

Parc Solar Caenewydd, Swansea

Design and Access Statement

Development of National Significance in the Renewable Energy Sector
Application Submission





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Contents

1. INTRODUCTION	4
2. REGULATORY BACKGROUND	6
3. SITE ASSESSMENT	7
Landscape	7
Vegetation and Land Use	8
Settlements	9
Biodiversity	9
Hydrology	13
Cultural Heritage	14
Agricultural Land	16
Ground Conditions	16
4. DESIGN PARAMETERS AND DESIGN SOLUTION	17
Design Flexibility	20
Ground Mounted Solar PV Arrays	21
Battery Energy Storage System (BESS) and Substation Compounds	22
Ecological Enhancement and Biodiversity Habitat Management Areas	24
Access Arrangements	25
Operational Lifespan	26
Decommissioning	26
Agricultural Matters	26
Undertakers	27
5. Design Evolution	28
Preliminary Design D – For Full Statutory Re-Consultation	34
6. POLICY CONTEXT	38
Potential Effects on Landscape Character	42
Potential Effects on Landscape Elements	43
Potential Effects on Visual Amenity	43



7. CONSTRUCTION	54
Temporary Construction Compounds	56
8. CRIME AND IMPACT ASSESSMENT	57
9. CONCLUSIONS	59

Appendices contents

APPENDIX 1 – SITE LOCATION PLAN.....	61
APPENDIX 2 – PLANNING APPLICATION DRAWINGS	62
APPENDIX 3 – GREEN INFRASTRUCTURE MAP.....	63

1. INTRODUCTION

- 1.1. This Design and Access Statement has been prepared by Pegasus Group on behalf of Taiyo Power & Storage Limited (herein referred to as “the applicant”) 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 proposed development will deliver a host of landscape, biodiversity, soil and hydrological enhancements, including measures to strengthen habitat connectivity through this part of the valley, the creation of green buffer zones and public right of ways improvements.
- 1.2. The proposed development is called ‘Parc Solar Caenewydd’.
- 1.3. The statutory requirement for a Design and Access Statement to accompany an application for a DNS is set out in article 14 of the Developments of National Significance (Procedure) (Wales) Order 2016. This document has been prepared in line with the Planning (Wales) Act 2015 and The Design and Access Statements in Wales: Why, What and How (Welsh Government 2017). These documents set out the requirements regarding the contents of a Design and Access Statement and reflect the objectives of good design as championed by Future Wales, Planning Policy Wales (PPW), and Technical Advice Note 12: Design (TAN 12).
- 1.4. This Design and Access Statement should be read in conjunction with the other documents that support the DNS application. Notwithstanding the above, this Design and Access Statement is designed to be read as a standalone document if required.
- 1.5. The key benefits of the development are summarised below: –
 - It would provide a valuable contribution with regards to provision of decentralised renewable energy for the south-west region of Wales without the use of best and most versatile agricultural land.
 - The solar power element of the proposed development would generate clean renewable energy for the equivalent of over 11,500 homes a year. The anticipated CO₂ displacement is 18,000 tonnes per annum.
 - The development would contribute towards energy security and the BESS would provide significant resilience to the local grid network to support growth of additional intermittent renewables and avoid future brownouts and blackouts.
 - It would deliver significant ecological enhancements, habitat creation and biodiversity net gain, and this would be managed and maintained during the lifetime of the proposed development.
 - The proposals are likely to meet the requirements for on-site biodiversity net gain, with a predicted gain of at least 26.25%, including restoration of priority habitat. 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 development would occupy low quality agricultural land. The site is not best and most versatile agricultural land and this has been agreed in consultation with the Welsh Government.
- The proposed management of the land under solar PV panels will improve soil health, such as increasing soil organic matter, and hence soil organic carbon, increasing soil biodiversity, and improving soil structure. By increasing soil health, soil biodiversity and soil organic carbon, solar farms present an ideal setting for significant biodiversity net gain, by increasing the soil microbial, mycorrhizal and invertebrate populations. The proposal would assist in the transition from artificial to the use of green fertilisers.
- The tenant farmer would continue to farm land located to the south of Afon Llan. The farm shop would remain in-situ and the tenant has already been provided with alternative land by the estate with the support of the applicant.
- The application proposal represents an efficient use of land that was formerly used for shallow depth coal mining activities.
- Development is temporary and would be decommissioned and removed from site after 40 years.
- Economic benefits would be secured in terms of construction and less so operational management of the application proposal. The application proposal will provide employment and business opportunities for component suppliers / installers and those involved in grid connection, transport and logistics. Where possible, local businesses will be contracted for relevant parts of the scope of works over the period of construction, operation and maintenance. There will be additional induced impacts during the construction period with any incoming construction workers (engineers, project managers etc) spending their wages at a local level (restaurants, retail stores etc) and using local accommodation.
- There are considered to be no significant adverse impacts on internationally or nationally statutory designated sites for nature conservation.

1.6. As part of the community benefits associated with the application proposal, the applicant commissioned Community Energy Wales to identify investing into shared community ownership. This identified Gower Power Limited who continued interest to deliver the shared ownership element of the proposed scheme. In addition to community ownership, the applicant is looking to enter into a legal agreement to provide funds to the Council to upgrade the local PRow infrastructure. Details of the proposed community benefits are presented within the accompanying Collaborative Benefits Report.

2. REGULATORY BACKGROUND

- 2.1. By virtue of its potential generating capacity, which stands at 44.45MWp (Megawatts peak), the proposed development constitutes a Development of National Significance (“DNS”). Therefore, instead of applying to the Local Planning Authority for Planning Permission, the application will be made to the Planning and Environment Decision Wales (PEDW). The application process is managed by PEDW on behalf of the Welsh Minister.
- 2.2. Part 5 of the Planning (Wales) Act 2015 (“Act”) established a new category of development named DNS. Provision in the Act came into force in March 2016 which requires the Welsh Ministers to determine DNS projects, with applications being made directly to them (through the Planning Inspectorate Wales). The process for applying for a Development of National Significance is set out by the Development of National Significance (Procedure) (Wales) Order 2016 and subsequent Regulations.
- 2.3. The DNS application process is managed by Planning Environment Decision Wales (PEDW) on behalf of the Welsh Government. Decisions are made in the context of the Welsh Government’s national planning policy, for renewable energy development this specifically includes Policies 17 and 18 of Future Wales: The National Plan 2040 and Planning Policy Wales (Edition 11) (February 2021). In the context of the proposed development and given its location the Swansea Local Development Plan 2010-2025 will also be a material consideration. These policies are described in detail in the Planning Statement, which accompanies the application.
- 2.4. The purpose of the DNS process is to ensure timely decisions are made on development proposals that are of the greatest significance to Wales because of their potential benefits and impacts. Prior to submitting the application to PEDW, the applicant must publicise and consult on the proposed application for a period of at least six weeks.
- 2.5. The application proposal has been subject of detailed informal and formal consultations with the relevant statutory consultees and the local community. These are discussed in detail in the accompanying Consultation Report. The appointed Inspector will consider evidence from the applicant, local communities, the local planning authority and other statutory consultees and interested parties, submitted both in writing and at targeted hearing or inquiry sessions, which are held in public. Following their consideration of the evidence, the Inspector will write a report to the Welsh Ministers, setting out their conclusions and making a recommendation as to whether or not the application should be granted planning permission. The Welsh Minister will then decide the application.

3. SITE ASSESSMENT

- 3.1. 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.
- 3.2. 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. To the south of the application site the land continues to rise, reaching c.170m AOD around West Cefncoed. The land gradually falls to the west to the Afon Llŵchwr (River Loughor).
- 3.3. The application site sits at the southeast residential edge of Gorseinon, within the designated green wedge and within a Special Landscape Area. The south of the residential site is offset 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.
- 3.4. 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.
- 3.5. 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. 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 industrial uses.

Landscape

- 3.6. With regards to the National Landscape Character Areas (NLCA), the application site is covered by NLCA 38: Swansea Bay and key characteristics that are relevant to the application and its setting include:
 - "Narrow Coastal Plain – a long lowland area, of limited width in its middle section, between uplands and the sea, and opening out into wider lowland areas at either end.

- "Character is urban and suburban with large housing and industrial estates. Heavy industries and settlement have made use of these strategically important locations, between coalfield and sea, and major ports around Swansea and the Steel Works at Port Talbot are landmark features."
- "Tightly fitted between the steeply rising uplands to the north and the sweeping bay to the south, this often busy, noisy, at times messy, urban, transport artery also extends over the broad neck of Gower to include the neighbouring, estuary-set town of Llanelli."

3.7. At a more detailed level, LANDMAP divides Wales into discrete geographical areas known as aspect areas. The 5 LANDMAP datasets are called the Geological Landscape, Landscape Habitats, Visual and Sensory, Historic Landscape and Cultural Landscape. The Visual and Sensory dataset locates the application site within Aspect Area, Afon Llan and surrounds. The area is described as:

- "Valley floor with Afon Llan flowing through it, urban areas surround it some being immediately adjacent. Pylons cross the area as do a number of roads with the A484 forming part of the northern boundary. Visual detractors within include a sewage works, roads and pylons. Factories and urban areas border it in places. Some hedgerow field boundaries but has a distinct urban edge character. Change detection 2014: expansion of Swansea edge into this area."

3.8. The Landscape Habitats Aspect Area is "Between Gorseinon and Gowerton", described as:

- "Semi-improved Neutral Grassland. Improved Grassland. Marshy Grassland. Arable. Buildings... An area of grassland between two urban areas."

3.9. The quality of the area is described as generally low, with the aim to improve ecological value of farmland.

3.10. The Gower Area of Outstanding Natural Beauty (AONB) is approx. 3.5km to the southwest of the application site at its closest point. There are no Registered Parks and Garden's, Registered Historic Landscapes, located within or immediately surrounding the application site. There are two small remnant areas of Ancient Woodland, one within the main part of the application site and a smaller area to the north between the A484 and Swansea Road. Stafford Common, an area of Statutory Access Land (SAL), is adjacent to the northern parcel of the site. To the north of Swansea Road there is a large area of SAL Penllergaer Common, which expands up to the industrial area. Within this area there is also a Scheduled Monument. A number of Public Rights of Way (PRoW) cross the application site and link to the wider area, namely; LC101, LC26, LC71, LC72 and CO60. Buffer zones from the PRoWs, lower array heights and breaks in the mass of arrays are all included in the layout design.

Vegetation and Land Use

3.11. The application site is crossed by several hedgerows, creating a medium sized field pattern of mixed grazing pasture and arable land. Some of the varying field sizes of the application site appear larger than the fields of the surrounding agricultural landscape. Hedgerows

are generally managed at a relatively low height (typical of the area) in the northern part of the application site with some exceptions. The condition of the hedgerows across the western fields appear gappy and would be bolstered in places. A small block of woodland (Ancient Woodland) is present within the central part of the application site, where the fields also have dense mature lines of trees around some of their boundaries, notably bordering the Swansea Road. The topography being flatter around the river corridor gives the appearance of a more vegetated landscape within views, whereas the higher slopes appear more open.

Settlements

- 3.12. The application site is located at the southeast residential edge of Kingsbridge and Gorseinon which extends west to the estuary. Gowerton and Waunarlwydd are to the south of the application site, contained in the main by the railway line, with a small residential area of Gowerton and Westfield Industrial Park encroaching north. Near to the application site, there are isolated properties along the B4560 (Swansea Road) which abut the application site, with Fforest Fach further east. Penyfodau Fawr Farm is located within but specifically excluded from the redline boundary.

Biodiversity

- 3.13. Part of the application site lies within Penyfodau Fawr To Llewitha, a 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. The western extent of the application site lies within Alcoa Wet Meadows SINC, designated for wet woodland, scrub, neutral grassland, purple moor grass and rush pasture, linear vegetation and watercourse. Part of the application site located to the north of the A484 straddles the Stafford Common SINC. The table below lists all the designations within 2km of the application site, with an extended search for international designations within 10km of the application site. It is important to note that no physical energy development is proposed on the SINC fields located within the planning application boundary.

Site Name	Designation	Category	Distance from Site Boundary
Burry Inlet	Ramsar	International	1700m
Burry Inlet	SPA	International	1700m
Gower Commons	SAC	International	3300m

Gower Ash Woods	SAC	International	7400m
Camarthen Bay and Estuaries	SPA	International	1700m
Crymlyn Bog	SAC	International	7800m
Crymlyn Bog	Ramsar	International	7800m
Limestone Coast of South West Wales	SAC	International	9800m
Burry Inlet and Loughor Estuary	SSSI	National	1700m
Penplas Grasslands	SSSI	National	1700m
Penllergear Railway Cutting	SSSI	National	3200m
Barland Common Stream Section	SSSI	National	3300m
Nant-Y-Crimp	SSSI	National	3700m
Cadel Heath	Local Nature Reserve	Local	1297m
Cwmllywd	Local Nature Reserve	Local	1757m
Stafford Common	SINC	Local – Non statutory	On Site

Alcoa Wet Meadows	SINC	Local – Non statutory	On Site
Penyfodau Fawr To Llewitha	SINC	Local – Non statutory	On Site
Mynydd Garn goch Common	SINC	Local – Non statutory	9m
Waungron to Gowerton Railway line	SINC	Local – Non statutory	142m
Main Swansea – Fishguard Railway Line	SINC	Local – Non statutory	238m
Gowerton Mart Woods	SINC	Local – Non statutory	278m
Lower Lliw Corridor & Llan Confluence	SINC	Local – Non statutory	462 m
Dunvant Brickworks	SINC	Local – Non statutory	679 m
Mynydd Bach-Y-Glo	SINC	Local – Non statutory	730 m
Valley Wood	SINC	Local – Non statutory	972 m

Portmead Common	SINC	Local – Non statutory	1009m
West Gowerton Woods	SINC	Local – Non statutory	1041m
Bishwell Common	SINC	Local – Non statutory	1094m
Upper Mynydd Garn goch Common	SINC	Local – Non statutory	1096m
Gowerton saltmarsh	SINC	Local – Non statutory	1379m
Marbled White Butterfly Meadow	SINC	Local – Non statutory	1527m
Cwmmawr Woods	SINC	Local – Non statutory	1916m
Nant Llwyd Valley	SINC	Local – Non statutory	1984m
B-Line	B-Line	Local – Non statutory	1700m

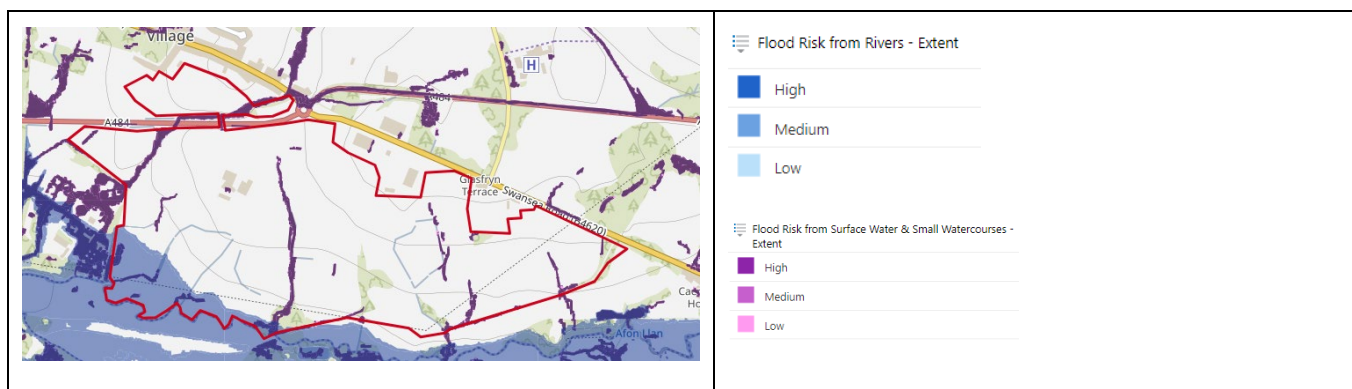
- 3.14. Within 2km of the application site boundary there are a further 65 Ancient Semi Natural Woodland Sites, Restored Ancient Woodland Sites, Plantation on Ancient Woodland site, and Ancient Woodland Sites of Unknown Category. These are all unnamed.
- 3.15. When considering the Zone of Influence for designated sites within a 10km radius, it should be noted that the application site lies within 2.1km of Penplas Grasslands Site of Special Scientific Interest (SSSI), Burry Inlet Ramsar Site and SSSI and Camarthen Bay and

Estuaries Special Areas of Conservation (SAC). The Afon Llan is connected to the SAC, creating a potential pollution pathway connecting to the proposed development.

