

Prosiect Maen Hir

Solar a Storio Ynni



Preliminary Environmental Information Report Volume I, Chapter 18: Cumulative Effects

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18.1 Introduction

- 18.1.1 The technical chapters of this PEIR have assessed the potential for likely significant effects from the Project on identified receptors. This chapter of the PEIR assesses the potential for likely significant effects as a result of the Project, cumulative with the likely effects arising from nearby Committed Developments (as presented in Table 18-2). Committed Developments are defined as 'other existing and/or approved development', that have the potential for Cumulative effects. There is the potential for identified receptors to experience effects from multiple developments, including the Project, at the same time. The purpose of this chapter is to identify where there is the potential for receptors to be impacted by Cumulative effects, and determine whether these are significant or not, in line with the requirements of the EIA Regulations.
- 18.1.2 Information on the baseline conditions, legislation, policy and guidance, and consultation and engagement, relevant to the technical topics covered in this Cumulative effects chapter, can be found in the relevant technical chapters of this PEIR (Chapters 6-17).

18.2 Methodology

- 18.2.1 The Planning Inspectorates (PINS) Advice Note 17 (Ref 18-1) sets out guidance on the approach to Cumulative effects Assessment (CEA). The Cumulative effects methodology undertaken in this PEIR is based on the guidance set out in PINS Advice Note 17 and has been adapted to fit the nature of the Project and the location in which it is based.
- 18.2.2 The listed of Committed Developments provided in Table 18-2 serves as the long list, presented for consultation through the submission of this PEIR. Consultation comments on the list are welcomed from the Isle of Angeley County Council, as well as other relevant statutory consultees. Further consultation on the Committed Developments will be undertaken prior to the submission of the ES and DCO Application.

Establishing the List of Committed Development

18.2.3 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 (Zol) for each topic discipline (see Table 18-1). The Zol for each environmental topic area is identified based on the extent of likely significant effects in line with industry specific guidance along with professional judgement and knowledge of the local area.

Table 18-1 Zone of Influence

Topic	Largest Zol (measured from the PEIR Boundary)
Landscape and Visual	3km
Ecology	30km
Cultural Heritage	5km from Solar PV Site
Transport and Access	The full extent of the routes from the Strategic Road Network (SRN), via the Local Road Network (LRN), required to facilitate traffic movements associated with the Project.
Noise and Vibration	500m
Ground Conditions	250m
Soils and Agriculture	Solar PV Site and Mitigation and Enhancement Areas
Water Resources	The Zol includes all the catchments where there is potential for significant effects, both upstream and downstream.
Climate Change	PEIR Boundary (Climate Change Resilience and Adaptation and Cumulative Climate Change Impacts) United Kingdom (Greenhouse Gas Emissions)
Air Quality	250m
Glint and Glare	30km
Waste	Isle of Anglesey County Council
Major Accidents and Disasters	Areas surrounding the PEIR Boundary to be agreed with North Wales Fire and Rescue

Topic	Largest Zol (measured from the PEIR Boundary)
Socio-Economics	Wales
Health	Wales

- 18.2.4 Although Wales is the largest Zol, where effects are considered at this scale in the socio-economic and health assessments, they are inherently cumulative by drawing from projections of the future baseline and therefore it is not necessary to consider Cumulative effects from specific Committed Developments. As such, 30km (in relation to Glint and Glare and Ecology and Biodiversity) is the largest Zol relevant to the search of Committed Developments. A search of Committed Developments only with the potential for Glint and Glare and Biodiversity and Ecology Cumulative effects was undertaken (where this lies outside of the Isle of Anglesey, the next largest Zol). This did not return any results so the search of general Committed Developments meeting the criteria set out below was limited to the Isle of Anglesey. Based on professional judgement it is considered that a search area limited to the administrative boundary of the Isle of Anglesey is sufficient to capture any potential significant Cumulative effects.
- 18.2.5 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.
- 18.2.6 These criteria were applied to a search of the following sources:
- Searches of the National Infrastructure Planning website;
 - Searches of local planning authority planning portals; and
 - Review of available Local Plan documents online.
- 18.2.7 Following a review of the potential long list Committed Developments, only four of the developments were identified (see Figure 18-1). Therefore, the screening

process to produce a short-list of developments was deemed unnecessary. The Committed Developments identified have been taken through for assessment in this Cumulative effects chapter.

