

## **4 PROPOSED DEVELOPMENT AND ALTERNATIVES CONSIDERED**

### **4.1 INTRODUCTION**

4.1.1 This chapter of the ES provides a description of the Proposed Development and Alternatives Considered.

### **4.2 PROPOSED DEVELOPMENT DESCRIPTION**

4.2.1 The Proposed Development is shown on **Figure 4.1**. The Proposed Development will have a capacity of approximately 47.5 MW.

4.2.2 The Application Site comprises approximately 156 hectares, allowing for boundary landscaping, boundary fencing, access and the grid connection corridor. The actual area for the solar development (within the security fencing) is 61.82ha and the total area for the battery storage compound is 0.47ha hectares.

4.2.3 The Proposed Development comprises the following key components (see accompanying planning drawings), the environmental effects of which have been appraised throughout the technical chapters of the ES:

- Creation or improvement of vehicular accesses for construction, and decommissioning:
  - The main site access will be into the south-eastern boundary of the site from St Asaph Road (A525) via an existing priority T-junction serving Gwernigrn Farmhouse and other residences. This access will be used for both construction and operational purposes. Minor works are required to widen the bellmouth at this junction to allow the required construction vehicles to use the access. Details of these are given in **Appendix 7.1**. The south eastern access junction will form the permanent access junction into the site until the site is ultimately decommissioned, at which point the access junction will revert to its current guise. Ancillary consent for these works will be sought from the Local Highways Department.
- Fixed solar PV panels which will be between 0.8 and 1.35 from ground level on the lower edge tilted to 22 degrees. The panels will be up to 3m to the highest point. The panels will be spaced with a minimum distance of 3.5m and a maximum distance of 5.5m between rows (Fixed tilt framework elevation SCUXX-GWERN-001-213);
- A c.2m in height wooden post and wire fence around the areas of solar panels within the Application Site, with gaps to enable small mammals free access;
- Approximately 15 internal Substations comprising transformers and switchgear at various locations around the solar arrays;

- A Battery Storage Compound enclosed by an acoustic fence. The battery storage compound comprises battery containers, transformers, Power Conversion Systems (PCS), AC combiner and HV switchgear units and Customer Switchgear Building located within a single compound is proposed towards the southern boundary (40ft– length battery storage container elevations & plan with aerials SCUKX-GWERN-001-283.B). This compound will have a floor composed of crushed aggregates but with concrete foundations for the electrical equipment and containers;
- A CCTV system, mounted on c.3m high poles, located at strategic points around the site, monitoring the fence line of the solar panel areas or key infrastructure assets such as the Substations, Battery and Site Compounds;
- Permanent access tracks (construction phase through to decommissioning connecting inverter/transformer units comprising construction with crushed aggregate according to the final road design (Permanent access track section SCUKX-GWERN-001-200A));
- Temporary access tracks which are shown providing access for the duration of the construction period and would likely be reinstated for the decommissioning phase. These tracks will comprise temporary matting or where the ground and the seasonal timing of construction is suitable (ie over summer) bare ground;
- Underground cables to connect to the grid at Bodelwyddan substation;
- ISO type storage container(s) for spare parts etc located at the Site Compound which will remain for life of the Proposed Development;
- Two Temporary Compounds for construction (and likely decommissioning) traffic (**Figure 4.3**). One of the Temporary Compounds is located near to the south eastern site entrance. The Temporary Compound layout will allow for HGVs to unload, turn, and leave in a forward gear, site security, some parking for site operatives and visitors, wheel wash and other materials as will be required by the Construction Traffic Management Plan (CTMP). The second Temporary Compound located within the yard to the south west of the Gwernigron Farm buildings. This will be utilised during the construction phase by containing temporary cabin type site offices, canteen areas, a drying room, welfare facilities; an offloading and refuelling area, skips/waste area, as well as parking for small vehicles and EV charging points. This area is currently used as the farmyard to the site and has a surface of mixed crushed aggregates spread across it. At the start of construction this surface will be supplemented with additional crushed aggregates to provide a smoother working surface.;

