

Appendix A.2

EIA Scoping Report Part 1 of 3





Bodelwyddan Solar and Energy Storage

Environmental Impact Assessment Scoping Report

On behalf of **Bodelwyddan Solar and Energy Storage Ltd**

Document Control Sheet

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Contents

1	Introduction.....	1
1.1	Project Background	1
1.2	Purpose of this Report.....	1
1.3	Terminology	2
1.4	Report Structure	2
2	Site Description	4
2.1	Site Context	4
2.2	Environmental Baseline Conditions.....	4
3	Proposed Development	8
3.1	Introduction	8
3.2	Development Description	8
4	EIA Process.....	13
4.1	EIA Regulations	13
4.2	Screening.....	13
4.3	Scoping.....	13
4.4	Consultation.....	13
4.5	Assessment	14
4.6	Mitigation	14
4.7	Monitoring	15
4.8	Environmental Statement	15
4.9	Consideration of Alternatives.....	15
4.10	EIA Team.....	16
5	Proposed Scope of the EIA	18
5.1	Technical Scope	18
6	Biodiversity	19
6.1	Introduction	19
6.2	Baseline Conditions	19
6.3	Baseline Description	20
6.4	Consultation	25
6.5	Potential Significant Effects	25
6.6	Not Significant Effects	29
6.7	Assessment Methodology	29
6.8	Summary	32
6.9	References	33
7	Landscape and Visual	34
7.1	Introduction	34
7.2	Baseline Conditions	34
7.3	Consultation.....	38
7.4	Potential Significant Effects	38
7.5	Not Significant Effects	39

7.6	Assessment Methodology	40
7.7	Summary	41
7.8	References	41
8	Built Heritage	42
8.1	Introduction	42
8.2	Baseline Conditions	42
8.3	Consultation	43
8.4	Potential Significant Effects	43
8.5	Not Significant Effects	43
8.6	Assessment Methodology	44
8.7	Summary	47
8.8	References	48
9	Topics Not Included in the EIA Scope.....	49
9.2	Flood Risk and Water Resources.....	49
9.3	Socio- Economics	60
9.4	Archaeology	63
9.5	Air Quality	64
9.6	Noise and Vibration	65
9.7	Transport and Access.....	67
9.8	Climate Change	70
9.9	Ground Conditions and Contaminated Land	72
9.10	Wind Microclimate	76
9.11	Daylight, Sunlight and Overshadowing	76
9.12	Agricultural Land.....	77
9.13	Soils	78
9.14	Land Use	79
9.15	Waste	79
9.16	Lighting	80
9.17	Major Accidents and Disasters	80
9.18	Summary of Topics to be Scoped Out	81
10	Cumulative Effects	84
11	Summary and EIA Methodology	86
11.2	Introduction	86
11.3	EIA Methodology	86
11.4	Prediction of Impact Magnitude	87
11.5	Site and Development Description	88
11.6	Alternatives	88
11.7	Construction Methodology and Phasing.....	88
11.8	Technical Assessments.....	88
11.9	Summary and Residual Effects	89

Figures

Figure 9.1: Noise Monitoring Locations	65
Figure 9.2: Extract from The WG Predictive ALC.....	77
Figure 9.3: Areas Predicted to be Subgrade 3a	77
Figure 9.4: LRA ALC Map	78
Figure 9.5: LRA ALC Map Extracts	78

Tables

Table 4:1 EIA Team and Relevant Experience	16
Table 5:1 Technical Scope	18
Table 6.1 International Statutory Designations within 15 km of the Site	20
Table 6.2 Non-statutory Designations within 2 km of the Solar Site	21
Table 6.3 Non-statutory Designations within 2 km of the BESS Site	23
Table 6.4 Summary of relevant protected and/or priority species	24
Table 6.5 Summary of Potential Construction and Decommissioning Impacts.....	26
Table 8.1 Historic values	44
Table 8.2 Importance of Historic Assets.....	44
Table 8.3 Magnitude of Impact	46
Table 8.4 Criteria for Significance of Effect	46
Table 8.5 Description of the significance of effect with reference to heritage policy	47
Table 9.1 Sea Level Rise by 2100.....	53
Table 9.2 Derivation of sensitivity	57
Table 9.3 Derivation of magnitude of change.....	57
Table 9.6 Socio-Economic Receptors, Potential Effects and Justification for Scoping Out of the..... Assessment	61
Table 9.7 Superficial Deposits Present On-Site, as Recorded by the BGS	73
Table 9.8 Bedrock Geology Present on the Site, as Recorded by the BGS	74
Table 9.9 Summary of Topics to be Scoped Out	81
Table 10.1 Cumulative Developments	84
Table 11.1 Environmental Statement Structure	86
Table 11.2 Methodology for Assessing Magnitude	87
Table 11.3 Methodology for Determining Sensitivity	87
Table 11.4 Effect Significance Matrix	87
Table 11.5 Technical Chapter Format and Content	88

Appendices

Appendix A	Site Location Plan & Layout Plans
Appendix B	EIA Regulations – Regulation 18 and Schedule 4
Appendix C	International Statutory Designated Sites
Appendix D	Non-Statutory Designated Sites
Appendix E.1	Site Location and Topographical Relief
Appendix E.2	Site Character Plan
Appendix E.3	Environmental Planning Considerations
Appendix E.4	Published Landscape Character - Overall Classification
Appendix E.5	Published Landscape Character - Evaluation
Appendix E.6	Findings of Visual Appraisal and Viewpoint Locations
Appendix E.7	LVIA Assessment Methodology
Appendix F	Groundsure Insight Report
Appendix G	Agricultural Land Classification Maps

1 Introduction

1.1 Project Background

- 1.1.1 This Environmental Impact Assessment (EIA) Scoping Report has been prepared by Stantec UK Ltd (Stantec) on behalf of Bodelwyddan Solar & Energy Storage Limited (the 'Applicant'), a Special Purpose Vehicle (SPV) owned by Island Green Power UK Limited, in relation to a full planning application for the construction, operation and maintenance of a proposed solar photovoltaic electricity generating system and battery energy storage system ('BESS'), associated solar arrays, inverters, transformers, cabling, substations, access tracks, landscaping, ecological enhancement areas and associated ancillary development (the 'Proposed Development') on land near Bodelwyddan, North Wales (the 'Site', which is shown on the Site Location Plan included in **Appendix A**).
- 1.1.2 The Proposed Development will comprise approximately 110MW solar and 110MW BESS (hereafter referred to as the 'Proposed Development'). Further information about the Proposed Development can be found in **Chapter 3**. The Site is located cross-boundary between the administrative boundaries of Conwy County Borough Council (CCBC) and Denbighshire County Council (DCC).
- 1.1.3 The Proposed Development exceeds the 10MW threshold for energy generating projects in Wales and therefore, constitutes a Development of National Significance (DNS) under the Planning (Wales) Act 2015ⁱ and the Developments of National Significance (Specified Criteria and Prescribed Secondary Consents) (Wales) Regulations 2016. The Planning (Wales) Act states that Welsh Ministers are to determine DNS projects and applications should be made directly to them. The framework for applying for a DNS is detailed within the *Developments of National Significance (Procedure) (Wales) Order 2016*, as amended. The DNS application process is managed by Planning and Environment Decisions Wales (PEDW) on behalf of the Welsh Ministers. Therefore, this EIA Scoping Report has been submitted to the Welsh Ministers with a request for a Scoping Direction for the Proposed Development.
- 1.1.4 In accordance with Regulation 33 of the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017ⁱⁱ, this Scoping Report contains:
- 'a plan sufficient to identify the land;*
 - brief description of the nature and purpose of the development including its location and technical capacity;*
 - description of the likely significant effects of the development on the environment;*
 - a statement that the request is made in relation to a development of national significance for the purposes of section 62D of the 1990 Act; and*
 - such other information or representations as the person making the request may wish to provide or make.'*

1.2 Purpose of this Report

- 1.2.1 EIA Scoping is a process through which the content and detailed methodology of the EIA process is agreed, formally, with the decision maker in consultation with consultees. It is best practice and ensures that any future planning application is accompanied by a suitably proportionate and focused Environmental Statement (ES) that takes all significant environmental issues into account. The ES, which will be prepared in compliance with the requirements of the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 (as amended) ("the EIA Regulations"), will be submitted with the planning application.
- 1.2.2 This EIA Scoping Report has been prepared to document the proposed scope and approach of the EIA. The EIA will consider the likely significant effects resulting from the Proposed Development defined in the planning application, as well as the cumulative effects with other existing and/or

approved developments in the local area. This approach is intended to provide comprehensive and robust environmental information on the likely significant effects of the Proposed Development on the environment.

- 1.2.3 Understanding the likely significant effects that the Proposed Development may have on the environment is an integral part of the design process that is currently underway. The purpose of this report is to document the scoping exercise that has been undertaken in order to identify the type and characteristics of any likely significant environmental effects associated with the Proposed Development.
- 1.2.4 The environmental topics that are proposed to be included in the EIA scope and those that are not (referred to as 'scoped out') are presented respectively in **Chapters 6-8** and **Chapter 9**. Accordingly, this report details how the environmental issues which have been included in the EIA scope are proposed to be examined and progressed as part of the EIA. The aim of the EIA is to protect the environment through minimising adverse environmental effects and to take advantage of opportunities for environmental enhancement. For those topics that are proposed to be 'scoped out' as significant effects are not likely, this Scoping Report identifies an evidence led-approach for so-doing.
- 1.2.5 This report provides information to key consultees regarding the proposal pursuant to the EIA Regulations and sets out the intended scope of the EIA and content of the ES. On the basis of this report, and in accordance with Regulation 33 of the EIA Regulations, the Applicant therefore requests a Scoping Opinion from the Welsh Ministers.

1.3 Terminology

- 1.3.1 The following terms have been used within the Scoping Report:
- **'Proposed Development'** – the application for which full planning permission is being sought as a DNS, as described in **Chapter 3**;
 - **'the Site'** – the site area being developed, as per **Appendix A** and described in **Chapter 2**;
 - **'Solar Farm Site'** – the site area being developed for the PV solar panels and ancillary development described in **Chapter 2**;
 - **'BESS Site'** – the site area being developed for the BESS and ancillary development, described in **Chapter 2**;
 - **'Indicative Cable Route'** – the cable route that connects the solar farm to the BESS Site and subsequently the POC at NGET Bodelwyddan Substation via underground cables;
 - **'the Study Area'** – the area that may potentially be impacted by the Proposed Development. The Study Area varies from topic to topic and is described in each chapter.
 - **'DCC'** – Denbighshire County Council;
 - **'CCBC'** – Conwy County Borough Council 'and
 - **'the Applicant'** – Bodelwyddan Solar & Energy Storage Limited.

1.4 Report Structure

- 1.4.1 This report continues with the following:
- **Chapter 2:** Site Description;
 - **Chapter 3:** The Proposed Development;
 - **Chapter 4:** EIA Process;

- **Chapter 5:** Proposed Scope of the EIA;
- **Chapters 6 – 8:** Topics included in the EIA Scope;
- **Chapter 9:** Topics Not included in the EIA Scope;
- **Chapter 10:** Cumulative Effects;
- **Chapter 11:** Summary and Next Steps; and
- Appendices.

2 Site Description

2.1 Site Context

- 2.1.1 The Site comprises two parcels of land, and the cable route connecting the Sites to the National Grid Bodelwyddan substation. It measures approximately 160.3 hectares ('ha') in total. The land is agricultural and lies to the north and south of Bodelwyddan. The Site is defined by the red line boundary provided at **Appendix A**.

Solar Site

- 2.1.2 The larger parcel of land to the northwest of Bodelwyddan extends to approximately 153.78 ha, comprising land to the north and south of Rhuddlan Road (A547), and to the west of St Asaph Avenue, and hereinafter is referred to as the 'Solar Site'. Towyn and Kinmel Bay are located to the north of the Solar Site and Abergele to the west.
- 2.1.3 A 2015 consent for a 24MW solar farm (Conwy LPA ref. 0/40999) sits partially within this scheme's Solar Site. Only part of this approved development was constructed and the portion of the builtout area (currently operational) sits outside the Proposed Development's application red line. A northern section that was consented but not built out, however, sits within the Proposed Development's application redline and therefore the precedent for solar development in this area has been established. The associated Screening Opinion (Conwy LPA ref. ENQ/23841) confirmed that it was not EIA development and therefore an ES was not required.

BESS Site

- 2.1.4 The smaller circa 6.52 ha rectangular parcel of land is positioned south of St Asaph Business Park and to the west of Bodelwyddan substation. It is referred to as the 'BESS Site'. High voltage overhead lines transect the eastern part of the BESS Site and pylons are located to the east and south of the site. To the east, south and west of the BESS Site lies agricultural land.

Indicative Cable Route

- 2.1.5 The Indicative Cable Route is proposed to be entirely underground and runs from the Solar and BESS Sites will be linked to Bodelwyddan Substation via underground cables approximately 5km in length and likely to be 132kV.

2.2 Environmental Baseline Conditions

Landscape

- 2.2.1 The Site lies outside the Green Belt, Country Parks, National Parks and any National Landscapes (previously Area of Outstanding National Beauty).
- 2.2.2 Two Registered Landscapes of Outstanding Historic Interest are located to the south and south-east, c.1km and c.4km from the Site respectively. Both are considered highly sensitive landscape receptors and have been scoped in for further consideration. There is a relatively infrequent network of Open Access Land (OAL) and Public Rights of Way (PRoW) such as footpaths, bridleways, byways open to all traffic, cycle routes, promoted paths and national trails in proximity to the Site.
- 2.2.3 The North Pilgrims Way is the closest promoted route to the site, around 1km south-east. Offa's Dyke (c.6km east) and the Wales Coastal Path (<2km north) are also within the study area. National Cycle Routes 84 and 5 are located approximately <2km east and north, respectively.
- 2.2.4 There are no areas of OAL or PRoW within the boundaries of the site. One PRoW runs adjacent to the Site boundary of the solar site, whilst a few are in proximity and have the potential for intervisibility with

the Site. Views from all PRoW and OAL within that have the potential for intervisibility with the Site. There are five Ancient Woodlands within proximity to the Site:

- **37492** - Restored Ancient Woodland Site (adjacent southern border)
- **37493** - 280m to north of border
- **37491** - 356m to south of border
- **37489** - 457m to southwest of border
- **37412** - 680m to east of border

Flood Risk and Drainage

- 2.2.5 The Solar Site almost entirely falls within the Development Advice Map (DAM) zone C1, meaning it is an area of floodplain that benefits from the presence of flood defences.
- 2.2.6 The BESS Site is located in DAM zone A, therefore at little or no flooding from main rivers or the sea.
- 2.2.7 The Solar Site parcels that are located to the south of the A547 fall within an area of 'Low' risk of flooding from rivers, meaning they are at risk from a present day 1 in 1,000 year defended event. Of the parcels to the north of the A547, only part of the westernmost parcel falls within an area of 'Low' risk.
- 2.2.8 Regarding tidal flooding, almost all of the Solar Site is at predicted risk during a present day 'Low' risk event, meaning it is potentially at risk during a 1 in 1,000 year event even with current defences in place. The predicted extent of this event is very similar to that of the DAM zone C1.
- 2.2.9 According to NRW's Surface Water and Small Watercourses flood map, significant parts of the parcels south of the A547 are predicted to be inundated during a Low risk event, during a 1 in 1,000 year event. North of the A547 the extents are smaller. It should be noted that due to its strategic scale, this mapping often misrepresents smaller watercourses as well as control structures, culverts, crossings, sluices or pumps. Therefore, it is likely that the risk of surface water and fluvial flooding posed to the Site is better represented by the above flood modelling studies.
- 2.2.10 Only very small parts of the BESS Site fall within areas predicted to be at risk from surface water and small watercourses. The majority of these are likely to be associated with field perimeter ditches, which may not be fully represented by the simulation modelling. The remaining areas are minor depressions in the land so depths would not be significant.

Biodiversity

- 2.2.11 The Site is not covered by any international or national conservation, ecological or heritage designations.
- 2.2.12 Traerth Pensarn Site of Special Scientific Interest (SSSI) and Liverpool Bay / Bae Lerpwl Special Protection Area (SPA) lie approximately 3,100m to the northeast and 2,100m to the north of the Solar Site respectively.
- 2.2.13 There are 31 Wildlife Sites and one Local Nature Reserve present within 2km of the Solar Site including two within the Site boundary, and there are 11 Wildlife Sites within 2km of the BESS Site.

Agricultural Land

- 2.2.14 The Agricultural Land Classification (ALC) predictive map for Wales indicates that the Site is predominantly Grade 3b, with some small areas of Grade 3a along the southern boundary (of the Solar Site). An Agricultural Land Classification Survey has been carried out in accordance with the MAFF, (1988). *Agricultural Land Classification for England and Wales: Guidelines and Criteria for Grading the Quality of Agricultural Land* methodology to test this position and plot it accurately. The

methodology determines grade based on the long-term, physical limitations of land for agricultural use, such as climate, site and soil, and the interactions between these factors. The survey found that 95% (152.5 ha) of the Solar Site was Grade 3b land, with 5% (7.8 ha) Grade 3a (Best and Most Valuable (BMV)). The entirety of the BESS site is Grade 3b land (0% BMV).

Cultural Heritage and Archaeology

- 2.2.15 There are no designated historic assets within the Solar Site or the BESS Site. The Indicative Cable Route (which is entirely underground) partly extends through Kinmel Grade II* Registered Historic Park and Garden (RHPG), the boundary of the access drive (Coed y Drive) lies immediately east and west of the Solar Site, and which is adjacent to the southern boundary of the existing operational solar farm. The southern extent of the indicative cable route lies along the southern boundary of Bodelwyddan Castle Grade II RHPG.
- 2.2.16 Five Scheduled Monuments are located within the 2km Study Area:
- St George's Well, c. 330m south of the Site;
 - First World War Practice Trenches at Bodelwyddan Park, c. 450m north of the Site;
 - Tyddyn Bleiddyn Burial Chamber, c. 980m south of the Site;
 - Bedd-y-Cawr Hillfort, c. 1.1km south of the Site; and
 - The Mount, c. 1.6km west of the Site.
- 2.2.17 A total of 163 Listed Buildings are located within the Study Area, of which two are Grade I Listed, 23 are Grade II* Listed and 138 are Grade II Listed. Several of these, including the Grade I Kinmel and Grade I Llwyni are located within Kinmel and Bodelwyddan RHPGs.
- 2.2.18 The nearest Listed Buildings to the Site are:
- the Grade II* Morfa Lodge, 70m east and west of the Solar Site;
 - the Grade II Listed Toll Bar Cottage, c. 30m south of the Solar Site;
 - the Grade II Listed Bodoryn Cottages, c. 20m south of the Solar Site; and
 - Grade II Kinmel Park, gatepiers and railings, immediately south-west of the Indicative Cable Route.
- 2.2.19 Three Conservation Areas are situated within the Study Area: St George, c. 120m south of the Indicative Cable Route part of the Site; Bodelwyddan, 1.3km to the south of the Site; and Abergele, 1.8km to the west of the Site.
- 2.2.20 The Vale of Clwyd Registered Historic Landscape lies c. 800m south of the Site.
- 2.2.21 Further details of built heritage designations within the surrounding area are detailed within **Chapter 9**.

Air Quality

- 2.2.22 The Site is not located within or in close proximity to an Air Quality Management Area.

Ground Conditions

- 2.2.23 The Site is currently used as agricultural land, and is both currently and historically undeveloped therefore, the potential for contamination to be present in the ground is very low.

Noise and Vibration

- 2.2.24 The dominant noise sources likely to affect the majority of the Site are vehicles on the surrounding road network. Specifically for the BESS Site, the dominant noise source is from the Gwynt y Môr Offshore Wind Farm Substation within the eastern part of the Bodelwyddan substation compound.

3 Proposed Development

3.1 Introduction

3.1.1 This section provides a high-level description of the Proposed Development, to provide sufficient information for the purpose of determining the scope of the EIA while highlighting those elements of the design that are yet to be finalised..

3.1.2 The description of development is as follows:

'The construction, operation and maintenance of a proposed solar photovoltaic electricity generating system and battery energy storage system ('BESS'), associated solar arrays, inverters, transformers, cabling, substations, access tracks, landscaping, ecological enhancement areas and associated ancillary development'.

3.1.3 The Proposed Development will have an operational lifespan of 40 years, after which it will be fully decommissioned and this would be secured via a planning condition.

3.1.4 The overall red line boundary of the Site (including the Solar Site, BESS Site and Indicative Cable Route) measures approximately 160.3ha however the 'developable area' of the Proposed Development itself will be much less than this and will be determined following design development and the inclusion of land for landscaping and biodiversity purposes. This is because the actual development footprint of the solar arrays in particular is very small when compared to the extent of solar panel coverage and the spacing between rows, including landscape enhancement and biodiversity improvement measures limit the development footprint further. The design is expected to evolve throughout the EIA process, with infrastructure positioned to avoid or reduce significant effects on any specific designations or assets and, where appropriate, to respond to feedback from CCBC, DCC, PEDW, statutory consultees, other key stakeholders and the local communities.

3.1.5 The technologies proposed as part of the Proposed Development (Solar PV and BESS) are rapidly evolving, and the application will propose that an appropriate degree of flexibility is maintained to ensure best available technology can be utilised at the point of construction to maximise the benefits of the Proposed Development.

3.1.6 The Bodelwyddan Solar and Energy Storage project will provide a source of renewable energy, helping to reduce carbon emissions and contribute to Wales' net-zero goals. It is estimated that the proposed solar farm could generate up to 110 megawatts (MW) of electricity, which is equivalent to providing enough power to meet the annual electricity needs of approximately 26,657 homes, with approximately 35,569 tonnes of carbon dioxide saved per year.

3.1.7 The BESS would store up to 110MW of electricity during times of high renewable energy generation (such as solar and wind) and discharge it when demand from the grid is high or renewable generation is low.

3.2 Development Description

3.2.1 The Proposed Development will be brought forward through a full planning application and will include the following key elements of infrastructure:

- Rows of solar photovoltaic ('PV') panels and mounting systems;
- Solar inverters and transformers
- Switchroom and substation buildings
- BESS equipment comprising battery units, power conversion systems ('PCS'), and associated infrastructure;

- Substation compound and associated equipment;
- Underground electrical cable route corridor;
- Internal access tracks;
- Perimeter fencing, gates, CCTV cameras and other ancillary infrastructure including fire suppression systems / water storage tanks;
- Landscape planting and ecological enhancements;
- Drainage; and
- Temporary construction compounds

Solar PV panels

- 3.2.2 The solar PV panels will convert sunlight/daylight into electrical current. The panel type could be monofacial or bifacial modules. The panels are made up of a series of photovoltaic cells beneath a layer of toughened glass. Other PV technology is developing rapidly and may be available at the time of construction.
- 3.2.3 There are two options for solar panels being considered: Tracking Panels and Fixed Panels. The use and distribution of these will be subject to further consideration as the design of the Proposed Development progresses.
- 3.2.4 Tracking panels would have a maximum height above ground level of 4.5m when at greatest inclination and 2.5m when horizontal, with a minimum height of the lowest part of the panel above ground level at 0.4m. The solar panels would be aligned in north-south rows. The panels will rotate to the east and west and tilt up to a maximum inclination of 60° from horizontal. Separation distance between rows of tracking panels will be a minimum of 2.5m at the closest point, and a maximum distance of 15.0m.
- 3.2.5 Fixed panels would have a maximum height above ground level of 3.5m with a minimum height of the lowest part of the panel above ground level at 0.4m. The solar panels would be aligned in east-west rows with panels facing south at a fixed tilt angle of between +10 to 35° from horizontal. Separation distance between rows of fixed panels will be a minimum of 2.5m at the closest point, and there will be a maximum distance of 14m.
- 3.2.6 The mounting structures for either panel type would comprise metal frames that hold the panels in rows either secured via metal posts driven into the ground to a depth of 1.5m-3.5m, dependant on ground conditions. If in the unlikely event that archaeological protection is required, concrete feet or other non-ground penetrative techniques will be considered as an archaeological mitigation option to secure the mounting structures to the ground.

Solar inverters and transformers

- 3.2.7 Inverters convert direct current ('DC') generated by the solar PV panels into alternating current ('AC'). Transformers then convert low voltage output from the inverters to high voltage suitable for feeding into the local electric distribution network.
- 3.2.8 If centralised inverters/transformers are used then these would be within containerised units (similar to shipping containers) located throughout the Solar Site and placed on a concrete base or feet. The maximum dimensions of the units would be 15m by 5m with a maximum height of 3.5m.
- 3.2.9 Alternatively, the Proposed Development may use smaller string inverters which can be fixed to the rear of the array framework or positioned on a frame at the end of an array and require a standalone transformer unit.

Switchroom and substation building

- 3.2.10 The substation and control building, also up to 3m in height, would accommodate all necessary equipment to enable the power from the conversion units on Site for the solar farm to be controlled, monitored and metered and connected to the network.
- 3.2.11 The substation, inverters and solar panels would be connected by electrical cables either positioned in shallow underground trenches or suspended in trays alongside the arrays.

Battery Energy Storage Systems (BESS) Equipment

- 3.2.12 The red line boundary of the BESS Site measures approximately 6.52 ha. It comprises a substation compound area, PCS, BESS units and associated infrastructure with appropriate surface water drainage and enclosed by security fencing. The BESS would facilitate efficient management of the energy created and help balance the electricity grid. The BESS would be utilised to reinforce the power generated by the solar farm and other renewable generation assets, storing energy at times of low demand, and releasing to the grid in periods of higher demand or when solar irradiance is lower. The energy stored will also provide balancing services to reinforce grid stability.
- 3.2.13 In terms of the maximum dimensions, the BESS units, PCS and other associated infrastructure could be up to 16m x 3m with a maximum height of 3.2m. Battery and PCS units are typically finished in an off-white or pale grey colour to discourage heat retention and have the appearance of a standard shipping container.

Fencing, Security and other Ancillary Development

- 3.2.14 The Proposed Development would be secured to prevent theft and criminal damage and as a health and safety requirement during both the construction, operational and decommissioning phases. Deer type wire and mesh and wooden post fencing with a maximum height of 2.5m is proposed around the perimeter of the site. The fence is designed to allow small animals such as sheep to graze securely amongst the arrays. Provision of mammal gaps at ground level in the fencing will allow continued access for foraging of wildlife across the Site. Exact positions of these gaps can be identified in a post-determination detailed Landscape and Ecological Management Plan ('LEMP'). Gates will be installed to allow for movement from the access points into the Site for ongoing maintenance.
- 3.2.15 The fencing around the compound areas (e.g. the substation and BESS compounds) comprise palisade fencing with a maximum height of 3m.
- 3.2.16 Pole mounted internal facing CCTV systems will be used around the perimeter of the operational elements of the Sites. It is anticipated that these will be galvanised steel painted green poles with a maximum height of 3m.
- 3.2.17 No structures on-Site would be permanently lit. No lighting would be attached to the perimeter fencing or for Site access purposes. Lighting is not required within the Solar Site for the operational period of the Scheme. Motion sensing security lighting will be provided within substations and within the BESS Site to be used only for maintenance and security purposes.

Access

- 3.2.18 Construction and operational access to the Solar Site is anticipated to be from Rhuddlan Road. Construction access to the BESS Site is anticipated to be from the B5381 (Glascoed Road) to an unnamed road, although alternative options are currently being considered. Operational access is likely to be from the south. These will be assessed in full in the Transport Statement and Construction Traffic Management Plan.
- 3.2.19 Internal to the Site, compacted crushed stone tracks would be installed to allow vehicular access between fields, utilising existing internal gateways/gaps and crossing points over ditches as far as practicable. For single tracks, the width typically ranges between 4-5 metres.