- 18.2.8 PINS Advice Note 17 (Ref 18-1) provides Tiers for Committed Developments, relating to the level of detail likely to be available for the development and the certainty of the development coming forward. There are three Tiers, with Tier 1 being the most certain and requiring, as a minimum, a submitted application, up to development that is under construction. All of the Committed Developments identified in Table 18-2 fall under Tier 1.
- 18.2.9 The list of Committed Developments identified for the assessment will be kept under review to ensure that the information within the ES is up to date.

Information Gathering

- 18.2.10 Environmental information has been gathered for the Committed Developments, where available, including details of:
- Proposed design;
 - Location;
 - Programme (construction and, if applicable, operation and decommissioning);
 - Baseline data; and
 - Effects arising from such other developments.

Preliminary Assessment of Cumulative effects

- 18.2.11 All relevant technical disciplines have contributed to the preparation of this Cumulative effects chapter. The preliminary assessment is undertaken to an appropriate level of detail commensurate with the information available on other Committed Developments and sets out measures envisaged to reduce or avoid any likely significant adverse Cumulative effects as necessary and, where appropriate, any proposed monitoring arrangements.
- 18.2.12 This assessment has considered, for each receptor, the areas where the residual effects of the Project could interact with effects arising from the Committed Developments on the same receptor based on a spatial and/or temporal basis.

- 18.2.13 The spatial scope concerns the location of affected receptors and, in the context of CEA, whether the affected location experiences effects from multiple developments. The temporal scope concerns timing of programmes affecting a receptor and, in the context of CEA, whether multiple programmes overlap affecting the same receptor.

Assumptions and Limitations

- 18.2.14 The assessment of Cumulative effects has assumed that appropriate mitigation measures and controls are implemented by the identified Committed Developments in accordance with legislation and policy.
- 18.2.15 The limitations stated for each of the technical chapters (PEIR Chapters 6-17) are relevant to the assessment of Cumulative effects presented in this PEIR chapter, in respect of each technical topic.

18.3 Assessment

Establishing the list of Committed Developments

- 18.3.1 The list of Committed Developments within the Isle of Anglesey that meet the criteria in paragraph 18.2.5 are set out in Table 18-2. Although Carrog Battery Storage does not constitute EIA development it has been included in the list because it comprises the same development type (battery storage) and is in proximity to the Project.
- 18.3.2 The proposed 400kV NGET 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. PINS Advice Note 17 (Ref 18-1) states that "the assessment should be undertaken to an appropriate level of detail, commensurate with the information available at the time of assessment". As there is no information on the 400kV NGET Substation available at the time of writing this PEIR, no assessment has been undertaken, in line with the Advice Note.
- 18.3.3 Any developments in the area that have already been constructed are considered as part of the baseline scenario for the assessments within this PEIR and are not considered any further in this Cumulative effects chapter.

Table 18-2 List of Committed Developments

ID	Application Reference	Description	Distance from PEIR Boundary	Application Type and Status	Tier	Within ZOI?	Overlap in temporal scope?
1	DNS/3274702	Alaw Mon Solar Farm	1.7km	DNS Application Acceptance of Notice 15/09/2023	Tier 1	Landscape and Visual, Ecology, Cultural Heritage, Transport and Access, Soils and Agriculture, Climate Change, Glint and Glare, Socio-Economics and Health, Waste	Construction – no Operation – yes
2	FPL/2023/218	Carrog Battery Storage	2.3km	Planning application to IoACC Validated 15/08/2023	Tier 1	Landscape and Visual, Ecology, Cultural Heritage, Transport and Access, Soils and Agriculture, Water Resources, Climate Change, Glint and Glare, Socio-Economics and Health, Waste	Construction – potentially yes Operation – yes
3	FPL/2021/201/EIA	Holyhead Breakwater Refurbishment Scheme	13.5km	Planning application to IoACC Approved 17/10/2022	Tier 1	Climate Change, Soils and Agriculture, Ecology, Glint and Glare, Socio-economics and Health, Waste	Construction – potentially yes Operation – yes
4	FPL/2021/294/EIA	Holyhead Waterfront Regeneration Scheme	14.2km	Planning application to IoACC Validated 17/12/2021	Tier 1	Climate Change, Soils and Agriculture, Ecology, Glint and Glare, Socio-economics and Health, Waste	Construction – potentially yes Operation – yes

Information Gathering

18.3.4 The following sub-sections summarise the Committed Developments.

Alaw Mon Solar Farm

18.3.5 The development (Ref: DNS/3274702) consists of the installation of a ground-mounted solar photovoltaic farm with a generating capacity of approximately 160MW, together with a battery energy storage system facility and associated infrastructure, works and access. The site extends to circa 268.8ha and comprises primarily agricultural fields. The closest part of this site to the PEIR Boundary is approximately 1.7km away.

