HEOLDDU SOLAR FARM

DESIGN AND ACCESS STATEMENT

September 2025

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MAKING COMPLEX EASY

A TETRA TECH COMPANY

Contents

Introduction

Introduction

This Design and Access Statement (DAS) is prepared on behalf of Heolddu Solar Park Limited, hereafter referred to as 'the Applicant'. Heolddu Solar Park Limited, is a registered company of Qualitas Energy ('QE'). QE has been leading the drive of renewable energy, energy transition, and sustainable infrastructure development in Europe for over 18 years.

The purpose and structure of a DAS is to communicate what is proposed and demonstrate the design process that has been undertaken to reach the final proposal. It is a document that addresses a key question: 'why is it like that?' by explaining how the design has responded to the site, context, relevant policy and objectives of good design.

By its nature, a DAS is concise and illustrated wherever possible to highlight the key information relating to design.

There is no standard layout for either the access or design content of a DAS, and the information they contain depends upon the scale and complexity of the proposed development.

Within the context of this application, the structure of this DAS is set out to capture the core design process and access appraisal with respect to the inherent opportunities and considerations of the site and location and the type of development proposed.

Introduction

The preparation of this DAS has had regard to the following national and local design related policy and guidance:

- Future Wales: The National Plan 2040, Welsh Government, February 2021.
- Planning Policy Wales, Edition 12, Welsh Government, February 2024 (PPW).
- Designing for Renewable Energy in Wales, Design Commission for Wales (DCFW), November 2023.
- Design and Access Statements in Wales: Why, What and How, DCFW, April 2017.
- The Developments of National Significance, DNS (Procedure) (Wales) Order (Article 14), 2016.
- Technical Advice Note 12: Design, July 2016 (TAN 12).
- The Town and Country Planning (Development Management Procedure) (Wales) Order 2012 (as amended).
- Carmarthenshire Local Development Plan 2006 – 2021 adopted December 2014 (the 'LDP').
- Wind and Solar Energy Supplementary Planning Guidance – adopted June 2019.

The specifics of the policies and guidance and the assessment of the proposal against its context is set out and explored in detail in the Planning Statement that also supports the planning application.

Vision and Brief

Vision and Brief

The project brief provides the starting point for the design and responds directly to the Welsh Government guidance document: *Design and Access Statements in Wales. Why, What & How?*

The brief and vision for the Proposed Development is set out below.

The Brief

- Design a solar farm to provide a renewable and sustainable source of electricity to be exported to the local electricity distribution network.
- The design should consider sustainability objectives (environmental, social and economic) and be sympathetic to the surrounding area by exploring economic and social objectives to benefit the local community.
- Be located on land offering suitable capacity and connection opportunities.
- Protect and enhance existing local wildlife and habitats and be sympathetic to the built and historic environment.
- Be sympathetic and complement the surrounding landscape.
- Protect the amenity of local communities.
- Explore opportunities to enhance the local environment, including landscape and biodiversity features.

The Vision

The vision for the development of the Site is to develop a wildlife-friendly solar farm to tackle the ecological, climate and energy security crises.

Image: **Solar Energy** UK

Core Principles

The Vision and brief are underpinned by a number of core principles:

- The design process has been one of technical review informing the layout and extent of the proposal from the outset, as opposed to technical review following design. Amenity in terms of noise and visual impact are key examples where assessment has driven layout.
- Listening and learning. Early consultation has meant that the scheme has been able to embody 'travelling endorsement' of consultees at each stage of the process to date.
- Embodies the 'step wise' approach of avoidance before mitigation meaning that the design has been responsive to key influences such as the protection of existing field boundaries.
- Delivers and/or facilitates associated benefits such as improvements to the local Public Right of Way network.

In developing their solar farms, QE sets out to create economic, ecological and environmental benefits. These include:

- Allowing the ground underneath solar panels to be used for habitat and conservation grazing.
- Ensuring solar panels are re-used or recycled at the end of their life.
- Providing a positive net impact on national food security by tacking climate change and providing farmers with financial security.
- Achieving a biodiversity net benefit.
- Improved soil and nutrient quality during operation, leading to better land quality once the panels have been removed and recycled.

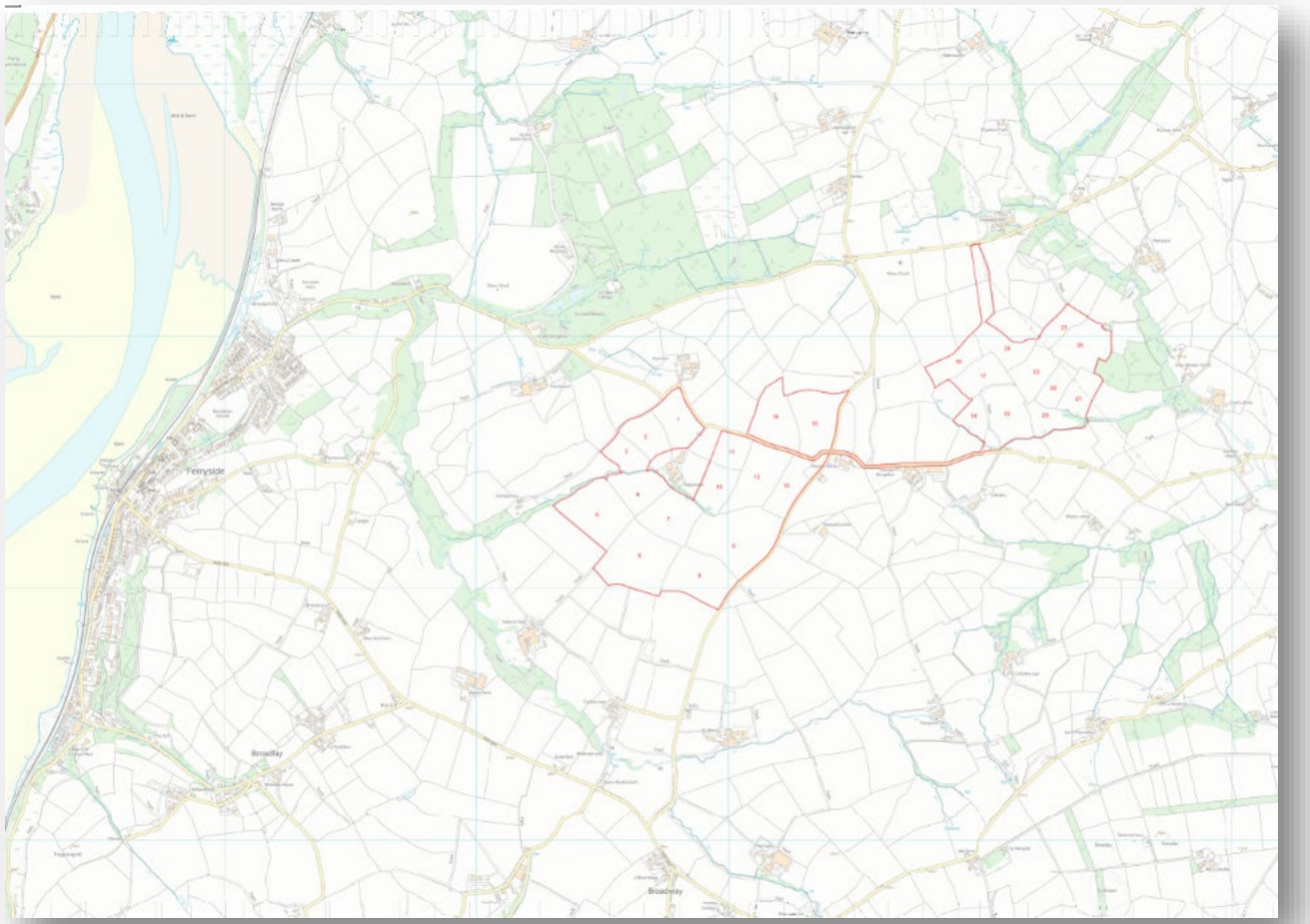
Image: **Solar Energy** UK

Site and context analysis

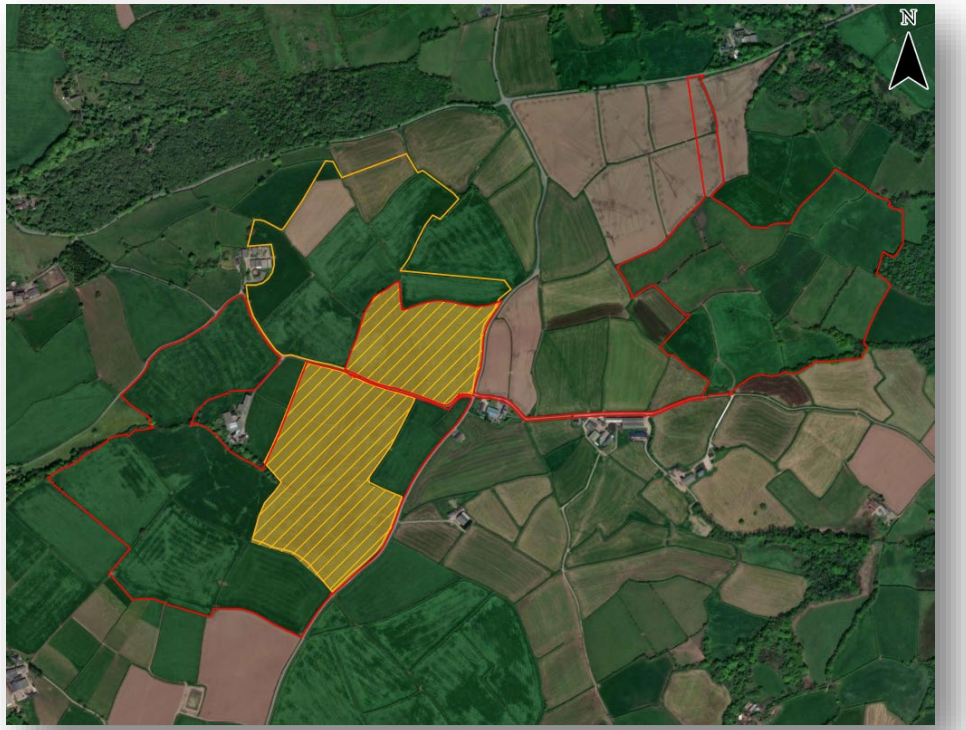
Site and Context

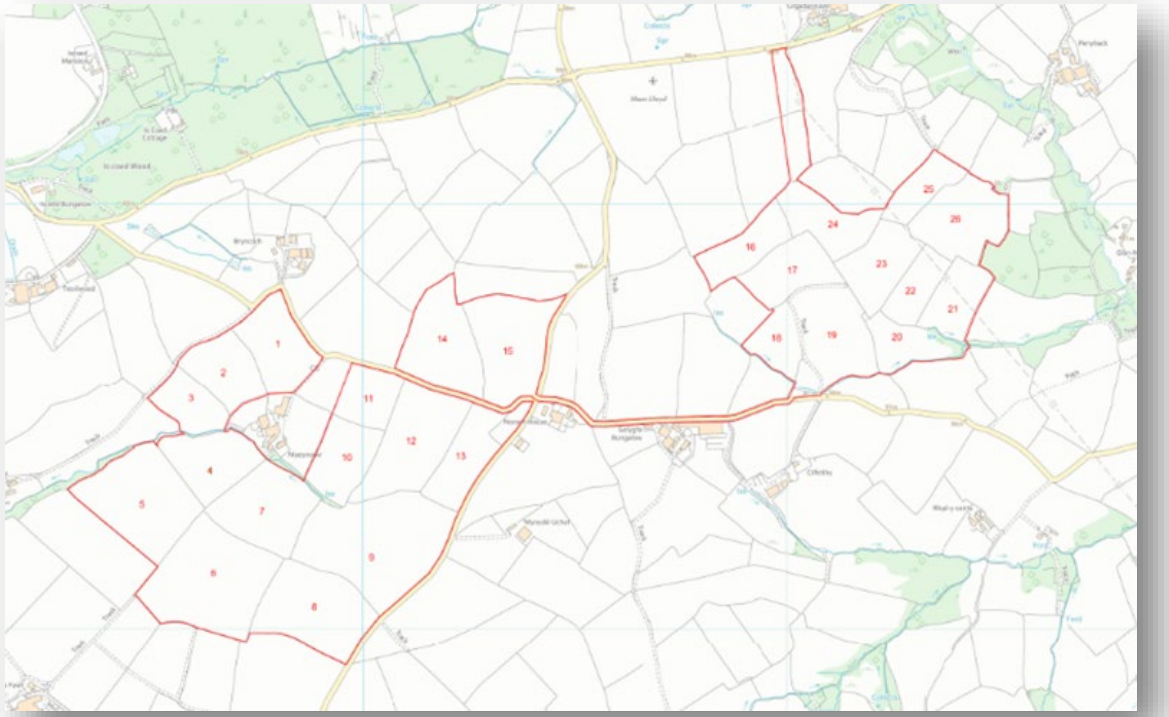
Solar Area **West** consists of fifteen fields, mainly flat and separated from each other by mature hedgerows which also form the Site boundaries. There is a small woodland within the fields. The land is well screened from the surrounding landscape and views by existing mature boundary vegetation. 57% of the application site was consented for solar development in 2015: the Bryncoch Solar Farm planning permission (W/32171) – hatched yellow on figure over page. This lapsed due to grid connection issues.

Solar Area **East** consists of eleven fields which, due to the surrounding topography and their hillside location, are more visible in the landscape than Solar Area West.



Bryncoch solar farm and Heolddu spatial extents





Context features

View from centre of Solar Area West looking north to boundary screening

Ephemeral waterbody in Solar Area East

Onsite pylon in Solar Area East, providing the point of connection

Relic hedgerow in Solar Area East

One of several existing field accesses

Designations & Influences

The site is not subject to any statutory designations. It does however lie approximately 500m to the east of the non-statutory Carmarthenshire Bay and Estuary Special Landscape (SLA) Area designation.

Beyond the SLA approximately 6km to the west of the Site, lies the Carmarthen Bay Special Protection Area (SPA). Afon Tywi Site of Special Scientific Interest (SSSI) lies approximately 2.5km to the west.

The Site lies wholly within Flood Zone 1 according to the Natural Resources Wales (NRW) Flood Map for Planning meaning that the Site is not at risk of flooding from rivers or the sea. There are small areas of surface water flooding identified within the Site associated with small watercourses.

