



**LLYR**

# **Llŷr 1 Floating Offshore Wind Farm Bat Mitigation Plan**

**November 2025**

**Document:**

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## 1. INTRODUCTION

On 28 August 2024, Llŷr Floating Wind Limited submitted a Marine Licence and a Section 36 (with deemed planning) applications to Natural Resources Wales (NRW) Marine Licensing Team and the Planning Environment Decisions Wales (PEDW) respectively for the Llŷr 1 Test and Demonstration that aims to provide a facility to demonstrate the next generation Floating Wind technology concept on a small-scale pre-industrialisation project.

The proposed facility involves the installation of an onshore electricity cable and substation to connect the offshore wind array to the National Grid connection point at Pembroke Power station. The substation will occupy a maximum area of 126 m x 109 m (excluding the SuDS and laydown area) – proposed layout is shown in Figure 7.8 Indicative Landscape Mitigation Plan in appendix 1). The onshore export cable route area within which the electrical export cables will be located is circa 2 km<sup>2</sup>. The onshore export cables are connected to the offshore export cables at Transition Joint Bays located at the Horizontal Directional Drill (HDD) landfall site next to Freshwater West.

The application details a project design envelope, which sets out a series of realistic design assumptions from which worst-case parameters are identified and allows specific reasoned maximum extents for key assessment parameters to be assessed on a ‘realistic worst-case’ basis. The final design of the proposed Project will fall within the maximum extents of the parameters defined. The footprint of the onshore infrastructure and associated temporary works, comprised of the Onshore Export Cable Corridor and the Onshore Substation, as defined, and including new access routes, that forms the onshore boundary for the planning application.



Figure 1 - Llŷr Onshore Development Envelope

Following the granting of consent for the development, the project will advance the design details based on procurement and supply chain feedback and further site investigation to arrive at the final detailed design of the project. This Bat Mitigation Plan will be updated based on the outcome of those

finalised design details and will be consulted and agreed with NRW, Pembrokeshire County Council and Pembrokeshire Coast National Park Authority prior to onshore works being undertaken.

The Bat Mitigation Plan proposes measures to minimise impacts on bat populations and their roosting sites from the construction activities and operation of the onshore substation. The plan forms part of the Llŷr Project Biodiversity Management Plan (BMP) to ensure compliance with wildlife protection legislation and maintains local bat population integrity.

## 2. PRE-APPLICATION BAT SURVEY AND CONCLUSIONS

The licence and permit applications were supported by a comprehensive Environmental Impact Assessment that undertook the ecology impact assessment (including bats) on a worst-case scenario upon a baseline established by desktop, project specific bat surveys (Llŷr Floating Offshore Wind Farm Environmental Statement Volume 6: Appendix 8C – Bat Survey Report - August 2024) and other surveys undertaken by project in the area (including a Preliminary Ecological Appraisal (PEA) and bat survey report (Greenlink, 2019a; Greenlink 2019b).

### 2.1 Baseline

The 2023 surveys identify that the onshore development area supports at least ten bat species. Taken together with the results of surveys undertaken in 2018 this species assemblage includes twelve species and is of National value (Greenlink, 2019b). The onshore development area is known to support species listed on Annex II of the EC Habitats Directive, including the lesser horseshoe bat, greater horseshoe bat and barbastelle. Greater horseshoe bats are also the primary designation feature of two SACs within 3 km of the onshore development area: Limestone Coast of South Wales SAC and Pembrokeshire Bat Sites and Bosherton Lakes SAC. Greater horseshoe bats also feature within the citation of eight SSSIs within 10 km of the onshore development area. Lesser horseshoe bats have been recorded within several of these SACs and SSSIs, though are not a primary reason for their designation. Given that lesser and greater horseshoe bats have a core sustenance zone of 3 and 2 km, respectively, there is potential for these species to rely on habitats present throughout the onshore development area for connectivity to important foraging areas (BCT, 2020). The population of greater horseshoe bats within these designations, and likely utilising habitat features within the onshore development area, is of international importance.

In summary, based on the desk study, project specific surveys and surveys undertaken by Erebus and Greenlink projects, the presence of the following species of bats were identified:

- barbastelle (*Barbastelle barbastellus*)
- brown long-eared (*Plecotus auritus*)
- common pipistrelle (*Pipistrellus pipistrellus*)
- Daubenton's bat (*Myotis daubentonii*)
- greater horseshoe (*Rhinolophus ferrumequinum*)
- leisler's bat (*Nyctalus leisleri*)
- lesser horseshoe (*Rhinolophus hipposideros*)
- long-eared (*Plecotus sp.*)
- nathusius' pipistrelle (*Pipistrellus nathusii*)
- natterer's bat (*Myotis nattereri*)
- noctule (*Nyctalus noctula*)
- serotine (*Eptesicus serotinus*)
- soprano pipistrelle (*Pipistrellus pygmaeus*)
- whiskered/Brandt's (*Myotis mystacinus/ brandtii*)

A preliminary roost assessment (PRA) conducted by AECOM in 2023 identified three PRF-I trees with minimal opportunity for roosting bats and two PRF-M trees with large cavities and potential to support multiple roosting bats. Also, adjacent to the onshore development area, four buildings were classified as having Low suitability for roosting bats.

In addition, during roost surveys carried out in 2018 for the Greenlink project, the war memorial (gun emplacement/gun battery) located on the B4319, north of Freshwater West Beach was identified as a frequently used roost for greater horseshoe bats and more infrequently used by lesser horseshoe bats. This is directly adjacent to the onshore development area, including the landfall area.

None of these roosts are within the red line boundary identified but some are within the 30 m buffer area. No further roosting sites were identified from either the site specific surveys nor the desk studies or other projects in or within proximity to the within the red line boundary, however acknowledging the limitations of the project specific surveys a full season of bat surveys along the cable route, around the HDD and substation locations to inform and update this mitigation plan. The mitigation plan will then be consulted and agreed with NRW, Pembrokeshire County Council and Pembrokeshire Coast National Park Authority in advance of the commencement of works.

The onshore development area is within the Core Sustenance Zone (CSZ) of known roosts for brown long-eared bat, common pipistrelle, greater horseshoe bat, lesser horseshoe bat, Natterer's bat and serotine and offers suitable foraging, commuting and roosting habitat for these species. The CSZ refers to the area around bat roosts in which the availability of habitat of suitable quality is likely to have a significant influence on the status of the roost. Developments within this area may impact bats commuting and foraging from the identified roost.

The survey results do confirm that habitat features within the application site are used by bats, including greater and lesser horseshoe bats associated with the nearby SACs, although the survey results are not adequate to determine if any particular habitats or flightlines are more important than others. Therefore, it is assumed that all hedgerows, woodland and scrub are important for bats. Further bat surveys will be conducted along the confirmed cable route to further inform this Mitigation Plan and agreed with the regulators prior construction activities commence on site.

## **2.2 Bat Ecological Features Affected by the Project**

The following internationally designated sites are within the onshore development area: Castlemartin Coast SPA and Limestone Coast of South West Wales SAC. The Pembrokeshire Marine SAC is situated directly adjacent to the onshore development area. These internationally designated sites are situated at the south-western boundary of the onshore development area in close proximity to the coast and designated in part for their marine interest but also their associated terrestrial habitats, protected flora and bat and bird assemblages in which this report will consider potential impacts on. These protected sites are of international importance and therefore the proposed Project proposes to directionally drill the cable beneath the area in which these designated sites are located, avoiding any direct impacts to the SPA and SACs within the onshore development area. Potential indirect impacts include pollution from run-off and disturbance impacts from noise, movement/visual and light pollution.

The onshore development area lies within the Core Sustenance Zone (CSZ) of the lesser and greater horseshoe bats (2 and 3 km CSZ respectively) cited within the Castlemartin Coast SAC and Limestone Coast of South West Wales SAC, the Milford Haven Waterways SSSI and the Castlemartin Range SSSI. The onshore development area is also within the CSZ of the following species cited within the Orierton Stable Block and Cellars SSSI (part of the Pembrokeshire Bat Sites and Bosherton Lakes SAC) located within 2.8 km of the onshore development area: greater horseshoe bat, brown long-eared bat, soprano pipistrelle (all 3 km) and noctule (4 km).

