

Parc Solar Caenewydd, Swansea

Sequential Site Selection Report

Development of National Significance in the Renewable Energy Sector
Application Submission



Parc Solar Caenewydd, Gowerton

Sequential Site Selection Report

28/11/2023



www.lowcarbonalliance.co.uk

Site Selection Methodology

This Sequential Site Selection Report has been developed in line with Welsh Government's toolkit for the strategic identification of renewable energy sites (Practice Guidance - Planning for Renewable and Low Carbon Energy - A Toolkit for Planners September 2015 edition). The toolkit sets out a clear requirement for the assessor to consider and balance a range of constraints when identifying sites.

In addition, paragraph 5.9.21 of Planning Policy Wales (PPW; 2021) provides the following guidance for renewable energy schemes:

"Prior to an application being submitted, developers for renewable and low carbon energy developments should, wherever possible, consider how to avoid, or otherwise minimise, adverse impacts through careful consideration of location, scale, design and other measures."

PPW's reference to 'wherever possible' is relevant to note. The Welsh Government therefore accepts that there may be circumstances where little can be done to mitigate the direct effects of that scheme.

Of relevance to this project is also paragraph 6.4.21 of PPW, which states (inter alia) that *"the first priority for planning authorities is to avoid damage to biodiversity and ecosystem functioning. Where there may be harmful environmental effects, planning authorities will need to be satisfied that any reasonable alternative sites that would result in less harm, no harm or gain have been fully considered"*.

Solar PV resource is discussed in E1.7 and explains that *"... local authorities should identify and allocate areas for potential PV farm projects. Solar PV farms, by nature, are most usually situated in rural settings away from residential settlements and where the solar resource is least constrained. This can mean that there is often no opportunity to utilise the power generated in buildings, therefore, an economically viable (relatively short distance from the solar array to an appropriate connection point) route to the electricity grid is required"*.

Project Sheet K of the toolkit deals specifically with solar PV and acknowledges that *"there is currently no standard agreed approach to constraints mapping for Solar PV Farms. This section therefore provides a potential approach on how to undertake a high-level assessment of the potential solar resource from 'standalone' PV farms in your local authority area"*.

Whilst the toolkit highlights that *"it is not appropriate to consider all site level issues as part of this high-level assessment"*, it accepts that *"other more detailed steps may be best assessed at the planning application stage for an individual site. Such activities might include:*

- *landscape sensitivity analysis*
- *distance to the nearest appropriate electricity grid connection, if electricity is to be exported*
- *proximity to public rights of way, bridle ways."*

Site Selection Methodology

The suggested methodology sets out the following steps:

Step 1: Map locations of built-up areas and infrastructure – The location of built-up areas and existing infrastructure will significantly constrain any deployment of large-scale stand-alone PV farms.

Step 2: Map further environmental and heritage constraints – Such as woodland areas, lakes and rivers, Special Protection Area (SPA), Special Area of Conservation (SAC), Candidate Special Area of Conservation (cSAC), RAMSAR sites, National Nature Reserves (NNR), Local Nature Reserves (LNR), Site of Special Scientific Interest (SSSI), Marine Nature Reserves (MNR), Scheduled Ancient Monuments (SAM), and Areas of Outstanding Natural Beauty (AONB).

Step 3: Map areas of suitable slope and topology – Solar PV performance is directly related to the inclination, orientation and shading and thus individual site surveys are ideal when determining site suitability.

Step 4: Addressing cumulative impact – Considering built/operational solar farm.

Step 5: Assessing potential installed capacity and energy output – According to the 'DECC UK Solar PV Strategy Part 1: Roadmap to a Brighter Future' the land area required for a 1MW fixed-tilt PV array is approximately 6 acres (or 2.4ha or 0.024km²). This figure should be used to determine the potential installed capacity of each site. It is recommended that a cut off equivalent to 0.5MW (i.e. 3 acres, 1.2ha or 0.012km²) is applied, as any sites smaller than this are less likely to be viable (commercially speaking) for development.

Step 6: Map locations of suitable Agricultural Land Classification and apply further constraints, as necessary – The aim is to protect best and most versatile agricultural land, however it is noted that diversification helps to support agriculturally based business and promotes multi-functional land uses in some cases. Suitability would be assessed on a case-by-case basis where necessary.

Using the above toolkit methodology, an overall assessment of identified alternatives sites was subsequently carried out which is summarised and concluded at the end of this document.

Contents Page

Point of Connection	5
AONB and SINCC	6
Search Area for Potential Points of Connection (POCs)	7
Environmental Protections	8
Agricultural Land Classification (ALC)	9
Brownfield Sites	10
Other Constraints and Considerations	11
Swansea Local Development Plan	12
Search Area with Restrictions and Constraints – Summary	13
Sites Identified	14
Alternative Sites Identified in the Search Area	15
Site 1	16
Site 1: ALC	17
Site 2	18
Site 2: ALC	19
Site 3 (Parc Solar Caenewydd Gowerton)	20
Site 3 (Parc Solar Caenewydd Gowerton): ALC	21
Site 4	22
Site 4: ALC	23
Site 4: Land Ownership	24
Site 4.1	25
Site 4.1: ALC	26
Alternative Sites Constraints Summary	27
Conclusions	28

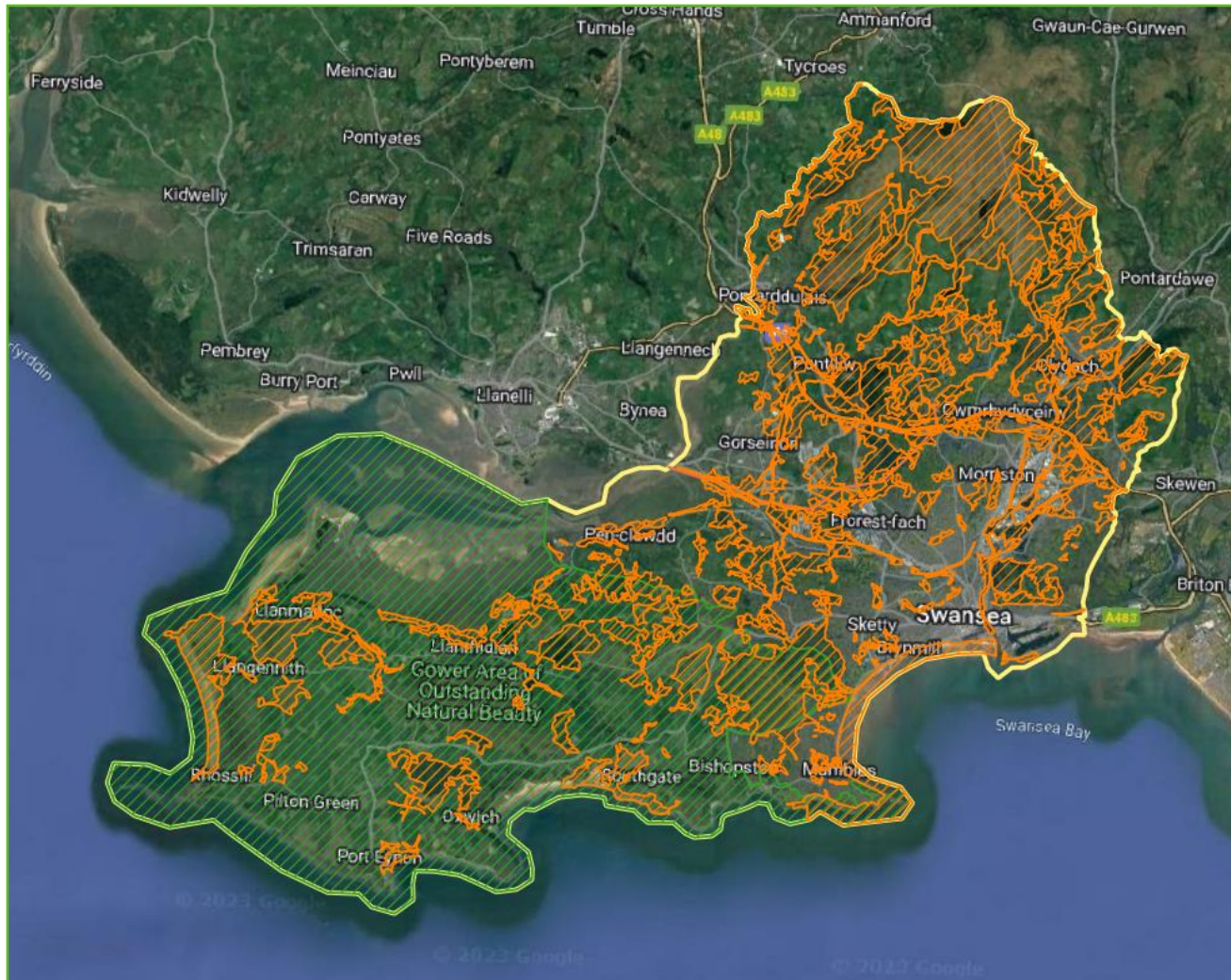
Point of Connection



A 132kV OH line with capacity runs southwest/west from the Swansea North Substation.