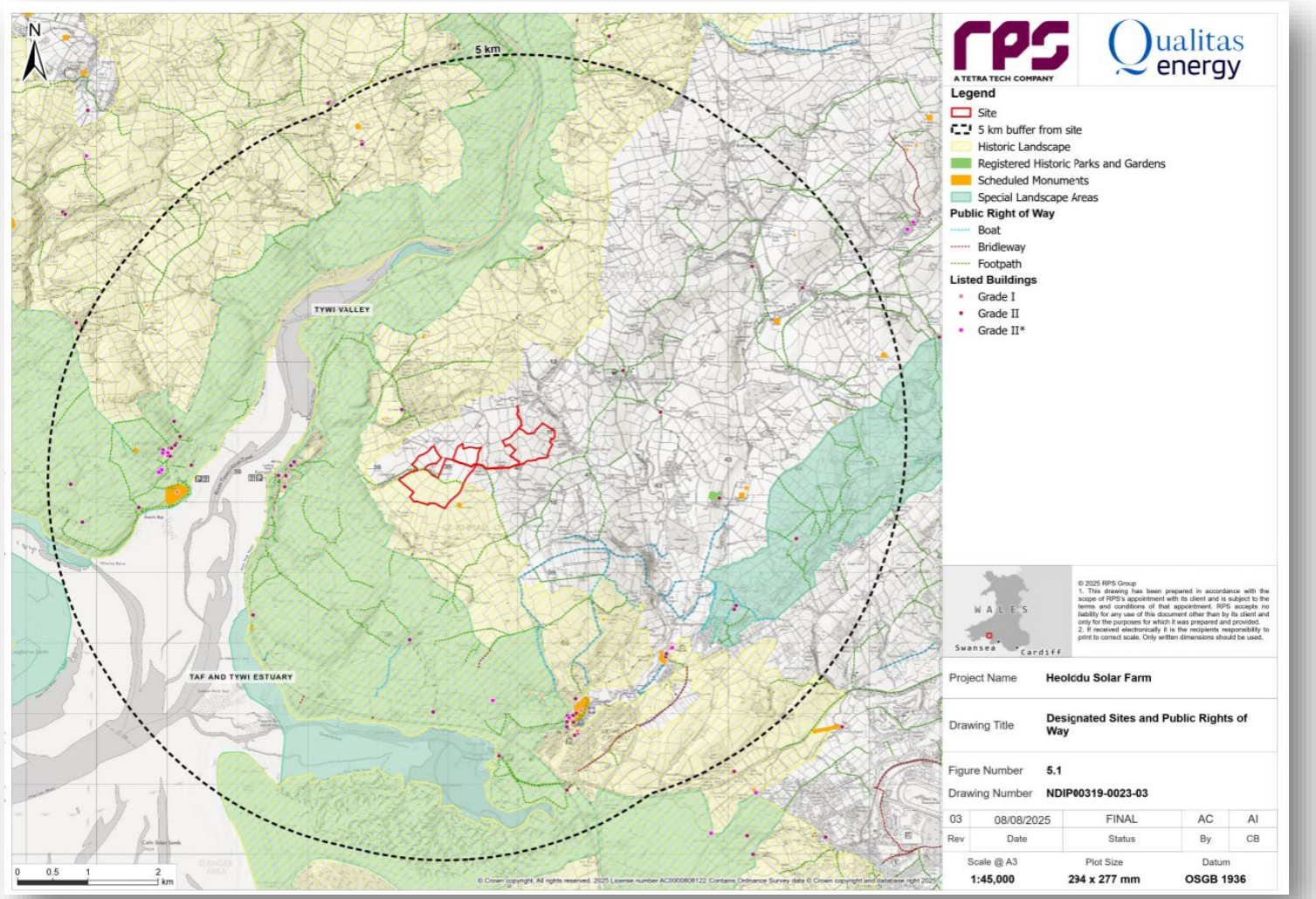
The Site contains a combination of Grade 3a and Grade 3b agricultural land.

The majority of Solar Area West is located in Tywi Valley Registered Historic Landscape.

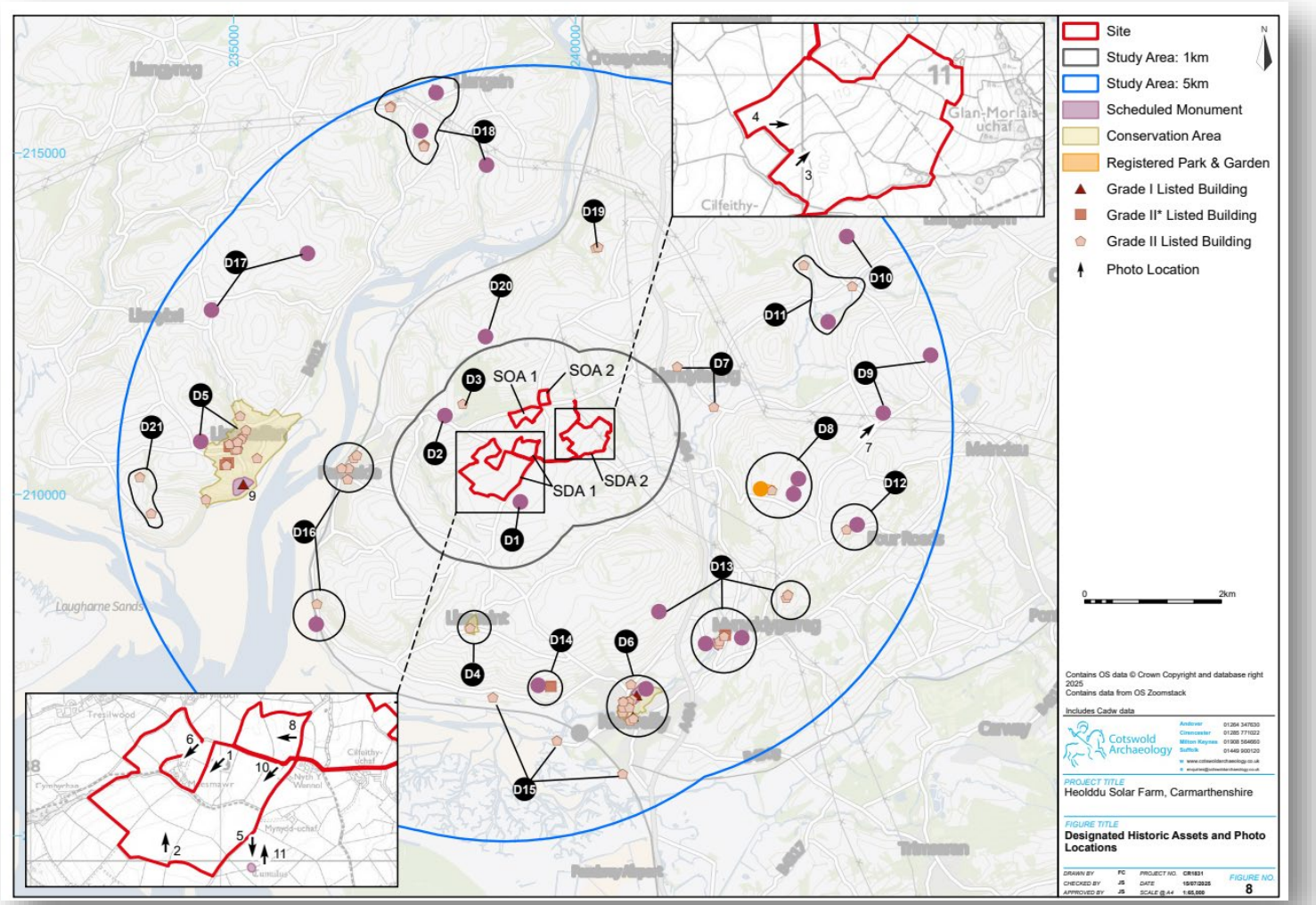
There are no built heritage, designated or undesignated historic assets within the Site. Several Listed buildings as well as three Conservation Areas (Llansteffan, Kidwelly and Llansaint) and a Grade II Registered Park and Garden (Llechdwnni) lie within 5km of the Site. There are no designated historic assets of archaeological interest (Scheduled Monuments) within the Site, however, two Scheduled Monuments are located within 1km, including the Round Barrow 330m SW of Mynydd-Uchaf (approximately 110m south-east of the site) and Is-Coed Standing Stone (approximately 710m to the north-west of the site).

The following series of plans set out the key designations, along with other important matters of influence on the design evolution such as existing ecological habitat.

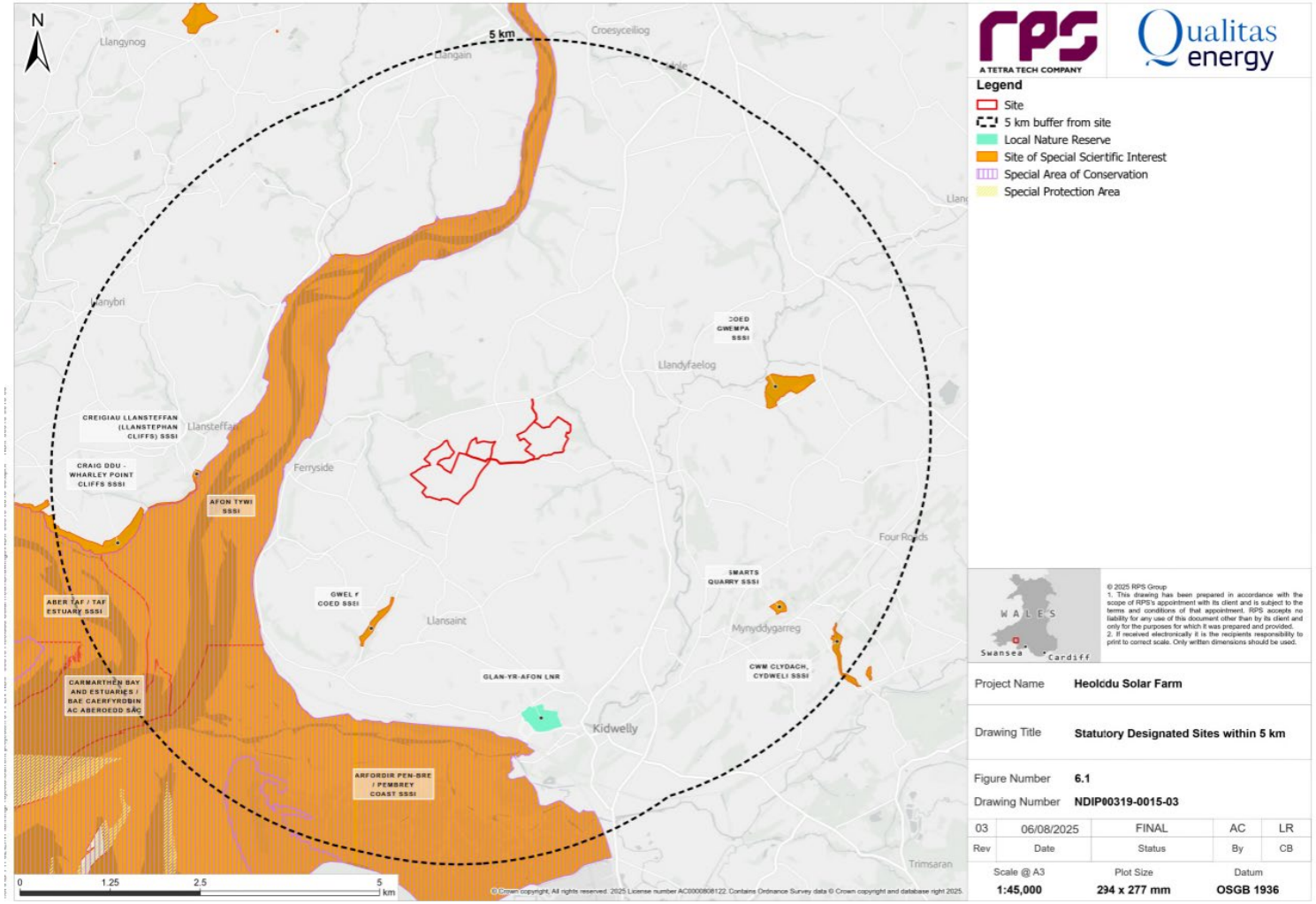
Designated Sites and PRoWs



Designated Historic Assets



Biodiversity Statutory Designated Sites



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Legend

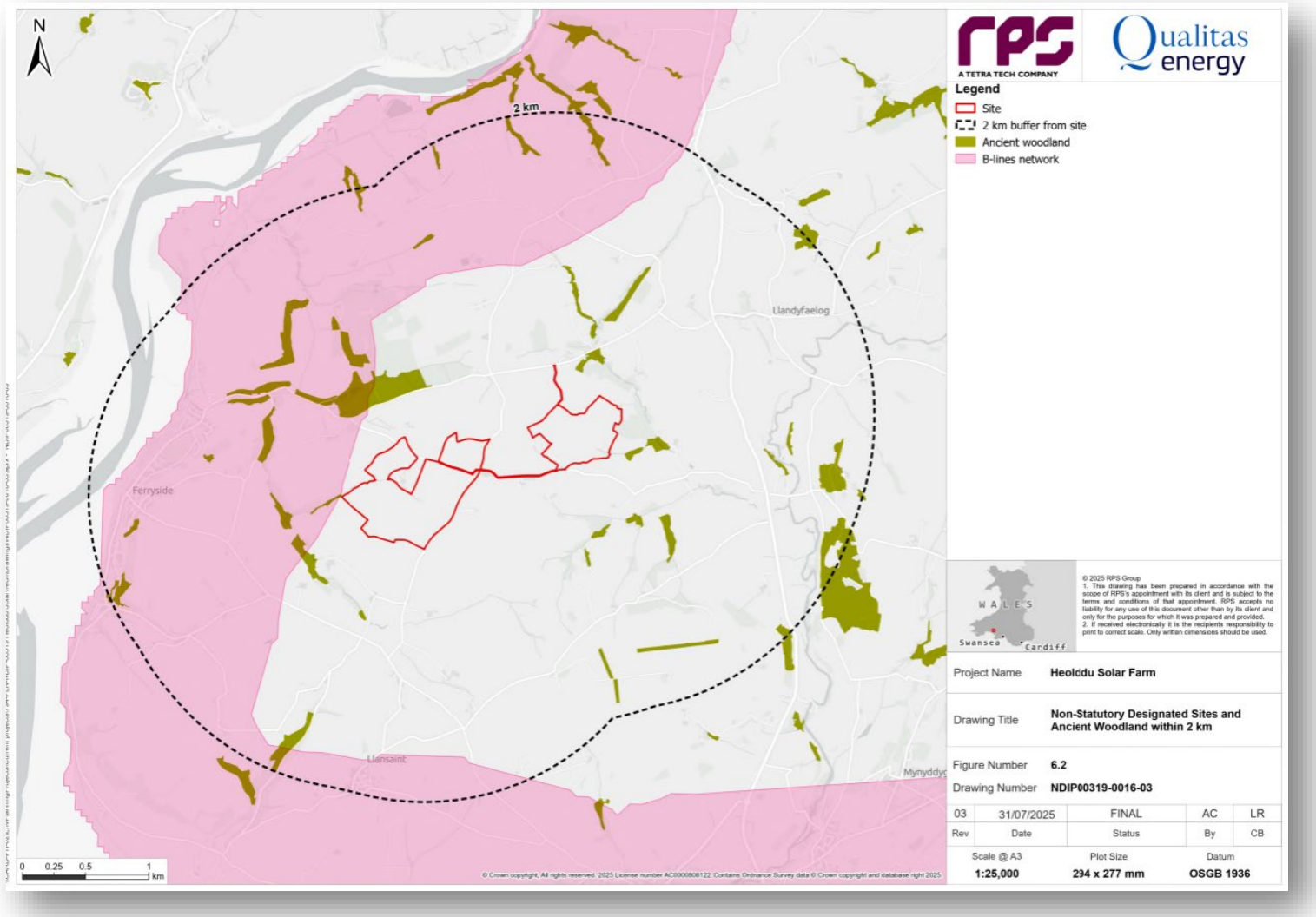
- Site
- 5 km buffer from site
- Local Nature Reserve
- Site of Special Sciertific Interest
- Special Area of Conservation
- Special Protection Area

Project Name	**Heolddu Solar Farm**
Drawing Title	**Statutory Designated Sites within 5 km**
Figure Number	**6.1**
Drawing Number	**NDIP00319-0015-03**