- A temporary parking area for the construction phase is also proposed adjacent to the western boundary of the Temporary Compound which is located to the south west of the Gwernigrn Farm Buildings. Parking is suited to the traffic numbers anticipated for construction given in the CTMP. The surface of this area would comprise temporary, surface laid, construction matting/panels;
- Communications and monitoring equipment located in/on the structures listed here (see accompanying elevation drawings); and
- Tree planting and proposed hedgerows are also illustrated at **Figure 4.1** across the site, as well as swales, attenuations basins and possible pond locations.

4.2.4 The photovoltaic panels would be set at an angle of approximately 22 degrees. The photovoltaic (PV) arrays will be fixed panels which will be positioned at a 'fixed' tilt and orientation.

4.2.5 The top edges of the panels would be up to 3m above ground level and the lower edges of the panels would be between 0.8 and 1.35m above ground level. The positioning of the arrays respond to existing physical features (e.g. topography) and separation distances are provided between such features, these include ditches, water pipes, electrical overhead lines, overshadowing, rights of way, biodiversity considerations and tree root protection areas. The separation distances have been guided by technical studies and consultation with relevant bodies.

4.2.6 The metal framework that houses the solar modules would be fixed into the ground by posts. The posts will be driven into the ground (by either direct piling or screw piling) to a depth of around 1.5 m dependent on localised ground conditions. The solar panels require no sub surface foundations and are designed to be reversible leaving no trace when removed.

4.2.7 Panels in areas identified as being potentially archaeologically sensitive (**Figure 4.4**) will be set on concrete ballast foundations to avoid disturbance of below ground features.

4.2.8 The Battery Storage Compound involves battery cells, which convert electricity into electrochemical energy that is then stored, within a solid electrolyte before being converted back to electricity for exporting into the local network.

4.2.9 The batteries proposed may be charged during periods of lower electricity demand, typically during the day when the full capacity of the solar farm is not required by demand on the network. The stored energy can be discharged during periods of high or peak demand, which is typically in the early evening. The batteries may also be charged by taking excess electricity from the grid at periods of very low demand, typically overnight from energy sources other than the proposed solar farm, to be released at times of higher demand, this provides a management service to the network.

4.2.10 In terms of the Grid Connection for this site, Bodelwyddan substation is a Tee off the Deeside to Pentir 400kV overhead line which forms part of the

national network. Supergrid transformers convert the 400kV voltage down to 132kV for use on the local, Distribution Network Operators (DNO) network.

4.2.11 A grid connection route corridor within which the underground cable route will be laid, is included as part of the planning application and is shown on **Figure 2.1**. This will require underground cabling to connect the site to the substation. The cable route will involve horizontal directional drilling under the A55 to enable connection from the site to the substation. The grid connection corridor has been assessed as part of each of the technical assessments in the ES.

4.2.12 Plant and equipment to enable energy to be exported to the grid will include a number of transformer and inverter housings appropriately spaced across the site. Each transformer will measure approximately 2.95m in length, 2.6m in width and 2.2m in height. The location of these are shown on **Figure 4.1**.

4.2.13 A c.2m high security fence will be installed around the solar panels areas within the Application Site to protect the solar panels from theft or vandalism. The fencing will provide gaps at ground level to allow for ecology to freely enter and exit. In addition, c.3m high pole mounted CCTV security cameras will be provided inside the site, facing the site and will monitor the integrity of the fence. CCTV poles will be positioned at 50m intervals around the perimeter fence.

4.2.14 All onsite cabling would be concealed and laid underground in trenches of approximately 0.4-0.6m deep or protected cable troughs. Where buried all cables would be buried according to current best practice, including soil handling techniques. Cable routes would run alongside access tracks where-ever possible. Where cables traverse field boundaries, micrositing will take place to allow the developer to run the cables through existing gaps in the hedgerows. Cables running through the archaeologically sensitive areas will be placed in cable troughs on the surface or routed through ducts on the panel framework.

