Environmental Statement: Chapter 5 – Construction Methodology & Phasing

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

5.0 CONSTRUCTION METHODOLOGY & PHASING

Introduction

5.1 This chapter describes the anticipated construction methodology and phasing of the Development. Consideration of likely significant effects on the environment that may arise during the construction phase, and any necessary mitigation measures are provided within the respective technical chapters of this ES.

5.2 Planning for construction is necessarily broad at this stage and may be subject to modification. This chapter is based on reasonable assumptions and experience that allows assessment of the realistic "worst case" construction phase effects.

Anticipated Programme

5.3 It is anticipated that the construction phase of the Development would last approximately 12 months (52 weeks), subject to gaining planning permission. Construction is anticipated to commence in 2025 and it is expected that the Development will be completed in 2026.

5.4 The Development would be completed within in a single phase of works.

5.5 The Development has a modelled operational lifespan of 40 years. It is therefore anticipated that decommissioning of the Site could occur from 2067. This is the assumption behind the high-level assessment of likely significant effects on the environment resulting from decommissioning assessed in the technical chapters of this ES.

Construction Methodology

Machinery

5.6 Consideration has been given to the types of plant that are likely to be used during the construction works. The plant and equipment likely to be associated with each key element of the construction process includes:

- Tracked/wheeled 360 degree excavators;
- Piling equipment;
- Front End JCBs;
- Wheel washing plant;
- Delivery trucks / heavy good vehicles ('HGVs'); and
- Road sweepers.

Construction Activities

5.7 The main construction activities for the Development would include:

- Site establishment and preparation for construction (access, fencing, ground preparation, preliminary civil works and drainage);
- Installation of the simple metal framework pile into the ground;
- Installation of underground cabling (trenching) and installation of inverters/transformers;

- Construction of the Battery Energy Storage System ('BESS') Facility and substation; and
- Construction of temporary construction facilities (temporary staff amenities and offices).

5.8 The construction of the solar farm element of the Development would include the preparation of the Site, installation of the access tracks, erection of security fencing / CCTV, assembly and erection of the solar photovoltaic ('PV') arrays, and the installation of the inverters/transformers and grid connection and underground cables.

5.9 The construction of the BESS Facility element of the Development would include the preparation of the Site (including earthworks), installation of the access roads, erection of security fencing, assembly of the battery system, and installation of the switch-room and grid connection.

5.10 The construction of the grid connection element of the Development would comprise trenching within the existing public highway from the main part of the Site to the National Grid substation at Wylfa.

5.11 Off-Site passby bays would be implemented during the construction phase but would require 'no-dig' construction. Further details of the passby bays are provided in Appendix 10.2 Outline Construction Traffic Management Plan.

Access Road Construction and Earthworks

5.12 The initial stages of construction will include improvements to the existing agricultural access points to the Site to allow for HGV movements, the access road to the proposed substation and internal access tracks. It is anticipated that the internal tracks will be constructed up to base-course level and used for construction traffic routes as the Development is built.

5.13 The improvements to the current existing agricultural accesses will include widening, to accommodate HGV movements, and measures to ensure visibility is sufficient. The accesses will be gated, with the gates set back by 20m from the public highway.

5.14 Earthworks would take place in parallel with the access road construction and comprise:

- The installation of the piles supporting the solar PV panels into the ground to a depth of typically 1.5m to 2m;
- Construction of internal access tracks;
- Installation of foundations for the on-Site substation;
- Trenches of up to 1.2m deep for the installation of the cables; and
- Construction of security fencing.

Drainage Works

5.15 Temporary drainage infrastructure will be installed by the main development contractor to manage and regulate surface water run-off during the construction period. This will ensure, using temporary matting and other measures (such as banksmen or crossing gates) if required, that the surface of the Public Rights of Way /National Cycle Route do not form a hazard to users.

5.16 The vast majority of the Site will be retained as greenfield, with no change to the surface treatment. The Flood Consequences Assessment (Appendix 9.1) sets out the area of impermeable surface is limited to the footprint of the Development's inverter/transformer units, substation buildings and the energy storage containers. The proposed access tracks and temporary construction compound(s) will form hardstanding of a permeable design. It is anticipated that these will be constructed during the infrastructure works when installing the temporary surface water management measures. Engineering works, including cut and fill, will be required to allow a suitable depth and extent for the drainage sub-bases.