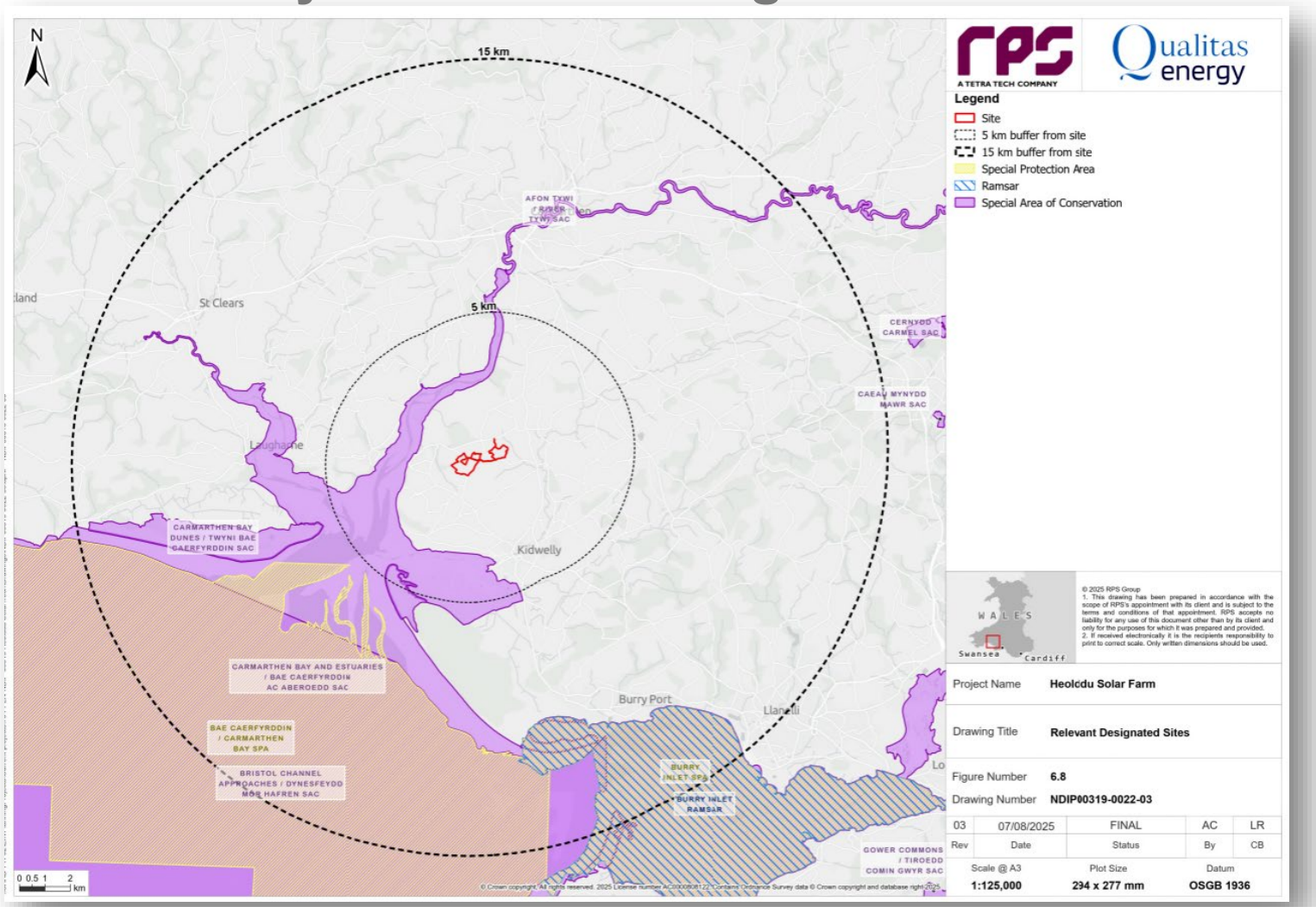
Rev	Date	Status	By	
03	06/08/2025	FINAL	AC	LR

Scale @ A3	Plot Size	Datum
1:45,000	**294 x 277 mm**	**OSGB 1936**

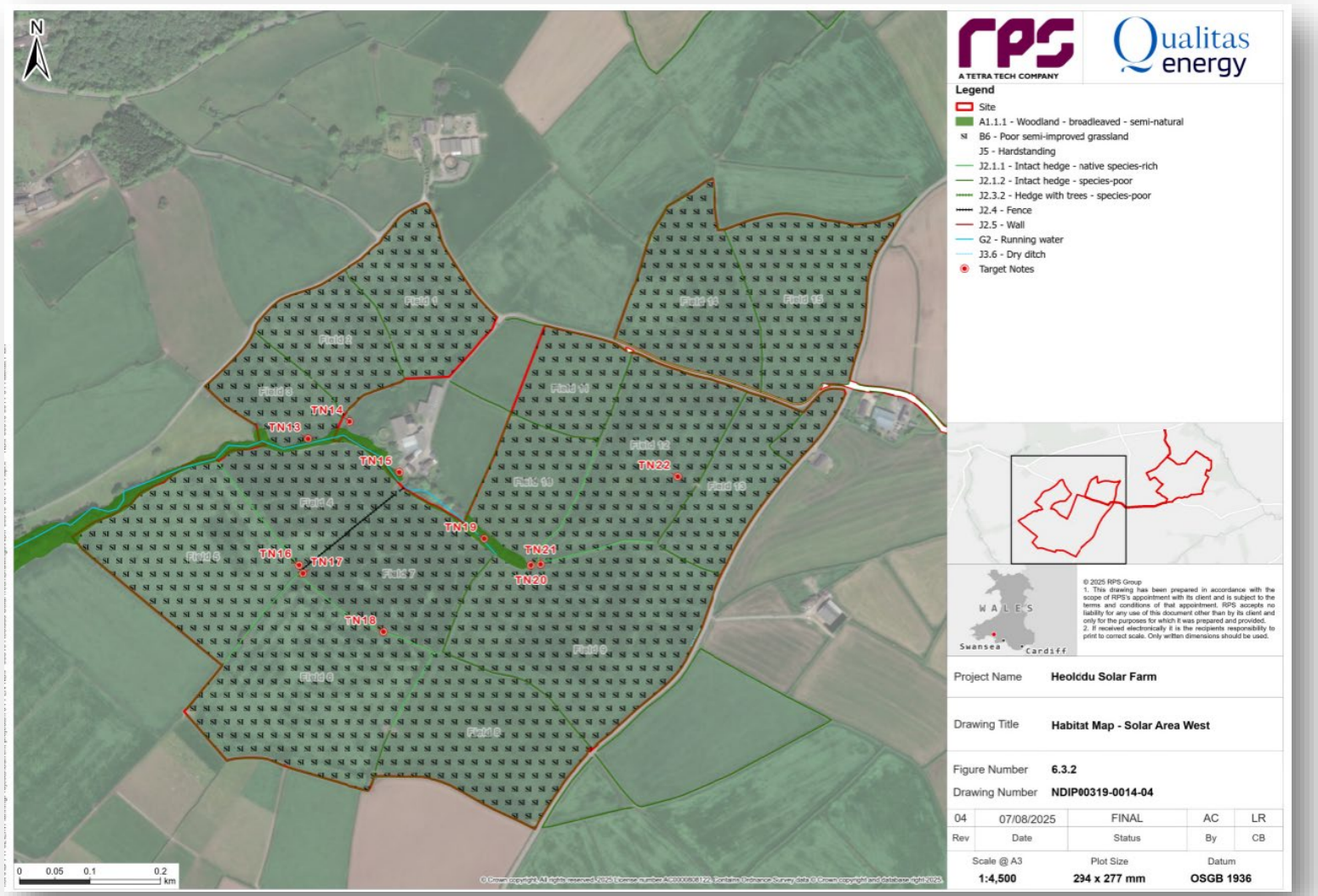
Biodiversity Non-Statutory Designated Sites



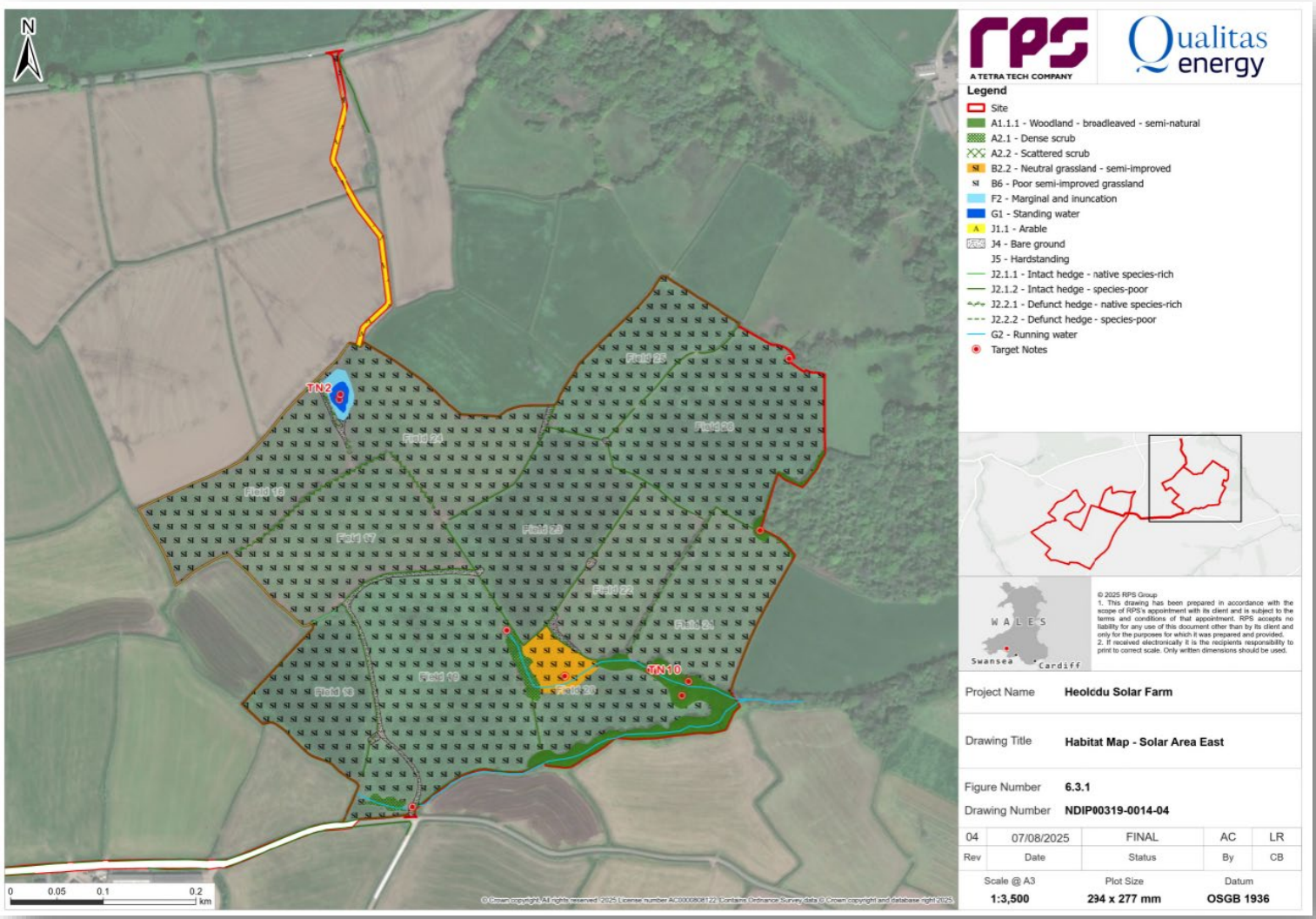
Biodiversity – Relevant Designated Sites



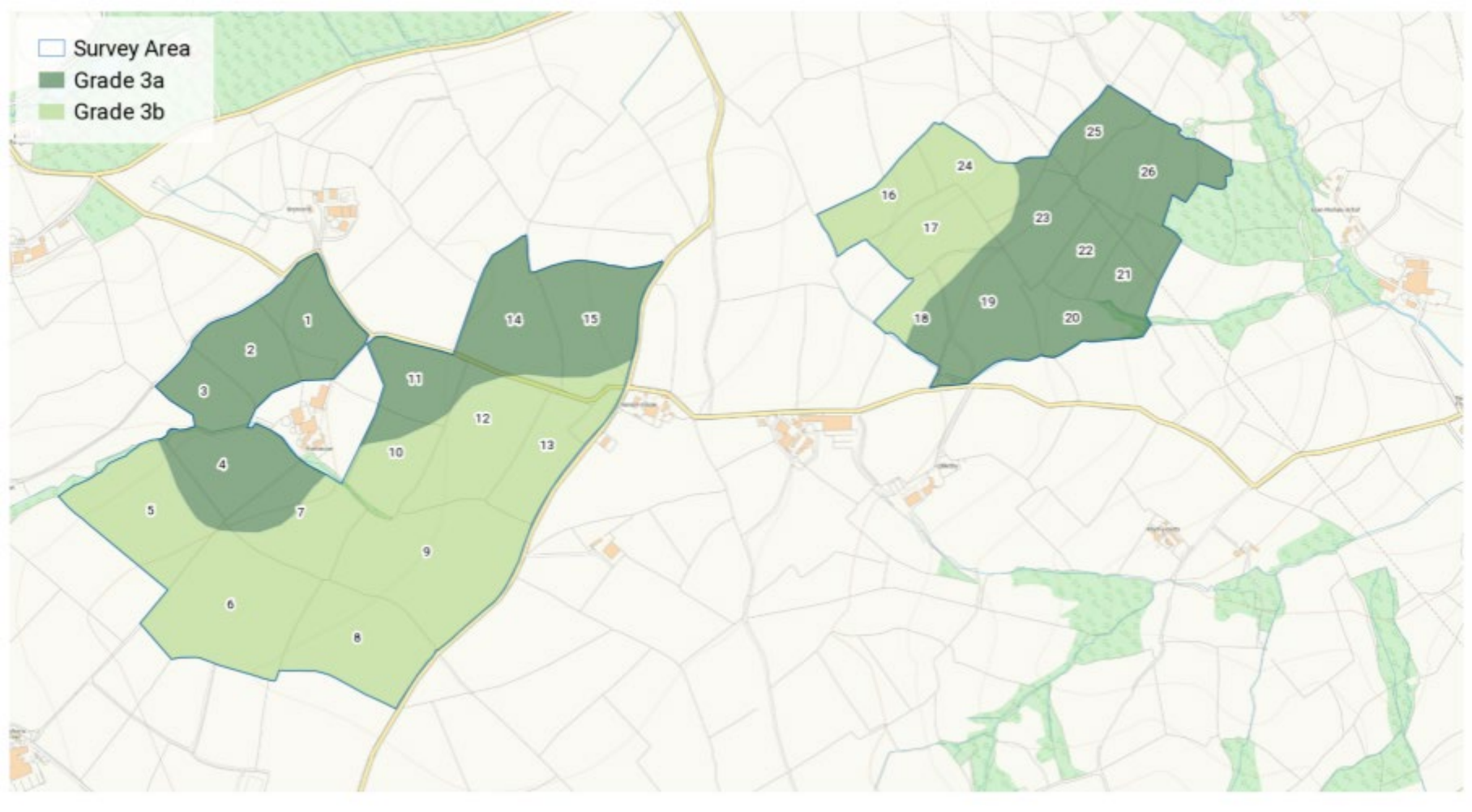
Habitat Plan – Solar Area West



Habitat Plan – Solar Area East



Agricultural Land Classification



Access and Movement

A Public Right of Way (PRoW) (62/12) runs broadly east-west through the centre of Area West along the rear of *Maesmawr.*

The route is currently impassable in places on its current alignment within the Site as well as beyond.