Hydrology

- 3.16. There is a main watercourse running along the southern boundary of the application site (Afon Llan). The Gors Fawr Brook also runs to the far southwest of the application site and is a tributary of the Afon Llan.
- 3.17. Geological data held by the British Geological Survey (BGS) indicates that the bedrock geology underlying the application site is "Grovesend Formation" – which is shown to be a mix of Mudstone, Siltstone and Sandstone. The application site is currently a permeable greenfield site that allows surface water run-off to drain naturally to ground and toward the existing watercourses. However, the Soilscape soils data shows the application site as "Lime-rich loamy and clayey soils with impeded drainage". There are several other small watercourses/ditches located across the application site which will be used to convey flows. The use of "leaky dams" is proposed in the form of obstacles within field ditches such as earth mounds or reducing the width of the ditch. The underlying ground conditions are shown as Mudstone, Siltstone and Sandstone formation with Sand and Gravel deposits. The topography of the application site falls north to south toward the Afon Llan.
- 3.18. The Natural Resources Wales website provides basic flood mapping data as a general guide to whether the application site is at risk of flooding from various sources including rivers and seas for Flood Zoning classification. The Surface Water (Pluvial) Flood Map indicates that the application site is at a very low risk from surface water flooding for the majority of the application site with some small pockets of land shown to be at high risk.

Figure: NRW River & Surface Flooding Map (annotated with main development area - not to scale)



Cultural Heritage

- 3.19. The application site comprised common land and/or farmland during the early medieval, medieval and earlier post-medieval periods. Evidence of such land use is likely to comprise buried ditches of former field boundaries and buried plough furrows.
- 3.20. Penyfodau Fawr farmhouse, its attached barn, and the range to its south-east were in existence by 1830 while the range to its south was in existence by 1878. These buildings represent non-designated historic assets of local significance.
- 3.21. There is evidence of localised industrial activity within the application site from the later post-medieval period onwards. The infilled cut of the Penclawwd Canal and the leat from Afon Llan are likely to survive in the southern parcel of the application site; and there is potential for buried remains of the track bed and associated structures (e.g. weighing machines) of the tramway and mineral railway in the south-western, eastern-central and central parts of the application site.
- 3.22. Such infrastructure would be considered non-designated historic assets, their heritage significance derived from their evidential and historic value.
- 3.23. Coal pits, mine shafts and pile/drift recorded on historic mapping and by The Coal Authority would not usually be considered as historic assets.
- 3.24. There are no designated historic assets located within the application site. Four Scheduled Monuments are located within 2km of the application site, these are:-
- Mynydd Carn-Goch Roman Earthworks;
 - Roman Practice Camp on Stafford Common;
 - Garn Goch Round Barrow; and
 - Melin Mynach Watermill, Gorseinon.
- 3.25. Twelve Listed Buildings are located within 2km of the application site, these are
- Church of St John;
 - Temple United Reformed Church;
 - Boundary Stone at Kingsbridge;

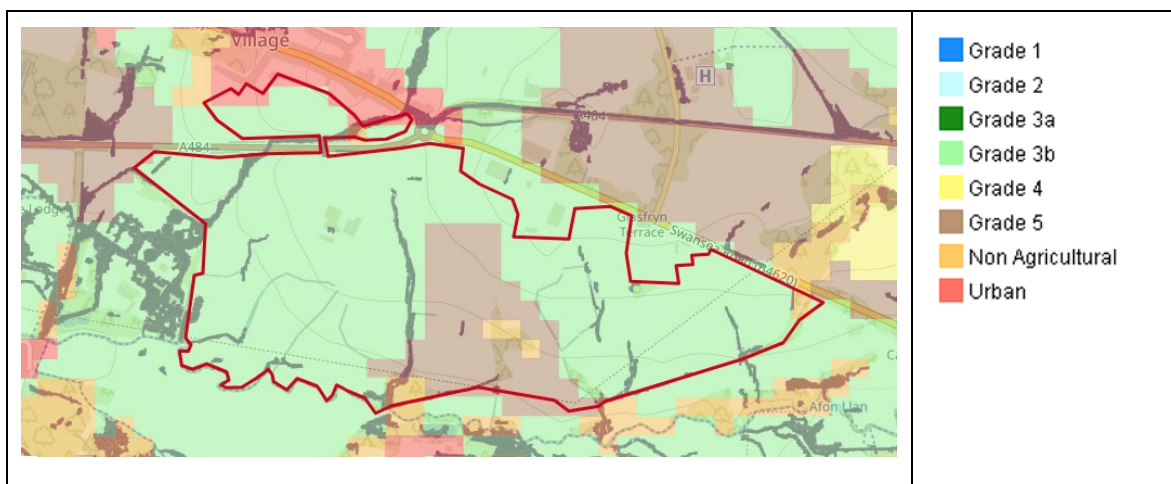
- Capel Bethlehem including attached vestry block;
- Walkers Snack Foods Factory;
- Bryn-rhos;
- North farmyard range at Bryn-rhos;
- West farmyard range at Bryn-rhos;
- East farmyard range at Bryn-rhos;
- Church of Saint Catherine;
- War Memorial in grounds of Church of Saint Catherine; and
- Church of the Blessed Sacrament.

3.26. No World Heritage Sites, Registered Historic Landscapes, Registered Historic Parks and Gardens, or Conservation Areas are located within 2km of the application site.

Agricultural Land

- 3.27. The Welsh Government has developed a web-based Predictive Agricultural Land Classification (ALC) map for Wales. The predictive ALC map shows that the quality of agricultural land within the application site mostly comprises land of Subgrade 3b and Grade 5, with small areas of non-agricultural land. The Welsh Government Soil Advisor has confirmed that a detailed ALC survey is not required, and the application site does not contain any best or most versatile agricultural land.

Figure: Predictive ALC Map 2 (annotated with main development area - not to scale)



Ground Conditions

- 3.28. The application site is located within the South Wales Coalfield. There are a high density of historic collieries and other mining related features on the application site and the surrounding area. Preliminary assessment has indicated a total of 41no. coal mine entries located within or within 20m the application site boundary (28 shafts & 13 adits). Of these entries, The Coal Authority indicates that 3no. shafts have been treated.
- 3.29. A review of historical and current Ordnance Survey mapping and environmental registers has indicated that potential contaminative current and historic land uses are present at the application site. These land uses include the historic coal mining legacy of the application site, historic backfilling of on-site canal, as well as the agricultural and farming land uses.

4. DESIGN PARAMETERS AND DESIGN SOLUTION

The Proposed Development and Design Principles

- 4.1. The applicant's design brief for the project was to design a cohesive scheme which maximises the potential energy yield available to the applicant; whilst achieving a layout which relates and takes into account the surrounding landscapes designations and delivers on green infrastructure requirements.
- 4.2. The design of the development has developed through a multidisciplinary design process guided from the following five sources:-
- the physical opportunities and constraints the application site provides;
 - the physical needs (and land take requirements) of the proposed development;
 - the policy context which surrounds the proposed development;
 - consultative process – technical and design comments provided by statutory and specialist consultees as part of the various formal and informal consultation undertaken by the applicant; and
 - advice put forward by the applicant and their multidisciplinary design team.
- 4.3. Design objectives have been followed throughout the development of the application proposal to ensure that the application proposal presented by the applicant clearly addresses the requirements of Policies 17 & 18 of Future Wales.
- 4.4. An assessment against Policies 17 & 18 of Future Wales is presented within Section 6 of this Statement. Assessment against other development plan policies are presented within the Planning Statement. The design objectives followed by the applicant accord with the design objectives set out in the renewable energy guidance published for consultation by the Design Commission Wales in April 2023¹, whereby the final document was recently published in November 2023². These are:
- Avoid unacceptable environmental impacts on local communities through the design processes

¹ Designing for Renewable Energy in Wales – Consultation on Draft Guidance Document (April 2023)

² Designing for Renewable Energy in Wales (November 2023)

- Maximise benefits to local communities
- Avoid negative environmental impacts on nature and wildlife
- Enhance the ecological diversity of the site to provide a net benefit
- Use of highest quality emerging new technology
- Sustainable construction
- Make meaningful changes to the landscape through design

Design Solution

- 4.5. The application proposal relates to the construction, operation, maintenance and decommissioning of a ground mounted solar power and battery energy storage facility. 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.
- 4.6. 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.
 - Ecological Enhancement and Biodiversity Habitat Management Areas.

Development Constraints

- 4.7. Appropriate design and siting required to take account of:
- Established built form and other physical constraints within the farmstead (including overhead electricity cables, underground utilities pipes and the Public Right of Way's 'definitive' and 'used' lines)
 - Established field boundaries, river, ditches and site-specific ecological sensitivities
 - Proximity to nearby residential receptors
 - Setting of Gower's Area of Outstanding Natural Beauty

- 2% of the development site is located within a high risk flood area
- Need to maintain the openness of the Green Wedge and designated Special Landscape Area
- Extensive former coal mining works recorded and identified within the application site
- Scheduled Monuments of Roman practice camps located near the application site
- Need to follow stepwise approach with regards to site-specific and neighbouring ecological designations, including the SINCS located within the site
- The Afon Llan is connected to the SAC, creating a potential pollution pathway connecting to the proposed development.
- 'Monuments' recorded within the application site include post-medieval leat from Afon Llan, the post-medieval farmstead of Penyfodau Fawr, a post-medieval coal pit, and a modern coal pile or drift. Infrastructure recorded within the site on 19th- and 20th-century maps include the Penclawdd Canal and tramway, two other sections of tramway, and a mineral railway. Any buried remains of the leat, canal, tramways, and mineral railway would be considered non-designated historic assets.

Development Opportunities

- Applicant is proposing community ownership as part of the development
- Proximity to point of grid connection
- Application site does not comprise best and most versatile agricultural land
- Compatible use of land formerly used for shallow depth coal mining activities
- Continued agricultural use of the application by sheep grazing
- Provide resilience to the local electricity grid network
- Land take requirement – the application site is an appropriate size for the development proposal
- With regards to maintaining the openness of the Green Wedge and designated Special Landscape Area, it is noted that photovoltaic arrays have a lower ground profile in comparison to other renewable energy developments, such as wind

- Photovoltaic solar panels are water compatible development thus acceptable within the 2% of the site which is categorised as a high risk flood area
- Primary point of access to the application site is served by an existing, appropriate agricultural vehicular access.
- Biodiversity gains and habitat creation – The proposed development would introduce biodiversity enhancement measures which will provide significant benefits for a diverse array of native wildlife for a 40 years period such as invertebrates; small mammals; larger mammals; and birds
- Sunlight intensity levels – the site is well located geographically for solar gain and is free of any buildings or landscape features that could cause overshadowing
- Contribute to the provision of renewables and low carbon energy
- Contribution to secure and affordable supply of electricity
- Surface water betterment during lifetime of development
- Contribute towards regional energy strategy which seeks to speed up the move from using fossil fuels to renewable energy.

Design Flexibility

- 4.8. The proposed development has employed a 'maximum design scenario' approach which reflects the Rochdale Envelope approach.
- 4.9. The Rochdale Envelope is employed where the nature of the proposed development means that some details of the whole project have not been confirmed and flexibility is sought to address uncertainty. It provides a 'maximum design' scenario approach to the impact of a project and allows for a broad definition of the project to be framed within a number of set parameters. This approach allows for a project to be assessed on the basis of maximum project design parameters in order to provide flexibility, while ensuring all potentially significant effects (positive or adverse) are assessed within the planning application. The need for flexibility in design, layout and technology is required to address uncertainties inherent to the development. This is very pertinent to solar development due to the rapid pace of change in module technology and commercial availability.
- 4.10. As technology advances, it is possible that modules could become more efficient which would result in a potential reduction in total module area required to deliver the same amount of generation or greater generation on the same land area. This in turn could require the micro-siting of ancillary equipment to reflect such changes, i.e., the final locations of cabling and inverters. Accordingly, a final build plan would be submitted to the Local Planning Authority as part of a pre-commencement condition. The final build plan would

demonstrate how the final 'as-built' design remains within the parameters of the DNS application submission. This approach is consistent with good practice applied at other recently permitted DNS energy schemes³.

Ground Mounted Solar PV Arrays

4.11. The design principles of the solar modules are:

- Arrays will be comprised of a galvanised steel and anodised aluminium mounting structure with the solar panels attached to it.
- Arrays will have a maximum top height of 3m and the lowest part of the arrays will be 0.8m above ground level.
- All solar panels will be south facing.
- All solar panels will be positioned on poor quality agricultural land.
- Solar panels will be dark blue, grey or black in colour.
- Indicative slope of the solar panels from horizontal would be 15 degrees.
- Internal access tracks will be of permeable construction.
- Typical minimum distance between edge of the arrays to the 2m high perimeter fencing would be 5m (this varies across the site).
- Biodiversity will be enhanced within and around the arrays.
- Appropriate offset will be provided between the development and the Public Rights of Way running through the site.
- CCTV will be positioned along the perimeter fencing of the arrays, on 2.7m high poles.