Indicative Cable Route

- 3.2.20 The electricity generated by the proposed solar farm will be exported to the National Grid at Bodelwyddan substation. The Solar and BESS Sites will be linked to Bodelwyddan Substation via underground cables approximately 5km in length and likely to be 132kV.
- 3.2.21 The underground cables will also facilitate the import of electricity from National Grid to the BESS.
- 3.2.22 The voltage of the cables and the number of circuits will affect the width and number of cable trenches required. The range of typical cable trench widths is from 1m-7m, with either one or two trenches anticipated to be required along the majority of the cable route. However, the width and spacing of the cable trenches may differ depending on environmental constraints, engineering requirements or if crossing third party apparatus.
- 3.2.23 The cable route is currently indicative and may be subject to change depending upon the conclusions of assessments, landowner negotiations, feasibility and the design process. Any changes to the cable route would be assessed using the same methodology and approach. The assessments required will not change.

Construction

- 3.2.24 It is anticipated that the construction phase will last for 12-24 months. It is expected that there would be an average of approximately 10 HGV trips to Site per day, or 20 two-way movements during the peak of the construction period. Details will be set out in a Transport Statement to be submitted with the application of the Proposed Development.
- 3.2.25 Construction activities and deliveries will be carried out Monday to Friday 07:00-18:00 and between 07:00 and 13:30 on Saturdays. No construction activities or deliveries will occur on Sundays or on Public Holidays. A Construction Traffic Management Plan ('CTMP') will set out measures to manage deliveries in a way that seeks to reduce local impacts.
- 3.2.26 During the construction phase, temporary construction compounds will be required to facilitate construction. The compounds will be located within the Solar and the BESS Sites, near to the Site entrances, to minimise HGV traffic within the Site. The internal access tracks will facilitate the movement of construction vehicles around the Sites. Where possible, these will follow existing tracks around the Site and be of a fully permeable construction. This secure temporary construction compound will be used to store materials and provide welfare facilities during the construction period.
- 3.2.1. The temporary compound will be formed of a temporary permeable hardcore/gravel base atop a mesh membrane to facilitate ease of removal when construction is complete. Compounds will include:
- Temporary gated security fencing (e.g. Heras Fencing) and temporary CCTV cameras;
 - Temporary portable buildings to be used for offices, welfare, and toilet facilities;
 - Materials and equipment storage areas;
 - Lighting may be required during construction periods but will be temporary in nature and normal working hours will be adhered to except in specified circumstances;
 - Parking and turning areas for delivery vehicles and workers' vehicles; and
 - Wheel washing facilities.
- 3.2.2. The activities on-Site during the construction phase are expected to include the following:
- Site establishment and enabling works for construction, including the erection of perimeter fencing and implementing any required ecological/environmental protection measures;

- Implementation of temporary construction facilities, temporary security measures and internal access track;
- Deliveries and construction of the solar farm, including the installation of mounting framework, solar panels and ancillary units;
- Deliveries and construction of the BESS infrastructure and substation compound;
- Cable trenching, ducting and backfilling to connect solar generating equipment to the substation equipment and from the substation equipment to the BESS Site and point of connection;
- Testing and commissioning of the generating station equipment and grid connection equipment; and
- Landscaping and biodiversity enhancements.

Operation

- 3.2.27 The Proposed Development is anticipated to be operational for up to 40 years. During the operational phase, on-site activities will primarily consist of maintenance tasks, anticipated to be approximately two per month in transit van, 4x4 type vehicles or quad bikes. These tasks will include servicing of plant and equipment and as well as vegetation management.
- 3.2.28 Several visits a year will be required to clean the solar PV panels (using only distilled water). Attendance will also be required in association with the implementation, monitoring, and maintenance of landscape and habitat enhancements and to manage any other mitigation to be delivered alongside the solar farm and BESS.
- 3.2.29 There will be the opportunity for sheep to graze the land between the arrays.

Decommissioning

- 3.2.30 Following termination of energy generation and exportation at the Site, the Proposed Development including solar PV arrays, mounting structures, cabling, ancillary infrastructure and BESS will be decommissioned, dismantled and removed and the Site would be fully reinstated and returned to agricultural use. This would be secured via planning condition(s) including approval of a full detailed decommissioning scheme.
- 3.2.3. Where possible, all equipment would be removed and recycled or disposed of in accordance with good practice at the time of decommissioning. Where this is not possible, any waste generated during decommissioning will be removed and transported by a certified and licensed contractor.
- 3.2.31 At the end of the useful life of the development, an appropriate method statement will be prepared and submitted to CCBC and DCC for their consideration. The construction phase would be followed in reverse. Vehicle movements for decommissioning are anticipated to be similar to those during the construction phase.

4 EIA Process

4.1 EIA Regulations

- 4.1.0 The process of EIA is governed by the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 (as amended) ("the EIA Regulations"). The EIA Regulations implement EC Directive 2014/52/EU and the implications were enacted in the UK on 16th May 2017 to form the 2017 EIA Regulations.
- 4.1.1 The EIA Regulations set out the requirements for undertaking an EIA, and Regulation 17 and Schedule 4 detail the required information for inclusion in an ES.

4.2 Screening

- 4.2.1 Due to the nature of the Proposed Development, the Applicant intends to voluntarily undertake an EIA of the Proposed Development which will be documented in an Environmental Statement (ES). The ES will be prepared in compliance with the requirements of the EIA Regulations. Therefore, no EIA screening request was prepared for the Proposed Development.

4.3 Scoping

- 4.3.1 The purpose of Scoping is to document the scoping exercise that has been undertaken to identify the nature and extent of the likely significant environmental effects of a development. It also allows for the issues identified to be subject to the appropriate level of assessment, thereby providing a focus for the EIA. Scoping also gives relevant stakeholders an opportunity to express their views on a development and to comment on the scope of the EIA.
- 4.3.2 This is the current stage of the EIA for the Proposed Development and this EIA Scoping Report has been prepared to fulfil the above purpose.

4.4 Consultation

- 4.4.1 The design of the Proposed Development is being progressed through an iterative process of design, assessment and review. It is therefore the intention that the proposals submitted for planning permission will incorporate measures to mitigate potential adverse environmental effects, and to enhance environmental benefits, where possible through its design.
- 4.4.2 Consultation with statutory and non-statutory consultees, along with the local community, will continue to inform both the EIA and the design of the Proposed Development. The feedback received through the consultation will be summarised in the ES and written in full in the consultation report submitted in support of the planning application.
- 4.4.3 Key Statutory and other relevant consultees include, but are not limited to:
- Planning and Environment Decisions Wales (PEDW);
 - Conwy County Borough Council;
 - Denbighshire County Council;
 - Natural Resources Wales;
 - Environment Agency; and
 - CADW.

4.5 Assessment

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

- **Data Review** – draw together and review available data;
- **Scoping** – identify significant issues, determine scope of EIA;
- **Baseline Surveys** – undertake baseline surveys and monitoring;
- **Assessment and iteration** – assess likely significant effects of development, evaluate alternatives, provide feedback to design team on adverse effects or opportunities for enhancement, incorporate any necessary mitigation or enhancement measures, re-assess effects of development; and
- **Preparation of the ES;**
- **Consultation on the ES;** and
- **Examination and decision making.**

4.6 Mitigation

4.6.1 One of the most important functions of the EIA process is to identify ways to mitigate adverse environmental effects and identify opportunities that the Proposed Development may have for environmental improvements. The EIA Regulations require an ES to contain: “A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment”.

4.6.2 A hierarchy of methods for mitigating significant adverse effects will be followed; these are, in order of preference:

- **Avoidance** – designing a Proposed Development in such a way that avoids effects on the environment;
- **Reduction** – design the development or employ construction methodologies such that significant effects identified are reduced;
- **Compensation** – providing off-site enhancement in order to compensate for where onsite mitigation has not been possible;
- **Enhancement** - opportunities that the Proposed Development may provide to enhance the local and wider environment.

4.6.3 The ES will identify mitigation and/or enhancement measures as appropriate for the construction, operational and de-commissioning stages of the Proposed Development. Environmental effects remaining after mitigation and enhancement measures have been incorporated are termed residual effects and these will be fully described in the ES.

4.6.4 Primary mitigation is defined as the measures which are designed to be an inherent part of the Proposed Development. Mitigation that is subsequently identified in order to prevent, reduce or offset any remaining significant adverse effect is defined as secondary mitigation. Tertiary mitigation are measures that would be undertaken to meet other existing legislative requirements, or actions that are considered to be standard practices used to manage commonly occurring environmental effects. Tertiary mitigation would occur with or without input from the EIA in the design process.

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

4.7 Monitoring

4.7.1 The 2017 EIA Regulations introduce new requirements in relation to monitoring. The Regulations require “the monitoring of any significant adverse effects on the environment of the Proposed Development”. It is important to note that the Regulations only require the monitoring of significant adverse effects. The ES will therefore ensure that it is clear to the reader which, if any, effects are both adverse and significant and may therefore require monitoring.

4.7.2 It is important to note that Regulation 25 (3) of the 2017 EIA Regulations state that planning authorities should:

“(b) take steps to ensure that the type of parameters to be monitored and the duration of the monitoring are proportionate to the nature, location and size of the Proposed Development and the significance of its effects on the environment; and

(c) consider, in order to avoid duplication of monitoring, whether any existing monitoring arrangements carried out in accordance with an obligation under the law of any part of the United Kingdom, other than under the Directive, are more appropriate than imposing a monitoring measure.”

4.7.3 Schedule 4 of the 2017 Regulations identifies that an ES should identify “any proposed monitoring arrangements”. The ES will therefore provide a schedule that clearly identifies any monitoring that is proposed in relation to any identified significant adverse effects. Any such monitoring will be proportionate.

4.8 Environmental Statement

4.8.1 The EIA process will be documented in an ES which will describe the Proposed Development and set out the policy context; give full detail of the EIA methodology and any technical methodologies and data used in support of the assessment; present the assessment of likely significant environmental effects; detail any mitigation and enhancement measures that have been employed; and provide a schedule of proposed monitoring arrangements. The ES will present the residual effects, and an assessment of the cumulative effects and impact interactions as described in **Chapter 11** below.

4.8.2 The significance of an environmental effect is determined by the interaction of magnitude and sensitivity, whereby the effects can be positive or negative.

4.8.3 In accordance with requirement 9 of Schedule 4 of the 2017 EIA Regulations a Non-Technical Summary of the ES shall also be provided.

4.9 Consideration of Alternatives

4.9.1 The 2017 EIA Regulations require an ES to include:

“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.”

4.9.2 This legal requirement is expressed in very general and high-level terms, requiring only the inclusion of a “description” of “reasonable” alternatives and an “indication” of “main” reasons. Although a full description of alternatives and a full assessment of their likely environmental effects are not required, sufficient detail should be provided to allow for a meaningful comparison between the alternatives and the Proposed Development.

4.9.3 It is a matter for the developer to decide which alternatives it intends to consider. The 2017 EIA Regulations do not expressly require that an applicant considers alternatives.

- 4.9.4 The ES will fulfil the requirements of the 2017 EIA Regulations through identifying the reasonable alternatives considered by the developer and explain the main reasons for the choices made. A comparison of environmental effects will also be provided.

4.10 EIA Team

- 4.10.1 In accordance Regulation 17 the ES will be “*accompanied by a statement from the developer outlining the relevant expertise or qualifications of such experts.*” At this scoping stage, **Table 4.1** identifies the organisations that will contribute to the EIA and provides an outline of their relevant expertise.

Table 4:1 EIA Team and Relevant Experience

Organisation	Relevant Experience	Discipline
Stantec	Stantec is a founder member of the Institute of Environmental Management and Assessment's (IEMA) EIA Quality Mark scheme for quality in EIA. Stantec has a dedicated EIA team that specialises in leading the EIA process for development projects, including land development, regeneration, energy and infrastructure projects. Stantec typically leads 10-20 EIA projects each year. Each of Stantec's EIA team have suitable academic and professional qualifications, with professional qualifications including Principal EIA Practitioner, Practitioner and Associate membership of IEMA, member of Royal Town Planning Institute and Chartered Environmentalist.	EIA Coordination; Socioeconomics, Transport, Climate Change,
Environmental Dimension Partnership (EDP)	EDP is an independent environmental planning consultancy with offices in Cirencester, Cardiff and Cheltenham. EDP specialises in providing expert planning advice and environmental design solutions for projects across the development sector. The practice provides advice to private and public sector clients throughout the UK in the fields of landscape, ecology, archaeology, cultural heritage, arboriculture, rights of way and masterplanning. EDP regularly provides EIA inputs for Developments of National Significance, in addition to large scale residential, commercial, energy, leisure and education developments.	Ecology, Landscape,
Cotswold Archaeology	Cotswold Archaeology is a leading provider of heritage and archaeological services, with one of the largest consultancy teams of its kind in the country. With over 20 heritage specialists, the team has a diverse portfolio of projects, including landscape-based archaeological assessments, historic building assessments, desk-based assessments and Environmental Impact Assessments for a wide range of development projects. As a Registered Organisation with the Chartered Institute for Archaeologists (CIfA), Cotswold Archaeology follows all professional guidance and standards of work. All members of the Consultancy team hold suitable academic and professional qualifications, including either Practitioner, Associate or Member level CIfA accreditation.	Heritage & Archaeology
Calibro	Calibro is a specialist infrastructure planning consultancy experienced and highly qualified transport planners, flood risk, infrastructure and drainage engineers. Calibro provides these services across a wide range of clients and sectors, from small housebuilders to large, mixed use developments and renewable energy schemes. Calibro leads the flood risk, drainage and ES process for approximately 20 renewable projects each year. The work involves feasibility, hydraulic modelling, flood risk assessment, detailed drainage design and construction advice, demonstrating an understanding of the issues from start to finish.	Flood Risk & Drainage
TetraTech	The acoustics team at Tetra Tech offer the full range of acoustics related services and have a wealth of experience in the application of acoustic principles across all market sectors from initial concept, assessment, and design, to the completion and handover stages of a project. All	Noise

Organisation	Relevant Experience	Discipline
	members of the acoustic team hold qualifications in acoustic related degrees and are corporate members of the Institute of Acoustics. Key elements of the approach is to take ownership of important acoustic issues, providing technical rigour, design skill and commercially minded acoustic solutions that are acceptable to all interested parties in assisting clients. This will ensure that the requirements of standards and regulations are met.	
Kernon Countryside Consultants (KCC) Ltd	KCC Ltd has been in existence since 1997. KCC Ktd. have advised the Welsh Government, local authorities, developers and individuals nationwide on land use change and rural planning matters, and have been involved with many Environmental Assessments	Agricultural Land Classification

5 Proposed Scope of the EIA

5.1 Technical Scope

5.1.1 This scoping exercise has been informed by desk-based research, professional judgement, and other information available for the site. **Table 5.1** sets out the proposed scope of the ES.

Table 5:1 Technical Scope

Topics	Potential Construction Phase Effects	Potential Operational Phase Effects	Likely Significant Effects (Pre-Mitigation)	Comments
Biodiversity	✓ - T	✓ - P	✓	Chapter to be prepared.
Landscape and Visual Effects (including a Glint and Glare Assessment)	✓ - T	✓ - P	✓	
Historic Environment	✓ - T	✓ - P	✓	
Water Resources and Flood Risk	x	x	x	Topic scoped out of the ES.
Socio-economics	x	x	x	
Archaeology	x	x	x	
Air Quality	x	x	x	
Noise and Vibration	x	x	x	
Transport	x	x	x	
Climate Change	x	x	x	
Contaminated land	x	x	x	
Wind	x	x	x	
Daylight Sunlight Overshadowing	x	x	x	
Agricultural Land	x	x	x	
Waste	x	x	x	
Lighting	x	x	x	
Major Accidents and Disasters	x	x	x	

Key: ✓ Likely Significant Effect / x No Likely Significant Effect.
T – Temporary Effect / P – Permanent Effect

5.1.2 For each of the topics being assessed, further information on the details to be included in the assessment and the methodology to be employed are set out in the following sections.

6 Biodiversity

6.1 Introduction

6.1.0 This Chapter of the EIA Scoping Report has been prepared by The Environmental Dimension Partnership Ltd (EDP) and it sets out the likely significant effects of the Proposed Development on biodiversity and features of nature conservation value, which will be reported in the ES. Based on the assessment work completed to date, it is proposed that biodiversity is scoped into the EIA as an overall topic, with an initial summary of which features/impacts will be scoped in/scoped out provided in **Section 6.8**.

6.1.1 This Scoping Report has been, and the future detailed assessment will be, prepared with reference to The Chartered Institute of Ecology and Environmental Management's (CIEEM) Ecological Impact Assessment Guidelines (CIEEM, 2018 version 1.2 – updated April 2022).

6.2 Baseline Conditions

Study Area

6.2.0 Baseline data is being collected within the potential zones of influence (ZoI) of the Proposed Development, which varies according to the feature in question. The following standard ZoI are proposed in this case:

- International statutory designations (15 km radius around the Site);
- National statutory designations and non-statutory local sites (2 km radius);
- Annex II bat species (6 km radius); and,
- All other protected, priority and notable species (2 km radius).

Baseline Sources

6.2.1 The following desk and field-based baseline investigations have been completed to date:

- Desk study records search (July 2024), the main data sources being:
 - o Multi-Agency Geographic Information for the Countryside (MAGIC); and,
 - o North Wales Environmental Information Service (Cofnod).
- Great crested newt eDNA survey – on-site (Solar Site) only (June 2024);
- Breeding bird pilot survey – Solar Site (July 2024);
- Extended Phase 1 habitat survey – Solar and BESS Site (July 2024);
- Bat activity automated detector surveys – Solar and BESS Site (July – October 2024);
- Bat activity nighttime walkover surveys – Solar and BESS Site (August and October 2024);
- Otter and water vole survey – Solar Site (September 2024);
- Extended Phase 1 habitat survey – Indicative Cable Route (western half) (October 2024); and,
- Badger survey – Solar and BESS Site (October 2024).

6.2.2 At the time of writing, the following field-based baseline investigations are still to be completed:

- Daytime bat roost assessment of trees (November 2024);
- Extended Phase 1 habitat survey – Indicative Cable Route (eastern half) (December 2024);
- Wintering bird survey (November 2024 – February 2025);
- Breeding bird survey (April – June 2025);
- Otter and water vole survey (May 2025);
- Great crested newt eDNA survey – off-site (April 2025);
- Great crested newt population survey (May – June 2025)
- Bat activity automated detector surveys (April – June 2025); and
- Bat activity nighttime walkover survey (May 2025).

6.2.3 The baseline investigations summarised above are being undertaken by appropriately qualified ecologists using relevant best practice methodologies.

6.3 Baseline Description

6.3.0 The following is a summary based on the studies completed to date.

Designated Sites

Statutory Designations

6.3.1 Eight international statutory designations (including the Dee Estuary, which is covered by three different designations) are located within 15 km of the Site, as summarised within **Table 6.1** and shown in **Appendix C**.

6.3.2 Other than Coedydd ac Ogofau Elwy a Meirchion SSSI, which is a component of Elwy Valley Woods SAC, there are no other national statutory designations (SSSIs) within 2 km of the Site, such that impacts on other SSSI can be scoped out.

Table 6.1 International Statutory Designations within 15 km of the Site

Site Name	Distance from Site (Direction)	Reasons for Designation
Elwy Valley Woods SAC	1.4 km (S)	One of three sites selected to represent <i>Tilio-Acerion</i> forest across its geographic range on the Carboniferous limestone of north Wales.
Liverpool Bay SPA	2.1 km (N)	Classified for the protection of red-throated diver (<i>Gavia stellata</i>), common scoter (<i>Melanitta nigra</i>), and little gull (<i>Hydrocoloeus minutus</i>) in the non-breeding season; common tern (<i>Sterna hirundo</i>) and little tern (<i>Sterna albifrons</i>) in the breeding season, and an internationally important waterbird assemblage.
The Dee Estuary SAC, SPA and Ramsar Site	10.1 km (E)	<u>SAC primary habitats</u> : Mudflats and sandflats not covered by seawater at low tide; <i>Salicornia</i> and other annuals colonizing mud and sand; Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>). <u>SPA features</u> : Over wintering species: bar-tailed godwit (<i>Limosa lapponica</i>), black-tailed godwit (<i>Limosa limosa islandica</i>), curlew (<i>Numenius arquata</i>), dunlin (<i>Calidris alpina alpina</i>), grey plover (<i>Pluvialis squatarola</i>), knot (<i>Calidris</i>

Site Name	Distance from Site (Direction)	Reasons for Designation
		<i>canutus</i>), oystercatcher (<i>Haematopus ostralegus</i>), pintail (<i>Anas acuta</i>), redshank (<i>Tringa totanus</i>), shelduck (<i>Tadorna tadorna</i>) and teal (<i>Anas crecca</i>). The Site has also supports breeding common tern (<i>Sterna hirundo</i>) and little tern (<i>Sterna albifrons</i>), as well as supporting on passage sandwich tern (<i>Sterna sandvicensis</i>) and redshank (<i>Tringa totanus</i>). The SPA also regularly supports at least 20,000 waterfowl. <u>Ramsar Site features</u> : One of the top ten estuaries in the UK for wintering and passage waterfowl populations. The estuary supports internationally important numbers of waterfowl and waders.
Llwyn SAC	10.7 km (SE)	One of the largest examples of alluvial forest in Wales. The woodland has formed on level ground on the floodplain of the River Clywedog.
Halkyn Mountain SAC	14.3 km (E)	Halkyn Mountain has the most extensive recorded area of the metalliferous NVC type OV37 <i>Festuca ovina</i> – <i>Minuartia verna</i> grassland community in Wales. Stands of this vegetation type are associated with a number of old lead and zinc ore mines, which date back to Roman times and were intensively worked during the 19th century.
Creuddyn Peninsula Woods SAC	14.7 km (W)	A large example of Tilio-Acerion forest near its western extreme at this latitude in the UK. Selected to represent the geographic range and variation of this habitat across the Carboniferous limestone of north Wales.

Non-Statutory Designations

- 6.3.3 There are 31 Wildlife Sites and one Local Nature Reserve present within 2km of the Solar Site including two Wildlife Sites within the Site boundary, and there are 11 Wildlife Sites within 2km of the BESS Site. These are summarised within **Table 6.2** and **Table 6.3** respectively and shown in **Appendix D**.

Table 6.2 Non-statutory Designations within 2 km of the Solar Site

Site Type	Site Code	Site Name	Distance (m)	Reasons for Designation
Wildlife Sites	Conwy 97/35	Morfa Rhuddlan [Candidate]	0	Grazing marsh.
Wildlife Sites	Conwy 97/105	Abergele grazing marsh [Candidate]	0	Grazing marsh.
Wildlife Sites	Conwy 97/69	Pwll Towyn Way [Candidate]	120	Standing water.
Wildlife Sites	Conwy 97/33	Coed Gors [Candidate]	280	Broadleaved woodland.
Wildlife Sites	Conwy 97/72	Pwll Bodoryn Fawr [Candidate]	290	Standing water.
Wildlife Sites	Conwy 97/31	Coed Bodtegwyl [Candidate]	350	Broadleaved woodland.
Wildlife Sites	Conwy 97/74	Plas Kimmel [Candidate]	580	Standing water.
Wildlife Sites	Conwy 97/83	St Georges Well [Candidate]	750	Standing water.
Wildlife Sites	Conwy 97/75	Pwll Llwyni Lodge [Candidate]	790	Standing water.
Wildlife Sites	Conwy 97/73	Pwll Ffordd St Asaph [Candidate]	810	Standing water.
Wildlife Sites	Conwy 97/26	Coed y Geufron [Candidate]	930	Coniferous woodland.
Wildlife Sites	Conwy 97/80	Coed Parc Kimmel [Candidate]	990	Coniferous woodland.

Site Type	Site Code	Site Name	Distance (m)	Reasons for Designation
Wildlife Sites	Conwy 97/77	Coed Nant Ddu [Candidate]	1010	Broadleaved woodland.
Wildlife Sites	Denbighshire D001	Clwyd Estuary and Adjacent fields	1110	An estuary including mudflats, where large numbers of birds feed, saltmarsh, a disused tip with botanical interest and supporting ground nesting birds, and adjacent fields and water bodies which support significant numbers of wintering waders and wildfowl.
Wildlife Sites	Conwy 97/41	Afon Gele [Candidate]	1120	Running water.
Wildlife Sites	Conwy 97/70	Berthglyd Pond [Candidate]	1130	Standing water.
Wildlife Sites	Conwy 97/84	Pwll Tan-y-bryn [Candidate]	1210	Standing water.
Wildlife Sites	Conwy 97/76	The Warren [Candidate]	1270	Calcareous grassland.
Wildlife Sites	Conwy 97/24	Ffordd Las [Candidate]	1300	Mixed woodland.
Wildlife Sites	Conwy 97/81	Pwll Parc Kimmel [Candidate]	1350	Standing water.
Wildlife Sites	Conwy 97/28	Coed Parc y Meirch / Coed Ty Croes [Candidate]	1460	Broadleaved woodland; coniferous woodland.
Wildlife Sites	Conwy 97/65	North Wales Holiday Camp [Candidate]	1460	Neutral grassland.
Wildlife Sites	Conwy 97/42	Fferam Ffordd Las Bach [Candidate]	1510	Calcareous grassland; scrub.
Wildlife Sites	Denbighshire D002	Coed Pen y Garreg	1510	A lowland ancient woodland in the grounds of Bodelwyddan Army Training Camp.
Wildlife Sites	Conwy 97/82	Pwll St Georges Well [Candidate]	1520	Standing water.
Wildlife Sites	Conwy 97/32	Coed Meibion [Candidate]	1570	Broadleaved woodland; coniferous woodland.
Wildlife Sites	Conwy 97/66	Remo Avenue [Candidate]	1660	Coastal grassland.
Wildlife Sites	Conwy 97/67	Afon Clwyd Saltmarsh [Candidate]	1780	Saltmarsh.
Local Nature Reserve		Kimmel Dunes	1880	Once part of a much larger coastline sand dune system, but now forms a thin strip between Towyn and Rhyl. The dunes are a valuable habitat for a wealth of plants and animals.
Wildlife Sites	Conwy 97/53	Bryn Plas Uchaf [Candidate]	1890	Calcareous grassland; broadleaved woodland.
Wildlife Sites	Conwy 97/85	Pwll Fardre [Candidate]	1940	Standing water.

Table 6.3 Non-statutory Designations within 2 km of the BESS Site

Site Type	Site Code	Site Name	Distance (m)	Reasons for Designation
Wildlife Sites	Denbighshire D032	Coed Cord, block to NW and Coed y Saeson (3 areas)	130	Broadleaved woodland.
Wildlife Sites	Denbighshire D035	Bryn Meiriadog	800	Ancient woodland including Alder, Ash and Oak communities, Blackthorn and Hazel scrub and calcareous grassland
Wildlife Sites	Denbighshire D040	Glascoed (2 areas)	1360	Lowland, ancient broadleaved woodland.
Wildlife Sites	Denbighshire D003/1	Plas Newydd/Coed Carreg Dafydd	1450	A flat, ancient woodland site with Ash and Beech woodland communities.
Wildlife Sites	Denbighshire D034	Ty'n-y-Coed Rough (2 areas)	1450	Flat, lowland broadleaved woodland.
Wildlife Sites	Denbighshire D003	Coed y Ddol/Coed y Fadir	1460	A south facing lowland ancient woodland on the valley side of the River Elwy.
Wildlife Sites	Denbighshire D041	Coed yr Accar (2 areas)	1460	Ancient broadleaved woodland.
Wildlife Sites	Denbighshire D033	Coed Fron and Eryl Hall Wood	1670	Ancient woodland with Alder, Ash, Oak and Birch communities.
Wildlife Sites	Conwy 97/102	Coed Wig [Candidate]	1870	Broadleaved woodland.
Wildlife Sites	Conwy SJ07/6	Pwllau Graig [Candidate]	1880	Standing water.

