TAIYO
POWER AND STORAGE

Parc Solar Caenewydd, Swansea

Green Infrastructure Statement

Development of National Significance in the Renewable Energy Sector
Variation Submission

On behalf of **Taiyo Power & Storage Limited**

June 2024 | P21-2998

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EXECUTIVE SUMMARY

This Green Infrastructure Statement (GIS) has been prepared by Devon Wildlife Consultants (DWC) and Pegasus Group on behalf of Taiyo Power & Storage Limited and forms part of a suite of documents supporting a planning application for Development of National Significance for the construction, operation, management and subsequent decommissioning of a co-located solar farm and battery storage facility. The development is known as 'Parc Solar Caenewydd' (PEDW Reference DNS CAS-01900-V0J7C7). This GIS has been produced in response to changes to Chapter 6 of Planning Policy Wales (PPW) which were incorporated into Edition 12 of PPW, published in February 2024.

Whilst the planning application was submitted to PEDW prior to publication of PPW 12 edition, this GIS demonstrates how the Applicant fully embraced the stepwise approach in formulating a design for application submission.

The GIS therefore summarises how the submitted planning information and documents evidence that green infrastructure has been incorporated into the proposal from project inception, throughout the design and promotion process and will be secured for the lifetime of the proposed development. The GIS also demonstrates that in substance the requirements of Chapter 6 of PPW (and the stepwise approach) have been robustly addressed. Accordingly, this document makes no alterations or substantive additions to the submitted planning information, but instead collates and presents the relevant information in the form required by Chapter 6 of the PPW (namely by way of this GIS).

From an early stage, scheme design has been undertaken in line with the DECCA and stepwise approach, to build and sustain resilient ecological networks to avoid, mitigate, compensate and secure enhancement to deliver a net benefit for biodiversity and ecosystem resilience.

The proposed green infrastructure, solar farm and battery storage facility have been designed to comply with both Future Wales Policy 9 "Resilient Ecological Networks and Green Infrastructure" and the Swansea Council's "Biodiversity and Development" Supplementary Planning Guidance (adopted 2021).

As detailed in Section 6 of this report, design was undertaken to avoid, mitigate, compensate and secure enhancement to deliver a net benefit for biodiversity and ecosystem resilience, including creation and enhancement of good quality green infrastructure.

In compliance with Future Wales Policy 18, the proposals will meet the requirements for on-site biodiversity net gain, with a predicted gain of at least 26.25%. It is furthermore considered that the creation of habitat corridor linkages and the restoration of grassland to priority habitat standard, with benefits to wildlife associated with these habitats, will provide ecological benefit additional to that indicated by the calculations. The river corridor and adjacent SINC are considered to be a key component of the mitigation approach. The proposed extensive green infrastructure works designed across the majority of the site will result in habitat retention and management, including restoration of priority habitat associated with the SINCs. This will also take into account protected and priority species; it will enhance retained commuting/ foraging habitat for badgers, bats, birds, dormice and reptiles, and provide enhancement measures for new roosting/nesting opportunities for bats and birds. Planting and management prescriptions will be set out in a detailed LEMP, and measures for implementation, maintenance, monitoring and review will be put in place

1. INTRODUCTION

1.1. This Green Infrastructure Statement (GIS) has been prepared by Devon Wildlife Consultants (DWC) and Pegasus Group on behalf of Taiyo Power & Storage Limited and forms part of a suite of documents supporting a planning application for Development of National Significance for the construction, operation, management and subsequent decommissioning of a co-located solar farm and battery storage facility on land fronting the A484 and Swansea Road (B4560) at Gowerton, Swansea ("the application site"). The development is known as 'Parc Solar Caenewydd' (PEDW Reference DNS CAS-01900-V0J7C7).

1.2. This GIS has been produced in response to changes to Chapter 6 of Planning Policy Wales (PPW) which were incorporated into Edition 12 of PPW, published in February 2024.

1.3. Whilst the planning application was submitted to PEDW prior to publication of PPW 12 Edition, this GIS demonstrates how the Applicant fully embraced the stepwise approach in formulating a design for application submission.

Variation Submission

1.4. As part of the variation submission, the Applicant has introduced further refinement to the scheme, and these include additional stepwise changes which respond to the consultee comments provided by the Woodland Trust.

Purpose of the GIS

1.5. The GIS therefore summarises how the submitted planning information and documents evidence that green infrastructure has been incorporated into the proposal from project inception and throughout the design and promotion process. The GIS also demonstrates that in substance the requirements of Chapter 6 of PPW (and the stepwise approach) have been robustly addressed. This document makes no alterations or substantive additions to the submitted planning information, but instead collates and presents the relevant information in the form required by Chapter 6 of the PPW (namely by way of this GIS).

1.6. This GIS first provides an overview of the site, baseline position (section 2) and proposed development (section 3) before detailing the relevant policy considerations on biodiversity net benefits and the DECCA framework alongside the stepwise framework (section 4), a green infrastructure assessment is then undertaken which details how the proposal conforms to the stepwise approach (section 5). The statement then concludes (section 6).

2. SITE DESCRIPTION

2.1. The application site is located off the A484 and B4620 (Swansea Road) and in-between the settlements Gowerton, Gorseinon Garden Village and Fforest-Fach. The National Grid Reference (NGR) for the centre of the application site is 260432, 196889, the closest postcode to the application site is SA4 4LE. The surrounding land uses consist of a mix of residential, agricultural and industrial areas. The redline boundary for the application extends to a total area of 83.2 hectares.

2.2. The height of the land across the undulating application site ranges from c.55-9.5m Above Ordnance Datum (AOD) and is considered typical of the landscape of the surrounding valley landscape. The application site falls towards and fronts the Afon Llan, which runs east to west. The land gradually falls to the west to the Afon Llwchwr (River Loughor).

2.3. The application site sits at the southeast residential edge (Garden Village) of Gorseinon, within the designated green wedge and within a Special Landscape Area. The south of the residential edge is separated from the edge of Gowerton and Waunarlwydd by woodland and vegetation along the railway line, Afon Llan and Westfield Industrial Park. The edge of Swansea is to the east, beyond intervening fields, woodland blocks, and vegetation along the Afon Llan. Substantial mitigation proposals would aim to retain and enhance the existing landscape elements which presently prevent coalescence.

2.4. The main development site currently consists of a number of individual, agricultural fields. The site is bordered by Afon Llan to the south, Gowerton Sewage Treatment Works to the west, agricultural land to the east, a business park, the B4560 and A484 roads to the north.

2.5. The roads also separate the main development site area, with a smaller area of undeveloped land located to the north and just south of residential dwellings along the B4620.

2.6. The Swansea Local Development Plan 2010-2025 has allocated various land parcels adjacent to the application site for a variety of uses including residential; a primary school; sports pitches; green infrastructure; and employment uses.

Desk Study and Site Setting

2.7. As part of the Ecological Appraisal (DWC Report No. 21/3752.02), a standard desk study search area of a 1km radius of the site from a central grid reference was requested from LERC Wales Aderyn. Details of statutory and non-statutory sites designated for nature conservation or interest, together with records pertaining to protected species and/or species of conservation concern were obtained.

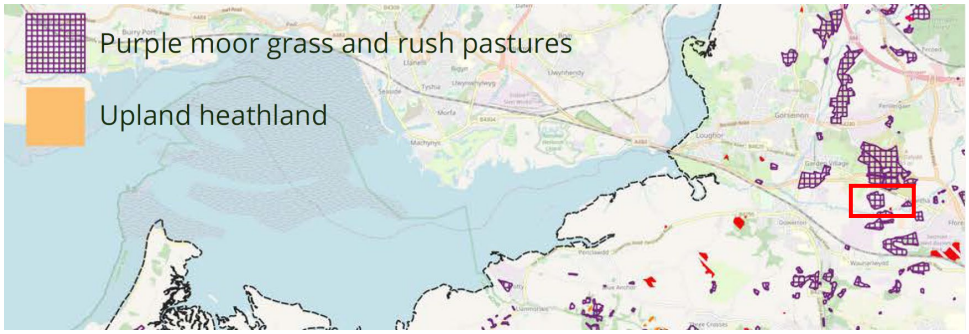
2.8. Information from Lle regarding the presence of statutory designated sites within a 2km radius of the site was also obtained. The search was extended to 10km for Natura 2000 sites (Special Areas of Conservation (SAC) and Special Protection Areas (SPA)).

2.9. This desk study information was combined with reviews of aerial photography, a review of Swansea Local Development Plan 2010-2025 and Swansea Local Nature Recovery Action Plan 2023-2030, and a search of nearby planning applications1 to identify existing and proposed key habitats, habitat corridors and green infrastructure features.

2.10. Designated sites have been a key consideration in the process. Part of the site lies within Penyfodau Fawr To Llewitha SINC, a 73ha Site of Importance for Nature Conservation (SINC), designated for a number of habitats including native woodland, scrub, lowland meadow, neutral grassland, lowland fen, purple moor grass and rush pasture, and watercourse with exposure/erosion features.

2.11. The western extent of the site lies within Alcoa Wet Meadows SINC, designated for wet woodland, scrub, neutral grassland, purple moor grass and rush pasture, linear vegetation and watercourse.

2.12. The LNRAP specifically identifies an area of purple moor grassland and rush pastures located within the application site, relevant extract is shown in the illustration below, with the site location marked in red. The planning application boundary has been extended to include areas of the SINC to specifically allow for these areas to be restored, enhanced and manged during the lifetime of the development. Development within the SINC is limited only to a cable trench, the majority of which follows an existing farm track.



2.13. The northern extent of the site lies adjacent to Stafford Common SINC, comprising a mosaic of lowland heath, marshy grassland and mown grass.

2.14. It should be noted that the site lies within 1.7km of Burry Inlet Ramsar Site, SPA and SSSI and Camarthen Bay and Estuaries Special Areas of Conservation (SAC). The SAC is designated for its habitats including sandbanks, estuaries, mudflats and sandbanks, large shallow inlets and bays, Salicornia saltmarsh and Atlantic salt meadows. It is also designated for the Annex II species twaite shad, sea lamprey, river lamprey, allis shad and otter. The Afon Llan river, adjoining the site, is connected to the SAC, and the river corridor is considered to be an important ecological feature within the landscape.

Baseline Habitats

2.15. The survey area comprises approximately 145ha of mixed farmland, watercourse and woodland habitats, although the array layout forms a smaller proportion of this area, excluding woodland, scrub, watercourse and other high value habitats.

2.16. The survey area sits within a wider mixed landscape comprising residential and commercial development to the north, sewage treatment works to the west, residential and industrial to the south, and agricultural land to the east. The surrounding landscape has features of high ecological value; woodland, hedgerows, mature trees and watercourse, including extensive areas of woodland to the south, and grassland to the east. Key wider habitat connectivity is associated with the network of hedgerows, woodland and grassland, and the Afon Llan river corridor.

2.17. The fields within the survey area are dominated by arable crops, pasture utilised for cattle grazing and improved grassland which are managed on rotation.

2.18. The botanical survey indicated a number of fields with potential and confirmed rhos pasture priority habitat. Intensive grazing appears to have limited the botanical diversity and presence of indicator species such as whorled caraway Carum verticillatum in a number of fields.

2.19. There are also a number of improved/ poor semi-improved grassland fields present, although small areas of rush are present in wetter areas of these fields. These fields were grazed by cattle, resulting in heavy poaching.

Priorities for Green Infrastructure

2.20. From an early stage of assessment, the river corridor and habitats associated with the SINC have been considered to be a key component of the mitigation approach. Furthermore, this area includes a network of public rights of way.

2.21. A continuous wide corridor of habitat creation and enhancement will be created along the norther side of the river corridor within the redline boundary, extending and linking valuable habitats as an ecological network. Open riparian habitats will be retained as part of the mosaic, but with a wider buffer zone than at present. A new wildlife corridor will be created around an existing public right of way that traverses the application site (LR26).