4.2.15 The Proposed Development includes a package of landscape, ecological and biodiversity measures which are described in the Biodiversity Management Plan which accompanies **Chapter 6** (Biodiversity) and the Planting Plan which accompanies **Chapter 5** (Landscape).

### **4.3 OPERATIONAL LIFESPAN**

4.3.1 The development would export renewable energy to the grid for up to 37 years.

4.3.2 During the operational phase, the activities on site would amount to servicing of plant and equipment and vegetation management.

4.3.3 Following cessation of energy generation and exportation at the site, and as part of the contractual obligations with the landowner, the above ground elements would be decommissioned and removed from site (see section 4.8 for further information).

### **4.4 CONSTRUCTION PHASE & PROGRAMME**

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4.4.1 Two Temporary Compounds will be established in the Application Site, as shown on **Figure 4.3**. The two Temporary Compounds will remain in place during the construction period and will be removed from the site following the completion of the construction phase. Each of the two Temporary Compound layouts will allow for HGVs to unload, turn, and leave in a forward gear, as well as providing some parking for site operatives and visitors, wheel wash and other materials as will be required by the CTMP.

4.4.2 The surface of the Temporary Compound located near to the south eastern entrance would comprise temporary, surface laid, construction matting/panels.

4.4.3 The second Temporary Compound will be located within the yard to the south west of the Gwernigrion Farm buildings. This will be utilised during the construction phase by containing temporary cabin type site offices, canteen areas, a drying room, welfare facilities; an offloading and refuelling area, skips/waste area, as well as parking for small vehicles and EV charging points. This area is currently used as the farmyard to the site and has a surface of mixed crushed aggregates spread across it. At the start of construction this surface will be supplemented with additional crushed aggregates to provide a smoother working surface.

4.4.4 A temporary parking area for the construction phase is also proposed adjacent to the western boundary of the Temporary Compound located within the yard to the south west of the Gwernigrion Farm buildings. Parking is suited to the traffic numbers anticipated for construction given in. The surface of this area would comprise temporary, surface laid, construction matting/panels. Smaller vehicles, such as telescopic handlers and forklift trucks, will be used to transfer material and components from the two Temporary Compounds to other areas of the Application Site using the internal access tracks, which are shown on the proposed Site Layout at **Figure 4.1**.

4.4.5 It is envisaged that the construction period would last 27 weeks in total.

4.4.6 The deliveries will be spaced across the construction period, with on average 12 deliveries (24 two way movements) taking place per day over the 27 week construction period.

## **4.5 ACCESS AND TRAFFIC MANAGEMENT**

4.5.1 The Proposed Development comprises a number of separate components, each of which would be delivered to the Application Site by HGV.

4.5.2 HGVs will be associated with the delivery of materials and components including the perimeter security fence, the solar panel support frames, the solar panels themselves, cabling and ancillary inverters and control equipment.

4.5.3 The Temporary Compounds will be available during the construction period to provide a reception and turning area for incoming vehicles, and a lay down area for materials. Wheel wash facilities will be located here for exiting vehicles.

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4.5.4 The Temporary Compound, to the south west of the Gwernigrion Farm buildings will be the main parking area for staff and visitors.

4.5.5 The volume of traffic which will occur during the construction of the development has been calculated having regard to estimated volumes of materials needed to be imported to the Application Site. These estimates have been based on worst case assumptions so as to consider the maximum potential effects. The estimated breakdown of the delivery of materials, components and construction plant can be summarised as follows:

• Delivery of modules	200 deliveries
• Delivery of inverters	20 deliveries
• Delivery of substations	20 deliveries
• Delivery of cables	60 deliveries
• Delivery of piles	46 deliveries
• Delivery of framework	92 deliveries
• Delivery of entranceways	20 deliveries
• Delivery of material for connection substation	10 deliveries
• Delivery of concrete blocks and sand for sub bases	50 deliveries
• Delivery of other aggregate	100 deliveries
• Delivery of deer fence	15 deliveries
• Site compound facilities	60 deliveries
• Delivery of construction plant	60 deliveries
• Delivery of site skips	200 deliveries
• Delivery of crane for substation	30 deliveries
• Delivery of battery substations	50 deliveries
• Total	1,883 deliveries

4.5.6 It is assumed that the plant will be brought to the Application Site at the beginning of the construction period and remain on the Application Site until construction is complete.