Swansea Administrative Area
132kV line

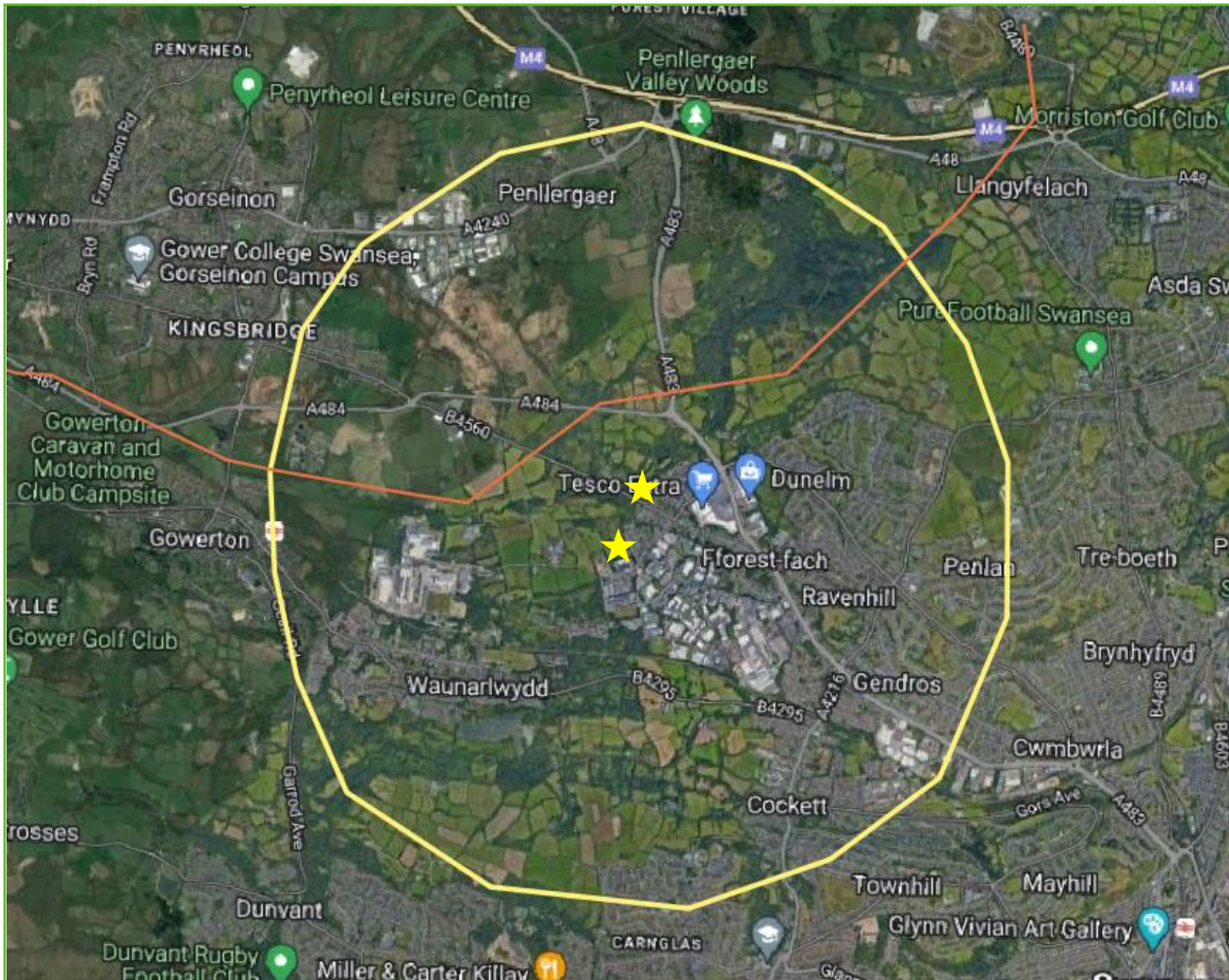
AONB and SINC



The Swansea Administrative Area contains a large area of AONB (Gower Area of Outstanding Natural Beauty) in the southwest and widespread Sites of Importance for Nature Conservation (SINC) throughout.

- Swansea Administrative Area
- 132kV line
- Area of Outstanding Natural Beauty
- Site of Importance for Nature Conservation

Search Area for Potential Points of Connection (POCs)



- POCs Constraints Boundary 2.5km
- 132kV line
- ★ Proposed POCs

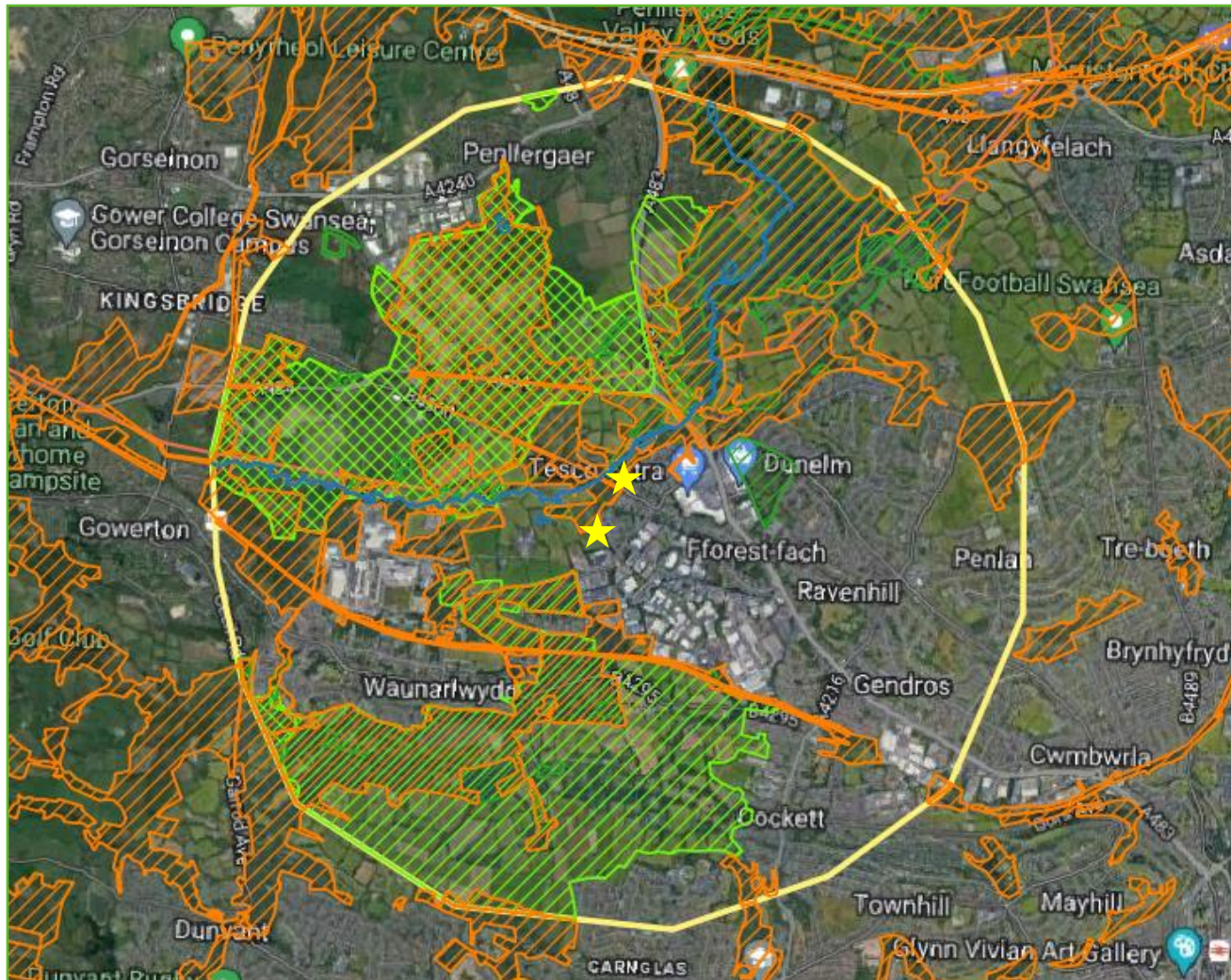
Two potential POCs were established with capacity by the DNO.

Following discussions with the DNO in respect of availability of capacity for solar generation and import capacity for battery storage around the Swansea area, the Applicant was advised to consider the high voltage 132kV line running from the west to Swansea North Substation.

The nature of the OHL voltage and associated cost of the connection meant that a scheme of 35-50MW would be required for financial viability which would require 125-200 acres.

A 2.5km search radius was established around the potential POCs. Due to the higher cost of cables, their installation and connection infrastructure associated with a higher voltage network of 132kV, the Applicant considered that any distance greater than 2.5km search area would be unviable.

Environmental Protections



SINC; ancient woodland; local nature reserve; SSSI; Green Wedge; and landscape protection designations were eliminated from the search area.

- Environmental Protections
- Rivers and Lakes
 - Site of Importance for Nature Conservation
 - Ancient Woodland
 - Local Nature Reserve
 - Site of Special Scientific Interest
 - Greenwedge
 - Landscape Protection