- 6.3.4 The indicative cable route linking the Solar Site to the BESS Site also passes through Coed Parc Kinmel [Candidate] Wildlife Site (ref. Conwy 97/80).

Habitats

Habitats of Principal Importance

- 6.3.5 Based on mapping data received from Cofnod, the following habitats of principal importance, as listed within Section 7 of the Environment (Wales) Act 2016 (also referred to as 'priority habitats'), are present within or near to the Site:
- Coastal floodplain and grazing marsh – covers a large proportion of the Solar Site;
 - Wood-pasture and parkland – present along parts of the indicative cable route, within Kinmel Park and Bodelwyddan Park.

Irreplaceable Habitats

- 6.3.6 There are several parcels of ancient woodland in the vicinity of the Site, however none within the Site boundary. The closest area is a strip of Restored Ancient Woodland, which divides the southern portion of the Solar Site.

On-site Habitats

6.3.7 Brief descriptions of the habitats present are provided below:

- Solar Site – a mix of improved grassland (including grazing marsh) and arable land, with field boundaries delineated by hedgerows (some with trees) and/or wet ditches and a single pond;
- BESS Site – two arable fields, with field boundaries delineated by hedgerows (some with trees); and
- Indicative Cable Corridor – passes through a range of land uses, primarily: improved grassland, arable, coniferous plantation and parkland, intersecting hedgerows in some locations.

Protected and Priority Species

6.3.8 A summary of the confirmed and potential protected and/or priority species present within the Site is set out in **Table 6.4**.

Table 6.4 Summary of relevant protected and/or priority species

Species/Group	Description	Level of Ecological Importance
Breeding birds	Initial survey results indicate that the breeding bird assemblage present is typical of lowland farmland and grazing marsh, comprising mostly widespread species but including Red list species namely skylark and linnet.	Local (to be confirmed following further surveys)
Wintering birds	Potential for overwintering assemblage within farmland habitats. Some potential for the Site to support species associated with off-site European Sites, in particular the Dee Estuary SPA and Ramsar Site.	Local – County (to be confirmed following further surveys)
Bats (roosting)	Several mature trees have features suitable to support bat roosting.	Local (to be confirmed following further surveys)
Bats (foraging/commuting)	A typical assemblage of bats, dominated by common and widespread species has been recorded across the Site, mainly associated with field boundaries. In terms of rarer species, the automated detector surveys completed to date have recorded a small number of greater horseshoe bat calls in the Solar Site, a small number of lesser horseshoe bat call in both parts of the Site.	Local (to be confirmed following further surveys)
Badger	No confirmed badger setts have been recorded within or around the Site, however some evidence of badger presence has been recorded suggesting foraging or dispersal within the Site.	Site
Otter	Several records in the area north of the Solar Site, and one record of otter spraints beside the ditch on the northern boundary of the Solar Site. No evidence of otter recorded on-site to date, but assume at least occasional presence (foraging/dispersal).	Local (to be confirmed following further surveys)
Water vole	Numerous records in the area north of the Solar Site; three records for the ditch on the northern boundary of the Solar Site; and one record in the eastern portion of the Solar Site. Evidence of water vole recorded in several ditches within the Solar Site, mainly in the southeast.	Local (to be confirmed following further surveys)

Species/Group	Description	Level of Ecological Importance
Great crested newt	eDNA result for on-site pond was negative, however there are previous records of this species in this pond, and in several off-site ponds within 250 m of the Site. Assume present in on-site pond and in suitable terrestrial habitat on-site, albeit this is largely limited to the field boundaries.	Local (to be confirmed following further surveys)
Reptiles	Field margins and ditches provide potentially suitable habitat for common reptile species. No survey proposed but presence to be assumed on a precautionary basis.	Local

Future Baseline Conditions

- 6.3.9 The majority of the Site is active agricultural land, which is intensively managed for agricultural production with no evidence of management specifically for biodiversity or nature conservation. It is therefore likely that, in the absence of the Proposed Development, the condition of the habitats present and their suitability to support protected and priority species would slowly deteriorate.

6.4 Consultation

- 6.4.0 No consultation has been undertaken to date other than to request local biodiversity records from Cofnod.

6.5 Potential Significant Effects

Construction and Decommissioning

- 6.5.0 Construction and decommissioning impacts which, in absence of mitigation, could give rise to potentially significant adverse effects on Important Ecological Features (IEFs) are summarised in Table 6.5.

Table 6.5 Summary of Potential Construction and Decommissioning Impacts

IEFs (provisional)		Potential Impact? (Y/N)			
Feature	Level of Ecological Importance	Habitat loss, fragmentation or severance	Habitat degradation or damage	Disturbance to species from noise and light	Pollution of surface water
The Dee Estuary SAC, SPA and Ramsar Site	International	Y - loss of functionally linked land if confirmed.	N	N	N
Morfa Rhuddlan [Candidate] Wildlife Site	County	Y – habitat loss due to land take within the Wildlife Site for Solar Site (albeit reversible after decommissioning).	Y – habitat damage due to construction within the Wildlife Site for Solar Site (albeit reversible after construction).	N	Y – pollutants from Solar Site construction activities (in particular silt from disturbed soils) entering wet ditches within the Wildlife Site via surface water run-off.
Abergele grazing marsh [Candidate] Wildlife Site	County			N	
Coed Parc Kinnel [Candidate] Wildlife Site	County	Y – habitat loss due to land take within the Wildlife Site for Indicative Cable Route.	Y – habitat damage due to construction within the Wildlife Site for Indicative Cable Route.	N	N
Coastal floodplain and grazing marsh priority habitat	County	Y – habitat loss due to land take within this habitat area for Solar Site (albeit reversible after decommissioning).	Y – habitat damage due to construction within this habitat area for Solar Site (albeit reversible after construction).	N	N
Wood-pasture and parkland	County	Y – habitat loss due to land take within this habitat area for Indicative Cable Route.	Y – habitat damage due to construction within this habitat area Site for Indicative Cable Route.	N	N
Ancient woodland	County	N	Y – habitat degradation due to construction in the buffer adjacent to this habitat area for Solar Site (albeit reversible after construction).	Y – disturbance of species within the woodland due to construction in the buffer adjacent to this habitat area for Solar Site .	Y – pollutants from Solar Site construction activities (in particular silt from disturbed soils) entering wet ditches within the woodland via surface water run-off.
Hedgerows and Mature Trees	Local	Y – habitat loss due to land take to construct the Solar Site, Indicative Cable Route and/or BESS Site.	Y – habitat degradation due to construction in the buffer adjacent to these habitats for Solar	N	N

IEFs (provisional)		Potential Impact? (Y/N)			
Feature	Level of Ecological Importance	Habitat loss, fragmentation or severance	Habitat degradation or damage	Disturbance to species from noise and light	Pollution of surface water
			Scheme, Indicative Cable Route and/or BESS Site.		
Wet ditches	Local	Y – habitat loss due to land take to construct the Solar Site.	Y – habitat degradation due to construction in the buffer adjacent to this habitat for Solar Scheme.	N	Y – pollutants from Solar Site construction activities (in particular silt from disturbed soils) entering wet ditches via surface water run-off.
Pond	Local	Y – habitat loss due to land take to construct the Solar Site.	Y – habitat degradation due to construction in the buffer adjacent to this habitat for Solar Scheme.	N	Y – pollutants from Solar Scheme construction activities (in particular silt from disturbed soils) entering the pond via surface water run-off.
Breeding birds	Local	Y – loss of breeding or foraging habitats due to land take to construct the Solar Site, Indicative Cable Route and/or BESS Site.	Y – degradation of breeding or foraging habitats due to construction in the buffer adjacent to these habitats for Solar Site, Indicative Cable Route and/or BESS Site.	Y – disturbance from noise, during construction of Solar Scheme, Indicative Cable Route and/or BESS Site, affecting breeding or foraging.	N
Wintering birds	Local - County			Y – disturbance from noise, during construction of Solar Site, Indicative Cable Route and/or BESS Site, affecting foraging.	N
Bats (roosting)	Local			Y – disturbance from light, during construction of Solar Site, Indicative Cable Route and/or BESS Site, affecting roosting.	N
Bats (foraging/commuting)	Local			Y – disturbance from light, during construction of Solar Site, Indicative Cable Route	N

IEFs (provisional)		Potential Impact? (Y/N)			
Feature	Level of Ecological Importance	Habitat loss, fragmentation or severance	Habitat degradation or damage	Disturbance to species from noise and light	Pollution of surface water
				and/or BESS Site, affecting foraging.	N
Badger	Site			Y – disturbance from noise and light, during construction of Solar Site, Indicative Cable Route and/or BESS Site, affecting breeding or foraging.	
Otter	Local	Y – loss of foraging habitats due to land take to construct the Solar Site.	Y – degradation of foraging habitats due to construction in the buffer adjacent to these habitats for Solar Site.	Y – disturbance from noise and light, during construction of Solar Scheme, affecting foraging.	Y – pollutants from Solar Site construction activities (in particular silt from disturbed soils) entering habitats used by these species.
Water vole	Local	Y – loss of foraging habitats due to land take to construct the Solar Site.		Y – disturbance from noise, during construction of Solar Site, affecting breeding or foraging.	
Great crested newt	Local	Y – loss of breeding or foraging habitats due to land take to construct the Solar Site, Indicative Cable Route and/or BESS Site.	Y – degradation of breeding or foraging habitats due to construction in the buffer adjacent to these habitats for Solar Site.	N	
Reptiles	Local	Y – loss of foraging habitats due to land take to construct the Solar Site.	Y – degradation of foraging habitats due to construction in the buffer adjacent to these habitats for Solar Site.	Y – disturbance from noise, during construction of Solar Site, affecting foraging.	N

- 6.5.1 Subject to the implementation of standard avoidance, mitigation or compensatory measures, no significant adverse residual effects are anticipated on the features summarised above.

Operation

- 6.5.2 Operational impacts which, in absence of mitigation, could give rise to potentially significant adverse effects on IEFs are very limited, and relate to potential disturbance to certain protected and priority species (birds, badger, otter, water vole, great crested newt and reptiles), from noise and lighting affecting breeding or foraging.
- 6.5.3 Subject to the implementation of standard mitigation and enhancement measures, no significant adverse residual effects are anticipated during the operation of the Proposed Development. Furthermore, a number of significant beneficial residual effects on habitats and species are anticipated as a result of these mitigation and enhancement measures.

6.6 Not Significant Effects

Construction and Decommissioning

- 6.6.1 Owing to their separation distance from the Site and absence of impact pathways, no significant construction and decommissioning effects on the following statutory designations are anticipated:
- Elwy Valley Woods SAC;
 - Liverpool Bay SPA;
 - Llwyn SAC;
 - Halkyn Mountain SAC;
 - Creuddyn Peninsula Woods SAC.
- 6.6.2 Similarly, owing to their separation distance from the Site and absence of impact pathways, no significant construction effects on any of the non-statutory designations listed in **Tables 6.2 and 6.3**, other than those listed in **Table 6.5**, are anticipated.

Operation

- 6.6.3 Owing to their separation distance from the Site and absence of impact pathways, no significant operational effects on any of the statutory designations listed in **Table 6.1** are anticipated.
- 6.6.4 Similarly, owing to their separation distance from the Site and absence of impact pathways, no significant operational effects on any of the non-statutory designations listed in **Tables 6.2 and 6.3** are anticipated.
- 6.6.5 Owing to the nature of the proposed development, comprising energy generation from solar panels and energy storage, no significant operational effects on retained on-site habitats, or habitats adjacent to the Site, are anticipated.

6.7 Assessment Methodology

The assessment will be undertaken with reference to CIEEM's Ecological Impact Assessment Guidelines (CIEEM, 2018 version 1.2 – updated April 2022) hereafter referred to as 'the guidelines'.

Evaluation

- 6.7.1 IEFs will be identified which are to be taken forward for impact assessment. The guidelines advocate an approach to valuing features that involves professional judgement based on available guidance and

information, together with advice from experts, who know the locality of the project and/or the distribution and status of the species or features that are being considered.

6.7.2 The guidelines recommend that the value or potential value of an ecological resource or feature should be determined within a defined geographical context and recommends that the following frame of reference should be used, or adapted to suit local circumstances:

- International and European;
- National;
- Regional;
- County; and
- Local.

6.7.3 For the purposes of this assessment, the following adapted geographic frame of reference will be used:

- International;
- National (i.e. Wales);
- Regional (North Wales);
- County (Denbighshire); and
- Local (Bodelwyddan or Community Council area).

Valuing Designated Sites

6.7.4 Within the UK, certain valued habitats have been assigned a level of nature conservation value through designation, and the guidelines recommend that the reasons for this designation need to be considered in the assessment. Such designations include:

- Internationally important sites such as SACs, SPAs and Ramsar sites;
- Nationally important sites such as SSSIs and NNRs; and
- Regional/County important sites such as LNRs.

6.7.5 Where a feature has value at more than one designation level, its overriding value is that of the highest level.

Valuing Habitats

6.7.6 The guidelines recommend that the value of areas of habitat and plant communities should be measured against published selection criteria where available, such as those listed on Annex 1 of the Conservation of Habitats and Species Regulations 2017 (as amended), or those listed as habitats of principal importance under Section 41 of the NERC Act 2006. Where areas of a habitat or plant community do not meet the necessary criteria for designation at a specific level, the guidelines recommend that the ecologist may consider the local context if appropriate. It also emphasises the importance of not under-estimating habitats in sub-optimal condition where there is potential for restoration.

6.7.7 S7 of the Environment (Wales) Act 2016 states that Welsh Ministers must prepare and publish a list of the living organisms and types of habitat which in their opinion are of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales.

Valuing Species

- 6.7.8 The guidelines require consideration of all protected species as 'important' features where there is the potential for a breach in legislation. Additionally, species should be assessed according to their biodiversity value, measured against published selection criteria where available (such as those listed under the Conservation of Habitats and Species Regulations 2017 (as amended) and those listed as habitats of principal importance under Section 41 of the NERC Act 2006).
- 6.7.9 In assigning value to a species, it is necessary to consider its distribution and status, including a consideration of trends based on available historical records, as well as their legal protection. The valuation of populations should make use of any relevant published evaluation criteria.

Assessment of Potential Impacts

- 6.7.10 The assessment of the potential impacts of the Proposed Development will consider both on-site impacts and those that may occur to adjacent and more distant ecological features. Impacts can be positive or negative. Negative impacts can include:
- Direct loss of wildlife habitats;
 - Fragmentation and isolation of habitats;
 - Disturbance to species from noise, light, or other visual stimuli;
 - Changes to key habitat features; and/or
 - Changes to the local hydrology, water quality and/ or air quality.
- 6.7.11 Direct, indirect, secondary, and cumulative negative and positive impacts on nature conservation features will be characterised based on predicted changes as a result of the proposed activities. In order to characterise the impacts on each feature, the following parameters will be considered:
- The magnitude of the impact;
 - The spatial extent over which the impact would occur;
 - The temporal duration of the impact;
 - Whether the impact is reversible and over what timeframe; and
 - The timing and frequency of the impact.

Criteria For Assessment

- 6.7.12 The assessment will identify those positive and negative impacts which would be 'significant', based on effects that either support or undermine the conservation objectives of the ecological feature or biodiversity in general. Significant effects encompass impacts on structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution). Such significant effects will be qualified with reference to an appropriate geographic scale and based on the best available scientific evidence. Where it is not possible to robustly justify that no significant effect will occur, a significant effect is assumed.
- 6.7.13 The integrity of 'designated' sites is described as follows and is taken from the guidelines. It will be used in the assessment to determine whether the impacts of the proposals on a designated site are likely to be significant:

"Significant effects encompass impacts on the structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species..... The following need to be determined: For designated sites - is the project and associated

activities likely to undermine the conservation objectives of the site, or positively or negatively affect the conservation status of species or habitats for which the site is designated, or may it have positive or negative effects on the condition of the site or its interest/qualifying features?"

- 6.7.14 The conservation status of habitats and species within a defined geographical area is described in the guidelines as follows, and will be used to determine whether the impacts of the proposals on non-designated habitats and species are likely to be significant:

"Habitats - conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure and functions as well as its distribution and its typical species within a given geographical area;

Species - conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area."

- 6.7.15 On the basis of the above, ecological effects will be described as either:

- Significant or not significant;
- Direct and/or indirect,
- Permanent or temporary; and
- Negative or positive.

- 6.7.16 Mitigation measures incorporated into the assessment parameter plans will be considered during the assessment of effects, so that the residual effects assessment reflects the completed development. These measures include those required to achieve the minimum standard of established practice plus additional measures to further reduce the effects of the Proposed Development. The assessment will consider the likely success of the mitigation.

- 6.7.17 Effects are unlikely to be significant where features of local importance or sensitivity are subject to small scale or short-term impacts. However, where there are a number of small-scale effects that are not significant alone, it may be that, cumulatively, these may result in an overall significant effect.

- 6.7.18 Although certain species and habitats may not constitute IEFs based upon their nature conservation value, they may still warrant consideration during the design of the development (and any mitigation identified) on the basis of their legal protection, their implications for policies and plans, or other issues, such as animal welfare.

- 6.7.19 The significance of the potential impacts upon IEFs will be assessed both before and after consideration of additional mitigation measures. The latter represents the assessment of the residual effects of the Proposed Development.

6.8 Summary

Discipline	Scoped In Elements	Scoped Out Elements
Biodiversity	Construction and decommissioning- Habitat loss, fragmentation or severance - potentially affecting the Statutory and Non-Statutory Designations, Habitats and Species listed in Table 6.5.	Impacts on Statutory and Non-statutory Designations not listed in Table 6.5; owing to separation distance and absence of impact pathways.
	Operation - Disturbance from noise and lighting to protected and priority species listed a paragraph 6.4.3.	Operation – Habitat degradation or damage.

- 6.8.1 If the Site is confirmed as being functionally linked to the Dee Estuary SAC, SPA and Ramsar Site, the assessment will also consider potential cumulative effects of other developments which could result in loss of functionally linked land. Subject to the implementation of mitigation and enhancement measures, no other non-significant residual adverse effects are anticipated, such that no other cumulative effects on IEFs will warrant further consideration.

6.9 References

- CIEEM, 2018, Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester.

7 Landscape and Visual

7.1 Introduction

- 7.1.1 This Chapter of the EIA Scoping Report has been prepared by the Environmental Dimension Partnership Ltd (EDP) and sets out the likely significant effects of the Proposed Development on landscape character and visual amenity, which will be reported in the ES. Based on the assessment work completed to date, it is proposed that landscape and visual is scoped into the EIA, with an initial summary of which key receptors will be scoped in/scoped out provided in Section 7.4.
- 7.1.2 The purpose of this scoping report is to identify the proposed assessment approach and agree the method of the assessment with consultees. The proposed approach to assessment described below sets out study areas at varying levels for landscape and visual receptors in accordance with best practice guidance. Consultees are invited to review the scope of this assessment and comment on whether they deem the scope proportionate.
- 7.1.3 The assessment will be carried out by Chartered Landscape Architects at EDP, a registered practice of the Landscape Institute. The study area and methodology proposed is set out below which is based upon professional experience and best practice guidance produced by the Landscape Institute (LI)/Institute of Environmental Management and Assessment (IEMA) and contained within the 'Guidelines for Landscape and Visual Impact Assessment' (3rd Edition, 2013) (GLVIA3).

7.2 Baseline Conditions

Study Area

- 7.2.1 A LVIA will be prepared to establish the landscape and visual effects of the Proposed Development upon the Site and study area, and study area boundaries are defined in this chapter.
- 7.2.2 Baseline data is being considered within the area of influence and varies according to the likely extent of the Zone of Theoretical Visibility (ZTV) with the Site and Proposed Development for visual receptors, and the visual and sensory characteristics of defined landscape character areas and landscape designations. The following study areas proposed for landscape and visual receptors are as follows:
- Visual receptors (Broad 7km radius from the Site boundary);
 - National and local landscape designations, and environmental considerations that overlap with the ZTV (Broad 7km radius from the Site boundary);
 - LANDMAP Published character areas that overlap with the ZTV (Up to 1km radius from the Site boundary where aspect areas overlap with the ZTV);
 - A Cumulative LVIA (CLVIA) will be included as part of the LVIA as required. The scope and extent of the cumulative list and the defined study area should be guided by the host LPAs; and
 - A Residential Visual Amenity Assessment (RVAA) will be undertaken to examine effects on the visual component of residential amenity for properties (a suggested 100m radius from the Site boundary).
- 7.2.3 Following an initial site visit, it is suggested that a night-time assessment is scoped out from further consideration owing to the immediate site context and nature of the development proposed.
- 7.2.4 The layout for the Proposed Development is not yet fixed. The initial baseline work and ZTVs included in the supporting figures have been indicatively mapped and will be refined as the proposals evolve. The baseline work will feedback during design team meetings and the final layout will be informed by the assessment of a wide range of factors, including potential landscape and visual effects, the need for mitigation, and potential effects on residential visual amenity. The layout will be environmentally led

to ensure that mitigation is embedded and the best possible 'fit' is achieved for the Site, but will also be informed by planning policy and relevant national and local guidance (and other technical factors).

Baseline Sources

7.2.5 The following desk- and field-based baseline investigations have been completed to date:

- Desk based review of environmental considerations using national datasets;
- OS Maps, Google Earth Pro and GIS modelling to establish likely extents of visibility;
- Review of Natural Resources Wales's LANDMAP datasets; and
- Site visits (November 2024).

7.2.6 This chapter is supported by consultees questions set out at the end of this chapter, and the following appendices:

- **Appendix E.1:** Site Location and Topographical Relief (edp8841_d003 21 October 2024 GYo/MDu);
- **Appendix E.2:** Site Character Plan (edp8841_d004 21 October 2024 GYo/MDu);
- **Appendix E.3:** Environmental Planning Considerations (edp8841_d005 21 October 2024 GYo/MDu);
- **Appendix E.4:** Published Landscape Character - Overall Classification (edp8841_d006 21 October 2024 GYo/MDu);
- **Appendix E.5:** Published Landscape Character - Evaluation (edp8841_d009 21 October 2024 GYo/MDu); and
- **Appendix E.6:** Findings of Visual Appraisal and Viewpoint Locations (edp8841_d007 10 December 2024 GYo/MDu).
- **Appendix E.7:** LVIA Assessment Methodology

Baseline Description

7.2.7 All relevant current baseline information will be set out in full in a Technical Appendix to the Landscape and Visual ES Chapter. The following is a summary based on the desktop analysis completed to date. The landscape designations and environmental considerations that overlap with the ZTV have been identified within 7km of the Site.

Table 7.1: National and Local landscape designations

Designation	Distance from Site (Direction)	Considerations
National Level		
Clwydian Range and Dee Valley (CRDV) National Landscape (NL)	5.9km (E)	Highly sensitive landscape receptor. Partially within the ZTV.
Local Level		
Special Landscape Area (SLA): Abergele hinterland	1km (SW)	Highly sensitive landscape receptor. Partially within the ZTV.

Table 7.2: Registered Historic Parks and Gardens

Designation	Distance from Site	Considerations
Kinmel Park and Garden	Adjacent to Site boundary	Highly sensitive landscape receptor. Partially within the ZTV.
Bodelwyddan Castle	800m	Highly sensitive landscape receptor. Partially within the ZTV.
Gwrych Castle	2.5km	Highly sensitive landscape receptor.
Brynbella	6km (SE)	Partially within the ZTV.
St. Beuno's College	6.4km (E)	Highly sensitive landscape receptor.

Registered Landscape of Outstanding Historic Interest

- 7.2.8 Two Registered Landscapes of Outstanding Historic Interest are located to the south and south-east, c.1km and c.4km from the Site respectively. Both are considered highly sensitive landscape receptors and have been scoped in for further consideration.

Open Access Land and Public Rights of Way

- 7.2.1 There is a relatively infrequent network of Open Access Land (OAL) and Public Rights of Way (PRoW) such as footpaths, bridleways, byways open to all traffic, cycle routes, promoted paths and national trails in proximity to the site, and within the ZTV.
- 7.2.2 The North Pilgrims Way is the closest promoted route to the Site, around 1km south-east. Offa's Dyke (c.6km east) and the Wales Coastal Path (<2km north) are also within the study area. National Cycle Routes 84 and 5 are located approximately <2km east and north, respectively.
- 7.2.3 There are no areas of OAL or PRoW within the boundaries of the Site. One PRoW runs adjacent to the Site boundary of the solar site, whilst a few are in proximity and have the potential for intervisibility with the Site. Views from all PRoW and OAL within that have the potential for intervisibility with the Site will be investigated in the ES Chapter.

Visual Baseline

- 7.2.1 A series of initial ZTVs were modelled to identify the likely extent of intervisibility with the site. ZTVs were calculated using a spatial modelling algorithm which considers Digital Surface Modelling (DSM) data, and the vertical accuracy of +/-5cm in combination with height estimates for the Proposed Development.
- 7.2.2 The pattern of the ZTV follows the pattern of the flat open lowland farmland; local ridgelines curtail the ZTV to the west, south-west, to mostly within a 2km radius of the Site whilst the land to the east appears to have higher intervisibility with the Site. The nature of the topography is such that views of the Proposed Development would not be easily discerned at low elevations beyond the immediate extents of the Site due to intervening vegetation together with the nature of the proposals. The existing solar scheme is not easily discerned in views from the east or west due to boundary vegetation for example. To the north, the field boundaries tend to be more open towards Towyn, and the backs of panels are more likely to be visible where post and wire fencing makes up most field boundaries in their current state.
- 7.2.3 The A55 intersects the ZTV on an east-west orientation, and ground truthing during a Site visit suggests that the found that the dual carriageway greatly acts as a barrier and limits visibility north and south to the Site. To the east, land to the east and west of the Clwyd Estuary and its tributaries is low lying, and land uses include farmland and settlement. Intervening vegetation tends to filter and screen many views, and there are no open views into the main Site as a result. It is likely that the extent of

significant effects will be limited and localised to close range views from roads and PRoW, and medium range views from elevated land to the south-west.

- 7.2.4 A site visit was carried out and a range of viewpoints were selected following the site visit. The photoviewpoints proposed for inclusion in the ES Chapter are listed in **Table 7.3** below.

Table 7.3: Proposed Photoviewpoint Locations

PVP no.	PVP name	Co-ordinates	Direction to site	Principal receptor
1	Rhuddlan Road (A547) / St Asaph Road adjacent to western parcel	96711, 77233	E	Road users
2	Rhuddlan Road looking NE	97492, 77270	NE	Road Users
3	Bordoryn Road / Rhuddlan Road Jcn. by cottages near east	97690, 77238	E	Road Users
4	PRoW by Pen y Bont cottage looking west from Site boundary	98963, 77664	W	PRoW Users
5	St Asaph Avenue / Rhuddlan Road roundabout	99377, 77570	W - SW	Road users
6	St Asaph Avenue / Unnamed road Jcn. looking northwest	99568, 76647	NW	Road users
7	Unnamed Road looking north	98834, 76377	N	Road users
8	Road by Kimmel avenue and Thorncliffe skip yard	98136, 76188	N	Road users
9	St George	97712, 76404	N	Road users
10	St Asaph Road in front of terrace	97107, 76577	NE	Road users
11	PRoW	96358, 77210	E	Road Users
12	Gors road on Site boundary	97750, 77753	S	Road Users
13	PRoW near most northerly tip of site	98332, 78670	S	PRoW Users
14	PROW, elevated along Afon Gele looking southeast	95723, 77969	SE	PRoW Users
15	Fadre Hill/ Nant Ddu Road	96741, 76069	NE	Road Users
16	PRoW	96679, 75587	NE	PRoW Users
17	PRoW from Abergele Hill	95402, 75922	NE	PRoW Users
18	PRoW and Tay Y Fron Road	95559, 76246	NE	PRoW and Road Users
19	Graig fawr Scenic VP	05945, 80391	SW	Open Access Land / scenic viewpoint / local reserve
20	Road by Wean Meredydd looking SE	01272, 73664	SE	Road Users
21	PRoW W of Site, looking E	01098, 73545	E	PRoW Users
22	Road SW of Site, view NE	01092, 73405	NE	Road Users
23	North Wales Pilgrim's Way Promoted Riad looking NW	02444, 72761	NW	PRoW Users

- 7.2.5 Given the flat, coastal fringe nature of the Site itself, the future baseline is considered unlikely to undergo much change in the short to medium term, and in the absence of any landscape management. In the wider Site context, where there is more variation and distinction with landscape features, both managed and unmanaged, there is potential for removal of managed plantations which could increase visibility to the proposals. The typical cyclical nature of managed plantations (e.g.,

fellings could occur every 20 years) means that the baseline is in constant flux, although no managed plantations appear to be near the Site that could lead to such a stark change in close range views.