³ Including Penderi Solar Farm (DNS 3213164); Brynrhyd Solar Farm (DNS/3260565), & Penpergwm Solar Farm (DNS/3252305)

- 4.12. The solar PV modules would convert solar irradiance into Direct Current (DC) electricity. The proposed PV panels may also be bifacial (such that they will collect light both on the front and the rear sides of the panel as it captures sunlight reflected from the grass surface under the solar framework).
- 4.13. The PV modules would be mounted on south facing galvanised steel and anodised aluminium metal racks. The racks will be laid out in multiple parallel rows running east to west across the various field enclosures. The framework and arrays would be static. The distance between the arrays would respond to topography but would vary between 3.0m to 5.2m. Land between and beneath the panels would be used for biodiversity enhancements and/or seasonal sheep grazing. This is discussed in detail below.
- 4.14. Parts of the two south-westerly fields, which front onto Afon LLan, are located within a flood risk area. This only extends to 1.55 hectares and is less than 2% of the total development area which is 80.2 hectares. The applicant has confirmed that solar modules are water compatible development and can still operate after being partly submerged by flood water. Sensitive components such as inverters and transformers will be positioned above projected maximum flood level of 12.5m and outside the flood risk area. The lowest levels within the site boundary where panels are placed would be approximately 10.5m AOD suggesting that the base of the panel would be set at 11.2m AOD with the flood water set partially up the panels.
- 4.15. The arrays would be set within a 2.0m high security fence. Cables linking the rows of panels will be buried in the ground within trenches, typically 0.5–1.1m in depth. Further cables will be used to link areas of panels to inverters and then the substation compound located in the eastern parcel of the application site. The dimensions of the cable trenches will vary and this is dependent on its location and ground conditions.
- 4.16. Sections of the cable will also be laid via trenchless techniques, and this is discussed within the Outline Construction Environmental Management Plan.
- 4.17. An existing agricultural underpass, located under the A484, will be used for the cable route section linking the single northern land parcel and the main site.
- 4.18. Internal access tracks of permeable aggregate are required during the lifetime of the development.

Battery Energy Storage System (BESS) and Substation Compounds

- 4.19. The battery energy storage system consists of containerised battery units that can store energy and are able to release or absorb energy from the power network. Being able to absorb and release energy, the BESS at the proposed development can be used to contribute towards the frequency balancing services, where the power is being generated or absorbed statically or dynamically depending on the system frequency. When there is not enough power, batteries are discharged to balance under frequency preventing local black and brown outs. To balance over frequency batteries are charged to prevent dangerous spikes across electricity infrastructure.

- 4.20. Under normal working conditions, the BESS would be unmanned. Visual checks will be undertaken during maintenance visits to the proposed development. The compound for the battery energy storage will require engineering works comprising cut and fill to achieve a level platform. Underground cabling works will be installed to connect the battery energy storage system to the proposed substation.
- 4.21. A new substation compound will be required for the proposed development, and this will be constructed in the easternmost field of the main application site. This is necessary to step up and convert voltage of the electricity delivered by the solar PV for connection to the National Grid Circuit.
- 4.22. The equipment and infrastructure to be installed at the BESS and Substation compounds include:
- Compound created through cut and fill
 - Internal access tracks
 - Vehicular parking
 - 42 No. containerised battery units measuring 7.81m by 2.65m with a height of 3.05m.
 - 5 No. skid mounted transformers and inverters
 - 2.4m high palisade fencing and lighting with CCTV
 - DNO compound comprising: emergency floodlight & CCTV columns; high level connectors; circuit breaker, low level disconnectors; and anchor blocks
 - 15m high lattice telecoms tower
 - The compounds will be surfaced with chippings.
 - DNO/BESS track providing ingress / egress directly to/from Carmarthen Road.
- 4.23. There are two options put forward within the application submission for the connection works linking the substation and point of connection to the circuit, these are: -
- Option 1 - the first is the overhead pylon located off Ystrad Road, Forestfach. The proposed routing option runs along the existing local highways (namely Swansea Road, Carmarthen Road, Ystrad Road and Denver Road).

- Option 2 – the alternative point of connection is the terminal overhead pylon tower located to the north off Carmarthen Road, near the Paper Mill Fisheries. The proposed routing option runs along the existing local highways (namely Swansea Road and Carmarthen Road).

4.24. A final decision on the point of connection will be made prior to construction and this can be secured by pre-commencement condition as part of the final build plan.

Ecological Enhancement and Biodiversity Habitat Management Areas

4.25. Measures have been specifically designed to enhance habitats after intensive grazing and provide a gain in biodiversity at the site during its operational phase.

4.26. Green infrastructure provision will include the creation and enhancement of 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.

4.27. Confirmed priority habitat fields have been removed from the scheme layout following the results of the botanical surveys. These fields are included in the proposed green infrastructure areas.

4.28. Furthermore, a number of areas that do not currently meet priority habitat standard including three large fields, 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. This field lies within the SINC designation but does 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.

4.29. This will also provide a large area of habitat for ground-nesting birds and invertebrates. A significant area of farmland bird mitigation on fields adjacent to the river will also be retained and enhanced. The proposals for the cable route to connect the proposed Parc Solar Caenewydd to the National Grid will now be limited to the existing highway and therefore no habitat loss is anticipated.

4.30. Planting of native hedge, tree and scrub, 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 the habitat mosaic and enhance habitat value for a range of species including bats and farmland bird species.

4.31. Enhancement of rhos pasture and creation of butterfly banks will enhance habitat and connectivity for butterfly species. A wildlife corridor will be created along the public right of way linking the site from north to south. This will comprise a habitat mosaic of grassland, scrub and hedgerow planting.

4.32. Additional woodland and hedgerow creation and infill planting will also strengthen habitat connectivity across the wider site.

- 4.33. 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. An area of farmland bird mitigation will also be created adjacent to the river. Treatment and removal of extensive Japanese Knotweed will also provide habitat enhancement.
- 4.34. 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.
- 4.35. A minimum of 20 bat boxes and 20 bird boxes will be installed on retained mature trees across the site to provide new roosting and nesting opportunities for these species. Bird boxes will be suitable for a range of woodland bird species.
- 4.36. Any brash, log or grass arisings resulting from vegetation management will be utilised to create habitat piles, providing potential habitat and over-wintering sites for invertebrates, amphibians, reptiles and small mammals. At least 10 habitat piles of approximately 1m³ in size will be located within relatively undisturbed locations at the edge of the grassland on site, including within the reptile mitigation area.
- 4.37. The proposals are likely to meet the requirements for on-site biodiversity net gain, with a predicted gain of at least 26.25% compared to baseline conditions.

Access Arrangements

- 4.38. The primary access for the development is from the private access road which serves Penyfodau Fawr Farm.
- 4.39. A secondary access fronts the rear of an existing lay-by on the southern side of the B4560 Swansea Road, approximately 430m east of the Hospital Road access. Access to this farm track is currently blocked up and the applicant understands that the landowners will reinstate this access. Improvement works to the access and track will be delivered as part of the application proposal. This access will be used by both the operator of the BESS compound and National Grid to access its substation compound.
- 4.40. The development parcel located to the north of the A484, will be served via an existing access on the western side of the B4560 Swansea Road (W), located approximately 30 metres northwest of the A484 / B4560 Swansea Road roundabout.

Operational Lifespan

- 4.41. A temporary operational lifespan of 40 years would be sought for the entire development and linked to the first export date of electrical energy from the development. During the operational phase, the activities on the application site would amount to servicing and maintenance of plant and equipment and vegetation management. Traffic impacts from the operational phase of the proposed development will only consist of between 10–15 Light Goods Vehicles per year.

Decommissioning

- 4.42. 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 and the land returned to agricultural use.
- 4.43. A decommissioning plan would be prepared prior to the decommissioning commencing. The application site will be surveyed by an appropriately qualified ecologist to identify any ecological constraints arising from decommissioning activities. Depending on the ecological value of the habitats that develop over the lifespan of the scheme, it is possible that certain areas of the site may need to be retained due to their value for wildlife on decommissioning. Alternatively, and on application of the mitigation hierarchy principles, their loss may require compensation through on or off-site measures to ensure land/habitats are preserved for wildlife into the future.
- 4.44. It cannot reasonably be foreseen what legislative protection will be afforded to particular wildlife species at the end of the scheme's lifespan. Further surveys for protected species, which could be impacted by decommissioning, would also be expected. Where possible and when electrical items have an ongoing life-span they will be removed from the application site in whole units and re-used in current form. Where units do not have an ongoing life-cycle they will be placed into a suitable re-cycling skip or container and then removed from the application site to a suitable waste recycling centre. Following decommissioning, there may be a period of soil management aftercare.

Agricultural Matters

- 4.45. The applicant has advised that as part of the contractual arrangement with the landowners, one of the two tenant farmers would surrender land within the application site in exchange for replacement agricultural assets (The applicant understands that these include alternative, adjacent to land already being farmed by the tenant). The tenant farmer already took occupation of these nearby replacement fields in March 2022. The applicant is supportive of the tenant's transition to the alternative land to ensure it is of the required quality for the tenant's purposes. The tenant will also continue the use of the farmstead, residence and outbuilding, and will continue to farm the land south of the Afon Llan, outside the development area. The developer and Estate landlord intend to continue agricultural use within the site by way of sheep grazing during the operational lifetime of the development. The existing Penyfrdau Fawr Farm shop will remain. The following joint statement prepared by the applicant and tenants ***"The Developer and the Jones family of Penyfrdau Fawr are working together to secure the future of this successful farming business. This will mean that the***

family will continue to operate the farm and live in and use the farmstead, the Penyfrdau Fawr Farm shop will remain. The Developer's investment and collaboration with the family and the Landlord has resulted in the new provision of alternative farmland in the local area."

Undertakers

- 4.46. The layout of the proposed development will provide an appropriate easement for the existing underground infrastructure, which include sewers and gas pipes. No arrays will be erected over the line of any underground infrastructure. The applicant is in discussion with Welsh Water and Wales & West Utilities to agree a strategy for the directional drilling of the cable run under their assets.

Community Benefits & Shared Ownership

- 4.47. As part of the community benefits associated with the application proposal, the applicant commissioned Community Energy Wales to identify investing into shared community ownership. This identified Gower Power Limited who continued interest to deliver the shared ownership element of the proposed scheme. In addition to community ownership, the applicant is looking to enter into a legal agreement to provide funds to the Council to upgrade the local PRow infrastructure. Details of the proposed community benefits are presented within the accompanying Collaborative Benefits Report.

Public Rights of Way (PRow)

- 4.48. The proposed layout incorporates and protects the definitive line of the Public Rights of Way traversing the application site. The application proposal also introduces a permissive footpath that links the farm track fronting the layby on the southern side of the B4560 Swansea Road, to other existing PRows within the site.

Renewable Energy and Carbon Displacement

- 4.49. The solar power element of the proposed development would generate clean renewable energy for the equivalent of over 11,500 homes a year. The anticipated CO₂ displacement is 18,000 tonnes per annum.

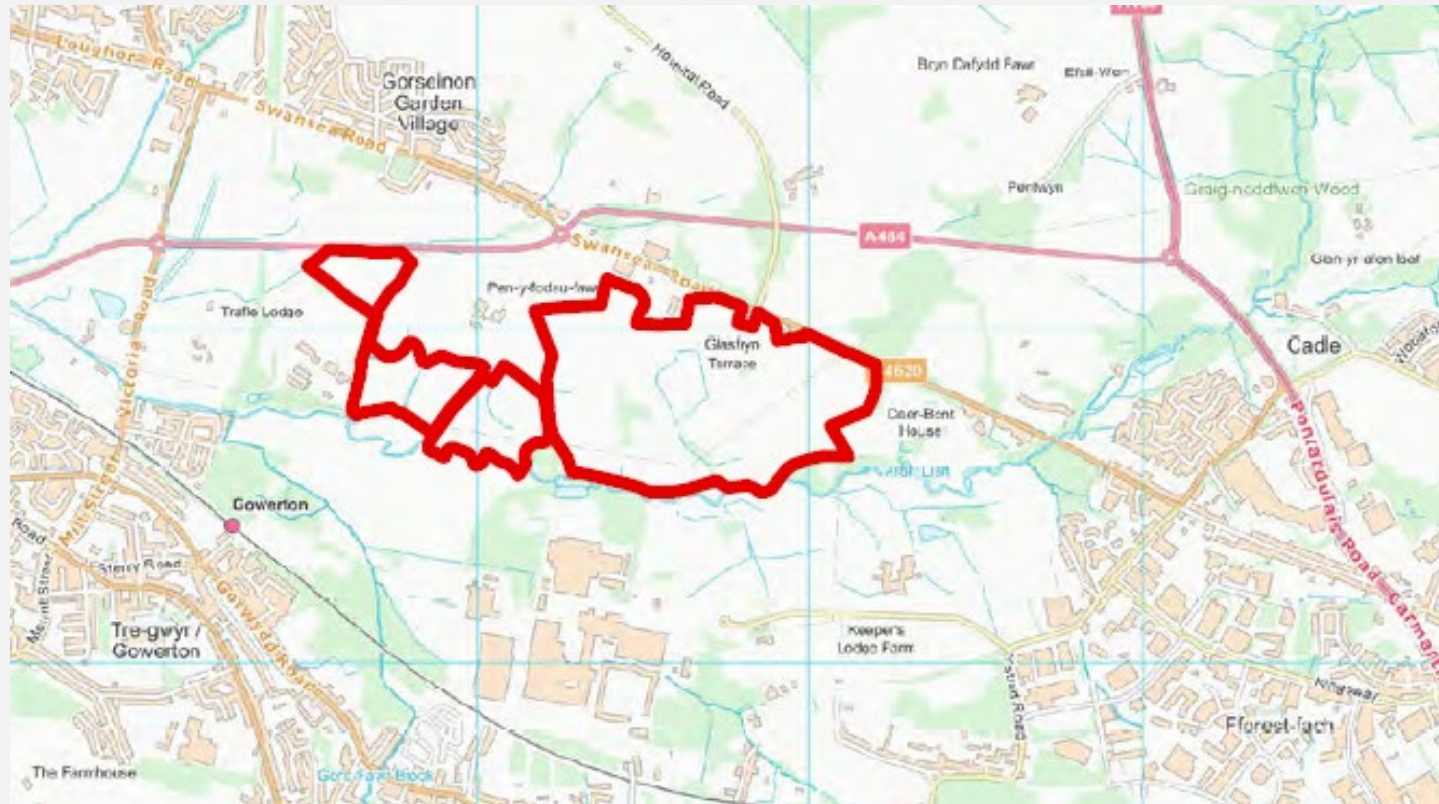
5. Design Evolution

- 5.1. 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 contributes towards how the application proposals meet the objectives of good design as promoted by Policy 18 of Future Wales. The main alternative designs are discussed here.

Preliminary Design A

- 5.2. 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 pre-application submission was prepared and submitted by SLR on behalf of the applicant. The Council's advice is discussed and appended to the Preliminary Consultation Report which accompanies this submission. 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.
- 5.3. A detailed design was not available for the preliminary high-level pre-application consultation with the Local Planning Authority.

