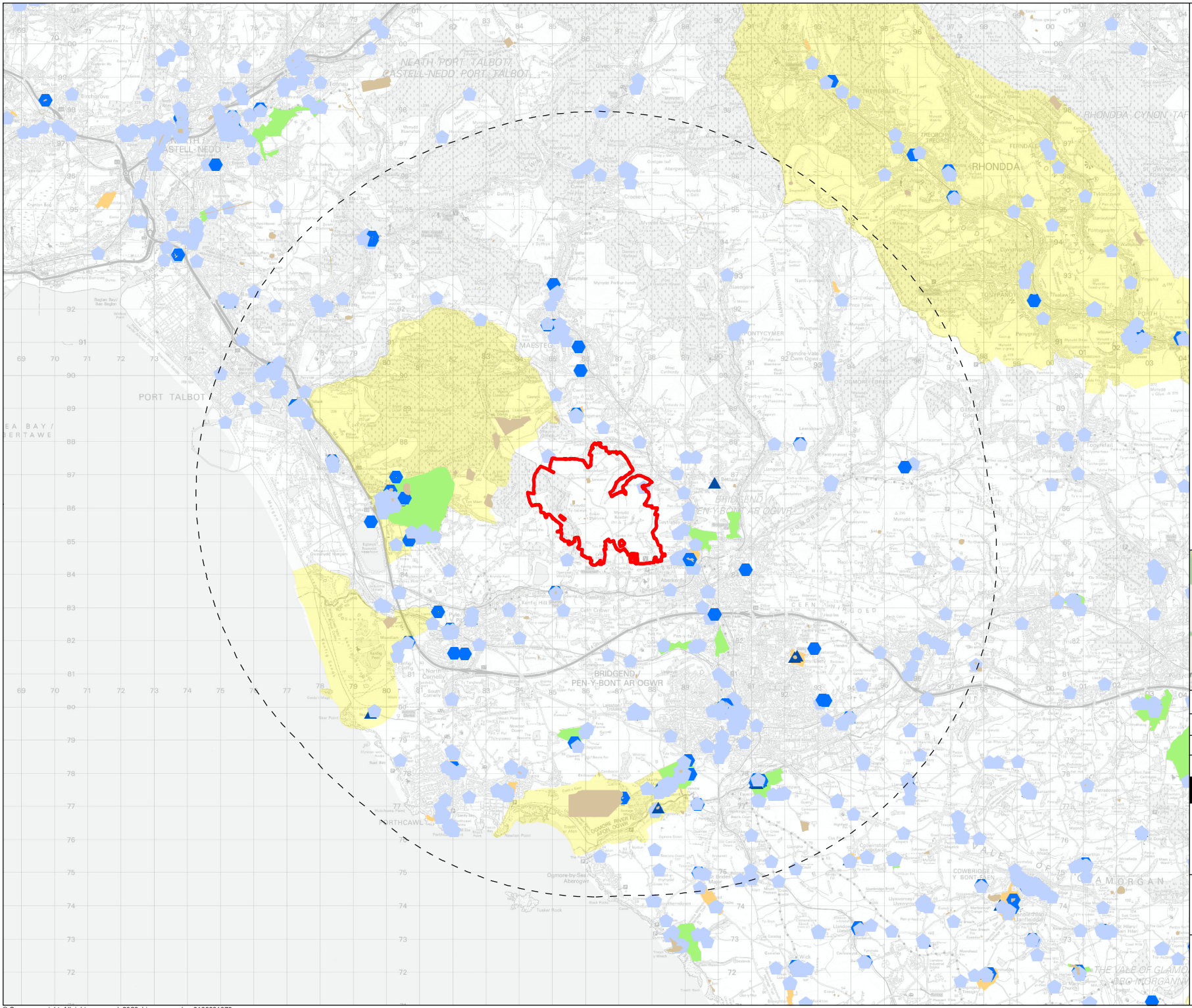
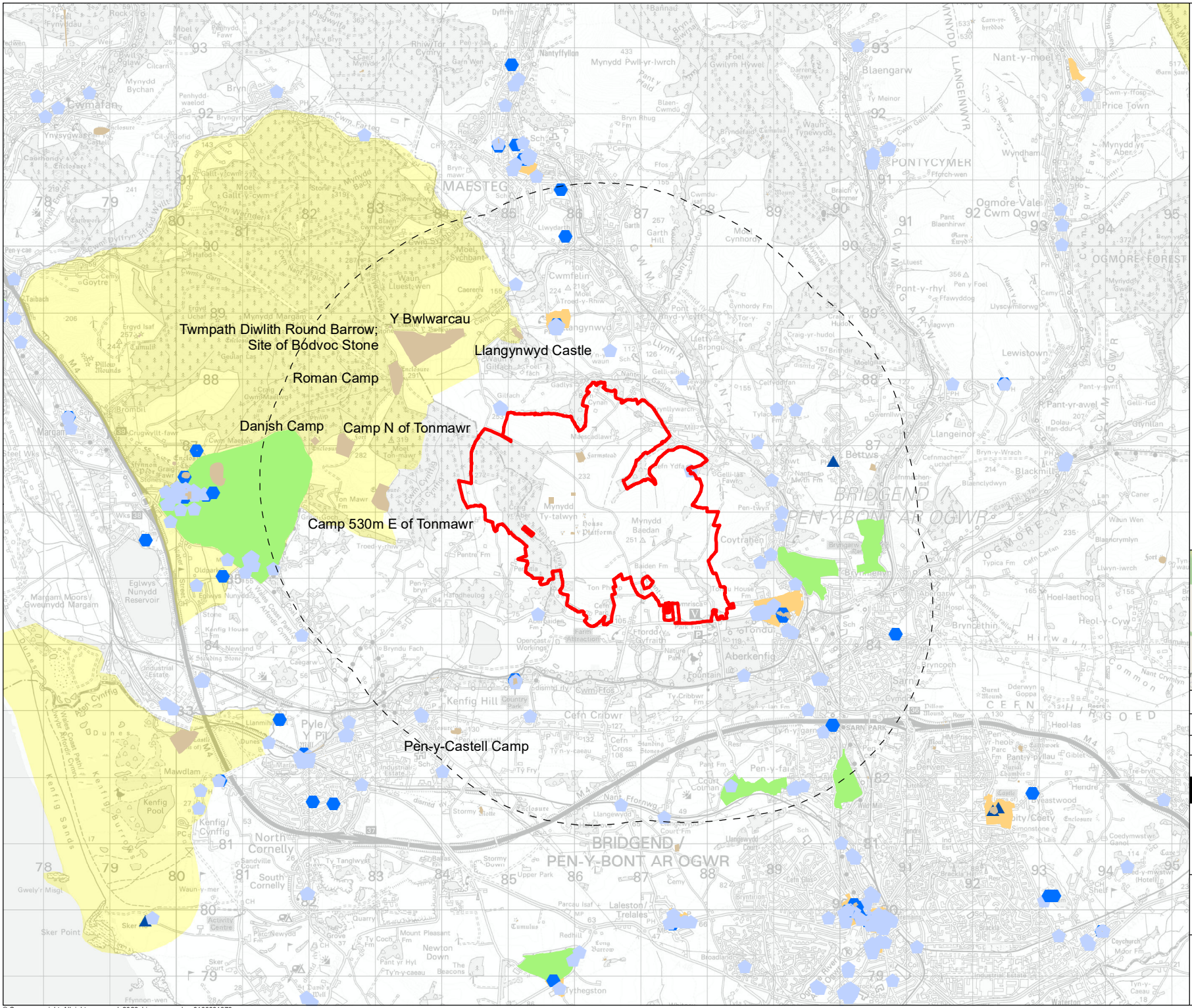
APPENDIX F - CULTURAL HERITAGE FIGURES