- 7.2.6 The known effects of climate change on the natural environment which may be of relevance to landscape and visual matters include crop failure, storm damage, flooding and drought. Such effects with potential to occur to the landscape within which the Site sits are unlikely to alter the future baseline of the Site context, or the predicted landscape and visual effects presented herein based on the current baseline. This assumption is based on the open and flat nature of the Site and local context, as well as the nature of the already available views anticipated in the current visual baseline. Climate change will inevitably lead to more unpredictable weather patterns; however, the effects of extreme heat and heavy rain are inconsequential to future landscape and visual matters. Furthermore, visual assessment of the current baseline makes judgements on the levels of effect predicted to arise on bright and clear days with high visibility.

Landscape Baseline

- 7.2.7 The host National Landscape Character Area is NLCA 08, North Wales Coast. The description states that the coastline is influenced by geology and human intervention. As well as areas of natural coastline around Prestatyn, other areas are defined by coastal defences, quarrying and mining, whilst limestone hills constrain the NLCA to an area of low-lying land and coastal fringes containing the Vale of Clwyd and settlements including Llandudno, Rhyl and Towyn. The former is referenced as having a strong cultural identity. Large extents of the soft coastline have been heavily modified or developed; lack of grazing is highlighted as a management concern where calcareous grassland is at risk of encroachment. Based on the condition and distinctive features of the NLCA, it's unlikely the proposals would result in significant effects.
- 7.2.8 LANDMAP data searches have been carried out and the overall classification and evaluations are included at **Appendix E**. The areas containing the Solar Site and the BESS Site are classified as flat open lowland farmland and mosaic rolling lowland, respectively. The overall evaluation for both Sites is recorded as moderate in LANDMAP. EDP will prepare its own site-specific character assessment in the ES and draw out the multifaceted aspects of landscape character on and immediately adjacent to the Site to give a detailed description of the Site and the resulting likely effects.

7.3 Consultation

- 7.3.1 Subsequent to the adoption of a scoping direction, the host Local Planning Authorities (LPA's) Conwy County Borough Council (CCBC) and Denbighshire County Council (DCC), will be consulted further on the detailed approach to the assessment of effects on landscape character and visual amenity.
- 7.3.2 Natural Resources Wales (NRW), and the Clwydian Range and Dee Valley National Landscape is governed by a Joint Committee are advised to be consulted as part of this scoping exercise; on the selection of viewpoints for the visual assessment, and on information regarding developments to be included in the cumulative assessment. The methodology will be finalised following this consultation process.

7.4 Potential Significant Effects

Construction

- 7.4.1 There are no rights of way or publicly accessible areas on Site, therefore no diversions or temporary closures would be required. There may be impacts on existing Site access and roads adjacent to the Site as a consequence of widening or/and increased traffic to facilitate construction.
- 7.4.2 During construction, the main effects are likely to be direct landscape effects resulting from the formation and operation of construction compounds and a Site office, material storage and movement including by loaders and large machinery and construction activities could include pile driving (at the BESS Site only) and construction or widening of access roads, excavation and laying of cabling prior to infilling, installation of foundations and mounting of PV panels. Construction activities would be conducted in line with a detailed Construction Management Plan (CMP) with works undertaken during

specified time periods and conditions as appropriate. Lighting may be required as part of the construction.

- 7.4.3 It is envisaged that due to nature of the solar and energy storage development, construction effects might exceed the magnitude of change temporarily experienced by receptors in the short term when compared to operational effects. Additionally, a staged construction process would allow for the completion of parts of the development with others still under construction, allowing for a shorter overall build out time with specialists able to work on different parts/aspects of the development Site at the same time. As such, the Proposed Development would be erected sequentially, and the operational phase of the development is likely to convey the greatest level of effects which would be long term. As such, only the operational effects are assessed in detail with construction effects described as appropriate.

Where there is direct change to the landscape character or fabric of the Site, and where there intervisibility with the construction activities associated with Proposed Development, (be it temporary or permanent, short term or reversible) there is potential for likely significant effects at the construction stage. The same receptors within the defined study area will be considered at construction as at operation, and these landscape and visual receptors are listed under operation.

Operation

- 7.4.4 Where there is direct change to the landscape character or fabric of the site, and where there intervisibility with the Proposed Development, there is potential for likely significant effects. The following receptors within the defined study area will be considered within the assessment.

- Settlements and private residences;
- Users of National Cycle Network and National Trails;
- Users of local/regional cycle and walking routes;
- Those using local rights of way - walkers, horse riders, cyclists;
- Users of open spaces with public access;
- People using major (motorways, A and B) roads; and
- People using minor roads.

- 7.4.5 The following landscape receptor groups are scoped in and will be considered in full in the ES Chapter:

- The landscape fabric of the development Site;
- The key landscape characteristics of the local context;
- The 'host' landscape character area that contains the Proposed Development;
- The 'non-host' landscape character areas surrounding the host character area and may be affected by the proposals (where relevant); and
- Landscape designations on a national and local level (where relevant).

7.5 Not Significant Effects

- 7.5.1 A site visit and a baseline data trawl has been carried out to inform the design at the early stages. With respect to the scale and location of the Site and the nature of the Proposed Development, the following considerations can be confidently drawn with respect to landscape and visual matters.

- 7.5.2 Night-time assessment – the Site is at a considerable distance from any nationally protected landscape which may have protected dark skies, therefore the effects of any lighting during construction, operation or decommissioning is unlikely to be perceptible from the closest National Landscape (Clwyd Range and Dee Valley c. 6km east). Nevertheless, NRW's Dark Skies Mapping has been reviewed because the Site and its context shows a considerable amount of light pollution, which is at its brightest to the north of the Site. The Site itself mostly falls within 1-2 Brightness value (nw/cm²/sr). Construction lighting will be temporary in nature, directional and only in use during working hours or in contingencies such as an emergency. Given the nature of the proposals, the Proposed Development will not be lit. The Outline CEMP/DEMP to be submitted with the application will include a lighting strategy to minimise light spill to receptors. During the operational phase, there would be no permanent external lighting installed as part of the Proposed Development. Security lighting would be infrared, and the limited lighting associated with the substations and within the BESS would be used for occasional maintenance/ emergency use only. It is not anticipated that the scheme would have security lighting during operation. Effects at nighttime are likely to be highly localised and not significant therefore the nighttime effects have been 'scoped out' of the EIA, and not considered any further.

7.6 Assessment Methodology

- 7.6.1 **Appendix E.7** includes EDP's full methodology for landscape and visual impact assessment.
- 7.6.2 In summary, the nature of landscape and visual assessment requires both objective analysis and subjective professional judgement. Accordingly, the assessment will be based on the latest best practice guidance, information and data analysis technique. It will use quantifiable factors wherever possible and subjective professional judgement where necessary and is based on clearly defined terms.
- 7.6.3 The assessment methodology for assessing landscape and visual effects prepared by EDP is based on the following best practice guidance:
- Guidelines for Landscape and Visual Impact Assessment - Third Edition (GLVIA3) (Landscape Institute, Institute of Environmental Management & Assessment, 2013);
 - Using LANDMAP in Landscape and Visual Impact Assessments Guidance Note 46, Natural Resources Wales (2013);
 - Designing Renewable Energy in Wales, Design Commission for Wales (2023);
 - An Approach to Landscape Character Assessment (Natural England, 2014);
 - Residential Visual Amenity Assessment (RVAA)-Technical Guidance Note 2/19: Landscape Institute, (15 March 2019); and
 - Landscape Institute Technical Guidance Note (TNG) 06/19 Visual Representation of Development Proposals (Landscape Institute, 2019).
- 7.6.4 To consider the likely significance of any effect, the sensitivity of each receptor is established when value and susceptibility to the type of development proposed is considered. Sensitivity is then combined with the predicted magnitude of change to determine the significance of effect, with reference also made to the geographical extent, duration and reversibility of the effect within the assessment. Having taken such a wide range of factors into account when assessing sensitivity and magnitude at each receptor, the significance of effect can be derived by combining the sensitivity and magnitude in accordance with the following matrix in **Table 7.4**.

Table 7.4: Receptor Sensitivity

Overall Sensitivity	Overall Magnitude of Change				
	Very High	High	Medium	Low	Very Low
Very High	Very Substantial	Substantial	Major	Major/-Moderate	Moderate
High	Substantial	Major	Major/ Moderate	Moderate	Moderate/-Minor
Medium	Major	Major/-Moderate	Moderate	Moderate/-Minor	Minor
Low	Major/-Moderate	Moderate	Moderate/ Minor	Minor	Minor/-Negligible
Very Low	Moderate	Moderate/ Minor	Minor	Minor/-Negligible	Negligible

7.6.5 In certain cases, where additional factors may arise, a further degree of professional judgement may be applied when determining whether the overall change in the view will be significant or not. For example, in cases where a moderate effect is experienced by a high or very high sensitivity receptor, this may be significant. Similarly, where a moderate effect is experienced by a very low sensitivity receptor, this may not be considered significant. Where this occurs, further explanation is given within the assessment.

7.7 Summary

Discipline	Scoped In Elements	Scoped Out Elements
Landscape and Visual	National and local landscape designations. Registered Historic Parks and Gardens. Registered Landscapes of outstanding Historic Interest. OAL and PRoW, including national trails, promoted routes and the coastal path. Host Character areas including LANDMAP Character Areas. Viewpoint analysis used to assess the visual effects from a range of receptor groups from a range of distances and directions to the Site. Cumulative landscape and visual impact assessment. Scope to be defined through LPA / PEDW consultation. Residential visual amenity assessment for residents within 100m of the Site boundary.	Nighttime assessment

7.8 References

- Landscape Institute, Institute of Environmental Management & Assessment, 2013. Guidelines for Landscape and Visual Impact Assessment - Third Edition. s.l.: Routledge.

8 Built Heritage

8.1 Introduction

- 8.1.1 This chapter of the EIA Scoping Report has been prepared by Cotswold Archaeology and sets out the likely significant effects on Built Heritage produced by the Proposed Development.
- 8.1.2 The built heritage resource to be considered within the ES comprises historic buildings, structures and monuments, as well as historic landscapes (including Registered Historic Parks and Gardens (RHPG)). Due to the nature of the Proposed Development, and specific factors associated with the historic assets within and nearby the Site and Study Area, significant effects are not anticipated. However, with the design parameters of the Proposed Development still in draft and detailed analysis still to be undertaken Built Heritage (and historic landscape) is scoped into the EIA.

8.2 Baseline Conditions

Study Area

- 8.2.1 The Built Heritage Study Area encompasses a 2km buffer surrounding the Site. It is recognised that beyond a certain distance, solar PV arrays lose definition and assume a 'washed-over' appearance, and are perceived as blocks of faded colour within an established agricultural landscape. As such, it can be stated with confidence that assets beyond this distance would not be adversely affected. The detailed assessment of this matter will be explored with Site visits and the use of the Zone of Theoretical Visibility (ZTV). Consultation with the advisors at Cadw and Heneb: Clwyd-Powys will be carried out to inform the selection of designated historic assets for detailed assessment.

Baseline Sources

- 8.2.2 Initial desk-based research has been undertaken to inform the material presented within this chapter of the Scoping Report. This exercise reviewed available heritage databases, including Coflein and Archwilio, and the Cadw list of designated historic assets, within the Study Area. This was supplemented by Heneb: Clwyd-Powys Historic Environment Record data, obtained in October 2024.

Baseline Description

- 8.2.3 There are no designated historic assets within the Solar Site or BESS Site, however, the Indicative Cable Route partly extends through Kinmel Grade II* RHPG, the boundary of which also lies immediately east and west of the Solar Site. The southern extent of the Indicative Cable Route lies along the southern boundary of Bodelwyddan Castle Grade II RHPG.
- 8.2.4 Five Scheduled Monuments are located within the Study Area. These comprise: St George's Well, c. 330m south of the Site; First World War Practice Trenches at Bodelwyddan Park, c. 450m north of the Site; Tyddyn Bleiddyn Burial Chamber, c. 980m south of the Site; Bedd-y-Cawr Hillfort, c. 1.1km south of the Site; and The Mount, c. 1.6km west of the Site.
- 8.2.5 A total of 163 Listed Buildings are located within the Study Area, of which two are Grade I Listed, 23 are Grade II* Listed and 138 are Grade II Listed. Several of these, including the Grade I Kinmel and Grade I Llwyni are located within Kinmel and Bodelwyddan RHPGs. The nearest Listed Buildings to the Site are: the Grade II* Morfa Lodge, 70m east and west of the Solar Site; the Grade II Listed Toll Bar Cottage, c. 30m south of the Solar Site; the Grade II Listed Bodoryn Cottages, c. 20m south of the Solar Site; and Grade II Kinmel Park, gatepiers and railings, immediately south-west of the Indicative Cable Route.
- 8.2.6 Three Conservation Areas are situated within the Study Area: St George, c. 120m south of the cable route part of the Site; Bodelwyddan, 1.3km to the south of the Site; and Abergele, 1.8km to the west of the Site.

8.2.7 The Vale of Clwyd Registered Historic Landscape lies c. 800m south of the Site.

8.3 Consultation

8.3.1 No consultations with stakeholders have been undertaken at this stage. Cadw and Heneb: Clwyd-Powys will be consulted during the course of the on-going survey work.

8.4 Potential Significant Effects

Construction

8.4.1 The potential effects upon the designated historic assets during the construction phase of the Proposed Development would derive from the presence of machinery, fencing, and construction compounds, as well as increased noise and traffic. Construction operations are temporary by nature, and the impacts associated with these works would be short lived and limited and would not cause significant effects to those designated historic assets.

Operation

8.4.2 Following the completion of the construction works, the Proposed Development would introduce change into the landscape setting of designated historic assets, and any impacts upon those assets as a result of change within their settings would be perceived for the duration of the operational phase.

8.4.3 The Proposed Development would change the character of land parcels within the setting of a number of designated historic assets (Listed Buildings, Scheduled Monuments, Registered Historic Park and Gardens, Conservation Areas and Registered Historic Landscape). The historic landscape character of the Site itself has not been recognised as of particular importance. Furthermore, the fundamental agrarian nature of the setting of these designated historic assets would be unchanged.

8.4.4 For all designated historic assets, their historic value is largely derived from their physical fabric, which will not be affected by the Proposed Development. With regard to their setting, the views towards the assets are the critical components of their experience, the vast majority of these being views from up close, as it is in those views that their physical fabric and (for historic buildings) special interest can be best appreciated. The form of the Proposed Development and its distance from these historic assets means that no important views of them would be lost or obscured. As such, key experiences of the buildings and monuments are unlikely to be altered. The potential effects upon those historic assets will be assessed through the methodology detailed below, with options to incorporate appropriate mitigation measures for any sensitive assets into the design of the Proposed Development, as the proposals evolve.

Decommissioning

8.4.5 There would be temporary change within the settings of the designated historic assets during decommissioning, resulting from the use of machinery and traffic to disassemble the elements of the Proposed Development. Similarly, as during the construction phase, such impacts would be temporary and limited and would not cause significant effects.

8.5 Not Significant Effects

8.5.1 Due to the limited and temporary nature of the effects upon designated historic assets during the construction phase, these will not be significant, and it is proposed that they are scoped out of the EIA. Effects during the decommissioning phase will be similarly limited and not significant and are therefore also proposed to be scoped out of the EIA.

8.5.2 As first noted above and in further detail below, the construction impacts on buried archaeological remains are expected to be limited, and thus, this element of the topic will be scoped out of the EIA.

8.6 Assessment Methodology

Baseline Surveys

- 8.6.1 A detailed historic environment desk-based assessment (HEDBA) discussing the historic assets which may be affected by the Proposed Development is currently being prepared. This assessment incorporates a detailed built heritage and historic landscape assessment. This will comprise a 'settings assessment' of the key designated (and potential undesignated) historic assets in proximity of the Site and assess impacts upon these as a result of change within their settings. The results of the assessment will inform the need for, and scope of, any mitigation measures.

Receptor Sensitivity/Importance/Value

- 8.6.2 The assessment of historic value has been guided primarily by the policies and guidance contained in Cadw's 'Conservation Principles' (Cadw 2011). This defines the value of a historic asset with reference to the following four key forms of value set out in **Table 8.1 below**.

Table 8.1 Historic values

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

- 8.6.3 Criteria for assessing historic value (sensitivity / importance) are set out in **Table 8.2**. As well as considering the principles above, this reflects current heritage statute and policy for Wales and professional best-practice guidance, including Cadw publications 'Setting of Historic Assets in Wales' (Cadw, 2017a) and 'Heritage Impact Assessment in Wales' (Cadw, 2017b). The terms expressed in the 'Planning Policy Wales' (Welsh Government, 2024) are used. This defines that the 'most important historic assets' often have statutory protection or are included in formal registers. These include World Heritage Sites, Scheduled Monuments, Protected Wreck Sites, Registered Battlefields, Grade I and II* Listed Buildings, and Grade I and II* Registered Parks and Gardens. The term significance, as adopted by Planning Policy Wales to describe the interests or values of a historic asset or assets, has been avoided here to save confusion with the EIA terminology of significance criteria and 'significant effects'.

Table 8.2 Importance of Historic Assets

Importance of resource / asset	Description
High	World Heritage Sites and historic assets of acknowledged international importance, or that can contribute significantly to acknowledged international research objectives. Historic landscapes of international sensitivity (designated or not) and extremely well-preserved historic landscapes with exceptional coherence, time depth, or other critical factor(s). Scheduled Monuments and undesignated assets of Schedulable quality and importance, according to the non-statutory criteria for scheduling ancient monuments utilised by the Secretary of State. Historic assets or groups of assets that can contribute substantially to acknowledged national research objectives. Historic landscapes exhibiting considerable coherence, time depth or other critical factors and

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

Magnitude of Impact

- 8.6.4 The magnitude of impact upon historic assets is defined as the change resulting from development that affects the historic significance of the asset. The classification of the magnitude of change on historic assets is rigorous and based on consistent criteria. This takes account of such factors as the physical scale and type of disturbance anticipated and whether features or evidence would be lost that are fundamental to their historic character and integrity. Changes may be adverse or beneficial. Depending on the nature of the change and the duration of development, effects can be temporary and/or reversible or permanent and irreversible. Change in itself, however, may not necessarily be harmful to historic assets. For example, judgements (such as paragraph 45 of the judgement by Lindblom J in R (Forge Field Society) v. Sevenoaks DC [2014] EWHC 1895 (Admin)) have clarified that in the context of the Planning (Listed Buildings and Conservation Areas) Act 1990 (which can be read across to the Historic Environment (Wales) Act 2023) 'preserving' means doing 'no harm'; and does not necessarily mean 'no change'. Similarly, Cadw's 'Conservation Principles' defines 'preserve' as 'to keep safe from harm' (Cadw 2011).
- 8.6.5 This will include the consideration of such issues as: which, and how many, elements of a historic asset are affected; whether the change physically modifies the asset or whether it comprises changes in visual aspects, noise or access that would alter its setting; and whether the change in the value of an asset will be adverse or beneficial.
- 8.6.6 In terms of the assessment of effects arising from change to an asset's setting, the guidance provided by Cadw in 'Setting of Historic Assets in Wales' (Cadw 2017a) makes clear that 'setting is not itself a historic asset' and that its importance 'lies in what it contributes to the historic values of an asset'.

- 8.6.7 The magnitude of impact on each individual historic asset is assessed using the criteria in **Table 8.3**. Changes may be adverse or beneficial; however, in the most part the descriptions offered below focus on adverse change.

Table 8.3 Magnitude of Impact

Magnitude of Impact	Description
High	Change to most or all historic building values, such that the asset is totally altered. Total changes to valued components of the setting of historic buildings. Change to most or all key valued historic landscape elements, parcels or components; changes to valued sound quality; fundamental changes to valued use or access.
Moderate	Changes to many key historic building elements, such that the asset's values are noticeably modified. Changes to the valued settings of historic buildings, such that it is noticeably modified. Changes to many key historic landscape elements, parcels or components; noticeable differences in valued sound quality; considerable changes to valued use or access.
Low	Changes to key historic building elements, such that the values of the asset are slightly modified. Changes to the valued settings of historic buildings, such that it is slightly altered. Change to a few key historic landscape elements, parcels or components; some limited changes to valued sound quality; slight changes to valued use or access.
No Impact	Inconsequential changes to historic building elements or their settings; to key historic landscape elements, parcels or components; to use or access.

Significance of Effect

- 8.6.8 The significance of effect upon any historic asset is a product of the importance of the asset, and the magnitude of change upon its values. This is summarised in **Table 8.4**. Where two alternatives are given in the table, professional judgement is used to decide which best reflects the significance of effect.

Table 8.4 Criteria for Significance of Effect

Magnitude of Impact	Historic Asset Importance			
	High	Medium	Low	Negligible
High	Substantial	Major	Minor to Moderate	Negligible
Medium	Major to Moderate	Minor to Moderate	Minor	Negligible
Low	Minor to Moderate	Minor to Moderate	Minor	Negligible
No Impact	Negligible	Negligible	Negligible	No Effect

- 8.6.9 Regarding the significance of the effect upon historic assets, the key principle to be considered is whether the effect is significant. For the purposes of this report 'significant effects' are considered to be of 'Moderate' significance of effect or higher. The significance of effect can be adverse or beneficial. Such effects may also be temporary or permanent, and reversible or irreversible.
- 8.6.10 The measured significance of effect may be equated to key concepts in planning policy and heritage guidance regarding the assessment of development effects upon historic assets, as per
- 8.6.11
- 8.6.12 **Table 8.5.** A key principle that is considered, in accordance with Planning Policy Wales is whether the effect comprises substantial harm or total loss. When a significant effect is identified, it may be appropriate to propose suitable mitigation measures to avoid, reduce or offset the effect.

Table 8.5 Description of the significance of effect with reference to heritage policy

Significance of Effect	Criteria
Substantial Adverse	Total loss of the values of a designated historic asset (or asset worthy of designation) such that development should not be consented unless substantial public development is delivered.
Major Adverse	Extensive harm to the values of a designated historic asset (or asset worthy of designation) such that development should not be consented unless substantial public benefit is delivered by the development. Total loss of a historic asset of medium importance without compensatory mitigation measures. Extensive harm to a landscape designated by virtue of its historic landscape value.
Moderate Adverse	Less than extensive harm to or total loss of the values of a designated historic asset (or asset worthy of designation) such that the harm should be weighed against the public benefit delivered by the development to determine consent. Total loss of a non-designated historic asset of medium importance (i.e. which may contribute to regional research objectives) with compensatory mitigation measures agreed with statutory consultees. Harm to a non-designated historic asset, of a greater degree than that perceived of as Minor Adverse, which should be considered in determining an application. Harm to a historic landscape type of more than low importance, and of some rarity.
Minor Adverse (not significant)	Less than extensive harm to the value of a designated historic asset, of a lesser degree than that perceived as Moderate Adverse, but which should still be weighed against the public benefit delivered by the development to determine consent. Harm to a non-designated historic asset that can be adequately compensated through the implementation of a programme of industry standard mitigation measures. Harm to a historic landscape type of limited heritage significance, and not of a rare form.
Negligible	Effect that is imperceptible.
No effect	Effect that is nil.
Minor Beneficial (not significant)	Development will deliver a positive contribution and / or better reveal the values of a non-designated historic asset.
Moderate Beneficial	Development will deliver a positive contribution and / or better reveal the values of a designated historic asset (or asset worthy of designation) such that an application should be treated favourably.
Major Beneficial	Development will deliver a positive contribution and / or better reveal the values of a designated historic asset of recognised greater importance such that an application should be treated very favourably.
Substantial Beneficial	Development will deliver a positive contribution and / or better reveal the values of many designated historic assets of recognised international importance such that an application should be treated very favourably

8.7 Summary

- 8.7.1 Based on the assessment presented above, it is likely that the Proposed Development could result in some adverse effects on designated historic assets (Built Heritage) through changes to setting. While these effects are not expected to be significant, subject to the final design, it is proposed that built heritage (and historic landscape) will be scoped into the EIA, with the scope of the assessment as follows:

Discipline	Scoped In Elements	Scoped Out Elements
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Built Heritage	Effects upon Designated Historic Assets during Operation Potential effects upon historic assets as a result of changes within their settings during the operation phase	Effects upon Designated Historic Assets during Construction and decommissioning Changes to the setting of historic assets during construction, would be limited and short-lived
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8.8 References

- The Ancient Monuments and Archaeological Areas Act 1979 (Act of UK Parliament)
- The Planning (Listed Buildings and Conservation Areas) Act 1990 (Act of UK Parliament).
- Historic Environment (Wales) Act 2016 (Act of the National Assembly for Wales).
- Hedgerows Regulations 1997 (Act of the National Assembly for Wales).
- The Historic Environment (Wales) Act 2023 (Act of the National Assembly for Wales).
- Welsh Government, 2017, Technical Advice Note (TAN) 24: The Historic Environment.
- Cadw, 2011, Conservation Principles.
- Chartered Institute for Archaeologists, 2020, Standard and guidance for historic environment desk-based assessment.
- Cadw, 2017a, Setting of Historic Assets in Wales.
- Cadw, 2017, Heritage Impact Assessment in Wales.
- Welsh Government, 2017, Technical Advice Note (TAN) 24: The Historic Environment.
- Welsh Government, 2024, Planning Policy Wales Edition 12

9 Topics Not Included in the EIA Scope

9.1.1 This section of the Scoping Report provides further information on the topics proposed to be scoped out of the EIA as shown in **Table 5.1** and including:

- Socioeconomics
- Archaeology
- Air Quality
- Noise and Vibration
- Transport
- Climate Change
- Ground Conditions and Contaminated land
- Wind
- Daylight Sunlight Overshadowing
- Agricultural Land
- Waste
- Lighting
- Major Accidents and Disasters.

9.2 Flood Risk and Water Resources

Introduction

9.2.1 This Chapter of the EIA Scoping Report has been prepared by Calibro Consultants and sets out the likely significant effects on Flood Risk and Water Resources produced by the Proposed Development which will be reported in the ES. It should be noted any impacts on groundwater quality are discussed in **Chapter 10** of this report.

Baseline Conditions

Study Area

- 9.2.2 The Solar Site occupies predominantly low-lying land which relies on a complex network of drainage systems including watercourses, culverts and pumping stations. The low-lying nature means flow rates to and from the Site are likely to be relatively slow and consequently mobilised sediment or similar would settle relatively quickly.
- 9.2.3 The BESS area is located on higher ground and has a relatively uniform slopes, of approximately 1 in 40 so not particularly steep.
- 9.2.4 In accordance with relevant policy and guidance, impacts on flood risks to third parties must be negated.
- 9.2.5 For the above reasons, and to promote a catchment-based approach that reflects the nature of the local hydrology, the study area extends 500 m from the red line boundary.