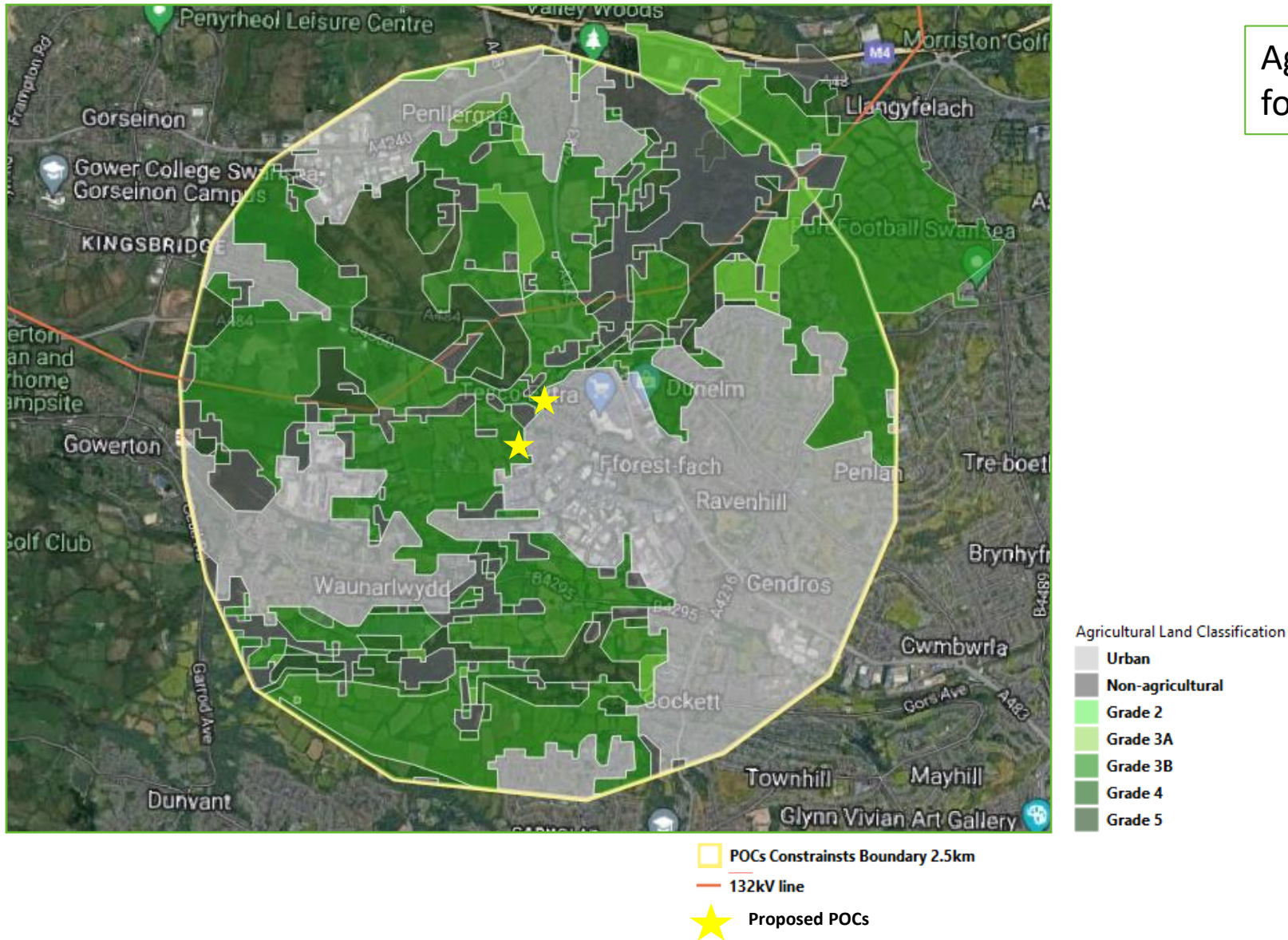
POCs Constraints Boundary 2.5km

132kV line

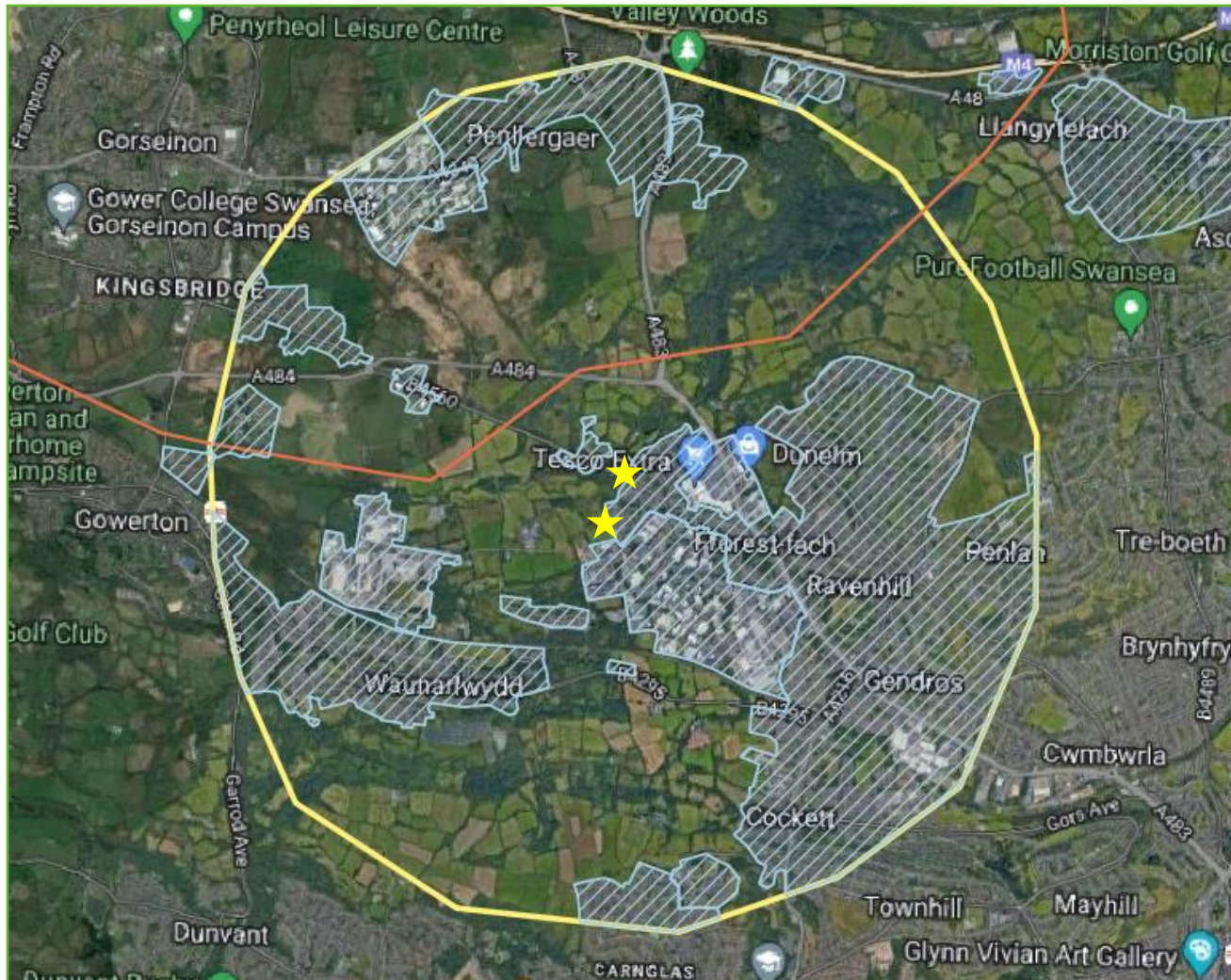
Proposed POCs

Agricultural Land Classification (ALC)

Agricultural land classification for the search area.



Brownfield Sites



Brownfield sites were considered and eliminated based on non-availability of suitable land to accommodate the proposed development within the area of search.

Settlement Boundaries and other Infrastructure

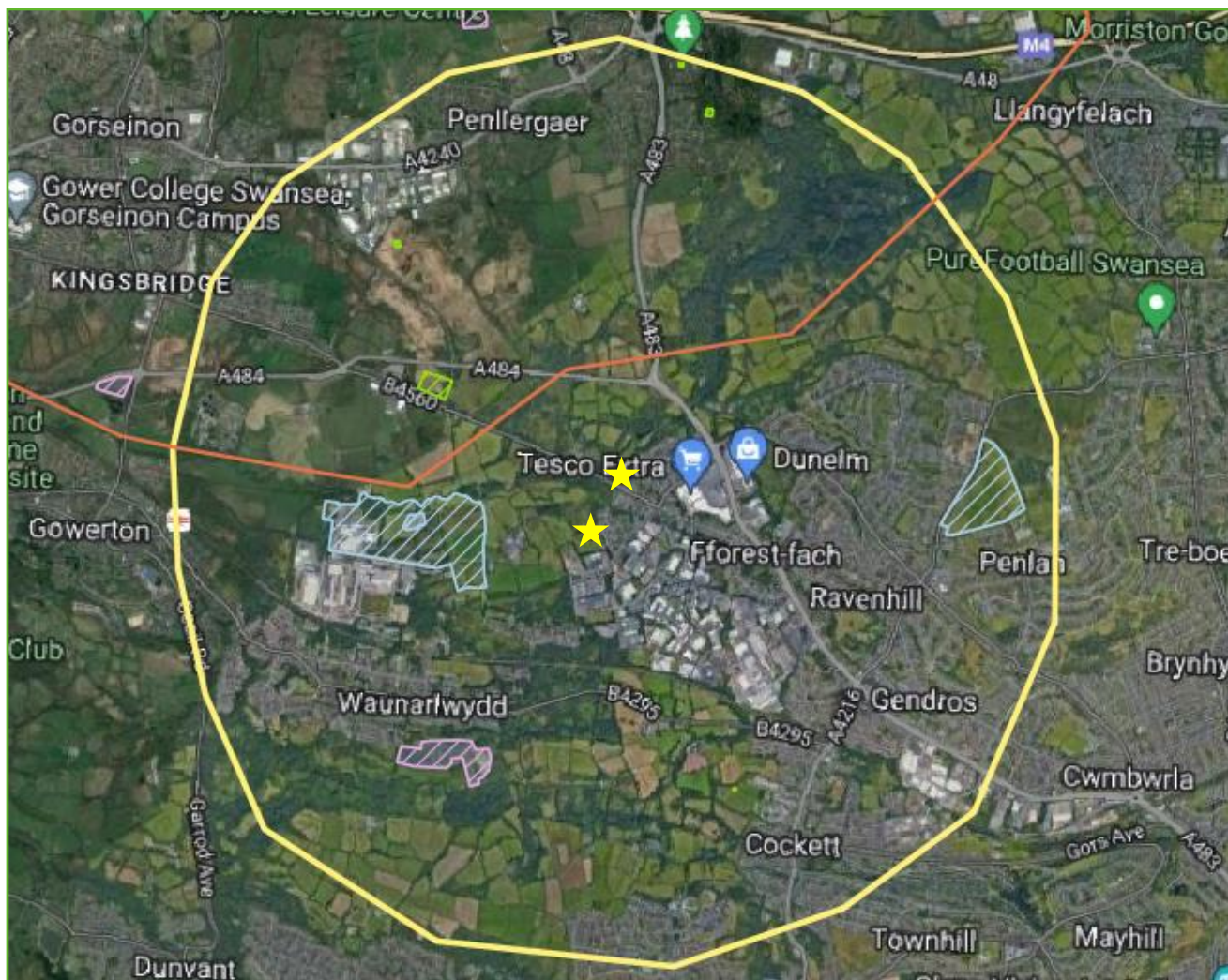
- Settlement Boundary
- Industrial Park
- Gorseinon Motorpark
- Cefn Coed Hospital
- Water Treatment Works