The onshore development area does not lie within the CSZ for greater horseshoe and lesser horseshoe bats, noctule, Natterer's bat, whiskered bat, Daubenton's bat, common pipistrelle and brown long-eared bat cited in the following designated sites: Scoveston Fort SSSI, Stackpole SSSI, Stackpole Courtyard Flats and Walled Garden SSSI and Park House Outbuildings, Stackpole SSSI. It is anticipated that the removal of hedgerows will be no more than 10 m at any one location, so connectivity for commuting bats will be retained. It is therefore not considered a significant loss of foraging habitat for bat populations associated with these SSSIs.

## 2.3 Applicable Legislation

### *International Legislation*

The UK is a contracting party to the 1979 Convention on the Conservation of European Wildlife and Natural Habitats (commonly referred to as the Bern Convention). Within England and Wales its provisions with regards to bats are transposed into law through the Conservation of Habitats and Species Regulations 2017 (as amended) (the England and Wales Habitats Regulations) and the Wildlife and Countryside Act 1981 (as amended) (the W&CA).

### *Legislation in Wales*

All bat species native to the UK are protected under Regulation 43 of the Conservation of Habitats and Species Regulations 2017 (as amended). This makes it an offence to

- deliberately capture, injure or kill a bat.
- deliberately, intentionally or recklessly disturb a bat.
- damage or destroy a breeding site or resting place of a bat; or
- possess, control, transport, sell or exchange or offer for sale or exchange, any live or dead bat or part of a bat or anything derived from a bat or any other part of a bat.

Disturbance of bats is defined as any activity which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young; to hibernate or migrate; or to affect significantly the local distribution or abundance of the species of bat.

Where development works are at risk of causing one or more of the offences listed above, a European Protected Species Mitigation Licence (EPSML) from Natural Resources Wales (NRW) may be obtained to facilitate the works that would otherwise be illegal.

Bats are also protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Lower levels of disturbance not covered by the Conservation of Habitats and Species Regulations 2017 (as amended) remain an offence under the Wildlife and Countryside Act 1981, although a defence is available where such actions are the incidental result of a lawful activity that could not reasonably be avoided.

Under Section 9 of the W&CA (s.9(4)(b), 9(4)(c) and 9(5) only), it is an offence (in relation to bats) to:

- intentionally or recklessly disturb a bat while it is occupying a structure or place of shelter or protection;
- intentionally or recklessly obstruct access to any structure or place used by a bat for shelter or protection; or
- sell, offer or expose for sale, or have in their possession or transports for the purpose of sale, any live or dead bat or any part of, or anything derived from a bat

Given the above legislation the potential presence of bats at a site represents a material consideration in the planning process. Even where planning permission is not required, there is still a legal

responsibility placed on the developer to ensure that an EPSML licence is obtained to cover any works that have the potential to result in an offence under the above legislation.

Seven of the UK bat species are listed as species of principal importance within Section 7 of the Environment (Wales) Act 2016, all of which have a recorded presence within the development area:

- barbastelle (*Barbastella barbastellus*) (area).
- Bechstein's (*Myotis bechsteinii*).
- brown long-eared (*Plecotus auritus*).
- common pipistrelle (*Pipistrellus pipistrellus*).
- greater horseshoe (*Rhinolophus ferrumequinum*).
- lesser horseshoe (*Rhinolophus hipposideros*).
- noctule (*Nyctalus noctula*); and
- soprano pipistrelle (*Pipistrellus pygmaeus*).

Although the law provides strict protection to bats, it also allows this protection to be set aside (derogated) under Regulation 53 of the Habitats Regulations through the issuing of an EPSML, for the purpose of preserving public health; public safety; other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment. However, in accordance with the requirements of the Habitats Regulations, a licence can only be issued where the following requirements are satisfied:

- The development works to be authorised are for the purpose of preserving public health or safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment;
- There is no satisfactory alternative; and,
- The action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

In Wales, EPSML applications are currently determined by NRW. NRW will normally only accept applications for schemes where planning consent has been granted, and all ecology relevant conditions have been discharged.

Currently it is not anticipated that an European Protected Species Mitigation Licences (EPSMLs) is required to undertake the construction works, however should the planned surveys identify the need for an EPSML, an application with the appropriate information will be submitted to NRW for determination. Should the project be successful in obtaining a required EPSML, this bat mitigation plan will be updated to incorporate the necessary information, management and mitigation measures necessary to achieve compliance.

### **3. KEY PROJECT ACTIVITIES WITH POTENTIAL FOR BAT INTERACTIONS**

This section briefly outlines the project activities that have potential for bat interactions. This mitigation plan will be updated with further detail on the activities and impacts following site specific geotechnical, archaeological and ecology (including bat) surveys, finalisation of the details of the cable route, HDD installation location and substation design and location. The mitigation plan will then be consulted and agreed with NRW, Pembrokeshire County Council and Pembrokeshire Coast National Park Authority in advance of the commencement of works.

#### **3.1 Construction Activities**

Construction activities include the establishment of a temporary compound for the HDD drilling behind the Freshwater West dune system, the HDD installation, the phased rolling installation of the 2 buried

cables between the HDD compound and the project substation, and phased installation of a single buried cable from the project substation to the National Grid connection point at Pembroke Power Station.

The following construction activities of the project likely to give rise to impacts on bats, as identified within the Environmental Statement are:

- Vegetation clearance - clearance of hedgerows and other vegetation to facilitate the construction of the substation, associated access roads and, in some cases along the onshore cable route.
- Establishment of temporary compounds and access tracks.
- Installation of onshore cables – open trench cutting
- Installation of onshore cables - trenchless installation (HDD).
- Establishment of onshore substations.
- Operation and movement of construction plant / vehicles.
- Employment and movement of construction workforce (human activity).
- Construction lighting

#### *Pre-Construction Surveys and Site Preparation Works*

Detailed pre-commencement surveys (such as geophysical, geotechnical, ecological, bat, otter and archaeological surveys) will be conducted before works commence at the landfall, the cable corridor and substation work areas. The precise route within the cable corridor will be informed by the results of these surveys - micrositing within the cable corridor may take place to make minor adjustments to accommodate constraints and any unexpected on-site conditions identified ahead of installation. This mitigation plan will be updated with the actual routes and detailed mitigation measures per each section of the cable route, HDD location and substation location. The following activities will be undertaken prior to the commencement of construction:

- **Soil strip:** prior to cable installation, topsoil will be removed, set aside and handled in accordance with the project Soil Handling and Storage Plan.
- **Vegetation clearance:** clearance of hedgerows and other vegetation to facilitate the construction of the substation, associated access roads and, in some cases along the onshore cable route. This will be undertaken only where completely necessary and will be kept to a minimum.

Construction will commence with the installation of fencing, temporary access roads, laydown areas and Temporary Construction Compounds (TCCs), where required, for each construction works location (e.g. the landfall, along the cable route and at the substation location).

Any necessary preparatory work will be undertaken to existing infrastructure, utilities and services (where required) to enable access and construction activities. Laydown areas will be established to allow the onshore infrastructure for the landfall, the cable corridor and substation to commence construction. The preparatory works will include the establishment of temporary construction compounds, offices, welfare facilities, security, wheel wash, lighting, and signage.

Preparation of laydown areas will typically involve the removal and appropriate storage of topsoil (for later reinstatement) and, where required, the creation of TCCs and temporary access roads typically using crushed stone potentially overlain on a reinforcing geotextile membrane. This is further detailed in the sections below.

Where no direct access is available to the laydown areas from the local highway network, a temporary haul road for the cable corridor route and construction access arrangements for laydown areas will be required. If needed, temporary access tracks and haul roads will be constructed and will typically be up to 15 m wide, including verges and drainage channels, the width will depend upon topography and

access requirements. The method of construction will also depend on ground conditions and topography.

The removal (or height reduction) of trees, hedgerows and ground vegetation will be kept to a minimum but where necessary will be completed in accordance with best practice methods and with the necessary licences in place. Hedgerows will be replaced wherever possible although trees cannot be planted within 3 m of any sections of underground cable that have been installed.

#### *Cable Installation at Landfall (HDD Site)*

The cable ducts at the landfall will be installed by HDD from the onshore site at the landfall with an exit point below the extreme low water mark offshore. At the landfall site each offshore cable will be connected to the onshore cable in an underground transition joint bay (TJB). There will be up to two TJBs and each will be up to 12 m long, 6 m wide and 2.25 m deep.