5.17 To replicate pre-developed conditions, runoff from the solar PV panels will infiltrate directly into the ground via grassland that will be provided beneath the panels. This will maintain the current hydrological response of the Site and will therefore not increase flood risk elsewhere. The access tracks and roads will be constructed of permeable materials and therefore there will be no increase in runoff from these areas when compared to the existing Site conditions.

5.18 The energy storage facility and the majority of the substation buildings will be located above an extensive 500mm deep sub-base formed of permeable material with a 30% void ratio, i.e. MOT Type 3 or similar. The permeable sub-base will extend wider than the BESS Facility and substation buildings footprints. The permeable sub-base would receive surface water from the containers and would promote infiltration to the ground without concentrating runoff. This will mimic the existing greenfield surface water runoff arising from the Site and ensure that runoff rates are not increased post-development.

5.19 Similarly, the inverter/transformer station containers will be placed on concrete plinths located above a 400mm deep sub-base formed of permeable material with a 30% void ratio, i.e. MOT Type 3 or similar. The plan area of the sub-base will extend at least 500mm beyond the footprint of the containers to allow the collection of roof runoff. As with the BESS Facility, the permeable sub-base would receive surface water from the containers and would promote infiltration to the ground without concentrating runoff. This will mimic the existing greenfield surface water runoff arising from the Site and ensure that runoff rates are not increased post-development.

5.20 All Site works will be undertaken in accordance with CIRIA (2001) Control of Water Pollution from Construction Sites[i], which promotes environmental good practice for control of water pollution arising from construction activities.

5.21 Construction vehicles will be properly maintained to reduce the risk of hydrocarbon contamination and will only be active when required. Construction materials will be stored, handled and managed with due regard to the sensitivity of the local water environment and thus the risk of accidental spillage or release will be minimised.

5.22 In accordance with the Control of Pollution (Oil Storage) (Wales) Regulations 2016[ii], any tanks storing more than 200 litres of oil will have secondary containment. Regarding minimum capacity, *'if the tanks aren't hydraulically linked but are in the same secondary containment system, the containment capacity must be a minimum of 25 per cent of the total capacity or 110 per cent of the largest tank, whichever is greatest. If the tanks are hydraulically linked but situated in the same containment system, they should be treated as one tank. The containment capacity should be a minimum of 110 per cent of the total capacity of the tanks.'* Any above ground storage tanks will be located on a designated area of hardstanding. No underground storage tanks will be used during the construction period. Storage of liquids such as degreasers, solvents, lubricants and paints will be in segregated, bunded enclosures. The construction drainage system will be designed and managed to comply with BS6031 "The British Standard Code of Practice for Earthworks"[iii], which details methods that should be considered for the general control of drainage on construction sites. Further advice is contained within the Geotechnical Design, General Rules (BS EN 1997)[iv] which should be read in conjunction with Basis of Structural Design (BE EN 1990)[v].

5.23 Depending on meteorological conditions, excavations may require dewatering (of accumulated rainfall or runoff) during construction. In such circumstances, care would be taken to ensure that the quality of this water is sufficiently high to allow discharge. Ponded water from excavations will be pumped into temporary (baffled) holding tanks within the Site to remove suspended sediment before discharge to ground.

5.24 If oil is observed in the water from the excavation sites, it will be diverted through temporary oil interceptors prior to being discharged. Dewatering activities may require a temporary abstraction licence, and this would need to be agreed with Natural Resources Wales prior to commencement of construction works.

5.25 Any oil interceptors will be regularly inspected, cleaned and maintained. Full records will be kept of inspections, maintenance works and measures undertaken to sustain equipment performance. These provisions should ensure that no significant impacts occur on water quality. The use of settlement

facilities will aid the removal of any potentially contaminated particulate material that might result from construction activities.

5.26 The following control measures have been incorporated into the Outline Construction Environmental Management Plan ('CEMP') (Appendix 5.1), which will be secured via a suitable worded planning condition:

- Temporary surface water management system, for example oil interceptors, holding tanks to remove suspended sediment before discharge etc;
- Equipment maintenance;
- Wheel washing;
- Covering stockpiles; and
- Storage of substances in accordance with applicable legislation.