POCs Constraints Boundary 2.5km

132kV line

Proposed POCs

Other Constraints and Considerations

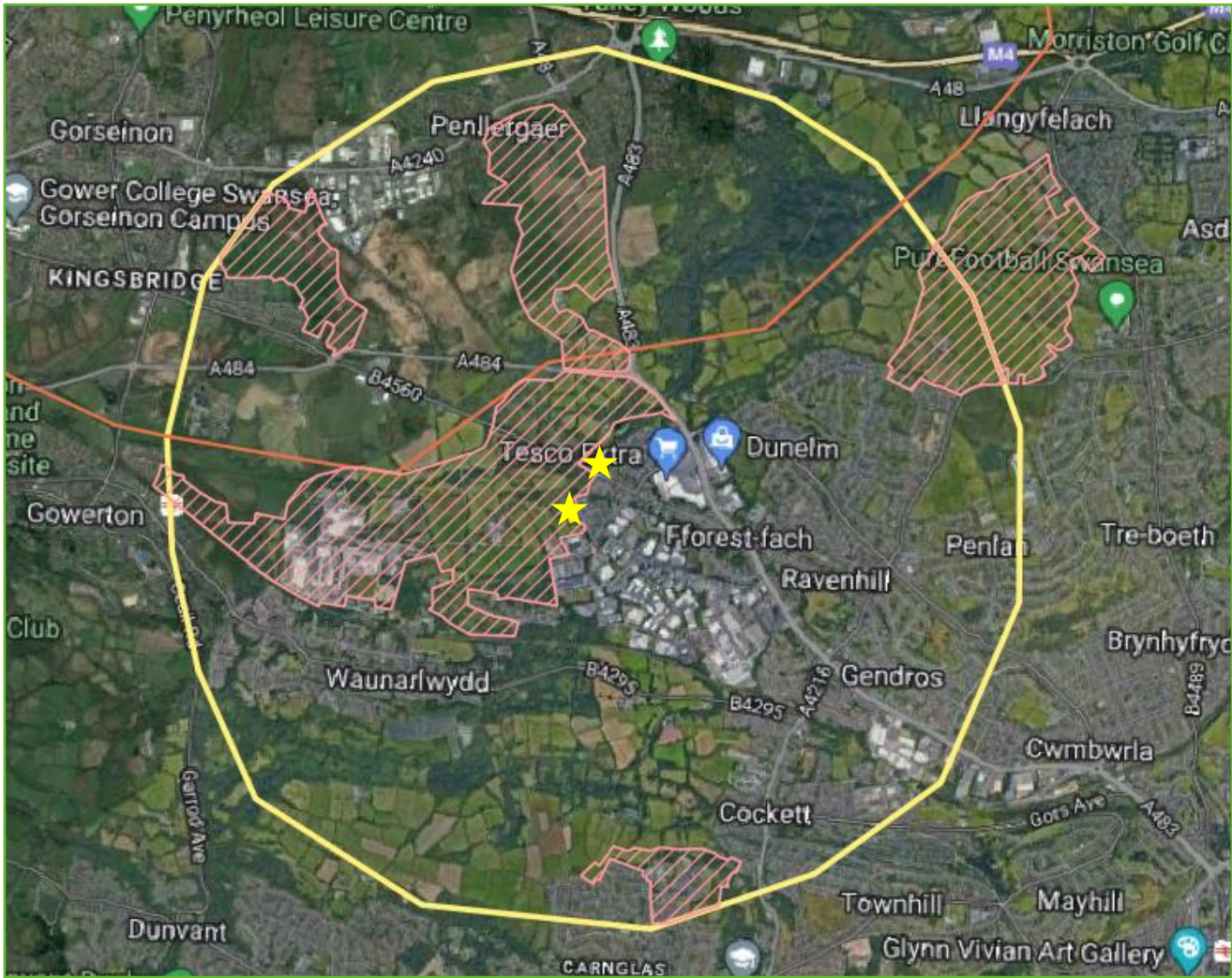


Existing low carbon energy schemes; scheduled ancient monuments; Timet UK land; and playing fields were eliminated from the search area.

- POCs Constraints Boundary 2.5km
- 132kV line
- Proposed POCs

- Existing Low Carbon Energy Schemes
 - Existing Solar Farms
 - Greenfrog Battery Scheme
- Scheduled Ancient Monuments
 - Scheduled Ancient Monuments
- Other Infrastructure/Restrictions
 - Timet UK
 - Playing Field

Swansea Local Development Plan



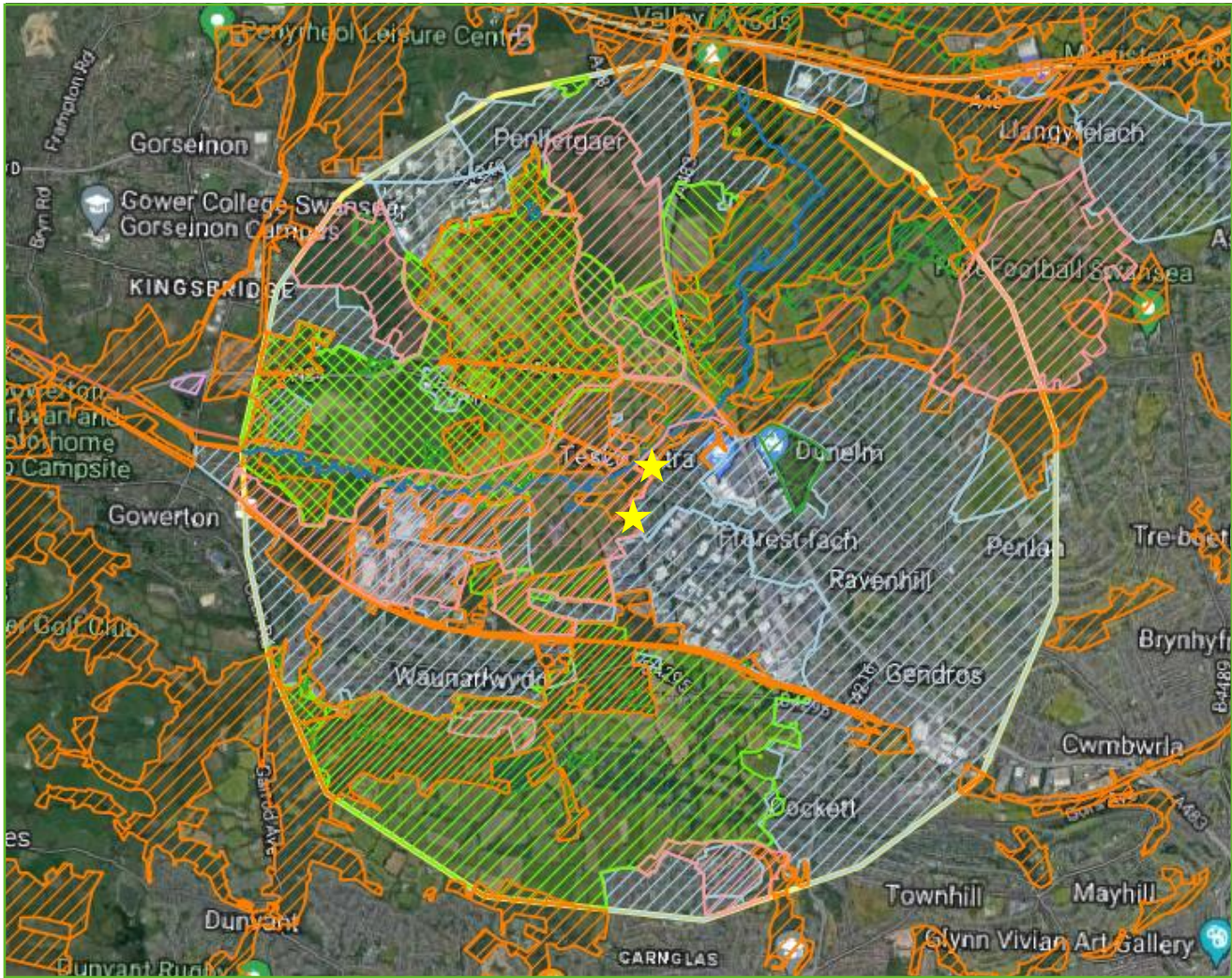
Swansea LDP allocated development land was eliminated from the search area.

- POCs Constraints Boundary 2.5km
- 132kV line
- Proposed POCs

- LDP Allocated Land
- LDP Cefn Coed Hospital, Cockett Development
 - LDP West of Llangyfelach Road, Penderry Development
 - LDP South of A4240 Parc Mawr Penllergaer Development
 - LDP North of Garden Villiage Development
 - LDP North of Waunarlwydd/Fforestfach Development

Search Area with Restrictions and Constraints - Summary

Summary of all identified restrictions and constraints within the search area.