Baseline Sources

- 9.2.6 An initial desk-based assessment of the Site was carried out. This assessment collated information from NRW, Ordnance Survey, SoilScapes, the BGS, the MAGIC website, the Water Watch Wales and Data Map Wales websites.
- 9.2.7 Topographic data for the Site has been taken from the topographic surveys, augmented by 1 m LiDAR DTM.
- 9.2.8 Hydraulic modelling outputs from three models has been supplied by NRW. The three models are; St. Asaph Flood Risk Management Scheme – Hydraulic Modelling Report, Afon Gele Flood Risk Study and the Point of Ayr to Pensarn Tidal Flood Risk Analysis.
- 9.2.9 The MAGIC website (magic.defra.gov.uk) was reviewed to identify relevant statutory and non-statutory designations in the vicinity of the Site. This identified no water-reliant designations, for example wetlands, freshwater habitats or other riparian habitats, within the study area.
- 9.2.10 No intrusive ground investigations have been carried out.

Baseline Description

Present Day

- 9.2.11 The Site is currently agricultural land, which is understood to be a mix of pasture and arable uses. The indicative cable route follows field boundaries, existing tracks, existing roads and along predominantly adopted highways, wherever possible.
- 9.2.12 Furthermore, the cable route would be a buried service. Therefore, subject to appropriate crossing of watercourses, it would not impact the flow or movement of water and has consequently been excluded from the scope of this assessment.
- 9.2.13 The majority of the Solar Site is on low-lying and flat ground, with levels being approximately 4 – 4.2 m AOD. Land starts to rise in a band along the southern boundaries of the Solar Site parcels located to the south of the A547, reaching between 5.5 m – 6.5 m AOD. The BESS Site is located at a much higher elevation, at approximately 48m AOD.
- 9.2.14 The lower parts of the Solar Site are characterised by a network of watercourses, including NRW Main Rivers. It is understood this watercourse network assists with the drainage of agricultural fields and is managed by a system of sluices, pumps and diversion channels.
- 9.2.15 The principal Main Rivers that flow through the study area are the Afon Gele and associated Bodoryn Cut, the Glan Y Morfa Drain, Bodelwyddan Main Drain, St Georges Meadow Drain, Coed Y Drive Drain and Glan Y Gors Drain.
- 9.2.16 For the Water Framework Directive (WFD) classification, the Solar Site lies within the Western Wales River Basin District, Clwyd Management Catchment, Gele Operational Catchment and Gele waterbody area. The BESS Site lies in the same Management Catchment however the Pont Robin Cut (Bodelwyddan) waterbody area.
- 9.2.17 The Gele water body is classed as being heavily modified due to its assistance with drainage of agricultural land. It has an overall Moderate status. Its ecological status is Moderate and chemical status High. The driving elements behind these classifications are dissolved oxygen and phosphorus which are classified as being Poor.
- 9.2.18 The Pont Robin Cut (Bodelwyddan) waterbody has an overall Poor status, with Poor ecological status and High chemical. The driving elements behind these classifications are invertebrates, which are classified as being Poor.

- 9.2.19 According to the WFD Cycle 3 data, diffuse sources from agriculture and rural land management are major reasons for not achieving good status.
- 9.2.20 In addition, the Site is located within an area with a Woodland Opportunity Map (WOM) 21 score of 4, indicating the WFD status of the water bodies are likely to be influenced by agricultural run-off.
- 9.2.21 Regarding groundwater, the entire Site (Solar and BESS Site) falls entirely within the Clwyd Permo-Triassic Sandstone groundwater area. This has an overall water body status of Good, with the groundwater quantity status also being Good. It should be noted the impact on groundwater quality is discussed in Chapter 10 of this report.
- 9.2.22 The Proposed Development will be the subject of a WFD Screening and Scoping assessment. If likely significant impacts are identified through this process, a full assessment will be completed. The WFD assessment process would utilise NRW templates and guidance.
- 9.2.23 The Solar Site almost entirely falls within the Development Advice Map (DAM) zone C1, meaning it is an area of floodplain that benefits from the presence of flood defences as per the operational solar farm consented in 2015 (described in paragraph 2.1.3 above), adjacent to the Solar Site, which was not EIA development (LPA ref, ENQ/23841).
- 9.2.24 The BESS Site is located in DAM zone A, therefore at little or no risk of flooding from main rivers or the sea.
- 9.2.25 The Solar Site parcels located to the south of the A547 fall within an area of 'Low' risk of flooding from rivers, meaning they are at risk from a present day 1 in 1,000 year defended event. Of the parcels to the north of the A547, only part of the westernmost parcel falls within an area of 'Low' risk.
- 9.2.26 Only very small parts of the BESS area fall within areas predicted to be at risk from surface water and small watercourses. The majority of these are likely to be associated with field perimeter ditches, which may not be fully represented by the simulation modelling. The remaining areas are minor depressions in the land so depths would not be significant.
- 9.2.27 Regarding tidal flooding, almost all of the Solar Site is at predicted risk during a present day 'Low' risk event, meaning it is potentially at risk during a 1 in 1,000 year event even with current defences in place. The predicted extent of this event is very similar to that of the DAM zone C1.
- 9.2.28 There are three known flood modelling studies in the vicinity of the Site that either augment or provide the above mapped flood risk. The models are the St Asaph Model (fluvial), the Point of Ayr to Pensarn Model (tidal) and the Afon Gele Model.
- 9.2.29 The St Asaph Model predicts the Site to be flood-free during the 1 in 100 year event, when accounting for defences. However, almost all of the Site south of the A457 is predicted to be at risk during the 1 in 1,000 year event.
- 9.2.30 When accounting for defences, the Point of Ayr to Pensarn Model predicts the Site to be flood free during the 1 in 200 year event.
- 9.2.31 According to NRW's Surface Water and Small Watercourses flood map, significant parts of the parcels south of the A547 are predicted to be inundated during a Low risk event, during a 1 in 1,000 year event. North of the A547 the extents are smaller. It should be noted that due to its strategic scale, this mapping often misrepresents smaller watercourses as well as control structures, culverts, crossings, sluices or pumps. Therefore, it is likely that the risk of surface water and fluvial flooding posed to the Site is better represented by the above flood modelling studies.
- 9.2.32 Outside the above, the Site contains a network of watercourses to assist with the drainage of agricultural fields.
- 9.2.33 British Geological Survey data shows most of the Site (including the BESS area) to be underlain by Warwickshire Group bedrock geology – a mudstone, siltstone and sandstone. The far northeastern

parcels are underlain by Kinnerton Sandstone Formation. The indicative cable route predominately runs through an area of Clwyd Group Limestone.

- 9.2.34 The low-lying parts of the Site, i.e. the vast majority of the Solar Site are underlain by Tidal Flat superficial deposits, comprising clay, silt and sand. As the Site rises, it is underlain by Till, Devensian – Diamiction superficial deposits. This means only the southern edges of the Solar Site are underlain by Till but the entire BESS Site and indicative cable route is underlain by such.
- 9.2.35 BGS data demonstrates that the aquifer designation matches the bedrock, with the areas of sandstone bedrock being classified as a 'Highly Productive Aquifer', with the mudstone, siltstone and sandstone as well as the limestone being a 'Moderately Productive Aquifer'.
- 9.2.36 Cranfield Soil and Agrifood 'Soilscapes' mapping shows soils at the Site to have seasonally wet soils with impeded drainage or be naturally wet with high groundwater.
- 9.2.37 The Site is not located within a Source Protection Zone but does fall within a groundwater Nitrate Vulnerable Zone.

Future Baseline

- 9.2.38 From a flood risk and water quality perspective, the future baseline is assessed against the anticipated lifetime of the Proposed Development, which is 40 years. The impacts to be considered in this part of the assessment are therefore impacts associated with climate change projections.
- 9.2.39 It is presumed the existing land use would, without the Proposed Development being in place, remain as per existing and therefore the Reasons for Not Achieving Good (RNAG) WFD status would similarly remain as existing.
- 9.2.40 Regarding fluvial flows, the Site falls within the West Wales River Basin District. In accordance with Welsh Government's Adapting to Climate Change: Guidance for Flood and Coastal Erosion Risk Management Authorities in Wales guidance, fluvial flows would increase between 40% (upper climate change estimate) or 25% (central estimate) over the lifetime of the Proposed Development.
- 9.2.41 The 'Flood Consequences Assessments: Climate change allowances' document (September 2021) states:

"The projected peak river flow change is a range, with the highest estimate equally likely to occur as the lowest estimate. For this reason, it is recommended that the central estimate, or change factor, for the 2080s for the relevant river basin district is used to assess the potential impact of climate change as part of a flood consequence assessment (FCA) and to inform design levels. If a figure other than the central estimate is used, applicants will be expected to provide full justification within the FCA."

- 9.2.42 Consequently, the relevant uplift to river flows for the Site would be 25%.
- 9.2.43 As with all areas in Wales, rainfall would increase between 20% (upper estimate) and 10% (central estimate). The guidance states that 'As a minimum, development proposals should be assessed against the central estimate to inform design levels' and 'Drainage systems should be designed to ensure there is no increase in site run-off when assessed against the upper estimate'.
- 9.2.44 As a result, the relevant surface water drainage assessments for the Proposed Development would use the upper scenario to ensure a conservative assessment.
- 9.2.45 For tidal flooding and sea level rise, the above guidance only provides uplifts for the years 2100 and 2120, which are beyond the Proposed Development lifetime. The guidance provides uplifts for each Local Authority. The resulting tidal uplifts are provided in **Table 9.1**.

Table 9.1 Sea Level Rise by 2100

Local Authority	Mean Sea Level Rise, m	
	Central Estimate	Upper Estimate
Conwy	0.75	1.01
Denbighshire	0.75	0.95

- 9.2.46 The St Asaph model predicts that the Site (noting the elevation of the BESS Site) is not at risk during a 1 in 100 year +30% fluvial event when accounting for defences.
- 9.2.47 The Point of Ayr to Pensam Model includes a model run that predicts flooding in the year 2067, which is considered to represent the design event for the Proposed Development. This shows the Site to be flood free when accounting for the presence of defences.
- 9.2.48 The Point of Ayr to Pensam Model also simulated the impact of a breach in the defences coinciding with a design flood event. However, these were only conducted for the years 2097 and 2122, beyond the anticipated lifetime of the Proposed Development. It is therefore likely that additional breach modelling is required to support the Proposed Development and estimate the potential flooding impacts at the end of the Site lifetime.

Consultation

- 9.2.49 Attempts have been made to engage with NRW to primarily discuss flooding however, they have requested sight of a completed Flood Consequence Assessment (FCA) in order to provide comments on the scheme. Liaison with the relevant Lead Local Flood Authorities (LLFA) and SuDS Approval Bodies (SABs) will commence when more clarity is available regarding the Proposed Development design and consequently, the likely drainage approach.

Potential Significant Effects

Construction

- 9.2.50 Without mitigation, during the construction of the Proposed Development, the predominant risk to the surface water environment could occur in the form of localised compaction through vehicle movement and earth works on the Site. This could increase runoff and sediment entering the watercourses.
- 9.2.51 However, given the relatively flat topography of the Site, such impacts would be very localised and very unlikely to significantly impact the watercourse network within the study area. Similarly, they would be very unlikely to increase the flood risk from the Site.
- 9.2.52 Given the likely low permeability of the underlying soils and geology, the above impact would also likely have a negligible impact on groundwater quantity.
- 9.2.53 It is likely that the various watercourses would need to be crossed by either cable routes or vehicular crossings. Without mitigation, these crossings could have an impact on the morphology of the watercourse as well as the flow of water or movement of wildlife.
- 9.2.54 Solar farm construction typically does not require significant storage of chemicals or hydrocarbons. This limits the likely source of contaminants entering the surface water bodies.
- 9.2.55 It is envisaged that construction activities would be supported by primary mitigation embedded within the proposals, for example an outline Construction Environmental Management Plan (CEMP) to be secured by way of planning condition. This would include, but not be limited to, the following measures to minimise either the source or the pathway would be negated:

- Include an easement around all watercourses in accordance with NRW and LLFA requirements with no activities (other than post-construction planting or watercourse crossings) within this easement;
- Construct access tracks early in the construction programme;
- Use of low tyre pressure machinery to reduce compaction;
- A delivery and construction schedule that minimises repeat journeys;
- Temporary measures such as sediment traps using geotextiles, straw and temporary bunding to minimise the risk of pollution;
- Use of permeable compound or lay down areas;
- Storage of chemicals in accordance with NRW Technical Guidance Notes;
- Use of Horizontal Directional Drilling (HDD) or trellising for cable crossings over watercourses;
- HDD to include a bentonite breakout plan to mitigate the risk of exposure to the watercourses;
- Utilise or upgrade existing vehicular crossing wherever possible;
- New crossings to be span bridge wherever possible with soffits at least at bankfull level; and,
- Promote riparian planting within the watercourses easements to act as a buffer for runoff entering them.

9.2.56 The above primary mitigation would, in combination with the flat nature of the site, likely mean that significant effects would be unlikely to arise from the construction of the Proposed Development.

Operation

- 9.2.57 It is generally accepted that the transition from agricultural land to solar farm results in benefits to soil erosion, runoff and therefore water quality and downstream flood risk. Although such benefits are more pronounced in areas of arable farmed land, they can still be realised in areas of pasture and grazing. For example, the proposed watercourse easements would be facilitated by fences which would prevent stock access to the watercourses and subsequent poaching or similar.
- 9.2.58 The main part of the Site would be taken up by solar panels, which are considered to have a negligible effect on runoff rates. Separation distances between rows of tracking or fixed panels would be a minimum of 2.5m at the closest point (for both panel types), and a maximum distance of 15m or 14m respectively. The solar arrays themselves have thermal expansion gaps. The concentration of runoff from the solar panels would therefore be spatially localised, draining between the expansion gaps.
- 9.2.59 Once rainfall has exceeded the interception capacity of vegetation it would initially take up any available depression storage and soil moisture deficit before moving laterally through the soil and percolating downwards. If the incident rainfall exceeds the rate of soakage into the ground, it would move laterally above the soil and soak into areas which are within the 'rain shadow' of the panels.
- 9.2.60 The velocity of water falling from the panels would be significantly less than the velocity of unimpeded rainfall. Soils would therefore be less susceptible to erosion
- 9.2.61 Stock densities could continue but be reduced which would lead to less compaction and promote a healthy sward, which would assist with percolation. In combination with planted easements, this would result in reduced runoff entering the watercourses.
- 9.2.62 It is a policy requirement that the Proposed Development would be subject of a detailed Flood Consequence Assessment (FCA) that would be subject to review and approval by NRW. The purpose

of this assessment would be to ensure that flood risks posed to the Proposed Development would be managed so it can remain operational during design flood conditions and not increase risk elsewhere. The FCA would be subject to review and agreement with NRW and the LLFA. It would describe primary mitigation embedded within the design such as:

- Location of water sensitive equipment (batteries, inverters, substations etc.) outside design flood extents;
- Where this is not possible, raise water sensitive equipment above the design flood level inclusive of freeboard to manage residual uncertainty;
- Where raising is required, promote measures that negate impacts to third parties such as use of pads or plinths;
- Panels are generally accepted within the flood extent but raise them so their lowest edge is above the design flood level inclusive of freeboard;
- Assess the likely impact of a breach in the local defences and promote reasonable mitigation if required; and,
- Promote the safety of site users including access and egress, noting that the Site would be operated remotely and therefore, access not required during design flood conditions.

- 9.2.63 Where required, the above assessment would be informed by Site specific hydraulic modelling. It is envisaged at this stage that such modelling would focus on the impact of defence breaches coinciding with a design event at the end of the Proposed Development lifetime.
- 9.2.64 A key aspect of the FCA and Proposed Development primary mitigation would be a detailed drainage strategy to ensure runoff from hardstanding areas can be mitigated in accordance with policy and best practice. The detailed drainage strategy would be subject to approval by the SAB and would follow a SuDS approach to achieve multiple benefits where relevant.
- 9.2.65 Access tracks or vehicular compounds (if required during operation) would be formed from permeable materials to allow rainfall to percolate to the ground locally, mimicking the existing site.
- 9.2.66 Given the nature of the hardstanding, runoff would have a low pollutant load. A core requirement of the drainage strategy would be to mitigate and remove contaminants before discharge to the watercourse network or the ground. s
- 9.2.67 BESS can be at risk of ignition, primarily due to thermal expansion, albeit this risk is exceptionally low. In this highly unlikely scenario, when alight, a battery could discharge contaminants such as heavy metals but predominantly hydrogen fluoride gas. If hydrogen fluoride comes into contact with water, it forms hydrofluoric acid.
- 9.2.68 Battery technology is rapidly improving, and primary mitigation would be included, predominantly via an Outline Battery Safety Management Plan (OBSMP). This would reduce the risk of fires both occurring or spreading. However, a separate BESS area is included as part of the Proposed Development. The Proposed Development's BESS would be included within the drainage strategy to manage the rate of runoff and confirm the discharge destination. The drainage strategy would also assess if there is a risk of contamination being released during a fire and include measures to mitigate this impact if applicable.
- 9.2.69 The BESS drainage strategy would include measures to mitigate the risk of contaminants being released in the event of water-based fire suppression. Predominantly, this is likely to include a contained storage area, which would have the ability to be isolated from the receiving watercourse network. It would have sufficient capacity to allow the storage of suppression water until such time that testing, pumping and removal of suppression water could be completed.

9.2.70 Furthermore, the response to ignition may utilise non-per and polyfluoroalkyl substances over water-based suppression. This would restrict the pathway for the entry of contaminants to enter the local water environment.

9.2.71 There are, however, a number of assumptions and assessments that need to be completed to inform the scale and nature of the primary mitigation. Whilst a BESS fire would be highly unlikely, for robustness, it is therefore proposed that BESS fire management is scoped into the assessment.

Decommissioning

9.2.72 The potential effects during decommissioning would mostly be similar to those anticipated during construction. However, as the new or upgraded vehicle crossings would remain in situ, as would the cable route, impacts to the watercourses would be negated.

9.2.73 As a result, the primary potential impact would be increased runoff and sedimentation from compaction and vehicular movement.

9.2.74 It is proposed that the decommissioning would be subject to a Decommissioning Environmental Management Plan (DEMP), which would be secured by planning condition and propose the following key activities:

- Retain the easement around all watercourses in accordance with NRW and LLFA requirements with no activities within this easement;
- Retain access tracks until late in the decommissioning programme;
- Use of low tyre pressure machinery to reduce compaction;
- A delivery and decommissioning schedule that minimises repeat journeys;
- Temporary measures such as sediment traps using geotextiles, straw and temporary bunding to minimise the risk of pollution;
- Use of permeable compound or lay down areas; and,
- Storage of chemicals in accordance with NRW Technical Guidance Notes.

Not Significant Effects

9.2.75 As described above, with the primary mitigation in place, the only impact with the potential to be deemed significant is the impact on the local water environment in the highly unlikely event of a BESS unit igniting, presuming that water would be used as suppression.

9.2.76 Furthermore, the Proposed Development would be subject to detailed FCA and drainage strategy. These details would be subject to review and approval by the relevant authorities. For this reason, all impacts except fire management are proposed to be scoped out of the assessment. However, the FCA and drainage strategy would be submitted as a technical appendix or similar to the ES.

Assessment Methodology

9.2.77 The significance criteria used to assess the potential effects of the Proposed Development are set out below. There are three stages to the assessment of the effect on water resources as follows:

- The sensitivity of the receptor (High to Negligible) based on attributes such as local flood risk and water resource quality (Table 9.2).
- The magnitude of change on the receptor, determined based on Table 9.3 and the assessor's knowledge of the project.

- An overall Significance of Effect, as set out in Table 9.4.

9.2.78 The sensitivity of receptor criteria has been derived accounting for: flood risk function; relevant statutory and non-statutory habitat designations; ecological and chemical status of surface waterbodies, as defined by the WFD and the groundwater aquifer classifications and source protection zones. The sensitivity has been defined to range from High to Negligible, the criteria and examples of which are set out in **Table 9.2**.

Table 9.2 Derivation of sensitivity

Sensitivity	Criteria	Example
High	Receptor has very limited capacity to tolerate changes to hydrology, water quality or flood risk.	Waterbody or associated defenses which serve a defined flood risk function. Sites of Special Scientific Interest (SSSIs), Ramsar sites, Special Areas of Conservation (SAC), Special Protection Areas (SPA). Surface water bodies with a High overall status as defined by the WFD. Principal Aquifers within Groundwater Source Protection Zones 1.
Medium	Receptor has limited capacity to tolerate changes to hydrology, water quality or flood risk. Water resource with a high quality and rarity at a local scale or water resource with a medium quality and rarity at a regional or national scale.	Waterbody that serves an important flood risk function or is upstream of areas at high risk of flooding. Local Nature Reserves (LNR), Sites of Nature Conservation Interest (SNCI). Surface water bodies with a WFD Good ecological status and Good chemical status. Principal Aquifers within Groundwater Source Protection Zones 2-4. Secondary aquifers within Groundwater Source Protection Zones.
Low	Receptor has moderate capacity to tolerate changes to hydrology, water quality or flood risk. Water resource with a low quality and rarity at a local scale	Waterbody that serves limited flood risk function. Surface water bodies with a WFD ecological status ranging from Poor to Moderate and/or a Good chemical status. Areas defined by BGS as Low Productivity Aquifer.
Negligible	Receptor is generally not sensitive to changes to hydrology, water quality or flood risk. Water resource with very low quality and rarity at a local scale.	Surface Water bodies with a WFD Bad ecological status and/or Fail chemical status. Ground defined by BGS as 'rocks with essentially no groundwater'.

9.2.79 The magnitude of change is based on the potential effects on water resource attributes as set out in **Table 9.3**.

Table 9.3 Derivation of magnitude of change

Importance	Criteria	Example
High - Negative	Results in substantial negative effect on attributes of a water resource.	Increase in flood risk to highly vulnerable land uses (as defined by TAN15) or nationally significant infrastructure. Effects that would cause a change to WFD status of a waterbody or have a significant effect on groundwater resources.

Importance	Criteria	Example
Medium - Negative	Results in negative effect on attributes of a water resource.	Increase in flood risk to more vulnerable land use (as defined by TAN15) or locally significant infrastructure. Effects that may cause a change to WFD status of a waterbody or have a moderate effect on groundwater resources.
Low - Negative	Results in minor negative effect on attributes of a water resource.	Increase in flood risk to less vulnerable or water compatible land uses (as defined by TAN15). Effects to a waterbody, but insufficient to change its WFD status.
Negligible	Results in an effect on attribute of a water resource but of insufficient magnitude to affect the use /integrity.	Effects that would have a negligible effect on water quality. Minor increase in flood risk to undeveloped land.
Low - Beneficial	Results in minor positive effect on attributes of a water resource.	Decrease in flood risk to less vulnerable or water compatible land uses (as defined by NPPF). Improvements to a waterbody, but insufficient to change its WFD status.
Medium – Beneficial	Results in positive effect on attributes of a water resource.	Decrease in flood risk to more vulnerable land use (as defined by NPPG) or locally significant infrastructure. Effects that may cause a change to WFD status of a waterbody or have a moderate effect on groundwater resources
High - Beneficial	Results in substantial positive effect on attributes of a water resource.	Significant decrease in flood risk to highly vulnerable land uses (as defined by TAN15) or nationally significant infrastructure. Effects that would cause an improvement to WFD status of a waterbody or have a significant effect on groundwater resources.

9.2.80 The significance scale that has been applied is included in Chapter 2: Approach to EIA. The scale includes seven different classifications ranging from 'Major Beneficial' to 'Major Adverse'.

9.2.81 The significance scale is derived from the interaction of the receptor sensitivity and the magnitude of change criteria. The shading in **Table 9.4** indicates those significance ratings that are deemed to be 'significant' effects.

		Sensitivity of Receptor			
		High	Medium	Low	Negligible
Magnitude of Change	High - Negative	Major adverse	Major adverse	Moderate adverse	Negligible
	Medium - Negative	Major adverse	Moderate adverse	Minor to Moderate Adverse	Negligible
	Low –	Moderate adverse	Minor to Moderate adverse	Minor adverse	Negligible
	Negative	Negligible	Negligible	Negligible	Negligible
	Negligible	Moderate Beneficial	Minor to Moderate Beneficial	Minor Beneficial	Negligible
	Low – Beneficial	Major Beneficial	Moderate Beneficial	Minor to Moderate Beneficial	Negligible
	Medium - Beneficial	Major Beneficial	Major Beneficial	Moderate	Negligible

Summary

- 9.2.82 The water environment within the Study Area is not particularly sensitive from a water quality perspective with watercourses being heavily modified on account of their agricultural purpose. The watercourses in the vicinity of the Solar Site are well-managed with a purpose of draining reclaimed land. The watercourses at the BESS Site are small and predominately field perimeter drains, again presumed to assist with draining agricultural land. Furthermore, diffuse agricultural runoff and the control structures currently present across all of the Site areas renders the watercourses to be of relatively low quality. In addition, the gently sloping nature of the Site limits the pathway for pollutants to enter the watercourses.
- 9.2.83 The indicative cable route would be a buried service and would remain in situ after decommissioning. Therefore, presuming watercourse crossings would be via trellising or HDD, the impacts arising from this would be negligible.
- 9.2.84 The transition to solar farm has the potential to result in betterment in terms of runoff, erosion and sedimentation. Given the flat and pastoral nature of the existing site, such benefits are likely to be less pronounced than, say, a steep arable site.
- 9.2.85 Primary mitigation during construction such as ensuring a planted easement, abiding by a CEMP and appropriately storing chemicals, would negate impacts on the water environment.
- 9.2.86 It is a policy requirement that the designs and application are informed, and supported, by an FCA and detailed drainage strategy. These reports and designs will be subject to approval by NRW and the SAB respectively. Such policy dictates that the Proposed Development will remain operational during design flood conditions, manage the risk of residual (defence breach) flooding and ensure negligible impact on third parties.
- 9.2.87 The BESS has the potential to ignite, albeit with a very low risk of occurrence, particularly given ongoing technological advances and primary mitigation. Nonetheless, if fire suppression water is to be used, this could potentially release pollutants to the water environment. Due to the current design stage of the Proposed Development, there is a need for this aspect to be taken into consideration during the design of the drainage strategy for the BESS site.
- 9.2.88 The Proposed Development would be policy compliant by managing identified risks to promote a safe, operable and accessible Site that would mitigate a risk of flooding to third parties. Integral to this mitigation would be the management of rainfall and runoff, restricting off Site flows (if required) to be as low as reasonably practicable, following a sustainable drainage approach.
- 9.2.89 In addition, the Proposed Development would mitigate identified potential impacts on the local water environment to negate the risk of deterioration in WFD receptors or status.
- 9.2.90 For the above reasons, cumulative impacts would be negligible.

Table 9.5 Scoping Summary

Discipline	Scoped Out Elements
Flood Risk and Hydrology	Low pathway due to gently sloping site. Primary embedded mitigation identified in a Construction Environmental Management Plan and utilising watercourse easements Operation – surface water quality and flood risk Overall benefit in transition from farmed land to solar. Limited source and pathway for entry of pollutants to watercourses. Use of planted easements to augment benefits. Primary mitigation to ensure Site would remain operational during design flood conditions. Appropriate design response to residual flood risk. Surface water drainage to result in no net increase to risk elsewhere and follow a SuDS approach, including cleansing of runoff. Contained storage of fire suppression water in the event of BESS unit fire breakout

9.3 Socio- Economics

Baseline Conditions

Baseline Sources

9.3.1 The following sources have been used to inform the baseline description:

- Office for National Statistics (ONS) Mid-Year Population Estimates;
- ONS UK Business Counts; and
- Google Maps.

Baseline Description

Solar Site

9.3.2 The Solar Site is located on agricultural land. Other than the existing agricultural farming use, there are no other socio-economic receptors directly on the Solar Site.

9.3.3 There are a number of individual dispersed residential properties/farms/businesses either adjoining or in close proximity to the Solar Site, with the largest concentration of residential properties and resident populations to the south of the Solar Site in the settlement of Bodelwyddan. The ONS estimate that Bodelwyddan has a population of 1,735 people¹.