The Proposed Development provides the opportunity to improve the footpath network on Site, as well as facilitating offsite improvements as set out in the application.

Interpretation and Design Development

Design Development

This section explains the iterative design process and what design decisions have been made to this point. Informal community consultation, pre-application feedback from the LPA and other regulatory bodies as well as the findings of various technical assessments have influenced the design of the Proposed Development.

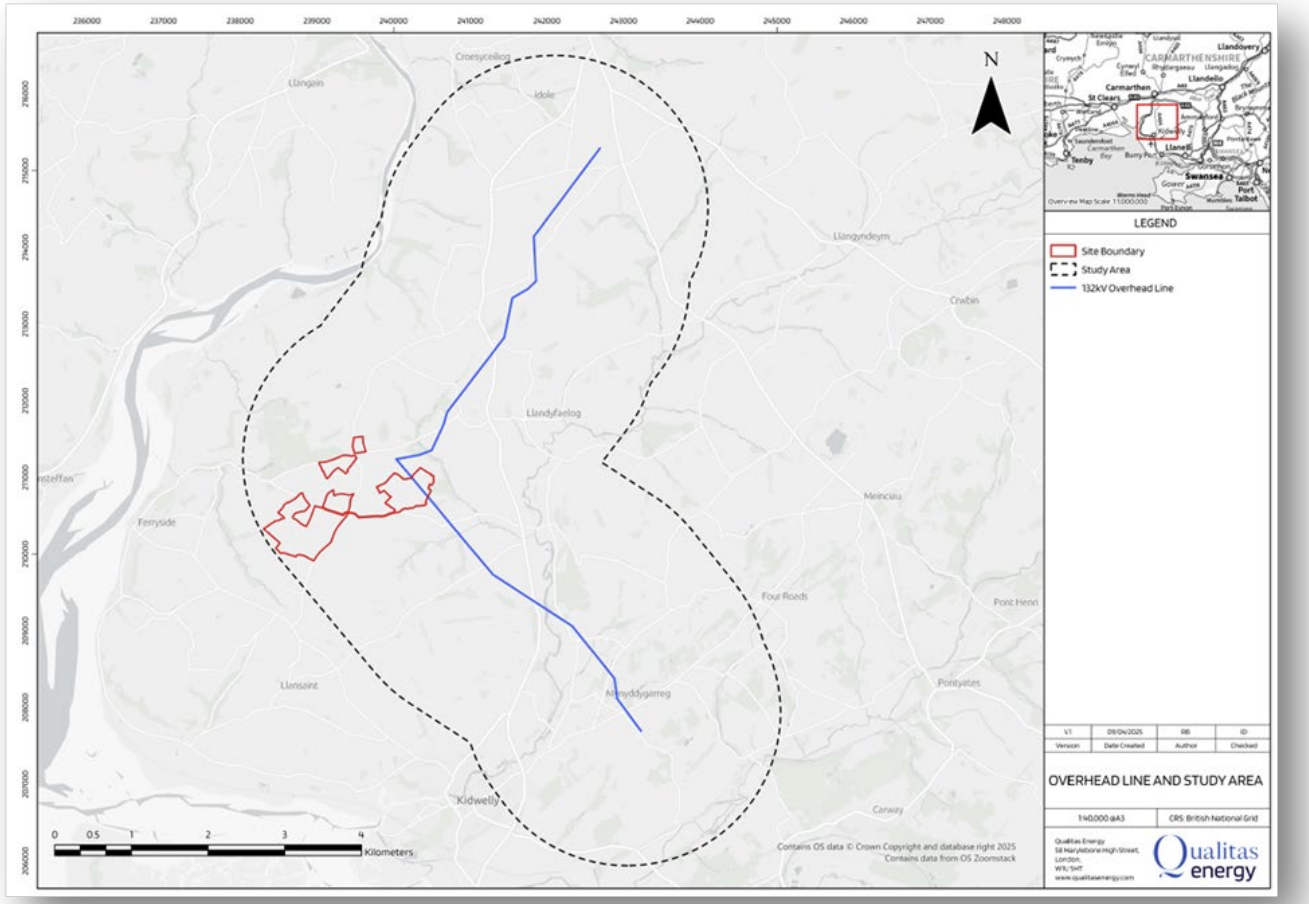
A robust site selection process was undertaken to identify appropriate land that could accommodate all components of the Proposed Development whilst avoiding significant adverse effects on the key environmental receptors.

The suitability of land to accommodate the solar farm is dependent upon several design constraints, as follows:

- Grid Connection: the Site must be in suitable proximity to a point of connection to the National Grid.
- Access: the Site must be readily accessible by roads suitable for large construction vehicles.
- Topography: topography should generally be less than 15% to maximise the usable land area and reduce shading on solar panels that results in lower energy yield.
- Land availability: the Site must be of a suitable size to accommodate a solar farm and associated infrastructure.

A search area was defined based on the technical requirement to connect the Proposed Development to the point of connection. A 2.0 km search area was therefore applied for reasons of electrical efficiency and responsiveness.

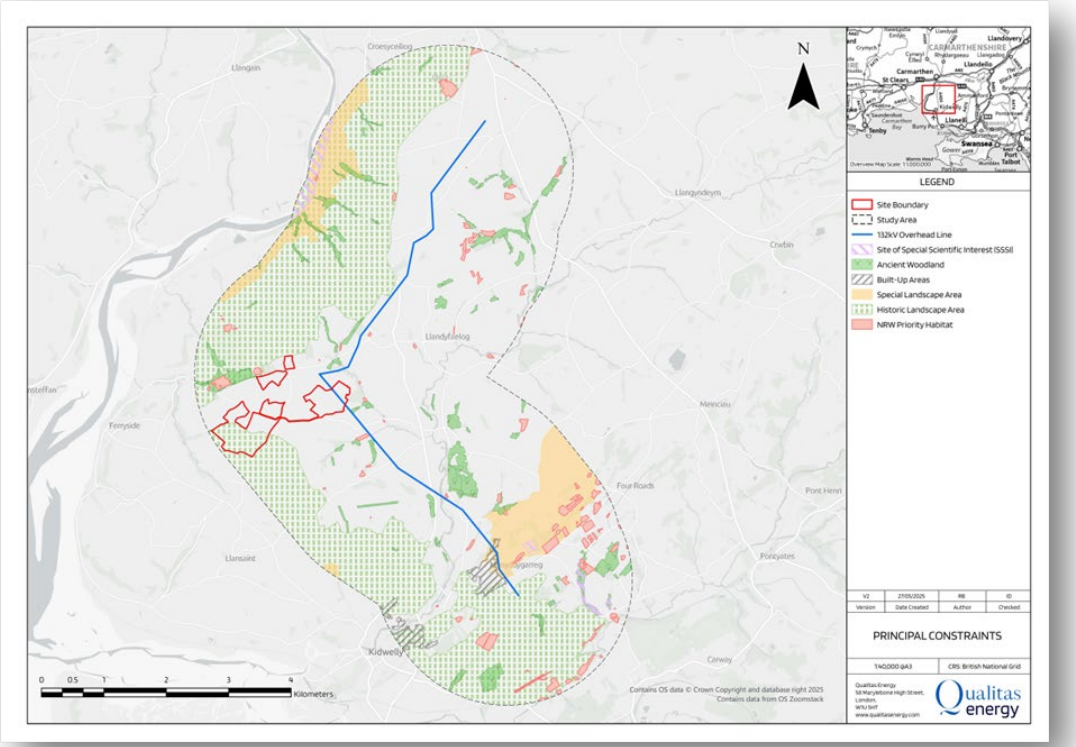
The alternative site search area is shown on the following page.



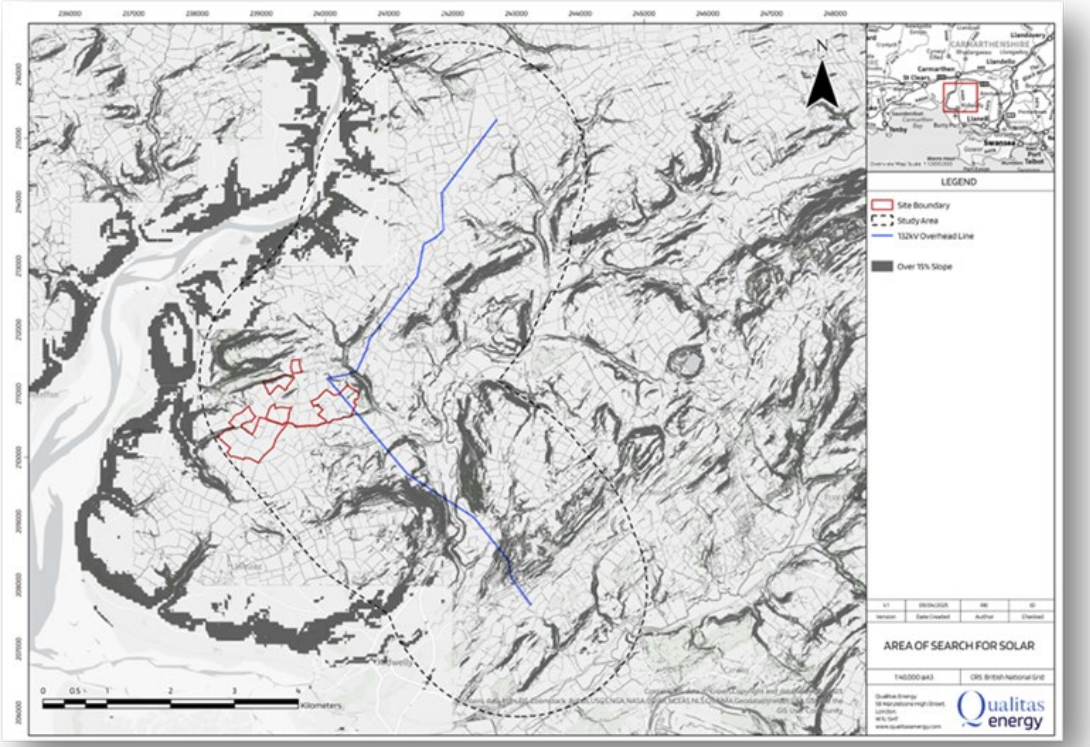
Alternative site search area

Environmental Constraints

GIS web mapping was utilised to collect relevant data and establish buffer exclusion zones from environmental features such as ponds and watercourses, environmental sensitive areas such as ancient woodland, utility infrastructure, cultural heritage and residential properties and Public Rights of Way (PRoW). The principal constraints in the search area are shown below.



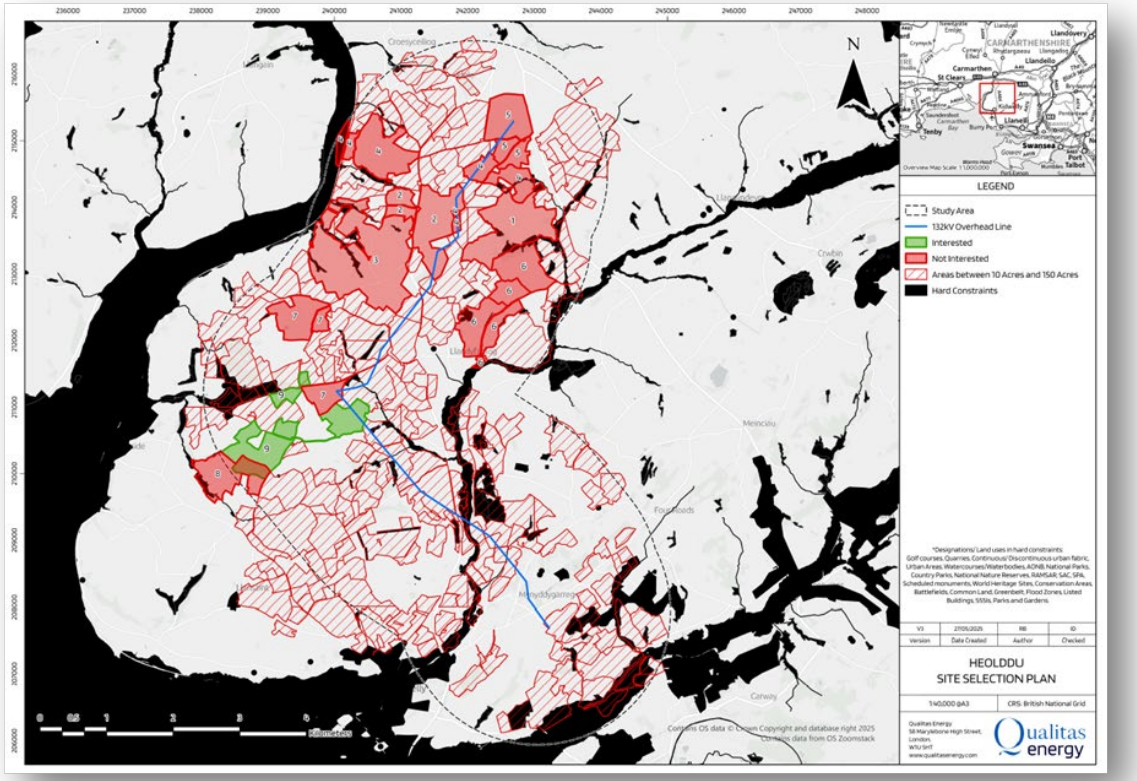
Principal constraints in the search area



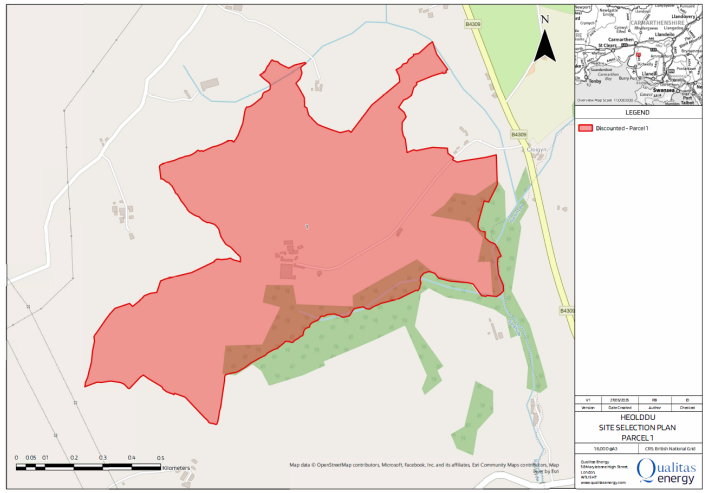
Topography

Site Selection

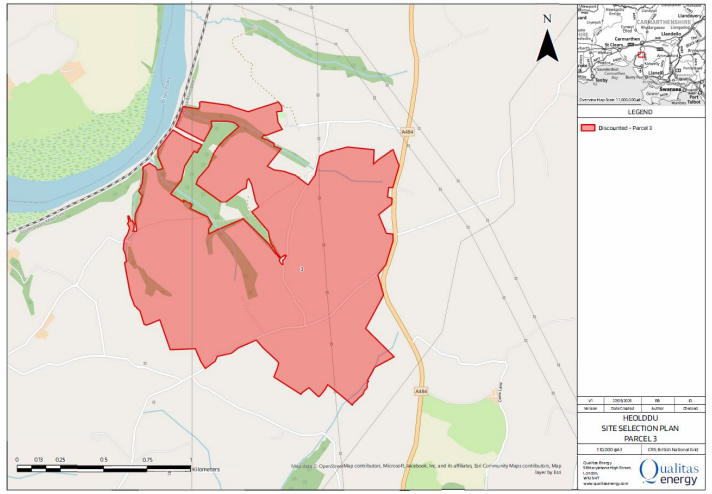
Four alternative sites were identified within the search area for further consideration that met the design criteria listed on the previous page (i.e. grid connection, land availability, access and topography). These four sites were taken forward for further consideration.