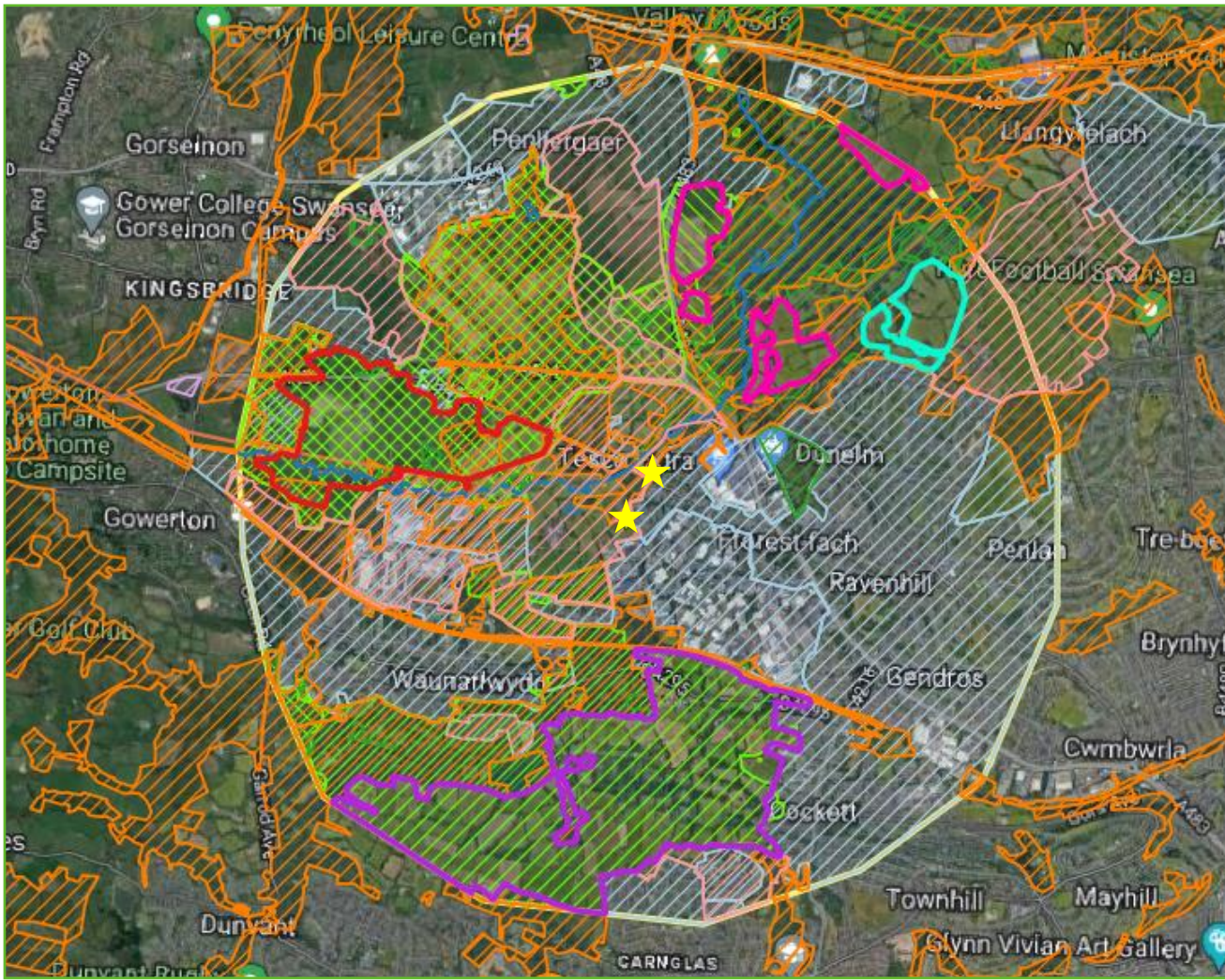


- Environmental Protections**
 - Rivers and Lakes
 - Site of Importance for Nature Conservation
 - Ancient Woodland
 - Local Nature Reserve
 - Site of Special Scientific Interest
 - Greenwedge
 - Landscape Protection
- Settlement Boundaries and other Infrastructure**
 - Settlement Boundary
 - Industrial Park
 - Gorseinon Motorpark
 - Cefn Coed Hospital
 - Water Treatment Works
- Existing Low Carbon Energy Schemes**
 - Existing Solar Farms
 - Greenfrog Battery Scheme
- Scheduled Ancient Monuments**
 - Scheduled Ancient Monuments
- Other Infrastructure/Restrictions**
 - Timet UK
 - Playing Field
- LDP Allocated Land**
 - LDP Cefn Coed Hospital, Cockett Development
 - LDP West of Llangyfelach Road, Penderry Development
 - LDP South of A4240 Parc Mawr Penllergaer Development
 - LDP North of Garden Villiage Development
 - LDP North of Waunarlywydd/FforestfachDevelopment

- POCs Constraints Boundary 2.5km
- 132kV line
- Proposed POCs

Sites Identified

Potential sites 1-4 (including the Gowerton site) have been identified following the elimination of restrictions and constraints.

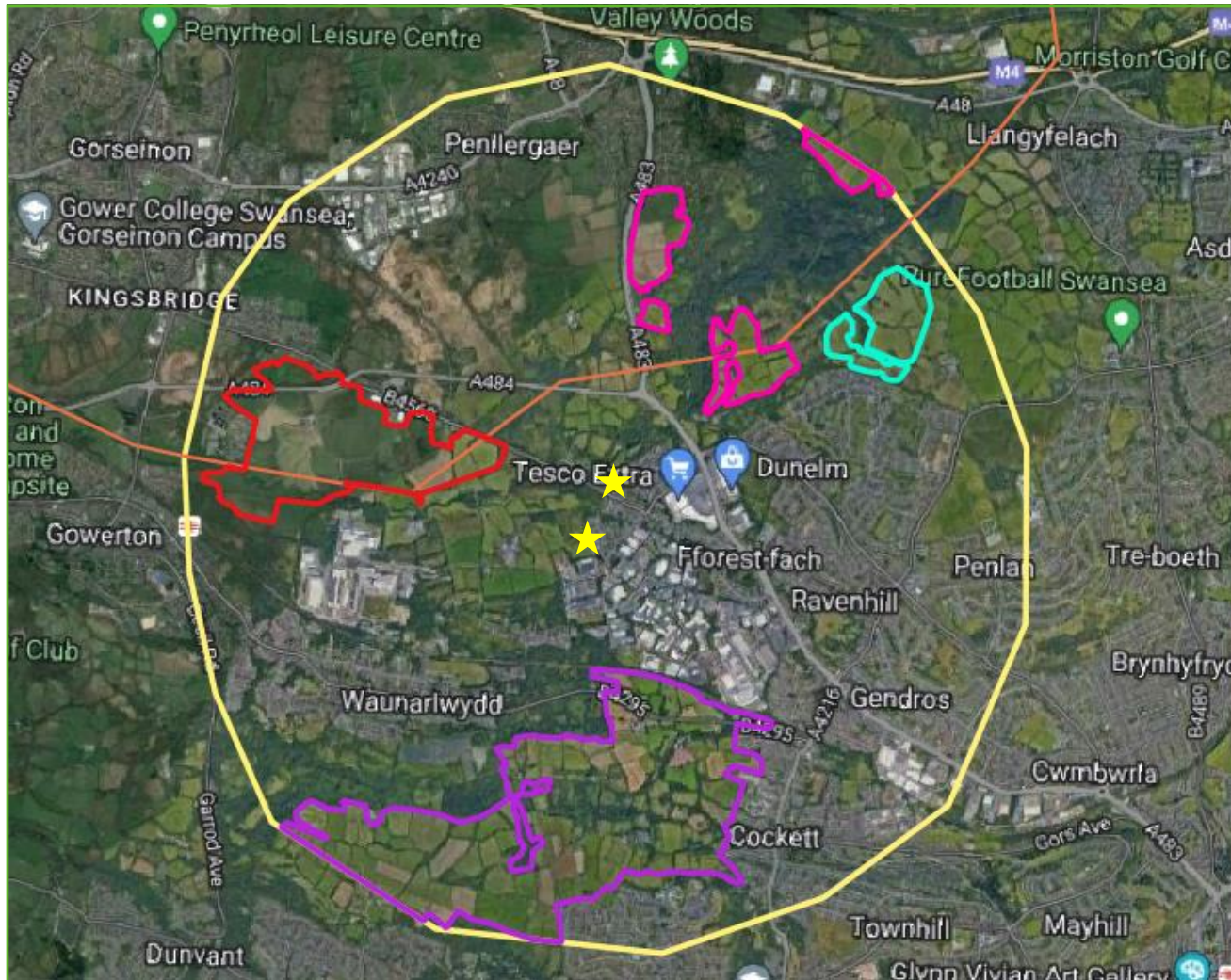


- Environmental Protections**
 - Rivers and Lakes
 - Site of Importance for Nature Conservation
 - Ancient Woodland
 - Local Nature Reserve
 - Site of Special Scientific Interest
 - Greenwedge
 - Landscape Protection
- Settlement Boundaries and other Infrastructure**
 - Settlement Boundary
 - Industrial Park
 - Gowerton Motorpark
 - Cefn Coed Hospital
 - Water Treatment Works
- Existing Low Carbon Energy Schemes**
 - Existing Solar Farms
 - Greenfrog Battery Scheme
- Scheduled Ancient Monuments**
 - Scheduled Ancient Monuments
- Other Infrastructure/Restrictions**
 - Timet UK
 - Playing Field
- LDP Allocated Land**
 - LDP Cefn Coed Hospital, Cockett Development
 - LDP West of Llangyfelach Road, Penderry Development
 - LDP South of A4240 Parc Mawr Penllergaer Development
 - LDP North of Garden Villiage Development
 - LDP North of Waunarlywydd/FforestfachDevelopment

- Potential Sites
- Potential Site 1
- Potential Site 2
- Gowerton Site Boundary
- Potential Site 4
- POCs Constraints Boundary 2.5km
- 132kV line
- Proposed POCs

Alternative Sites Identified in the Search Area

Potential sites identified in the search area.



POCs Constraints Boundary 2.5km

132kV line

Proposed POCs

Potential Sites

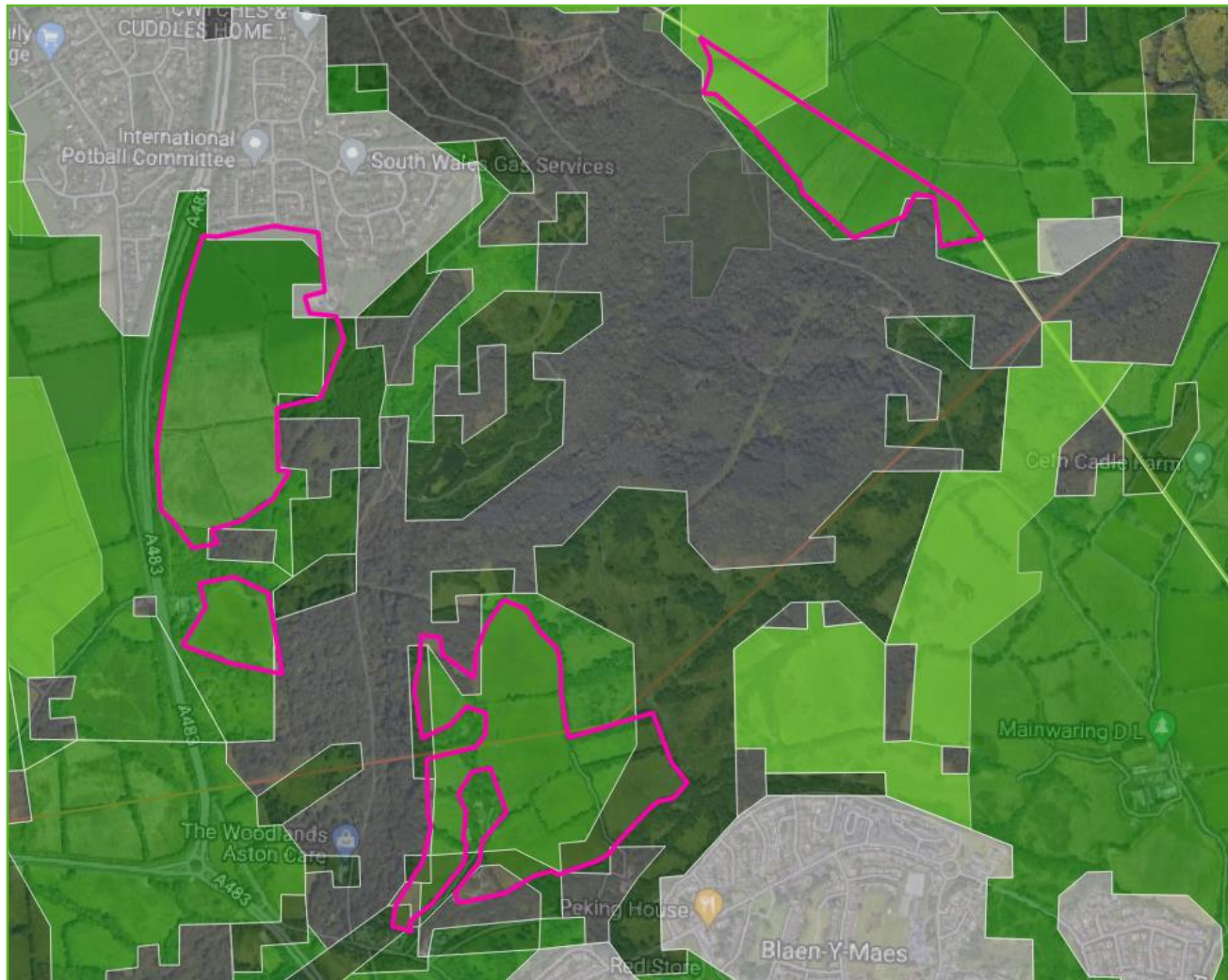
Potential Site 1

Potential Site 2

Gowerton Site Boundary

Potential Site 4

Site 1: ALC



Site 1 is located mostly within ALC grade 3B land.