3. DEVELOPMENT PROPOSAL

Development Proposal

3.1. The application proposal relates to the construction, operation, maintenance and decommissioning of a ground mounted solar power and battery storage facility and ancillary development. An operational lifespan of 40 years is sought after which the proposed development will be decommissioned, and the application site returned to full agricultural use.

3.2. Individual elements of the proposed development are shown on the accompanying Planning Application Drawings. The proposed development can be split into three key components, these are:

- Ground Mounted Solar PV Arrays.
- Compounds for the Battery Energy Storage System and Substations & cable routing to POC.
- Ecological Enhancement and Biodiversity Habitat Management Areas.

3.3. It is proposed to create extensive green infrastructure across the majority of the proposed development site with a ground mounted solar and battery storage facility and associated infrastructure.

3.4. It should be noted that the proposed layout forms a smaller proportion of the total area of the wider survey area. The wider survey area comprises approximately 145ha of mixed farmland, watercourse and woodland habitats. The layout excludes woodland, scrub, watercourses and other high value habitats or features identified during the survey period.

3.5. Ecological input was sought from an early stage of design and findings used to inform and evolve the layout in order to avoid and minimise potential ecological impacts in line with the mitigation hierarchy. The design process has included consideration of alternative layouts and design elements which were considered to result in greater ecological impacts and therefore discounted or redesigned.

3.6. The redline boundary includes all areas which will be utilised for habitat creation and enhancement. Extensive mitigation and enhancement measures for the development site covered by the solar arrays are included in the development proposals and include strengthening of green infrastructure and creation of new habitat corridors across the site.

3.7. The green infrastructure provision detailed in this report is set out in the Green Infrastructure Plan in Appendix 1.

Operational Lifespan

3.8. A temporary operational lifespan of 40 years is sought for the entire development and linked to the first export date of electrical energy from the development (please see paragraph 3.13.1 below). During the operational phase, the activities on the application site would amount to servicing and maintenance of plant and equipment and vegetation management.

Construction & Biodiversity

3.9. Construction compliance measures have been provided in order to protect protected sites and habitats, in addition to populations of protected species including birds, badger, bats, otter and reptiles during the works. These are laid out in an outline Construction Environmental Management Plan (CEMP) (please see paragraph 3.13.3 below).

3.10. During construction there is the potential for sediment runoff and pollution as a result of construction activity which could affect the designated sites within the wider Zone of Influence of the project (namely the Camarthen Bay and Estuaries SAC (SAC)). As concluded in the Ecological Appraisal (Applicant's Document Ref DOC16) at paragraph 4.7.1 (Shadow Habitats Regulations Assessment (HRA) statement) the works are likely to have no likely significant impact on the SAC and in compliance with Future Wales Policy 18, there are considered to be no significant adverse impacts on nationally statutory designated sites for nature conservation. As a precautionary measure and standard good practice, any potential impacts will be avoided and mitigated through appropriate construction control and runoff design measures, set out in a detailed, robust Construction Environmental Management Plan (CEMP) to accompany planning submission.

Decommissioning & Biodiversity

3.11. After a 40 year generation period the proposal would be decommissioned with all electricity generating equipment and built structures associated with the proposed development removed from the application site.

3.12. A decommissioning plan would be prepared prior to the decommissioning commencing (please see paragraph 3.13.2 below).

Planning Conditions

3.13. The following planning conditions, as set out in the agreed Statement of Common Ground with Swansea Council and Natural Resources Wales, are invited by the Applicant and are intended to secure compliance and observance of the stepwise approach throughout the lifetime of the development (reflecting the requirements of paragraph 6.4.14 of Planning Policy Wales).

3.13.1. LPA3 The authorised development shall cease operating 40 years after the date on which electricity is first exported to the National Grid (excluding any testing or commissioning).

This planning permission authorises the decommissioning of the development and shall expire on the date that the site has been decommissioned in accordance with the approved Decommissioning Environmental Management Plan.

The date on which the development first exports electricity to the national grid shall be notified in writing to the local planning authority within 28 days of first export.

Reason: The proposal is time limited and in the interests of visual amenity and to comply with Policy 18 of Future Wales and PS2 and EU1 of the Swansea LDP.

3.13.2. LPA4 No later than 12 months before the end of the 40 year operating period (or within 12 months of the permanent cessation of electricity production) a Decommissioning Environmental Management Plan (DEMP) shall be submitted for the written approval of the local planning authority. The DEMP shall include the following:

i) Surveys and assessments to identify the existing ecology and habitat status at the time of decommissioning to inform the DEMP.

ii) Method Statement detailing the process and extent of removal of surface elements of the photovoltaic solar farm and associated development and any foundations, anchor systems, trackways and subsurface cabling and associated works;

iii) Proposals for effective recycling and disposal of decommissioned elements;

iv) Traffic management plan to address likely traffic impacts arising from decommissioning operations;

v) Measures to ensure environmental protection at the site to cover all decommissioning operations;

vi) Measures to ensure ecological protection at the site to cover all decommissioning operations informed by the surveys and assessments under i) above;

vii) Implementation timescales and schedules for all elements of the DEMP;

viii) Reporting and monitoring responsibilities and delivery mechanisms for all elements of the DEMP; and,

ix) Site restoration measures following all decommissioning operations, informed by the surveys and assessments under i) above and a soil assessment; including aftercare for a period of 12 months from completion of restoration. The DEMP shall be implemented in accordance with the approved details.

Reason: The proposal is time limited and in the interests of visual amenity and to comply with Policy 18 of Future Wales and PS2 and EU1 of the Swansea LDP..

3.13.3. LPA7 No development works or site clearance works shall commence until a site wide Construction Environmental Management Plan (CEMP) has been

submitted to and approved in writing by the local planning authority. The CEMP shall include:

- Construction methods (including method of piling), details of materials, how waste generated will be managed;

- General Site Management: details of the construction programme including timetable, details of site clearance; details of site construction drainage, containments areas, appropriately sized buffer zones between storage areas (of spoil, oils, fuels, concrete mixing and washing areas) and any watercourse or surface drain.

- Identify any surrounding watercourses, including intermittent drainage from highways, that could run across the site. Clarify what measures, if any, could be implemented to ensure that water could be prevented from running across the site, so that it could carry on its journey without becoming contaminated from the construction activities.

- Propose measures to ensure how any water that could not be prevented from running across the site, would be protected from becoming contaminated with sediment

- Propose how to manage water arising from the site, such as rainfall, in such a way that it does not become contaminated with sediment.

- Propose measures which ensure how any water contaminated with sediment will be prevented from leaving the site before it is clean.

- Propose how any drains that have been laid are going to be protected from sediment laden water entering them.

- Biodiversity Management: appropriate good practice, details of tree and hedgerow protection; invasive species management; species and habitats protection, reasonable avoidance measures for vegetation clearance concerning potentially suitable dormouse habitats (e.g. pre-construction checks, timing of works, vegetation clearance methodology etc) and mitigation measures.

- Soil Management: details of topsoil strip, storage and amelioration for re-use.

- CEMP Masterplan: details of the extent and phasing of development; location of landscape and environmental resources; design proposals and objectives for integration and mitigation measures.

- Control of Nuisances: details of restrictions to be applied during construction including timing, duration and frequency of works; details of measures to minimise noise and vibration from piling activities, for example acoustic barriers; details of dust control measures; measures to control light spill and the conservation of dark skies.

- Resource Management: details of fuel and chemical storage and containment; details of waste generation and its management; details of water consumption, wastewater and energy use.

- Traffic Management: details of plant on site and wheel wash facilities.

- Pollution Prevention: demonstrate how relevant Guidelines for Pollution Prevention and best practice will be implemented, including details of emergency spill procedures and incident response plan.

- Details of the persons and bodies responsible for activities associated with the CEMP and emergency contact details.

- The CEMP shall be implemented as approved during the site preparation and construction phases of the development.

- Surface Water Management Plan: A detailed surface water management plan should be provided for the installation process, to include the location and type of measures that will be used to control/contain and treat any contaminated surface water that is generated due to site activity/from haul roads, eliminate the risk of polluted water, notably sediment/suspended solids from leaving the construction area

- Water Quality Monitoring Plan: To manage any potential adverse impacts of construction on water quality in all watercourses. The Water Quality Monitoring Plan should include: Details of the monitoring methods; Timescales for submission of monitoring and interpretative reports during construction; Details of triggers for specific action and any necessary contingency actions, for example the need to stop work, introduction of drip trays, make use of spill kits and shut-off valves

- Landscape/ecological clerk of works to ensure construction compliance with approved plans and environmental regulations.

Reason: To ensure the site is developed in a sensitive manner that respects the surrounding environment with regards to pollution, contamination, water resources and ecology in compliance with Policies 9, 17 and 18 of Future Wales and PS2, RP1, RP2, RP3, RP4, EU1, ER2, ER5, ER6, ER8, ER9 and ER11 of the Swansea LDP.

4. POLICY CONTEXT

Overview

4.1. This section of the statement sets out the policy context for GIS. The Environment (Wales) Act 2016 provides a context for the delivery of multi-functional green infrastructure. Section 6 of the Environment (Wales) Act 2016 requires planning authorities to seek to maintain and enhance biodiversity in the exercise of their functions. This means that development should not cause any significant loss of habitats or populations of species (not including non-native invasive species), locally or nationally and must work alongside nature and it must provide a net benefit for biodiversity and improve, or enable the improvement, of the resilience of ecosystems.

4.2. A net benefit for biodiversity is the concept that development should leave biodiversity and the resilience of ecosystems in a significantly better state than before, through securing immediate and long-term, measurable and demonstrable benefit, primarily on or immediately adjacent to the site. The stepwise approach (outlined below) is the means of demonstrating the steps which have been taken towards securing a net benefit for biodiversity. In doing so, planning authorities must also take account of and promote the resilience of ecosystems, in particular the following attributes, known as the DECCA Framework. DECCA is short for 'Diversity, Extent, Condition, Connectivity and other Aspect of ecosystem resilience' and refers to:

- diversity between and within ecosystems;
- the connections between and within ecosystems;
- the scale of ecosystems;
- the condition of ecosystems (including their structure and functioning); and
- the adaptability of ecosystems to change

4.3. Welsh Government has issued guidance in relation to the Environment (Wales) Act through a series of factsheets. The Biodiversity and Resilience of Ecosystem Duty factsheet (published Aug 2020) explains the Section 6 duty and provides examples of how public authorities can meet the duty. The Biodiversity and Resilience of Ecosystem Duty FAQs (revised Feb 2022) reiterates the duty and those elements which should be taken account of and be given regard to. In addition, it requires that the six objectives contained with the Nature Recovery Action Plan for Wales (NRAP) should be used to help develop and guide actions to comply with the duty. These objectives are listed below and are discussed through paragraphs 4.21 – 4.32 and are:

1. Engage and support participation and understanding to embed biodiversity throughout decision making at all levels.

2. Safeguard species and habitats of principal importance and improve their management.

3. Increase the resilience of our natural environment by restoring degraded habitats and habitat creation.

4. Tackle key pressures on species and habitats.

5. Improve our evidence, understanding and monitoring.

6. Put in place a framework of governance and support delivery.

4.4. In a Ministerial Statement published in October 2023, the Welsh Minister for Climate Change confirmed that in recognition of how the planning system has an essential role in fulfilling the Section 6 duties; she advised that the next iteration of Planning Policy Wales would be updated to fulfil the Welsh Government duties to maintain and enhance biodiversity resilience of ecosystems in Wales.

4.5. The statement summarised the main changes to the policy as:

Green Infrastructure: stronger emphasis on taking a proactive approach to green infrastructure covering cross boundary considerations, identifying key outputs of green infrastructure assessments, the submission of proportionate green infrastructure statements with planning applications and signposting Building with Nature standards.