9.3.4 The nearest community facilities to the Solar Site are also located in Bodelwyddan comprising shops and services, recreational facilities, a hospital and a primary school. The ONS estimate that there are 300 business enterprises in Bodelwyddan and the neighbouring town of Rhuddlan² across a range of industrial sectors. Specifically, there are 10 enterprises in the accommodation sector.

BESS Site

9.3.5 The BESS Site is located on agricultural land. Other than the existing agricultural farming use, there are no other socio-economic receptors directly on the BESS Site.

9.3.6 The BESS Site is located to the south of St Asaph Business Park. The nearest resident populations to the BESS Site are located northeast of the BESS Site in the settlement of St Asaph. The ONS estimate that St Asaph has a population of 3,468 people³.

9.3.7 The nearest community facilities to the BESS Site are also located in St Asaph comprising shops and services, recreational facilities and schools. The ONS estimate that there are 280 business enterprises in St Asaph⁴ across a range of industrial sectors. Specifically, there are 5 enterprises in the accommodation sector.

Indicative Cable Route

9.3.8 The Indicative Cable Route extends across numerous parcels of agricultural land, existing tracks and alongside existing roads (predominantly adopted highways) but does not intersect with any socio-economic receptors.

¹ Office for National Statistics, Mid-2022 Population Estimate for the built-up area of Bodelwyddan [downloaded from NOMIS on 14 November 2024]

² Office for National Statistics, 2024 UK Business Counts. Data for Middle Super Output Area (MSOA) Denbighshire 009

³ Office for National Statistics, Mid-2022 Population Estimate for the built-up area of St Asaph [downloaded from NOMIS on 14 November 2024]

⁴ Office for National Statistics, 2024 UK Business Counts. Data for Middle Super Output Area (MSOA) Denbighshire 010

Consultation

9.3.9 No consultation has been undertaken or is proposed in respect of socio-economics.

Not Significant Effects

9.3.10 Given the Site's location and nature of the Proposed Development, there is the potential for the Proposed Development to provide both beneficial and adverse socio-economic effects during the construction, operation and decommissioning phases, but which are either anticipated to be not significant, or will be considered by other technical assessments, such as Landscape and Visual. **Table 9.6** provides further details.

Table 9.6 Socio-Economic Receptors, Potential Effects and Justification for Scoping Out of the Assessment

Receptor	Description of Potential Effect	Justification for Scoping Out of the Assessment
Farm businesses	<u>Adverse</u> Disruption to existing farming activities which could lead to decreased agricultural productivity. <u>Beneficial</u> Opportunity for landowners to diversify their income streams.	<u>Construction/ Decommissioning Phase</u> The Site currently comprises land under agricultural uses. Whilst the current farming activities on the Site will be disrupted by the Proposed Development, there is the potential for the Site to remain in some agricultural use, for example, for the grazing of sheep and poultry farming on fields containing the solar panels. Furthermore, following decommissioning, the land within the Site will be restored and returned to its original use as far as is possible. <u>Operational Phase</u> Despite the loss of arable farming activities, the Proposed Development will provide landowners with an alternative income stream, resulting in no financial loss to existing farm businesses. Effects on farm businesses are therefore anticipated to be not significant. In the event of planned maintenance or panel and/ or battery replacement there will be no further effects on farm businesses.
Employment and Skills	<u>Adverse</u> No adverse effects relating to employment and skills are anticipated <u>Beneficial</u> Employment and upskilling opportunities for local residents and the wider supply chain	<u>Construction/ Decommissioning Phase</u> Whilst the construction and decommissioning phase will support employment across a range of occupation and skill levels, these are not anticipated to be new jobs – rather a temporary relocation of an existing specialised workforce providing limited opportunities for new job creation for local residents. Indirect employment will be supported as a result of spin-off and multiplier effects in the supply-chain. However, based on the current understanding of the supply chain it is likely that the physical components of the Proposed Development are predominantly sourced from outside of the UK providing limited opportunities within the local supply chain. Whilst there is the potential for landscaping, maintenance and more routine occupation/material requirements to be sourced locally, these are anticipated to be not significant. <u>Operational Phase</u> Limited employment opportunities will be supported during the operational phase associated with routine maintenance and security, however, these are considered to be not significant.
Economic Output	<u>Adverse</u>	<u>Construction/ Decommissioning Phase</u> Whilst a beneficial effect to the economy will be realised through GVA generated by construction employment, the

Receptor	Description of Potential Effect	Justification for Scoping Out of the Assessment
	There are no adverse effects to economic output anticipated. <u>Beneficial</u> Employment supported will create Gross Value Added (GVA) contributing to the regional economy.	workforce will be sourced from within the UK meaning that the area of impact for this receptor is Wales. In the context of national GVA, the effect is anticipated to be not significant. <u>Operational Phase</u> Whilst the operational phase has the potential to support employment local to the Site, the small workforce will create very limited GVA that is considered not significant.
Tourist Accommodation	<u>Beneficial/ Adverse</u> If the workforce temporarily re-locate to the area, this may impact on the availability of accommodation for tourists. However, conversely, it could support the local tourist accommodation providers during off-peak periods.	<u>Construction/ Decommissioning Phase</u> Should some workers required to be accommodated off-site, baseline conditions have identified that there are a number of accommodation enterprises in the local area to the Site. Effects are therefore anticipated to be not significant. <u>Operational Phase</u> The operational workforce is small and anticipated to be sourced from the local area, placing either no demand on local tourist accommodation, or only a small demand which would be not significant.
Shops	<u>Adverse</u> No adverse effects to local shops are anticipated. <u>Beneficial</u> Local shops could benefit from additional footfall and expenditure created by workforce.	<u>Construction/ Decommissioning Phase</u> Workforce expenditure is considered to be limited to off-site accommodation, food and drink. Whilst this will benefit local shops and services, the effects are anticipated to be not significant. <u>Operational Phase</u> The operational workforce is small, which would only provide a small benefit to local shops and service which would be not significant.
PRoW	<u>Adverse</u> Access to PRoW could be temporarily or permanently disrupted impacting on recreational enjoyment and individuals' health and wellbeing. <u>Beneficial</u> No beneficial effects to PRoW are anticipated.	<u>Construction/ Decommissioning/ Operational Phase</u> No PRoW's have been identified on the Site itself nor adjacent to the Site's boundaries. There is a network of PRoW and recreational routes in close proximity to the Site, the amenity of which has the potential to be impacted upon by construction and decommissioning of the Proposed Development. However, such effects on PRoW will be assessed by the Landscape and Visual assessment.
Resident Population	<u>Adverse</u> Transport, noise and visual effects have the potential to impact resident amenity, and the arrival of a new workforce may lead to a change in community dynamic. <u>Beneficial</u> No beneficial effects on the resident population are anticipated.	<u>Construction/ Decommissioning/ Operational Phase (including replacement of panels and/ or batteries)</u> Amenity effects on the local resident population attributed to noise, visual, transport effects will be mitigated by a number of embedded measures to be outlined in a CEMP, LEMP and a Decommissioning Environmental Management Plan (DEMP). There are not anticipated to be any significant effects in relation to the community dynamic between existing residents and the Proposed Development's workforce, as the workforce is anticipated to be relatively small in comparison to the resident population of the local area. Significant impacts are therefore not anticipated for any phase of the Proposed Development.

Summary

- 9.3.11 It is proposed that Socio-Economic effects are therefore scoped out of the ES. However, a standalone Socio-Economic Statement will be prepared to accompany the planning application to report the socio-economic benefits of the Proposed Development.

9.4 Archaeology

- 9.4.1 This section of the Scoping Report sets out the approach to the assessment of the effects of the Proposed Development upon buried archaeological remains. The reasons why this environmental topic is proposed to be scoped out of the EIA are presented, and the suggested approach for addressing this matter, through appropriate assessment and investigation, is detailed.

Baseline Conditions

Baseline Sources

- 9.4.2 Initial desk-based research has been undertaken to inform the material presented within this chapter of the Scoping Report. This exercise reviewed available heritage databases within the 2km Study Area, including Coflein and Archwilio, the Cadw list of designated historic assets, and Heneb: Clwyd-Powys Historic Environment Record (HER) data, obtained in October 2024.

Baseline Description

- 9.4.3 The initial research has indicated the potential for buried archaeological remains within the Site, with evidence within the surrounding area for activity dating from the later prehistoric period onwards. Bronze Age barrows are recorded to the south and east of the Site, along with isolated findspots of this period.
- 9.4.4 Within the alignment of the Indicative Cable Route, the Glascoed Road is thought to broadly follow the route of a Roman road connecting Segontium (Caernarfon) and Deva (Chester). Potential sections of the Roman road have been identified in the vicinity of the present road as earthworks and cropmarks, and as a metalled surface revealed through ploughing.
- 9.4.5 The majority of the HER records within the Site's surrounds are of post-medieval and modern date and include former farmsteads and Second World War features. The Solar Site and BESS Site appear to have been within agricultural use from at least the mid-19th century, and the only recorded features in these parts of the Site comprise the sites of former boundary stones. The Indicative Cable Route extends through Kinnel Park, a 19th century landscape park which originated as a deer park in the post-medieval period, and there is some potential that buried remains of associated parkland features may be present within this part of the Site.

Consultation

- 9.4.6 No consultations with the archaeological advisors at Heneb: Clwyd-Powys has been undertaken to date. However, consultations will take place during the course of the ongoing survey work, to confirm the scope of work necessary to inform the assessment as well as any required mitigation.

Not Significant Effects

- 9.4.7 The potential extent and heritage significance of buried archaeological remains is being investigated by additional desk-based research and geophysical survey, which have commenced on site. These will inform the need for any further surveys (such as trial trenching) so that any sensitive remains can be safeguarded.
- 9.4.8 Known and potential buried archaeological remains are anticipated to be present within the Site. However, the minimal nature of ground disturbing activities associated with the construction and

decommissioning of the Proposed Development means that significant effects on the archaeological interest (significance) of any potentially surviving remains is very unlikely.

- 9.4.9 The below ground impacts associated with the Proposed Development are generally limited and would derive from ground disturbance associated with the excavation of cable trenches, foundations for inverters, substations and the BESS, as well as earthworks for access roads. The impacts from piling for the installation of the solar arrays would be more limited still, the size and frequency of the driven piles and cable runs for the solar arrays being so slight that even if their location were to coincide exactly with buried remains there would be no or negligible material loss of archaeological interest. In addition, it is noted that no trial trenching or further detailed assessment of the potential for archaeology was required in the case of the existing 24MW solar farm (Conwy LPA ref. 0/40999) solar farm.
- 9.4.10 Furthermore, mitigation through detailed design (avoidance) can allow for any especially sensitive buried archaeological remains (such as human remains) to be safeguarded completely from any disturbance. Other complimentary techniques involve ballast footings (such as concrete shoes) to avoid piling completely.
- 9.4.11 Therefore, while all investigations and assessments will follow industry good practice and professional guidelines and reports on this work will form part of the application for development consent, it is considered that the assessment of buried archaeological remains can be scoped out of the EIA, as significant effects are deemed very unlikely.

Summary

- 9.4.12 Based on the assessment presented above, it is considered likely that the Proposed Development can be accommodated without significant environmental effects on buried archaeological remains, based on the methodology described above being followed, and provided appropriate and proportionate mitigation measures are implemented alongside good design.
- 9.4.13 The desk-based assessment report, incorporating an archaeological impact assessment, as well as the results of any additional surveys (in the first instance, a geophysical survey) will be submitted to support the Proposed Development's planning application.
- 9.4.14 Significant effects related to buried archaeological remains are considered to be unlikely and, in accordance with the EIA Regulations, it is appropriate to scope the topic of buried archaeological remains out of the EIA. Thus, a chapter reporting these matters will not be included within the Environmental Statement.

9.5 Air Quality

- 9.5.1 The Site is not located within an AQMA.
- 9.5.2 Standard mitigation measures to control dust impacts during construction would be outlined in a Construction Environmental Management Plan (CEMP) secured to the planning permission by a planning condition. With mitigation measures in place, it is unlikely that construction HGV movements would exceed 20 per day (i.e. 10 deliveries a day) during the peak period of construction. This number is below the Institute of Air Quality Management (IAQM) criteria that would require undertaking a more detailed assessment.
- 9.5.3 Once complete, operational maintenance vehicle movements will be limited to approximately 2 a month and therefore, are not considered to be significant. Decommissioning effects will be controlled through a Decommissioning Environmental Management Plan (DEMP) and, similar to construction, would not result in significant effects.
- 9.5.4 Given the nature and scale of the Proposed Development, significant effects on the environment with respect to air quality are unlikely. Therefore, it is proposed to scope out air quality from the EIA.

9.6 Noise and Vibration

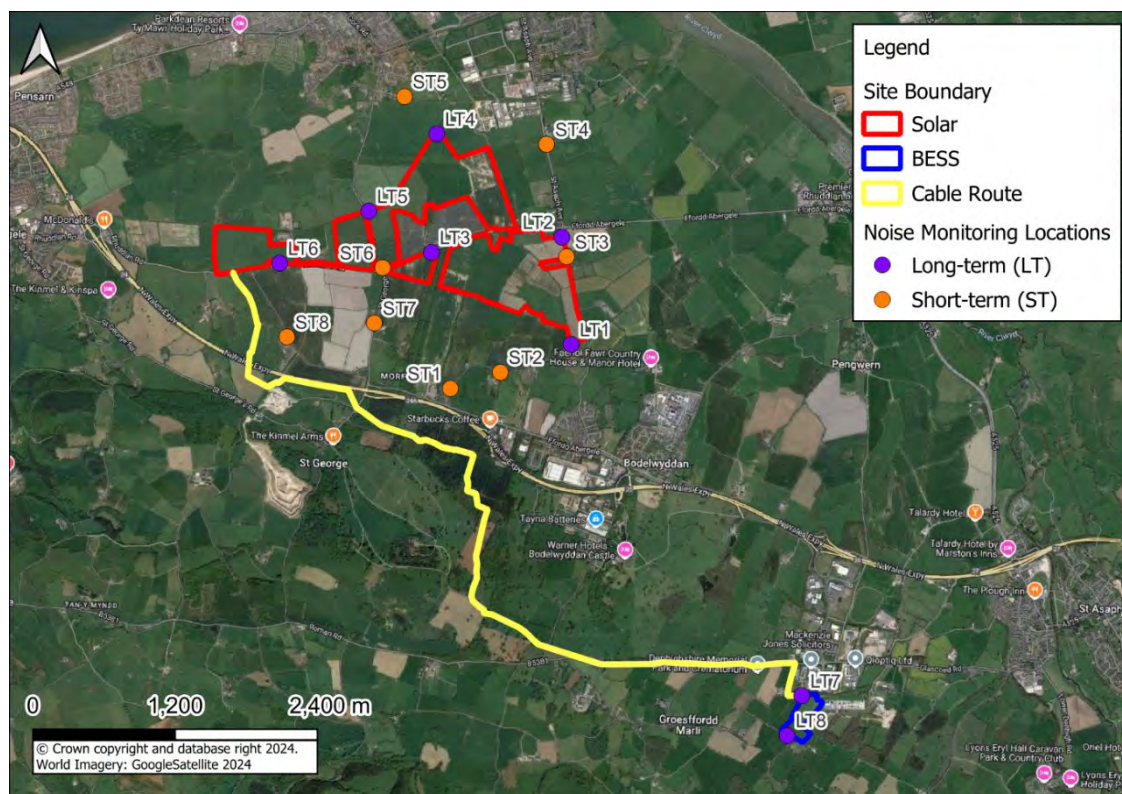
- 9.6.1 This Section of the EIA Scoping Report has been prepared by Tetra Tech and sets out the likely non-significance of effects produced by the Proposed Development in relation to noise and vibration.
- 9.6.2 The Site layout will have a good acoustic design, incorporating any physical mitigation along with optimising the locations of the noise generating equipment and mitigating noise at source to protect the amenity of existing sensitive receptors.

Baseline Conditions

Baseline Sources

- 9.6.3 A baseline noise monitoring survey was undertaken at sixteen locations (as shown in) from Friday 18th October 2024 to Friday 25th October 2024. Attended Short-Term (ST) locations were measured at 8 locations during the day, evening and night periods, and 8 Long-Term (LT) locations were measured unattended over a 166-hour period.
- 9.6.4 Measurements were taken in general accordance with BS 7445-1:2003 The Description and Measurement of Environmental Noise: Guide to quantities and procedures. Weather conditions during the survey period were observed as being dry. Anemometer readings confirmed that wind speeds were less than 5 ms⁻¹ at all times during the survey.

Figure 9.1: Noise Monitoring Locations



Baseline Description

Solar Site

- 9.6.5 The dominant noise sources found in the area in vicinity to the Solar Site include road traffic noise.

- 9.6.6 The results of the baseline noise survey show that the existing background noise levels L_{A90} are in the range of 42 to 57 dB during the daytime (07:00 – 23:00) and 33 to 42 dB during the night-time (23:00 – 07:00).
- 9.6.7 The existing ambient noise levels L_{Aeq} are in the range of 44 to 72 dB during the daytime and 38 to 60 dB during the night-time.

BESS Site

- 9.6.8 The dominant noise source found in the area in vicinity to the BESS Site is from the Gwynt y Môr Offshore Wind Farm Substation located adjacent to the National Grid Bodelwyddan Substation.
- 9.6.9 The results of the baseline noise survey show that the existing background noise levels L_{A90} are in the range of 32 to 38 dB during the daytime (07:00 – 23:00) and 38 dB during the night-time (23:00 – 07:00).
- 9.6.10 The existing ambient noise levels L_{Aeq} are in the range of 52 to 57 dB during the daytime and 45 to 50 dB during the night-time.

Indicative Cable Route

- 9.6.11 The baseline noise levels along the Indicative Cable Route, which is entirely underground, were not measured. This is because noise and/or vibration are not expected to be a concern during the operational phase as no activities or noise sources are planned along the route during the operational phase.
- 9.6.12 During the construction phase, noise and vibration levels will be controlled to avoid significant levels of noise or vibration at the existing sensitive properties along the Indicative Cable Route. The effect of the construction works along the cable route will also be short-term and dispersed.

Consultation

- 9.6.13 No consultation has been undertaken or is proposed in respect of noise and vibration.

Not Significant Effects

Construction Phase

- 9.6.14 Construction noise is generally not regarded as being a key issue in the planning process other than where it is likely to be high in level and likely to continue for very long periods.
- 9.6.15 For the Proposed Development, although the construction phase would likely extend over several months in respect to the whole Site, the nature of the construction works will be dispersed which would mean that the impact on individual existing sensitive receptors (residential properties) would be for much shorter periods.
- 9.6.16 The construction works for the Solar and BESS Sites would primarily consist of installation of solar panels, battery energy storage units, substations and other ancillary units along with access routes. It is considered that these works would be relatively small in scale and as such would be unlikely to result in noise or vibration levels that are significant over a long period.
- 9.6.17 For the cable route, 'Best Practicable Means' and best practice advice provided in BS 5228-1:2009+A1:2014 will be employed to ensure any existing sensitive receptors in vicinity of the cable route will not be exposed to significant levels of noise or vibration over long periods.

Operational Phase

- 9.6.18 The Site layout will have a good acoustic design, incorporating any physical mitigation as well as optimising the locations of the noise generating equipment and mitigating noise to protect the amenity of the existing sensitive receptors.
- 9.6.19 For the Solar Site, the main noise generating equipment will be the inverters, whilst at the BESS Site, the primary noise sources will be the inverters, BESS units and transformers.
- 9.6.20 The most appropriate equipment will be chosen to ensure that the noise impact from these sources at the existing sensitive receptors will not be significant.
- 9.6.21 A technical noise assessment will be undertaken in support of the planning application, in accordance with industry standards such as BS 4142:2014+A1:2019, BS 8233:2014, World Health Organisation (1999) and Guidelines for Environmental Noise Impact Assessment from the Institute of Environmental Management & Assessment (IEMA) (2014).
- 9.6.22 Considering that the results of the baseline noise survey show that the existing background noise levels L_{A90} are in the range of 42 to 57 dB during the daytime (07:00 – 23:00) and 33 to 42 dB during the night-time (23:00 – 07:00), the target rating noise levels at the location of the receptors is therefore up to this range in order to ensure that the noise levels from the development does not result in a significant adverse impact at the receptors.
- 9.6.23 BS 4142:2014+A1:2019 specifies that noise rating levels that are +5 dB above the existing background noise levels are likely to be an indication of an adverse impact whilst +10 dB or more above the existing background noise levels would result in a significant adverse impact.
- 9.6.24 The noise effects from the development, although not significant, will be captured in the standalone technical noise report to highlight that the proposed development would not result in an adverse impact at the existing sensitive properties.

Decommissioning Phase

- 9.6.25 The decommissioning phase of the Site will have similar effects to the construction phase.
- 9.6.26 The decommissioning works will be dispersed which would mean that the impact on individual existing sensitive properties would be for short periods and it is considered that these works would be relatively small in scale and as such would be unlikely to result in noise or vibration levels that are significant over a long period.

Summary

- 9.6.27 Potential noise and vibration impacts from the Proposed Development on existing sensitive receptors are considered to be controllable at the design stage for the operational phase and by the use of 'Best Practicable Means' during the construction and decommissioning phases. The effects of noise and vibration from the Proposed Development are therefore not anticipated to be significant. As such, it is proposed that noise and vibration are scoped out of the EIA.

9.7 Transport and Access

- 9.7.1 The effects of a development on traffic flow are not a direct environmental consideration, however, the noise and air quality impacts of road traffic are environmental effects, and these have been addressed above. The Proposed Development involves limited traffic movements during the construction/decommissioning phases and very low vehicle movements associated with ongoing maintenance during the operational life of the Proposed Development. Construction/decommissioning traffic will be managed in accordance with measures set out in the Outline CEMP/DEMP to be submitted with the planning application and subsequently the detailed CEMP/DEMP to be secured through conditions to the planning consent. Additionally, as the construction phase is anticipated to be

a maximum 12-24 months, the effects would be temporary and negligible. It is therefore concluded that there will be no significant effects on transport and therefore, this topic will be scoped out of the ES.

- 9.7.2 This Section of the EIA Scoping Report has been prepared by Stantec UK Ltd and outlines the likely non-significance of effects produced by the Proposed Development in relation Transport and Access.
- 9.7.3 Although no consultation with the relevant highway authorities (Denbighshire County Council (DCC), Conwy County Borough Council (CCBC) and North and Mid Wales Trunk Road Agent (NMWTRA) has been undertaken to date, the nature of the Proposed Development means that during the operational phase the number of vehicles will have an imperceptible impact on the road network.
- 9.7.4 In addition, as part of the planning application, Stantec will prepare an Outline Construction Traffic Management Plan (CTMP) that will be submitted and secured by planning condition, which will set out the measures that will be implemented to manage and minimise the impact of the construction phase of the Proposed Development.
- 9.7.5 It is considered that transport, both construction, decommissioning and operational can be scoped out of the ES and adequately addressed through the submission of separate standalone technical reports which will accompany the planning application – including an Outline CTMP and a Transport Statement.

Baseline Conditions

Baseline Description

BESS Site

- 9.7.6 Glascoed Road (B5381) is located to the north of the BESS Site and is a single two-way carriageway road. The road links the Lower Denbigh Road mini-roundabout junction approximately 2.5km to the northeast of the BESS Site. In addition, approximately 2.5km to the northwest of the BESS Site Glascoed Road (B5381) becomes Engine Hill and continues north, providing access to Bodelwyddan village centre and Junction 25 of the A55.
- 9.7.7 Within the vicinity of the BESS Site, Glascoed Road (B5381) is subject to a 40mph speed limit, reducing to 30mph approximately 100 m west of the Glascoed Road (B5381)/Ffordd Richard Davies/ Glascoed Road (B5381)/Ffordd Richard Davies roundabout junction.
- 9.7.8 Approximately 600m northeast of the BESS Site, Glascoed Road (B5381) links to Ffordd William Morgan via a roundabout junction. Ffordd William Morgan is a single two-way carriageway which is subject to a 20mph speed limit and has street lighting at regular intervals along the road. Ffordd William Morgan runs north of the Glascoed Road (B5381)/Ffordd Richard Davies roundabout junction and provides access to Junction 26 of the A55, located approximately 1.7km to the north of the BESS Site.
- 9.7.9 Within the vicinity of the BESS Site, the North Wales Expressway (A55) can be accessed via Ffordd William Morgan, located approximately 1.7km to the north of the BESS Site. The North Wales Expressway (A55) is a dual carriageway road which forms part of the strategic highway network. The A55 serves as a key route linking Llandudno and Conwy to the west and Chester to the east. In addition, the North Wales Expressway provides access to Saint Asaph to the southeast and Abergele to the northwest. The road is subject to national speed limit (70 mph).

Solar Site

- 9.7.10 Rhuddlan Road (A547) is a single two-way carriageway road subject to national speed limit (60mph). Rhuddlan Road (A547) links to the Ffordd Abergele/St Asaph Avenue roundabout junction approximately 1.1km to the east of the Solar Farm Site. In addition, approximately 3km to the west of the Solar Farm Site, Rhuddlan Road links to Junction 24 of the North Wales Expressway (A55) via Faenol Interchange roundabout junction, providing access to the broader strategic highway network.

- 9.7.11 Approximately 1.1km northeast of the Solar Farm Site, Rhuddlan Road (A547) links to Ffordd Abergele via a roundabout junction. Ffordd Abergele is a two-way single carriageway which is subject to national speed limit (60mph). Ffordd Abergele runs east of the Rhuddlan Road (A547)/Ffordd Abergele/St Asaph Avenue roundabout junction and terminates at the St Asaph Road (A525)/Station Road roundabout junction, located approximately 2.5km east of the Solar Farm Site.
- 9.7.12 Within the vicinity of the Solar Farm Site the North Wales Expressway (A55) can be accessed via Rhuddlan Road (A547), located approximately 3 km to the west of the Solar Site. The North Wales Expressway (A55) is a dual carriageway road which forms part of the strategic highway network. The A55 serves as a key route linking Llandudno and Conwy to the west and Chester to the east. Within the vicinity of the Solar Farm Site, the North Wales Expressway provides access to Bodelwyddan to the southeast and to Llanddulas the northwest. The road is subject to national speed limit (70mph).
- 9.7.13 The cable routing options have not been considered as part of this EIA Scoping section.

Consultation

- 9.7.14 To date no consultation with the relevant highway authorities has been undertaken to discuss the proposed scope of the assessment.
- 9.7.15 Consultation with the relevant highway authorities will be undertaken as the Proposed Development proposals evolve.

Not Significant Effects

- 9.7.16 The nature of the Proposed Development means that there will be no significant effects in Transport and Access terms during the operational phase. During the operational phase it is expected that there will only be a handful of visits to the Site per month by vehicles for maintenance purposes only which, overall, is likely to be less than the number of vehicle movements associated with the agricultural uses at the Site.
- 9.7.17 The vehicle movements associated with the occasional visits to the Site would have a negligible influence on the surrounding population and highway network, as the trips would be less than daily variation in traffic flows and therefore have an imperceptible impact on the road network.
- 9.7.18 The construction and decommissioning phases are expected to generate HGV traffic. As part of the application, Stantec will prepare an Outline Construction Traffic Management Plan which will be agreed with DCC, CCBC and NMWTRA prior to commencing construction. The plan will confirm the size of vehicles to be used, the routes taken to access the Site and how the movements will be managed to minimise impact on the highway network.
- 9.7.19 The decommissioning effects will be similar, and no worse, than the construction effects and therefore this is also proposed to be scoped out of the assessment.
- 9.7.20 Based on similar sites, the construction period is expected to take approximately 12-24 months. It is expected that standard construction hours will be followed between 07:00 and 18:30 hours Monday to Friday and 07:00 to 13:00 hours on Saturday. It is unlikely that, even at the most intense period of construction, there will be more than 15 HGV deliveries per day.
- 9.7.21 The IEMA Guidelines set out two rules which have been used as threshold impacts to define the scope of assessment, as follows:
- Rule 1: Include highway links where traffic flows will increase by more than 30% (or where the number of HGVs will increase by more than 30%); and
 - Rule 2: Include any other specifically sensitive areas where traffic flows have increased by 10% or more.