18.3.6 The construction programme for Alaw Mon Solar Farm does not currently overlap with the construction programme for the Project; however, if there are any delays to the construction of the Committed Development there is the potential for overlap with the Project as there is currently only a one year gap between the construction phases. This will be kept under review and the cumulative assessment in the ES will consider this as relevant.

Carrog Battery Storage

18.3.7 This development (Ref: FPL/2023/218) consists of the installation of a battery energy storage system with a 660MWh capacity, together with a substation, transformer stations, site accesses, internal access tracks, access gates, security measures, other ancillary infrastructure and landscape and biodiversity enhancements. The site comprises 15.6ha and is located in Carrog, approximately 2.3km south of Cemaes and 2.4km north-east of Llanfechell. The closest part of this site is approximately 2.3km from the PEIR Boundary

Holyhead Breakwater Refurbishment Scheme

18.3.8 Full application for the refurbishment / repair of the breakwater structure together with formation of a temporary concrete batching plant for the fabrication, curing and storage of concrete armour units. The closest part of this site is approximately 13.5km from the PEIR Boundary.

Holyhead Waterfront Regeneration Scheme

18.3.9 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 together with associated land reclamation, service infrastructure and hard and soft landscaping. The closest part of this site is approximately 14.2km from the PEIR Boundary.

Preliminary Assessment of Cumulative effects

Landscape and Visual

- 18.3.10 The potential for cumulative landscape and visual effects are considered to be limited in scope to Alaw Mon Solar Farm due to the scale and location of this development. Carrog Battery Storage has not been considered in the assessment of landscape Cumulative effects due to the size and scale of the development relative to the Project, and subsequent potential for cumulative landscape and visual effects.
- 18.3.11 The proposed Alaw Mon Solar Farm, located 1.8km to the south-west of Maen Hir Central, has the potential to generate a number of Cumulative effects during the construction, operation, and decommissioning phases in relation to the following landscape and visual receptors:
- LCA 5 Gogledd Orllewin Yns Mon / North West Anglesey;
 - LANDMAP Visual and Sensory Aspect YNSMNVS008 North West Drumlins;
 - Visual Receptor Group 11: Llyn Alaw, Penwerthyr and Gwredog uchaf;
 - Visual Receptor Group 12: Llanerch-y-medd West, Cae Mawr, Ceidio, Wilpol and Peny-bryn; and
 - Copper Trail (NCR 500) at Pen-y-Bryn and Wilpol to the west of Llanerch-y-medd.
- 18.3.12 Alaw Mon Solar Farm is separated from Maen Hir Central by the Llyn Alaw waterbody, as well as undulating landform providing physical and visual separation between the two developments. This physical separation is sufficient to minimise the potential for significant Cumulative effects with LCA 5 Gogledd Orllewin Yns Mon / North West Anglesey, LANDMAP Visual and Sensory Aspect YNSMNVS008 North West Drumlins, and Copper Trail (NCR 500) at Pen-y-Bryn and Wilpol to the west of Llanerch-y-medd.

18.3.13 However, due to the locations of Visual Receptor Group 11: Llyn Alaw, Penwerthyr and Gwredog uchaf and Visual Receptor Group 12: Llanerch-y-medd West, Cae Mawr, Ceidio, Wilpol and Peny-bryn, there is the potential for significant Cumulative effects from the Project and Alaw Mon Solar Farm. The Cumulative effects on these receptors will be assessed further in the ES.

Ecology

18.3.14 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, consisting of the sources set out in PEIR Chapter 7: Ecology, and, where necessary professional judgement on a precautionary basis. However, it is expected that with further refinement of the ecological baseline and the subsequent implementation of appropriate mitigation measures, that the significance of effects presented in Chapter 7: Ecology will reduce further, therefore minimising the potential for Cumulative effects.

18.3.15 As the baseline data required to undertake a comprehensive assessment of the potential for Cumulative effects is not yet fully collected, a conservative and qualitative assessment has been undertaken for the assessment of Cumulative effects on ecological receptors in this PEIR. The ES will, with complete and comprehensive baseline data, fully assess the potential for Cumulative effects on ecological receptors.