Net Benefit for Biodiversity and the Step-wise Approach: further clarity is provided on securing net benefit for biodiversity through the application of the step-wise approach, including the acknowledgement of off-site compensation measures as a last resort, and, the need to consider enhancement and long-term management at each step. The use of the green infrastructure statement as a means of demonstrating the stepwise approach is made explicit. A simplified diagram of the policy approach has been developed (which will be further refined in the consolidated version of PPW12). The importance of strategic collaboration to identify and capture larger scale opportunities for securing a net benefit for biodiversity is recognised.

Protection for Sites of Special Scientific Interest: strengthened approach to the protection of SSSIs, with increased clarity on the position for site management and exemptions for minor development necessary to maintain a 'living landscape'. Other development is considered unacceptable as a matter of principle. Exceptionally, a planned approach may be appropriate where necessary safeguards can be secured through a development plan.

Trees and Woodlands: closer alignment with the stepwise approach, along with promoting new planting as part of development based on securing the right tree in the right place.

Planning Policy Wales

4.6. As stated elsewhere in this document, changes to Chapter 6 of Planning Policy Wales (PPW) were incorporated into Edition 12 of PPW and published in February 2024. The key relevant extract of PPW dealing with green infrastructure is set out below.

4.7. Paragraph 3.8 of PPW identifies how (inter alia) *"Landscape and green infrastructure considerations are an integral part of the design process. Integrating green infrastructure is not limited to focusing on landscape and ecology, rather, consideration should be given to all features of the natural environment and how these function together to contribute toward the quality of places. This embraces the principles of 'ecosystems services' and sustainable management of natural resources where multiple benefits solution become an integral part of good design."*

4.8. Paragraph 3.34 states how (inter alia) *"The Environment (Wales) Act 2016 introduces the Sustainable Management of Natural Resources*[1] *(SNMR) and sets out a framework to achieve this as part of decision-making. The objective of the SMNR is to maintain and enhance the resilience of ecosystems and the benefits they provide".* Paragraph 3.35 goes on to state how PPW translates the principles of SMNR into use for the planning system.

4.9. Paragraph 3.36 states:

The planning system is wide in its social, economic environmental and cultural scope and takes an all embracing approach to sustainable development where decisions on short and long-term needs and cost and benefits come together. It secures outcomes where multiple benefits (more than one ecosystem benefit) can be provided as part of plan making strategies or individual development proposals. The key features of the SMNR approach to which the planning system can contribute are:

• improving the resilience of ecosystems and ecological networks;

• halting and reversing the loss of biodiversity;

• maintaining and enhancing green infrastructure based on seeking multiple ecosystem benefits and solutions;

• ensuring resilient locational choices for infrastructure and built development, taking into account water supplies, water quality and reducing, wherever possible, air and noise pollution and environmental risks, such as those posed by flood risk, coastal change, land contamination and instability;

• taking actions to move towards a more circular economy in Wales; and

[1] www.gov.wales/natural-resources-policy

• facilitating the move towards decarbonisation of the economy.

4.10. Chapter 6 of PPW deals with, amongst other things, green infrastructure. Paragraph 6.2.2. reinforces how *"The Environment (Wales) Act 2016, provides a context for the delivery of multi-functional green infrastructure"* and how it is integral to how local authorities deliver their Section 6 duty of the Environment Act 2016.

4.11. Paragraph 6.2.1 of PPW defines green infrastructure as (inter alia):

Green infrastructure is the network of natural and semi-natural features, green spaces, rivers and lakes that intersperse and connect places. Component elements of green infrastructure can function at different scales and some components, such as trees and woodland, are often universally present and function at all levels. At the landscape scale green infrastructure can comprise entire ecosystems such as wetlands, waterways, peatlands and mountain ranges or be connected networks of mosaic habitats, including grasslands. At a local scale, it might comprise parks, fields, ponds, natural green spaces, public rights of way, allotments, cemeteries and gardens or may be designed or managed features such as sustainable drainage systems.

4.12. Paragraph 6.2.12 of PPW12 states:

A green infrastructure statement should be submitted with all planning applications. This will be proportionate to the scale and nature of the development proposed and will describe how green infrastructure has been incorporated into the proposal. In the case of minor development this will be a short description and should not be an onerous requirement for applicants. The green infrastructure statement will be an effective way of demonstrating positive multi-functional outcomes which are appropriate to the site in question and must be used for demonstrating how the step-wise approach (Paragraph 6.4.15) has been applied.

4.13. Paragraph 6.2.14 states how:

Development proposals should be informed by the priorities identified in green infrastructure assessments and locally based planning guidance. The Building with Nature standards represent good practice and are an effective prompt for developers to improve the quality of their schemes and demonstrate the sustainable management of natural resources. Using these standards in a way which is proportionate to the nature and scale of the development proposed will be a useful way of ensuring appropriate consideration in circumstances where there is an absence of a green infrastructure assessment and planned approach or relevant local or Supplementary Planning Guidance. The standards are underpinned by an accreditation system and whenever possible, accreditation under these standards should be pursued.

4.14. Paragraph 6.4.5 states (inter alia):

A net benefit for biodiversity is the concept that development should leave biodiversity and the resilience of ecosystems in a significantly better state than before, through securing immediate and long-term, measurable and demonstrable benefit, primarily on or immediately adjacent to the site. The step-wise approach outlined below is the means of demonstrating the steps which have been taken towards securing a net benefit for biodiversity. In doing so, planning authorities must also take account of and promote the resilience of ecosystems, in particular the following attributes, known as the DECCA Framework:

• diversity between and within ecosystems; • the extent or scale of ecosystems;

• the condition of ecosystems including their structure and functioning; • the connections between and within ecosystems; and

• adaptability of ecosystems including their ability to adapt to, resist and recover from a range of pressures likely to be placed on them through climate change for example.

4.15. Paragraph 6.4.10 states how securing a net benefit for biodiversity includes addressing all of the following attributes known as the DECCA Framework:

- Diversity: at a biological level, including at the genetic, species, habitat, ecosystems or sea/landscape scale, as well as at the geological and physical level underpins biodiversity, resilient ecosystems, their functioning and the delivery of important ecosystem services. More diverse ecosystems are more resilient to external influences (this includes biological, geological and physical diversity on a site). This means strategic planning and individual development proposals should avoid negative impacts on biodiversity by considering how biodiversity assets can be maintained and enhanced;

- Extent: to ensure mechanisms allow for the identification of potential habitat, the maintenance of existing biodiversity assets and networks and promote the restoration of damaged, modified or potential habitat and the creation of new additional habitat, as ecosystems which are small in extent are less resilient to external influences. This means that strategic planning and individual development proposals must avoid loss in the extent of biodiversity and incorporate measures to appropriately maintain and enlarge existing habitats, especially where extent is small or declining, through habitat restoration and creation with adjoining and nearby areas, green infrastructure features and networks;

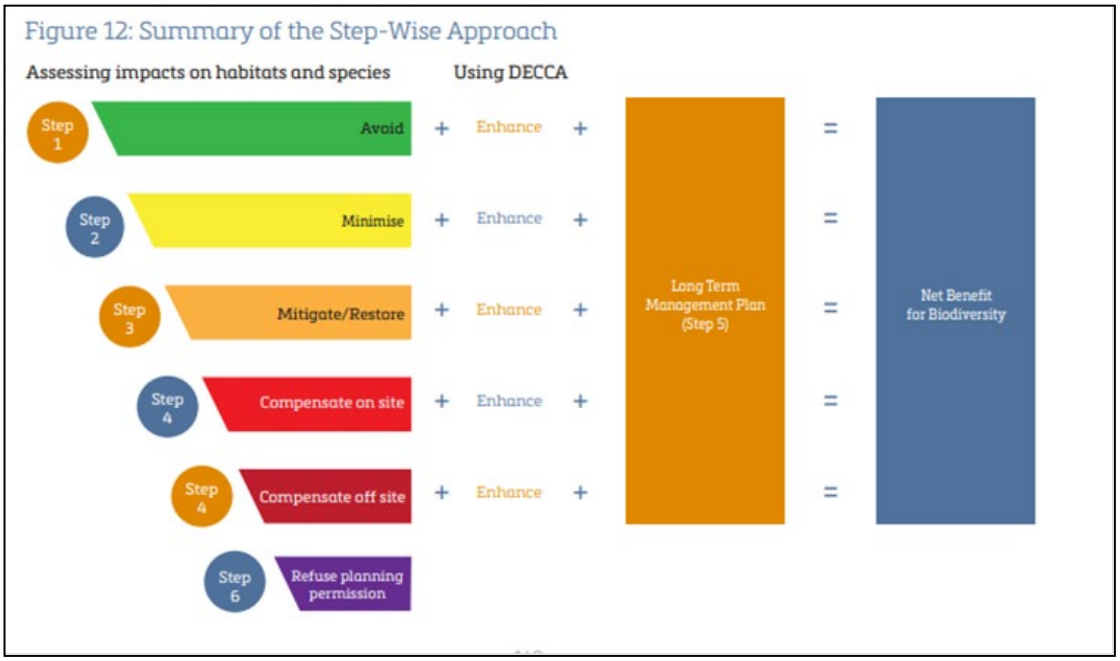
- Condition: Ecosystems and biodiversity assets need to be in a healthy condition to function effectively, to deliver a range of important ecosystem services and be more resilient to external influences. Ecosystem health can be adversely affected by a range of pressures including land use and climate change, pollution, Invasive Non-Native Species and over exploitation as set out in SoNaRR.

- Connectivity: to take opportunities to develop functional and physical connectivity of biodiversity and ecological networks within and between ecosystems and across landscapes, building on existing connectivity and quality and encouraging habitat

creation, restoration and appropriate management, including the links within and between habitats, allows species to forage, breed and migrate and respond to climate change and other pressures, as well as enabling the flow of natural processes (however, measures should be taken to prevent undesired flows such as INNS and nutrients).

- Adaptability to change: resistance and recovery from pressures arise when the attributes of ecosystem resilience – diversity, extent, condition and connectivity of ecosystems are in good condition. Habitats and species are not static: planning for nature recovery should aim to sustain habitats and associated species as the geography and land use changes around them, harnessing natural processes and opportunities for nature-based solutions

4.16. Paragraph 6.4.11 identifies how planning authorities must follow a stepwise approach to maintain and enhance biodiversity. In summary this involves avoiding and retaining important features, minimising impacts, ensuring that habitat connectivity and favourable conservation status of species is maintained, providing additional mitigation, and building in ecosystem reliance to deliver a net benefit. This approach is illustrated in Figure 12 of PPW, which is presented below.



4.17. Paragraph 6.4.15 of PPW provides the amplification to the stepwise approach, this is summarised below:

- Step 1a - The first priority for planning authorities is to avoid damage to biodiversity in its widest sense (i.e. the variety of species and habitats and their abundance) and ecosystem functioning. Where there may be harmful environmental effects, planning authorities will need to be satisfied that any reasonable alternative sites (including alternative siting and design options) that would result in less harm, no harm or benefit have been fully considered.

- Step 1b - Proposals in statutory designated sites are, as a matter of principle, unacceptable and therefore must be excluded from site searches undertaken by

developers. This principle also extends to those sites containing protected species and habitats which are irreplaceable and must be safeguarded. Such sites form the heart of resilient ecological networks and their role and the ecosystem services they provide must be protected, maintained and enhanced and safeguarded from development. It will be wholly exceptional for development to be justifiable in such instances.

- Step 2 - When all locational, siting and design options for avoiding damage to biodiversity have been exhausted, applicants, in discussion with planning authorities, must seek to minimise the initial impact on biodiversity and ecosystems.

- Step 3a - Where, after measures to minimise impact, biodiversity and ecosystems could still be damaged, or lost through residual impacts, the proposed development should mitigate that damage. Mitigation measures must be put in place to limit the negative effects of a development.