4.5.7 Chapter 7 provides an assessment of construction effects of traffic and transport.

4.5.8 All workforce vehicles are assumed to be light vehicles (cars, vans or minibuses) and are likely to give rise to approximately 29 vehicle movements at

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the beginning of each working day (with a similar number at the end of the day), with occasional movements throughout the remainder of the day.

4.5.9 Trips associated with decommissioning would be less than those associated with construction, since landscaping will remain in place, and the number of HGV trips will therefore be correspondingly reduced.

4.5.10 Denbighshire County Council Public Rights of Way: 208/20 and 201/8 will be diverted as indicated in **Figure 4.2**. The route of the PRow through the Proposed Development will comprise unimproved field edges with some small areas of vegetation clearance (see Chapter 6 for more details). Access to Public Rights of Way within the vicinity of the Application Site will be maintained at all times. The PRow have been appraised in the relevant chapters of the ES.

4.5.11 A temporary construction phase diversion of PRow 208/20 will be required near to the south eastern entrance as shown in **Figure 4.2**. The proposed Temporary Construction Phase Diversion will comprise an unimproved route. The Temporary Construction Phase Diversion will cross the site access track and this crossing will be suitably managed with signage or other measures deemed necessary in the final CTMP to ensure the PRow is unobstructed during the construction phase and further ensure the safety of pedestrians using the PRow.

4.5.12 Drivers of construction vehicles will be made aware of the potential for members of the public to be using the PRow and will be informed that they must give way to rights of way users at all times. Further details of the management of the Temporary Construction Phase Diversion are provided in the CTMP (see **Appendix 7.1**).

4.5.13 Equally, users of the PRow will be warned of construction traffic through the use of appropriate signage. This will ensure there is safe access for both construction traffic and byway users as detailed in the CTMP provided at **Appendix 7.1**.

## **4.6 CONSTRUCTION METHODOLOGY**

4.6.1 Preliminary works in the form of site set-up and the implementation of any required ecological protection works would be carried out in accordance with construction standard best practice and ecological guidance and/or licence as appropriate to the species/habitat (where required).

4.6.2 The proposed construction measures form part of the 'Standard measures and the adoption of construction best practice methods' as referred to in the Assessment Approach (see Chapter 2). This would include:

- Details of the site set-up, site compound facilities and services;
- Prohibited or restricted operations (location, hours etc.);
- Details of construction operations highlighting any operations likely to result in disturbance and/or working hours outside the core working period, with an indication of the expected duration of key phases and dates;

- The details of proposed routes for HGVs travelling to and from the Application Site;
- Details of all works involving interference with a public highway, including temporary carriageway/footpath closures, realignment and diversions;
- Housekeeping procedures and environmental control measures;
- Procedures for managing environmental risks and responding to environmental incidents;
- Baseline levels for noise, vibration and/or dust and details of any monitoring protocols that may be necessary during the construction works (where specifically requested by the Council);
- Standard measures to control and mitigate potential for noise, dust, air quality and water pollution (see below);
- Standard measures for the management of run-off due to construction activities to reduce the risk of pollution and elevated flood risk both on and off site;
- Any requirement for monitoring and record keeping;
- Contact details during normal working hours and emergency details outside working hours;
- The mechanism for the public to register complaints and the procedures for responding to complaints;
- Provision for reporting, public liaison, prior notification etc; and
- Procedures for regular dialogue with the Council, relevant authorities and the local community.