18.3.16 It is considered that there is the potential, without additional mitigation, for significant cumulative ecological effects with Alaw Mon Solar Farm due to the scale, nature, and location of the development relative to the Project. The other Committed Developments listed in Table 18-2 are not considered to be of sufficient scale, nature or location to have the potential for Cumulative effects with the Project. This relates to the loss of habitat for bird and bat species that both projects may incur. In particular, there is potential for the following significant effects to have Cumulative effects with Alaw Mon Solar Farm during construction and decommissioning:

- Moderate Adverse effect on Bat activity due to loss and displacement of foraging and commuting habitat;
- Moderate Adverse effect on Whooper Swan, due to loss and displacement of foraging and roosting habitat for birds;
- Moderate Adverse effect on Greenland White Fronted Goose due to loss of foraging and roosting habitat for birds; and
- Moderate Adverse effect on Chough associated with Holy Island Coast SPA, due to loss of foraging habitat during the non-breeding season.

18.3.17 During operation there is potential for the following significant effects to have Cumulative effects with Alaw Mon Solar Farm:

- Moderate Adverse effect on Bat activity due to loss and displacement of foraging and commuting habitat; and
- Moderate Adverse effect on Ornithology, due to loss and displacement of foraging and roosting habitat for birds.

18.3.18 It is possible that the effects identified above could change in scale and significance, with further baseline data and detailed assessment, which would include the identification of any relevant mitigation measures to reduce the scale of potential effects. A comprehensive and fully informed assessment of these Cumulative effects will be provided in the ES.

Cultural Heritage

Archaeology

18.3.19 During the construction phase, any 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. As such, not significant adverse Cumulative effects are anticipated.

18.3.20 The archaeological impacts identified in this PEIR are limited to the construction phase, therefore there is no potential for cumulative archaeological effects during operation and decommissioning.

Designated Historic Assets

- 18.3.21 Potential effects upon designated historic assets during the construction and decommissioning phases 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 be temporary and limited and would not be likely to cause significant effects to designated historic assets. Due to the temporary nature of cumulative construction and decommissioning impacts, significant Cumulative effects are not considered likely.
- 18.3.22 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.
- 18.3.23 The Historic Environment Desk Based Assessment (DBA) considered the setting of designated historic assets within 5km of the Solar PV Site of the Project, with a small number scoped into a detailed assessment. A similar approach was followed within the HEDBA for the proposed Alaw Mon Solar Farm, with designated historic assets within 5km of the development considered. 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.
- 18.3.24 The Carrog Battery Storage planning application did not require any supporting documentation to consider the impact of the development on built heritage assets as there are not historic assets located within its site boundary. It has therefore been considered that Carrog Battery Storage has no impacts on built heritage assets and there are no Cumulative effects with the Project and this Committed Development.

18.3.25 In respect of the above justification relative to each of the identified Committed Developments, it can be concluded that it is not likely that the Project has the potential for significant Cumulative effects on designated heritage assets.

Transport and Access

18.3.26 The assessment of the impacts of the Project on Transport and Access receptors has used Department for Transport ('DfT') Trip End Model Presentation Program (TEMPro) Growth Factors (see Section 9.3 of Chapter 9: Transport) in order to establish a future baseline scenario when construction is anticipated to be at its peak in 2027. 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, as the future traffic flows have been accounted for in the TEMPro Growth Factor model used for assessment.

18.3.27 Furthermore, there is no overlap or interaction between the Project's proposed 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 effects. In addition, there has been assumed to be no temporal overlap with the construction period for Alaw Mon Solar Farm and the Project, further reducing the potential for cumulative construction effects.

Noise and Vibration

Construction and Decommissioning

The assessment of noise and vibration presented in Chapter 10: Noise and Vibration has identified distanced beyond which there is no potential for likely significant effects:

- 150m or more from onsite noise generating construction / decommissioning works - short-term, temporary, minor adverse or negligible effects.
- 17m or more from onsite vibration generating construction / decommissioning works - short-term, temporary, minor adverse or negligible effects.

- 18.3.28 With the nearest identified Committed Development being located approximately 1.7km from the PEIR Boundary, there is no potential for NSRs to experience Cumulative construction/decommissioning noise and/or vibration effects as a result of onsite activities associated with the Project and Committed Developments.
- 18.3.29 Construction generated road traffic noise has the potential for Cumulative effects when the construction programmes overlap between multiple developments, and when multiple projects share the same construction traffic route. However, 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 NSRs as a result of construction generated road traffic.