- Step 3b - Effective mitigation or restoration measures should be incorporated into the design proposal following the consideration of steps one and two above. Mitigation or restoration measures must be designed to address the specific negative effects by repairing damaged habitats and disturbed species. They should seek to restore in excess of like for like, accounting for disturbance and time lags for the recovery of habitat and species, and in every case, mitigation or restoration measures should seek to build ecosystem resilience within the site and where possible the wider area. In some circumstances, where like for like mitigation measures are not possible, particularly in respect of restoration measures, it may be necessary to consider on site compensation measures in the first instance.
  In designing mitigation measures where uncertainty exists, applicants should follow the precautionary principle and assume a significant effect.

- Step 4 - When all the steps above have been exhausted, and where modifications, alternative sites, conditions or obligations are not sufficient to secure biodiversity outcomes further on-site/immediately proximate, as a last resort off-site compensation for unavoidable damage must be provided.

- Step 5 - Each stage of the step-wise approach must be accompanied by a long-term management plan of agreed and appropriate avoidance, minimisation, mitigation/restoration and compensation measures alongside the agreed enhancement measures. The management plan should set out the immediate and on-going management of the site, future monitoring arrangements for all secured measures and it should clearly identify the funding mechanisms in place to meet the management plan objectives. The management plan must set out how a net benefit for biodiversity will be achieved within as short a time as possible and be locally responsive and relevant to local circumstances.

- Step 6 - Where the adverse effect on biodiversity and ecosystem resilience clearly outweighs other material considerations, the development should be refused.

Future Wales

4.18. Future Wales provides additional commitments on ensuring resilient locational and design choices and reversing the decline in biodiversity and increasing the

resilience of ecosystems. Policy 9 confirms resilient ecological networks are vital for nature recovery and are defined as *"networks of habitat in good ecological condition linking protected sites and other biodiversity hotspots across the wider landscape, providing maximum benefit for biodiversity and well-being"*.

4.19. Nine National Natural Resources are identified as part of Policy 9 in areas where these issues are of national importance. The National Natural Resources indicate broad areas where nationally important ecological networks/green infrastructure exist as a basis for promoting action to protect and enhance biodiversity and improve the resilience of ecosystems and recognising the importance of strategic green infrastructure. The importance of these areas should be given particular attention when identifying development proposals. Policy 9 states that there is a need to expand and make connections between designated sites to increase the ability of species and ecosystems to adapt to the pressures of climate change and pollution. Protected sites are critically important to the long-term resilience of our ecosystems and should not be seen as islands within the landscape but should instead form the nodes of large-scale resilient and functional ecological networks and green infrastructure.

4.20. The concept of green infrastructure was developed to highlight the need to plan this network in a strategic way and to consider it at an early stage in the development planning process. By considering the interactions between the built and the natural environment, it is possible to develop in a way that not only avoids damaging the environment but enhances it.

Swansea Local Nature Recovery Action Plan (LNRAP) 2023-2030

4.21. Swansea Council declared a Nature Emergency in November 2021. The Nature Recovery Action Plan (NRAP) for Wales is the national biodiversity strategy for Wales. It sets out six key objectives and five overarching themes of action to direct nature recovery action at a national level. These are detailed below.

4.22. To address the nature emergency in Swansea, this Swansea Local Nature Recovery Action Plan (LNRAP) was created by the Swansea Local Nature Partnership (LNP). This LNRAP replaces the Local Biodiversity Action Plan (published 2005).

4.23. The LNRAP sets out how nature has declined through industrialisation, habitat fragmentation and loss of traditional land management practices. 80% of protected natural features in Wales are in an unfavourable or undesirable state.

4.24. Over 20% of the county's land area is designated as protected sites by law. Even green spaces (such as Sites of Importance for Nature Conservation – SINCs) are important for maintaining the quality and extent of nature in Swansea. There are 154 SINCs in the Swansea area.

4.25. The Swansea Ecosystem Resilience report maps ecosystem resilience across the county, taking 11 different factors into account. It is important that ecosystem resilience is improved across the county. It should be noted that the project site lies within an area of lower ecosystem resilience.

4.26. The LNRAP sets out local priorities in the form of 'action themes' (aligned with the six key Themes of Action of the NRAP for Wales) to address the decline of nature and achieve nature recovery in Swansea. LNP partners will use the action themes to guide their work, and progress will be recorded annually.

4.27. The NRAP for Wales Themes of Action that the Swansea LNRAP Action Themes are aligned with are:

1. Maintaining and enhancing resilient ecological networks

2. Increasing knowledge and knowledge transfer

3. Realising new investment and funding

4. Upskilling and capacity for delivery

5. Governance, mainstreaming and reporting our progress

4.28. The Swansea LNRAP has 25 Action Themes which are set out under 6 overarching Objectives. These Objectives are listed below, along with key Action Themes that are considered to be of particular relevance to this assessment:

Objective 1. Engage and support participation and understanding to embed biodiversity throughout decision making at all levels.

Action Theme 1.4. Embed evidence-led nature positive decision making at all levels and advocate for changes that support nature recovery.

Objective 2. Safeguard species and habitats of principal importance and improve their management.

Action Theme 2.2. Develop, review and deliver targeted actions that address threats to or improve management of species and habitats of principal importance, thereby building into a wider network of nature recover and ecosystem resilience.

Action Theme 2.3. Deliver proactive actions that increase the abundance and expansion of the extent of species and habitats of principal importance.

Objective 3. Increase the resilience of our natural environment by restoring degraded habitats and habitat creation.

Action Theme 3.2. Develop and deliver actions to improve the diversity, extent, condition and connectivity of habitats within Swansea.

Action Theme 3.3. Ensure that at least 30% of Swansea county is protected and effectively managed for nature by 2030.

Action Theme 3.5. Restore and create habitat and green infrastructure in urban and peri-urban areas, to increase access to good quality multifunctional semi-natural green and blue spaces.

Action Theme 3.6. Restore and create habitat within our river and floodplain environments to help restore ecological process and connect aquatic wildlife.

Objective 4. Tackle key pressures on species and habitats.

Action Theme 4.2. Work collaboratively to tackle terrestrial, freshwater and marine INNS across the county of Swansea.

Action Theme 4.3. Contribute to Swansea's Net Zero 2050 target and make globally responsible decisions to tackle climate change and its impact on species and habitats.

Action Theme 4.5. Minimise further loss and increase connectivity in key wildlife corridors throughout Swansea to reduce the effects of habitat fragmentation resulting from urban growth and historic land use impacts.

Objective 5. Improve our evidence, understanding and monitoring.

Action Theme 5.1. Use baseline surveys, monitoring, and other initiatives to develop a high-quality local evidence base for Swansea and ensure data is accessible through SEWBReC, and other relevant organisations (e.g. NRW).

Objective 6. Put in place a framework of governance and support delivery.

4.29. The Swansea LNRAP also sets out habitat overviews, adapted from previous work on the Local Biodiversity Action Plan; including woodland, open water, wetlands, heath and grasslands, coastal habitats, the marine environment and the urban environment. Woodland and grasslands are key habitats within the site. Swansea has a variety of semi-natural woodland habitat, some of which is ancient. Woodland habitats support a variety of Species of Principal importance. There are many threats to woodland habitats in Swansea including fragmentation, inappropriate management and the spread of invasive species.

4.29.1. Swansea has a variety of heath and grasslands including eight habitats of principal importance, including purple moor gras and rush pasture (rhos pasture). Heathland and grassland habitats in Swansea support a variety of Species of Principal importance. There are many threats to these habitats in Swansea including fragmentation and INNS, but the major issue is variability of appropriate management, including overgrazing. The Swansea LNRAP includes an audit of Species of Principal Importance, and a spotlight on some of Swansea's species and special sites including the Loughor Estuary. A number of these spotlight species have been recorded within the site and/or are likely to be associated with the habitats present within the site that will be retained and enhanced, including otter and horseshoe bats.

4.30. Table 6.3 of this report details how the proposed development considers the Swansea LNRAP, including providing enhancements and benefits to the identified habitats and species.

5. BIODIVERSITY OPPORTUNITIES AND SITE ASSESSMENTS

Opportunities

5.1. The survey area originally extended to approximately 145ha of mixed farmland, watercourse and woodland habitats, although the potential array layout forms a smaller proportion of this area, excluding woodland, scrub, watercourse and other high value habitats. The iterative design process, lead by the stepwise approach, resulted in a final planning application boundary area of 83.2 hectares. The proposed development prioritises conforming with the landscape and nature conservation designations by including designs for over 57 hectares of green infrastructure and wildlife habitat improvements across c.63% of the fields; with the PV arrays, substation and battery compound only occupying c.37% (around 31 hectares) of the site. Green infrastructure provision will include the creation and enhancement of 6.24ha of meadow grassland, 6.8ha of rhos pasture enhancement, 5.51ha of floodplain habitats, 3.56ha of targeted mitigation for species, approximately 1.9ha of tree planting, and approximately 3km of hedgerow creation. The Swansea LNRAP identifies the site as being located in an area of lower ecosystem resilience.

5.2. The survey results informed avoidance and mitigation measures which have been specifically designed to mitigate and compensate for the ecological impacts of the development, in order to provide a gain in biodiversity at the site post-development.

5.3. This provision is set out in the Green Infrastructure Plan in Appendix 1. Key elements of the mitigation and green infrastructure approach illustrated on the plan include:

- Retention and buffering of existing high value habitats.
- Enhancement of river corridor habitats to improve connectivity and wildlife value.
- Public right of way enhancements including a new north-south wildlife corridor.
- Enhancement and restoration of degraded rhos pasture SINC habitats.
- Infill planting and creation/extension of hedgerow corridors.
- Planting of woodland and small copses of trees to add to landscape character and increase connectivity of woodland including SINC habitats.
- Leaky dams to be installed along existing ditches to create additional wetland habitat diversity.

Avoidance - Existing Habitat Retention

5.4. In line with Planning Policy Wales, the first priority for creating a resilient green infrastructure network is to avoid causing damage to green infrastructure assets that already exist on the site.

5.5. Therefore, from an early project stage, ecological surveys of habitats and species were undertaken to identify ecological value across the site, including botanical surveys of higher value habitats. Biodiversity and ecosystem resilience was taken into account, assessing the condition of habitats on site and identifying any pressures that may be contributing to habitats which were in poor condition.

5.6. Confirmed priority habitat fields were removed from the scheme layout following the results of the botanical surveys. These fields are included in the proposed green infrastructure areas for retention and enhancement.

5.7. Furthermore, a number of areas that do not currently meet priority habitat standard including three large fields (e.g. fields to the south of Nos. 4 and 6 and east of No. 7b), totalling an extensive area approximately 9.36ha in size, have been removed from the solar facility layout, yet remain within the site boundary as part of the green infrastructure. These fields lie within the SINC designation but do not currently meet priority habitat standard. Therefore, it is proposed that these fields are restored by altering the management regime and additional seeding where necessary. Protected and priority species are also considered; this restoration of priority habitat will also provide a large area of habitat for ground-nesting birds and invertebrates.

5.8. Further avoidance measures implemented include the proposals for the cable route to connect the proposed Parc Solar Caenewydd to the National Grid, which have been redesigned to be primarily located within the existing adopted highways (including Swansea Road & Carmarthen Road), except for a short stretch between the highway and point of connection, and therefore no habitat loss is anticipated. This is further explained in Table 6.1.

Improvement - Habitat Creation & Enhancement

5.9. In order to enhance the biodiversity and ecosystem resilience of species and habitats within the 2km radius of the site, a number of wider enhancements have been designed. Habitat retention, creation and enhancement measures have been designed to increase the extent and quality of habitat on key corridors within and through the site. These measures will strengthen habitat connectivity through the site, including creation of buffer zones.