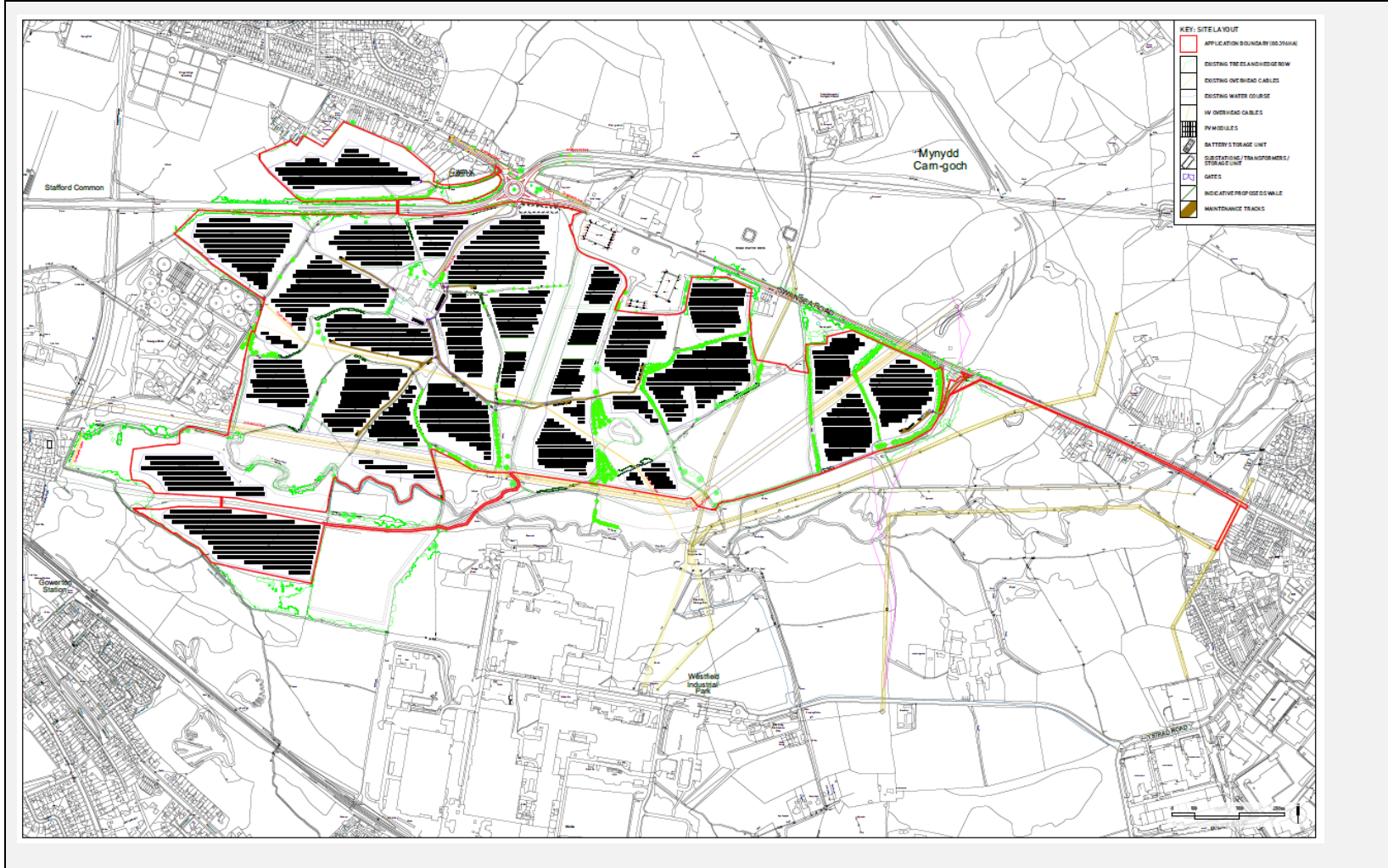
Preliminary Design A



Preliminary Design B

- 5.4. Following a technical review by the applicant, the proposed design and land take was modified.
- 5.5. The 'red line' was extended 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 following further design input from the applicant's technical team. Specifically, the application site area was extended to include land to the south of Afon Llan, additional land around Penyfodau Farm, together with land to the north of the A484.
- 5.6. The applicant removed the field to the immediate south of Glasfryn Terrace in order to respect the amenity space of the residents. Moving southwards, the adjoining field has also been 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.
- 5.7. 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.
- 5.8. 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.
- 5.9. This design was also used for the basis of detailed informal consultation with the Local Planning Authority. Full details of the informal consultation carried out with the community is presented within the accompanying Consultation Report.

PRELIMINARY DESIGN B (PRESENTED AT INFORMAL CONSULTATION & EIA SCREENING)

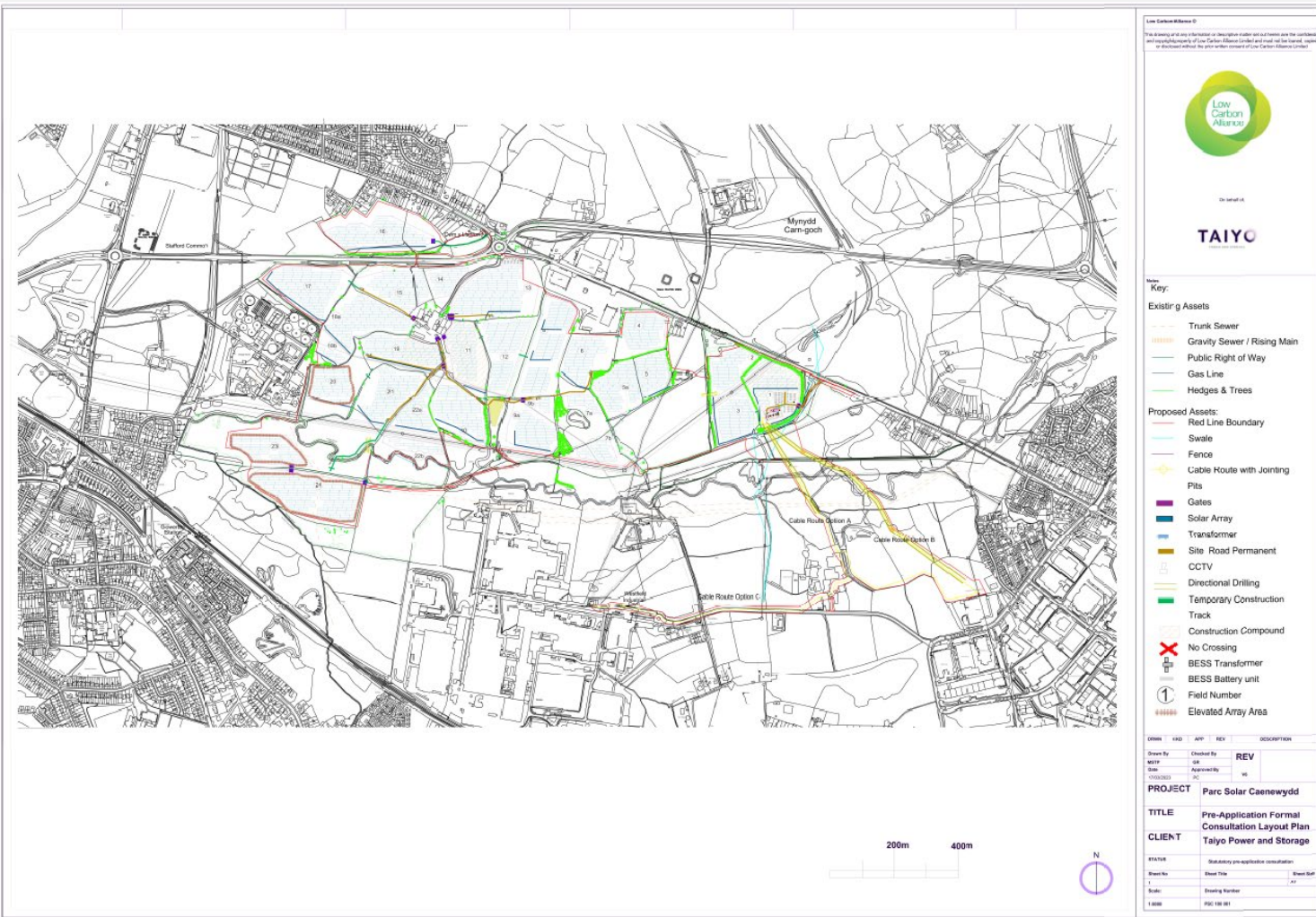


Preliminary Design C

5.10. For the first stage formal pre-application consultation, undertaken in Summer 2023, the layout 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:-

- The layout was revised to accommodate 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. The applicant has also advised PEDW of the changes to the cable route options.
- 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, the additional hedgerow and tree planting was incorporated into Design C.
- For Design C, the applicant was able to introduce the detailed designs for the substation and battery energy storage facilities.

PRELIMINARY DESIGN C – FIRST ROUND OF STATUTORY PRE-APPLICATION CONSULTATION



Preliminary Design D – For Full Statutory Re-Consultation

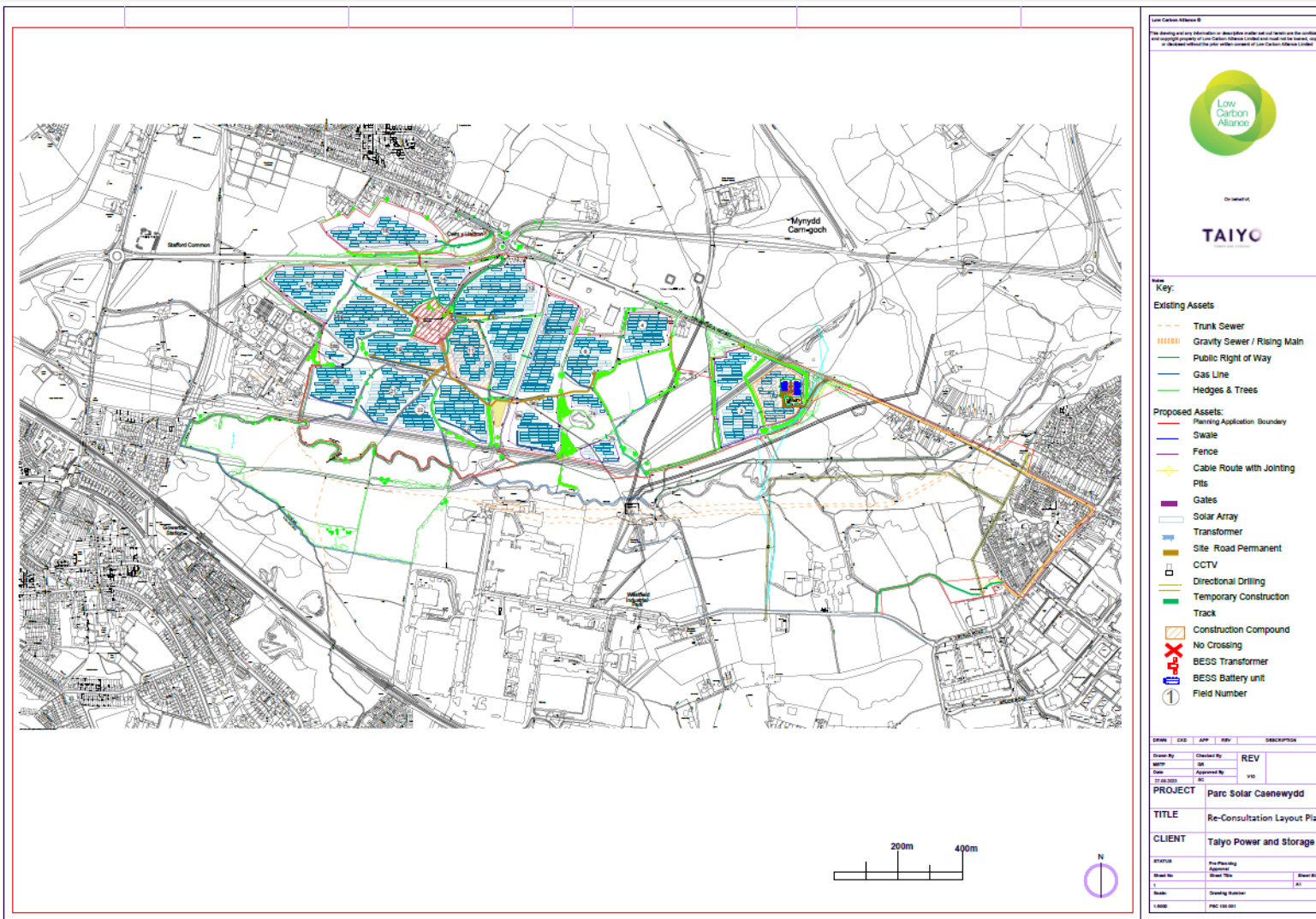
5.11. Following the initial statutory consultation, the layout was further refined to reflect technical matters raised by the project team, latest policy guidance and DNS decisions and consultee advice. The key changes included: –

- All solar arrays were removed from the fields located to the south of the Afon Llan. This is due to ecology stepwise considerations and flood risk. These fields will therefore be retained for full continued agricultural use. These proposed modifications have reduced the development areas within the planning application boundary. By removing the arrays to the south of Afon Llan, the applicant has also taken out the need for any associated directional drilling works under Afon Llan. Solar arrays have also been removed from a further two fields located due south of Glasfryn Terrace due to ecological stepwise considerations (exclusion of SINC areas).
- 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.
- The proposals presented during the first round of statutory consultation showed three cable routing options, all of which traverse the agricultural fields to the south of the river Afon Llan. However, following further technical and land option considerations, alternative cabling routes were progressed. To this end, the applicant introduced a design change by rerouting the cable trench along the existing local highways (namely Swansea Road, Carmarthen Road, Ystrad Road and Denver Road). In addition, a second point of connection option is being introduced to the scheme and this is located to the north off Carmarthen Road. The planning application boundary was amended and extended to accommodate these changes.

5.12. Other refinements to the scheme included: –

- The reconfiguration of the battery energy storage system and customer substation compound and its dedicated access fronting Camarthen Road.
- Reconfiguration of internal construction track through the main site.
- Introduction of a permissive footpath that would connect Carmarthen Road to the wider PRow network running alongside Afon Llan.

PRELIMINARY DESIGN D – FOR FULL STATUTORY RE-CONSULTATION



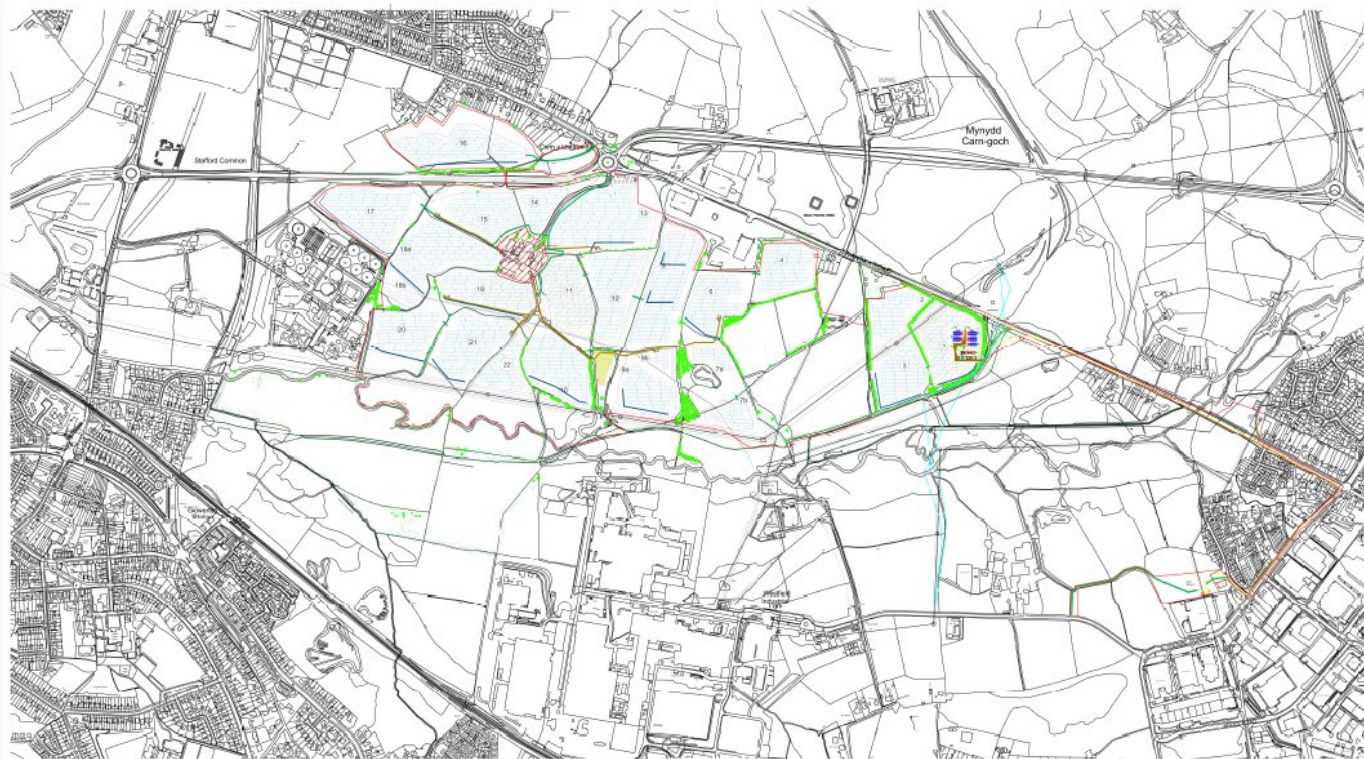


Final Design to Support Planning Application Submission

5.13. 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.