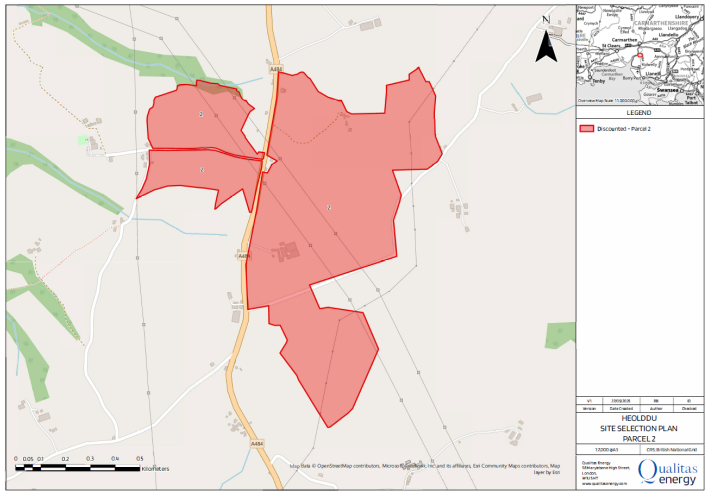
Alternative Sites



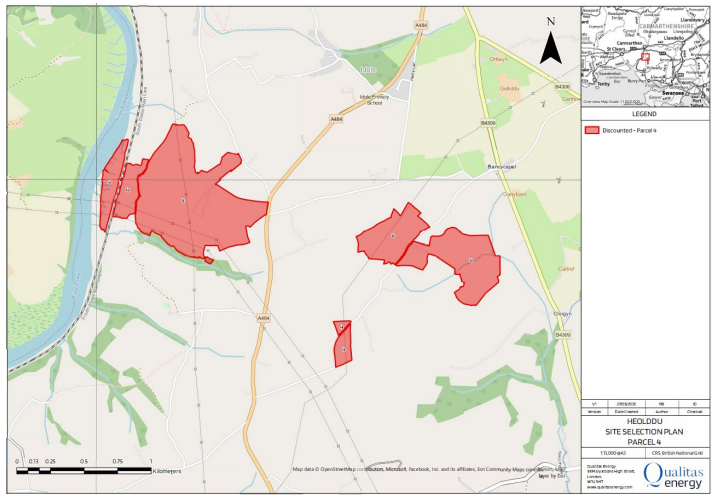
Alternative site 1



Alternative site 3



Alternative site 2



Alternative site 4

Design Development

In the absence of specific guidance on how to approach site selection, the Welsh Government Practice Guidance - Planning for Renewable and Low Carbon Energy - A Toolkit for Planners 2015 edition has been observed with consideration of the following steps:

- Step 1 – Map locations of built-up areas and infrastructure.
- Step 2 – Map further environmental and heritage constraints.
- Step 3 – Map areas of suitable slope and topology.
- Step 4 – Addressing cumulative impact.
- Step 5 – Assess potential installed capacity and energy output.
- Step 6 – Map locations of suitable Agricultural Land Classification and apply further constraints as necessary.

The four alternative sites identified were discounted for various reasons, generally either due to physical constraints that limited the capacity of the site to achieve the necessary generation capacity or because their development would be likely to result in greater effects on environmental receptors. Each of the four alternative sites performed comparably in respect of the quantum of best and most versatile agricultural land affected.

Further information is provided within Environmental Statement, Volume 1, Chapter 3: Design Evolution and Alternatives.

Design Development

The location and extent of the Site has been influenced by the following environmental constraints:

- Agricultural Land Classification – best and most versatile (BMV) agricultural land was a limiting factor for all reasonable alternative sites such that none of the alternative sites identified out-performed the Site in this respect. Avoidance of BMV agricultural land by site selection was therefore not feasible, specifically in terms of the availability of other sites and proximity of grid connection as noted above. Accordingly, avoidance by design has been achieved through the careful siting of infrastructure within the Site as far as practicable to avoid areas of BMV agricultural land.
- Landscape and Visual Impact – the Site is not subject to any statutory landscape designations. The site selection exercise avoided the Carmarthenshire Bay and Estuary Special Landscape Area in entirety and sought to avoid the Tywi Valley Registered Historic Landscape (RHL) as far as practicable.
- Ecology – the Site is not subject to any statutory ecological designations and avoids areas of priority habitat. Existing woodland blocks are excluded from the Site to avoid any adverse impact of the Proposed Development on that habitat.
- Heritage – the Site has been selected to avoid heritage receptors including Listed Buildings, Scheduled Monuments, the Llansaint Conservation Area and the Llechdwnni Registered Historic Park and Garden.

The design evolution of the Proposed Development within the Site is set out on the following pages.

Design Iteration 1

Design Iteration 1: Maximum Capacity Layout (October 2024) – this layout accounted for technical feasibility and focused PV panels within the developable area which was defined by existing field boundaries. The full capacity layout accommodated solar panels in all fields. At this stage, the findings of the Baseline Noise Survey were considered, and noise modelling was undertaken to inform the final choice of a centralised inverter technology solution.

This iteration sited panels on a total of 39 ha of BMV agricultural land and areas of elevated land.

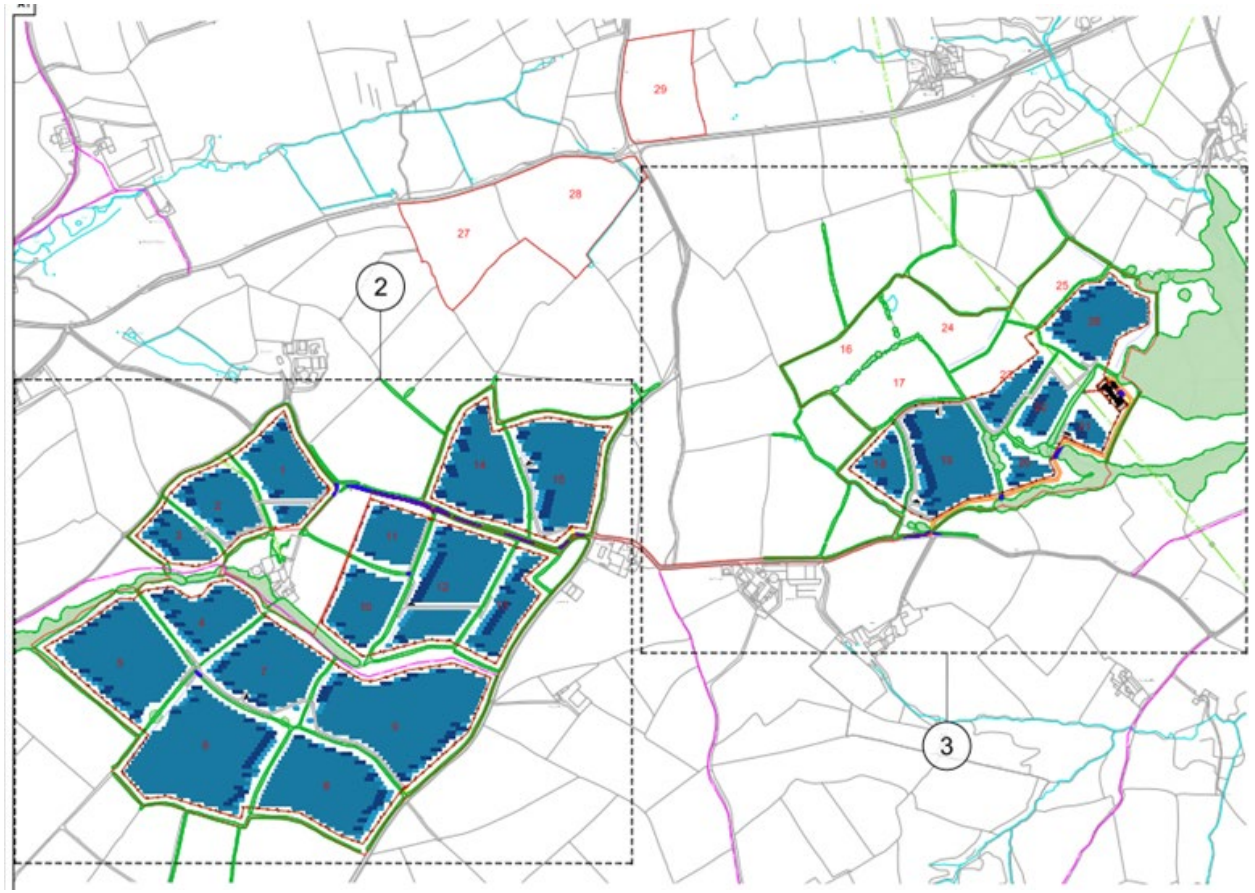
Design Iteration 2

Design Iteration 2: excluded several parcels of land that were considered to be visually intrusive. In this iteration, panels were sited in the entirety of Solar Area West and in Fields 18 to 22 as well as part of Field 23 and Field 26.

Re-orientation of the DNO substation compound was explored to reduce the amount of cut required to create the level platform and to orientate it in line with topographic ridgelines.

Drainage features were incorporated along the eastern boundaries of Field 9, Field 13, Field 15; along the western boundaries of Field 10 and Field 11; and along the southern boundary of Field 14 and Field 15.

This iteration sited panels on a total of 23 ha of BMV agricultural land through the exclusion of parcels that were of high landscape and visual sensitivity but also containing BMV agricultural land.



Design Iteration 3

Design Iteration 3: Whilst iteration **2** reduced the impact on agricultural land and landscape receptors, the export capacity required to enable to project to progress commercially could not be achieved. This final design sought to incorporate the benefits of iteration **2** whilst still achieving the necessary megawatt capacity.

In this iteration, the quantum of BMV agricultural land within the Site totalled 17 ha through the siting of panels within the entirety of Solar Area West and within Fields 18 to 22, part of Field 23 and Field 26, reducing the amount of BMV agricultural land within the Site as far as practicable.

A Landscape and Ecological Design Scheme has been prepared to provide additional screening in the form of hedgerow reinforcement, gapping up and planting of hedgerow trees to filter views into the Site of those panels on elevated land.

Concept Proposal

Design Parameters

Placemaking, Appearance and Design

The Proposed Development comprises the development of a solar farm, including associated ancillary infrastructure and development, temporary laydown areas and landscape and environmental enhancements. As such, form largely follows function.

The infrastructure is generally lower in height than the many existing mature trees and hedgerows within and around the Site.

The Landscape and Ecological Design Scheme will ensure the assimilation of the infrastructure into the landscape, screening views and retaining the countryside character.

The Proposed Development would be removed at the end of its 40-year life enabling the Site to return to its former agricultural character and appearance.

Amount & Scale

The Proposed Development will consist of a series of solar arrays and will generate 40 MW of electricity. Scale in terms of spatial extent is determined by the topography of the Site, grid connection and ownership.

The total proposed Site area extends to 81.8 ha. The main development area (comprising land within the perimeter fence, the external access track and the cable route) consists of 58.12 ha.

Layout

The layout avoids impacts on environmental and other sensitive receptors as a design driver. The design evolution process has sought to avoid those areas of the Site that were identified as being likely to result in an adverse landscape and visual impact and reduce impact on BMV agricultural land.

The final layout limits the amount of BMV agricultural land within the Site developed on as far as practicable whilst also achieving a commercially viable scheme. A Landscape and Ecological Design Scheme has been developed to provide additional screening to panels identified as being on elevated ground.

Design Parameters

Site Operation

The Proposed Development will operate for a period of 40 years. It does not require any permanent staff. However, access would be required for staff to undertake inspection, maintenance, repairs and make adjustments. For the majority of the time, the facility would be controlled remotely.

Safety & Security

Solar photovoltaic technology is a relatively benign and safe form of electricity generation with very low risk of accident or disaster and will not have a significant environmental effect in this regard.

The Proposed Development will be enclosed by appropriately designed security fencing and monitored by CCTV, which will lower the risk of unauthorised access and accidents.

Open Space and Public Realm

Due to the nature of the Proposed Development, there can be no public access to the operational part of the Site. However, as part of the Proposed Development, the existing footpath which runs along the northern boundary of Solar Area West will be diverted to provide an enhanced opportunity for public access through the Site.

As part of the diversion, appropriate signage and a crossing point will be established. Off-site improvements to the footpath network will also be facilitated through a financial contribution to Carmarthenshire County Council.

Overall Layout – Solar Area West

LEGEND:

- PLANNING APPLICATION BOUNDARY
- PROPOSED DNO ACCESS
- PROPOSED INTERNAL ACCESS
- PROPOSED SITE ACCESS
- EXISTING WATERCOURSE
- PERIMETER DEER FENCELINE
- FP — FP — FP FOOTPATH
- PROPOSED O/H CABLE ROUTE

SERVICES:

- HV 132kV —ELE 132kV O/H CABLE ROUTE

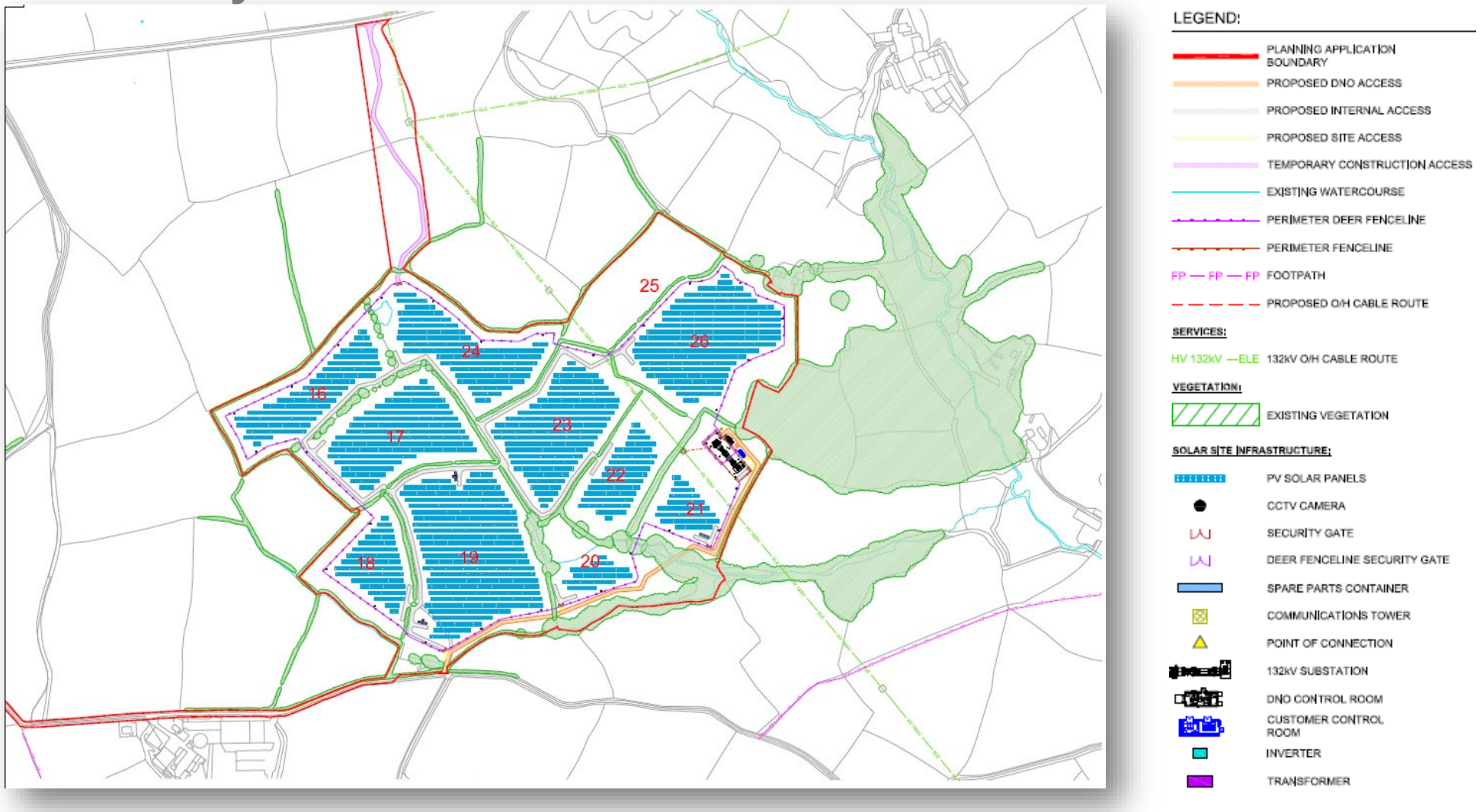
VEGETATION:

- EXISTING VEGETATION

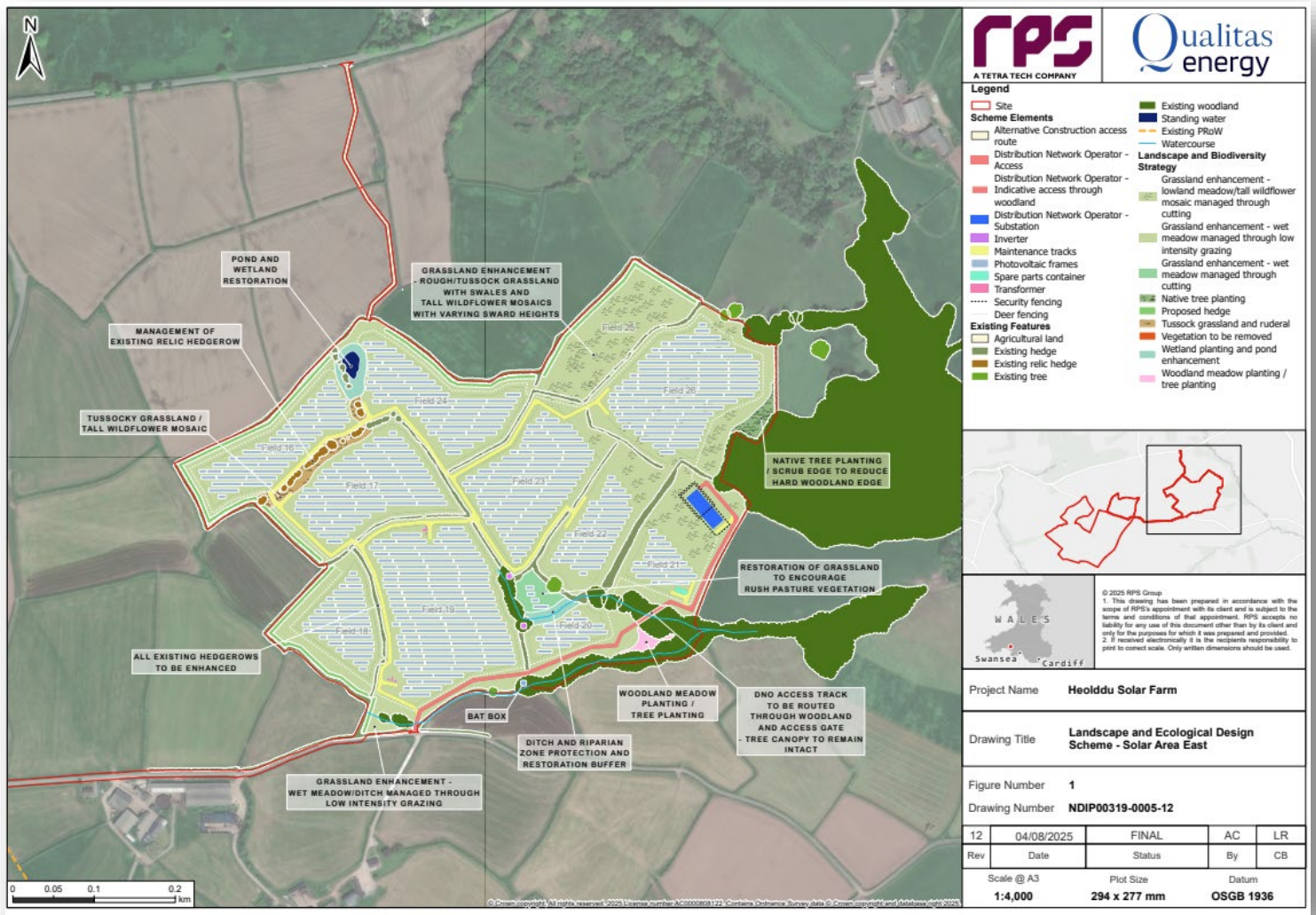
SOLAR SITE INFRASTRUCTURE:

- PV SOLAR PANELS
- CCTV CAMERA
- DEER FENCELINE SECURITY GATE
- POINT OF CONNECTION
- INVERTER
- TRANSFORMER

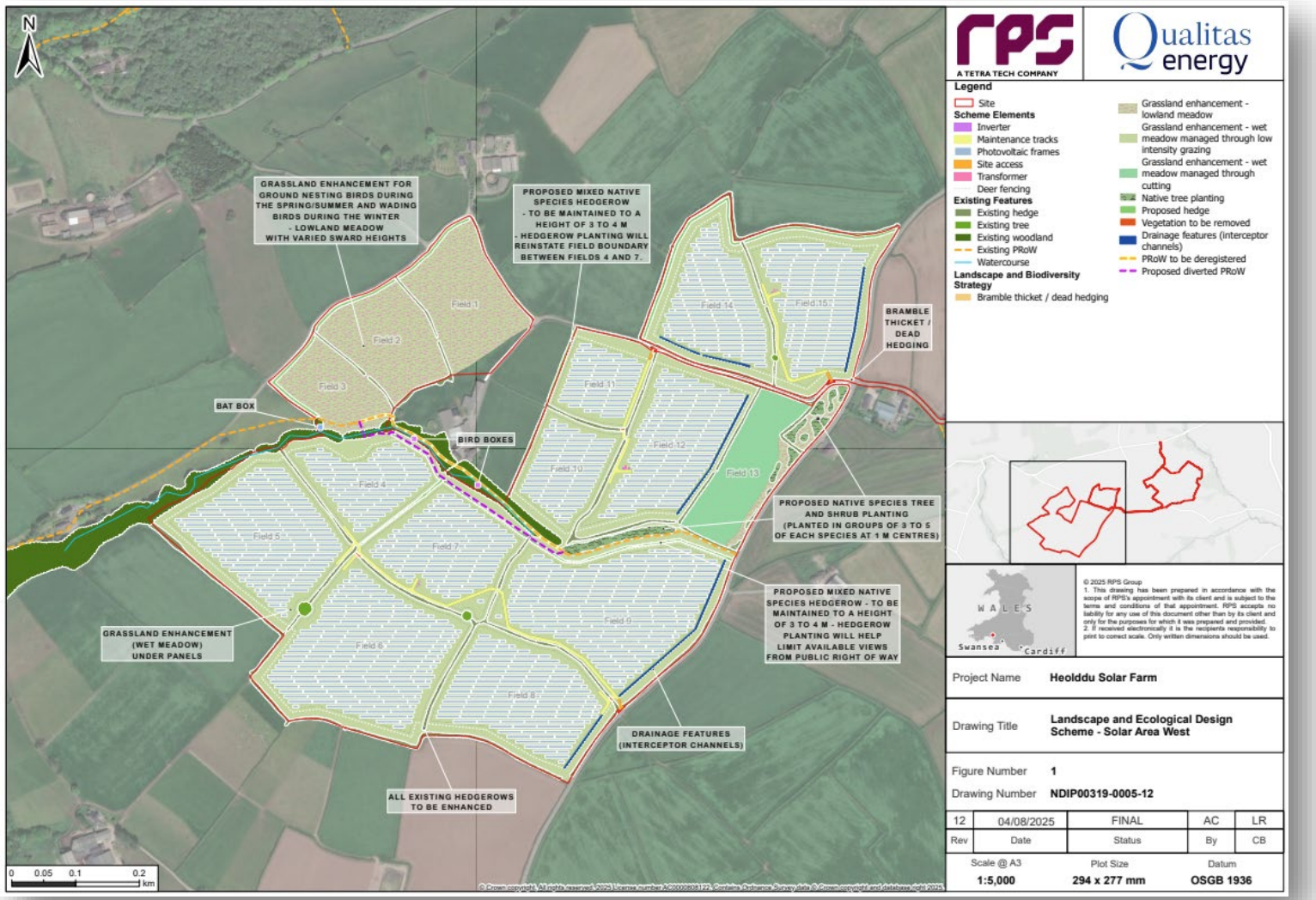
Overall Layout – Solar Area East



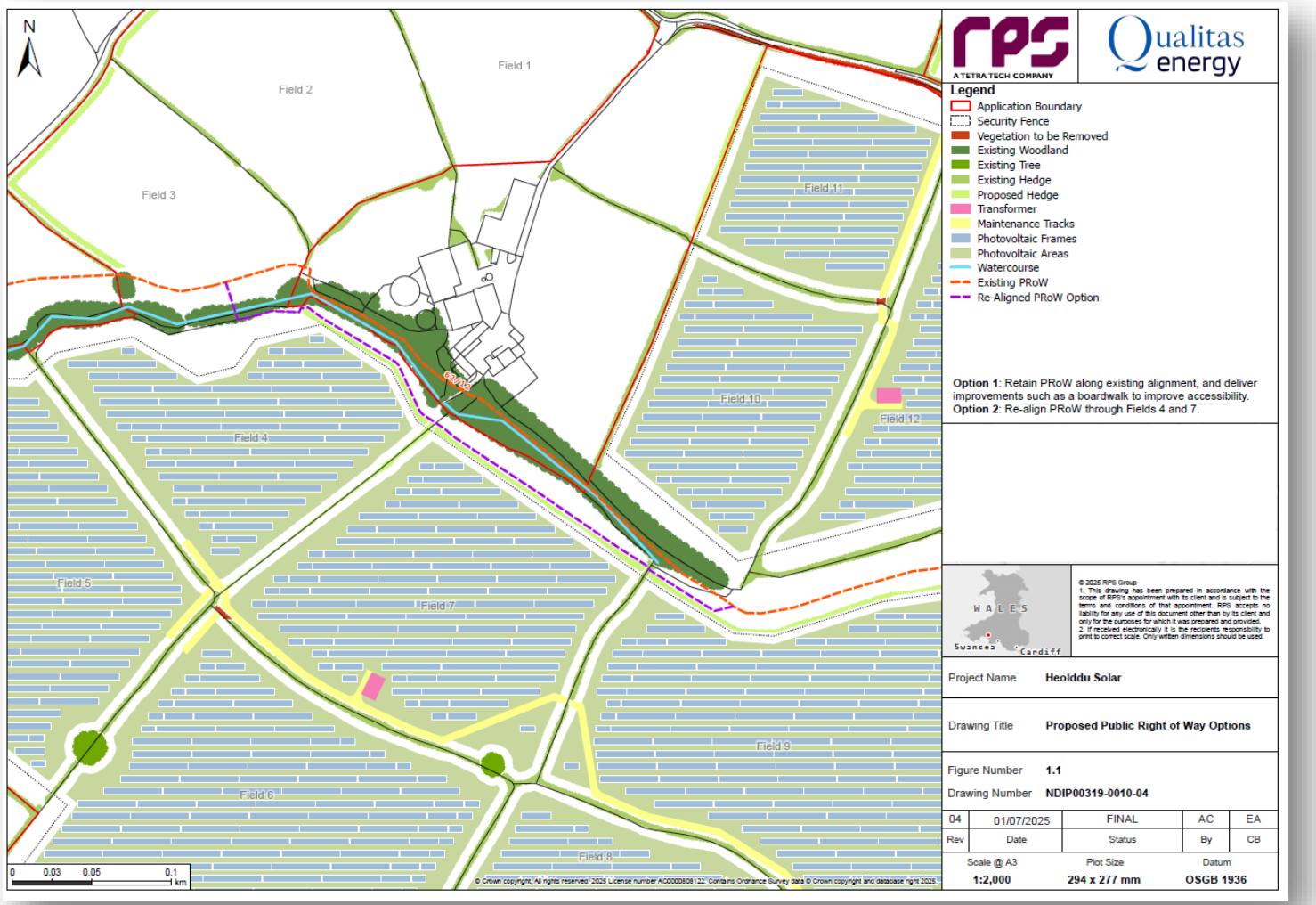
Landscape & Ecological Design Scheme – Solar Area East



Landscape & Ecological Design Scheme – Solar Area West



PRoW Re-Alignment Proposal



A section of PRoW 62/12/4 is to be diverted south of its existing alignment so that it aligns with the proposed hedgerow along the field boundary. An application for Secondary Consent is to be submitted with the DNS application to permit the proposed re-alignment which has been agreed in consultation with the PRoW Officers at Carmarthenshire County Council.

Infrastructure

Solar Panels and Frames

The Proposed Development comprises the development of a solar farm made up of solar panels, also known as photovoltaic panels (PV). The solar panels will be attached to metal frames or mounting structures which together form PV tables (or modules). A solar panel array will comprise of multiple rows of solar panels running east to west. Between each row of solar panels there would be a gap of approximately 2.0 – 6.0 m to avoid overshadowing from one solar row to another.

Inverters and Transformers

Inverters are required to convert the Direct Current (DC) electricity generated by the panels, to Alternating Current (AC) which is compatible with the wider UK grid network. Central inverter technology has been selected which would be situated in pairs at regular intervals throughout the Site. The inverters comprise containerised units, measuring up to approximately 3.0 m long (L), 2.0 m wide (W) and 2.2 m high (H) (including the base). 10 inverters are required.

Transformers are required to step up the voltage to a higher level, suitable for transmission over power lines. The proposed transformers will be up to approximately 5.4 m (L), 2.2 m (W) and 2. 5m (H) (including the base). These are an 'open air' design, surrounded by a fence and will be finished in green or white colour. The selected technology is a Twin Skid Compact Solution which contains one transformer station and two central inverters. 5 transformers are required and 10 inverters. The inverters and transformers will be sited on a hardcore base.

District Network Operator (DNO) and Customer Substation Compound

All electricity from across the solar PV arrays will collect at a substation within the DNO and Customer Substation Compound. The compound will measure up to approximately 68.5 m long (L) and 26.5 m wide (W). The maximum height of infrastructure within the compound will be up to 10.0 m high (H) where the cable anchors are mounted. The compound will be enclosed by a 2.4 m palisade fence.