5.10. The river corridor and adjacent SINC are considered to be a key component of the mitigation approach; a continuous wide corridor of habitat creation and enhancement will be created along the river corridor within the redline boundary, extending and linking valuable habitats as an ecological network. Open riparian habitats will be retained as part of the mosaic, but with a wider buffer zone than at present.

5.11. It is noted that potential impacts include the loss or alteration of grassland habitat beneath the solar arrays, particularly the loss of open habitat for ground-nesting birds. A significant area of farmland bird mitigation on fields adjacent to the river will be created and enhanced, contributing to the protection of the river corridor habitat. The enhancement measures carried out within the large mitigation field and farmland bird mitigation area will mitigate these impacts, as will the proposed sympathetic grassland management beneath and around the solar arrays.

5.12. The treatment and removal of extensive invasive species, primarily Japanese Knotweed and Himalayan Balsam, will also provide habitat enhancement. Herbicide treatments started in Autumn 2023 with brush cutting also carried out in April 2024. Invasive species are identified as one of the biggest barriers to nature recovery in Swansea.

5.13. A wildlife corridor will be created along the public right of way LR26 linking the site from north to south. This will comprise a habitat mosaic of grassland, scrub and hedgerow planting. Additional woodland and hedgerow creation and infill planting will also strengthen habitat connectivity across the wider site.

5.14. Therefore, enhancement of public access and associated health and wellbeing is an additional benefit that will be provided as part of the green infrastructure.

5.15. As detailed above, a number of rhos pasture areas that do not currently meet priority habitat standard remain within the site boundary as part of the green infrastructure. It is proposed that these fields are restored by altering the management regime and additional seeding using native wildflower seed/green hay from a donor site (likely to be from retained habitat to the south). Enhancement of rhos pasture and creation of butterfly banks will also improve habitat and connectivity for butterfly species.

5.16. Infill planting of gaps in hedgerows, combined with planting and extension of new hedgerow corridors will enhance and create additional habitat connectivity across the site, including links to the wider landscape.

5.17. Planting of woodland, trees and scrub, and creation of wild bird cover will aim to extend the habitat mosaic and enhance habitat value for a range of species including bats and farmland bird species. It will link and buffer the network of woodland and copse habitats in the landscape, including those that form part of the SINC designations.

5.18. It is proposed to provide a series of enhancements such as swales, basins, leaky dams and filter trenches along arrays rows and in existing drainage ditches, as part of a SuDS betterment which will provide additional wetland habitat diversity. The additional hedgerows and the rhos grassland field provide flood betterment once the cattle poaching has stopped, and the meadow grasses recover.

5.19. Therefore, flood betterment is an important additional benefit that will be provided as part of the green infrastructure.

Evidence and Policy

5.20. It is anticipated that net biodiversity gain can be achieved at the site, particularly with regards to the uplifting condition of priority habitats, and habitat connectivity along the river valley corridor. These proposals for green infrastructure, ecological connectivity and enhancement have been designed to meet Policy 9 of Future Wales, Resilient Ecological Networks and Green Infrastructure. The Applicant's response to the Stepwise and DECCA approaches are set out fully in Section 6 below.

Biodiversity Net Gain (BNG)

5.21. The Defra Biodiversity Metric has been used to provide a quantitative preliminary indication of whether net gain can be achieved at the site. It should be noted that the metric is not implemented by Natural Resources Wales (NRW) and is therefore only utilised for the purposes of this site as a non-statutory tool to indicate biodiversity net gain in a quantitative manner, and to show whether a net gain for biodiversity can be achieved within the timescales of the project.

5.22. Based on improvement of the habitat distinctiveness of improved grassland habitats, conversion of arable habitats to grassland, and enhancement of grassland in ecological buffer areas, the development proposals are currently likely to result in a net gain in biodiversity of at least 26.25% on the site.

5.23. It is furthermore considered that the creation of habitat corridor linkages and the restoration of grassland to priority habitat standard, with benefits to wildlife associated with these habitats, will provide ecological benefit additional to that indicated by the metric calculations.

6. GREEN INFRASTRUCTURE ASSESSMENT

Introduction

6.1. The application's response to the stepwise and DECCA approaches are set out below.

- Table 6.1 demonstrates how the stepwise approach, to securing a net benefit to biodiversity, has been integrated into the project design.
- Table 6.2 explains how the DECCA principles have been achieved.
- Table 6.3 shows how the project's design will contribute to key Action Themes in the Swansea's LNRAP.

Table 6.1 Stepwise Approach

STEPWISE APPROACH	HOW HAS THIS BEEN INTEGRATED INTO THE DEVELOPMENT?
Step 1 - avoiding and retaining important features	At a strategic level, the Applicant has adopted a stepped approach in facilitating and identifying appropriate land for the development. At the outset, the Applicant undertook a regional study with regards to grid connection capabilities around the Swansea administrative area. Swansea represents a particularly favourable area for solar development because of the high levels of solar irradiation through its proximity to the coastline, which presents the opportunity for significantly more electricity generation than other locations in Wales and is comparable to the Pembrokeshire and the Llyn Peninsular (it is noted that significant parts of Pembrokeshire and the Llyn Peninsula are embargoed from development due to their respected National Park and AONB designations). Having identified the grid opportunity within the locality, the Applicant then undertook a more detailed site search around two established points of connection with capacity west of Fforest-fach. This is demonstrated in the submitted Site Selection Report prepared by the Applicant (Applicant's Documentation Reference Number DOC08). The site search methodology utilised GIS mapping system to identify and assess sites based on environmental, heritage and other physical constraints; and followed the Welsh Government's toolkit for the strategic identification of renewable energy sites (Practice Guidance - Planning for Renewable and Low Carbon Energy - A Toolkit for Planners September 2015 edition). To summarise, the site selection methodology followed the following 6 steps: **Step 1:** Map locations of built-up areas and infrastructure – The location of built-up areas and existing infrastructure will significantly constrain any deployment of large-scale stand-alone PV farms. **Step 2:** Map further environmental and heritage constraints – Such as woodland areas, lakes and rivers, Special Protection Area (SPA), Special Area of Conservations (SAC), Candidate Special Area of Conservation (cSAC), RAMSAR sites, National Nature Reserves (NNR), Local Nature Reserves (LNR), Site of Special Scientific Interest (SSSI), Marine Nature Reserves (MNR), Scheduled Ancient Monuments (SAM), and Areas of Outstanding Natural Beauty (AONB).

	Step 3: Map areas of suitable slope and topology – Solar PV performance is directly related to the inclination, orientation and shading and thus individual site surveys are ideal when determining site suitability. **Step 4**: Addressing cumulative impact – Considering built/operational solar farm. **Step 5**: Assessing potential installed capacity and energy output – According to the 'DECC UK Solar PV Strategy Part 1: Roadmap to a Brighter Future' the land area required for a 1MW fixed-tilt PV array is approximately 6 acres (or 2.4ha or 0.024km²). This figure should be used to determine the potential installed capacity of each site. It is recommended that a cut off equivalent to 0.5MW (i.e. 3 acres, 1.2ha or 0.012km²) is applied, as any sites smaller than this are less likely to be viable (commercially speaking) for development. **Step 6:** Map locations of suitable Agricultural Land Classification and apply further constraints, as necessary – The aim is to protect best and most versatile agricultural land, however it is noted that diversification helps to support agriculturally based business and promotes multi-functional land uses in some cases. Suitability would be assessed on a case-by-case basis where necessary. The strategic site selection process identified four potential sites for the development within a 2.5km search radius around the potential points of connection. Ancient woodland and SINC were present on all four sites. SSSI were present within other sites and by selecting the application site, this statutory designation has been avoided. Furthermore, the use of BMV agricultural land was also avoided. The site search methodology did not consider all site level issues - these were considered as part of the planning application preparation and in particular through the design and layout of the proposed development. The evolvement of the layout and extent of development area is detailed in the submitted Design and Access Statement (DAS) prepared by Pegasus Group (Applicant's Document Ref DOC03). Over the course of the design process, the applicant has continuously refined the design of the proposed development to encompass the Council's and other stakeholders' feedback at numerous junctures. These alterations and refinements contribute towards how the application proposals meet the objectives of good design as promoted by Policy 18 of Future Wales and the stepwise approach. **Preliminary Design A (2021)** As detailed in the DAS, the inception design 'Preliminary Design A' related to smaller parcel of land in comparison to the latest layout. The purpose of the preliminary red line was to enable the Applicant to engage with and request high level pre-application advice from the local planning authority. The development area considered for the initial pre-

application advice is set out below. The Local Planning Authority provided without prejudice advice whereby they agreed in principle to the positioning of the development within the green wedge and special landscape area.

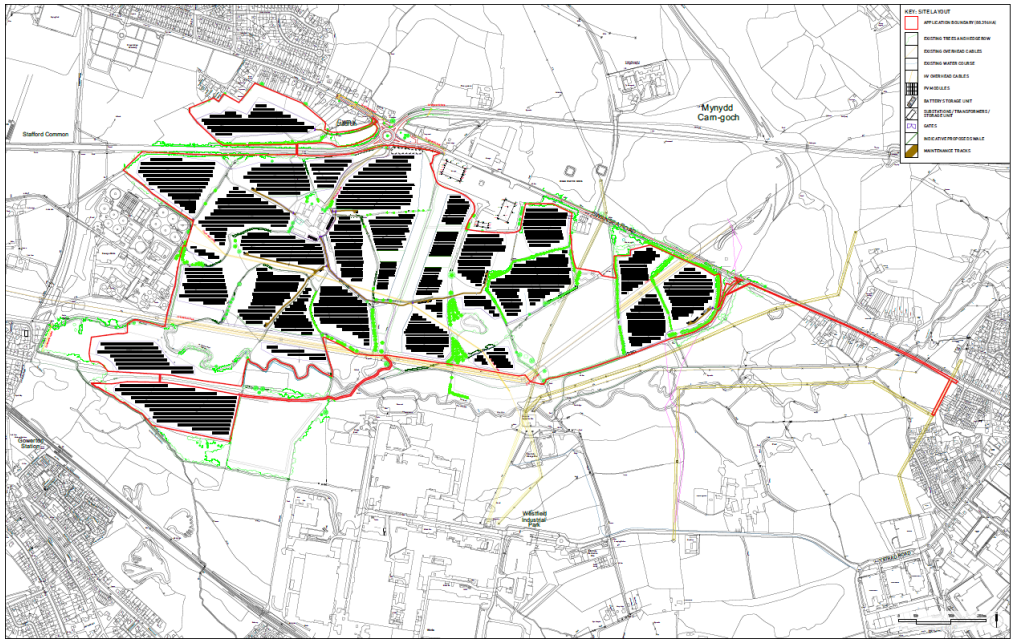
Illustration – Preliminary Design A.