FINAL DESIGN FOR APPLICATION SUBMISSION



Low Carbon Alliance

On behalf of:

TAIYO
SOLAR POWER STORAGE

Key:

Existing Assets

- Public Right of Way
- Gas Line
- Hedges & Trees

Proposed Assets:

- Planning Application Boundary
- Swale
- Fence
- Cable Route with Jointing
- Pits
- Gates
- Solar Array
- Transformer
- Site Road Permanent
- CCTV
- Temporary Construction
- Track
- Construction Compound
- No Crossing
- BESS Transformer
- BESS Battery unit
- Field Number
- Permissive Footpath

Drawn	Checked	App	Rev	Transmissions
Drawn By: MDP	Checked By: REV			
Date: 01-12-2023	Approved By: VJS			
PROJECT Parc Solar Caenewydd				
TITLE Proposed Layout Plan				
CLIENT Taiyo Power and Storage				
STATUS	Planning Application	Sheet Title	Sheet Size	
Sheet No:	1	Sheet Title:	A1	
Scale:		Drawing Number:		
Version:	PRE 100-001			



6. POLICY CONTEXT

- 6.1. The accompanying Planning Statement provides a detailed assessment of the relevant planning policy and material considerations that are pertinent to the application proposal and to avoid repetition this section will focus on the design related policies set out in Future Wales. In the case of DNS schemes, Planning Policy Wales, at paragraph 5.7.5, states “Planning applications for onshore generating projects in Wales which have an installed generation capacity of between 10MW and 50MW (there is no upper limit for onshore wind generating stations) are made directly to the Welsh Ministers under the Developments of National Significance (DNS) process *and considered under policies in Future Wales*”.

Future Wales: The National Plan 2040 (February 2021)

- 6.2. Future Wales provides a spatial context for facilitating the delivery of development in Wales over the next 20 years and constitutes the development plan for DNSs in line with section 38(6) of the Planning and Compulsory Purchase Act 2004.
- 6.3. Future Wales will be used to guide both public and private investment. Welsh Government’s aim is to ensure investments and developments – whether large or small in scale – contribute to the broader ambitions of the Welsh Government and to the well-being of communities. Therefore, Future Wales will influence how communities develop over the next 20 years and it is important that we have a comprehensive understanding of the positive and negative effects this could have as the plan developed. Future Wales is the national development framework for Wales and has development plan status.
- 6.4. Page 15 of Future Wales identifies how Future Wales does not contain statements on all land use matters, but it provides specific policies on issues which the Welsh Government considers them to be a national policy at this time, it goes on to state “*deciding where to locate renewable energy generation technology is a spatial issue of such significance that national ambitions are unlikely to be achieved without national planning policies*”.
- 6.5. Schemes qualifying as energy Developments of National Significance (DNS) must be determined in accordance with Policy 18 of Future Wales. This point is expanded on further below. The First Minister of Wales’s Ministerial Foreword makes an early and important reference to the climate emergency faced by Wales. There is a recognised need for Wales to focus on generating the energy it needs to support its communities and industries over the next twenty years. This message is repeated in the Foreword by the Minister for Housing and Local Government which states (inter alia) “*this Government is committed to supporting and delivering more active travel and sustainable transport infrastructure, new renewable energy schemes, improved digital communications infrastructure and new public services and facilities. In all these areas our decisions can contribute towards decarbonisation, healthy and active lifestyles, a resilient and diverse environment and increased economic prosperity and fairness*”.

- 6.6. In the 'Introduction' to Future Wales, achieving decarbonisation and climate-resilience are noted as being one of the "key national priorities" for Wales; indeed Future Wales only includes policies "on issues where the Welsh Government considers a national priority at this time, or matters which are distinctly spatial and require national leadership. For example, ...deciding where to locate renewable energy generation technology is a spatial issue of such significance that national ambitions are unlikely to be achieved without national planning policies." It also acknowledges that Wales faces a climate emergency.
- 6.7. It is clear that delivering renewable energy is one of the Welsh Government's top national priorities for the next 20 years. Future Wales sets out 11 outcomes that can be achieved by 2040 provided the planning system is focused on the long-term and provides quality development in the right places for the right reasons.
- 6.8. The application proposal would contribute towards outcomes 9, 10 and 11, these are:-
- **Outcome 9 – a Wales where people live in places that sustainably manage their natural resources and reduce pollution.** Wales' natural resources, including its minerals, soils and geodiversity, coast, water, forests and landscape support a range of activities and sectors and are assets of great value in their own right. The environmental, social and cultural value of our resources will be managed, maintained and enhanced, while economic benefits will be utilised sustainably and appropriately by promoting nature-based solutions and a circular economy. Across Wales the risks of flooding and coastal erosion will be effectively managed and mitigated while better resource choices will be reflected in more sustainable places. Places will benefit from reduced pollution and be healthier and more liveable.
 - **Outcome 10 – a Wales where people live in places with biodiverse, resilient and connected ecosystems.** The variety of flora and fauna found across Wales make Wales a special place. Biodiversity underpins the functioning of healthy, resilient ecosystems and the multiple benefits they provide. While biodiversity has declined in recent decades, we will reverse these losses and enhance the resilience of ecosystems. The planning system will ensure wildlife is able to thrive in healthy, diverse habitats, both in urban and rural areas, recognising and valuing the multiple benefits to people and nature.
 - **Outcome 11 – a Wales where people live in places which are decarbonised and climate-resilient.** The challenges of the climate emergency demand urgent action on carbon emissions and the planning system must help Wales lead the way in promoting and delivering a competitive, sustainable decarbonised society. Decarbonisation commitments and renewable energy targets will be treated as opportunities to build a more resilient and equitable low-carbon economy, develop clean and efficient transport infrastructure, improve public health and generate skilled jobs in new sectors. New homes will be energy efficient and will help communities adapt to the changing climate.
- 6.9. Future Wales sets a clear direction of how Wales should be investing in infrastructure and development for the greater good of Wales and its people – the provision of renewable energy is firmly embedded to this future direction. In terms of the specific policies in Future Wales, Policies 17 and 18 contain strategic spatial and detailed criteria-based policies respectively and should be considered together in the determination of applications, along with detailed advice on assessing benefits and impacts in Planning Policy Wales.

6.10. Policy 17 states (own emphasis underlined):

Policy 17 – Renewable and Low Carbon Energy and Associated Infrastructure

The Welsh Government strongly supports the principle of developing renewable and low carbon energy from all technologies and at all scales to meet our future energy needs. In determining planning applications for renewable and low carbon energy development, decision-makers must give significant weight to the need to meet Wales' international commitments and our target to generate 70% of consumed electricity by renewable means by 2030 in order to combat the climate emergency. In Pre-Assessed Areas for Wind Energy the Welsh Government has already modelled the likely impact on the landscape and has found them to be capable of accommodating development in an acceptable way. There is a presumption in favour of large-scale wind energy development (including repowering) in these areas, subject to the criteria in policy 18. Applications for large-scale wind and solar will not be permitted in National Parks and Areas of Outstanding Natural Beauty and all proposals should demonstrate that they will not have an unacceptable adverse impact on the environment. Proposals should describe the net benefits the scheme will bring in terms of social, economic, environmental and cultural improvements to local communities. New strategic grid infrastructure for the transmission and distribution of energy should be designed to minimise visual impact on nearby communities. The Welsh Government will work with stakeholders, including National Grid and Distribution Network Operators, to transition to a multi-vector grid network and reduce the barriers to the implementation of new grid infrastructure.

6.11. Reflecting the site selection requirements of Policy 17, the application site is not located within a National Park or within an Area of Outstanding Natural Beauty.

6.12. Policy 18 provides a decision-making framework for renewable and low carbon energy technologies. Policy 18 states:

Renewable and Low Carbon Energy Developments of National Significance Proposals for renewable and low carbon energy projects (including repowering) qualifying as Developments of National Significance will be permitted subject to policy 17 and the following criteria:

1. outside of the Pre-Assessed Areas for wind developments and everywhere for all other technologies, the proposal does not have an unacceptable adverse impact on the surrounding landscape (particularly on the setting of National Parks and Areas of Outstanding Natural Beauty);

2. there are no unacceptable adverse visual impacts on nearby communities and individual dwellings;
 3. there are no adverse effects on the integrity of Internationally designated sites (including National Site Network sites and Ramsar sites) and the features for which they have been designated (unless there are no alternative solutions, Imperative Reasons of Overriding Public Interest (IROPI) and appropriate compensatory measures have been secured);
 4. there are no unacceptable adverse impacts on national statutory designated sites for nature conservation (and the features for which they have been designated), protected habitats and species;
 5. the proposal includes biodiversity enhancement measures to provide a net benefit for biodiversity;
 6. there are no unacceptable adverse impacts on statutorily protected built heritage assets;
 7. there are no unacceptable adverse impacts by way of shadow flicker, noise, reflected light, air quality or electromagnetic disturbance;
 8. there are no unacceptable impacts on the operations of defence facilities and operations (including aviation and radar) or the Mid Wales Low Flying Tactical Training Area (TTA-7T);
 9. there are no unacceptable adverse impacts on the transport network through the transportation of components or source fuels during its construction and/or ongoing operation;
 10. the proposal includes consideration of the materials needed or generated by the development to ensure the sustainable use and management of resources;
 11. there are acceptable provisions relating to the decommissioning of the development at the end of its lifetime, including the removal of infrastructure and effective restoration.
- The cumulative impacts of existing and consented renewable energy schemes should also be considered.

6.13. The amplification to Policy 18 states *“Irrespective of location or scale, the design and micro-siting of proposals must seek to minimise the landscape and visual impact, particularly those in close proximity to homes and tourism receptors”*. The ‘Designing for Renewable

Energy in Wales', a consultation document published by the Design Commission for Wales in April 2023, identifies how the design considerations for large scale DNS energy schemes are drawn from Policies 17 and 18 of Future Wales.

How the development accords with Policy 18 of Future Wales

- 6.14. Policy 18 specifically relates to qualifying energy Developments of National Significance and presents 11 principles which should be satisfied to secure consent. The requirements set out in Policy 18 are considered in turn below.

Criteria 1: Outside of the Pre-Assessed Areas for wind developments and everywhere for all other technologies, the proposal does not have an unacceptable adverse impact on the surrounding landscape (particularly on the setting of National Parks and Areas of Outstanding Natural Beauty)

- 6.15. The application site is not located within a statutory protected landscape designation such as a National Park or an Area of Outstanding Natural Beauty of national importance, however it is within a green wedge and a Special Landscape Area. The proposals would inevitably change the character of the application site from undulating pastoral farmland to a solar PV development. However, the arrangement of the proposed solar farm responds positively to the landform and field pattern with the existing hedgerow vegetation being retained and strengthened, where appropriate, meaning that overall no unacceptable adverse impact will be caused in this regard. This is fully assessed in the supporting LVIA.

Criteria 2: There are no unacceptable adverse visual impacts on nearby communities and individual dwellings

- 6.16. The LVIA assessed the effects of the proposed development on landscape elements, landscape character, and visual amenity. These are summarised below.

Potential Effects on Landscape Character

- 6.17. The landscape elements that constitute the character of the LANDMAP geological, habitats, historic or cultural aspect areas within the Site would generally remain physically unaffected by the proposed development. The effects on landscape character would therefore result from the visual influence of the solar arrays on the LANDMAP visual and sensory aspects including the Afon Llan and surrounds SWNSVS700 and to a lesser extent Gorseinon SWNSVS726 for both of which the magnitude of change rapidly diminishes beyond the Site boundaries due to the visual screening provided by landform, woodland and hedgerows containing the solar PV development.
- 6.18. The green infrastructure enhancements (accounting for 63% of the Site area) including circa 3km of hedgerow, and circa 4.75 acres tree planting, would on balance provide beneficial changes. Due to the limited visibility of the Site within the study area, the landscape character of the LANDMAP aspect areas would generally prevail with the proposed development in place.

Potential Effects on Landscape Elements

- 6.19. The landscape elements that constitute the landscape character of the Site would remain largely unaffected by the proposed development. Site topography, field pattern and enclosure, woodlands, hedgerows, and trees would generally remain physically intact with the solar arrays and supporting infrastructure in place. Enhancements to landscape elements would be made in terms of the maintenance and infilling of hedgerows to enhance visual screening, species diversity, age structure, health, and the long-term contribution to the character of the Site.
- 6.20. New hedgerows are proposed to provide an overall net gain of the Site's hedgerow resource (proposed hedgerow circa 3km, tree planting circa 1.9ha). The existing hedgerows would be managed to improve the visual screening of the solar panels and security fencing, and to enhance the landscape character and biodiversity of the Site. Owing to the ease of removal of all the above ground structures, ground fixings and associated infrastructure, any effects upon landscape elements resulting from the proposed development are reversible with the land being returned to agricultural land use on decommissioning.

Potential Effects on Visual Amenity

- 6.21. As described in the LANDMAP Aspect Area, the valley floor has Afon Llan flowing through it, with urban areas surrounding it, some being immediately adjacent. Pylons cross the area as do a number of roads with the A484 forming part of the northern boundary. Visual detractors within include a sewage works, roads, pylons. Factories and urban areas border it in places. There are some hedgerow field boundaries but the area has a distinct urban edge character. Change was in evidence in 2014 as expansion of Swansea edged into this area.
- 6.22. The Zone of Theoretical Visibility (ZTV) presented within the LVIA TV for the site reflects the undulating topography and tree cover and theoretical visibility which is generally contained by built form within 5km of the site. The 'actual' visibility of the site is less than illustrated in the ZTV mapping as demonstrated by the representative viewpoints. The reduced extent and pattern of visibility of the proposed development is due to the visual containment provided by the steeply rising topography and tree cover within the Afon Llan Valley and surrounding settlement. The entire site is not intervisible with itself, and it is therefore not possible to view the entirety of it within a single field of view thus reducing the perceived scale of the proposed development in the wider landscape.
- 6.23. There would be limited to no effects on the majority of residential receptors due to factors such as orientation, intervening landform, built form and vegetation. There are likely major effects at year 1 on residential receptors on high ground Waunarlwydd. Mitigation measures in place, such as new 3km of hedgerows and 1.9ha of tree planting to break up the series of panels along the visible slopes of the site, would all help to reduce potential effects at year 15. to an acceptable level.
- 6.24. Based on the location of some of the properties close to the site, their orientation, number of storeys, and nature and character of their curtilage it is predicted that major visual effects may occur at Pen-y-fodau Fawr Farm, and properties along Swansea Road

(B4560) overlooking the eastern corner of the proposed development. Boundary mitigation measures have been proposed to help mitigate against these effects, reducing them by year 15.