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Legend:

- Site
- 3km
- Registered Historic Landscapes
- Scheduled Monuments

Listed Buildings

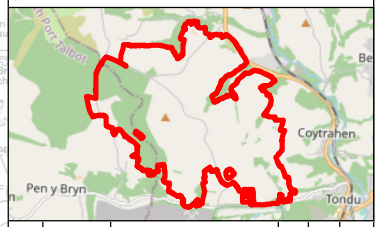
Grade

- I
- II
- II*

- Registered Parks and Gardens
- Conservation Areas

Only Scheduled Monuments named in the Scoping Report are labelled.

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter



Rev	Date	Description	Drn	Chk	App
00	07/11/2023	First Draft	EP	EP	EP

Mynydd ty Talwyn

PEGASUS GROUP

Figure 6.2:
Designated Historic Assets within 3km

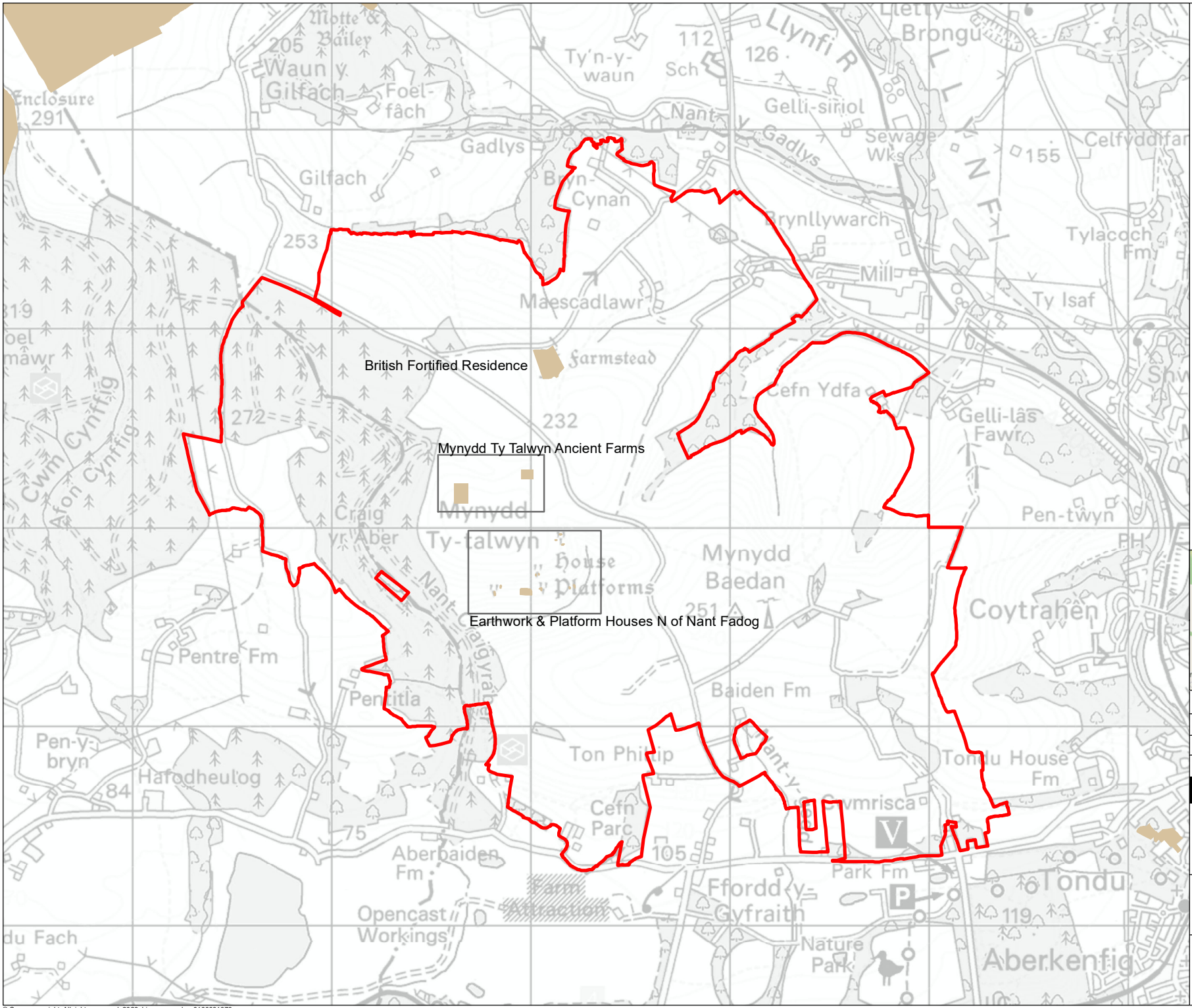
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Legend:

- Site
- Scheduled Monuments

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter

Rev	Date	Description	Drn	Chk	App
00	07/11/2023	First Draft	EP	EP	EP

Mynydd ty Talwyn

PEGASUS GROUP

Figure 6.3:
Scheduled Monuments within the Site

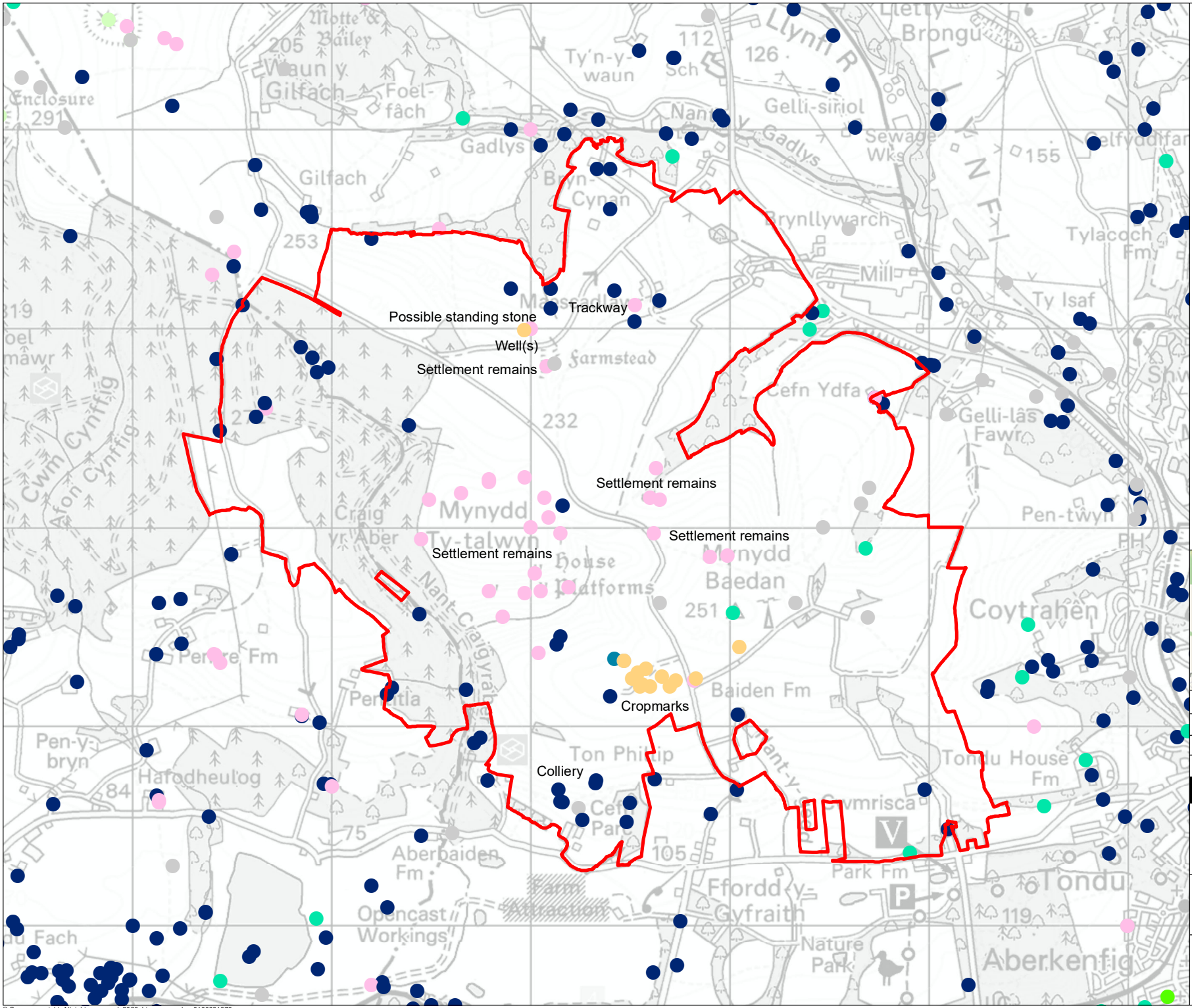
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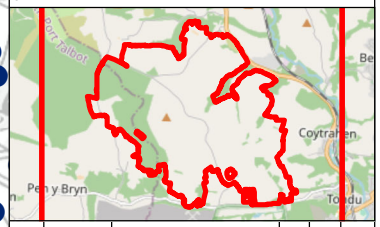
Legend:

Site

GGAT HER 'Monuments', displayed according to time period:

Orange = Bronze Age
Pink = Medieval
Indigo = Post-Medieval
Turquoise = Modern
Blue = Multiperiod
Grey = Unknown

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter



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00	07/11/2023	First Draft	EP	EP	EP

Mynydd ty Talwyn

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Figure 6.4:
Non-Designated Historic Assets within the Site

0 250 500
m
SCALE: 1:25,000 @ A4

REV 00

Document Path: \\10.6.1.1\Data\Projects\P23\P23-0389_Galileo_Myndyy ty-Talwyn\05 PG Work\06 Drawings\03 HT\01 GIS\Fig 6-4 new.mxd

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APPENDIX G - LAND AND SOILS CONSTRAINTS PLAN

DO NOT SCALE FROM THIS DRAWING

N

Old Quarry
Woollen Mill Factory
Old Coal Shafts
Old Tramway
Quarry
Quarry (extensive area)
Paper Mill (Extensive Area)
Llynfi Power Station (Extensive Area)
Llynfi Power Station
Settling Ponds
Gravel Pits
Old huts and earthworks (various locations)
Ty Talwyn Colliery (extensive area)
Ty-Talwyn Colliery
Aber-baiden Colliery
Ton Phillip Colliery (extensive area)
Refuse tip (large area)
Cefn Cribbwr (Davies Brothers)
Baiden Farm (W. Howells)
Tondu (D. Morgan)
Cwm Risca Farm, Tondu (T. Anthony)

LEGEND

- Site boundary
- Quarry activities
- Mine entries
- Gravel pits
- On-site historical landfills
- Off-site historical landfills
- Off-site features
- Old huts and earthworks (various locations)
- Refuse tip (large area)
- Old tramway

Notes:

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Rev	Date	Amendment	Drawn	Chkd	Appd
P03	06.11.23	First Issue	LS	##	##

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Web: www.rsk.co.uk

Client: Galileo

Project Name: Mynydd Ty-talwyn Energy Park

Description: Land and Soils Constraints Plan

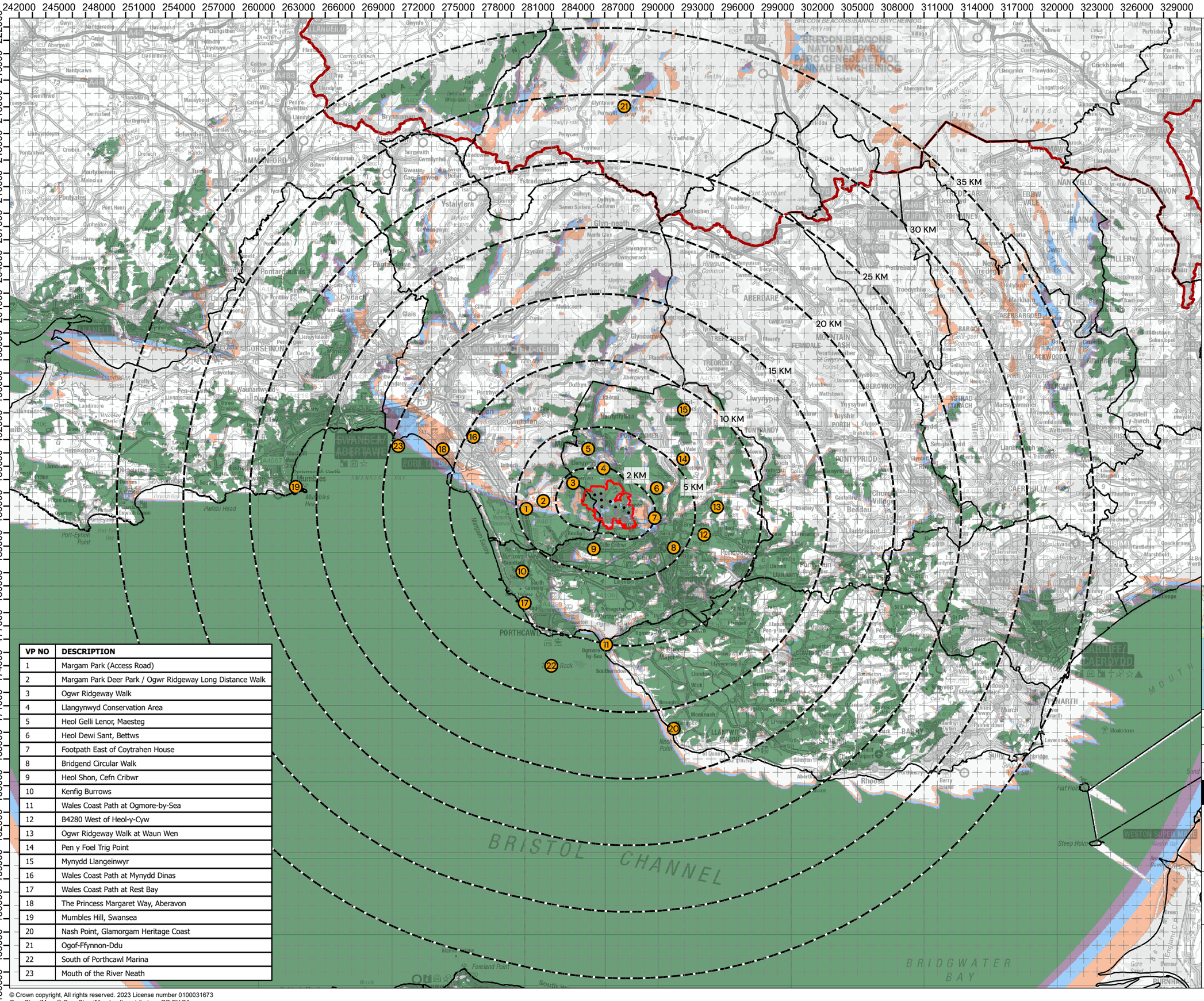
Project ID	Drawing no.	Revision
323220	11301	P03