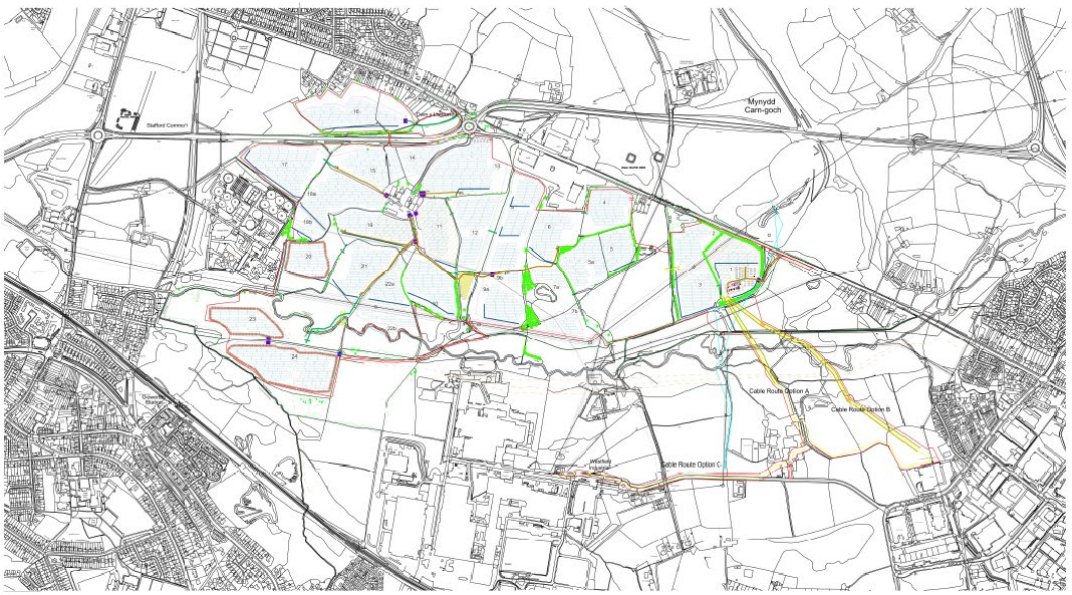
Preliminary Design B (September 2022)

Following a technical review by the applicant's project team, the proposed design and land take was modified.

The 'red line' was extended and altered to provide the additional land necessary to maximise the available grid connection at the application site and to compensate for ecologically and landscape sensitive land removed from the original development area, such as land within the SINC and immediately adjacent to the river corridor of the Afon Llan.

The Applicant notes that the inclusion of the fields to the south of Afon Llan in 2022 preceded the changes to chapter 6 of PPW and in line with the stepwise approach the fields to the south of Afon Llan were subsequently removed from the proposal.

	The Applicant removed the field to the immediate south of Glasfryn Terrace in order to respect the amenity space of these residents. Moving southwards, and following the principles of stepwise, the adjoining field was removed from accommodating solar arrays due to its SINC designation. The field remains within the red line as the Applicant proposes to restore its habitat standards by altering the management regime and additional seeding where necessary. This will also provide a large area of open habitat for ground-nesting birds. Full details of the proposed creation and management of enhanced green infrastructure and biodiversity areas is provided within the supporting Ecological Appraisal (Applicant's Document Ref DOC16). The red line was also updated to show and accommodate the works associated with the preliminary point of connection to the electricity grid located off Swansea Road. The evolved design of 'Preliminary Design B' was used for the Environmental Impact Assessment Screening Direction request to PEDW and for the initial informal public exhibitions with the community, which began in September 2022 and continued until March 2023. This design was also used for the basis of detailed informal consultation with the Local Planning Authority.  *Illustration – Preliminary Design B.* **Preliminary Design C (Summer 2023)**

	For the first stage formal pre-application consultation, undertaken in Summer 2023, the layout further evolved to reflect technical matters raised by the project team and the consultee advice provided by the Local Planning Authority and National Resource Wales. The key changes included: • Changes to the preferred point of connection located to the south east of the application site. The cable route options were delineated following discussions with the relevant landowners which include the Council's estate office. • To reflect the comments put forward by National Resource Wales, the applicant increased the height of arrays within the flood risk area. • As recommended by the Local Planning Authority as part of its pre-application advice over Design B, additional hedgerow and tree planting was incorporated into Design C. • Introduction of detailed designs for the substation and battery energy storage facilities.  *Illustration – Preliminary Design C.*

	Preliminary Design D – For Full Statutory Re-Consultation (October/November 2023) Following the initial statutory consultation, the layout was further refined to reflect technical matters raised by the project team, latest policy guidance and DNS decisions and consultee advice. The key changes included: • All solar arrays were removed from the SINC fields located to the south of the Afon Llan. This was due to ecology stepwise considerations and flood risk. These fields will therefore be retained for full continued agricultural use. By removing the arrays to the south of Afon Llan, the applicant has followed the stepwise approach be removing the need for any associated directional drilling works under Afon Llan, which leads downstream to the Loughor Estuary SSSI and Special Protection Area. This modification was also recognised by NRW as part of their consultee response to PEDW's statutory consultation. • Removal of solar arrays from a further two fields located due south of Glasfryn Terrace due to ecological stepwise considerations, given these two fields are within the SINC. These fields have been retained within the planning application boundary as the Applicant proposes to enhance the purple moor grass and rush pasture with an appropriate management regime for the lifetime of the development. The cable trench is the only proposed infrastructure that will be retained within the SINC. • Following the exclusion of five land parcels (as described above), the applicant has sought to relocate some of the PV modules within the retained fields, thus achieving a more efficient use of the retained fields. • Alternative cable routes were explored and assessed, resulting in re-routing cable trenches along the existing local highways (namely Swansea Road, Carmarthen Road, Ystrad Road and Denver Road) and therefore removing previous cable route options across agricultural fields to the south of the river Afon Llan.

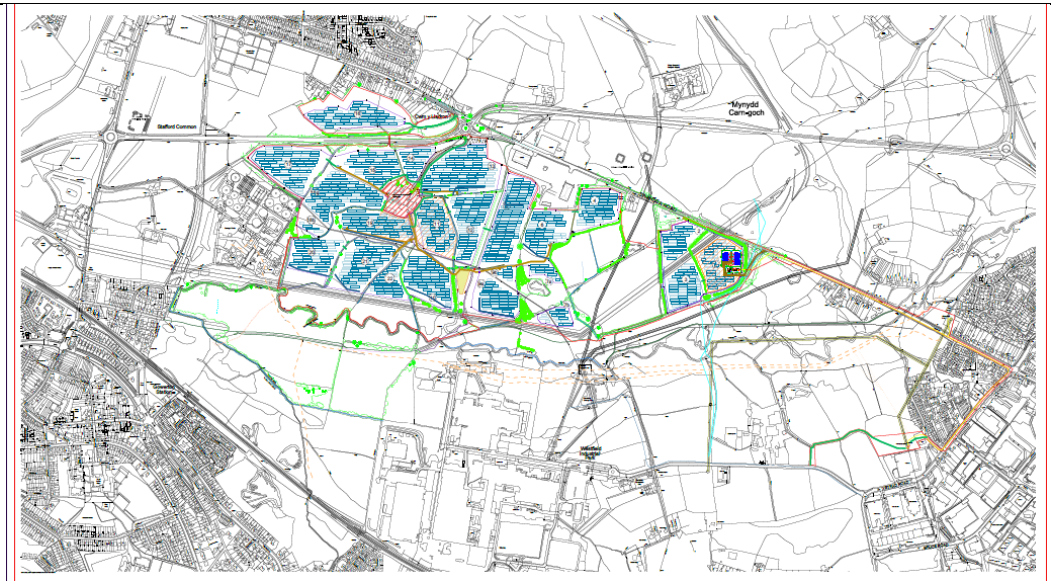


Illustration – Preliminary Design D.

Existing ecological features (hedgerows, woodland, wetland habitat and scrub) within the Site have been retained and incorporated into the design of the Development from the offset. As such, any impacts on these features are being avoided. Only the removal of some sections of hedgerow are proposed. The hedgerow loss has been minimised wherever possible.

Application Submission Design (December 2023)

Following the statutory re-consultation, the applicant carried out minor alterations to the layout and these included: -

- Indication of plant to be located at the points of connection;
- Refinement to the positioning of the stock fencing around the arrays;

- Delineation of the cables connecting the arrays to the transformers and then onwards to the client substation;

- Refinement to the secondary access track which will serve the BESS & substation compounds.

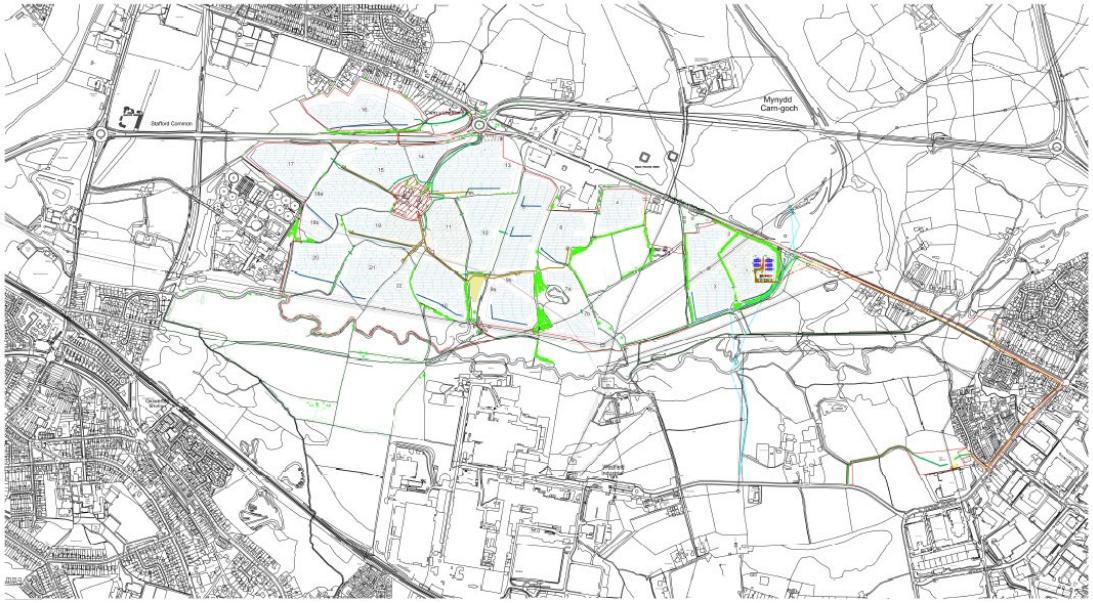


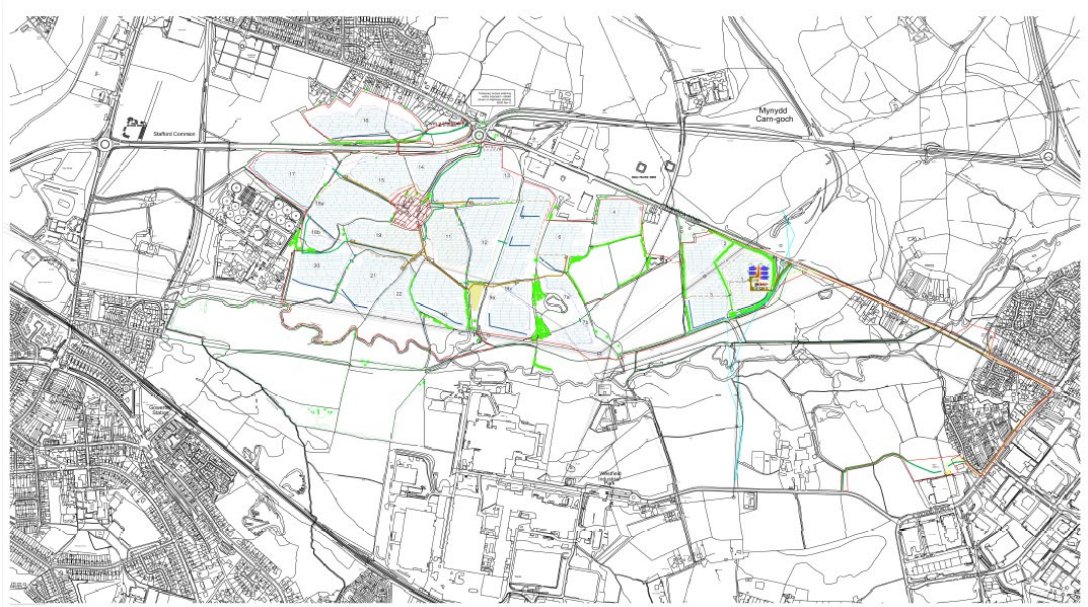
Illustration – Application Submission Layout

Variation Layout (June 2024)

As part of the variation submission, the layout has been amended as follows: -

- Adjustments to cable route, fencing and arrays around the ancient woodland (fields 7a, 9a, 9b) – this responds to the consultee representation provided by the Woodland Trust.