5.27 Further information on the CEMP is provided below.

Landscaping

5.28 Landscaping works will involve some ground modelling works and the establishment of green spaces within the Site including soil preparation, tree and vegetation planting and seeding. The ground modelling works will be undertaken concurrently with the site preparation and earthworks outlined above.

Material and Resource Use

5.29 The primary construction materials to be used will include solar PV modules, cabling, aggregate, steel and timber. Associated electrical equipment, such as the inverters/ transformers will be delivered to the Site in containerised form. Where possible, materials and resources used during the construction of the Development will be sourced from the local area.

Construction Phase Vehicle Movements

5.30 Construction activities and deliveries will be carried out Monday to Friday 08:00-18:00 and between 08:00 and 13:30 on Saturdays. No construction activities or deliveries will occur on Sundays or Public Holidays. Where possible, construction deliveries will be coordinated to avoid construction vehicle movements during the traditional AM peak hour (08:00-09:00) and PM peak hour (17:00-18:00).

5.31 The number of daily vehicle movements associated with the Site during the construction phase is summarised in Table 5.1.

Table 5.1 Construction Traffic

Vehicle Type	Average Trips Per Day
HGVs	20 two-way trips (10 in and 10 out)
Light Goods Vehicles ('LGVs')	100 two-way trips (50 in and 50 out)

5.32 Based on the information provided in Table 5.1, it is expected that there will be approximately 10 HGVs accessing the Site per day on average over the construction period.

5.33 In addition, up to 150 construction workers are anticipated to be on-Site during an average day throughout the construction period. The location of where staff will travel from is unknown at this stage as it will depend on the appointed contractor. However, it is envisaged that the majority of non-local workforce will stay at local accommodation and be transported to the Site by minibuses to minimise the effect on the strategic and local highway network. In addition, a construction worker Travel Plan will be prepared, to encourage workers to travel to the Site as sustainably as possible. As a robust judgement,

it is assumed that there could be 50 vehicle arrivals and 50 vehicle departures associated with construction workers per day by car/LGV (100 two-way trips). Construction workers will arrive outside of the highway network peak hours to minimise their impact.

Construction Traffic Access and Management

5.34 All construction traffic will route to the Site from the A55, via the B5112. To the north of Carmel, vehicles will turn left off the B5122 onto an unnamed road, before turning right into the main Site access, where the site compound is to be located. Other routes to the Site have been reviewed and this route is considered the most appropriate following a site visit and traffic count surveys.

5.35 All deliveries will be unloaded in the site compound, with smaller vehicles (maximum 10m rigid) then transporting materials to the respective land parcels.

5.36 Access from and egress to the public highway will occur in a forward gear at all times and appropriate car parking will be provided in the site compound, with parking on-street by contractors prohibited at all times.

5.37 Construction traffic and access arrangements will be managed in accordance with the CEMP and Construction Traffic Management Plan ('CTMP'). The Outline CTMP (Appendix 10.2) sets out the strategy for the following:

- Site access;
- Site compound;
- Construction traffic routing;
- Construction vehicle trip generation and vehicle dimensions;
- Mitigation measures; and
- Highway condition surveys requirements.

Controls to Protect the Environment

5.38 The environmental controls (or mitigation measures) to eliminate, reduce or offset likely significant adverse effects on the environment during the construction phase (as identified above) are identified below. It is anticipated that these controls will be secured by appropriately worded planning conditions or obligations:

- Preparation of a detailed CEMP, including a detailed CTMP, which clearly sets out the methods of managing environmental issues for all involved with the construction works, including supply chain management;
- Requirement to comply with the detailed CEMP included as part of the contract conditions for each element of the work. All contractors tendering for work will be required to demonstrate that their proposals can comply with the content of the CEMP and any conditions or obligations secured through the consent for the DNS application;
- In respect of necessary departures from the above, procedures for prior notification to Isle of Anglesey County Council ('IACC'), as appropriate, and affected parties will be established;
- Establishing a dedicated point of contact and assigning responsibility to deal with construction related issues if they arise. This will be a named representative from the construction team; and
- Regular dialogue with IACC and the local community.

