

Environmental Statement: Chapter 4 – Alternatives & Design Evolution

Development of National Significance
Pre-Application Consultation

Alaw Môn Solar Farm

Land west of the B5112, 415m south of Llyn Alaw, 500m east of Llantrisant and 1.5km west of Llannerch-y-Medd, Anglesey

October 2023



4.0 ALTERNATIVES & DESIGN EVOLUTION

Introduction

4.1 Regulation 17 of the EIA Regulations require an applicant to provide:

‘a description of the reasonable alternatives studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment’.

4.2 Schedule 4 (2) is worded slightly differently and requires:

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

4.3 The form of the Development has been influenced by a range of factors, including location, surrounding uses and landscape character, environmental impact assessment and input from Isle of Anglesey County Council (‘IACC’), Natural Resources Wales (‘NRW’), Cadw, Dŵr Cymru (‘DCWW’) and other statutory consultees and stakeholders.

4.4 This chapter, therefore, reviews the principal land use and siting options explored and the reasoning for the selection of the current design for the Development which forms the subject of assessment within the ES. The following four alternative options have been identified:

- The ‘do nothing’ alternative where the Development is not progressed;
- Alternative locations for the Development;
- Alternative uses for the Site; and
- Alternative design/ layout for the Development in the context of the design evolution.

The ‘do nothing’ Alternative

4.5 The ‘do nothing’ alternative refers to the option of leaving the Site in its current state, as described in Chapter 3 Site and Development Description, and the Development would not be progressed. In this scenario, the existing configuration of the land would remain the same in the form of agricultural fields that are predominately used for grazing purposes. As such, the significant impacts both adverse and beneficial that are highlighted in this ES would not occur. The generation of solar energy is one of the key elements towards the UK achieving net zero carbon. Under current legislation and policy, the UK Government is obligated to reduce carbon emissions and is legally bound to achieve net zero carbon emissions by 2050. These obligations underpin the need for renewable energy, such as solar. The Development will have an export capacity of approximately 160MW. Should the Development not be taken forward, its energy-generating potential and potential carbon savings would not be recognised. The ‘do nothing’ alternative would result in the loss of the generation of this renewable energy.

Consideration of Alternative Locations & Uses

4.6 The Development must be located near to an existing grid connection to ensure that a viable development capable of generating renewable electricity that can be exported to the grid can be realised. The Applicant has a Bilateral Connection Agreement and Construction Agreement with National Grid

which allows for the connection of a solar and battery project to the point of connection at the Wylfa nuclear substation. This agreement secures the capacity available on the grid at the substation for a fixed period of years for this form of generation. The Site has been considered acceptable for the Development following the site selection assessment upon when the Applicant undertook a rigorous assessment of land available in close proximity to the point of connection that balanced both environmental constraints and the ability to deliver a large-scale solar facility, consistent with the opportunity provided by the existing point of connection and agreement. The process involved a review of land availability and suitability in the area surrounding the point of connection, a selection and assembly of land and refinement of land to produce the Site. It is clear from national policy that renewable energy is urgently required and is supportive of renewable energy development including solar.

Review of Land Availability and Suitability

Irradiance and site topography

- 4.7 The amount of electricity generated by the Development is directly affected by irradiance levels. Irradiance can be affected by surrounding topography, with an uncovered or exposed site of good elevation and favourable south-facing aspect more likely to increase year-round irradiance levels. The land within Anglesey, and the more localised site selection area surrounding the grid connection, is considered as having potential to locate a large-scale solar development due to the large open area of undeveloped land, characterised by gently undulating topography, which would provide uniform exposure to irradiance, and generally sparse settlement patterns.
- 4.8 Given the rural nature of the immediate vicinity, there are numerous areas of vast open space, namely agricultural fields, within a 5km radius of the connection point. The nature of this landscape means many of these fields are devoid of overshadowing from vegetation (which is generally constrained to field or property boundaries) or tall buildings.