- Adjustment of temp. construction route around the farmyard (removal from fields 14 and 15 but new route through fields 20, 18b into 18a);

	• Adjustment of temp. construction track from southern arm of the roundabout (primary access point) – this responds to the consultee representation provided by Swansea Highways Authority. • Swale in field 16 has been shorted to avoid works within and around the ancient woodland – this responds to consultee representation provided by the Woodland Trust.  *Illustration – Variation Layout*
Step 2 - When all locational, siting and design options for avoiding damage to biodiversity have been exhausted, applicants, in discussion with planning authorities,	Following Step 1, elements of the development which must be assessed under Step 2 are:- (i) A section of the internal cable trench which crosses the field to the immediate south of Glasfryn Terrace (this relates to the cable trench connecting fields No. 4 & No. 3). Cable trenching through SINC from fields 3 to 4 is 345m in length (ii) Section of internal access track crossing the central ancient woodland buffer area (this relates to the extant farm track that connects fields No. 9b and No. 7a)

must seek to minimise the initial impact on biodiversity and ecosystems	(iii) Section of internal access track crossing the northern ancient woodland buffer area (this relates to the existing fam track within field No. 16) (iv) Section of internal cabling crossing the northern ancient woodland buffer area (but along and within an existing farm track leading from the underpass within field No. 16). (v) Grassland habitat beneath the solar arrays (relates to various fields) (vi) Open and arable habitat beneath the solar arrays (relates to various fields) An Ecological Appraisal has been carried out (Applicant's Document Ref DOC16). The baseline surveys of the wider landholding have been used to identify habitats and species within the site. Ecology surveys were commissioned prior to any other disciplines, providing an iterative Ecological Constraints and Opportunities Plan, and informing the extent of layout to be considered. Design was undertaken to avoid, mitigate, compensate and secure enhancement to deliver a net benefit for biodiversity and ecosystem resilience, including the removal of significant areas of SINC habitat from the layout, with subsequent proposals for enhancement and restoration of these areas. Where all siting and design options were exhausted as detailed in Step 1 above, further measures were sought to minimise the initial impact on biodiversity and ecosystems: (i) The internal cable trench which crosses the field to the immediate south of Glasfryn Terrace: Further consideration of alternatives was discussed and discounted, including relocating the track to the south of the SINC field, which was considered to have additional ecological impact and affect a larger area of habitat. Following design changes in Step 1 and the further consideration of alternatives, in addition to avoidance measures including trenchless installation, impacts will be limited to minimal and temporary habitat loss. The temporary impacts must be considered in Step 3 below. (ii) Section of internal access track crossing the central ancient woodland buffer area: The access track has been designed to follow the alignment of an existing field track, avoiding impacts on the habitat. The temporary impacts must be considered in Step 3 below. (iii) Section of internal access track crossing the northern ancient woodland buffer area: The internal access track has been designed to follow the alignment of the existing farm access track, avoiding impacts on the habitat. The temporary impacts must be considered in Step 3 below.

	(iv) Section of internal cabling crossing the northern ancient woodland buffer area. Following avoidance measures including trenchless installation, impacts will be limited to limited and temporary habitat loss. The temporary impacts must be considered in Step 3 below. (v) Grassland habitat beneath the solar arrays, resulting in alteration of the vegetation structure due to potential shading: This potential impact has been minimised through design under Section 1 but must be considered further under Step 3 below. (vi) Open and arable habitat beneath the solar arrays, resulting in loss and alteration of the habitat: This impact has been minimised through design under Section 1 , primarily during Preliminary Design D where all solar arrays were removed from the SINC fields located to the south of the Afon Llan, solar arrays were removed from a further two SINC fields located due south of Glasfryn Terrace, and a targeted area of farmland bird mitigation was included in the site boundary. However, it must be considered further under Step 3 below.
Step 3a - Where, after measures to minimise impact, biodiversity and ecosystems could still be damaged, or lost through residual impacts, the proposed development should mitigate that damage. Mitigation measures must be put in place to limit the negative effects of a development.	As detailed in Step 2, all measures to minimise impacts have been considered. The following construction compliance and habitat protection measures have been inbuilt to scheme design: (i) The internal cable trench which crosses the field to the immediate south of Glasfryn Terrace: Impacts will be limited to minimal and temporary habitat loss which will be mitigated through construction control measures, including protecting and restoring the retained surrounding grassland. This can be secured by the implementation of a robust CEMP. Minimal temporary loss of this habitat will be offset by the wider enhancement of grassland habitats across the site. (ii) Section of internal access track crossing the central ancient woodland buffer area: The access track has been designed to follow the alignment of an existing field track, avoiding impacts on the habitat. Construction compliance will comprise fixed protective tree fencing and geogrid root protection measures to protect the retained habitat surrounding the track. No further mitigation measures are required. (iii) Section of internal access track crossing the northern ancient woodland buffer area: The internal access track has been designed to follow the alignment of the existing farm access track, avoiding impacts on the habitat. Construction compliance will comprise fixed protective tree fencing and geogrid root protection measures to protect the retained habitat surrounding the track. This can be secured by way of a final CEMP. No further mitigation measures are required.

	(iv) Section of internal cabling crossing the northern ancient woodland buffer area. Impacts will be limited to minimal and temporary habitat loss which will be mitigated through construction control measures, including fixed protective tree fencing. Minimal temporary loss of this habitat will be offset by the wider enhancement and creation of wooded habitats across the site. (v) Grassland habitat beneath the solar arrays: This impact has been minimised through design under Section 1, but residual impacts will be offset through habitat mitigation and enhancement associated with the wider site. Loss and alteration of this habitat will be offset by the wider enhancement of grassland habitats across the site, including restoration of degraded priority SINC habitat. (vi) Open and arable habitat beneath the solar arrays: Loss and alteration of this habitat will be offset by the creation of suitable alternative habitats within the wider site including areas of wild bird cover crops and floodplain grazing rush pasture. This will provide suitable compensatory breeding and foraging habitat for associated species including farmland birds.
Step 3b - Effective mitigation or restoration measures should be incorporated into the design proposal following the consideration of steps one and two above.	In order to mitigate for the minimised impacts identified above, namely the temporary habitat loss associated with internal cabling, and grassland and open and arable habitats beneath the solar arrays, the above habitat mitigation, enhancement and creation have been incorporated into scheme design and are set out in an Outline Landscape and Ecological Management Plan (oLEMP), which is incorporated into the submitted Ecological Appraisal (Applicant's Document Ref DOC16).
Step 4 - When all the steps above have been exhausted, and where modifications, alternative sites, conditions or obligations are not sufficient to secure biodiversity	Off-site compensation is not required to make the development acceptable as measurable net biodiversity gain can be achieved at the site, particularly with regards to the uplifting condition of priority habitats, and habitat connectivity along the river valley corridor. The Defra Biodiversity Metric has been used as a non-statutory tool to indicate biodiversity net gain in a quantitative manner. Based on improvement of the habitat distinctiveness of improved grassland habitats, conversion of arable habitats to grassland, and enhancement of grassland in ecological buffer areas, the development proposals are currently likely to result in a net gain in biodiversity of 26.25% on the site.

outcomes further on site/immediately proximate, as a last resort off site compensation for unavoidable damage must be provided	
Step 5 - Each stage of the stepwise approach must be accompanied by a long-term management plan of agreed and appropriate avoidance, minimisation, mitigation/restoration and compensation measures alongside the agreed enhancement measures	An Outline Landscape and Ecological Management Plan (oLEMP), which will inform a detailed LEMP, is presented in the Ecological Appraisal (DWC Report No. 21/3752.02; (Applicant's Document Ref DOC16) and will be secured by planning condition. A detailed LEMP will be produced as a pre-commencement requirement on completion of the finalised scheme design and detailed landscaping design. This would be secured by planning condition. In accordance with BS 42020:2013 the LEMP will include planting and maintenance prescriptions, ensuring that all new and existing habitats present within the site will be managed during the operational lifetime of the development. The LEMP will outline management responsibilities, funding and mechanisms for the management and monitoring work by which the long-term implementation of the plan will be secured by the developer with the management bodies responsible for its delivery. Maintenance of the proposed planting (for the first 12 months after completion) will come under the responsibility of an appointed landscape contractor who would be responsible for replacing any lost, damaged, diseased plants or plants which are not thriving. As part of the landscaping contract, all trees, shrubs and hedge planting will be inspected annually for the first five years; failed plants will be replaced with the same species (unless this is the reason for their failure). All tree/shrub guards, ties, stakes and mulch mats (if used) will be removed at the end of five years. Ecological monitoring will be undertaken annually for the first five years and every five years thereafter. This will comprise habitat conditions assessments and targeted surveys for key species to ensure that habitat creation is established successfully, and the management prescriptions are resulting in the proposed target conditions for each habitat. If the monitoring indicates that expected biodiversity and green infrastructure outcomes are not likely to be achieved, then the recommended habitat retention, enhancement and creation measures will be amended and implemented. Precise planting and management prescriptions will be set out in the reports and may include additional planting and/or recommendations for changes to the management regime to achieve the target habitat conditions.

	These maintenance controls will ensure that the overall green infrastructure aims for the site are achieved. Monitoring under the LEMP will feed into the review of the GIS to ensure the identified results are delivered, and to take corrective action where required. The LEMP will be updated accordingly following the results of this review. Monitoring will be undertaken in Years 1, 2, 3, 5, 10 and 15, unless otherwise agreed. A written report of the effectiveness of the LEMP shall be submitted to the local planning authority every 5 years on the anniversary of the first exportation of electricity to the national grid.
Step 6 - where the adverse effect on biodiversity and ecosystem resilience clearly outweighs other material considerations, the development should be refused.	The application submission demonstrates that this is not applicable, as there is a significant positive impact on biodiversity and ecosystem resilience, which has been inbuilt to the scheme.

Table 6.2 DECCA Attributes and Achieved Principles	
DECCA ATTRIBUTES	**HOW THESE ARE ACHIEVED WITHIN THE DEVELOPMENT'S DESIGN**
Diversity at every level and scale from genes to species and from habitats to landscapes	Restoration and creation of key habitats including meadow grassland, rhos pasture enhancement, floodplain habitats, targeted mitigation for species including farmland birds, woodland/tree planting, and hedgerow creation. This will create a diverse, connected mosaic of habitats across the site. A substantial net gain in tree numbers, hedgerow length, woodland planting and an overall canopy cover is proposed as part of the development.
Extent of the ecosystem, supporting the complexity of ecosystem functions and interactions	A continuous wide corridor of habitat creation and enhancement will be created along the river corridor within the redline boundary, extending and linking valuable habitats as an ecological network.
Condition of the ecosystem that affects the resilience and capacity of ecological communities, affected by multiple pressures	Enhancement of river corridor habitats to improve connectivity and wildlife value. Enhancement and restoration of degraded rhos pasture SINC habitats. Buffer planting including planting of woodland and small copses of trees linking to SINC habitats. Invasive non-native species remediation plan for Japanese Knotweed and Himalayan Balsam
Connectivity between and within habitats including physical corridors, stepping stones and vegetation types	Enhancement of river corridor habitats to improve connectivity and wildlife value. A new north-south wildlife corridor along public right of way LR26. Infill planting and creation/extension of hedgerow corridors. Planting of woodland and small copses of trees to increase connectivity of woodland including SINC habitats.

Aspects of ecosystem resilience regarded as a produce of the above attributes	A resilient ecological network will be formed of core areas of retained and enhanced SINC sites, linked by a mosaic of intervening land-use that buffers, reinforces and connects these core areas. This is achieved through restoration and creation of key habitats including woodland, grassland and hedgerows.