To accommodate the substation compound, ground reprofiling will be necessary to ensure a level platform is achieved. Cut and fill operations will be employed to create a platform and a cut and fill plan has been designed to minimise the amount of material to be exported off-site and to utilise the material available on-site where necessary. Surplus material will be spread across the Site appropriately.

Infrastructure cont.

DNO and Customer Control Room

A control room is required to enable remote monitoring and control of the solar farm. There will be one customer control room and one DNO control room both located adjacent to the DNO and Customer Substation Compound. These buildings will provide daily information/data in relation to the operation of the solar farm.

The customer control room is typically up to approximately 10.3 m (L) x 4.0 m (W) and 3.3 m (H) (including the base). The DNO control room is typically up to approximately 10.4m (L) x 4.6 m (W) and 3.3 m (H) (including the base). Adjacent to the DNO and Customer Control Room compound will be a standalone communications tower. The communications tower will measure up to approximately 15.2 m (H) (including the base).

Cabling

The cabling within the Site will be laid underground via surface dug trenches of up to approximately 1.0 m deep and 50 cm wide and backfilled. These will utilise existing access tracks wherever practicable.

Perimeter Fencing and CCTV

The Proposed Development will be secured by perimeter fencing. This will be deer fencing with wooden posts at circa 3.5 m centres. The fence will be approximately 2.4 m high. CCTV cameras will be positioned on galvanised steel posts of up to approximately 3.0 m high and will be directed into the solar PV areas.

Access

The following access points are proposed which would be established to accommodate vehicular:

- Access 1 – via an upgrade to the existing field access along the Carmarthen Road into Field 11 (Solar Area West).
- Access 2 – via an upgrade to the existing field access along the Carmarthen Road into Field 15 (Solar Area West).
- Access 3 – via an upgrade to the existing field access along the Carmarthen Road into Field 19 (Solar Area East).
- Alternative construction access – access to Solar Area East which would route south from the Carmarthen Road approximately 500 m to the east of the crossroads at Field 28 and Field 29.

Infrastructure cont.

Within the Site, surfaced tracks comprised of crushed aggregate will be laid. Most of the access tracks would be required to facilitate the construction of the proposed development, though a number will be retained after construction to facilitate maintenance activities during the operational phase.

Temporary Construction Compounds

Two temporary construction compounds will be established for temporary storage of components and materials which are required for construction. The temporary construction compounds will be removed at the end of the construction phase.

Spare Parts Container

One permanent container will be located within the Site to store miscellaneous spare parts. This unit will measure approximately 12.2 m (L) x 2.5 m (W) x 2.5 m (H).

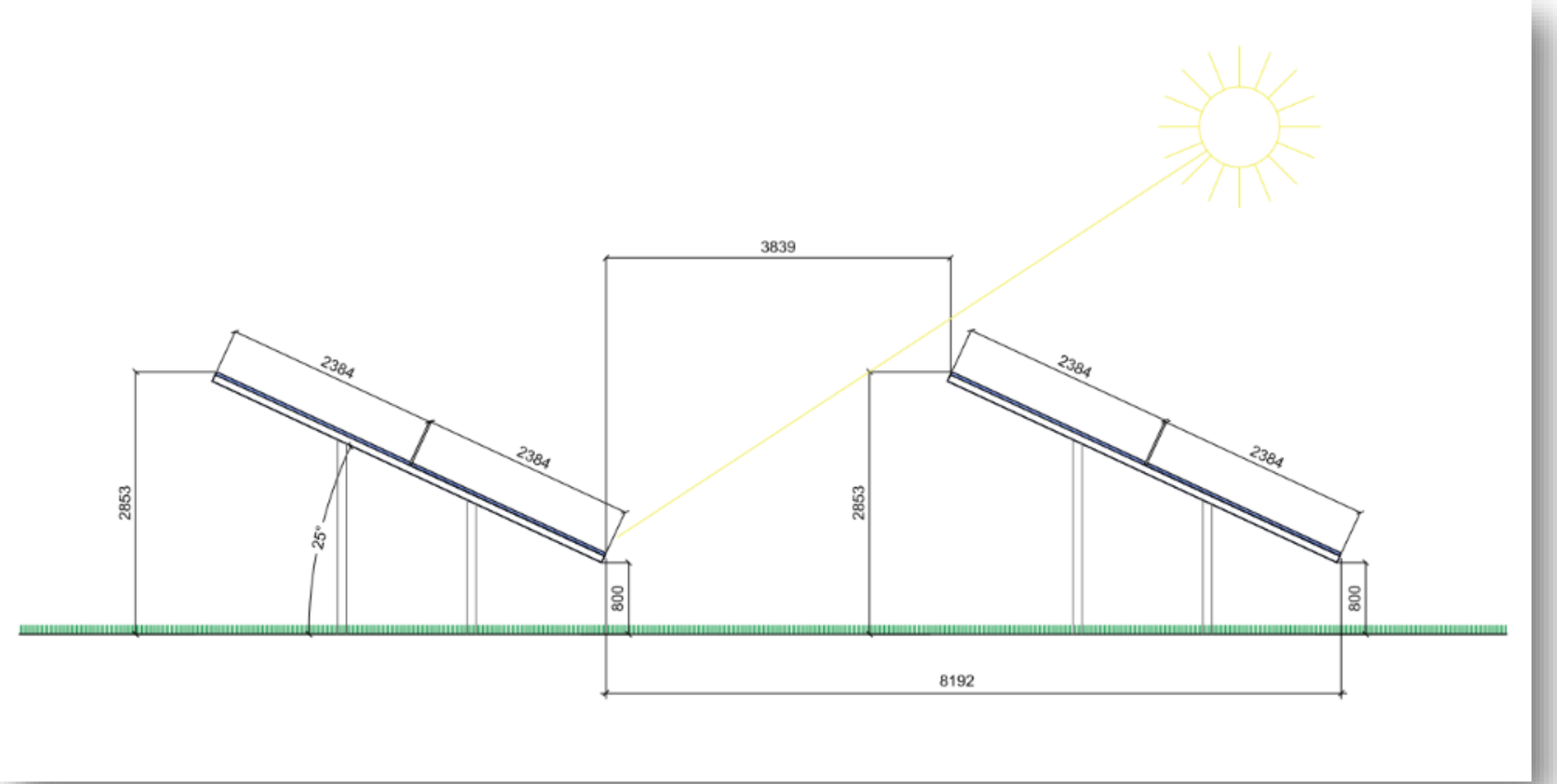
Lighting

There will be no artificial lighting during operation that could adversely affect field boundary habitats and/or adjoining habitats. Some temporary task lighting may be required during construction and decommissioning depending on the time of year and sunlight levels.

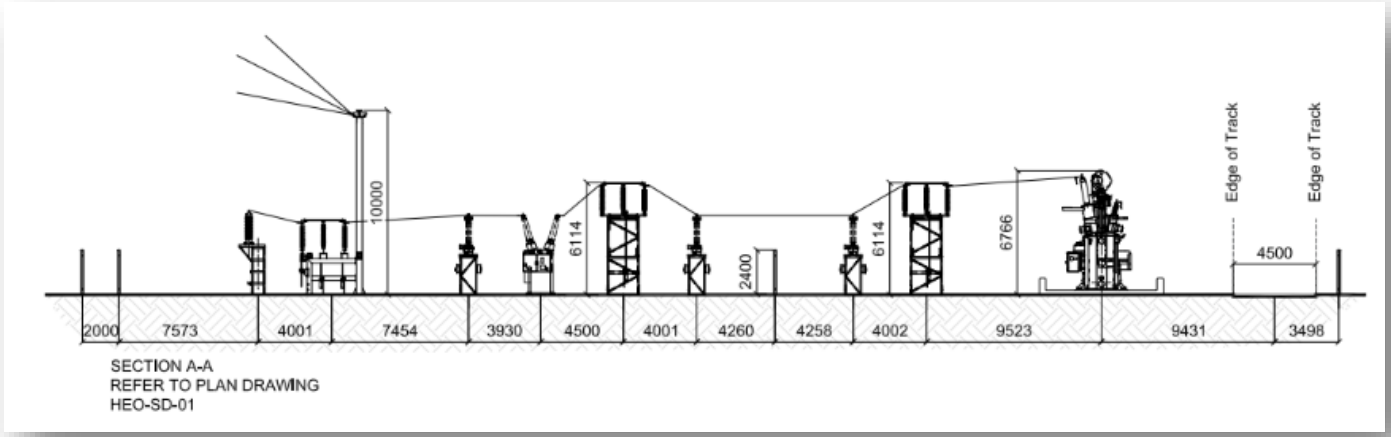
Grid Connection

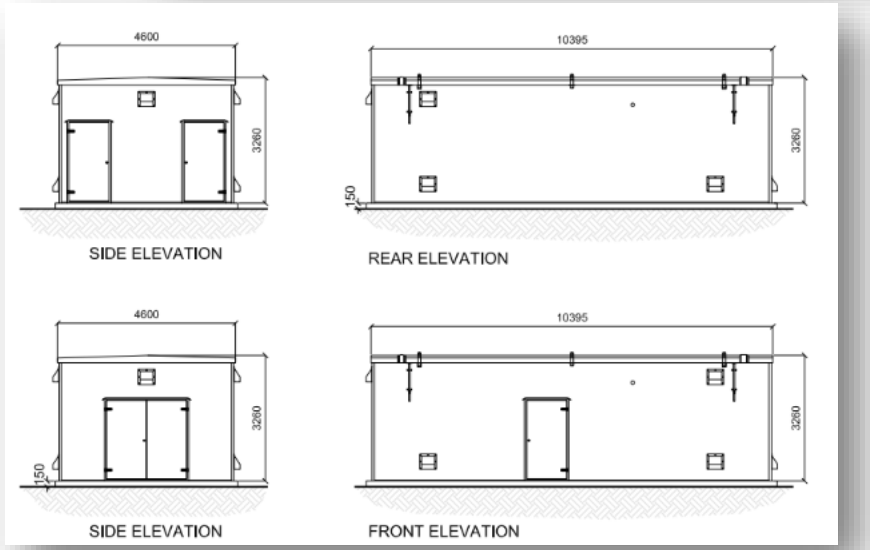
A grid connection agreement has been secured for the Proposed Development to be accommodated by connection to the National Grid 132 kV overhead line that is located within the Site.

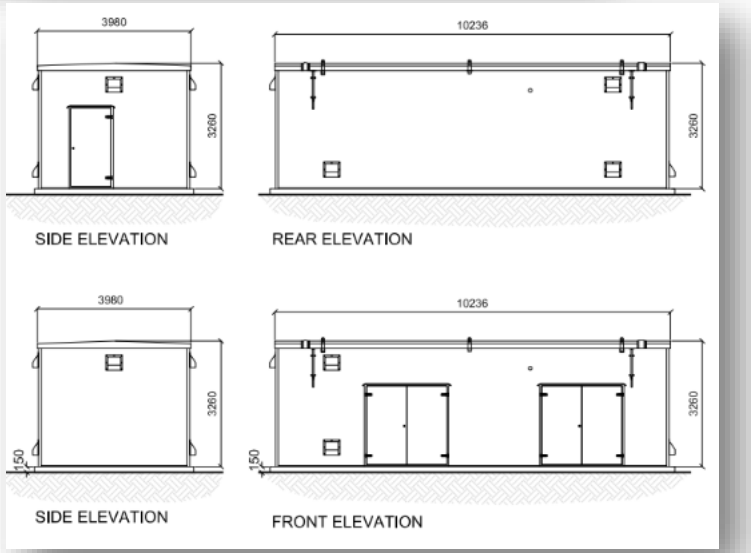
Infrastructure – solar panel



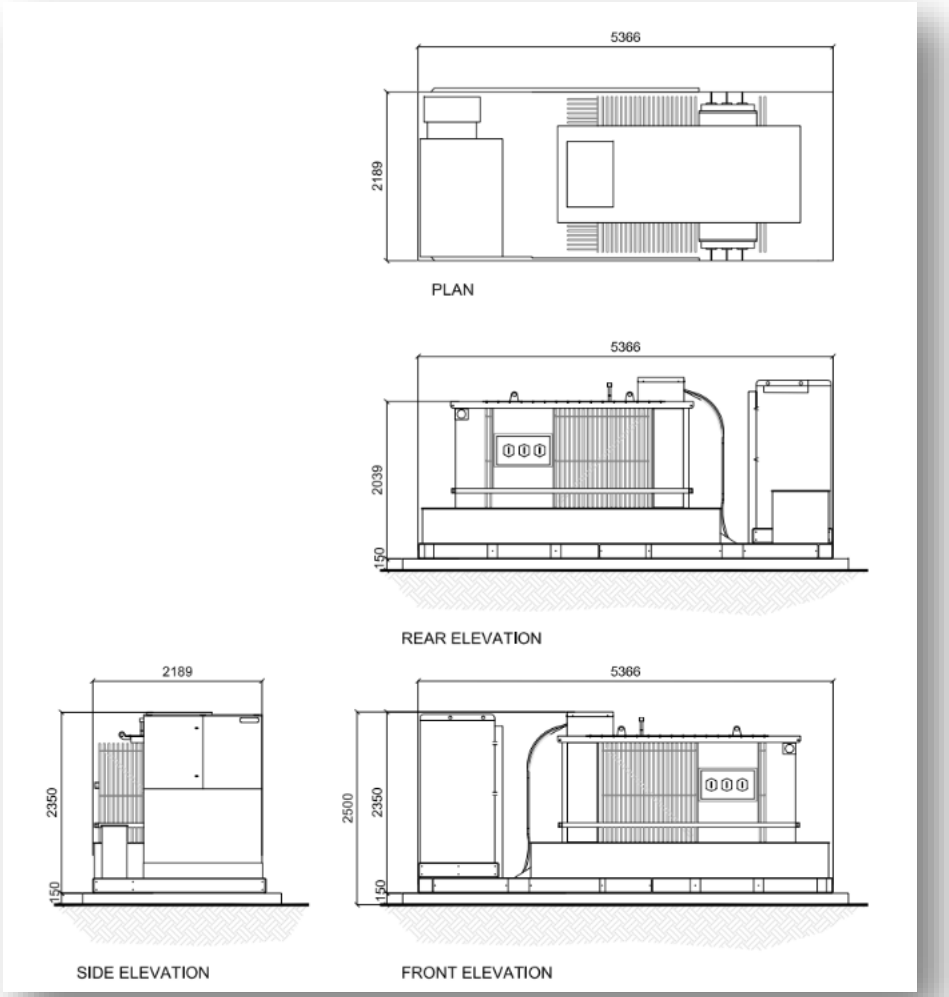
Infrastructure – substation and control rooms