- 6.25. Considering the intervening boundary vegetation and low-lying profile of the proposed development it is assessed that views from the surrounding network of PRow would be considerably screened and visual effects would not be adverse. Views from small sections of the PRow footpaths which cross the Site including LC26 which runs south from Swansea Road (B4560), west of Days Motors to the Afon Llan, would be subject to adverse visual effects due to the proposed developments proximity causing a high magnitude of change to existing views at year 1. There would be no major effects on road users along Swansea Road/A484, Titanium Road, Statutory Access land users north and west of the Site, or long distance footpath users (Wales Coast Path and the Gower Way).
- 6.26. For the reasons set out in the LVIA and summarised above, it is considered that the application proposal accords with the requirements of criteria 2 of Policy 18 Future Wales.

Criteria 3 & 4 - There are no adverse effects on the integrity of Internationally designated sites (including National Site Network sites and Ramsar sites) and the features for which they have been designated (unless there are no alternative solutions, Imperative Reasons of Overriding Public Interest (IROPI) and appropriate compensatory measures have been secured) & there are no unacceptable adverse impacts on national statutory designated sites for nature conservation (and the features for which they have been designated), protected habitats and species.

- 6.27. The statutory consultation is supported by an Ecological Appraisal undertaken by Devon Wildlife Consultants. The Ecological Appraisal provides an assessment of impacts of the proposed development on internationally designated sites. The salient points are set out below.

Camarthen Bay and Estuaries SAC

- 6.28. The Afon Llan is connected to the SAC, creating a potential downstream pathway linking the development site to the SAC. During construction there is the potential for sediment runoff and pollution as a result of construction activity. However, any such impacts can be mitigated through adequate construction control and runoff design measures. These are set out within the Outline Construction Environmental Management Plan.
- 6.29. During operation of the scheme, it is considered that sediment runoff and nutrient load will be reduced due to the change to grassland from ploughed arable land, particularly for the fields adjacent and uphill of the river. Therefore, a Habitats Regulations Assessment (HRA) is not required as there are no identified likely significant impacts upon this designated site or its key designated habitats and species. The works are likely to have no likely significant impact on the SAC.

Burry Inlet Ramsar Site and SSSI

- 6.30. No significant wading bird species have been recorded utilising the site during the targeted bird surveys. It is considered unlikely that the site is utilised regularly by wading birds and waterfowl. Therefore, there are considered to be no significant impacts on the waterfowl assemblage associated with Burry Inlet Ramsar Site, SPA and SSSI. The works are likely to have no likely significant impact on the Ramsar Site, SPA and SSSI. In compliance with Future Wales Policy 18, there are considered to be no significant adverse impacts on nationally statutory designated sites for nature conservation.

Penyfodau Fawr To Llewitha, Alcoa Wet Meadows and Stafford Common SINC

- 6.31. The site lies within two SINC and adjacent to Stafford Common SINC. During construction there is the potential for sediment runoff and pollution as a result of construction activity. Potential impacts can be mitigated through adequate construction control and runoff design measures, including designated Ecological Protection Zones, to be set out in a detailed Construction Environmental Management Plan (CEMP). Habitat retention/creation/management as detailed in Section 4.5 has been specifically designed to maintain and enhances priority habitat associated with these SINC, from the current suboptimal habitat condition. The works are considered likely to have a Minor Positive impact at a District level.
- 6.32. For these reasons set out above, the proposed development is not considered to materially conflict with criteria 3 & 4 of Policy 18.

Criteria 5 – The proposal includes biodiversity enhancement measures to provide a net benefit for biodiversity

- 6.33. As stated elsewhere in this statement, measures have been specifically designed to enhance habitats after intensive grazing and provide a gain in biodiversity at the site during its operational phase.
- 6.34. Green infrastructure provision will include the creation and enhancement of 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.
- 6.35. Confirmed priority habitat fields have been removed from the scheme layout following the results of the botanical surveys. These fields are included in the proposed green infrastructure areas.
- 6.36. Furthermore, a number of areas that do not currently meet priority habitat standard including three large fields, 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. This field lies within the SINC designation but does 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.

- 6.37. This will also provide a large area of habitat for ground-nesting birds and invertebrates. A significant area of farmland bird mitigation on fields adjacent to the river will also be retained and enhanced. The proposals for the cable route to connect the proposed Parc Solar Caenewydd to the National Grid will now be limited to the existing highway and therefore no habitat loss is anticipated.
- 6.38. Planting of native hedge, tree and scrub, 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 the habitat mosaic and enhance habitat value for a range of species including bats and farmland bird species.
- 6.39. Enhancement of rhos pasture and creation of butterfly banks will enhance habitat and connectivity for butterfly species. A wildlife corridor will be created along the public right of way linking the site from north to south. This will comprise a habitat mosaic of grassland, scrub and hedgerow planting.
- 6.40. Additional woodland and hedgerow creation and infill planting will also strengthen habitat connectivity across the wider site.
- 6.41. 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. An area of farmland bird mitigation will also be created adjacent to the river. Treatment and removal of extensive Japanese Knotweed will also provide habitat enhancement.
- 6.42. 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.
- 6.43. A minimum of 20 bat boxes and 20 bird boxes will be installed on retained mature trees across the site to provide new roosting and nesting opportunities for these species. Bird boxes will be suitable for a range of woodland bird species.
- 6.44. Any brash, log or grass arisings resulting from vegetation management will be utilised to create habitat piles, providing potential habitat and over-wintering sites for invertebrates, amphibians, reptiles and small mammals. At least 10 habitat piles of approximately 1m³ in size will be located within relatively undisturbed locations at the edge of the grassland on site, including within the reptile mitigation area.
- 6.45. The proposals are likely to meet the requirements for on-site biodiversity net gain, with a predicted gain of at least 26.25% compared to baseline conditions.

Criteria 6 – There are no unacceptable adverse impacts on statutorily protected built heritage assets

- 6.46. The application submission is supported by a Heritage Statement undertaken by Pegasus Group. With regards to the built environment, an appropriate and proportionate level of settings assessment has been undertaken for designated historic assets located within a 5km radius of the application site. Particular attention has been given to the Scheduled Monuments of Roman practice camps at Carn Gôch Common and Stafford Common. It was established that their historic associations with one another, the Roman Swansea–Loughor road, and the forts at Swansea and Loughor, and the close-ranging views of the earthworks from within the designated areas contribute through setting to their significance. No association or intervisibility with the application site has been identified.
- 6.47. It is considered that the application site does not contribute through setting to the significance of these or any other Scheduled Monuments, or to the significance of any Listed Building.
- 6.48. Turning to archaeology, the assessment has been informed by a review of historic environment record data, available historic maps and aerial photographs, and a walkover survey. ‘Monuments’ recorded within the site by GGAT HER include a post-medieval leat from Afon Llan, the post-medieval farmstead of Penyfodau Fawr, a post-medieval coal pit, and a modern coal pile or drift. Infrastructure recorded within the site on 19th- and 20th-century maps include the Penclawdd Canal and tramway, two other sections of tramway, and a mineral railway.
- 6.49. As well as the features described above, there is potential in the northern part of the application site for archaeological evidence relating to the Roman Swansea–Loughor road. Buried Roman features, the extant stone-built farm buildings, and any buried remains of the leat, canal, tramways, and mineral railway would be considered non-designated historic assets.
- 6.50. In consultation with GGAT, geophysical survey and targeted trial trenching have been undertaken at the site. The results of the field work have been reported within the following accompanying reports: –
- Geophysical Survey, prepared by Magnitude Surveys
 - Archaeological Field Evaluation, prepared by Archaeology Wales
- 6.51. A summary review of the field works undertaken to date is provided within the accompanying report prepared by Heritage Archaeology and the salient matters are discussed below.
- 6.52. A geophysical survey of the entire accessible and suitable site area was undertaken between July and September 2022. The survey identified two areas of potential enclosures in the northern part of the application site. One of these areas was subsequently removed from the red line boundary for the proposed development. Anomalies indicative of historical agricultural activity were identified, some of which can be correlated to boundaries marked on historic mapping. Areas of former mineshafts, an aqueduct and mineral railway

were also identified, corresponding to the results of the desk-based assessment. A number of anomalies classed as 'undetermined' were also plotted, the potential for an archaeological interpretation for these cannot be ruled out from the geophysical survey alone.

- 6.53. As a result of the geophysical survey a targeted programme of archaeological trenched evaluation was undertaken in November – December 2022. In consultation with GGAT, thirty trenches were excavated within the site, targeting anomalies interpreted as 'archaeology possible', 'agricultural', and 'undetermined' by the geophysical survey. The evaluation revealed a site that has been extensively drained, particularly from the industrial period. Some of the features were identifiable as land drains of post medieval to modern date, some clearly correspond to post medieval and modern field boundaries. No finds or environmental evidence was obtained to date the remaining features, but it is likely that they are also of post-medieval or modern date. One feature interpreted by the geophysical survey as a possible enclosure in the northern part of the site was removed from the red line boundary so not tested by trenching, the other feature identified as a possible enclosure was tested by trenching but was not present.
- 6.54. The results of the intrusive and non-intrusive surveys conclude that there is evidence for post medieval agricultural activity within the application site and for later post medieval coal mining activity. This confirms and supports the conclusions of the desk-based assessment and helps to clarify the extent of coal mining disturbance within the site. Despite the proximity of the northern part of the application site to two scheduled Roman marching camps, no evidence for Roman activity was identified within the application site. The evidence indicates a site that has been improved by drainage for agricultural use and no evidence for activity within the site pre-dating the post medieval period has been identified within the application site.
- 6.55. The results of the intrusive and non-intrusive surveys indicate that the site does not include any historic assets with archaeological interest of equivalent significance to a scheduled monument. An amendment to the red line boundary excluded a potential archaeological feature identified during the geophysical survey from the development footprint (a potential enclosure). No additional surveys or mitigation are currently proposed given the results of the surveys to date, GGAT has confirmed, through additional consultation (including production of the composite plan for the field surveys undertaken, provided below), that they ***"agree the remaining mitigation works could be carried out post-determination. The exact scope and methodology would of course depend on the detail of the proposed development in such areas and be detailed in an agreed WSI."*** Any other historic assets present within the site that warrant mitigation could otherwise be safeguarded through additional minor amendments to the layout and foundation design.
- 6.56. Overall, the proposed development is not considered to alter the setting of any of these assets. It would therefore not be contrary to Section 66(1) of the Planning (Listed Buildings and Conservation Areas) Act, 1990 and to the 'desirability of preserving an ancient monument and its setting' and the 'desirability of preserving the building, or its setting' of Planning Policy Wales.

Criteria 7 - There are no unacceptable adverse impacts by way of shadow flicker, noise, reflected light, air quality or electromagnetic disturbance

- 6.57. Criteria 7 sets out the development management considerations for both wind and ground mounted solar. Shadow and flicker are constraints pertinent only to wind turbines and are therefore not relevant in relation to the proposed development.
- 6.58. Turning to noise, the application is supported by a noise assessment prepared by ION Acoustics. Overall, the noise assessment indicates that operational noise from the proposed development during the likely operating hours would be relatively low in absolute terms and would largely comply with the operational noise target at all the noise sensitive receptors. To that end, noise from the proposed development is unlikely to be audible and the resultant impact across all receptor locations is low. It is considered that there are no noise-related issues associated with the proposed development which would prevent the granting of full planning permission.
- 6.59. Turning to reflected light, the application is supported by a Glint and Glare Assessment, prepared by Pager Power, which concludes that the measured intensity of a reflection from solar panels can vary from 2% to 30% depending on the angle of incidence. It is also noted that evidence shows that reflections from solar panels are significantly less intense than many other reflective surfaces, which are common in an outdoor environment. Given the existing vegetation and terrain within and surrounding the application site, no mitigation is required meaning that no unacceptable adverse impacts are caused from reflected light.
- 6.60. Turning to air quality considerations, the application site is not located near any Air Quality Management Area as per Wales Airborne Pollution Map. The Wales Airborne Pollution map 2017 background air pollution data for the development site suggests an annual mean background concentration of $10.7 \mu\text{g}/\text{m}^3$ for PM10 which is below the objective of $40 \mu\text{g}/\text{m}^3$. It is anticipated that the development would introduce additional road traffic and construction dust. The construction impacts associated with the proposed development would likely generate a small magnitude of dust and PM10.
- 6.61. Impacts from dust emissions during the construction phase would not be significant, which is supported by the low levels of annual mean emissions. It is considered that despite there not being a defined risk present, it is still advisable that a number of good practice measures are implemented, such as considerate traffic speed and observing minimal dust dispersion where at all possible during construction and transport activities and these can be incorporated in a final Construction Environmental Management Plan.
- 6.62. Maintenance vehicles are only expected to visit the application site periodically. Therefore, it is unlikely that the number of vehicle movements during the operational phase will exceed those of the construction phase. As a result, operational phase impacts associated with road traffic emissions are deemed to be not significant. The Outline Construction Environmental Management Plan details appropriate housekeeping and mitigation measures that would be followed at the construction and operational stages to minimise any adverse impact on air quality.
- 6.63. With regards to electromagnetic disturbance, all equipment that generates, distributes or uses electricity produces electric and magnetic fields (EMFs). The main potential source of interference is the substation. Solar panels and underground cables do not in general produce any significant radio-frequency emissions. The substation would operate in accordance with the management practices of the DNO, when operating under a full load, the field levels located at the boundary of the compound would be significantly

less than the EC Council Recommendation 1999 (EC 1999) Reference Levels which form the UK Guidance for electromagnetic field limits. Therefore, it is expected that the electromagnetic fields produced by the proposed development would not present a hazard to members of the public in accessible areas outside of the site boundary and along the public footpaths.

6.64. For the reasons set out above it is considered that the proposed development duly accords with the requirements of criteria 7.

Criteria 8 - There are no unacceptable impacts on the operations of defence facilities and operations (including aviation and radar) or the Mid Wales Low Flying Tactical Training Area (TTA-7T)

6.65. There are no identified defence facilities or operations within the vicinity of the application site, and the proposed development will not result in unacceptable impacts on the Mid Wales Low Flying Tactical Training Area (TTA 7T).

6.66. The development therefore accords with the requirements of criteria 8.

Criteria 9 - There are no unacceptable adverse impacts on the transport network through the transportation of components or source fuels during its construction and/or ongoing operation

6.67. The application submission is supported by a Construction Traffic Management Plan prepared by Pegasus Group. The salient points of the report are set out below.