Table 6.3 Key Swansea LNRAP Action Themes and How These Are Achieved	
Swansea LNRAP Action Theme	HOW THESE ARE ACHIEVED WITHIN THE DEVELOPMENT'S DESIGN
Objective 1. Engage and support participation and understanding to embed biodiversity throughout decision making at all levels	
Action Theme 1.4. Embed evidence-led nature positive decision making at all levels and advocate for changes that support nature recovery.	It is anticipated that net biodiversity gain can be achieved at the site, particularly with regards to the uplifting condition of priority habitats, and habitat connectivity along the river valley corridor. These proposals for green infrastructure, ecological connectivity and enhancement have been designed to meet Policy 9 of Future Wales, Resilient Ecological Networks and Green Infrastructure. The applicant's response to the Stepwise & and DECCA approaches are set out fully above.
Objective 2. Safeguard species and habitats of principal importance and improve their management	
Action Theme 2.2. Develop, review and deliver targeted actions that address threats to or improve management of species and habitats of principal importance, thereby building into a wider network of nature recover and ecosystem resilience.	A resilient ecological network will be formed of core areas of retained and enhanced SINC sites and priority habitats, linked by a mosaic of intervening land-use that buffers, reinforces and connects these core areas. It should be noted that the project site lies within an area of lower ecosystem resilience. Swansea LNRAP identifies that key threats to woodland and grassland habitats are inappropriate management and the spread of invasive species. Within the site, this will be combatted through targeted management, restoration and creation of key habitats; a key element will be the enhancement and restoration of degraded rhos pasture SINC habitats of principal importance.
Action Theme 2.3. Deliver proactive actions that increase the abundance and expansion of the extent of species and habitats of principal importance.	SINC habitats will be linked by a mosaic of intervening land-use that buffers, reinforces and connects these core areas of priority habitat. Buffer planting including planting of woodland and small copses of trees linking to SINC habitats. The Swansea LNRAP includes an audit of Species of Principal Importance, and a spotlight on some of Swansea's species. A number of these species have been recorded within the site

	and/or are likely to be associated with the habitats present that will be retained and enhanced, including otter and horseshoe bats. These species will therefore benefit from the proposed habitat management, restoration and creation. Habitat restoration and connectivity will aim to restore associated species such as marsh fritillary that have not yet been recorded within the site.
Objective 3. Increase the resilience of our natural environment by restoring degraded habitats and habitat creation.	
Action Theme 3.2. Develop and deliver actions to improve the diversity, extent, condition and connectivity of habitats within Swansea.	The applicant's response to the DECCA approach is set out fully above and has been considered throughout the design process. The application proposal would therefore positively contribute towards the objectives of Action Theme 3.2
Action Theme 3.3. Ensure that at least 30% of Swansea County is protected and effectively managed for nature by 2030.	The habitat enhancement, creation and management measures will be set out in the detailed LEMP which will include planting and maintenance prescriptions, ensuring that all new and existing habitats present within the site will be managed during the operational lifetime of the development. The application proposal would therefore positively contribute towards the objectives of Action Theme 3.3
Action Theme 3.5. Restore and create habitat and green infrastructure in urban and peri-urban areas, to increase access to good quality multifunctional semi-natural green and blue spaces.	A new north-south wildlife corridor will be created along public right of way LR26, increasing good quality green infrastructure provision within the site. The application proposal would therefore positively contribute towards the objectives of Action Theme 3.5
Action Theme 3.6.	Enhancement of river corridor habitats to improve connectivity and wildlife value will be undertaken. A continuous wide corridor of habitat creation and enhancement will be created along the northern edge of river corridor within the planning application boundary, extending

Restore and create habitat within our river and floodplain environments to help restore ecological process and connect aquatic wildlife.	and linking valuable habitats as an ecological network. The planning application boundary was specifically set at the edge of Afon Llan in order to allow the development to introduce enhancements to the river corridor habitats, with benefits for associated aquatic wildlife including otters and kingfishers. The application proposal would therefore positively contribute towards the objectives of Action Theme 3.6
Objective 4. Tackle key pressures on species and habitats.	
Action Theme 4.2. Work collaboratively to tackle terrestrial, freshwater and marine INNS across the county of Swansea.	The applicant is committed to the remediation of all Japanese Knotweed and Himalayan Balsam located within the planning application site. An invasive non-native species remediation plan for Japanese Knotweed and Himalayan Balsam is being implemented by the applicant. Work undertaken to date includes herbicide treatment of all plants within the site boundary in October 2023, followed by a winter dry cut in March 2024, with further herbicide treatment scheduled for July 2024. The LNRAP identifies how some of the biggest barriers to nature recovery in Swansea is Japanese Knotweed and Himalayan Balsam. The application proposal would therefore positively contribute towards the objectives of Action Theme 4.2
Action Theme 4.3 Contribute to Swansea's Net Zero 2050 target and make globally responsible decisions to tackle climate change and its impact on species and habitats	By its nature the proposed green infrastructure, solar farm and battery storage facility will contribute to Net Zero targets whilst providing a net gain for species and habitats within the site and local area; this ecological benefit is additional to that indicated by the metric calculations. The proposal will also introduce a permissive footpath that will seek to encourage walking and improve active and sustainable leisure opportunities. The application proposal would therefore positively contribute towards the objectives of Action Theme 4.3
Action Theme 4.5 Minimise further loss and increase connectivity in key wildlife corridors throughout Swansea to	Restoration and creation of key habitat corridors across the site including the river corridor, and a new north-south wildlife corridor. This will create a diverse, connected mosaic of habitats across the site, extending and linking valuable habitats as an ecological network. The

reduce the effects of habitat fragmentation resulting from urban growth and historic land use impacts.	application proposal would therefore positively contribute towards the objectives of Action Theme 4.5
Objective 5. Improve our evidence, understanding and monitoring.	
Action Theme 5.1. Use baseline surveys, monitoring, and other initiatives to develop a high-quality local evidence base for Swansea and ensure data is accessible through SEWBReC, and other relevant organisations (e.g. NRW).	Ecological monitoring will be undertaken annually for the first five years and every five years thereafter. This will comprise habitat conditions assessments and targeted surveys for key species to ensure that habitat creation is established successfully, and the management prescriptions are resulting in the proposed target conditions for each habitat. The survey results will be made available to Swansea Council, who in turn can then share with relevant stakeholders. The application proposal would therefore positively contribute towards the objectives of Action Theme 5.1

7. SUMMARY and CONCLUSIONS

7.1. The proposed green infrastructure, solar farm and battery storage facility have been designed to comply with both Future Wales Policy 9 "Resilient Ecological Networks and Green Infrastructure" and the Swansea Council "Biodiversity and Development" Supplementary Planning Guidance, in addition to Swansea Local Nature Recovery Action Plan (LNRAP) 2023-2030. Ecological input was sought from an early stage of design and findings used to inform, evolve and adapt the layout in order to exclude the use of environmentally sensitive areas, avoid and minimise potential ecological impacts but also identify opportunities for retention and enhancement for the site and surrounding landscape.

7.2. The planning application boundary has been extended to include areas of the SINC to specifically allow for these areas to be restored and enhanced as part of a management scheme to be implemented during the lifetime of the development. The proposal provides certainty that these areas will be appropriately managed during the lifetime of development. Development within the SINC is limited only to a cable trench, the majority of which follows an existing farm track. Surveys and design have been undertaken in line with the DECCA and stepwise approach to build and sustain resilient ecological networks to avoid, mitigate, compensate and secure enhancements to deliver a net benefit for biodiversity and ecosystem resilience.

7.3. The SINC habitats will be retained, with development within these areas limited to cable routes utilising existing farm tracks; there will be no arrays or associated infrastructure. The proposed extensive green infrastructure works designed across the majority of the site will result in habitat retention and management, including retention, buffering and restoration of priority habitat associated with the SINCs. This will enhance retained commuting/foraging habitat for protected and priority species such as badgers, bats, birds, dormice and reptiles, and provide enhancement measures for new roosting/nesting opportunities for bats and birds.

7.4. New and enhanced habitat corridors will be provided across the site for these species, linking to wider ecosystem features. Planting of native hedge and scrub species, and creation of wild bird cover plots will aim to extend the habitat mosaic and enhance habitat value for a range of species, including bats and farmland bird species. Retention and enhancement of rhos pasture and creation of butterfly banks will improve habitat and connectivity for butterfly species. Green infrastructure provision comprises 51.54ha, including 6.24ha of lowland meadows, 6.8ha of rhos pasture enhancement, 5.51ha of floodplain habitats, 3.56ha of targeted mitigation for species, approximately 1.9ha of tree planting, and approximately 3km of hedgerow creation.

Appendices

Appendix 1 – Green Infrastructure Plan

KEY

- Site Boundary
- Public Footpaths
- Overhead Power Line
- Proposed cable route
- Directional Drilling of Cable
- Solar Panel Modules
- Access tracks
- Transformer
- BESS Battery Unit
- BESS Transformer
- Security Fence
- Proposed Swale

- **Existing Woodland and Hedgerow** — Gaps in existing hedgerows to be infilled with hedgerow panting (as required) at approx 30% rate. (For further information, refer to Tree Survey and Constraints Plan prepared by Barton Hyett)
- **Existing Vegetation to be removed**
- **Grazing Seed Mix to Panel Compounds** - ie. EG26Old Fashioned Grazing Mixture by Emorsgate
- **Meadow Seed Mix to Field Margin** - ie. EG10 Tussock Grass Mixture by Emorsgate
- **Tussocky Grassland** - ie. EG9 Meadow Grass Mixture for Hedgerows and Woodland by Emorsgate (may be grazed, but maintained suitably short as lapwing breeding habitat)
- **Meadow Grassland** - ie. Wales Meadows Seed Mix by Habitat Aid
- **Arable Bird Mitigation** - Wildflower bird seed mix on arable field margins
- **Reptile Mitigation Area**
- **Existing Rush Pasture** - Green hay seeding (potential local donor source)
- **Habitat Mosaic** - ie. Wales Meadows Seed Mix by Habitat Aid in selected areas, managed on rotation to retain mosaic/increase grassland
- **SINC Grassland Enhancement**
- **Proposed Hedgerow Planting**
- **Proposed Small-Scale Tree Planting**
- **Proposed Woodland / Shrub Planting** — Tree planting within mix shown indicatively

Note: locations of planting proposals is shown indicatively only at this stage.

Revisions:
First Issue- 05/07/2022
A - (08/07/2022 IHW) Amended to client and comments
B - (16/08/2022 IHW) Proposed pond added, panels simplified
C - (31/10/2022 IHW) Hedgerow alignments amended to central PRoW corridor following comments received from LPA PRoW officer
D - (13/02/2023 IHW) Redline amended; landscape adjusted to revised layout; PRoW alignments updated; connecting cable routes added
E - (28/02/2023 IHW) Redline amended; ecology notes added
F - (01/03/2023 IHW) Redline amended; ecology notes added
G - (04/10/2023 IBD) Red line amended to exclude southern fields; solar layout amended site-wide; landscape proposals amended to suit revised solar layout
H - (05/10/2023 IBD) Reptile Mitigation Area amended
J - (11/10/2023 IBD) Planting clash corrected
K - (08/12/2023 IBD) Amended to suit layout PSC 100 001 V13
L - (13/12/2023 IBD) Key amended to client comments
M - (30/05/2024 VK) Amended to client comments
N - (31/05/2024 IBD) Amended to client comments

Green Infrastructure Plan
Parc Solar, Caenewydd

Client: Taiyo Power & Storage Ltd

DRWG No: **P21-2998_13** REV: **N**

Drawn by : VK/IBD Approved by: IBD

Date: 31/05/2024

Scale: 1:2000 @ A0

Pegasus Design

0 100m

N

Town & Country Planning Act 1990 (as amended)
Planning and Compulsory Purchase Act 2004

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