#### *Horizontal Directional Drilling (HDD) Construction Process*

Horizontal Directional Drilling is a trenchless construction method used to install underground utilities like pipelines, fibre optic cables, and conduits with minimal surface disruption. Following the pre-construction site surveys, geotechnical investigations, and identification of utilities or services within the site, a bore path profile will be designed to calculate the entry and exit angles, depths, and the pilot hole trajectory to avoid existing utilities and geological obstacles. The HDD operation will require a drilling rig, a mud mixing and recycling system, drill pipe, various reamers and cutting tools, and tracking equipment. The HDD drilling will follow a three-phase process:

##### **Phase 1: Pilot Hole Drilling**

The drill rig is positioned at the entry point, and a steerable drill head with a locating beacon is launched at a shallow angle into the ground. The drill operator advances the drill string while continuously monitoring the beacon's position using a walkover locating system. By controlling the drill head's orientation and adjusting the angle, the operator steers the pilot hole along the designed path. Drilling fluid (bentonite mud) is pumped through the drill string to cool the bit, stabilize the borehole, and carry cuttings back to the surface. The pilot hole emerges at the predetermined exit point.

##### **Phase 2: Reaming**

Once the pilot hole reaches the exit point, the drill bit is removed and replaced with a reamer—a larger cutting tool. The reamer is pulled back through the pilot hole toward the entry point, enlarging the borehole to the required diameter. This may involve multiple passes with progressively larger reamers, depending on the size of the product to be installed. Drilling fluid continues to flow, maintaining borehole stability and removing cuttings.

##### **Phase 3: Product Pullback**

After the borehole is reamed to the proper size, the final reamer is attached to a swivel, which connects to the product pipe or conduit at the exit point. The drill rig then pulls the reamer and product back through the borehole to the entry point. The swivel prevents torque from transferring to the product. Drilling fluid lubricates the process and helps reduce friction as the product is installed.

#### **HDD Construction Site Layout**

A 100 m x 50 m temporary works area (5,000 m<sup>2</sup>) along with a 40 m x 50 m (2,000 m<sup>2</sup>) construction compound will be required at each TJB during installation and be contained within the Onshore HDD Site (see figure 3). Access to the temporary works area and construction compound will be via the

previously used Greenlink access track, which is also visible in figure 3. The HDD construction compound will consist of:

**Drilling Rig** - The HDD rig is positioned at the entry point with adequate space for the drill string to be launched at the designed entry angle (typically 8-20 degrees). The rig needs firm, level ground and must be oriented precisely along the bore alignment. Behind the rig, there's a staging area for drill pipe sections that will be progressively added as the pilot hole advances.

**Mud System Area** - Adjacent to the rig sits the drilling fluid system, which includes mud mixing tanks, pumps, and storage for bentonite and additives. This area needs water supply access and enough space for bulk material delivery. The mud is pumped from here through hoses to the drill string.

**Mud Recycling and Settling Pits** - Drilling fluid that returns to the surface (carrying drill cuttings) flows into containment pits or tanks near the entry point. These settling pits allow cuttings to separate from the fluid so the mud can be reconditioned and reused. The pits must be properly lined to prevent environmental contamination and sized to handle the expected fluid volumes.

**Spoil Management Area** - Space is needed for disposing of or stockpiling drill cuttings and spent drilling fluid. This typically includes roll-off bins, vacuum trucks, or designated containment areas. The material may require testing and proper disposal depending on soil conditions.

**Pipeline Staging Area** - The conduit to be installed is laid out in a straight line leading from the entry pit, positioned along the bore path alignment. For long installations, the product may be pre-assembled and supported on rollers or skids to reduce friction during pullback. The staging area must be long enough to accommodate the entire product string.

**Equipment and Materials Storage** - Space is allocated for reamers, swivels, pullback equipment, pipe fusion equipment (if needed), and other tools. There may also be welding or joining stations if pipe sections need to be connected on-site.

**Safety and Welfare Facilities** - The site will include an area for safety equipment, first aid, sanitation facilities, and temporary offices for site personnel.

**Utilities, Services and Security** - The HDD site will need temporary power (generators), water supply for mud mixing, and potentially compressed air. All these utilities must be safely routed and protected. The site will have temporary fencing around the site and temporary lighting rigs required for personal safety and safe operations. The management details of the lighting is provided in the mitigation section 4.3.

#### *Installation of Onshore Cables*

The onshore export cable will be 7.1 km long within the red line boundary (predominantly within agricultural fields) and is up to 900 m wide; although the actual cable disturbance area will be no more than 35 m wide (and most typically up to 25 m wide). The minimum burial depth is 0.9 m, except for agricultural lands where the minimum burial depth is 1.1m, and this may be increased in certain locations for example across some arable fields to allow for ploughing. The maximum trench width will be 1.2 m. It should be noted that this will also vary with depth of cover (the deeper the cables are buried the wider the trench may become).

The primary cable installation method will be open-cut trenching through agricultural fields unless crossings are required. The cable installation will likely proceed sequentially along the cable route, starting from either the landfall or the onshore substation. If time constraints demand, concurrent installation may be carried out. As a conservative estimate, the cable installation rate for a single cable in a single trench through greenfield is around 50 m to 60 m per day (for works within agricultural fields

meeting the typical working corridor requirements). Considering the approximately 7.1 km length of the onshore cable route, the installation is estimated to take up to 72 weeks, disregarding any sensitivity constraints.

The onshore cable trenches will be excavated, typically utilising tracked excavators. The trench will typically be made by digging up ground along the route with a large excavator. A 5 m wide corridor will be required for heavy vehicle access (earth digging equipment and lifting equipment for the cable drums) along the side of the trench, and a further 5 m will be required for lay down of equipment, topsoil, and spoil from the trenching. Another 1.5 m (depending on method of trench shoring) is required from the edge of the trench on each side for safety and to prevent trench collapse under load, and a final 3 m to 5 m should be provided on the far side of the trench for access, storage or working as required. The overall working corridor width will be 35 m.

Following duct installation, the native material removed during construction (providing it is thermally suitable) will be replaced on top of the protective cover (marked with tiles/hazard warning tape) and any large and sharp stones removed. Finally, the trench will be covered with a minimum of 300 millimetres topsoil, using the native topsoil, up to the surface level, and the temporary access land is restored as close as possible to its original conditions.

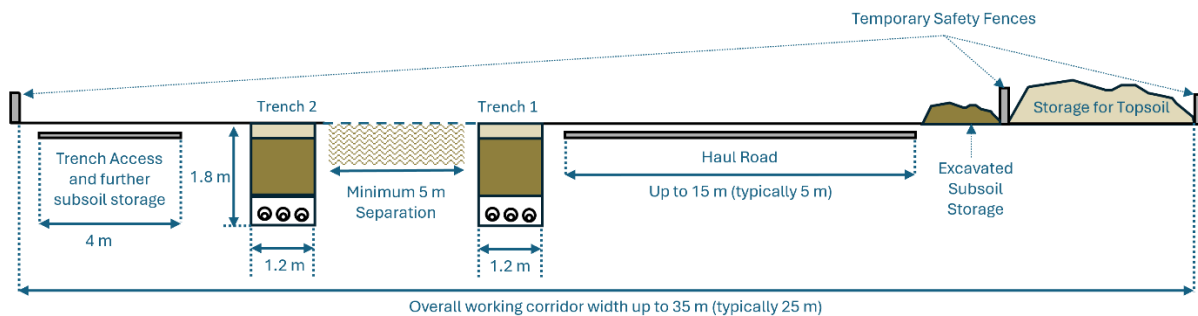


Figure 2 - Cable Route Installation working corridor (WCS)

Following installation of the ducts along the cable route, the cabling itself will be installed. The cable pulling operations are performed from the CJBs, with the cable drums situated at the next CJB along the route (a distance of approximately 1000 m).

Following completion of cable installation, all work areas will be reinstated to pre-construction conditions. Each CJB requires approximately 10 days for completion, starting from the delivery of the jointing tent until its removal and reinstatement. This timeframe encompasses joint creation, cable jointing, and ground reinstatement.

The onshore cable route crosses ecological obstacles such as watercourses, Trees and Hedgerows and environmentally sensitive areas; however, it will avoid areas of woodland/wooded copses.

#### Onshore Substation Construction

The construction of the onshore substation will require a number of construction facilities including:

- Cable drum laydown area.
- Site and administration offices.
- SuDS.
- Secure material storage; and
- Areas for storage of plant and other construction machinery.

Transportation of equipment will use local roads including the B4319 and B4320 to access the substation access road. Generally, work is expected to occur between 7am and 7pm, Monday to Saturday. However, certain operations such as oil filling and power transformer testing may require 24-hour working.

Under a conservative scenario, the construction of the onshore substation is estimated to take 1.5 years of continuous work. A further three to six months may be required at a later stage, following construction, for the final assembly and commissioning of the substation.