- 9.7.22 The IEMA Guidelines identify general thresholds for traffic flow increases of 10% and 30%. Where either (or both) of these rules are exceeded, then further detailed consideration of the associated impacts is undertaken in accordance with the methodologies and assessment criteria set out below. Where the predicted increase in traffic/HGV flow is lower than these thresholds, then the significance of the effects should be considered to be low or not significant and further detailed assessment is not required.
- 9.7.23 Based on the above, it is therefore considered that transport, both construction, decommissioning and operational can be scoped out of the ES and adequately addressed through the submission of separate standalone technical reports which will accompany the planning application – including an Outline CTMP/DEMP and a Transport Statement. A detailed Construction Traffic Management Plan detailing the delivery routes, construction routes, construction compounds and any associated parking or management of construction traffic, prepared in accordance with the Outline CTMP, would be submitted for approval via a planning condition. It is also proposed that details of the operational traffic movements and any onsite parking and turning spaces will be provided as part of the CTMP and the Transport Statement.

Summary

- 9.7.24 It is proposed that Transport and Access be scoped out of the ES as the number of vehicle trips generated during the construction, operational and decommissioning phases are likely to have a negligible impact on the local and strategic highway network. In addition, it is considered that the number of vehicle trips generated will not be above the thresholds to define the scope of assessment and therefore would not require assessment.
- 9.7.25 In addition, the impact of the Proposed Development on the local highway network will be adequately addressed through the submission of separate standalone technical reports which will accompany the planning application – including an Outline CTMP/DEMP and a Transport Statement.

9.8 Climate Change

- 9.8.1 In terms of Greenhouse Gas (GHG) Emissions, the climate study area comprises the land, infrastructure and activities that occur within the Site boundary and extends to include activities that occur beyond the Site boundary, such as the transport of construction materials. It is not possible at this stage to define the exact location for some sources of GHG emissions that will occur outside of the Site boundary, such as materials production.
- 9.8.2 Current GHG emission sources relate to the agricultural use. It is expected that existing farming practices provide a source of GHG emissions due to equipment use, soil disturbance, pesticides and/or livestock grazing.
- 9.8.3 Hedgerows and trees surrounding the boundaries of the Site provide a limited amount of carbon sequestration.
- 9.8.4 The GHG Protocol (WBCSD and WRI, 2019) categorises direct and indirect emissions into three broad scopes:
- Scope 1: all direct GHG emissions;
 - Scope 2: indirect GHG emissions from the generation of purchased electricity, heat or steam; and
 - Scope 3: other indirect emissions, such as the extraction and production of purchased materials and fuels, electricity-related activities not covered in Scope 2, outsourced activities, waste disposal etc.
- 9.8.5 During construction GHG emissions would be generated from the following activities:

- Scope 1: construction processes such as emission resulting from the combustion of fuels in the applicant's owned/controlled vehicles, plants or equipment used for construction of the Proposed, emissions associated with soil disturbance, and potential minimal hedgerow/tree cutting during the construction of the underground cables (although this will be avoided wherever possible);
 - Scope 2: emissions associated with purchased electricity needed for plant and welfare facilities ; and
 - Scope 3: Embodied carbon from purchased materials required to construct the Proposed Development such as waste disposal and staff commuting.
- 9.8.6 While some carbon emissions are involved in the manufacturing process, solar panels offset these emissions within five years of operation. After this, they have a net positive contribution for the rest of the project's life cycle by generating zero-carbon, pollution-free electricity. Solar power has the lowest form of CO₂ generation of any energy generation. This means the carbon savings from using energy generated by solar panels far outweigh the emissions produced during their manufacture.
- 9.8.7 Due to the scale of the Proposed Development and low levels of related traffic it is not considered that these would have the potential to cause significant effects and the effect from GHG emissions during construction is therefore scoped out of the ES:
- 9.8.8 During operation GHG emissions would be generated from the following activities:
- Scope 1: The proposed ecological mitigation and enhancement areas on Site, such as the grassland and meadow, additional hedgerows, new tree planting and vegetated buffers would provide carbon sequestration.
 - Scope 2: emissions associated with energy storage monitoring/cooling equipment from the BESS.
 - Scope 3: emissions that are predominantly outside the applicant's control, for example, processing waste associated with purchased materials to replace and maintain solar panels and associated infrastructure, maintenance and the provision of clean water for cleaning of panels and treatment of wastewater, and transport to and from the Site during operation of the Proposed Development.
- 9.8.9 As the Proposed Development will contribute to enabling prevention of further climate change effects through the generation of renewable electricity it is proposed that GHG emissions during operation are scoped out of the ES.
- 9.8.10 In terms of Climate Change Risk and Resilience, it is anticipated that the risk of climate hazards will be managed through adherence to the CEMP and standard construction and health and safety practices, such as securing material/equipment for correct storage to mitigate against hazards from storms and not undertaking works during periods of extreme rainfall or high winds. The conditions during construction are anticipated to be similar to the existing baseline and no significant effects are anticipated on the Proposed Development as a result of climate change. The risk of climate hazards during construction is considered to be not significant and proposed to be scoped out of the ES.
- 9.8.11 During operation, infrastructure such as the solar panels and BESS is considered to be the main receptor to climate risks such as increasing temperatures, heatwaves and storm damage. Design standards for this infrastructure will be followed to mitigate against this effect.
- 9.8.12 Human receptors, such as Site maintenance operators may be vulnerable to climate risks, some of which will be more susceptible to climate change than others depending on a range of factors such as age (the elderly and people with existing poor health). It is anticipated that Site maintenance operators will visit the Site infrequently over the operational period of the Proposed Development and that general health and safety practices will be applied to reduce the risk of working in extreme weather conditions.
- 9.8.13 In addition, during operation of the Proposed Development the landscaping and planting may be considered sensitive to the effects of climate changes depending on their current distribution or

climatic tolerances. It is anticipated that plant species suited and native to the local area will be utilised to provide resilience to the local climatic conditions. Furthermore, the ongoing management and maintenance of any new planting within the Site during the operational lifetime of the Proposed Development will be set out in a Landscape and Ecological Management Plan (LEMP) and secured via planning condition(s).

- 9.8.14 Based on the above, the Proposed Development is considered to be resilient to climate change throughout the construction, operation and decommissioning phases and the effect of climate change on the Proposed Development is considered to be not significant and is proposed to be scoped out of the ES.

9.9 Ground Conditions and Contaminated Land

- 9.9.1 This Section of the EIA Scoping Report has been prepared by Stantec UK Ltd and sets out the likely non-significance of effects produced by the Proposed Development in relation to ground conditions. This will include potential effects from the disturbance of ground on the Scheme (arrays, cables and structures such as the substation), existing structures, human health and the environment (surface water, groundwater, ecology, soils including peat (if applicable), geology, minerals including coal) during the construction, operational and decommissioning phases. To prevent duplication within this scoping report the reader is directed to **Chapters 6, 9 and 8** (Ecology, Cultural Heritage and Archaeology and Drainage and Water Resources).
- 9.9.2 Guidance on the approach to be undertaken for the assessment of Ground Conditions for EIA is limited but reference has been made to the following:
- Guidance within the Design Manual for Roads and Bridges (DMRB) (DMRB, 2019 & DMRB, 2020).
 - Planning Practice Guidance that are relevant to ground condition considerations (DCLG, 2019A & DCLG, 2019B).
 - Guidance given in Land Contamination Risk Management (EA, 2023).
 - Guidance on the assessment of soils (IEMA, 2022) - the guidance seeks to move practice away from a narrow focus on quantifying and financially compensating impacts on agricultural land and advocates a new and wider approach to assessing the soil functions, ecosystem services and natural capital provided by land and soils.

Baseline Sources

- 9.9.3 This Section of the EIA Scoping Report has been informed by the Insight Report by Groundsure Ltd presented in **Appendix F.1** and the mineral resource assessment (desk study) by Stantec UK Ltd. The Insight Report includes historical Ordnance Survey maps, pollution inventory data, recent and historical aerial imagery, Environmental Permits, Incidents and registers, hydrology and hydrogeology data including abstractions, source protection zones (SPZ), flood data and environmental designations.
- 9.9.4 In addition, the DataMap Wales has been interrogated for geological sites of importance https://datamap.gov.wales/maps/new?layer=inspire-nrw:NRW_RIG_SITES#/
- 9.9.5 A request for records pertaining to private water abstractions has been made to the local authority.
- 9.9.6 The Coal Authority interactive viewer has been considered as part of this Section: <https://datamine-cauk.hub.arcgis.com/>
- 9.9.7 A desk based mineral resource assessment has been prepared that utilised the following:
- Mineral Resource Map of North East Wales. Morley, C., Shaw, R.A., Bide, T.P., Humpage, A.J., Davies, J.R. and Lott, G.K. OR/10/022. British Geological Survey. 2010.

- Conwy County Borough Council Replacement Local Development Plan 2018-2033. July 2019.
- Denbighshire County Council Local Development Plan 2006-2021. June 2013.
- Planning Policy Wales Edition 12. February 2024.
- BGS GeoIndex Onshore Map Viewer <https://mapapps2.bgs.ac.uk/geoindex/home.html>
- Geological Survey of Great Britain National Grid Series 1:10560/1:10,000 maps sheet SH97NE

Baseline Description

- 9.9.8 The baseline description details the potential for contamination to be present based on identified land-use from Ordnance Survey mapping and the environmental setting, with receptors assigned a sensitivity informed by the importance of the attribute, for example groundwater designated as a Principal aquifer would be assigned as High sensitivity, Secondary A as Medium sensitivity and Secondary B as Low sensitivity.

Land-Use and Potential for Contamination to be Present

- 9.9.9 The vast majority of the Site is both currently and historically undeveloped/used for agriculture and the potential for contamination to be present in the ground is very low. There are rare occurrences of historical land-use that could generate contamination typically outside of the Site boundaries, but these are generally small-scale and very localised.
- 9.9.10 The most significant land-use is the former Kinmel Park Training area built in 1915, during the First World War, as a military training camp. At the time of its construction, it was the largest army camp in Wales and reported to be around 1.5 km by 0.75 km. The unexploded ordnance (UXO) screening exercise has identified that due to the proximity of this military feature a detailed desk based threat assessment is required.

Receptor - Geology and Hydrogeology

- 9.9.11 Geological data from the British Geological Survey, including published mapping, historical borehole records and other publications/ data sets in the public domain have been reviewed and summarised in the following tables.

Table 9.7 Superficial Deposits Present On-Site, as Recorded by the BGS

Stratum	Description	Site Elements
Tidal Flat Deposits – Clay, Silt and Sand	Described by the BGS as: “including mud flat and sand flat deposits, form extensive nearly horizontal marshy land in the intertidal zone that is alternately covered and uncovered by the rise and fall of the tide. They consist of unconsolidated sediment, mainly mud and/or sand. They may form the top surface of a deltaic deposit.	Underlying the Solar Site and partially underlying the area between there and the point of connection (POC) where the indicative Cable Route may extend.
Till, Devensian – Diamicton	Diamicton is a general term for a sediment that contains a wide range of particle sizes	Partially underlying the area between the Solar Site and BESS where the indicative cable route may extend and underlying the Project Substation and BESS.

Table 9.8 Bedrock Geology Present on the Site, as Recorded by the BGS

Stratum	Description	Site Elements
Kinnerton Sandstone Formation - Sandstone	Described by the BGS as: 'Dominantly aeolian... sandstone, red-brown to yellow, generally pebble-free, fine- to medium-grained, cross-stratified'	Underlying the Solar Site.
Warwickshire Group - Mudstone, Siltstone and Sandstone	Described by the BGS as: 'Predominantly red, brown or purple-grey sandstone, siltstone and mudstone, some grey strata, coals not common, local conglomerates, localised beds of Spirorbis limestone.'	Underlying the BESS Site, partially underlying the area between the Solar Site and POC where the cable route may extend and underlying the majority of the POC.
Clwyd Limestone Group - Limestone	Described by the BGS as: 'A diverse range of limestone facies with subordinate sandstone and mudstone units, and exhibiting local dolomitisation.'	Partially underlying the area where the cable route may extend and partially underlying the POC.
The Stratum are listed from youngest to oldest.		

9.9.12 With regards to hydrogeological setting, the Superficial strata underlying the Site are classified as Secondary Undifferentiated Aquifers (these are aquifers where it is not possible to apply either a Secondary A or B definition because of the variable characteristics of the rock type.) These have only a minor value.

9.9.13 The Bedrock strata underlying the Site are classified as:

- Secondary A Aquifer – Warwickshire Group. Defined as 'Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.'
- Principal Aquifers – Kinnerton Sandstone and Clwyd Limestone Group. Defined as strata which 'provide significant quantities of drinking water, and water for business needs. They may also support rivers, lakes and wetlands.'

9.9.14 The Site is not within Source Protection Zone for groundwater.

9.9.15 There is one Water Framework Directive (WFD) groundwater body record on the Site - Clwyd Permo-Triassic Sandstone (GB41001G202100) which recorded a chemical rating of Good in 2017.

9.9.16 There are no sites designated as Regionally Important Geological sites mapped within 1 km of the Site.

9.9.17 Geology is not identified as a potential receptor.

9.9.18 Groundwater is identified as a moderate/high sensitivity receptor.

Receptor - Surface Water

9.9.19 The northern part of the Site is intersected by a number of artificial drains constructed to drain the Tidal Flat Deposits towards the north-east into the River Clwyd just south of Rhyl approximately 2 km from the Site.

9.9.20 There are two WFD water body catchments on the Site, Pont Robin Cut (water body ID GB110066059970) and Gele (water body ID GB110066059980) both of which are in the Clwyd catchment, and both record a chemical status of good in 2016.

9.9.21 There are no records of surface water abstraction within 1 km.

- 9.9.22 Surface water is identified as a potential receptor, with the on-site drains assigned as a moderate sensitivity as they are within a WFD water body.

Receptor - Minerals and Coal

- 9.9.23 The Site is not mapped as being in a coal reporting area.
- 9.9.24 Part of the indicative cable route will cross a Mineral Safeguarding Area for Limestone and approximately two-thirds of the POC and Project Substation area are partly underlain by a Mineral Safeguarding Area for Limestone. However, it is considered that the Proposed Development will have only very limited impacts on mineral resources which should not preclude the development from taking place for the following reasons:
- Following decommissioning mineral extraction could occur, deeming the sterilisation temporary (typically between 40 and 60 years) and not permanent.
 - The Indicative Cable Route corridor is approximately 10 m wide (including easement). The BESS Site covers only a small area (6.52 ha) compared to the Solar Site which is 153.78 ha.
 - The areas involved are dwarfed by the vast areas of northern Wales underlain by the Clwyd Limestone Group from which adequate quantities of limestone could be won.
 - The Proposed Development comprises a renewable energy generation and storage asset and is considered to be functional in nature and therefore, unlike residential developments for example, would not suffer from being in proximity to mineral extraction work and the potential associated nuisance, such as traffic, noise and dust. Therefore, should any new mineral workings be proposed in the vicinity of the Site, the development of the Site for the stated end uses should not prevent any off-site mineral extraction receiving planning permission.

- 9.9.25 Neither minerals nor coal are identified as potential receptors.

Receptor – Soils and Peat

- 9.9.26 Peat is not identified on the mapped geology and is therefore not identified as a potential receptor.
- 9.9.27 . The Agricultural Land Classification (ALC) predictive map for Wales indicates that the Site is predominantly Grade 3b, with some very small areas of Grade 3a along the southern boundary (of the Solar Site). Soil surveys have been undertaken at the Site and found that 95% (152.5 ha) of the Solar Site was Grade 3b land, with 5% (7.8 ha) Grade 3a (Best and Most Valuable (BMV)). The entirety of the BESS Site is Grade 3b land (0% BMV). This is covered in further detail in Section 10.11 below.

Receptor – Human Health

- 9.9.28 There will be short term occupation during construction and medium term transient attendance during operation. Whilst the Site is located in a very rural area there are a small number of residential properties in close proximity. Human health is identified as a potential receptor, with on-site being assigned a medium importance and off-site a high sensitivity.

Consultation

- 9.9.29 Consultations have not been undertaken at this time. Requests for information will be made to the local authorities and Natural Resource Wales regarding ground conditions and private water abstractions. The requests and responses will be provided in the Phase 1 Ground Conditions Assessment report that will accompany the planning application.

Not Significant Effects

- 9.9.30 The following potential receptors have been eliminated/are not present - peat, geological features, minerals and coal.

- 9.9.31 Whilst there are potential receptors (human health, groundwater, surface water and the Proposed Development (degradation of in-ground construction materials due to aggressive ground) the potential impacts due to ground disturbance and release of existing contamination will not be significant given the nature of the identified ground conditions as current and historical land-uses with a very low potential for contamination generation. It is also noted that in respect of potential impacts to human health there are other legislative regimes (Health and Safety at Work Act and the Construction (Design and Management) Regulations 2015) that require ground conditions to be assessed and appropriate mitigation measures implemented. It is expected that given the identified land-uses that typical measures for hygiene will be sufficient. Such measures would be captured in the Construction and Environmental Management Plan (CEMP) and augmented with a requirement for the contractor to deploy awareness raising and prepare a discovery strategy for unforeseen ground conditions.
- 9.9.32 The process of design evolution and detailed design informed by ground investigation undertaken post consent are considered to be primary mitigation and as such effects from ground instability hazards, if present, will not be significant.
- 9.9.33 The impacts to soils arising from construction (loss due to foundations or compression from vehicle movement) would not be deemed significant as the soils are assigned as moderate sensitivity/value and low sensitivity/value for other functions. The intention is to minimise damage through deployment of mitigation measures such as defining haul routes, handling and storage procedures and maximum vehicle weights. These will be defined in a Soil Management/Resource Plan.

Summary

- 9.9.34 The potential for contaminated ground to be present on the Site is considered to be low based on the identified current and historical land-use. Whilst potential receptors have been identified the effects associated with low levels of contamination would not be significant.
- 9.9.35 Primary mitigation will ensure that stability impacts are addressed through design.
- 9.9.36 The following reports relevant to ground conditions will be prepared and submitted with the planning application.
- A Phase 1 Ground Conditions Assessment (Phase 1 GCA) is being prepared which will present the findings of desk study research, the observations from walkovers, a Tier 1 contamination Preliminary Risk Assessment, and a preliminary ground stability assessment. The report will be prepared following guidance on how to assess and manage the risks from land contamination provided in Land Contamination Risk Management (LCRM).
 - Desk Based Mineral Resource Assessment
 - Detail UXO Assessment
 - Soil Management Plan prepared with reference to Code of practice for the sustainable use of soils on construction sites (DEFRA, 2018).
 - Outline CEMP

9.10 Wind Microclimate

- 9.10.0 Likely significant effects on the wind microclimate are not anticipated given that the PV arrays will be no more than 3m above the ground and not in a location with public access preventing members of the public accessing outdoor amenity space. It is proposed that this topic will be scoped out of the ES.

9.11 Daylight, Sunlight and Overshadowing

- 9.11.1 The scale and massing of the Proposed Development will not cause changes to daylight or sunlight availability or cause overshadowing of residents or amenity space. It is therefore proposed to scope

this topic out of the ES. In addition, a Glint and Glare Assessment will be prepared and submitted with the planning application.

9.12 Agricultural Land

- 9.12.1 The Welsh Government's Predictive ALC (version 2.1, May 2021) predicts the grading of agricultural land. It shows the Site to comprise mostly subgrade 3b, as in **Figure 9.2**.

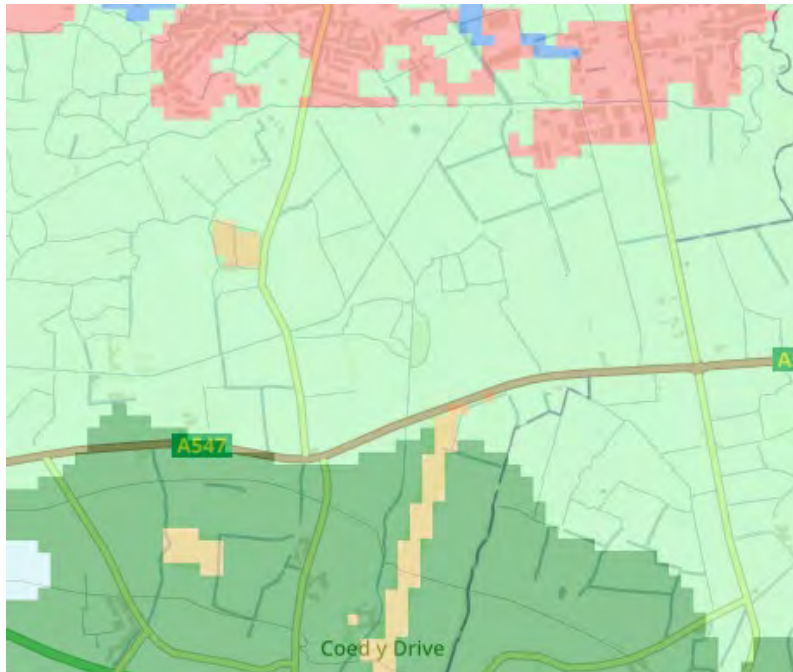


Figure 9.2: Extract from The WG Predictive ALC

- 9.12.2 The only areas predicted to be of subgrade 3a, which falls into the category of the Best and Most Versatile (BMV) agricultural land, as defined in Planning Policy Wales (February 2024), are outlined in red in **Figure 9.3**.



Figure 9.3: Areas Predicted to be Subgrade 3a

- 9.12.3 Accordingly, a detailed ALC report has been undertaken by Land Research Associates (**Appendix G**). Their ALC grading plan is shown in **Figure 9.4**. It indicates the relative accuracy of the Welsh Government Predictive ALC maps, and has also refined the two areas of subgrade 3a to the areas shown.

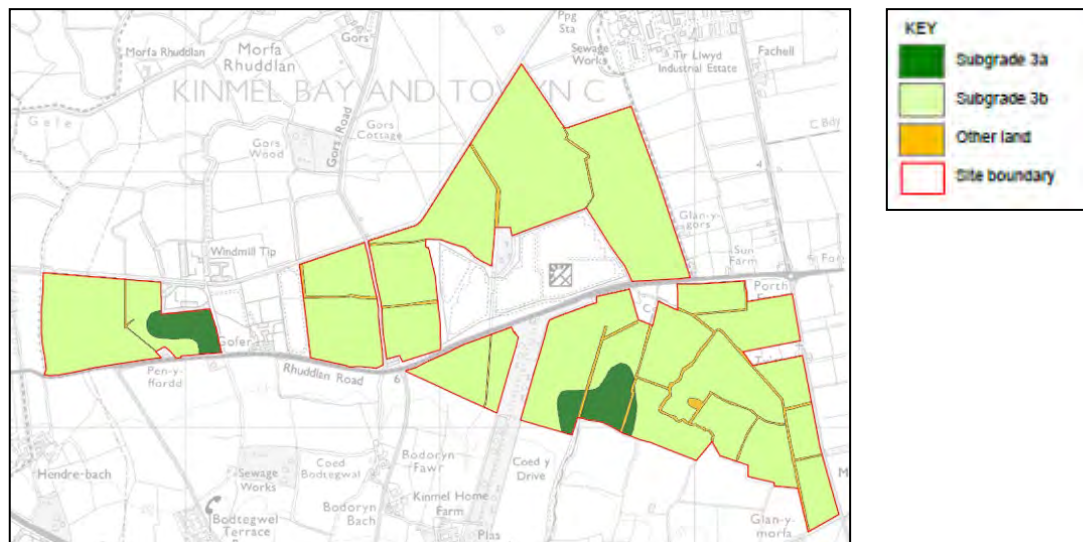


Figure 9.4: LRA ALC Map

9.12.4 LRA have also surveyed the proposed BESS Site, which classifies as subgrade 3b (Figure 9.5).



Figure 9.5: LRA ALC Map Extracts

9.12.5 Collectively across both the Solar and BESS Sites approximately 7.8 ha of subgrade 3a is included, lying in four different fields.

9.13 Soils

9.13.1 The soils over the Site are shown on the 1:250,000 Soil Map of England and Wales¹ as 813f Wallasea 1 soils, being deep stoneless calcareous and non-calcareous clayey soils. The soils found in the ALC survey are mostly alluvial clay soils, mostly stoneless silty clay or clay topsoil over clay or silty clay subsoils. Occasionally areas of silty clay loam, sandy clay loam or clay topsoils were found. In the southern part of the Site some slightly stony medium clay loam and sandy clay loam topsoils were found over slowly permeable clay, with soils in Wetness Class IV. The climate in the areas has a field capacity days of between 168 and 176. The soils are therefore of medium or high sensitivity (i.e. a low

or medium resilience to structural damage), so careful handling during the construction and decommissioning phases will be important.

9.14 Land Use

- 9.14.1 The land is all farmed, with a mixture of permanent pasture, pasture and arable land. Grassland is used for grazing of livestock or for fodder conservation.

Not Significant Effects

- 9.14.2 At this stage the full detailed layout of the Proposed Development is not known. However, the installation of solar PV arrays does not cause either a loss or diminution in the quality of agricultural land. It is only in areas where soil is physically disturbed, such as to create internal tracks, to create bases for fixed infrastructure, and on a generally small scale to create trenches to insert cabling, that there is the potential to result in land quality downgrading or loss of land.
- 9.14.3 Subject to management practices following guidance and handling soils only when they are suitably dry, in most cases soils moved for these items of infrastructure can be stripped, stored and restored in a manner whereby the inherent land quality will be fully restored, and no loss will result.
- 9.14.4 The Proposed Development includes only 7.8ha of BMV agricultural land. This will not be adversely affected. The majority of the land included within the Proposed Development is subgrade 3b quality, and of medium sensitivity. With the exception of the small areas of fixed infrastructure, the agricultural land resource is not affected.
- 9.14.5 At this stage of scoping the amount of BMV land involved for tracks, fixed equipment etc, is not known. Given the location of the BMV land at the edge of the Site, the amount likely to be involved will be small, well below 5 ha. As such the impact will be of a minor magnitude, on a receptor of medium sensitivity, which will be an adverse effect of slight significance, which is not significant.
- 9.14.6 Through primary mitigation, as will be set out in a Soil Management Plan to be submitted alongside the ES, the effect of soils will be minor or negligible adverse. The impact is thus not likely to be significant.
- 9.14.7 The landowners have entered the Proposed Development voluntarily, and so no significant effects on rural businesses are likely.
- 9.14.8 Overall, the impacts on agricultural land, soils and farm businesses are all likely to be slight and given the sensitivity of the impacts the overall effect will be slight or neutral, which will not be significant.
- 9.14.9 Only a small area, approximately 7.8 ha, is of BMV quality. This falls into four different fields, and is all located on the southern edge of the Solar Site area.
- 9.14.10 Solar PV development does not generally adversely affect the land quality. The impact is likely to be minor or negligible magnitude on a resource of medium sensitivity, leading to a minor or negligible adverse effect, which is not significant. It is therefore proposed that agriculture and soils be scoped out of the ES. However, a standalone Soil Management Plan will be submitted alongside the ES.

9.15 Waste

- 9.15.1 As the Site comprises of undeveloped agricultural land, there are no existing sources of municipal, commercial and industrial (C&I), or construction and demolition (C&D) waste on Site.
- 9.15.2 An outline CEMP will be submitted with the application and a full detailed CEMP would subsequently be secured by a planning condition will include the mitigation measures to be implemented during the construction phase to minimise waste and ensure that it is stored, managed, collected and disposed of appropriately.