Operation

- 18.3.30 During operation the Project has the potential for noise effects resulting from the 33kV Substations, String Inverters and 132kV Substations. The assessment of operational noise has concluded that NSRs located more than 200m from the noise source are likely to experience negligible adverse effects during the daytime and early morning periods. During the nighttime period, NSRs beyond 100m would experience no worse than minor adverse effects. With the nearest identified Committed Development being located approximately 1.7km from the PEIR Boundary, there is no potential for NSRs to experience cumulative operational noise effects.
- 18.3.31 The Project Substation and BESS have the potential for cumulative adverse effects with the proposed NGET Substation depending on where they are sited. This will be assessed and will be reported on in the ES when the location of the NGET Substation is determined.

Ground Conditions

- 18.3.32 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 including Phase 1 preliminary risk assessment, Phase 2 intrusive investigation, remediation strategy,

remediation implementation and verification in accordance with Environment Agency (EA) guidance and Land Contamination Risk Management (LCRM). It is considered that there will be no significant Cumulative effects on ground conditions and contamination resulting from the Project and the Committed Developments considered as part of the assessment, as each development will incorporate appropriate mitigation measures to avoid residual significant adverse effects, therefore avoiding any Cumulative significant effects. Furthermore, all of the Committed Developments are sufficiently distanced from the PEIR Boundary such that in the absence of the measures described, significant Cumulative effects would still be avoided.

Soils and Agriculture

- 18.3.33 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 more than 20ha of BMV land.
- 18.3.34 Results of the detailed ALC survey for the proposed Alaw Mon Solar Farm show that there would be a loss of approximately 1.8ha of BMV land from agricultural production during operation. The Predictive ALC mapping shows the agricultural land to be affected by Carrog Battery Storage is almost entirely subgrade 3b, with a small area (<0.5 ha) of potential subgrade 3a on the north-eastern edge of the site. The other two Committed Developments which are located in Holyhead (Holyhead Breakwater Refurbishment Scheme and Holyhead Waterfront Regeneration Scheme) will not affect any BMV land.
- 18.3.35 As such, 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 than 20ha which would result in a Major adverse effect which is significant. However, the temporary loss of BMV land from agricultural production should be considered within the context of agricultural land within Anglesey. Anglesey comprises an estimated 65,088ha of agricultural land (as shown on the Predictive ALC Mapping). Of this an estimated 34,615ha (53.2%) is

BMV. In this context, the effects on agricultural land considered to be negligible adverse and not significant.

Water Resources

- 18.3.36 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.
- 18.3.37 However, significant Cumulative effects are unlikely given that there are no significant adverse effects anticipated for the Project and Carrog Battery Storage will also be subject to requirements of planning policy and best practice to limit impact on hydrological regimes and water quality. 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

- 18.3.38 The assessment of the impact of the Project on climate change has been undertaken based on the contribution to the UK Carbon Budget targets, as well as a comparison of the carbon intensity of alternative electricity generating means. 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 developments coming forward. The assessment of the Project's carbon emissions at all phases of the Project, relative to the UK Carbon Budget, is therefore inherently cumulative, as all other developments need to align with the UK Carbon Budget.
- 18.3.39 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's operational phase 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

- 18.3.40 The scope of the Major Accidents and Disasters chapter of this PEIR is limited to fire risk associated with the Project BESS. Both Alaw Mon Solar Farm and Carrog Battery Storage comprise batteries which also have the limited potential for fire risk, with the risk of both developments experiencing battery fires at the same time being very low. The Project is sufficiently distanced from 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 Project BESS will be controlled through an outline Battery Safety Management Plan (oBSMP), further reducing the potential for significant Cumulative effects.
- 18.3.41 Although the BESS does not have the potential for Cumulative adverse effects with the proposed NGET Substation (as there is a low fire risk associated with it), there is potential for fire spreading from the BESS to the NGET Substation depending on where they are both sited. This will be assessed and reported in the ES when the location of the NGET Substation is determined.

Glint and Glare

- 18.3.42 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.
- 18.3.43 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

Construction Dust

- 18.3.44 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. Additionally, each of the Committed Developments would require their respective dust impacts to be mitigated so as to not result in significant adverse effects.