#### *Overall Construction Programme*

A detailed construction programme is being developed as design and procurement activities progress and this mitigation plan will be updated with full details of the construction programme, sequencing and installation methodologies and will be consulted and approved by NRW, Pembrokeshire County Council and Pembrokeshire Coast National Park Authority prior to the commencement of construction and as a condition of consent. The installation of onshore components is likely to be completed over 18 to 24 months.

Generally, work will be undertaken 7am to 7pm Monday to Saturday, however some works may require 24 hour working (e.g. HDD at the landfall, road and river crossings). Any works requiring 24 hour working will be agreed in advance with the local authority.

Installation	Anticipated Duration
Landfall HDD works	24 – 64 weeks
Onshore cable route installation	38 – 72 weeks
Substation	78 weeks

### **3.2 Operation and Maintenance Activities**

The project will be operational for a period of 30 years from final commissioning. The key O&M tasks envisaged during the operation of the are as follows:

#### *Cable Operation and Maintenance*

Cable systems are highly reliable and typically do not require intrusive maintenance. Maintenance of onshore export cables primarily involves annual visual inspections along the cable route to check for any potential impact from external factors such as heavy loads. Access to the main onshore export cable lengths outside of the Transition Joint Bays is limited, so specific maintenance on the onshore export cable would only be conducted on the section where a problem is identified. In such cases, a section (usually tens of meters long) would be removed, a new section (cable spare) would be spliced in with field joints, and the cable would be reinstalled. The impacts associated with cable operation and maintenance are essentially the same as the construction activities, although at a smaller scale.

#### *Substation Operation and Maintenance*

In the initial five to ten years of operation, the maintenance needs of the substation will be relatively low compared to later stages of its lifespan. This will be taken into account for future work planning on the onshore substation.

As the substation ages but remains within its working life, more extensive maintenance may be required. This proactive maintenance approach addresses potential issues before they occur, as opposed to a corrective maintenance program that responds to problems after they have happened, potentially resulting in revenue loss in the worst-case scenario. Some major overhaul procedures may necessitate the shutdown of specific substation equipment.

The substation will also be complemented with security infrastructure such as 2.4 m high, galvanised steel panelised fencing, CCTV, motion sensor lighting as well as security alarms. Different lighting will be used throughout the substation site. This will include 10 lux along access paths and electrical paths and further 2.2 lux lighting around the security fencing. In a worst case scenario this lighting will be operated for 24 hours although ideally these will only be used when required.

The substation has the potential to emit low levels of noise. Indicative operational noise relating to the onshore substation are:

Substation Equipment	Sound power level at Source dB(A)
Grid Transformer main tank	72
Grid Transformer coolers	76
Auxiliary Transformer	60
Harmonic Filter	85
Shunt reactor main tank	76
Shunt reactor coolers	75
STATCOM/ SVC switched reactor	80
STATCOM heat exchanger cooling	76
Voltage Source Converter (VSC) air cooled reactor	76
STATCOM cooling plant pumps	85

During the operational phase (for any repair works at the substation), there will be a minimum of two persons on site at any one time (24 hours per day, seven days per week). The project has an anticipated lifetime of 30 years, following which the infrastructure will be decommissioned which is expected to be complete within 12 months.

#### 4. BAT MITIGATION PLAN

The purpose of this bat mitigation plan is to minimise, or at least compensate, for negative impacts on the bat populations around the development site and their habitat. It also aims, where possible, to maximise the benefits for biodiversity from the development of the Llŷr project. The plan is being developed by the Llŷr project to ensure legal compliance and maintain the local bat conservation goals and local ecosystem services.

This plan takes the ‘mitigation hierarchy’ approach to bat mitigation, where avoidance is the first step, then considering mitigation of any impacts that cannot be avoided and where it cannot be avoided, using compensation measure to offset any residual impact.

##### 4.1 Pre-Construction Survey

The project will undertake a full season of pre-construction bat survey along the cable route, around the HDD and substation locations to inform and ensure that no ‘new’ roosts are established prior to construction (as bats are a highly mobile species). The surveys will be used to inform and update this mitigation plan, which will then be consulted and agreed with NRW, Pembrokeshire County Council and Pembrokeshire Coast National Park Authority in advance of the commencement of works.

##### 4.2 Mitigation Measures - Avoidance

The footprint of the onshore cable route including the HDD location, associated temporary works, new access routes, and the onshore substation, will be carried out within the defined ‘red line boundary’ forms the onshore boundary for the section 36 consent and will be within the maximum extents of the worst-case parameters defined.

The LLŷr project HDD location and substation sites will be developed in open agricultural fields which will ensure that the activities will avoid accidental destruction of bat roosts from the direct construction and cable installation activities within these areas.

### **Detailed Design and Route Selection**

Following the granting of consent for the development, the project will advance the design details based on procurement and supply chain feedback and further site investigation to arrive at the final detailed design of the final cable HDD location, cable route and substation design.

Prior to construction a full season of bat surveys along the cable route, around the HDD and substation locations. The surveys will be designed and undertaken by a suitably qualified and experienced (minimum qualified BCT Level 3 (CIEEM Accomplished) or NRW protected species licenced) ecologist to inform the final cable route including:

- Confirming / identifying bat species that could be affected by the cable installation activities.
- Identification / confirmation of locations with potential to support roosting bats and assessment of the importance and use (e.g. mating, raising young and overwintering) of these locations.
- Bat commuting routes and relative importance of those routes
- Identifying foraging habitat within the cable route and the relative importance of this habitat and use by foraging bats.
- Location of habitat loss relative to known roosts.

The results of the survey will inform the updated bat mitigation scheme by considering:

- Avoidance of previously unidentified active bat roosts, breeding sites or resting places for bats.
- The relative importance of foraging habitats, assemblage and flight-paths with the aim to avoid fragmentation of bat habitat resulting from removal, obstruction or disturbance of commuting routes

In addition, in order to reduce the impacts on habitat connectivity for bats and to reduce the time for mature vegetation to develop following the works the final cable route will ensure that:

- existing gaps in hedgerows (e.g. farm gateways) will be used wherever possible. A scaled plan will be included within the updated bat mitigation plan to show where existing gateways/gaps in hedges are used.
- the construction works will avoid areas of woodland/wooded copses.

This Bat Mitigation Plan will be updated based on the outcome of pre-construction survey and will be consulted and agreed with NRW, Pembrokeshire County Council and Pembrokeshire Coast National Park Authority prior to onshore works being undertaken.

### **Onshore Site Preparation Works**

In accordance with standard practice, pre-construction surveys will be conducted over the finalised agreed cable route before construction starts. The pre-construction survey will cover:

- Habitats with the potential to support protected or notable species where the baseline surveys did not find evidence of species, but where protected or other notable species could establish prior to commencement.
- Habitats with the potential to support protected or notable species where the baseline surveys found evidence of species, but where the time elapsed since the baseline surveys the updated survey information will ensure the potential impacts are fully addressed in the final Bat Mitigation Plan and through NRW protected species licensing.

The results of the pre-construction surveys will be used to identify whether any changes to the measures are required prior to the finalisation of this Bat Mitigation Plan and whether additional licensing submission may be required should a change in bat presence be observed. All surveys will be undertaken by suitably experienced/ licensed ecologists.

The surveys will be undertaken to the latest industry best practice guidance between April and September; outside the hibernation season and prior to construction commencing. The surveys will cover all trees identified as having the potential to support roosting bats

### **Bats in Building Structures**

There is no requirement for the Llŷr project to remove or undertake partial demolition of any buildings or structures along the cable route or within the HDD site or substation location.

The Preliminary Environmental Assessment (PEA) report identified four built structures located just beyond the site/red line boundary (but within the 30m survey buffer) which were assessed to have low potential to support roosting bats:

- BN1 – Flat roofed farm structure at Broomhill in the survey buffer in the western part of the onshore development area;
- BN2 – open sided metal cattle shelter at Broomhill in the survey buffer in the western part of the onshore development area;
- BN3 – metal structure with corrugated metal roof used as cattle shelter at Broomhill in the survey buffer in the western part of the onshore development;
- BN6 – Corrugated roofed building with gaps under flashing located in survey buffer west of Wollaston Cross.

There are no buildings located within the ‘red-line boundary’ nor are there any further buildings within the 30m buffer zone with potential to support roosting bats. As a consequence, a 100 meter exclusion zone will be placed around the buildings BN1, BN2 and BN3, and a 50 meter exclusion zone around BN6, where no construction activity will occur (see figures 3 and 4).