A small northwestern section of the northern-most land parcel contains BMV grade 3A.

A small eastern section of the southern-most land parcel is located within grade 5 land.

Agricultural Land Classification

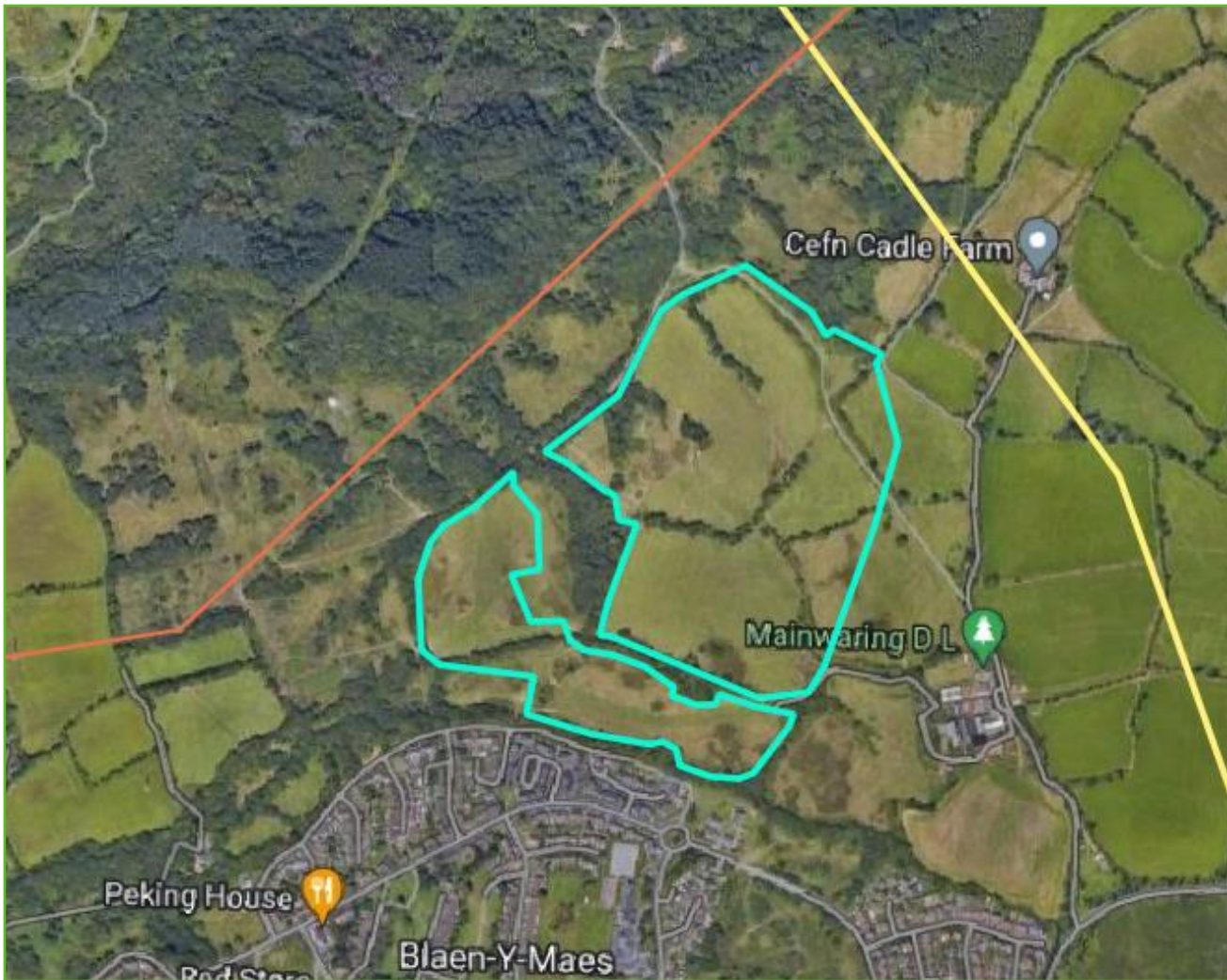
- Urban
- Non-agricultural
- Grade 2
- Grade 3A
- Grade 3B
- Grade 4
- Grade 5

✓ Potential Site 1

POCs Constraints Boundary 2.5km

132kV line

Site 2



□ Potential Site 2

□ POCs Constraints Boundary 2.5km

— 132kV line

Site 2 is made up of 2 land parcels and is located to the Northeast of the POCs.

Total Acreage: 60.

Closest distance to Northern POC is approx. 1.5km.

The landowners are David Richards; Ian Howell and Georgina Llewelyn.

B: Proprietorship Register / Cofrestr Perchnogaeth

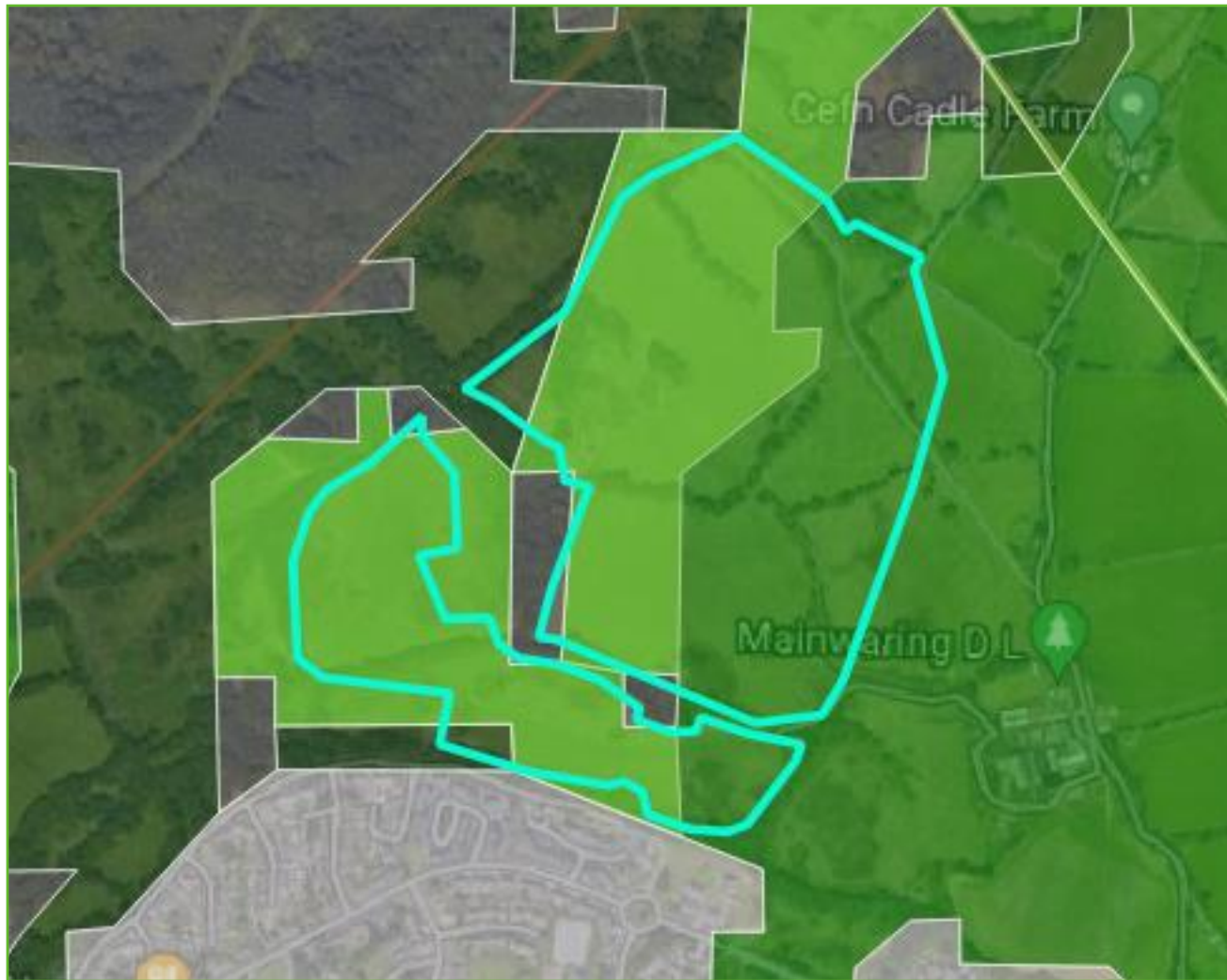
This register specifies the class of title and identifies the owner. It contains any entries that affect the right of disposal.

Mae'r gofrestr hon yn nodi'r math o deit ac yn enwi'r perchennog. Mae'n cynnwys unrhyw gofnodion sy'n effeithio ar yr hawl i waredu.

Title absolute/Teitl llwyr

1 (13.04.2000) PROPRIETOR: DAVID EDWARD KEITH RICHARDS, IAN HOWELL and GEORGINA KATHERINE LLEWELYN of Druslyn House, De La Beche Street, Swansea SA1 3HH.

Site 2: ALC



Site 2 consists of mostly BMV grade 3A land to the west and grade 3B land to the east.