File name: 323220-HE-113-SS-D-C-11301-P03

Dimensions	Scale	Size
m	1:15000	A3

0 200 400 600 800m

APPENDIX H - LANDSCAPE FIGURES



VP NO	DESCRIPTION
1	Margam Park (Access Road)
2	Margam Park Deer Park / Ogwr Ridgeway Long Distance Walk
3	Ogwr Ridgeway Walk
4	Llangynwyd Conservation Area
5	Heol Gelli Lenor, Maesteg
6	Heol Dewi Sant, Bettws
7	Footpath East of Coytrahen House
8	Bridgend Circular Walk
9	Heol Shon, Cefn Cribwr
10	Kenfig Burrows
11	Wales Coast Path at Ogmore-by-Sea
12	B4280 West of Heol-y-Cyw
13	Ogwr Ridgeway Walk at Waun Wen
14	Pen y Foel Trig Point
15	Mynydd Llangeinwyr
16	Wales Coast Path at Mynydd Dinas
17	Wales Coast Path at Rest Bay
18	The Princess Margaret Way, Aberavon
19	Mumbles Hill, Swansea
20	Nash Point, Glamorgam Heritage Coast
21	Ogof-Ffynnon-Ddu
22	South of Porthcawl Marina
23	Mouth of the River Neath

Legend:

- Site Boundary
- Proposed Turbines
- Indicative Solar PV Area
- Study Area 35km
- Local Authority Boundary
- Bannau Brycheiniog/Brecon Beacons National Park
- LVIA Viewpoint

Blade Tip Zone of Theoretical Visibility (230m)

- 1 to 3 turbines visible
- 4 to 6 turbines visible
- 7 to 8 turbines visible
- 9 to 10 turbines visible

Notes:
This map contains data from the following sources:
DATA SOURCE (DATE)

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter



Rev	Date	Description	Drn	Chk	App
00	31/10/2023	First Draft	AA	AA	AA

Mynydd Ty-Talwyn Energy Park

RSK

TITLE:
Figure H.1: Blade Tip ZTV with LVIA Viewpoints (to 35km)

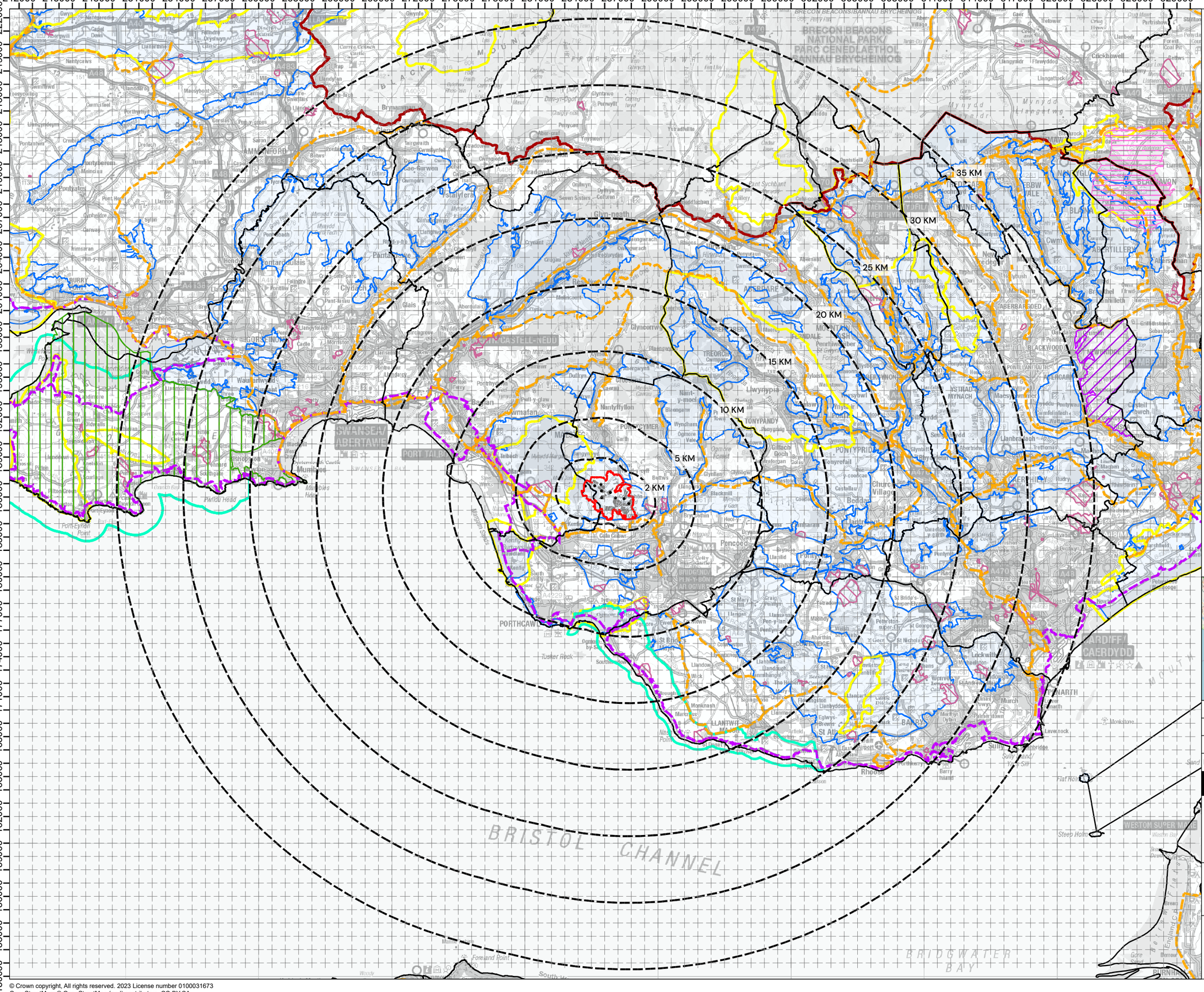
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Legend:

- Site Boundary
- Proposed Turbines
- Indicative Solar PV Area
- Study Area 35km
- Local Authority Boundary
- Blaenavon Industrial Landscape World Heritage Site
- Bannau Brycheiniog/Brecon Beacons National Park
- CADW Historic Landscape
- Registered Historic Parks and Gardens
- Special Landscape Area
- Heritage Coast
- Gower Area of Outstanding Natural Beauty
- Caerphilly Visually Important Landscape (VILL)
- Wales Coast Path
- SUSTRANS National Cycle Network

Notes:
This map contains data from the following sources:
DATA SOURCE (DATE)

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter



Rev	Date	Description	Drn	Chk	App
00	31/10/2023	First Draft	AA	AA	AA

Mynydd Ty-Talwyn Energy Park

RSK

TITLE:
Figure H.2: Landscape Designations (to 35km)

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Kilometres
SCALE: 1:265,000 @ A3

N W E S

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Document Path: \\10.6.1.1\Data\Projects\P23\P23-0389_Galileo_Mynydy ty-Talwyn\05 PG Work\06 Drawings\02 EN\06 GIS\P23-0389_EN.aprx

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APPENDIX I - INDICATIVE WIND FARM NOISE CONTOUR PLAN

LEGEND:

- Approximate turbine locations (revision TL02)
- Noise Sensitive Receptor
- 35dB and 45dB LA90 contour at V10=10m/s (indicative)
- Site Boundary

REV	DATE	DESCRIPTION	BY	APR.
02	01/11/23	Issue	KCM	DC
01	26/07/23	Draft	KCM	DC

RSK acoustics

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Registered Office: Spring Lodge, 172 Chester Road, Helsby, WA6 0AR
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Client: GGE Wales Limited

Project Name: Mynydd Ty-talwyn Energy Park

Drawing Title: Indicative Wind Farm Noise Contour

Scale	Orig. Size	Project No.
1:20000	A3	2061688

Drawing No.: 2061688-RSK-DR-KCM-0001

Status: S0

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APPENDIX J - PROPOSED STRUCTURE OF ENVIRONMENTAL STATEMENT

At this stage, it is anticipated that the ES will be structured as follows:

Volume I: Non-Technical Summary

Volume II: Main Text;

- Chapter 1: Introduction
- Chapter 2: Description of the Proposed Development
- Chapter 3: Consideration of Alternatives
- Chapter 4: Approach to EIA
- Chapter 5: Climate
- Chapter 6: Cultural Heritage
- Chapter 7: Land and Soils
- Chapter 8: Landscape and Visual
- Chapter 9: Noise and Vibration
- Chapter 10: Ornithology
- Chapter 11: Terrestrial Ecology
- Chapter 12: Traffic and Transport
- Chapter 13: Cumulative Effects
- Chapter 14: Summary of the ES

Volume III: Supporting Technical Appendices

Volume IV: Supporting Figures and Plans

APPENDIX K - SIGNIFICANCE CRITERIA

J-1 BIODIVERSITY

The determination of ecologically significant effect for EcIA, as discussed below, is taken from *'Guidelines for Ecological Impact Assessment in the UK and Ireland'* (Chartered Institute of Ecology and Environmental Management (CIEEM), 2018)[1].

Significant Effects

For the purpose of EcIA, a significant effect is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project. It is a positive or negative effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national / local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales, from international to local.

A significant effect does not necessarily equate to an effect so severe that consent for the project should be refused planning permission. For example, many projects with significant negative ecological effects have been lawfully permitted following EIA procedures. Significant effects should be qualified with reference to an appropriate geographic scale. For example, a significant effect on a Site of Special Scientific Interest is likely to be of national significance. European case law is specific regarding significance in relation to European sites and Annexed habitats. However, the scale of significance of an effect may not be the same as the geographic context in which the feature is considered important. For example, an effect on a species which is on a national list of species of principal importance for biodiversity may not have a significant effect on its national population. Examples of other relevant scales include regional and county. It should be noted that effects may be significant at the local scale, particularly in view of policies for no net loss of biodiversity.

When seeking mitigation and / or compensation solutions, efforts should be consistent with the geographical scale at which an effect is significant. For example, mitigation and / or compensation for effects on a species population significant at a county scale should ensure no net loss of the population at a county scale. The relative geographical scale at which the effect is significant will have a bearing on the required outcome which must be achieved.

Determining Ecologically Significant Effects

Designated / defined sites and ecosystems

Significant effects encompass impacts on the structure and function of defined sites and ecosystems. The following need to be determined:

- For designated sites – is the project and associated activities likely to undermine the conservation objectives of the site, or positively or negatively affect the conservation status of species or habitats for which the site is designated, or may it have positive or negative effects on the condition of the site or its interest/qualifying features?

[1] CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland.* Chartered Institute of Ecology and Environmental Management (CIEEM). September 2018.

- For ecosystems – is the project likely to result in a change in ecosystem structure and function?

Consideration should be given to whether:

- Any processes or key characteristics will be removed or changed
- There will be an effect on the nature, extent, structure and function of component habitats
- There is an effect on the average population size and viability of component species.

Consideration of functions and processes acting outside the formal boundary of a designated site is required, particularly where a site falls within a wider ecosystem e.g. groundwater dependent terrestrial ecosystems can be damaged where the proposed activity impacts on the quantity or quality of groundwater that feeds these habitats. Predictions should always consider wider ecosystem processes.

Many ecosystems have a degree of resilience to perturbation that allows them to tolerate some biophysical change. Ecological effects should be considered in the light of any information available or reasonably obtainable about the capacity of ecosystems to accommodate change.

Habitats and species

Consideration of conservation status is important for evaluating the effects of impacts on individual habitats and species and assessing their significance:

- Habitats – conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure and functions as well as its distribution and its typical species within a given geographical area
- Species – conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area.

In many cases (e.g. for species and habitats of principal importance for biodiversity), there may be an existing statement of the conservation status of a feature and objectives and targets against which the effect can be judged. However, not all species or habitats will be described in this way and the conservation status of each feature being assessed may need to be agreed with the relevant statutory nature conservation body and set out in the EcIA. The conservation status of a habitat or species will vary depending on the geographical frame of reference.

When assessing potential effects on conservation status, the known or likely background trends and variations in status should be taken into account. The level of ecological resilience or likely level of ecological conditions that would allow the population of a species or area of habitat to continue to exist at a given level, or continue to increase along an existing trend or reduce a decreasing trend, should also be estimated.

Precautionary Principle

The evaluation of significant effects should always be based on the best available scientific evidence. If sufficient information is not available, further survey or additional research may be required. In cases of reasonable doubt, where it is not possible to robustly justify a conclusion of no significant effect, a significant effect should be assumed. Where uncertainty exists, it must be acknowledged in the EcIA.

J-2 CLIMATE

The significance of the effects relating to climate change caused by the proposed development will be assessed using IEMA's Guidance to Assessing GHG Significance (2022).

Given the international urgency of climate change, the sensitivity of the receptor (i.e. global climate) to fluctuations in GHG emissions is considered 'Very High'. Thus, the level of the significance of effects is determined by the magnitude, and timing, of GHG emissions and the likelihood of avoiding severe climate change.