### **Bats in Trees**

The surveys undertaken to date identified three trees present within the ‘red-line boundary’ that have potential to support roosting bats; two of which were classified as PRF-M. To ensure that there is no physical disturbance to these potential PRF-M roosts, a 50 m exclusion zone will be placed around these two trees – identified as T3 and T6 in figures 4 and 5.



Figure 3 - Llŷr - Onshore HDD Site





Figure 4 - Llŷr Onshore Substation Site



Figure 5 - Llŷr Onshore cable route approach to Pembroke Power Station

### 4.3 Mitigation Measures - Minimisation of Potential Impacts

#### 4.3.1. General Management Arrangements

The Llŷr project Principal Contractor and its sub-contractors will have a duty to familiarise themselves with the site environmental policy, procedures and arrangements and maintain compliance with the site environmental requirements (including legal).

The Principal Contractor, and their sub-contractors, shall ensure the protection of the environment is assured through the duration of the Works through the commitment to the implementation of an Environmental Management System and this Bat Mitigation Plan, as appropriate, to the level of work to be undertaken.

The Llŷr project will also encourage the Principal Contractor to apply best available techniques at the site to minimise the environmental impact of the construction activities on the environment.

Where applicable, work activities, including those of sub-contractors, shall not commence unless the necessary consents and licenses have been obtained.

The Principal Contractor, and its sub-contractors, must also comply with any future relevant legislation, or guidance, as developed by the UK and Welsh Governments, NRW, local planning authorities and other bodies as appropriate.

The Principal Contractor, once appointed, will be responsible for adhering to all requirements of the relevant legislation throughout the construction phase of the project.

It is anticipated that the Principal Contractor will provide a schedule of relevant legislation, consent conditions and other requirements (commitments), and identify the compliance arrangements and responsibilities for compliance with each identified condition/requirement. The schedule and the compliance arrangements will be agreed with the Llŷr project prior to construction commencing.

#### 4.3.2. Communication, Training and Awareness

The Principal Contractor will formulate a site induction training programme, to be agreed with the ECoW and Llŷr project, to ensure all personnel on site are aware of the site environmental sensitivities, key legislative obligations with regards to bat disturbance, identification of key bat sites and flight paths for the relevant work area, and their personal responsibilities to protect the environment.

All personnel arriving on site will receive the agreed site induction when they arrive. It will cover, amongst other issues, personnel environmental roles, responsibilities and the management arrangements in place to protect the environment during the construction project.

The Principal Contractor will ensure that Toolbox talks with all site operatives will be carried out on a weekly basis. Site Operatives will also be trained in the environmental emergency control procedure, which will include the location and use of spill kits.

Where works are within an area of sensitive bat flight paths or identified bat roost, the toolbox talk will be delivered prior to work commencing in the area to inform personnel of the presence of bats, familiarise themselves with the key bat mitigation requirements and identify any roost locations and any potential access points. This talk will be delivered by the ECoW, who will be present during works within 10 meters of a sensitive bat location.

#### 4.3.3. Working Hours

In general, working hours for construction will be from 07.00 to 19.00 Monday to Saturday. No working is proposed on Sundays and public holidays.

The exception to the proposed working hours will be for certain operations such as oil filling, power transformer testing, and HDD installation activities where there may be an operational need for 24-hour working.

Night-time working will be avoided as far as possible to limit the impact of disturbance on bats present within the onshore development area. Where night working and associated lighting cannot be avoided, screening must be provided to direct bats to intact flyways (retained woodland and hedgerows).

4.3.4. Unintentional / Unplanned encountering of bat roosts or Injured bats

In the event of an unplanned encounter with a bat or bat roost, work shall stop immediately within the affected area and the ECoW informed. The ECoW will notify and liaise with NRW as the Statutory Nature Conservations Body (SCNB) for further advice on how to proceed. No further work within the location will be undertaken until the SCNB has given advice as to whether the activity should be carried out and, if so, the method to be used. The Principle contractor must give the SCNB reasonable time to provide a response.

In the event where works come across an injured bat, work shall stop immediately within the affected area and the ECoW informed. The area shall be isolated and temporary protection measures implemented. No personnel shall handle the injured bat unless licenced to do so.

The ECoW will inform the project bat expert who will implement the necessary measures to protect the injured bat (such as provision of dark, quiet temporary housing). The bat expert will liaise with the local bat rehabilitation centre and arrange the appropriate measures to remove the bat to safety.

4.3.5. Overview of General Duties and Responsibilities

As the manager of the construction site, the Principal Contractor will be responsible for the environmental management and performance of the construction site. The Principal Contractor will be responsible for minimising the environmental impact of construction activities and ensuring the appropriate resources are made available, as required, to ensure environmental compliance, on a day to day basis.

Table 1 provides a high level overview of the responsibilities of Llŷr Floating Wind Limited, the Principal Contractor and Sub-contractors in the implementation of this bat mitigation plan during the construction phase of the Llŷr project:

Table 1 – Roles and Responsibilities

Duty Holder	Responsibilities during the Construction Phase
Llŷr Floating Wind Limited	<ul style="list-style-type: none"> <li>• Provide pre-construction information to the construction contractors.</li> <li>• Ensure that sufficient time and resources for all stages of the project to be constructed.</li> <li>• Check the competence and resources of all contractors.</li> <li>• Ensure there suitable management arrangements are in place to comply with the environmental and planning conditions for the project.</li> <li>• Appoint a competent Principal Contractor</li> <li>• Appoint a company Ecological Clerk of Works (ECoW) to oversee the implementation of the Bat Mitigation Plan.</li> <li>• Appoint a company Llŷr project bat expert, who will be a qualified bat consultant on call for expert advice. The bat expert will be as a minimum qualified BCT Level 3 (CIEEM Accomplished) or NRW protected species licenced ecologist.</li> <li>• Make sure that the construction phase does not start unless there are suitable:                         <ul style="list-style-type: none"> <li>○ An agreed Construction Environmental Management Plan in place and</li> <li>○ All appropriate environmental consents, authorisations and licenses are in place before relevant work commences.</li> </ul> </li> </ul>

Duty Holder	Responsibilities during the Construction Phase
Principal Contractor	<ul style="list-style-type: none"> <li>• Check that Llŷr Floating Wind Limited is aware of their duties.</li> <li>• Plan, manage and monitor construction phase in liaison with client, the ECoW and sub-contractors.</li> <li>• Prepare, develop and implement a written plan and site rules that comply with this bat mitigation agreement.</li> <li>• Provide site contractors with relevant parts of the plan.</li> <li>• Check competence of all appointees.</li> <li>• Ensure all workers have site inductions and any further information and training needed for the work.</li> <li>• Secure the site.</li> </ul>
All Contractors	<ul style="list-style-type: none"> <li>• Plan, manage and monitor own work and environmental performance</li> <li>• Provide information to the workforce and appointees</li> <li>• Co-operate with the Principal Contractor in planning, managing work and implementing site rules</li> <li>• Provide details to the Principal Contractor of any contractors who may be sub contracted in connection with the works</li> <li>• Provide information needed for the bat mitigation plan.</li> <li>• Inform the Principal Contractor of any problems with the plan</li> <li>• Inform the Principal Contractor of any accidents, incidents and near misses</li> </ul>

The specific roles and responsibilities of individual appointees within the construction project will be identified and agreed within the final agreed bat mitigation plan prior to construction activities; however, it is anticipated that the following roles will be defined:

- Llŷr Construction Project Manager
- Principal Contractor Site Manager
- Ecological Clerk of Works
- Llŷr project bat expert
- Site Operatives

#### 4.3.6. Stakeholder Management

The Llŷr project will engage with the statutory consultees and local bat groups in the planning of future bat surveys and formulation of the final mitigation plan to insure that local knowledge is incorporated into the plan.

#### 4.3.7. Tree and Hedgerow Management

It is not anticipated that it will be necessary to fell trees that are suitable to support bats. However, it is recognised that bat roosting sites can change depending on a variety of factors and therefore the presence of bats should never be ruled out completely. As a consequence, a pre-construction bat survey will be undertaken to identify if these trees are present (and where they are). The survey will assess the cable route for bat roosting sites, foraging habitats, and flight corridors. Where possible the survey will identify which bat species are present to enable the tailoring of protective measures specific to the species present.

Should the cable route be unable to avoid trees that support bat roosting sites, appropriate soft felling procedures will be identified by the Principle contractor, agreed and updated within this bat mitigation plan. In such situations a bat ecologist will be on-hand during felling operations to inspect felled trees for bats. If bats are seen or heard in a tree that has been felled, work will cease and NRW will be contacted for advice.