#### 4.6.3 The standard construction best practice measures would include:

- Selection of construction methodologies to minimise generation of noise, vibration and/or dust;
- All vehicles and/or plant to be switched off when not in use;
- All vehicles and/or plant to be used in accordance with the manufacturer's instructions and subject to regular maintenance;
- The site compound/storage of materials to be appropriately sited to reduce environmental risk and appropriately secured;
- Stockpiles of soil materials to be appropriately sited to reduce environmental risks, of an appropriate height/batter to avoid slippage, with appropriate surface water management and subject to dust control measures;

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- Implementation of surface water drainage traps/attenuation, where required, with appropriate arrangements for discharge and/or collection (as appropriate);
- All liquids and solids of potentially hazardous nature (e.g. diesel fuels, oils and solvents) to be stored on surfaced areas with appropriate bunding to reduce the risk of spillage;
- Use of plant that may give rise to nuisance (noise and/or dust) to be adequately screened (where deemed necessary);
- Wheel and/or vehicle body washing facilities to be used to prevent tracking out of mud/dust onto the public highway using wheel wash or wash skip out as appropriate (where deemed necessary);
- Deployment of a road sweeper/road cleaning for use on the public highway (where deemed necessary);
- Programme of cleaning traffic management cones, lights and signs where deployed (as necessary); and
- Vehicles carrying materials to/off-site to be enclosed and/or sheeted as appropriate.

4.6.4 The requirement to comply with the procedures set out within a Construction Management Plan will be included as part of the contract conditions for each element of the work including the supply chain as appropriate. All contractors tendering for work will be required to demonstrate that their proposals can comply with the procedures and current best practice techniques.

4.6.5 Any proposed departures from the agreed Construction Management Plan will be submitted to the Council, relevant authorities and affected parties in advance.

#### **4.7 OPERATION**

4.7.1 During the operational phase, the activities on-site would amount to servicing of plant and equipment, cleaning the panels and vegetation management.

4.7.2 These trips will typically be made by small vans and 4x4 vehicles. The frequency of vehicle trips associated with monitoring and upkeep of the Proposed Development is typically expected to be about 18 times a year (3 visits every two months).

#### **4.8 DECOMMISSIONING**

4.8.1 After the 37 year generation period, the development would be decommissioned. All surficial components of the proposed development (comprising but not limited to: solar panels, transformer units, fencing, security measures, cabling, batteries, tracks, containers/enclosures, containers/enclosures foundations), will be removed.

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4.8.2 Areas of hardstanding and attenuation/drainage features which served them will be returned to the condition they were in prior to the construction of the Proposed Development (as noted in a pre-construction Record of Condition).

4.8.3 Any subsurface component of the Proposed development, (including but not limited to hardstanding base layers or foundations) will be cleared down to a depth of 1.2m. Any foundation or other component will be cleared away and the ground returned to its pre-construction status, as set out in a Record of Condition. Any foundation or ground preparation that lies below 1.2m may be left in-situ rather than be removed. Features beyond this depth will not interfere with the continued agricultural use of the site and can cause greater levels of ground disturbance to extract.

4.8.4 The ponds set out in the Biodiversity Management Plan (**Appendix 6.7**) and other features of the BMP will be left in-situ but there will be no ongoing obligation to maintain these once the Proposed Development has been decommissioned.

4.8.5 The rerouting of the PROW will remain following the decommissioning of the Proposed Development.

#### **4.9 ACCIDENTS OR DISASTERS**

4.9.1 Schedule 4 (Part 8) of the EIA Regulations states that the ES should include a description and assessment of the likely significant effects resulting from potential accidents or disasters applicable to the development proposal. The development is not considered likely to cause a significant accident or disaster risk during either the construction, operation and decommissioning phases.