Table J-2-1: IEMA's Guidance to Assessing GHG Significance (2022) Framework for assessment of significant effects

Significance	Level	Criteria
Significant	Major adverse	Project adopts a business-as-usual approach, not compatible with the national Net Zero trajectory, or aligned with the goals of the Paris Agreement (i.e., a science-based 1.5°C trajectory). GHG impacts are not mitigated or reduced in line with local or national policy for projects of this type.
	Moderate adverse	Project's GHG impacts are partially mitigated, and may partially meet up-to-date policy; however emissions are still not compatible with the national Net Zero trajectory, or aligned with the goals of the Paris Agreement.
Not significant	Minor adverse	Project may have residual emissions, but the project is compatible with the goals of the Paris Agreement, complying with up-to-date policy and good practice.
	Negligible	Project has minimal residual emissions and goes substantially beyond the goals of the Paris Agreement, complying with up-to-date policy and best practice.
Significant	Beneficial	Project causes GHG emissions to be avoided or removed from the atmosphere, substantially exceeding the goals of the Paris Agreement with a positive climate impact.

J-3 CULTURAL HERITAGE

Assessment of Significance

The Welsh Government's Technical Advice Note 24 (TAN24) defines heritage significance as: "*the sum of the cultural and natural heritage values of a place, often set out in a statement of significance*."

Cadw's Conservation Principles for the sustainable management of the historic environment in Wales defines significance as deriving from a combination of any, some or all of the following four component values:

- Evidential value: deriving from the potential of a place to yield evidence about past human activity;
- Historic value: deriving from the ways in which past people, events and aspects of life can be connected through a place to the present;
- Aesthetic value: deriving from the ways in which people draw sensory and intellectual stimulation from a place; and
- Communal value: deriving from the meaning of a place for the people who relate to it, or for whom it figures in their collective experience or memory.

This approach allows for a detailed and justifiable determination of significance and the values from which that significance derives.

In accordance with the levels of significance articulated in TAN24 and Planning Policy Wales 11 (PPW11), the following terminology will be used in the ES Chapter:

- Designated historic assets: Scheduled Monuments, Listed Buildings (Grade I, II* and II), Registered Parks and Gardens (Grade I, II* and II), Registered Historic Landscapes ('Outstanding' or 'Special'), World Heritage Sites and Conservation Areas;
- Non-designated nationally important archaeological remains: Archaeological remains that are not designated but are still considered to be of a level of significance commensurate with that of a Scheduled Monument; and
- Non-designated historic assets: Assets of less than national importance, including any of special local interest.

Contribution made by Setting to Significance

Setting is defined in TAN24 as:

"*the surroundings in which [a historic asset] is understood, experienced, and appreciated embracing past and present relationships to the surrounding landscape. Its extent is not fixed and may change as the asset and its surrounding evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect [the] ability to appreciate that significance or may be neutral*."

Setting can contribute to, detract from, or have a neutral effect upon the heritage significance of an asset. In addition, whilst a physical or visual connection between a historic asset and its setting will often exist, it is not essential or determinative.

TAN24 states that "*setting is not a historic asset in its own right but has value derived from how different elements may contribute to the significance of a historic asset*." As such, any impacts are described within the ES Chapter in terms of how they affect the significance of a historic asset, and any heritage values that contribute to that significance, through changes to setting.

Settings assessment will be undertaken in accordance with the industry-standard methodology provided by Cadw's Setting of Historic Assets in Wales. This guidance promotes a 'stepped' (iterative) approach, as follows:

- Stage 1 - assess which assets would be affected and identify their setting;
- Stage 2 - define and analyse the settings to understand how they contribute to the significance of the historic assets and, in particular, the ways in which the assets are understood, appreciated and experienced ;
- Stage 3 - assess the effects of the proposed development, whether beneficial or harmful, on that significance or on the ability to appreciate it; and
- Stage 4 - consider options to mitigate or improve the potential impact of a proposed change or development on that significance.

The following resources will be used to inform Stage 1:

- The relevant Cadw Scheduling and Listing descriptions;
- A screened zone of theoretical visibility model;
- Elevation and contour mapping;
- Modern and historic mapping;
- LiDAR imagery; and
- Satellite imagery and aerial photography.

Assessment of Harm and Benefit

The over-riding provision within PPW11 in relation to harm to designated assets (and non-designated assets of equivalent significance) is that there should be a presumption in favour of:

- The physical preservation in situ of Scheduled archaeological remains;
- The preservation and enhancement of Listed Buildings and their settings, and ensuring consistency with the statutory requirement under Section 66(1) of the Planning (Listed Buildings and Conservation Areas) Act 1990; and
- The preservation or enhancement of the character or appearance of Conservation Areas or their settings.

PPW11 also provides that any development effects upon the following are material considerations in the determination of planning applications:

- Registered Parks or Gardens, or their setting; and
- Non-designated archaeological remains, with the relative importance of the archaeological remains and their settings to be weighed against other factors, including the need for the proposed development.

Where harm to the significance of a historic asset is identified, the nature and scale of that harm will be discussed, and professional judgment used to determine the acceptability of that level of harm within the context of the above policy provisions.

The following terminology and approach will be used in the ES Chapter:

- Harm to Designated Historic Assets (or to non-designated assets of equivalent significance): The designated asset's significance would be reduced. An attempt will be made to qualify more precisely the nature and level of harm, with reference to PPW11, TAN24 and the heritage values defined by Conservation Principles; all determinations will be fully qualified.
- Harm to Non-Designated Historic Assets: The non-designated asset's significance would be reduced. Professional judgment will be used to define the anticipated level of harm to the significance of non-designated historic assets; all determinations will be fully qualified.
- No Harm: The asset's significance would be preserved.
- Heritage Benefit: The asset's significance would be enhanced. This would weigh in favour of the Proposed Development in the planning balance. It would be a desirable outcome, consistent with all key policy objectives and industry guidance provisions.

Assessment of Significance of Effect

In determining whether any identified harm to heritage significance would translate into a significant effect, the determination of the significance of effects have been based upon professional judgement, which is presented qualitatively and with full justification.

Ultimately, a statement of whether any identified harm does or does not represent a significant effect is provided in respect of each cultural heritage receptor using the following terminology: ‘Significant’ or ‘Not Significant’.

J-4 LAND AND SOILS

Magnitude of Significance

Where an impact is considered to be present, the magnitude of the significance will be classified as negligible, minor, moderate or major. Impacts can be beneficial or adverse. The criteria are as follows, with definitions provided in Table J-4-1:

- Major beneficial
- Moderate beneficial
- Minor beneficial
- Negligible
- Minor adverse
- Moderate adverse
- Major adverse

Table J-4-1: Definition of terms relating to the magnitude of an impact

Magnitude of impact	Definition
Major	These effects are likely to be important considerations at a regional or district scale, and if adverse, are potential concerns, depending upon the relative importance attached to the issue during the decision-making process. Mitigation measures and detailed design work are unlikely to remove all the effects upon the affected communities or interests. Examples include short term (acute) risk to human health likely to result in 'significant harm' as defined by the Environment Protection Act 1990, Part IIA; short-term risk of pollution of sensitive water resources; catastrophic damage to buildings or property; and short-term risk to an ecosystem or part of an ecosystem.
Moderate	These effects, if adverse, while important at a local scale, are not likely to be key decision-making issues. The cumulative effect of such issues may lead an increase in the overall effects on a particular area or on a particular resource. They represent issues where effects will be experienced but mitigation measures and detailed design work may ameliorate / enhance some of the consequences upon affected communities or interests. Some residual effects will still arise. Examples include chronic damage to human health ('significant harm' as defined in 'Draft Circular on Contaminated Land', DETR 2000); pollution of sensitive water resources; and significant change in an ecosystem or organism forming part of that ecosystem.