Felled trees will not be mulched immediately. Such trees will be left lying several hours and preferably overnight before any further sawing or mulching. This is a precautionary measure to allow for instances

where a bat is present within the tree, but has not been identified in the pre-construction survey, to emerge and avoid accidental death.

The felling of trees with no potential for roosting bats (features such as tree holes, crevices, loose bark, spilt limbs and dead wood are absent) does not require a bat specialist to be present.

Where possible tree and hedgerow clearance work will be scheduled to avoid sensitive periods; specifically, the maternity season (May through July when females raise young) and hibernation season (November through March). The route design will ensure that suitable alternative commuting routes are available for bats once they arise from hibernation in the spring (April).

Where works are still required, or replanting is not yet fully established, this may include temporary measures such as the use of heras fencing and barrels mounted with vegetation to be placed into any gaps overnight.

Where hedgerow must be removed to facilitate the cabling works, that hedgerow translocation will be used in preference to replanting for post-works habitat re-instatement. Replanting will only be used to gap up areas where translocation fails. All planting will be maintained and monitored, with replacement provided where this does not establish.

If construction works resulting in the severing of hedgerows occurs during the summer months, it will be necessary to provide linear connection of hedges overnight to maintain bat flight. This will be installed at the height of the hedge canopy so that bats flying along the hedgerow do not need to deviate in either the horizontal or vertical plane. This will be achieved through mounting cut stems or branches from the cleared hedgerow on barrels which can be moved on to the alignment of the hedgerow at the end of the working day.

Any inadvertent damage to treelines outside the proposed development area but adjacent to it and thus at risk, will be clearly marked by the supervising ECoW.

Appropriate care of vegetation shall apply to translocated and newly planted habitat. Further detail of the planned hedgerow management will be provided within this bat mitigation plan following the determination of the final cable route. This will include a scaled plan showing where hedges will be removed.

#### 4.3.8. Lighting Strategy

Night-time working will be avoided as far as possible to limit the impact of disturbance on bats present within the onshore development area. Where night working and associated lighting cannot be avoided, screening/shielding will be provided to direct bats to intact flyways (retained woodland and hedgerows). Task lighting will be the minimum intensity required for safety purposes and the extent of the lit area will be limited to avoid light spill onto adjacent habitats. Where lighting is required, it will not be directed on any potential bat roosts. Further bat roost emergence surveys and/or endoscopic inspections are required on trees and buildings if they will be unavoidably impacted by lighting and/or other indirect impacts by the proposed Project.

It is anticipated that lighting will be required within the HDD and Substation construction compounds. The following measures will be adopted in these areas:

- The project will adopt a low-impact lighting strategy during construction and post development.
- Where possible, the lighting will be timed to be used only when required (except for instances of safety and security where it will likely be required 24 hours).
- The design of all temporary works lighting will maintain the light spill and intensity to a minimum needed to facilitate health and safety and will be focused on the working area only.

- The construction site, equipment and compounds will require lighting to the brightness of 10 lux. Construction works lighting on site will be avoided during non-working hours to ensure that the construction works remain as dark as possible after hours.
- Security fencing will require 2.2 lux and brightness of 110 lux will be used for entry points. Where possible this lighting will be timed to be used only when required (except for instances of safety and security, where it will likely be required 24 hours).
- Lighting will not illuminate the tree and hedgerow boundaries around the HDD or substation site to ensure provision of a dark commute route and foraging grounds.
- Floodlights will be cowled and angled downwards to minimise spillage.
- Lighting will be positioned and directed as not to unnecessarily impact on sites or woodland habitats. Particular consideration will be given to avoiding lighting impacts on the war memorial (gun emplacement/gun battery) to the west of the site.

Following completion of the detailed HDD layout, cable route and substation design, a detailed lighting plan for the construction and operational phases of the development will be developed to control light spill onto adjacent habitats (including compensatory habitats provided as part of the scheme). The lighting plan will be agreed with the statutory bodies including NRW, Pembrokeshire County Council and Pembrokeshire Coast National Park Authority and incorporated into this bat mitigation plan.

Operational lighting required for the substation will also include the following measures within the lighting plan:

- Lighting of the substation and surrounding areas will be kept to a minimum (but maintaining safety and security requirements), with low level downward-facing lighting only.
- Native woodland planting and earthwork bunds around the substation will be utilised to screen the adjacent retained habitats from permanent lighting.

#### 4.3.9. Noise and Vibration Management

The Principle contractor, supported by the ECoW, will ensure that noise levels are kept to a minimum in accordance with best practice as defined by the Control of Pollution Act 1974 to avoid unacceptable levels of noise and vibration.

Applicable measures include using the quietest equipment and plant available, shutting down equipment when not in use and completing deliveries during working hours only.

#### 4.3.10. Construction Methods

Where large areas of works are required, such as during the construction of the onshore substation, the HDD construction compound and TJB, temporary screening will be implemented to direct foraging and commuting bats away from the works area. This will include the use of fencing and screens with green mesh or willow screens attached. Where possible, dead or temporary hedging will be implemented to reinforce the flight line and encourage bats to use them. Dead hedging may be incorporated to this, by stacking removed vegetation, including woody material where appropriate, into sections a similar height and width to the removed hedgerow.

### 4.4 Compensatory and Enhancement Measures

Llŷr Floating Wind provided a Green Infrastructure Statement to support the Section 36 application (Llŷr 1 Floating Offshore Wind Farm, Environmental Statement, Volume 6: Appendix 8F – Green Infrastructure Statement; August 2024). The Green Infrastructure Statement provides details of habitat enhancements on compensatory measures for the permanent loss within the onshore substation and temporary loss of habitats along the cable route.

#### 4.4.11. Post Construction Monitoring

The Llŷr project acknowledge that post construction monitoring is an essential part of the mitigation process and is important in determining whether the mitigation measures are effective and if not where interventions are needed to adjust the mitigation measures.

The post construction monitoring programme will be designed and undertaken by a suitably qualified and experienced (minimum qualified BCT Level 3 (CIEEM Accomplished) or NRW protected species licenced) ecologist to inform the effectiveness of the mitigation measures. A set of appropriate qualitative indicators and quantitative metrics will be identified to assess the effectiveness of the key mitigation, compensatory and enhancements measures. This data will be reported until it has been established that the mitigation measures have been effective.

#### 4.4.12. Vegetation, Soft Landscaping and Biodiversity Gain

Native woodland planting will compensate in part for the loss of the hedgerow near the onshore substation by being a distinct linear feature close to where the hedgerow will be lost. The substation compound will see the creation of new and improved habitats will contribute to environmental net gains.

The Llŷr Green Infrastructure Statement provides an indicative Landscape Mitigation Plan (replicated in figure 6) for the onshore substation. The plan includes the creation of:

- Native woodland planting around most of the substation providing multifunctional benefits including diversifying the habitat, acting as a visual and noise screening and acting as a carbon sink.
- Proposed earthwork bunds to enhance visual and noise screening.
- Replacement of sections of improved grassland with species rich grassland to improve species diversity and habitat condition on site.
- A sustainable drainage system (SuDS) to increase the diversity of habitats on site. This will include the introduction of scrub planting to integrate the SuDS, increase the diversity of habitats on site and increase the SuDS's wildlife value.
- Long term maintenance plan; including rotational hedgerow cutting every three years, annual tree health checks and pruning as required and meadow management (including annual late September cut)

When the detailed design of the substation is finalised, this bat mitigation plan will be updated with the details will be consulted and approved by NRW, Pembrokeshire County Council and Pembrokeshire Coast National Park Authority prior to the commencement of construction activities.

#### 4.4.13. Bat Boxes

The installation and maintenance of bat boxes around the substation site will be considered as part of the Green Infrastructure Statement to provide a comprehensive approach to maintaining bat populations during and after the proposed development and ensure that there is no net loss of bat roost provision. The bat boxes will be:

- Unlit by artificial light at all times.
- Made of long lasting woodcrete.
- Installed between 3 to 5 m in height and facing a southerly direction where possible.
- Trees chosen for supporting boxes will have a straight trunk and be free of branches and foliage that may cause flight obstruction.
- Retained in perpetuity (any boxes that fall will be replaced and monitored by the substation employees) with active management (including annual inspection, structural integrity assessment,

debris removal, etc). Bat box maintenance will only be done by a suitably qualified and experienced NRW bat licenced person.

- Include active monitoring and adaptive management procedures that addresses monitoring colonisation and occupancy rates, identifying key adaptive management trigger metrics, modification of provision or installation at an alternative site if necessary.