Construction Traffic

- 18.3.45 There is no overlap or interaction between the Project's proposed 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

- 18.3.46 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. The assessment of the waste arisings of the Project that will be provided in the ES will therefore serve as a cumulative assessment, and it is not anticipated that a separate assessment of the impact of the Project and the Committed Developments identified in Table 18-2 would be required.
- 18.3.47 This approach will be revisited prior to the preparation of the ES, once details of waste arisings are fully understood.

Socio-economics

- 18.3.48 A blended approach has been undertaken for the Cumulative effects assessment depending on the effect being assessed. 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 committed developments being brought forward in the relevant study area and therefore do not require Cumulative effects assessment.
- 18.3.49 For other effects, where projections are not available, data are presented on the expected changes as a result of Committed Developments. Table 18-3 provides more detail on the Cumulative effects approach. These considerations – be they projections or assessments of Committed Developments – are contained in the

future baseline for each effect, as presented in PEIR Chapter 16: Socio-economics.

18.3.50 The effect of Cumulative effects 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 effects would constitute double counting.

Table 18-3 Approach to Cumulative effects

Potential effect	Approach to Cumulative effects
Construction and decommissioning phases	
Direct and indirect construction jobs supported by the delivery of the Project	Inherently cumulative. The future baseline considers the construction workforce requirements at the relevant study area.
Provision of education, skills, training and supply chain	Inherently cumulative. The future baseline considers the skills requirements of the construction workforce at the relevant study area.
Changes in demand for temporary workers accommodation	Not inherently cumulative. The future baseline does not present projections on demand for temporary workers accommodation.
Changes to land uses	Not inherently cumulative. The future baseline does not present how land use at the PEIR Boundary may change in the absence of the Project.
Operational phase	
Operational employment (direct, indirect and induced) supported by the Project	Inherently cumulative. Operational jobs projections are available at the relevant study area.
Provision of education, skills and training	Inherently cumulative. The future baseline considers the skills requirements of the future workforce.
Impact on community power	Not inherently cumulative. The future baseline does not present projections on changes to community power.

Potential effect	Approach to Cumulative effects
Changes to land uses	Not inherently cumulative. The future baseline does not present how land use at the PEIR Boundary may change in the absence of the Project.
Changes to local tourism assets	Changes to local tourism assets are considered at the NCA level.

18.3.51 For those identified potential effects where the assessment undertaken for the Project is not inherently cumulative, the ES will undertake an appropriate and proportionate assessment of Cumulative effects. However, for the purposes of this preliminary assessment, a summary of the Cumulative effects assessment for effects that are not inherently cumulative is presented below.

Table 18-4 Potential Socio-economic Cumulative effects

Potential effect	Approach to Cumulative effects
Construction and decommissioning phases	
Changes in demand for temporary workers accommodation	Of the four committed developments, Alaw Mon Solar Farm is the only Committed Development likely to have a material effect on temporary workers accommodation through its construction workforce. However, based on information available, it is assumed that the construction phase (and peak construction periods) of the Project and Alaw Mon would not overlap and therefore there would not be a Cumulative effect on demand for temporary workers accommodation.
Changes to land uses	It is not considered that any of the committed developments would have a Cumulative effect on changes to land uses at the PEIR Boundary as all committed developments are located outside of the PEIR Boundary. Chapter 16: Socio-economics outlines the possible plans for the Former Oil Depot in Rhosgoch based on the LA's Freeport status, however confirms current future plans are not known and will be reviewed at the ES.
Operational phase	
Impact on community power	In 2020, Welsh Government set out its expectation for all new renewable energy projects to include an element of local or shared ownership. This is therefore only relevant to Alaw Mon Solar Farm and Carrog Battery Storage given the nature of the Committed Developments.

Potential effect	Approach to Cumulative effects
	<p>Alaw Mon Solar Farm intends to support a community benefit fund of approximately £32,000 per annum and Carrog Battery Storage would support its local communities in accessing renewable energy. However, given the Project's community power scheme is still developing, it is not yet clear how the study area for this effect is defined and therefore whether there would be Cumulative effect with Alaw Mon Solar Farm and Carrog Battery Storage. This will be reviewed further in the ES.</p>
<p>Changes to land uses</p>	<p>It is not considered that any of the committed developments would have a Cumulative effect on changes to land uses at the PEIR Boundary given all committed developments are located away from the PEIR Boundary. Chapter 16: Socio-economics outlines the possible plans for the Former Oil Depot in Rhosgoch based on the LA's Freeport status, however, confirms current future plans are not known and will be reviewed at the ES.</p>
<p>Changes to local tourism assets</p>	<p>As noted in the preliminary assessment of Cumulative effects for Landscape and Visual, Alaw Mon Solar Farm is the only development considered due to its scale and location. Alaw Mon Solar Farm is located approximately 1.8km south-west of Maen Hir Central and has the potential to generative a number of Cumulative effects on landscape and visual receptors, which includes tourism assets. Most relevant to tourism is Llyn Alaw, which is part of Visual Receptor Group 11 and separates Alaw Mon Solar Farm from Maen Hir Central, which is likely to experience significant Cumulative effects from the Project and Alaw Mon Solar Farm. Based on this, there are likely to be a significant Cumulative effect relating to Llyn Alaw reservoir.</p>