##### **Construction and Decommissioning**

4.9.2 The risk both to construction workers and the general public is low and not significant during the construction and decommissioning phases. This would be regulated by the Health and Safety Regulations and the construction (Design and Management) Regulations 2015. The construction of the Development would be managed in accordance with the Health and Safety at Work Act 1974 and would comply with all other relevant Health and Safety Regulations, including the Construction (Health, Safety and Welfare) Regulations 1996 and Electricity Safety, Quality and Continuity Regulations 2002.

##### **Operational Phase**

4.9.3 When operational, the majority of the Proposed Development will comprise solar PV modules which are inert. Electrical infrastructure will be located across the Development, in the form of inverters, transformers and cabling, all of which will be subject to routine maintenance such that it is not considered to pose a significant risk to creating an accident or disaster.

4.9.4 The substation compounds (40ft Substation and external transformer elevations & plan SCUKX-GWERN-001-282.B) will have a concentration of electrical infrastructure which will include the substation and transformers and will be subject to a routine maintenance regime. Accordingly, it is not considered to pose a significant risk of creating an accident or disaster.

4.9.5 An Energy Storage Safety Management Plan has been prepared in order to set out the procedures which are in place should there be a fire during the operation of the Battery Storage Facility and this is provided at **Appendix 10.1**.

4.9.6 Overall, no potential has been identified for the development proposal to lead to increased risk of a major accident or disaster in isolation or in combination with cumulative developments.

#### **4.10 CLIMATE CHANGE**

4.10.1 The ES should also include description of the likely significant effects the development proposal has on climate and the vulnerability of the project to climate change.

4.10.2 With regards to vulnerability to climate change, the solar modules are designed to capture the sun's energy and therefore built to withstand extreme climatic conditions and are purposefully located in open locations. The Application Site is not located within a coastal location and as such is not at risk to any changes to the sea level. The framework holding the modules are driven into the ground at an appropriate depth which responds to site specific ground conditions and are designed to accommodate the predicted relatively small change in wind speed during the lifespan of the development.

4.10.3 Turning to the proposal effects on climate change, the UK Government has set ambitious targets for reducing greenhouse gas emissions by 2050. The Development, in conjunction with other renewable energy developments, will contribute to the UK's aims to reduce carbon emissions and achieve its ambitious greenhouse gas emissions reduction targets. When operational, the Development will generate electricity from a renewable source and export this to the National Grid.

4.10.4 The proposal would provide a clean, renewable and sustainable form of electricity. The scheme would add to the Council's progress in meeting its renewable energy target. It would also assist in meeting national targets. The generation of electricity from the Development will displace the generation of electricity from other conventional power sources, typically coal, oil, gas or diesel-fired electricity production as these are more often being decommissioned.

#### **4.11 ALTERNATIVES**

4.11.1 The EIA Regulations (Schedule 4, paragraph 2) require for inclusion in an ES:

*"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"*

4.11.2 The Applicant has considered the 'do nothing' alternative as well as alternative designs, alternative types of generating stations and alternative locations.

### **'Do Nothing' Alternative**

4.11.3 The 'do nothing' option would entail leaving the Application Site in its current condition and it is assumed that the current land use would remain as it is, that is, available for agricultural use. It is an obvious statement that any impacts associated with the Proposed Development would therefore not occur. However, the 'do nothing' option will result in the loss of potential renewable energy source proposed. Other benefits that would not be secured are farm diversification and biodiversity enhancements.

### **Alternative Designs**

4.11.4 The constraints and opportunities presented by the Application Site have been used to inform the design principles, which in turn have helped refine and structure the Proposed Development.

4.11.5 A number of mitigation measures have been implemented during the iterative design stage and these relate to the protection of boundary vegetation, location and alignment of access tracks, location of ancillary infrastructure such as substations (comprising transformers and switchgear) as well as the location of the two Temporary Compound areas.