Opportunities for the integration of bat boxes around 4 to 7 metres above ground into the substation design will be considered, as this would ensure enhancement measures for a broader range of bat species.

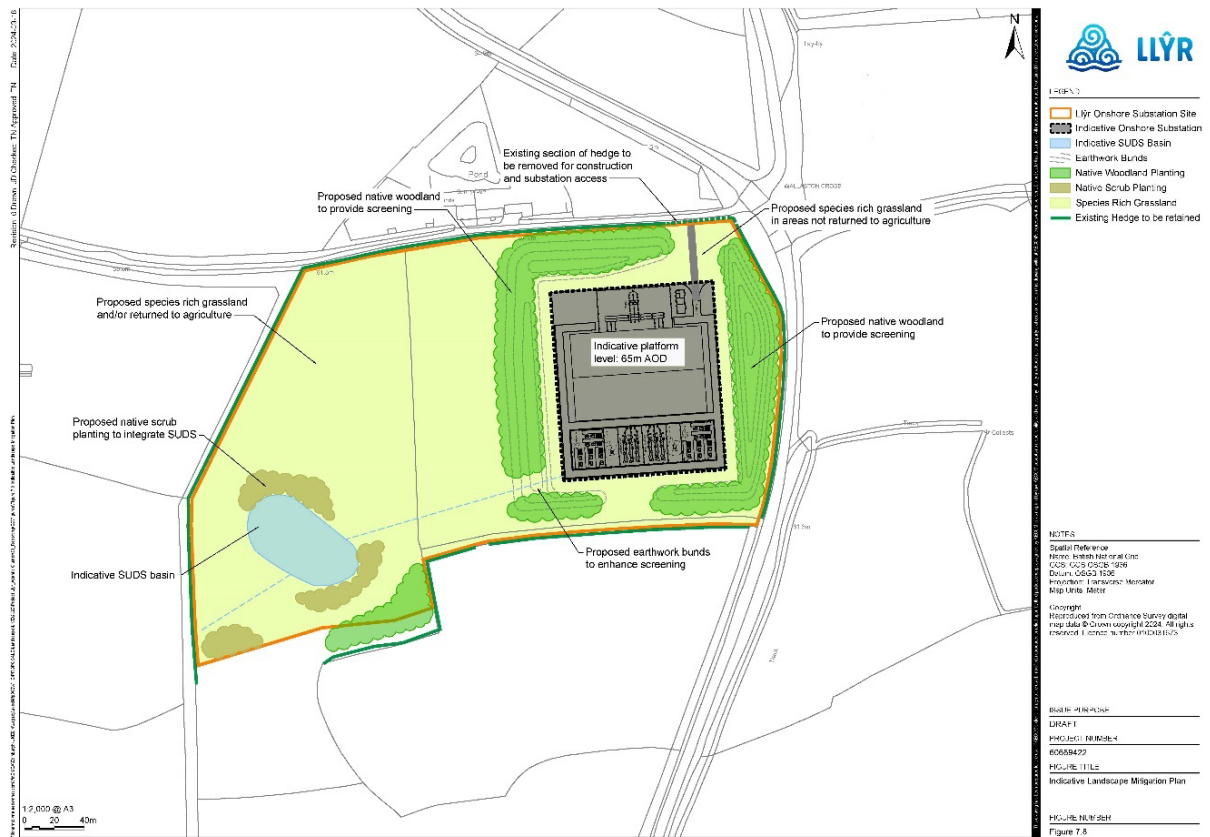


Figure 6 - Indicative Substation Landscape Mitigation Plan



Figure 7 – Indicative LLŷr Substation

**APPENDIX 1 – SCHEDULE OF MITIGATION**

Description of Effect	Potential Worst Case Scenario Impact	Significance of Potential Effect		Additional Mitigation Measures	Significance of Residual Effect	
		Significance of Effect	Beneficial / Adverse		Significance	Beneficial / Adverse
<b>Construction</b>						
Limestone Coast of South West Wales / Arfordir Calchfaen De Orllewin Cymru SAC	<ul style="list-style-type: none"> <li>Habitat loss, severance and fragmentation</li> <li>Disturbance to foraging and commuting bats</li> <li>Impacts avoided through the utilisation of HDD techniques</li> </ul>	Negligible	n/a	<ul style="list-style-type: none"> <li>Pollution control measures</li> <li>Avoidance of works within the SAC</li> </ul>	Negligible	n/a
Pembrokeshire Marine / Sir Benfro Forol SAC	<ul style="list-style-type: none"> <li>Habitat loss, severance and fragmentation</li> <li>Disturbance to foraging and commuting bats</li> </ul>	Minor	Adverse	<ul style="list-style-type: none"> <li>Implementation of the Bat Mitigation Plan (BMP).</li> <li>Directional lighting</li> <li>Screening where required</li> <li>Maintenance of dark corridors.</li> <li>Habitat enhancement</li> </ul>	Minor	Adverse
Pembrokeshire Bat Sites and Bosherton Lakes SAC / The Orierton Stable Block and Cellars SSSI:	Greater and lesser horseshoe bats – Disturbance to foraging and commuting bats	Minor	Adverse	<ul style="list-style-type: none"> <li>Implementation of the BMP.</li> <li>Maintenance of linear connection of hedgerows overnight in areas where hedges are severed.</li> <li>No night time working in areas where severance of hedgerows cannot be avoided.</li> <li>Overall enhancement of the hedgerow network along the onshore cable corridor.</li> </ul>	Minor	Adverse
Milford Haven Waterway SSSI	Greater and lesser horseshoe bats –	Negligible	n/a	<ul style="list-style-type: none"> <li>Implementation of the BMP.</li> </ul>	Negligible	Adverse

Description of Effect	Potential Worst Case Scenario Impact	Significance of Potential Effect		Additional Mitigation Measures	Significance of Residual Effect	
		Significance of Effect	Beneficial / Adverse		Significance	Beneficial / Adverse
	Disturbance to foraging and commuting bats			<ul style="list-style-type: none"> <li>Maintenance of linear connection of hedgerows overnight in areas where hedges are severed.</li> <li>No night time working in areas where severance of hedgerows cannot be avoided.</li> <li>Overall enhancement of the hedgerow network along the onshore cable corridor.</li> <li>Habitat enhancement and generation in and around the substation building.</li> </ul>		
Castlemartin Range SSSI	Greater and lesser horseshoe bats – Disturbance to foraging and commuting bats	Negligible	n/a	<ul style="list-style-type: none"> <li>Implementation of the BMP.</li> <li>Maintenance of linear connection of hedgerows overnight in areas where hedges are severed.</li> <li>No night time working in areas where severance of hedgerows cannot be avoided.</li> <li>Overall enhancement of the hedgerow network along the onshore cable corridor.</li> <li>Habitat enhancement and generation in and around the substation building.</li> </ul>	Negligible	n/a
Stackpole SSSI	Habitat loss, severance and fragmentation Disturbance to foraging and commuting bats	Negligible	n/a	<ul style="list-style-type: none"> <li>Implementation of the BMP.</li> <li>Maintenance of linear connection of hedgerows overnight in areas where hedges are severed.</li> <li>Directional lighting, screening where required and maintenance of dark corridors.</li> </ul>	Negligible	n/a

Description of Effect	Potential Worst Case Scenario Impact	Significance of Potential Effect		Additional Mitigation Measures	Significance of Residual Effect	
		Significance of Effect	Beneficial / Adverse		Significance	Beneficial / Adverse
				<ul style="list-style-type: none"> <li>No night time working in areas where severance of hedgerows cannot be avoided.</li> <li>Overall enhancement of the hedgerow network along the onshore cable corridor.</li> </ul>		
Park House Outbuildings, Stackpole SSSI	Habitat loss, severance and fragmentation Disturbance to foraging and commuting bats	Negligible	n/a	<ul style="list-style-type: none"> <li>Implementation of the BMP.</li> <li>Maintenance of linear connection of hedgerows overnight in areas where hedges are severed.</li> <li>Directional lighting, screening where required and maintenance of dark corridors.</li> <li>No night time working in areas where severance of hedgerows cannot be avoided.</li> <li>Overall enhancement of the hedgerow network along the onshore cable corridor.</li> </ul>	Negligible	n/a
Bats (general assemblage): Loss of commuting features and foraging habitats:	Habitat loss, severance and fragmentation Disturbance to foraging and commuting bats Temporary and permanent loss of foraging and commuting habitat through the removal and illumination of hedgerows. Disturbance to bats potentially roosting in structures and trees	Minor	Adverse	<ul style="list-style-type: none"> <li>Implementation of the BMP.</li> <li>Maintenance of linear connection of hedgerows overnight in areas where hedges are severed.</li> <li>No night time working in areas where severance of hedgerows cannot be avoided.</li> <li>Use of sensitive lighting in and around the substation building.</li> <li>Overall enhancement of the hedgerow network along the onshore cable corridor.</li> </ul>	Minor	Adverse