6.68. Two temporary construction compounds are proposed, the main construction compound will be located off the Penyfodau Fawr Farm access track, the secondary construction compound will be positioned within the field containing the substation. As the proposed development is built out, the construction compounds would be scaled down and removed from the application site. The main construction compound for the green infrastructure and renewable energy facility is anticipated to be located in the Central Development Parcel.

6.69. The primary construction and operational access for the solar development is from the private access road which serves Penyfodau Fawr Farm. Construction vehicles will access the road from the southern arm of the A484 / B4560 Swansea Road roundabout. The preliminary consultation response from Swansea Council Highways confirms there is no issue with the use of this access in principle, although there may be a need to widen the access road to accommodate the construction traffic. This will be where all deliveries will be made to throughout the construction phase. This includes deliveries of materials and plant. All machinery and deliveries will be off loaded here before being transported by either a 10-metre rigid vehicle or a tractor and trailer before being dropped off at each parcel of land, respectively.

6.70. The secondary construction and operational access for the Central Development Parcel is proposed to be served from the rear of an existing lay-by on the southern side of the B4560 Swansea Road (E), approximately 430m east of the Hospital Road access. The area is currently overgrown and will require clearance prior to construction of the access. During the operational phase, it is expected that

this access will be used by the District Network Operator to gain access to the proposed substation and by the site operator to gain access to the BESS compound.

- 6.71. The Northern Development Parcel is proposed to be served via an existing access on the western side of the B4560 Swansea Road (W), located approximately 30 metres northwest of the A484 / B4560 Swansea Road roundabout. It is anticipated that all plant and machinery will be decanted within an internal site compound in the Central Development Parcel, prior to being transported to the Northern Development Parcel via a 10m Rigid Vehicle or a tractor and trailer.
- 6.72. For the reasons summarised above, the proposed development will not have any unacceptable adverse impacts on the transport network and, therefore, duly accords with the requirements of criteria 9 of Policy 18.

Criteria 10 – The proposal includes consideration of the materials needed or generated by the development to ensure the sustainable use and management of resources

- 6.73. The outline Construction Environmental Management Plan details the appropriate pollution protection techniques that will be adopted by the appointed contractor team. The purpose of the document is to demonstrate the measures that could be used during the build out phase to adequately protect the environmental resources including potential impact upon human receptors. The detailed CEMP will be submitted for approval subject to whether the scheme is granted permission.
- 6.74. With regards to flood risk, the development sits within Flood Zones A (1), B (2) and C2 (3), with some parts of the southern portion of the site sitting predominately within Flood Zone C2. This only extends to 1.55 hectares and is less than 2% of the total development area which is 80.2 hectares. The site is at low risk from all other causes of flooding reviewed. Parts of the two south-westerly fields, which fronts onto Afon Llan, are located within a flood risk area. The applicant has confirmed that solar modules are water compatible development and can still operate after being partly submerged by flood water. The lowest levels within the site boundary where panels are placed would be approximately 10.5m AOD suggesting that the base of the panel would be set at 11.2m AOD with the flood water set partially up the panels.
- 6.75. The proposed development will only marginally increase the percentage impermeable surface area. Consequently, the run-off from the post-development site would remain almost exactly as the existing land use. It is therefore proposed to allow the development to drain to the soil surface, where infiltration to the underlying soils would occur, to mimic the existing hydrological characteristics of the application site.
- 6.76. It is important that the proposed development does not increase run-off from the application site and thereby increase the risks of flooding for others. There may be risks associated with soil compaction or degradation during construction or brought about by the rain-shadows under the arrays. However, many such risks also exist with modern farming practices. It is therefore recommended that following installation of the panels the application site is chisel-ploughed or similarly cultivated and seeded with native meadow grass and wildflowers. Chisel-ploughing will reduce soil compaction on the site and promote seed growth; it has been proven to significantly

increase infiltration thereby reducing runoff rates from the site. Additionally, longer meadow type grasses and wildflower vegetation provide high levels of natural storage which will serve to reduce the risks of erosion and limit surface water flows across the site. With the implementation of Chisel-ploughing, changing the site's primary function to solar power generation will have several potential longer-term benefits regarding surface water runoff rates. Further information can be found in the accompanying Ecological Appraisal by Devon Wildlife Consultants.

6.77. The absence of intensive farming activity will provide the following benefits, which serve to reduce soil compaction and runoff rates from the application site:

- The field will not be left without vegetation coverage in the winter (if in arable production);
- The field will not be intensively trodden or over grazed; and
- The field will not be regularly traversed by heavy machinery.

6.78. Using the site for solar power generation therefore has the potential to provide betterment to the existing land use in terms of surface water runoff rates and downstream flood risk.

6.79. Turning to surface water management, it is proposed to provide a series of enhancements such as swales, basins, check dams and filter trenches along arrays rows that will be provided to aid in the slowing down of flood waters as part of a SuDS type train which will allow the flows of water to be contained and slow the flows of waters across these areas when flooding occurs during extreme events. Notably the extra hedgerows, tree planting and the restoration of the Rhos grassland field provide betterment once the cattle poaching has stopped, and the meadow grasses recover. This will provide a betterment in overall flood risk to the site but also impact on the current fast rate of connection to the existing watercourses.

6.80. For the reasons summarised above, the proposed development duly considers the materials needed or generated by the development to ensure the sustainable use and management of resources and, therefore, accords with the requirements of criteria 10 of Policy 18.

Criteria 11 – There are acceptable provisions relating to the decommissioning of the development at the end of its lifetime, including the removal of infrastructure and effective restoration

6.81. Following a 40-year generation period, the proposed development will enter into a decommissioning stage; and this can be secured by a suitably worded planning condition.

6.82. The applicant will either be insured or enter into a bond to guarantee that the scheme is decommissioned at the end of its operational lifespan. The applicant has therefore made acceptable provisions for the decommissioning of the proposed development. No more than 12 months prior to the decommissioning commencing, an ecological survey would be undertaken to identify ecological constraints

arising from decommissioning activities. The application site will be surveyed by an appropriately qualified ecologist to identify any ecological constraints arising from decommissioning activities.

- 6.83. Depending on the ecological value of the habitats that develop over the lifespan of the scheme, it is possible that certain areas of the site may need to be retained due to their value for wildlife on decommissioning. Alternatively, and on application of the mitigation hierarchy principles, their loss may require compensation through on or off-site measures to ensure land/habitats are preserved for wildlife into the future.
- 6.84. It cannot reasonably be foreseen what legislative protection will be afforded to particular wildlife species at the end of the scheme's lifespan. Further surveys for protected species which could be impacted by decommissioning would also be expected.
- 6.85. No less than 6 months before the 40th anniversary of the first export date, a decommissioning and site restoration scheme would be submitted to the relevant planning authority for approval. The decommissioning strategy would detail how plant and equipment located within the application site would be removed. The decommissioning strategy will follow the principles laid out in this Outline Decommissioning Strategy and informed by any mitigation requirements identified by the pre-decommissioning ecological survey(s).
- 6.86. **Overall, the proposed development duly accords with the 11 principles set out in Policy 18 of Future Wales and when weighed against the benefits, the proposals favour approval.**

7. CONSTRUCTION

- 7.1. Details regarding the construction programme and delivery vehicle types have been provided by the applicant based on experience in supporting the development of similar sites elsewhere in the UK whilst taking into account the specifics of the application site.
- 7.2. It is anticipated that the solar and battery energy storage facility will take approximately eight to nine months (up to 39 weeks) to complete. This includes the preparation of the site, the temporary access roads (if necessary), erection of security fencing, assembly and erection and installation of the cabling and solar module arrays, PV strings, installation of the transformer, battery and substation containers and grid connection.
- 7.3. The construction period will include the use of HGVs to bring the equipment onto the site and this will be strictly managed to ensure that vehicle movements are controlled and kept to a minimum. The applicant has confirmed that around 15 16.5m HGVs are required for every MWp at the site, split equally between the modules and mounting structures.

Vehicle Movements

- 7.4. All traffic movements will be carried out between the hours of 8.00 to 16.00 on Monday to Friday and 08.00 to 16.00 on Saturdays. The primary access for construction is the private access road which serves Penyfodau Fawr Farm. Construction vehicles will access the road from the southern arm of the A484 / B4560 Swansea Road roundabout.
- 7.5. The secondary construction compound is principally to aid the construction of the eastern fields, including substation, battery storage area and the cable trench works from the substation to the point of connection, this will be accessed via the secondary farm track fronting the layby on the southern side of the B4560 Swansea Road.
- 7.6. For the single field north of the A484, all plant and machinery will be off loaded at the main compound and then transported along the local road to the northern site.
- 7.7. An average of around 50 construction workers are forecast to be on site during peak times during the construction period. Temporary storage, welfare and car parking areas (including spaces for minibuses) will be provided on the application site within a contractor's compounds. Parking will therefore be contained within the application site and no parking will occur on the local highway network.
- 7.8. It is estimated that there could be a maximum of around 713 deliveries over an eight to nine month period. There will also be construction workers arriving at the site first thing in the morning and departing in the evening, although the numbers involved are forecast to be relatively low on a day-to-day basis with car sharing encouraged and minibuses provided for general operatives. The level of traffic during the temporary eight to nine month construction phase is not considered to be material and it is considered that this will not have a detrimental impact on the safety or operation of the local or strategic highway network.

Mitigation Measures

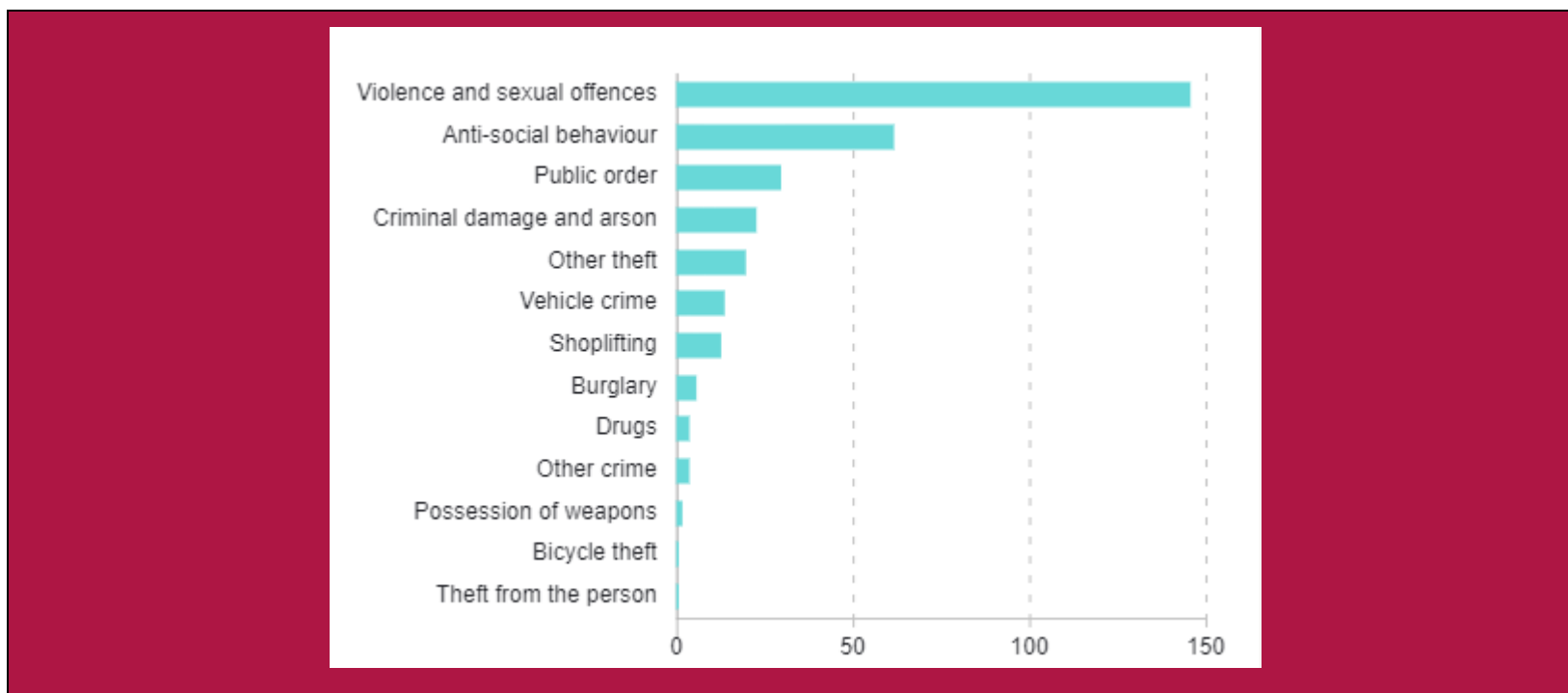
- 7.9. The contractor appointed to carry out the construction will introduce measures to minimise the impact on the local highway network resulting from construction activities. These will be managed by the Project Manager and Site Manager.
- 7.10. The Site Manager will assume responsibility for the operation of the site. The details of the Site Manager will be provided to the highway authority in advance of any works being carried out.
- 7.11. Mitigation measures will be likely to include a variety of measures to be agreed between the contractor and highway authority in due course. These may include:
- Temporary signage would be erected in the vicinity of the site during the construction phase. Diagram 7301 'WORKS TRAFFIC ONLY' in the Traffic Signs Regulations and General Directions (TSRGD) will be used to indicate that heavy construction vehicles are turning. Signage will be white text and red background 1050 x 750mm mounted in 'A' frames. All signage would be provided in Welsh above English.
 - In order to mitigate any traffic obstructions along the private access road serving the primary construction access, a banksman can be deployed at either end of the road to communicate between vehicles/site management via CB radio (to be agreed between the contractor and Highway Officers). This would ensure no oncoming traffic is approaching before guiding the construction traffic into and out of the site.
 - Wheel washing may be required until the internal access tracks are completed. A hose, or similar facility, could be provided within the site before vehicles exit on to the local highway network if considered necessary.
 - An area of coal mining high risk has been identified within the site. Currently buffer areas have been placed at these areas and no heavy construction traffic will enter into these areas. Further investigation will be undertaken prior to construction to further ascertain the specific areas.

Temporary Construction Compounds

- 7.12. Two temporary construction compounds are proposed, the main construction compound will be located off the Penyfodau Fawr Farm access track, the secondary construction compound will be positioned within the eastern field containing the BESS and substation. As the proposed development is built out, the construction compounds would be scaled down and removed from the application site.
- 7.13. The construction compounds would contain the following: -
- Temporary site facilities (Port-a-Cabin type) to be used for site office and welfare facilities, including welfare facilities with provision for sealed waste storage and removal
 - Container storage unit(s) for tools and equipment storage
 - Container storage unit(s) for components and materials
 - Refuelling compound for construction vehicles and machinery
 - Adequate parking area for cars, construction vehicles and machinery
 - Designated skips for recycling and construction waste
 - Wheel washing facility
 - Adequate space for HGV to manoeuvre and offload within site to reduce impacts on local roads.

8. CRIME AND IMPACT ASSESSMENT

- 8.1. This section of the Design and Access Statement deals with the issue of crime. The Crime Impact Assessment process involves identifying, evaluating and mitigating the crime and disorder effects of a development proposal early in the design process.
- 8.2. The goal is to reduce the developments vulnerability to crime by taking into account the analysis of the proposed development context and the crime issues in the area.
- 8.3. The www.police.uk website provides data on crime levels. For the catchment area of Gowerton between 20 to 45 crime incidents have been reported per month over the 12-month period from March 2022 to February 2023. No crime has been recorded within the demise of the application site over the last 12 months. A breakdown of crime types is displayed in the table below.