Agricultural Land Classification

- Urban
- Non-agricultural
- Grade 2
- Grade 3A
- Grade 3B
- Grade 4
- Grade 5

Potential Site 2

POCs Constraints Boundary 2.5km

132kV line

Site 3 (Parc Solar Caenewydd Gowerton)



□ Gowerton Site Boundary

□ POCs Constraints Boundary 2.5km

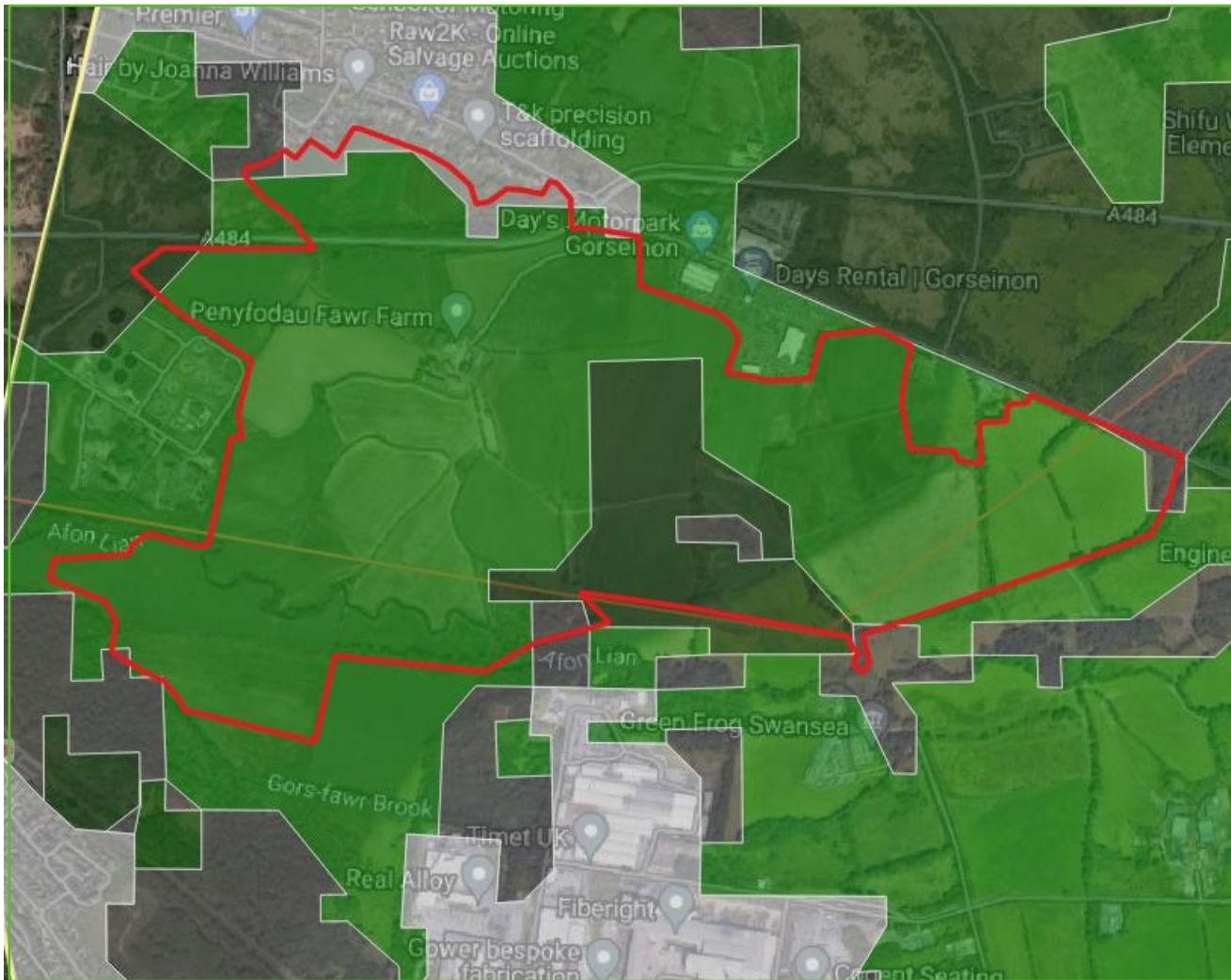
— 132kV line

Site 3 is made up of 1 contiguous land parcel and is located to the west of both POCs.

Total Acreage: 230.

Site is equidistant to both POCs, approx. 670m away.

Site 3 (Parc Solar Caenewydd Gowerton): ALC



□ Gowerton Site Boundary

□ POCs Constraints Boundary 2.5km

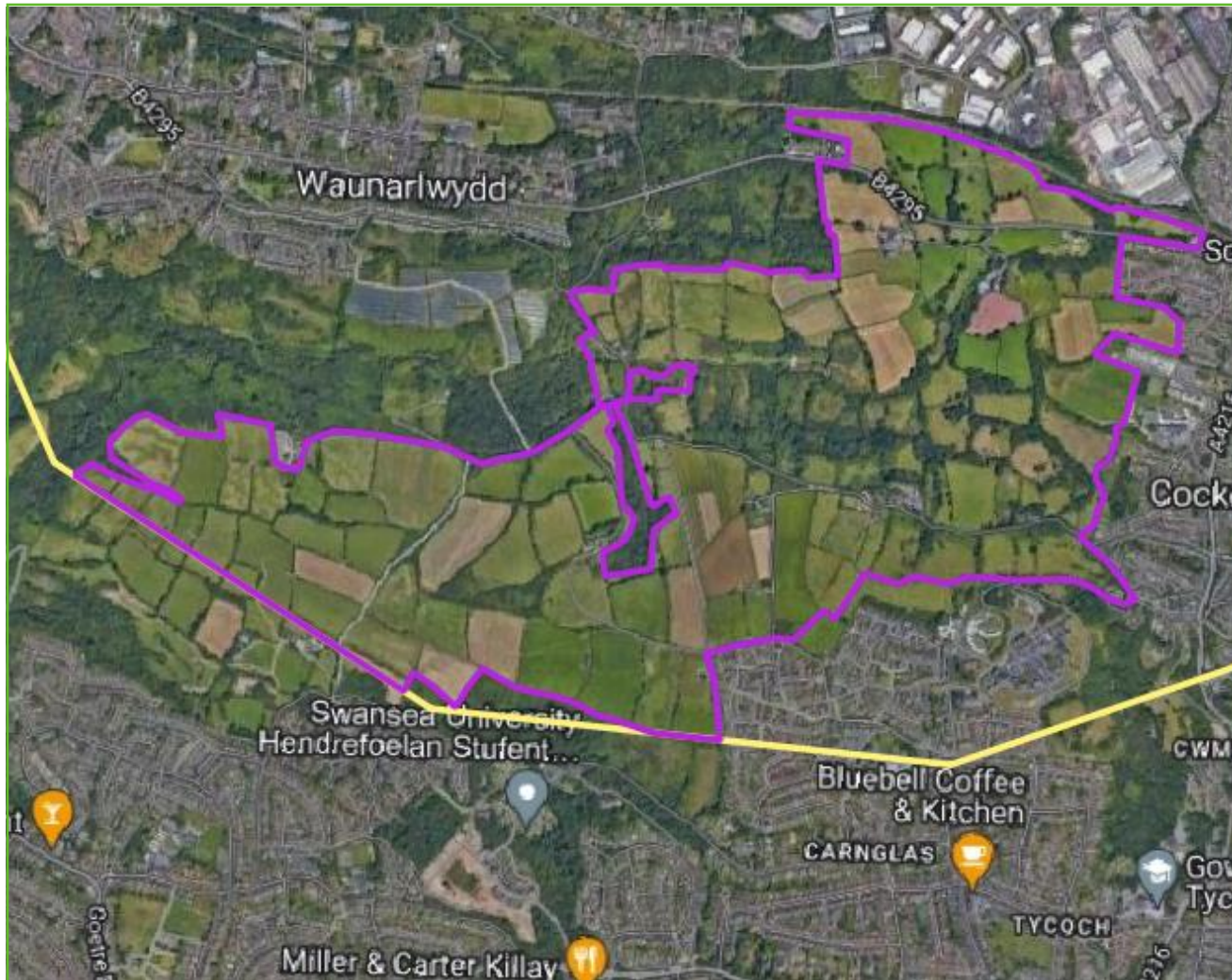
— 132kV line

Site 3 consists mostly of ALC grade 3B land.

A section of grade 5 land exists in the middle of the site.

A small portion of the land in the middle is non-agricultural.

Site 4



□ Potential Site 4

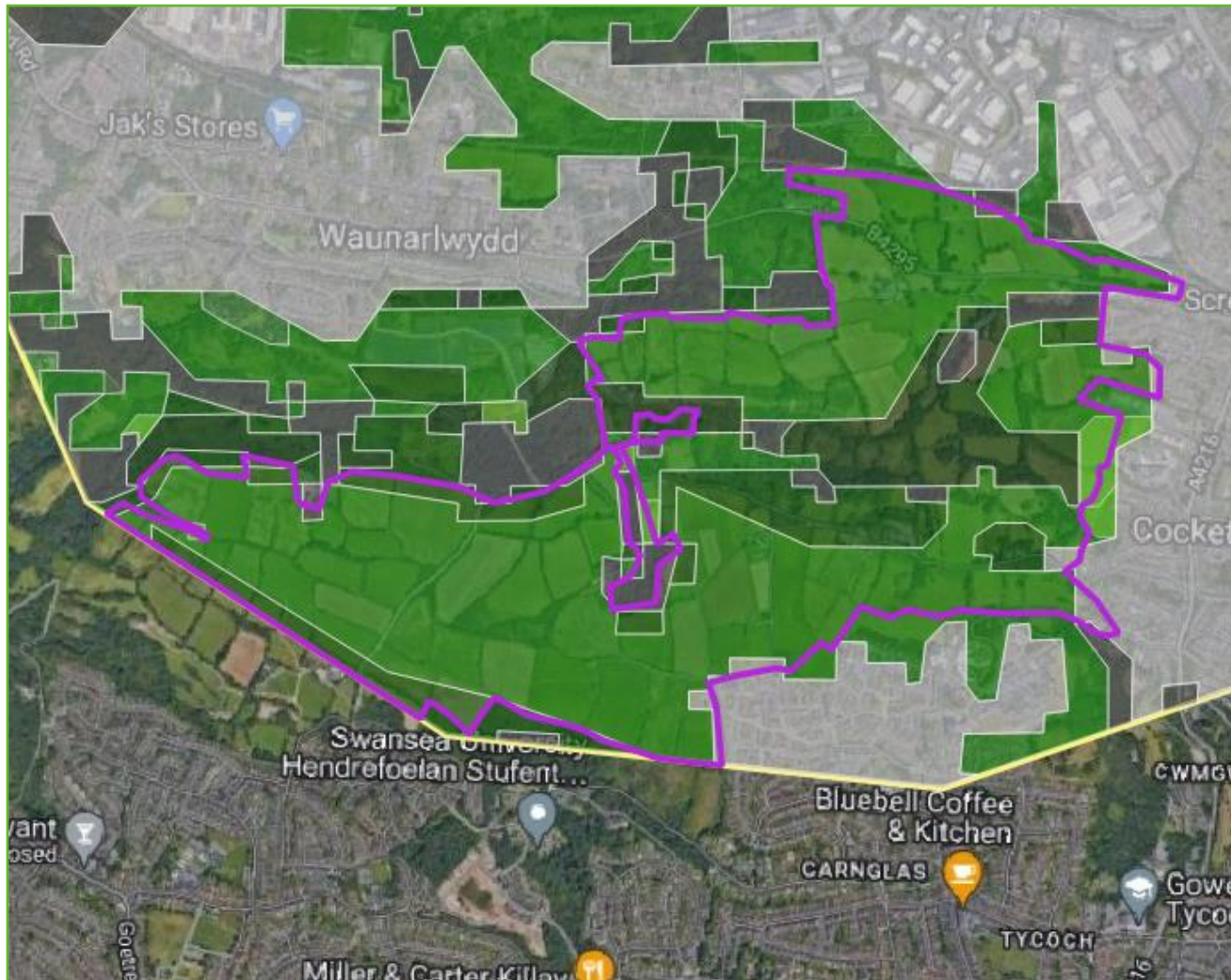
□ POCs Constraints Boundary 2.5km

Site 4 is made up of 1 contiguous land parcel and is located to the south of the POCs.