Agricultural Land Classification

- 4.9 As stated in Chapter 3 Site and Development Description of the ES, a detailed agricultural land classification ('ALC') survey was carried out at the Site in April 2021 and covered a slightly larger area than is now included within the Site, owing to minor changes to the Site boundary. The detailed survey determined that approximately half of the area surveyed (122.3ha or 45.5% of the area) is classified as Sub-grade 3a agricultural land. Approximately one-third (87.5ha or 33.6% of the area) is classified as Sub-grade 3b agricultural land. There are smaller proportions of Grade 2 (36.7ha or 13.7% of the area) and Grade 4 (6.5ha or 2.4% of the area) agricultural land also present. The remainder of the land within the area is classified as non-agricultural uses, i.e., woodland, roads, buildings (7.2ha or 2.7% of the area) or for the grid connection corridor (8.6ha or 3.2% of the area).

Proximity to Dwellings

- 4.10 Due to the size of large-scale solar development, the site selected for solar development may have a substantial zone of visual influence; therefore, the proximity to existing sensitive receptors is an important consideration to ensure visual amenity and glint and glare impacts are minimised.
- 4.11 Human settlements within close proximity to the Site include:
- 500m to the east of the small hamlet of Llantrisant; and
 - 1.5km to the west of the village of Llannerch-y-medd.

Capacity of the Site

- 4.12 In order to maximise the irradiance levels at a solar development site, and therefore to ensure efficient generation of energy, the layout (orientation and spacing) must be optimal within the footprint of the selected solar development site. As identified in Chapter 3 Site and Development Description, the Site comprises an area of 268.77ha, which will contain solar PV panels, a battery energy storage system and ancillary infrastructure, access routes, ecological enhancements, and landscaping. This area is

considered to be of a suitable size so as to ensure adequate space for solar PV provision that may generate energy for the desired export capacity (approximately 160MW).

Accessibility

- 4.13 The suitability of vehicular access routes to and from a solar development site must be considered to ensure construction, operational and decommissioning traffic do not cause significant adverse effects to transport. Being situated in proximity of the A55, B5112 and an unnamed access road between the B5112 and the Site, the Site is considered to have good accessibility, avoiding the rural road network, for construction, operation and decommissioning.

Consideration of Alternative Designs

- 4.14 Initial concept designs were prepared and refined as the Site boundary and the Development was progressed in its formulative stages up to the 'design freeze' for this PAC Environmental Statement.
- 4.15 Within the original Site boundary, representing all land within the land assembled, the area and layout was initially defined based on the optimal solar PV arrangement considering the most efficient layout and orientation within the land holding that would maximise the output of the solar farm within the land assembled. From this position, the Site boundary and Development was refined, considering environmental constraints and opportunities. Numerous iterations to the Site layout, and more generally to specific elements of the design, have occurred as the Development has evolved since submission conception. The Site boundary has been amended to reflect design changes since the request for a Scoping Direction was submitted to Planning Inspectorate Wales (now Planning and Environmental Decisions Wales).
- 4.16 The early layout iterations for the Development were prepared without inverters, access roads and associated infrastructure to allow for subsequent design inputs and amendments resulting from feedback from the consultant team, consultees and design team. The additional plant and equipment were added later in consideration of opportunities and constraints specific to the location of associated infrastructure (i.e. visual, noise or access). The Site boundary was considered and amended to reduce impacts of the Development, including consideration of opportunities and constraints. The local environment, and the character of the surrounding area and landscape, have informed the design of the Development inclusive of the embedded mitigation incorporated into the design.
- 4.17 The evolution of the design of the Development since March 2021 is shown on Figures 4.1 to 4.4. The current layout for the Development is shown on Figure 7.12 of the ES. Examples of the changes to the Site boundary include changes (reduction) in the total Site extent, inclusion of the grid connection route, inclusion of landscape margin and internal cable route and removal of fields from development. Examples of the changes to the Development include relocation of the battery energy storage system and substation compound, adjustment to panel offsets and buffers for landscape, ecology, residential amenity and other technical design constraints. These changes also included the removal of fields from development and adjustment of the internal arrangements (notably fence line and access roads). The layout was amended to achieve opportunities identified and address findings of studies/reports prepared including residential amenity and, where possible, addressing consultee and public comments made during the July 2021 and July 2023 informal community consultations held.