4.11.6 Site specific requirements or modifications made to the design over the course of the design process as a result of statutory consultee and technical consultants' feedback include:

- Heritage considerations – Development has been excluded from both the southern part of the field immediately to the east of the Grade II Listed Gwernigrn Farmhouse and Grade II\* Listed Dovecote and from the northern part of the field on the south side of the access track directly south of the Farmhouse and Dovecote;
- Transport considerations – The main site access will be into the south-eastern boundary of the site from St Asaph Road (A525);
- Locating one of the two Temporary Compounds near to the site entrance (See **Figure 4.3**);
- The existing PRow located within the site will be diverted where required (See **Figure 4.2**) which will include a temporary diversion for the applicable section during the construction phase. A Construction Traffic Management Plan is provided at **Appendix 7.1**;
- Internal access tracks have been designed to utilise existing gateways and farm tracks wherever possible to minimise the need for localised hedgerow removal. The location and alignment of access tracks have also been informed by the arboricultural survey and attempts to keep a separation between construction traffic and users of the Public Rights of Way as well as the residents of the properties at the centre of the site;

- Appropriate green colouring (RAL 6005 or similar) for electrical equipment and the battery containers to help integrate into existing landscape context;
- Appropriate retention and set back of panels and infrastructure from trees and hedgerows, including consideration of Root Protection Areas;
- Landscape considerations - Part of the field to the far north, an area north of Gwernigrion Farm, fields north of the A55 (including west of houses at Old Walls, and fields south, west, and north (west of the A525) have been omitted to provide off sets from building and provide areas for mitigation measures including substantial areas of tree and woodland planting and new hedgerow lines to enhance the existing hedgerow structure;
- Additional planting and hedgerows enhancements include gapping up / strengthening of existing hedgerows using native species that respond to local landscape character and context. The majority of hedgerows onsite are well established. Additional planting is included as part of the Proposed Development to provide hedgerow reinforcements and habitat connectivity. Extensive lengths of new hedgerow planting, hedgerow trees and additional woodland blocks are located throughout the Proposed Development, to break up areas of panels and filter longer distance views within the AONB. In addition to the existing hedgerow boundary, substantial woodland planting has been provided along the eastern boundary with the A525 to provide visual screening;
- It is proposed that external hedgerows and internal hedgerows be maintained at 3-4m in height (including new planting once established). Details of the future maintenance/management proposals for existing/proposed planting are described in the Biodiversity Management Plan at **Appendix 6.7** and the Planting Plan at **Figure 5.11**;
- Further biodiversity enhancements include onsite improved grassland, and the provision of bird and bat boxes. Provision of wildflower grassland (between / perimeter of the panels) to be incorporated into the design, including for target butterfly species. Additional habitat will be provided for Great Crested Newts. Details are provided in Biodiversity Management Plan at **Appendix 6.7**.
- Utilisation of lower quality Grade 3b agricultural land as well as some higher quality land with potential of natural maintenance of the site by grazing sheep, retaining an agricultural use of the land. The layout has been refined to reduce the amount of BMV land utilised with 0.85ha of Grade 2 land and 17.98ha of Grade 3a land included in the area proposed to be covered by the solar panels and battery storage elements;
- Recycling of all materials after end use – to include panels (which are now covered by the Waste Electrical and Electronic Equipment Directive), frames and wiring.

4.11.7 Further details on the above are provided in each of the respective technical chapters under the heading 'Mitigation and Enhancement'. The above

therefore illustrates an iterative approach to design, which has been incorporated into the Proposed Development as 'embedded mitigation' or 'mitigation by design'.

### **Alternative Types of Generating Stations**

4.11.8 Solar generation is the only type of renewable energy generation considered for the Proposed Development, as Solarcentury are a solar PV developer, and therefore no alternative technologies have been considered.

### **Alternative Locations**

4.11.9 A detailed consideration of alternative locations for the proposed solar scheme are set out in the Sequential Assessment Report which accompanies the application submission. The Sequential Assessment Report confirms that there is no available previously developed land and that there is no available or deliverable land of lower agricultural land designation which could accommodate the proposed development. Alternative locations have therefore been considered and no suitable alternatives have been identified.