Total Acreage: 564.

Closest distance to Southern POC is approx. 770m.

Site 4: ALC



□ Potential Site 4

□ POCs Constraints Boundary 2.5km

Agricultural Land Classification

- Urban
- Non-agricultural
- Grade 2
- Grade 3A
- Grade 3B
- Grade 4
- Grade 5

Site 4 consists mostly of ALC grade 3B land.

A band of grade 4 and 5 runs in the east-west direction through the middle of the site.

Site 4: Land Ownership



□ Potential Site 4
□ Potential Site 4.1

□ POCs Constraints Boundary 2.5km

Site 4 is made up predominantly of small individual land parcels with different landowners.

The orange polygons (site 4.1) show the only land assembly which is over 100 acres within site 4.

Site 4.1



□ Potential Site 4.1

□ POCs Constraints Boundary 2.5km

Site 4.1 is made up of 10 individual land parcels with interspersed pockets of woodland areas, lacking connectivity. Site 4.1 is located to the South of both POCs.

Total Acreage: 105.

Closest distance to Southern POC is approx. 940m.

The landowners are Christopher Davies and Rory Hutchings.

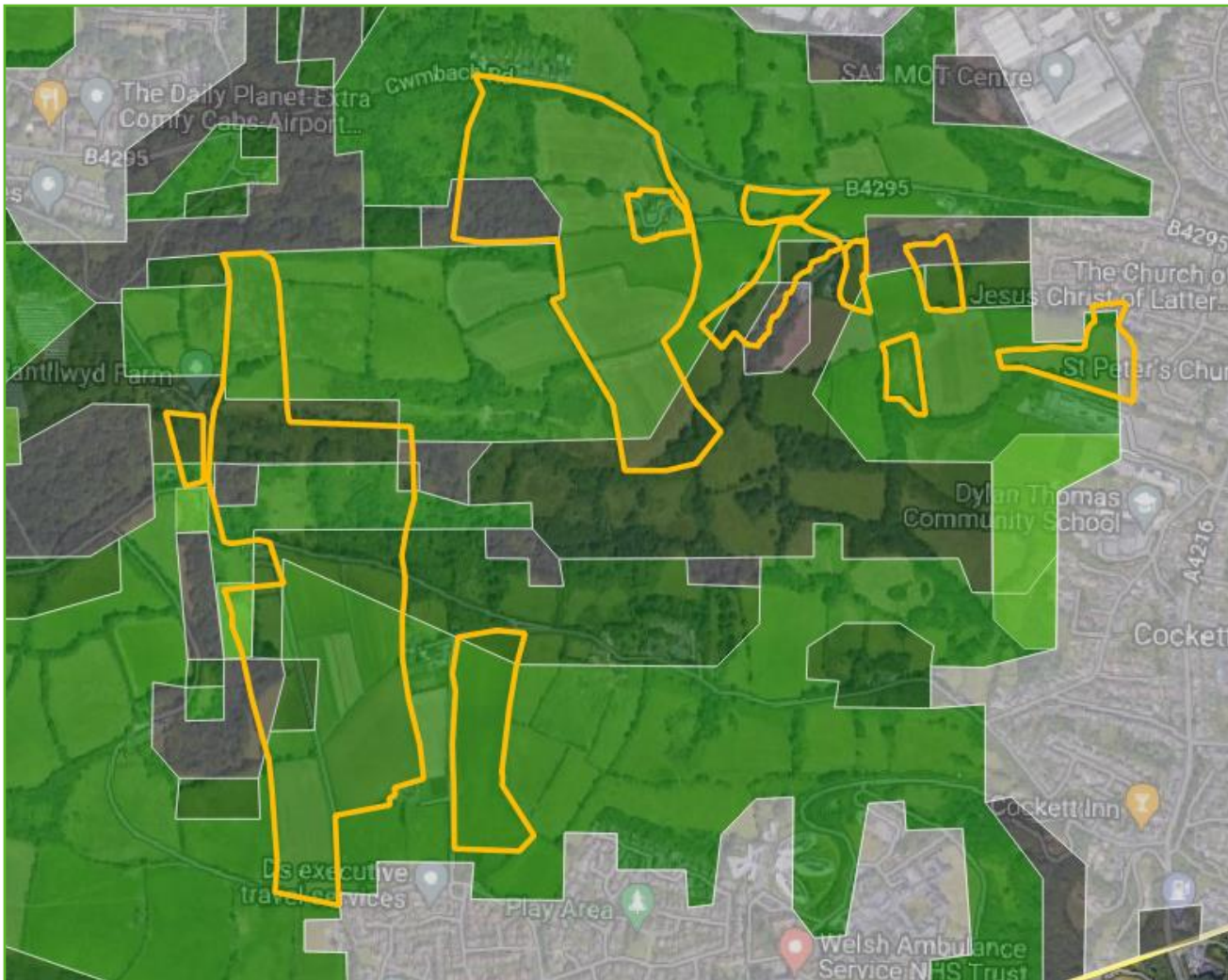
Christopher Wayne Davies

Venture Court, Waterside Business Park, Clos Llyn Cwm,
Swansea Enterprise Park, Swansea, SA6 8AH

Rory Kerr Hutchings

Venture Court, Waterside Business Park, Clos Llyn Cwm,
Swansea Enterprise Park, Swansea, SA6 8AH

Site 4.1: ALC



Orange outline: Potential Site 4.1

Yellow outline: POCs Constraints Boundary 2.5km

The site is mostly located within grade 3B ALC land.

It also contains non-agricultural, BMV grade 3A, grade 4 and grade 5 land.

Alternative Sites Constraints Summary

Constraint	Site 1	Site 2	Site 3: Parc Solar Caenewydd Gowerton	Site 4.1
Size (min. 125 acres required)	103 acres - insufficient	60 acres - insufficient	230 acres	105 acres - insufficient
Distance to POC	718m from northern POC; 132kV line runs through site.	1.5km from northern POC; 132kV line runs through site.	700m from northern and southern POC; 132kV line runs through site.	940m from Southern POC.
Landownership	Single landowner - Penllergaer Estates Limited. This site was discussed with the landowner, who is also the landowner of Site 3, but was not available due to other plans for commercial/residential use.	Not a single landowner - David Richards; Ian Howell and Georgina Llewelyn.	Single landowner - Penllergaer Estates Limited.	Not a single landowner - Christopher Davies and Rory Hutchings.
Environmental constraints	Borders ancient woodland, SSSI, SINC and river Afon Llan; western parcels are within the Green Wedge.	Borders ancient woodland, SSSI and SINC.	Contains 2 small areas of ancient woodland; borders SINC and river Afon Llan; within the Green Wedge and landscape protection designations.	Contains 2 small areas of ancient woodland and small area of SINC; within the landscape protection designation.
ALC – Best and Most Versatile	Mostly grade 3B, small portions of BMV and grade 5.	Mostly BMV and grade 3B.	Contains no BMV. Mostly grade 3B, section of grade 5 and small sections of non-agricultural.	Contains some BMV. Mostly grade 3B, but also non-agricultural and grades 4 and 5.
Heritage constraints	Borders 4 listed buildings; approx. 317m from a scheduled ancient monument; approx. 624m from closest listed building.	No heritage constraints.	Approx. 60m from a scheduled ancient monument, separated by the A4560 (Swansea Road).	Approx. 416m and 454m from 2 listed buildings.
Residential amenity	The village of Penllergaer abuts to the north.	The housing estate of Blaen-Y-Maes abuts to the south.	Some residential dwellings abut the northern boundary.	Eastern and southern parcels abut the communities of Cockett and Carnglas.
Topography, orientation and shading	Steep gradient; surrounded by woodland. Southern parcel is primarily westerly/north-westerly facing. Western and northern parcels are primarily southerly/south-westerly facing.	Steep gradient; patch of woodland between parcels – shading impact. Parcels are primarily westerly/north-westerly facing.	Relatively flat gradient. Parcels are primarily southerly/south-westerly/south-easterly/westerly facing.	Steep gradient; woodland covering 17 acres of site – shading impact. Majority of parcels are northerly/north-easterly/north-westerly facing.
Cumulative impact	1.3km from existing 5-acre solar farm.	No existing solar farm within 2.5km.	514m from existing 3-acre solar farm.	230m from existing 20-acre solar farm.

Conclusions

- The methodology applied by the Applicant follows the toolkit methodology published by Welsh Government.
- There is no policy requirement to identify the 'best site' for development, and Applicant has assessed that, within the relevant environmental, heritage and nature conservation constraints, there is no obvious site that performs better in environmental terms.
- There are no appropriate brownfield or previously used sites over 125 acres available within the defined search area to accommodate the proposed development.
- The only line where this solar energy project could feasibly be connected to the grid in this region is the 132kV OH line which runs in south-westerly/westerly direction from Swansea North Substation, in line with the DNO's requirements.
- 3 potential alternative sites were identified, but none represented an improvement when compared to the application site, given similar or higher quality environmental habitats that would be potentially harmed by the proposals.
- This document provides a robust and logical site assessment of environmental, heritage and physical constraints within the search area to review potential options for delivering this 44MW solar farm proposal and it is therefore concluded that the proposed site has been deemed to be the most appropriate.