Magnitude of impact	Definition
Minor	These effects may be raised as local issues but are unlikely to be of importance in the decision-making process. Nevertheless, they are of relevance in the detailed design of the Proposed Development and consideration of mitigation or compensation measures. Examples include pollution of non-sensitive water resources; significant damage to crops, buildings, structures and services ('significant harm' as defined in 'Draft Circular on Contaminated Land', DETR 2000); and damage to sensitive buildings, structures or the environment.
Negligible	No change or a barely perceptible change from the baseline position. Examples include non-permanent human health effects easily prevented by use of personal protective clothing; and easily repairable damage to buildings, structures and services.
No change	No change from baseline conditions.

Receptor Sensitivity

The sensitivity of receptors to the impact is assigned a category from negligible to high. Sensitivity criteria are defined in Table J-4-2.

Table J-4-2: Definition of terms relating to the sensitivity of the receptor

Sensitivity	Definition
Very high	The receptor is highly sensitive and could be easily damaged by activities associated with the project. The receptor is likely to be of national significance. The recovery of the receptor is either impossible or very long term.
High	The receptor is of high sensitivity and is of importance at a local or regional level. The receptor is vulnerable to the effects of the project and recovery would be slow and/or costly (e.g. remedial measures to groundwater may be required to prevent a wider impact).
Medium	The receptor is of medium value and is likely to be of local importance. The receptor is slightly vulnerable to impacts from the project and would be expected to recover over a moderate timescale (e.g. up to 5 years for groundwater to return to its current or an improved condition).
Low	The receptor is of low value and has little contribution to local, regional or national resources. The receptor is not generally vulnerable to impacts that may arise from the project and/or will recover over a short timescale (e.g. up to 1 year before groundwater returns to its current or improved condition).
Negligible	The receptor is of negligible positive value. The receptor is not vulnerable to impacts that may arise from the project and/or will recover quickly.

Significance Matrix

A significance matrix is then used to classify the significance of an impact based on the magnitude and sensitivity categories. The significance can range from negligible to major and can be adverse or beneficial.

The ES chapter will provide definitions and examples for each category in terms of magnitude of impact and receptor sensitivity.

Table J-4-3: Risk matrix assessing the significance of impacts on receptors

		Magnitude of Impact			
		Major	**Moderate**	**Minor**	**Negligible**
Sensitivity	**Very high**	Very high	High	Moderate	Moderate/ Low
	High	High	Moderate	Moderate/ Low	Low
	Medium	Moderate	Moderate/ Low	Low	Very low
	Low	Moderate/ Low	Low	Very low	Very low
	Negligible	Low	Very low	Very low	Very low

J-5 LANDSCAPE AND VISUAL

The purpose of an LVIA when produced in the context of an EIA is to identify any significant effects on landscape and visual amenity arising from the Proposed Development.

Neither EC Directive 2011/12/EU nor the Electricity Works (Environmental Impact Assessment) (England and Wales) Regulations 2017 define a threshold at which an effect may be determined to be significant. In certain other environmental disciplines, there are regulatory thresholds or quantitative standards which help to determine the threshold of what constitutes a significant effect. However, in LVIA, any judgement about what constitutes a significant effect is ostensibly a subjective opinion expressed as in this case by a competent and appropriately qualified professional assessor.

The level (relative significance) of the landscape and visual effects is determined by combining judgements regarding sensitivity of the landscape or view, magnitude of change, duration of change and the reversibility of the change. In determining the level of residual effects, all mitigation measures are taken into account.

The level (relative significance) of effect is described as **major, major/moderate, moderate, moderate/minor, minor, minor/no effect or no effect**. No Effect may also be recorded as appropriate where the effect is so negligible it is not even noteworthy.

In the LVIA, those effects described as **major, major/moderate** and in some cases **moderate** may be regarded as significant effects as required by the EIA Regulations. These are the effects which the authors of the LVIA consider to be most material in the decision-making process.

J-6 NOISE AND VIBRATION

All residential properties found within the study area for noise and vibration are classed as high sensitivity and included within the assessment. A noise impact assessment will be conducted for the construction, operation, and decommissioning phases of the Proposed Development. To determine the significance of potential effects at noise sensitive receptors, the following guidance and criteria will be applied.

Construction and Decommissioning

The method for assessing the significance of noise from construction activities are provided within Annex E of BS 5228. One such method of applying significance to noise effects is repeated in **Table J.6.1**.

Table J.6.1: Criteria for assessing potential significant effects

Assessment Category and Threshold Value Period, L_{Aeq}	Threshold Value in Decibels, dB		
	Category A[1]	Category B[2]	Category C[3]
Night-time (23.00−07.00)	45	50	55
Evenings and weekends [4]	55	60	65
Daytime (07.00−19.00) and Saturdays (07.00−13.00)	65	70	75

[1] Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.
[2] Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.
[3] Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.
[4] 19.00–23.00 weekdays, 13.00–23.00 Saturdays and 07.00–23.00 Sundays.

A significant effect has been deemed to occur if the site noise level (construction only), exceeds the threshold level for the Category appropriate to the ambient noise level for a month or more. If the baseline ambient noise level exceeds the Category C values, then a significant effect is deemed to occur if the total noise level (construction + ambient noise) for the period increases by more than 3 dB. Works for a shorter duration that might result in a significant effect are considered by using the trigger levels for sound insulation and time criteria from Annex E.4 of BS 5228-1.

Operation - Wind Farm

The assessment of operational source levels from the wind farm will be conducted in line with ETSU-R-97, following guidance outlined within the IoA Good Practice Guide.

ETSU-R-97 recommends, "*The variation in background noise level with wind speed will be determined by correlating L_{A90} noise measurements taken over a period of time with the average wind speeds measured over the same 10-minute periods and then fitting a curve to these data.*"

Noise targets relate to two time periods: quiet daytime and night-time, defined below in **Table J.6.2**.

Table J.6.2: ETSU-R-97 assessment periods

Day	Time	Period
Monday – Friday	18:00 – 23:00	Quiet Daytime
Saturday	13:00 – 23:00	Quiet Daytime
Sunday	07:00 – 23:00	Quiet Daytime
All Days	23:00 – 07:00	Night-time

The lower limit for quiet daytime periods is set at 35 – 40 dB L_{A90} or 5 dB above the prevailing quiet daytime background noise level, whichever is greater. The value between 35-40 dB depends on a range of factors; how many receptors are in the vicinity, the effect of noise targets on the power generated in kWh and the duration and level of exposure. At night, a lower limit of 43 dB L_{A90} is applied. The lower limit of 43 dB is based on a sleep disturbance criterion of 35 dB, with an allowance of 10dB for attenuation through an open window, minus 2 dB to account for the use of $L_{A90,10min}$ rather than $L_{Aeq,10min}$.