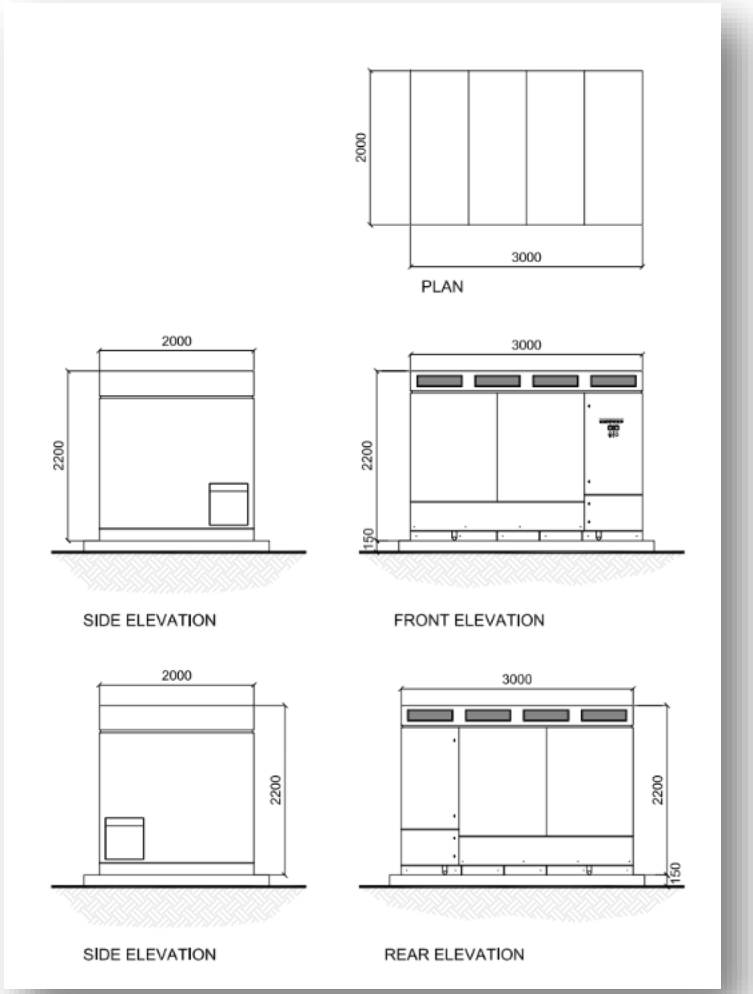




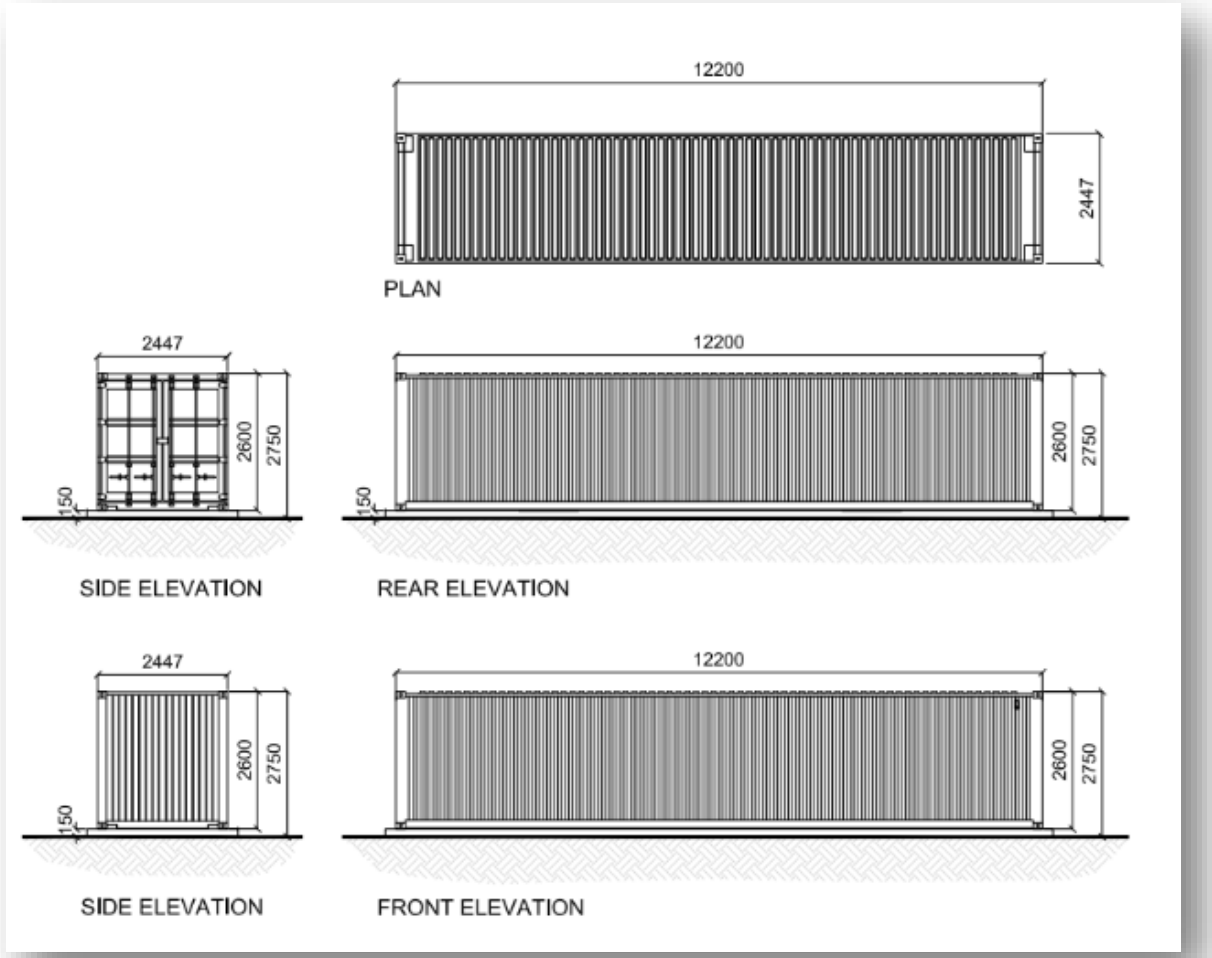


Infrastructure – transformer and inverter

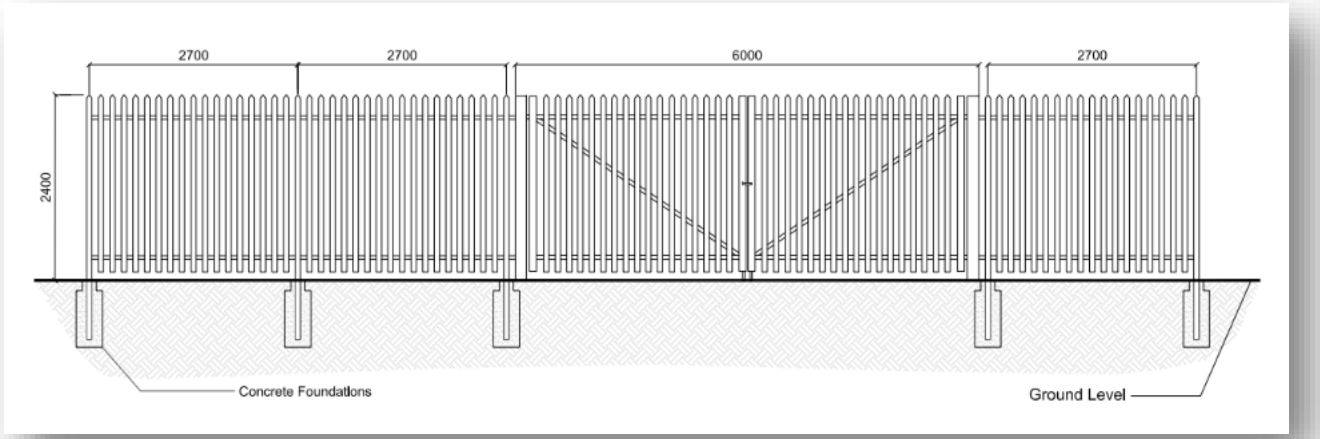


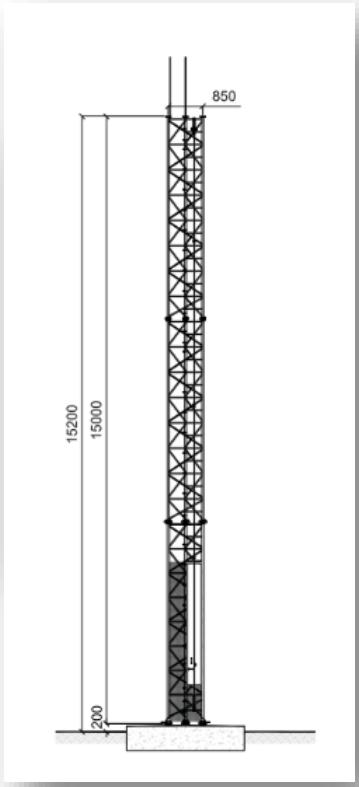


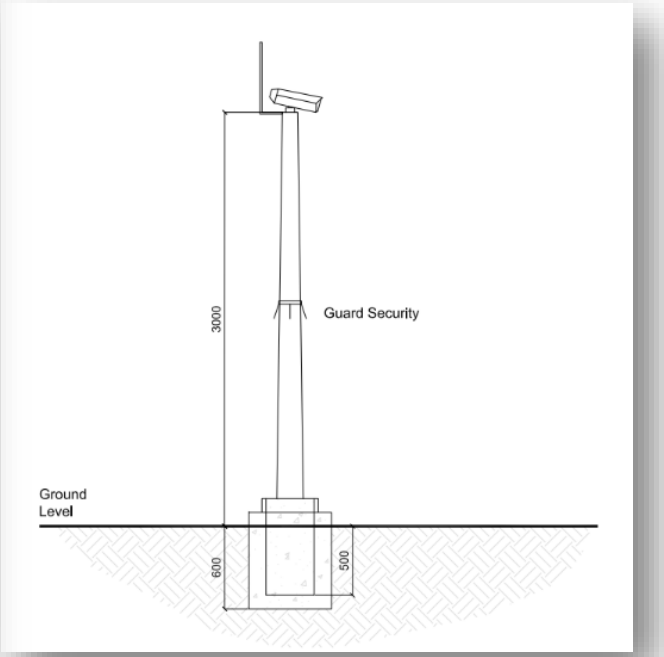
Infrastructure – spare parts container



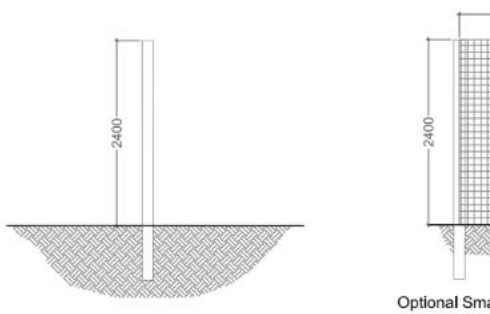
Infrastructure – security (fencing and gate, comms tower & CCTV)



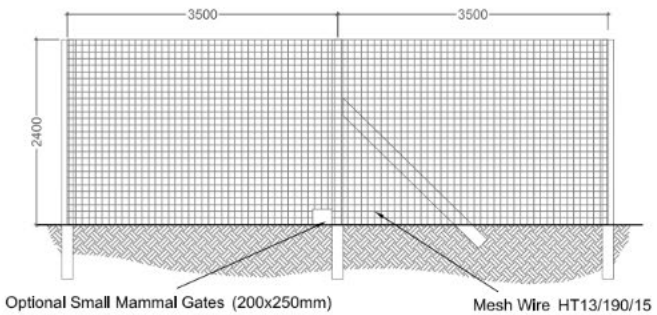




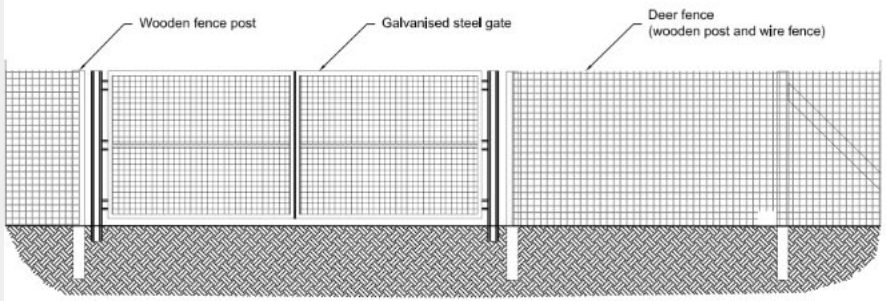
Infrastructure – perimeter fencing



SIDE VIEW

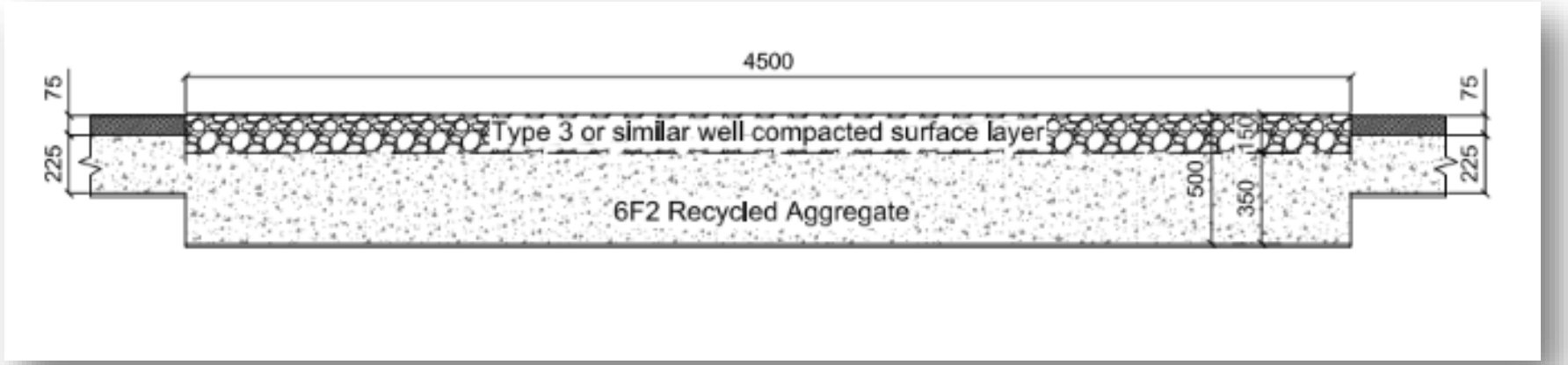


FRONT VIEW



DEER FENCE-ILLUSTRATIVE IMAGE

Infrastructure – access track section



Conclusion

Conclusion

The importance of renewable energy generation and its key role in the response to climate change is recognised at all levels of governance in Wales. Renewable energy generation supports the national economic objective to reduce dependency on fossil fuels and decentralise energy supply. The Welsh Government therefore considers that the wider benefits of renewable energy schemes to society and the economy are significant and should be given substantial weight by decision makers when reaching their decisions on individual planning applications. At a local level, Carmarthenshire County Council declared a climate emergency in 2019. This project contributes to these ambitions.

The design and access considerations of the Proposed Development have been proportionately addressed, and the layout has been designed sensitively in keeping with existing topography and the landscape. Assessments have recognised the potential of the scale of the Proposed Development to cause localised change. However, through effective mitigation the Proposed Development will not have unacceptable adverse impacts on the visual or amenity value or character of the local or wider countryside by way of its siting, scale, form, massing or appearance.

The design has evolved throughout the iterative design stage to respond to the suite of detailed technical surveys and studies undertaken to support this DNS planning application. In addition, the design has responded to the comments and responses received from the local community as part of pre-application consultation and the comments received from statutory and non-statutory consultees to date.

The Proposed Development is compliant with the relevant provisions of the Development Plan by ensuring that the proposals contribute to creating sustainable development that has due regard to the context of the local, natural environment, access design requirements and conservation of distinctive landscape and heritage features and ecological designations.

At the end of the Proposed Development's lifespan, the Site can not only be restored to its current use but will also have been improved for future generations.

Image: **resuimages**