General Risk Assessment

8.4. The typical security issues for a development of this nature are:

- Acts of criminal damage during the construction period;
- Theft of components during the construction phase;
- Criminal damage during operational phase;
- Theft of components during the operational phase;
- Theft of components during site restoration.

Construction Site Risk Assessment

8.5. Two secure temporary construction compounds will be used to store materials and ancillary welfare facilities during the construction period. Security teams are likely to be present to additionally secure the application site.

Design, Layout and Security Requirements

8.6. Taking into account the low level of recorded crime for the locality, the following security measures are considered to be appropriate to combat potential criminal activity and unauthorised access into the arrays:

- A 2.0 m high stock fence will encompass the fields containing the solar panels;
- Security cameras, potentially with external perimeter intruder detection (PID), would be installed on top of extended poles at appropriate intervals along the stock fence.

9. CONCLUSIONS

9.1. Matters pertaining to design, construction access and crime for the proposed development have been explored and presented within this Design and Access Statement. Taking not account the matters set out in this statement and the accompanying Planning Statement and other technical documents, the application site is deemed to be appropriate in that it can accommodate the proposed solar scheme with an installed capacity of 44MW DC and 33MW AC export to the grid. The applicant duly considers that the application site can suitably accommodate the development proposal without causing any unacceptable impacts on the local environment.

9.2. The benefits of the development are multiple:

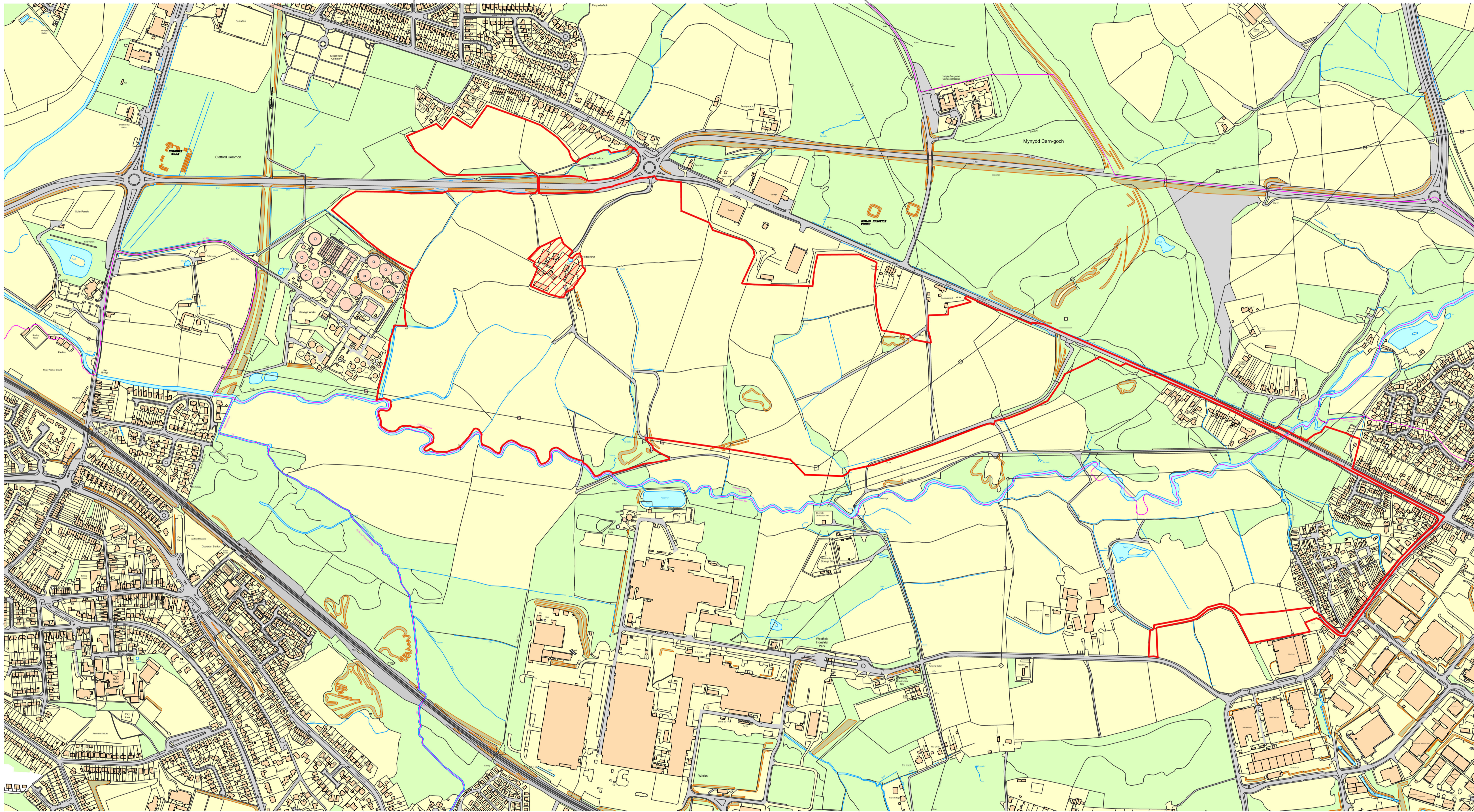
- It would provide a valuable contribution with regards to provision of decentralised renewable energy for the south west region of Wales without the use of best and most versatile agricultural land.
- The solar power element of the proposed development would generate clean renewable energy for the equivalent of over 11,500 homes a year. The anticipated CO₂ displacement is 18,000 tonnes per annum.
- The development would contribute towards energy security and the BESS would provide significant resilience to the local grid network to support growth of additional intermittent renewables and avoid future brownouts and blackouts.
- It would deliver significant ecological enhancements, habitat creation and biodiversity net gain, and this would be managed and maintained during the lifetime of the proposed development.
- The proposals are likely to meet the requirements for on-site biodiversity net gain, with a predicted gain of at least 26.25%, including restoration of priority habitat. 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 development would occupy low quality agricultural land. The site is not best and most versatile agricultural land and this has been agreed in consultation with the Welsh Government.
- The proposed management of the land under solar PV panels will improve soil health, such as increasing soil organic matter, and hence soil organic carbon, increasing soil biodiversity, and improving soil structure. By increasing soil health, soil biodiversity and soil organic carbon, solar farms present an ideal setting for significant biodiversity net gain, by increasing the soil microbial, mycorrhizal and invertebrate populations. The proposal would assist in the transition from artificial to the use of green fertilisers.

- The tenant farmer would continue to farm land located to the south of Afon Llan. The farm shop would remain in-situ and the tenant has already been provided with alternative land by the estate with the support of the applicant.
- The application proposal represents an efficient use of land that was formerly used for shallow depth coal mining activities.
- Development is temporary and would be decommissioned and removed from site after 40 years.
- As part of the applicant's intension to maximise benefits to the community, the applicant is proposing and promoting community shared ownership of part of the scheme.
- Economic benefits would be secured in terms of construction and less so operational management of the application proposal. The application proposal will provide employment and business opportunities for component suppliers / installers and those involved in grid connection, transport and logistics. Where possible, local businesses will be contracted for relevant parts of the scope of works over the period of construction, operation and maintenance. There will be additional induced impacts during the construction period with any incoming construction workers (engineers, project managers etc) spending their wages at a local level (restaurants, retail stores etc) and using local accommodation.
- There are considered to be no significant adverse impacts on internationally or nationally statutory designated sites for nature conservation.

9.3. The temporary and reversible nature of the proposed development, together with the measures that are to be taken to enhance and encourage the ecological diversity of the application site will ensure that in the long term the application site can not only be restored to its current use but will also have been improved. The wider environmental benefits and sustainability credentials associated with the increased production of energy from renewable sources represents a significant case in favour of the development proposals. This Statement demonstrates that the application proposal accords with the relevant design policies set out in Future Wales, namely Policies 17 and 18. Compliance with these policies emphasises the applicant's commitment towards good design.



APPENDIX 1 – SITE LOCATION PLAN



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On behalf of:



Notes

Key:

— Red Line Boundary

DRWN	CKD	APP	REV	DESCRIPTION
GR				REV
28/11/2023	SC		V9	
PROJECT	Parc Solar Caenewydd			
TITLE	Site Location PLAN			
CLIENT	Taiyo Power and Storage			
STATUS	Planning Application			
Sheet No	Sheet Title			Sheet Size
1				A1
Scale:	Drawing Number			
1:5000	PSC 100 002			



APPENDIX 2 – PLANNING APPLICATION DRAWINGS



On behalf of:



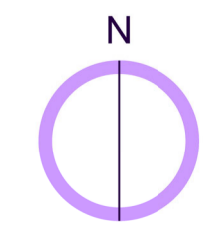
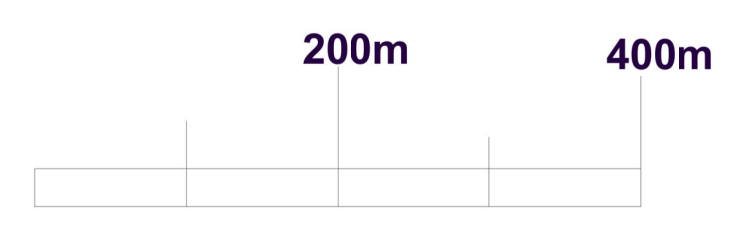
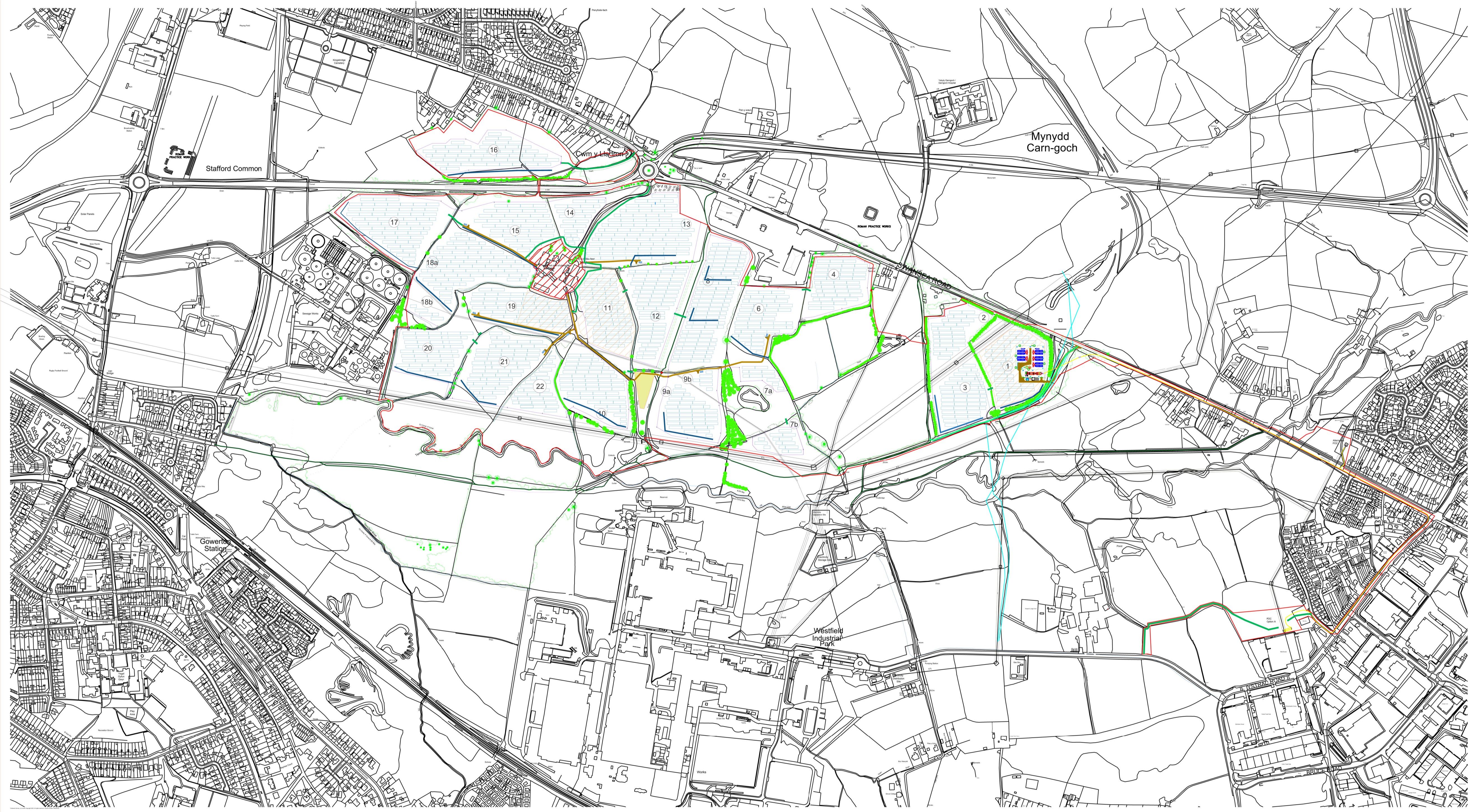
Notes
 Key:

Existing Assets

- Public Right of Way
- Gas Line
- Hedges & Trees

Proposed Assets:

- Planning Application Boundary
- Swale
- Fence
- Cable Route with Jointing Pits
- Gates
- Solar Array
- Transformer
- Site Road Permanent
- CCTV
- Temporary Construction Track
- Construction Compound
- No Crossing
- BESS Transformer
- BESS Battery unit
- Field Number
- Permissive Footpath



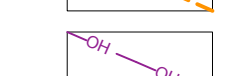
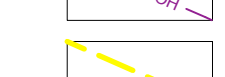


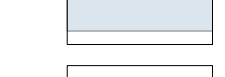
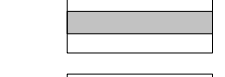
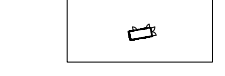


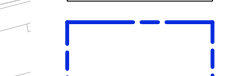




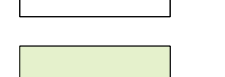






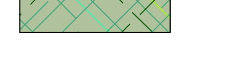




DRWN	CKD	APP	REV	DESCRIPTION
Drawn By	Checked By	REV		
MSTP	GR			
Date	Approved By	V13		
01.12.2023	CD			
PROJECT	Parc Solar Caenewydd			
TITLE	Proposed Layout Plan			
CLIENT	Taiyo Power and Storage			
STATUS	Planning Application			
Sheet No	Sheet Title	Sheet Size		
1		A1		
Scale:	Drawing Number			
1:5000	PSC 100 001			



APPENDIX 3 – GREEN INFRASTRUCTURE MAP

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 planting (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. EG26 Old 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:
- A - (08/07/2022) IHW amended to client and comments
 - B - (14/08/2022) 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 - (11/02/2023) 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

**Green Infrastructure Plan
Parc Solar, Caenwydd**

Client: Taiyo Power & Storage Ltd
 DRWG No: **P21-2998_13** REV: L
 Drawn by: IBD Approved by: IBD
 Date: 13/12/2023
 Scale: 1:2000 @ A0
Pegasus
 Design



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



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