Where a property is financially involved with the Proposed Development, lower fixed limits can be increased to 45 dB L_{A90}.

Where the Proposed Development noise emissions are below the ETSU-R-97 limits applied, no significant effect is expected to occur. Where noise emissions exceed the limits at each noise sensitive receptor, significant impacts may arise.

Operation - Additional Infrastructure

The noise assessment for the solar and BESS elements of the Development follows British Standard 4142: 2014 + A1: 2019 'Methods for rating and assessing industrial and commercial sound'

BS 4142:2019 describes the methods for rating and assessing noise from industrial or commercial sources, including manufacturing processes, fixed installations and plant equipment, loading of goods and sound from mobile plant. The standard is applicable for the purpose of assessing sound at dwellings, through the determination of a rating level of an industrial or commercial noise source.

Where certain acoustic features are present at the assessment location, a character correction should be applied to the specific sound level to give the rating level to be used in the assessment.

- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5dB is likely to be an indication of adverse impact depending on the context.
- Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact depending on the context.

Where the initial estimate of the impact needs to be modified due to the context, all pertinent factors should be taken into account, including:

- The absolute level;
- The character and level of the residual sound;
- The sensitivity of the receptor and whether dwellings will already (or likely) to incorporate design measures that secure good internal and/or outdoor acoustic conditions, such as: i) façade insulation treatments, ii) ventilation and/or cooling, and iii) acoustic screening.

J-7 TRAFFIC AND TRANSPORT

Assessment of the traffic and transport environmental impacts and their significance will be based on the Guidelines for the Environmental Assessment of Traffic and Movement (Institute of Environmental Assessment, 2023). The significance of likely effects is determined by considering the sensitivity of receptors to change, taking account of the specific issues relating to the Study Area, and then the magnitude of that change.

The determining factors that need to be taken into account when assessing the impact of traffic and movement vary for each type of impact:

- Severance of communities
- Road vehicle driver and passenger delay
- Non-motorised user delay
- Non-motorised user amenity
- Fear and intimidation on and by road users
- Road user and pedestrian safety
- Hazardous/large loads

Having quantified the magnitude of the impact (i.e. the level of change), there are various ways of interpreting whether or not the resulting outcome is considered significant. There is no definition of a 'significant effect' in the EIA Regulations. Furthermore, for many impacts, there are no simple rules that define appropriate assessment thresholds and therefore there is a need for interpretation and professional judgement. The Environmental Statement will record judgements about the likely significance of effects arising from the Proposed Development.

Guidelines for assessment – significance criteria

The Design Manual for Roads and Bridges (DMRB) (2020) sets out a framework for undertaking EIAs, which the methodology of the traffic and transport assessment will be based on. However, the updated IEMA Guidelines (2023) provide the following advice on the analysis of the various traffic and transport impacts that may occur as a result of the proposed development:

Severance

Factors that need to be considered in determining whether severance is likely to be an important issue include road width, traffic flow and composition, traffic speeds, the availability of crossing facilities and the number of movements that are likely to cross the affected route. Different groups in a community may be more affected by severance than others. Vulnerable groups may be more sensitive to traffic conditions than others.

The Department for Transport has historically set out a range of indicators for determining the significance of severance. Changes in traffic flow of 30%, 60% and 90% are regarded as producing 'slight', 'moderate' and 'substantial' changes in severance respectively. Although these thresholds no longer appear in Department for Transport guidance, they have not been superseded by subsequent changes to guidance and are established through planning case law. Caution, however, needs to be observed when applying these thresholds as very low baseline flows are unlikely to experience severance impacts even with high percentage changes in traffic.

Driver delay

Delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system. Values for delay due to these elements can be determined by the use of proprietary software packages such as Transport Research Laboratory's Junctions 10 suite, JCT's LinSig or other suitable programs.

The assessment of driver delay will normally be based on the technical work reported within the Transport Assessment, which generally focuses on conditions in the network peak periods, with highway mitigation defined to ensure conditions with the development are not materially worse than would otherwise have been the case without the development and mitigation.

Pedestrian delay (incorporating delay to all non-motorised users)

The assessment of pedestrian delay serves as a proxy for the delay that other modes of non-motorised users may experience when crossing roads. Pedestrian delay and severance are closely related effects and can be grouped together. Changes in the volume, composition or speed of traffic may affect the ability of people to cross roads. Given the range of local factors and conditions that can influence pedestrian delay (e.g. a discrete delay may have a lesser impact in an urban environment than a rural setting), the guidance does not set down definitive thresholds. Instead it is recommends that the competent practitioner use their judgement to determine whether pedestrian delay constitutes a significant effect.

Non-motorised user amenity

The 1993 Guidelines suggest that a tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow (or HGV component) is halved or doubled. Although these thresholds no longer appear in Department for Transport guidance, they have not been superseded by subsequent changes to guidance and are established through planning case law. It acknowledges that thresholds are expressed as a starting point for any assessment and typically have been derived from studies of major changes in traffic flow and therefore should be used cautiously in any assessment. Furthermore, the assessment of amenity should pay full regard to specific local conditions.

Fear and intimidation

While most of the foregoing factors can be quantified, there will be a need for judgement to be exercised in determining the degree of fear and intimidation. Special consideration is required to areas where there are likely to be particular problems, such as:

- high-speed sections of road,
- locations of turning points and accesses, and
- the inherent lack of protection created by factors such as:
  - a narrow pavement median,
  - a narrow path, or
  - a constraint (such as a wall or fence) preventing people stepping further away from moving vehicles.

Locations where people may be unfamiliar with the locale (e.g. beauty spots or heritage/tourist attractions) need a level of judgement to be applied to determine the degree of impact.

The movement of hazardous/large loads will heighten people's perception of fear and intimidation and, if this is likely to occur, it should be noted.

The 2023 Guidelines present a weighting system to assessors to allow for a first approximation of the likelihood of pedestrian fear and intimidation.

Road safety

It is common for a 'collision cluster' assessment to be used to identify potential road safety impacts at a more detailed level. Collision clusters are identified by a detailed review of the baseline characteristics to determine the road safety sensitivity of discrete areas of the highway network. The collision cluster criterion is typically based on a definition of number of personal injury collisions occurring within a defined period in a given spatial radius. Impacts are assessed by examining STATS1919 collision data to identify any emerging patterns or factors that could be exacerbated by traffic or movement generation.

While the traditional approach to road safety serves to address collision rates and cluster sites to good effect, there are limits to the benefits that can be gained from retrospective assessment. The updated guidance, therefore, recommends that consideration is given to the emerging, 'Safe System' policy approach to the assessment of road safety impacts of a project. Notwithstanding this, it is recommended that engagement should be made with the relevant authorities to determine the best approach for determining the significance of road safety effects.

Hazardous loads/large loads

The traffic and movement assessment needs to clearly outline the estimated number and composition of such loads. Where the number of movements is considered to be significant, the assessment should include a risk or catastrophe analysis to illustrate the potential for an accident to happen and the likely effect of such an event. The extent of such analysis should clearly reflect the nature of the load being transported.