Health

18.3.52 The Cumulative effects assessment for health considers the impact of Committed Developments alongside the Project on the health determinants considered in the assessment of effects. Of the four Committed Developments, two are within the same Neighbourhood Impact Area (NIA) and Local Authority (LA) as the Project (Alaw Mon Solar Farm and Carrog Battery Storage), whilst the Holyhead Breakwater Refurbishment Scheme and Waterfront Regeneration Scheme are only within the same LA as the Project. Where this assessment relies on other technical chapters, the Committed Developments are considered within the study areas of those chapters, ensuring consistency with the assessment of the Project's direct effects on human health.

Construction and decommissioning

Diet and nutrition

- 18.3.53 Chapter 17: Health identified that Wales is integrated into the UK food system which is heavily reliant on trade. Therefore, diet and nutrition on the Island are largely influenced by trade as opposed availability or quality of agricultural land. As such, it is unlikely that any of the Committed Developments outlined in Table 18-2, particularly those not related to agricultural land, will alter this effect. Most residents are expected to continue sourcing the majority of their food from non-local sources. Therefore, significant cumulative health effects are not anticipated, as no significant adverse health effects related to diet and nutrition are expected at the LA level.

Housing

- 18.3.54 Alaw Mon Solar Farm is considered the only committed development outlined in Table 18-2 likely to affect housing demand, as it is the only projected expected to require a significant construction workforce, as identified in the future baseline section of Chapter 16: Socio-economics. Chapter 16: Socio-economics also indicates that the construction phase of this project will not overlap with the Project's construction phase, and therefore, it is unlikely to increase the demand for temporary worker accommodation.
- 18.3.55 It is not considered that the Holyhead Waterfront Regeneration Scheme would lead to a significant construction workforce uplift that would require temporary accommodation. This will be reassessed during the ES stage; however, 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. Consequently, significant cumulative health effects at the LA level are not expected.

Transport modes, access and connections

- 18.3.56 The assessment of Cumulative effects for transport identified that there is no expected overlap or interaction between the Project's proposed construction routes and those of Alaw Mon Solar Farm and Carrog Battery Storage on any roads where significant adverse effects could occur. It is also considered that

disruption caused by construction activities from committed developments would be managed within the oCTMP. As such, significant Cumulative effects at the NIA level are not likely.

Community identity, culture, resilience and influence

- 18.3.57 Chapter 17: Health identified that certain vulnerable groups could have the potential to feel intimidated as a result of the presence of construction workers but the literature does not support this. Additionally, it found that the inflow of new construction workers would represent a relatively low and temporary uplift on the existing population and activity.
- 18.3.58 The future baseline in Chapter 16: Socio-economics identifies the Alaw Mon Solar Farm as the only other Committed Development outlined in Table 18-2 likely to have a significant workforce. However, since the construction phase of this project will not overlap with the Project's construction phase, any impact on community identity from the construction workforce is expected to be minimal.
- 18.3.59 The assessment of Cumulative effects for landscape concluded that the only relevant committed development is Alaw Mon however given the physical and visual separation, no significant Cumulative effects are expected.
- 18.3.60 Regarding the Welsh Language, the committed developments are expected to implement measures to enhance the Welsh Language. The Alaw Mon Solar Farm has been given a Welsh name linked to the locality, and all public signage, including construction traffic signage, will be bilingual. Carrog Battery Storage WLIA concluded that the development will positively affect the Welsh language within the community by providing local employment opportunities which helps to retain residents within the area. The Holyhead Waterfront Regeneration Scheme Planning Statement also concludes that, with appropriate mitigation measures, the project would have beneficial effects on the Welsh language and the community in Holyhead. It is expected that there would be positive Cumulative effects through the measures identified among the committed developments. However, due to the scale of the developments, it is not likely to be significant.
- 18.3.61 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, as described above, so the Cumulative effect remains the same as the Project specific conclusion of minor adverse and not significant at the LA level.