- 9.15.3 There will be no volumes of waste generated during the operational phase. Waste generated during decommissioning will be managed and disposed of in accordance with best practice guidance and legislation in force at the time.
- 9.15.4 The Proposed Development will not produce significant amounts of waste to the extent that the creation or disposal of which will give rise to significant effects on the environment and is therefore scoped out of the ES.

9.16 Lighting

- 9.16.1 The Site is comprised of agricultural land which is unlit. However, sources of light from nearby car headlights are likely to be present.
- 9.16.2 During the construction phase, temporary, directional and moveable lighting columns will be operated in accordance with the relevant best practice guidance, including with regard to any sensitive ecology, and limited to daylight working hours, where possible. The Outline CEMP/DEMP to be submitted with the application will include a lighting strategy to minimise light spill to receptors.
- 9.16.3 For the operational phase, there would be no permanent external lighting installed as part of the Scheme. Security lighting would be infrared, and the limited lighting associated with the substations and within the BESS would be used for occasional maintenance/ emergency use only.. On this basis, the development is not anticipated to produce a significant lighting impact on the existing character of the night-sky.
- 9.16.4 On this basis, the Proposed Development is not anticipated to produce a significant lighting impact on the existing character of the night-sky. Therefore, it is proposed to scope this topic out of the ES

9.17 Major Accidents and Disasters

- 9.17.1 There is no definition of “major accidents or disasters” provided in the EIA Regulations; however, the IEMA Quality Mark Article on ‘Assessing Risks of Major Accidents/ Disasters in EIA’ⁱⁱⁱ provides the following definition: *‘man-made and natural risks, which are considered to be likely and are anticipated to result in substantial harm that the normal functioning of the project is unable to cope with/rectify i.e. a significant effect.’*
- 9.17.2 The Site is not in a location which is at risk of disasters such as land instability or earthquakes. A FCA will be submitted in support of the planning application to flood risk and drainage.
- 9.17.3 A Flood Consequences Assessment will be prepared and submitted in support of the planning application. During the construction and decommissioning phases, the contractor(s) will implement measures in accordance with Health and Safety legislation, and best practice, to minimise the risk of accidents. All such measures will form part of the CEMP to be secured by planning conditions. Therefore, likely significant effects in respect of accidents on-site during the construction, operation and decommissioning phases are not anticipated.
- 9.17.4 Solar photovoltaic technology is relatively benign form of electricity generation with very low risk of accident or disaster and will not have a significant environmental effect in this regard. The Solar Site will be enclosed by appropriately designed security fencing and monitored by CCTV, which will lower the risk of unauthorised access and accidents.
- 9.17.5 It is acknowledged that there is some element of risk associated with emerging battery storage technology. The development will minimise fire risk by:
- Procuring components and using construction techniques which comply with all relevant legislation;
 - Including automatic fire detection systems in the development design;
 - Including automatic fire suppression systems in the development design;

- Designing the Proposed Development to contain and restrict the spread of fire through the use of fire-resistant materials, and adequate separation between elements of the battery storage facility;
- Continuous monitoring of the BESS parameters (current, voltage, temperature, etc.) that would be used as an early indicator of an issue and would result in shut down of the system before a failure event would typically occur; and,
- Ensuring that North Wales Fire and Rescue Service recommendation and requirements are addressed to enable an adequate emergency response to a fire.

9.17.6 A Battery Safety Management Plan will be produced to secure the implementation of the above principles through the construction, operation and decommissioning of the Proposed Development.

9.17.7 On this basis, it is considered that risk of major accidents (including fire risk) can be scoped out of the EIA.

9.18 Summary of Topics to be Scoped Out

Table 9.9 Summary of Topics to be Scoped Out

Topic	Construction	Operation	Decommissioning
Population and Human Health	Human Health – no significant effect from noise impacts and air quality emissions during construction activities. Demand on Local Services – no significant effect as no additional population will be generated.	Human Health – no significant effect from noise impacts such as from BESS, or air quality emissions. Demand on Local Services - no significant effect as no additional population will be generated.	Human Health - no significant effect from noise impacts and air quality emissions during decommissioning activities. Demand on Local Services - no significant effect as no additional population will be generated.
Flood Risk and Water Resource	Low sloping Site and primary mitigation (notably a CEMP and use of planted watercourse easements) would result in no significant effects during construction	Site-specific FCA would ensure the Site should remain operational during design flood conditions and operatives remain safe. Detailed drainage strategy and FCA would mitigate impacts on third parties. BESS fire management plan, including contained storage of runoff, would minimise impacts in the event of fire breakout. No significant impacts expected	Services such as cables and crossings to remain in situ. As with construction, low sloping Site and primary mitigation would result in no significant effects likely.
Air Quality	Human Health – no significant effect from construction HGV movements.	Human Health – no significant effect from operational vehicle movements which is anticipated to be approximately 2 vehicles per month.	Human Health – no significant effect from decommissioning HGV movements.
Noise and Vibration	Human Sensitive Human Receptors - no significant effect from construction HGV movements.	Human Sensitive Human Receptors – no significant effect from operational vehicle movements which is anticipated to be	Human Sensitive Human Receptors - no significant effect from decommissioning HGV movements.

Topic	Construction	Operation	Decommissioning
		approximately 2 vehicles per month. No significant effect from operational noise such as BESS.	
Traffic and Access	During construction, it is unlikely that construction HGV movements would exceed 15 per day (i.e. 10 deliveries a day) during the peak period of construction. This is not considered to have a significant effect on transport and access.	A very low volume of vehicle movements is associated with the operation of the Proposed Development. No significant effects on traffic and access are considered.	It is anticipated that there will be a similar level of HGV movements during decommissioning as construction. This is not considered to have a significant effect on transport and access.
Climate Change	GHG Emissions – no significant effect from construction traffic. Climate Resilience – no significant effect as the Site is not in a location which is at risk of disasters such as land instability or earthquakes. A Flood Risk Assessment will be submitted with the planning application.	GHG Emissions – no significant effect due to the low levels of related traffic from the Proposed Development. The Proposed Development will contribute to enabling prevention of further climate change effects through the generation of renewable energy. Climate Resilience – no significant effect as the Site is not in a location which is at risk of disasters such as land instability or earthquakes. A Flood Consequence Assessment will be submitted with the planning application.	GHG Emissions – no significant effect from construction traffic. Climate Resilience – no significant effect as the Site is not in a location which is at risk of disasters such as land instability or earthquakes. A Flood Consequence Assessment will be submitted with the planning application.
Materials and Waste	Materials and Waste – A CEMP to be secured by a planning condition will include the mitigation measures to be implemented during the construction phase to minimise waste and ensure that it is stored, managed, collected and disposed of appropriately so that there are no significant effects.	Materials and Waste – no significant effect due to the limited volumes of waste generated during the operational phase.	Materials and Waste – no significant effect as waste generated during decommissioning will be managed and disposed of in accordance with best practice guidance and legislation in force at the time.
Lighting	Human Health – no significant effect to surrounding residential receptors. Temporary and moveable lighting columns will be operated in accordance with the relevant best practice guidance, including with regard to any sensitive ecology, and limited to daylight working hours, where possible.	Human Health – no significant effect to surrounding residential receptors. Any lighting within the development would be limited to motion activated downward facing security lighting on the substations and operational lighting would be installed for emergency purposes only. The Site will not be permanently lit.	Human Health – no significant effect to surrounding residential receptors. Temporary and moveable lighting columns will be operated in accordance with the relevant best practice guidance, including with regard to any sensitive ecology, and limited to daylight working hours, where possible.

Topic	Construction	Operation	Decommissioning
Accidents and Disasters	A Flood Consequence Assessment will be prepared and submitted in support of the planning application. During the construction and decommissioning phases, the contractor(s) will implement measures in accordance with Health and Safety legislation, and best practice, to minimise the risk of accidents. All such measures will form part of the CEMP to be secured by planning conditions. Therefore, likely significant effects in respect of accidents on-site during the construction, operation and decommissioning phases are not anticipated		
Ground Conditions and Contaminated Land	Ground Conditions and Contaminated Land – no significant effect on agricultural land. Mitigation measures during construction to prevent harm from pollutant linkages associated with construction and maintenance workers will be managed and reduced through the adoption of standard practice and mitigation measures which will be secured through the CEMP, which will be secured by condition.	Ground Conditions and Contaminated Land – no significant effect during operation due to the nature of the Proposed Development.	Ground Conditions and Contaminated Land - no significant effect on agricultural land. Mitigation measures during construction to prevent harm from pollutant linkages associated with construction and maintenance workers will be managed and reduced through the adoption of standard practice.
Agricultural Land	No permanent loss of BMV.		

10 Cumulative Effects

- 10.1.1 The ES will consider the potential for likely significant effects on the environment resulting from committed developments in the area. PPG identifies that:

“...There are occasions where other existing or approved development may be relevant in determining whether significant effects are likely as a consequence of a proposed development...”

- 10.1.2 Cumulative effects (inter-project) are defined in paragraph 5(e) of Schedule 4 to the EIA Regulations as:

“the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources.”

- 10.1.3 The ES will consider the potential for likely significant effects on the environment resulting from committed developments. **Table 10.1** below details the Proposed Development identified within 2km of the Site to be considered within each ES chapter. Each technical ES chapter will include a dedicated section for the assessment of inter-project cumulative effects.
- 10.1.4 In collating the information with regards to cumulative developments, the Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment advice was taken into consideration and a tier-based approach was used. This approach will be considered over the assessment period and cumulative developments will continue to be monitored throughout the entire process.

Table 10.1 Cumulative Developments

Site Address and Application Reference Number	Description	Decision	Distance to from site	Scope
Land immediately north of A547 Rhuddlan Road Towyn Conwy. 0/40999	Installation of ground mounted photovoltaic (PV) solar arrays to provide 24MW generation capacity together with inverter buildings, internal maintenance access track, landscaping, fencing and ancillary infrastructure.	Approve with conditions	Immediately adjacent	In. Scope in due to proximity to the Site.
Awel y Mor Offshore Wind Farm EN010112	Wind farm and associated development	Approved with conditions	Approx 25km	Out
Mona Offshore Wind Farm EN010137	Wind farm and associated development	Currently under consideration		Out
Teyrdan Farm Llanellian Colwyn Bay Conwy LL29 8YU 0/40814	Provision of photovoltaic solar park and ancillary infrastructure	Approve with conditions	10.2km	Out
Lower Lodge, Thatched Cottage Junction To Pont	Installation of a ground-mounted solar array development to provide	Not EIA development	8.5km	Out

Site Address and Application Reference Number	Description	Decision	Distance to from site	Scope
Llanerch, Llannerch Park, St Asaph, DENBIGHSHIRE, LL17 0BB 30/2018/0269	renewable electricity to the Water Treatment Works			
Llyn Bran, B4501 Cerrig Road To County Boundary, Bylchau, DENBIGHSHIRE 25/2015/0321	Construction and operation of wind farm comprising of 7 wind turbines, transformers, access tracks, on-site substation, anemometry tower and associated construction and operational infrastructure	Granted at Appeal	~18.6km	Out – distance from Site
Land East Of Llyn Brenig, B4501 Brenig Road Groesffordd Crossroads To Cerrig Road Junction, Nantglyn, SIR DDINBYCH 25/2015/0636	Construction and operation of a wind farm comprising of sixteen wind turbines along with transformers, access tracks, on-site switchgear and metering building, two anemometry towers and associated construction and operation infrastructure (revised scheme partially implemented under planning permission reference 25/2007/0565)	Granted at Appeal	~20.4km	Out- distance from Site

11 Summary and EIA Methodology

11.1.1 The ES will contain three main volumes as set out in **Table 11.1** below.

Table 11.1 Environmental Statement Structure

Volume 1: ES Main Text and Figures		
Chapter No.	Chapter Title	Description
1	Introduction	Introduction to the ES, EIA requirements, details of project team, ES organisation and availability.
2	EIA Methodology	Methods used to prepare each chapter, description of ES structure and content, generic significance criteria, scoping and consultation.
3	Site and Development Description	Site description and details of the proposed development.
4	Alternatives and Design Evolution	Outline of the main alternatives considered by the Applicants.
5	Construction Methodology and Phasing	Details of anticipated programme for development and construction methodology.
6	Biodiversity	Assessments of effects relating to biodiversity.
7	Landscape and Visual Effects	Assessments of effects relating to landscape and views.
8	Historic Environment	Assessments of effects relating to heritage.
9	Summary and Residual Effects	Summary of the residual and interactive effects of the proposed development.
Volume 2		
Technical Appendices		Technical data and reports to support the chapters in Volume 1. To include Noise Impact Assessment, Flood Consequence Assessment and Drainage Strategy, Transport Statement and Construction Traffic Management Plan, Arboricultural Impact Assessment, Geophysical Report, Glint and Glare Assessment, Minerals Impact Assessment, Agricultural Land Classification Survey, Outline Battery Safety Management Plan, Statement of Community Involvement, Topographical Survey, Soils Management Plan,
Standalone Document		
Non-Technical Summary		Summary of the ES in non-technical language.

11.2 Introduction

11.2.1 This chapter will provide background to the EIA, describe the structure of the ES and identify the project team.

11.3 EIA Methodology

11.3.1 This chapter will set out the methodology used in the EIA, state the assumptions applicable to all disciplines, summarise the EIA Scoping process undertaken and summarise the public consultation process. Bespoke methodologies, limitations and assumptions will be contained in the technical chapters of the ES where required.

11.3.2 The significance of an environmental effect is determined by the interaction of magnitude and sensitivity, whereby the effects can be positive or negative. Generic criteria to be used in carrying out

this process are detailed below. Some technical chapters will use discipline-specific criteria with their own terms for magnitude, sensitivity and significance. This will be explained in the relevant chapter.

11.4 Prediction of Impact Magnitude

11.4.1 The methodology for determining the scale or magnitude of impact is set out below.

Table 11.2 Methodology for Assessing Magnitude

Magnitude of Impact	Criteria for assessing impact
Major	Total loss or major/substantial alteration to key elements/features of the baseline (pre-development) conditions such that the post development character/composition/attributes will be fundamentally changed.
Moderate	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes of the baseline will be materially changed.
Minor	A minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible/detectable but not material. The underlying character/composition/attributes of the baseline condition will be similar to the pre-development circumstances/situation.
Negligible	Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation.

11.4.2 The sensitivity of a receptor is based on the relative importance of the receptor using the scale set out below.

Table 11.3 Methodology for Determining Sensitivity

Sensitivity	Examples of Receptor
High	The receptor/resource has little ability to absorb change without fundamentally altering its present character, or is of international or national importance.
Moderate	The receptor/resource has moderate capacity to absorb change without significantly altering its present character, or is of high importance.
Low	The receptor/resource is tolerant of change without detriment to its character, is of low or local importance.

Assessment of Effect Significance

11.4.3 Effect significance will be calculated using the matrix in **Table 8.4**. This illustrates the interaction between impact magnitude and receptor sensitivity.

Table 11.4 Effect Significance Matrix

Magnitude	Sensitivity		
	High	Moderate	Low
Major	Major Adverse/Beneficial	Major - Moderate Adverse/Beneficial	Moderate - Minor Adverse/Beneficial
Moderate	Major - Moderate Adverse/Beneficial	Moderate – Minor Adverse/Beneficial	Minor Adverse/Beneficial
Minor	Moderate - Minor Adverse/Beneficial	Minor Adverse/Beneficial	Minor Adverse/Beneficial - Negligible
Negligible	Negligible	Negligible	Negligible

11.5 Site and Development Description

- 11.5.1 This chapter will describe the setting of the Site and the existing conditions on the site, as well as explaining the proposed development and setting out the development parameters. The parameter plans will be included as figures to the chapter.

11.6 Alternatives

- 11.6.1 This chapter would describe the evolution of the proposed development based on environmental constraints and discuss any reasonable alternatives considered by the Applicant, with reasons for the choice made.

11.7 Construction Methodology and Phasing

- 11.7.1 This chapter will outline the anticipated construction programme, phasing and methodology and explain the assumptions made. This chapter will form the basis of the construction phase assumptions documented in each of the technical chapters of the ES.

11.8 Technical Assessments

- 11.8.1 Each ES chapter will follow the headings set out below to ensure the final document is transparent, consistent and accessible.

- Introduction;
- Assessment Methodology;
- Baseline Conditions;
- Likely Significant Effects;
- Mitigation Measures;
- Residual Effects;
- Cumulative Effects; and
- Summary.

- 11.8.2 Each chapter sub-heading is explained in further detail below.

Table 11.5 Technical Chapter Format and Content

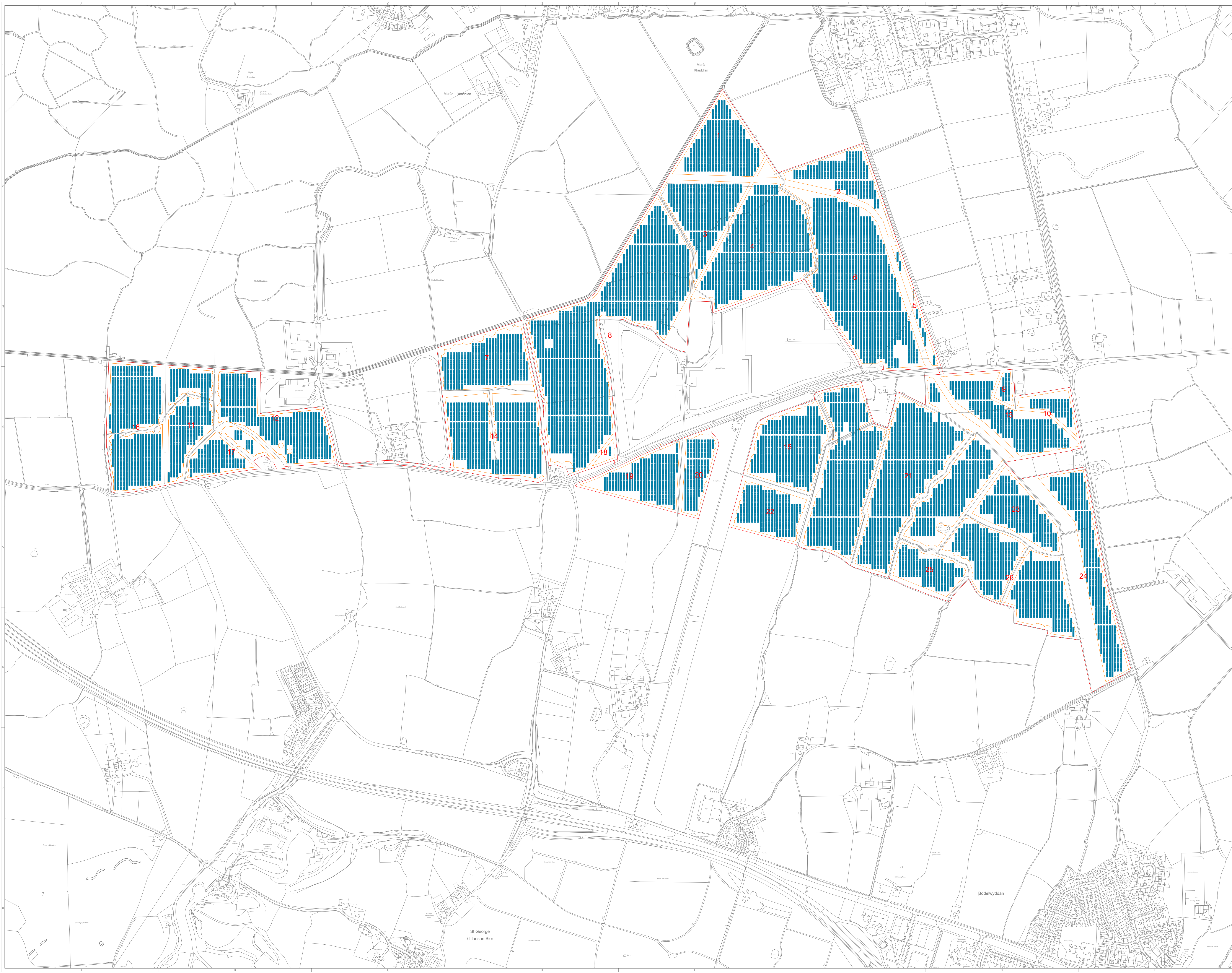
Sub-Heading	Content
Introduction	This section will introduce the assessment discipline and the purpose for which it is being undertaken.
Planning Policy Context	This section will include a summary of national, regional and local policies of relevance to the environmental discipline and assessment. Where applicable, relevant legislation will also be summarised.
Assessment Methodology	This section will provide an explanation of methods used in undertaking the technical study with reference to published standards, guidelines and best practice. The application of significance criteria will also be discussed. It will also outline any difficulties encountered in compiling the required information.
Baseline Conditions	This will include a description of the environment as it is currently (2023) and as it is expected to change given the project were not to proceed (i.e. 'future baseline scenario'). The method used to obtain baseline information will be clearly identified. Baseline data will be collected in such a way that the importance of the particular subject area to be

Sub-Heading	Content
	affected can be placed in its context and surroundings so that the effects of the proposed changes can be predicted.
Likely Significant Effects	This section will identify the likely significant effects on the environment resulting from the construction and operational phases of development.
Mitigation Measures	Adverse effects will be considered for mitigation and specific mitigation measures put forward, where practicable. Mitigation measures considered may include modification of the project, compensation and the provision of alternative solutions (including alternative technology) as well as pollution control, where appropriate. The extent of the mitigation measures and how these will be effective will be discussed. Where the effectiveness is uncertain or depends upon assumptions about operating procedures, data will be introduced to justify the acceptance of these assumptions. Clear details of when and how the mitigation measures will be carried out will be given. When certainty of impact magnitude and/or effectiveness of mitigation over time exists, monitoring programmes will be proposed to enable subsequent adjustment of mitigation measures, as necessary. The opportunity for enhancement measures will also be considered, where appropriate. Information will be included on the mechanism by which the mitigation will be secured (e.g. by planning condition) with outline arrangements for monitoring and responsibilities for doing so, where necessary.
Residual Effects	The residual effects, i.e. the effects of the proposed development assuming implementation of proposed mitigation, will be determined. The residual effects represent the overall likely significant effect of the proposed development on the environment having taken account of practicable/available mitigation measures.
Cumulative Effects	The cumulative effects of the proposed development and the identified committed developments will be assessed.
Summary	A summary of the assessment and conclusions will be provided at the end of each technical chapter.

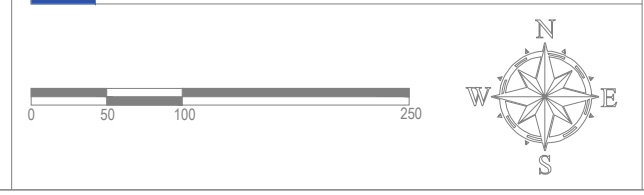
11.9 Summary and Residual Effects

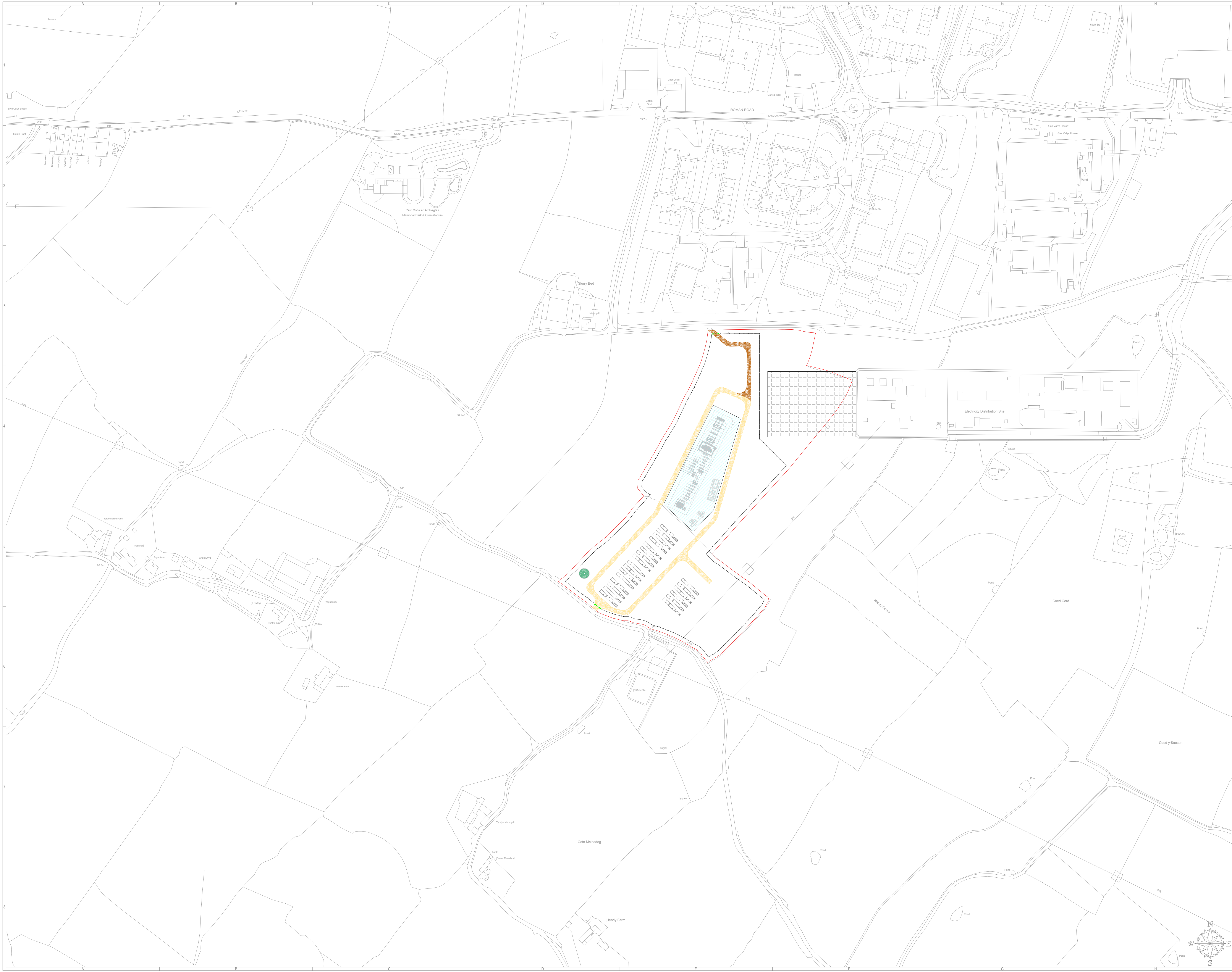
- 11.9.1 The residual effects of the proposed development will be summarised in one table at the end of the ES setting out the overall beneficial and adverse effects of the proposed development.
- 11.9.2 Interactive effects (the interaction of effects relating to different technical disciplines on one receptor or group of receptors) will be summarised here, if applicable. Transboundary effects would not be likely.

Appendix A Site Location Plan & Layout Plans

[illegible]

Project:	Bodelwyddan Solar PV farm		
Project Location:	Land by Rhuddian Rd, St George, Abergelle LL22 9SE		
Ownership:	TBC		
Document Title:	Preliminary Layout		
Sheet format:	A1 "B41 x 594"	Scale:	1:5000
Document annotations:	v.1	10/12/2024	A.A.
Company:	Island Green Power UK Limited Unit 20.2, Coda Studios 189 Munster Road, London SW6 6AW		





General Legend:	
	Application Boundary
	National Grid Substation Extension
	Substation Compound
	Energy Storage System
	Power Conversion System
	Construction Track
	Operational Track
	Gate
	Fence
	Water Tank

Project:	Bodelwyddan BESS
Project Location:	Land by Glascoed Rd, Saint Asaph LL17 0LJ
Ownership:	TBC
Document Title:	Preliminary Layout
Sheet Format:	A1 "841 x 594"
Scale:	1:2000
Document annotations:	v.1 09/12/2024 A.S.
Company:	Island Green Power UK Limited Unit 25.7, Coda Studios 189 Munster Road, London SW6 6AW