5.39 The preparation of a detailed CEMP is an established method of managing environmental effects resulting from construction works.

5.40 The detailed CEMP will be submitted to IACC (and other statutory authorities) prior to the commencement of the works and an Outline CEMP is provided at Appendix 5.1. Compliance with the CEMP will be secured by planning condition attached to the consent for the DNS application. The structure of the detailed CEMP will include the following:

- A table showing the objectives, activities (mitigation/optimisation measures), and responsibilities for the implementation of those activities;
- The broad plan of the work programme including working hours and delivery times;
- Details of prohibited or restricted operations (location, hours etc.);
- Institutional arrangements for its implementation and for environmental monitoring: responsibilities, role of the environmental authorities, participation of stakeholders;
- Contact during normal working hours and emergency details outside working hours;
- Provision for reporting, public liaison, and prior notification of particular construction related activities;
- The mechanism for the public to register complaints and the procedures for responding to such complaints; and
- The details of proposed routes for HGVs travelling to and from the Site.

Site Offices & Welfare Accommodation

5.41 Specific offices and welfare accommodation for construction staff will be required and located on-Site. It is envisaged that the majority of non-local workforce will stay at local accommodation overnight and be transported to/from the Site by minibuses.

Hours of Work

5.42 Working hours on the Site will be agreed with IACC through the detailed CEMP. However, the standard hours of work will be adhered to. These are:

- Monday to Friday, 8am to 6pm;
- Saturday, 8am to 1.30pm; and
- Sunday and Bank Holidays, no noisy activities on-Site.

5.43 All work outside these hours will be subject to prior agreement of, and/or reasonable notice to IACC, as appropriate.

5.44 Night-time working will be restricted to exceptional circumstances. By arrangement, there may be some out of hours construction deliveries made to the Site.

Response to Complaints

5.45 Any complaints will be logged on-Site and, where necessary, reported to the relevant individual within IACC, as appropriate, as soon as practicable. Further details are provided in the Outline CEMP.

Prior Notice

5.46 In the event of unusual activities or events, these will be notified to IACC, as appropriate, and relevant property owners or occupiers in advance. The relevant activities will be agreed with IACC, as appropriate, once the detailed programme of construction is defined. This will include:

- Necessary night-time, weekend or evening working (outside core areas) of a type which may affect properties; and
- Road or footpath closures/diversions and movements of wide loads (unlikely to be required).

5.47 The community will be kept informed during the construction phase through press adverts, IACC and through direct notification to IACC as appropriate.

Decommissioning Methodology

5.48 It is anticipated that similar plant and equipment would be required to dismantle and demolish the Development's structures and restore the Site, as would be required for the construction phase.

5.49 It is likely that vehicle trips to and from the Site during the decommissioning phase would also be similar, as the majority of materials moved on to the Site would require moving off the Site for recycling and disposal. The estimated construction vehicle traffic therefore forms the basis for assessing the effects of decommissioning-related traffic movements on sensitive receptors. However, there would be an increase in the number of daily movements due to decommissioning taking place over a more condensed period of time than construction.

5.50 Decommissioning would involve the following steps:

- Isolation of services and utilities;
- Demolition of structures and sorting of material for recycling or disposal;
- Stockpiling of material for removal;
- Removal of foundations and other underground structures;
- Reinstatement of subsoil and topsoil; and
- Landscaping (reinstatement).

5.51 As it is so far in the future (2067), there is no set plan for how decommissioning would be phased across the Site. It is anticipated that a Decommissioning Management Plan will be secured by condition for submission to, and approval by, IACC at the end of the project's operational lifespan.

5.52 The sections below provide high level consideration of decommissioning in terms of each technical discipline.

REFERENCES

[i] CIRIA C532 (2001) Control of Water Pollution from Construction Sites Guidance for consultants and contractors

[ii] The Control of Pollution (Oil Storage) (England) Regulations 2001, Statutory Instrument 2001 No. 2954

[iii] British Standards Institution (December 2009) BS6031:2009 Code of Practice for Earthworks

[iv] British Standards Institution (December 2004) BS EN 1997-1:2004 Eurocode 7. Geotechnical Design. General Rules.

[v] British Standards Institution (2002) BS EN 1990: 2002 Basis of Structural Design