Description of Effect	Potential Worst Case Scenario Impact	Significance of Potential Effect		Additional Mitigation Measures	Significance of Residual Effect	
		Significance of Effect	Beneficial / Adverse		Significance	Beneficial / Adverse
	within and adjacent to the onshore development area			<ul style="list-style-type: none"> <li>Habitat enhancement and generation in and around the substation building (including bat boxes).</li> <li>Implementation of the BMP to maintain a dark corridor to encourage foraging and commuting bats away from construction zones.</li> <li>Temporary structures to be utilised to maintain connectivity of commuting features.</li> </ul>		
<b>Operation</b>						
Pembrokeshire Marine / Sir Benfro Forol SAC	<ul style="list-style-type: none"> <li>Habitat loss, severance and fragmentation</li> <li>Disturbance to foraging and commuting bats</li> </ul>	Minor	Adverse	<ul style="list-style-type: none"> <li>Implementation of the Bat Mitigation Plan (BMP),</li> <li>Directional lighting</li> <li>Screening where required</li> <li>Maintenance of dark corridors.</li> <li>Habitat enhancement</li> </ul>	Minor	Adverse
Pembrokeshire Bat Sites and Bosherton Lakes SAC / The Orielton Stable Block and Cellars SSSI;	Greater and lesser horseshoe bats – Fragmentation and disturbance to foraging and commuting bats	Negligible	n/a	<ul style="list-style-type: none"> <li>Bat Mitigation Plan (BMP), maintaining linear connection of hedgerows overnight in areas where hedges are severed.</li> <li>No night time working in areas where severance of hedgerows cannot be avoided.</li> <li>Overall enhancement of the hedgerow network along the onshore cable corridor.</li> </ul>	Negligible	n/a
Milford Haven Waterway SSSI	Greater and lesser horseshoe bats – Fragmentation and disturbance to foraging and commuting bats	Negligible	n/a	<ul style="list-style-type: none"> <li>BMP, maintaining linear connection of hedgerows overnight in areas where hedges are severed.</li> </ul>	Negligible	n/a

Description of Effect	Potential Worst Case Scenario Impact	Significance of Potential Effect		Additional Mitigation Measures	Significance of Residual Effect	
		Significance of Effect	Beneficial / Adverse		Significance	Beneficial / Adverse
				<ul style="list-style-type: none"> <li>No night time working in areas where severance of hedgerows cannot be avoided.</li> <li>Overall enhancement of the hedgerow network along the onshore cable corridor.</li> <li>Habitat enhancement and generation in and around the substation building.</li> </ul>		
Castlemartin Range SSSI	Greater and lesser horseshoe bats – Fragmentation and disturbance to foraging and commuting bats	Negligible	n/a	<ul style="list-style-type: none"> <li>BMP, maintaining linear connection of hedgerows overnight in areas where hedges are severed.</li> <li>No night time working in areas where severance of hedgerows cannot be avoided.</li> <li>Overall enhancement of the hedgerow network along the onshore cable corridor.</li> <li>Habitat enhancement and generation in and around the substation building.</li> </ul>	Negligible	n/a
Bats (general assemblage)	Loss of commuting features and foraging habitats	Minor	Adverse	<ul style="list-style-type: none"> <li>BMP, maintaining linear connection of hedgerows overnight in areas where hedges are severed.</li> <li>No night time working in areas where severance of hedgerows cannot be avoided.</li> <li>Use of sensitive lighting in and around the substation building.</li> <li>Overall enhancement of the hedgerow network along the onshore cable corridor.</li> </ul>	Minor	Adverse

Description of Effect	Potential Worst Case Scenario Impact	Significance of Potential Effect		Additional Mitigation Measures	Significance of Residual Effect	
		Significance of Effect	Beneficial / Adverse		Significance	Beneficial / Adverse
				<ul style="list-style-type: none"> <li>Habitat enhancement and generation in and around the substation building.</li> <li>Landscaping to provide buffering from noise, light and human presence within the onshore substation during operation.</li> <li>Implementation of the BMP to maintain a dark corridor to encourage foraging and commuting bats away from construction zones.</li> <li>Temporary structures to be utilised to maintain connectivity of commuting features.</li> </ul>		
<b>Decommissioning</b>						
Demolition / Removal of transition joint bays, cables and substation building	Fragmentation and disturbance to foraging and commuting bats	Negligible	n/a	<ul style="list-style-type: none"> <li>BMP including pre-works surveys for protected species.</li> <li>No night time working but if unavoidable then the use of sensitive lighting in and around the substation building and surrounding habitats</li> </ul>	Negligible	n/a

**APPENDIX 2 – BASELINE BAT SPECIES IDENTIFIED**

Species	Foraging/Commuting Records and Location <sup>1</sup>	Roosting Records and Location <sup>19</sup>	Species Core Sustainance Zone (CSZ) <sup>2</sup> radius
Whiskered bat/ Brandt's bat ( <i>Myotis mystacinus/ brandtii</i> )	Two records 1.6 km southeast of the onshore development area with connectivity via farmland and hedgerows.	N/A	1 km
Common pipistrelle ( <i>Pipistrellus pipistrellus</i> )	Two records, the closest is 0.2 km north of the onshore development area – within a field directly adjacent to it	Two records, the closest is 1.2 km south east of the onshore development area with connectivity via farmland and hedgerows	2 km
Daubenton's bat ( <i>Myotis daubentonii</i> )	One record 0.2 km north of the onshore development area – within a field directly adjacent to it	N/A	2 km
Lesser horseshoe bat ( <i>Rhinolophus hipposideros</i> )	One record 1.7 km southeast of the onshore development area with connectivity via farmland and hedgerows.	One record 1.6 km south of the onshore development area connected via farmland and hedges	2 km
Pipistrelle species ( <i>Pipistrellus sp.</i> )	Two records, the closest is 1.6 km south of the onshore development area connected by farmland and hedges	N/A	2-3 km
Brown long-eared bat ( <i>Plecotus auritus</i> )	One record, 1.2 km southeast of the onshore development area with connectivity via farmland and hedgerows	One record 1.6 km south of the onshore development area with connectivity via farmland and hedgerows.	3 km
Greater horseshoe bat ( <i>Rhinolophus ferrumequinum</i> )	Two records, the closest is 0.2 km north of the onshore development area – within a field directly adjacent to it	One record 0.6 km southeast of the onshore development area connected via farmland hedgerows and woodland	3 km
Soprano pipistrelle ( <i>Pipistrellus pygmaeus</i> )	Two records, the closest is 0.2 km north of the onshore development area – within a field directly adjacent to it	N/A	3 km
Natterer's bat ( <i>Myotis nattereri</i> )	One record 0.5 km southeast of the onshore development area with connectivity via farmland and hedgerows, and woodland	One record 1.6 km south of the onshore development area connected via farmland and hedges	4 km
Noctule ( <i>Nyctalus noctula</i> )	Three records, the closest is 0.2 km north of the onshore development area – within a field directly adjacent to it	N/A	4 km
Serotine ( <i>Eptesicus serotinus</i> )	N/A	One record, 1.2 km south east of the onshore development area with connectivity via farmland and hedgerows	4 km

<sup>1</sup> Where records are situated outside of the onshore development area, the distance and direction is given at the closest point of the feature from the onshore development area.

<sup>2</sup> Bat Conservation Trust (2016). Core Sustainance Zones. Available at: <https://www.bats.org.uk/our-work/landscapes-for-bats/core-sustenance-zones> (Accessed: 30/09/21)

Species	Foraging/Commuting Records and Location <sup>1</sup>	Roosting Records and Location <sup>19</sup>	Species Core Sustenance Zone (CSZ) <sup>2</sup> radius
Long-eared bat species ( <i>Plecotus sp.</i> )	One record 1.7 km east of the onshore development area with connectivity via farmland woodland and hedgerows.	N/A	3 km
Unknown species ( <i>Chiroptera sp.</i> )	Two records, the closest is 0.2 km north of the onshore development area – within a field directly adjacent to it	N/A	Unknown

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## References

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