Education and training

- 18.3.62 The assessment of Cumulative effects for Chapter 16: Socio-economics identifies that for education and training, the assessment inherently considers the Committed Developments within the relevant study area.

Employment and income

- 18.3.63 The assessment of Cumulative effects for Chapter 16: Socio-economics identifies that for employment and income, the assessment inherently considered Cumulative effects as it evaluates impacts against a future baseline that includes a range of employment projections for the study area, capturing scenarios capturing the scale of energy island initiatives coming forward. These projections inherently consider the impacts of the Committed Developments being brought forward in the study area, including the impact of all committed developments which lie within the relevant study area (LCA).

Water quality or availability

- 18.3.64 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. Additionally, Carrog Battery Storage will also be subject to requirements of planning policy and best practice to limit impact on hydrological regimes and water quality. As such there are no significant health Cumulative effects anticipated at the NIA level.

Noise and vibration

- 18.3.65 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 at the NIA level.

Health and social care services

- 18.3.66 The future baseline of Chapter 16: Socio-economics identified that the Alaw Mon Solar Farm is the only committed development outlined in Table 18-2 likely to have a significant construction workforce. However, Alaw Mon's construction phase will not overlap with the Project's construction phase. Therefore, it is not likely that the Cumulative effect would put additional strain on health and social care services. As such, it is not likely that there would be significant health Cumulative effects at the NIA level.

Operation

Diet and nutrition

- 18.3.67 Chapter 17: Health identified that Wales is integrated into the UK food system which is heavily reliant on trade. Therefore, diet and nutrition on the Island are largely influenced by trade and not availability or quality of agricultural land that may be supported by the operation of committed developments. Most residents are expected to continue sourcing the majority of their food from non-local sources. As such, it is not likely that there would be significant health Cumulative effects as there are no significant health adverse effects anticipated for the Project or committed developments at the LA level.

Open space, leisure and play

- 18.3.68 The cumulative health effects for open space, leisure and play aligns with the study areas of the Landscape and Visual Assessment, which identify the Alaw Mon Solar Farm as the only relevant committed development due to its scale and location. There are six public rights of way (PRoW) that access the Alaw Mon Solar Farm, all of which will be retained and safeguarded during all phases of the development. Therefore, it is currently considered unlikely that the retention of these PRoWs at Alaw Mon Solar Farm, along with the Project's commitment to

retaining all existing PRowS, will have significant Cumulative effects on open space, leisure, and play. As such, it is not likely that there would be significant health Cumulative effects at the NIA level.

Community identity, culture, resilience and influence

- 18.3.69 The assessment of Cumulative effects for landscape and visual concluded that the only relevant committed development is Alaw Mon but because of the physical and visual separation, no significant Cumulative effects are expected.
- 18.3.70 Regarding the Welsh Language, the committed developments are expected to implement measures to enhance the Welsh Language, however, they are not likely to be significant.
- 18.3.71 Chapter 17: Health found that 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.

Climate change and adaptation

- 18.3.72 The Cumulative effects assessment for climate change determined that the cumulative impact on greenhouse gas (GHG) emissions is likely to be both beneficial and significant. Both the Project and the Alaw Mon Solar Farm are expected to contribute positively to climate change mitigation through the generation of additional renewable energy. This Cumulative effect is anticipated to have a positive impact on health by reducing some of the adverse effects of climate change. However, the significance of this health impact is likely to be limited, as health outcomes related to climate change are influenced by various factors on a national scale. Therefore, 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.

Wider societal infrastructure and resources

- 18.3.73 Alaw Mon Solar Farm is the only Committed Development which may have an impact on wider societal infrastructure and resources. 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. Unlike the climate change focus on renewable energy's role in reducing GHG emissions, this effect emphasises the importance of enhancing and supporting energy infrastructure itself, through the contributions of the Project and the Alaw Mon Solar Farm. While these improvements in energy infrastructure can lead to positive cumulative health effects, they are similarly not expected to be significant at the national level in combination.

Bio-physical environment (radiation)

- 18.3.74 Alaw Mon Solar Farm is the only Committed Development which may have an impact on the bio-physical environment. The Planning Statement for 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 as there are no health effects anticipated at the national level.

18.4 References

- Ref 18-1 The Planning Inspectorate (2015) Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects

