

Naturalis Energy Developments Ltd

Mynydd Fforch Dwm
proposed wind farm and solar array

Environmental Statement
Non-Technical Summary

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Non-Technical Summary

1. Introduction

Background

- 1.1 Naturalis Energy Developments Ltd ('the Applicant') has submitted a planning application for a Development of National Significance ('DNS') to Planning and Environment Decisions Wales (PEDW). The project is named the Mynydd Fforch Dwm Wind Farm and Solar Array (MFD).
- 1.2 The submission will take the form of the construction and operation of six electricity generating wind turbines, a solar photovoltaic array and associated infrastructure that would be located approximately 6 kilometres (km) to the east of Neath and 1 km to the north-east of Tonmawr, within the administrative area of Neath Port Talbot County Borough Council (NPTCBC).
- 1.3 Savills has coordinated the preparation of the Environmental Statement (ES) to accompany the DNS application. The ES is prepared in accordance with the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 ('the EIA Regulations'). This is the Non-technical Summary of the ES.
- 1.4 The location and the extent of the planning application Site is identified by the red line shown on NTS Figure 1. In total, the Site covers an area of some 290 hectares (ha).

Environmental Impact Assessment

- 1.5 Environmental Impact Assessment (EIA) is a process that formally considers the construction and operational aspects of a proposal that may have significant effects on the environment. The findings of an EIA are described in a written report known as an Environmental Statement (ES).
- 1.6 An ES provides environmental information about the scheme, including a description of the development, its predicted environmental effects and the measures proposed to mitigate adverse effects: information that is taken into account in the planning decision. Subsequently, when PEDW is deciding whether to grant planning permission, it can do so in the full knowledge of any significant effects predicted and take this into account in the decision-making process.
- 1.7 The EIA is based on the EIA Scoping Direction that was issued by Planning & Environment Decisions Wales (PEDW) on behalf of Welsh Ministers in June 2022 (Reference: 3255801). The EIA is based upon the Scoping Direction and pre-application consultation.

2 Site and Local Context

- 2.1 The Site comprises approximately 290 ha of land located to the north-east of the village of Tonmawr (Figure 1). The Site is comprised of two main areas as shown on Figure 1, known as Mynydd Blaenafon ('MB') to the west and Mynydd Fforch-dwm ('MFD') to the east.
- 2.2 The MB section consists of fallow pasture land due to be planted with coniferous plantation trees. The MFD section consists of pasture land with the Fforch-dwm farm comprising two residential properties and agricultural barns. The north-eastern part of the MFD Site

comprises 'open country' land, and a footpath/track passes from south-west to north-east, parallel with the watercourse, understood to form part of a former minerals railway.

- 2.3 Elevations within this area range from slightly below 200 metres above Ordnance Datum (aOD) along the Nant Blaenpelenna watercourse in the west and north of the Site, and up to 350 metres aOD at the south east extent of the Site.
- 2.4 The Site occupies open ground and forestry between the valleys of Vale of Neath to the northwest and Afon Afan to the south.
- 2.5 There are existing wind farms nearby: the Pen Y Cymoedd wind farm (76 turbines) is immediately adjacent to the north and north east, and the Ffynnon Oer wind farm (16 turbines) is also to the east. Both of these wind farms are located within upland commercial forestry plantation. Other notable nearby uses include the Afan Forest Park, which is approximately 3 km to the south.
- 2.6 There are no statutory designated sites for nature conservation located within 5 km of the Proposed Development. There are also no Special Areas of Conservation (SAC's) for bat interests located within 10 km of the Proposed Development.
- 2.7 The Bannau Brycheiniog National Park and Gower Peninsula Area of Outstanding Natural Beauty (AONB) are both more than 14 km from site. There are a number of registered Parks and Gardens within 15 km. Those which are closest (The Gnoll, Jersey Park and Rheola) have limited intervisibility with MFD.
- 2.8 There are a number of heritage designations within 5 km of the Site, with the Cwm Pelenna Colliery Ventilation Furnace Scheduled Monument and Grade II listed building within the Site boundary. Within 5 km there is one Registered Historic Landscape, two Conservation Areas, two Registered Historic Park and Gardens, 28 Scheduled Monuments, and 143 Listed Buildings.
- 2.9 A number of Public Rights of Way (PRoW) cross the Site, including several footpaths, a bridleway in the southern edge of the MB parcel and another bridleway crossing the eastern section of the MFD parcel (Figure 2).

3 Proposed Development

3.1 The development assessed is of:

- Six horizontal axis three blade wind turbines with a maximum height to blade tip as follows
 - T1, T2 - 180 m;
 - T3, T4, T5 T6 - 200 m;
- wind turbine foundations; crane pads/turbine laydown areas;
- switching station/control building and communications mast;
- temporary and permanent access tracks and turning places;
- a replacement bridge over Nant Blaen Pelenna, part temporary and part permanent;
- ~10 ha of solar photovoltaic panels, mounted on frames fixed to the ground, with associated inverters, solar transformer stations and a storage container, security fencing and CCTV system;
- underground communication and electricity cables between the wind turbines, solar array and the switching station/control building (two possible locations considered); and
- two temporary construction and storage compounds.

3.2 The proposed locations of the turbines can be seen on Figure 2. The turbines will be of a standard design, with white or light grey paint and lacking external markings or advertisements. The brand and model of turbine to be used will be subject to a tendering process and so the EIA has considered the maximum tip heights listed above.

3.3 To provide visibility for aircraft, lighting will be included on all turbines at hub height, with three turbines displaying higher strength lights. As required by the MOD, the turbines will also include the provision of infrared lighting.

3.4 The layout of the solar array is configured so as to integrate with the wind farm and access tracks, as well as the topography of Mynydd Blaenavon and the field boundaries. The solar farm will include electrical inverters and transformer units. These work to raise the voltage of the electrical output so that it can be efficiently transmitted to the grid.

3.5 The Proposed Development will be accessed directly from Fforch-dwm Road, with a new track providing access to Mynydd Blaenavon. The eastern section of the Site at MFD will be accessed from the end of Fforch-dwm Road. These two points of access would be used for all deliveries to the Site.

3.6 Access for Abnormal Indivisible Loads (AIL) will be taken from Swansea Docks to the two access junctions via the B4287 Afan Valley Road, Ton Mawr Road and Fforch-dwm Road. The route has been appraised in detail and initial consultations undertaken with local highway officers. The use of specialist blade lifting trailers will be necessary to negotiate the constraints located within Neath, Cimla, Efail-fach and Tonmawr.

3.7 The Proposed Development has been designed to be operational for up to 35 years and will include site management to ensure that the site facilities, such as access tracks, boundaries and gates are maintained. At the end of a planning consent for the wind turbines, there would be a requirement to decommission the wind farm and remove the wind turbines.

Alternatives and Design Evolution

Alternative Sites

- 3.8 The location of the Site has been identified to accord with the spatial frameworks provided by adopted and emerging national and local planning policy.
- 3.9 Future Wales: The National Plan 2040, was published in February 2021 and is the National Development Plan for Wales, setting out the direction for development to 2040. It is a development plan with a strategy for addressing key national priorities through the planning system, including sustaining and developing a vibrant economy and achieving decarbonisation and climate-resilience. Future Wales 2040 set out the national development plan context for energy and provides specific policies for heat network and renewable energy development, incorporating the following national policy targets on renewable energy:
- For 70% of electricity consumption to be generated from renewable energy by 2030;
 - For one gigawatt of renewable energy capacity to be locally owned by 2030;
 - For new renewable energy projects to have at least an element of local ownership from 2020.
- 3.10 Future Wales states that the planning system plays a significant role in the provision of new renewable and low carbon energy and gives effect to the Welsh Government's national targets, setting the overall strategic framework and direction within which developers can propose new energy infrastructure projects. Future Wales notes that *"Wales can become a world leader in renewable energy technologies. Our wind and tidal resources, our potential for solar generation, our support for both large and community scaled projects and our commitment to ensuring the planning system provides a strong lead for renewable energy development, mean we are well placed to support the renewable sector, attract new investment and reduce carbon emissions"*.
- 3.11 The pre-assessed areas for wind energy have been identified by the Welsh Government and are considered, in principle, to be areas where DNS scale onshore wind projects would be acceptable subject to the criteria of Policy 17. The Site is located within pre-assessed area for wind energy (area 9) and has therefore been identified in response to the clear national and local planning policy focus to the delivery of onshore wind project in this area.

Scheme Design

- 3.12 The design approach has been informed by consultation with Neath Port Talbot Council, PEDW and statutory consultees on matters such as highways, noise, ecology, ornithology and soil/peat resources, including the EIA scoping process, and public consultation.
- 3.13 The design responds to considerations relating to environmental, planning, engineering, existing and proposed land uses. The aim of this process has been to identify an appropriate solution that has considered and balanced these constraints alongside the need for sufficient number and scale of development to deliver a significant quantum of renewable energy.
- 3.14 The comments received and the environmental assessment process has refined the layout of turbines and the routing of access tracks to minimise the amount of development over areas of shallow peat, it has removed the turbine that was nearest to the village of Tonmawr, reduced the height of the turbines proposed on Mynydd Fforch-dwm, and confirmed that a reduction in the lighting intensity on three of the turbines is acceptable and compliant with aircraft navigation safety.

4 Findings of the EIA

Aviation, Telecommunications, Shadow Flicker and Safety

Aviation

- 4.1 Wind turbines have the potential to affect civil and military aviation. The Proposed Development is located 39 km to the north-west of Cardiff Airport and 27 km to the east-north-east of Swansea Airport. The closest controlled airspace is an airway designated as the Strumble Control Area, Class A controlled airspace which runs east/west and is over 5 km to the north of the site. The closest military airspace is the Pembrey Danger Area over 40 km to the west.
- 4.2 The proposed wind turbines will be visible to the radar at Cardiff Airport. A technical mitigation scheme has been identified that would install a new radar at the airport. This will become available subject to contractual agreements between the applicant and the airport. The imposition of a planning condition on a planning consent can ensure that the proposed wind turbine development cannot operate until the new radar is functioning. The only other mitigation required is for aviation lighting on the turbines to fulfil the requirements of both the Civil Aviation Authority and the Ministry of Defence, again controlled by a planning condition.

Shadow Flicker

- 4.3 Shadow flicker may occur under certain combinations of geographical position and time of day, when the sun passes behind the rotors of a wind turbine and casts a shadow at neighbouring properties. As the blades rotate, the shadow may result in an effect known as shadow flicker inside buildings, which appears through a window opening.
- 4.4 The prediction of significant shadow flicker effects as a result of the Proposed Development uses computer modelling to indicate the number of hours in a year that the effect might occur. It is an overestimate because it assumes that the sun is shining during all daylight hours over the course of a year, it does not account for any screening by trees, hedges or buildings, the face of the rotor always being aligned towards the dwelling, and that the rotor is always turning.
- 4.5 The results confirm that of the all properties assessed in this 'worst-case' scenario, Fforch-dwm is the only house that could experience over 30 hours of shadow flicker in a year. The effect could arise in the early evening in spring and summer, and in early morning in the summer. It is likely that the actual hours of potential shadow flicker would be considerably less, due to the wind not always blowing and the sun not always shining.
- 4.6 As shadow flicker effects are likely to fall to below 30-hours per year, the effect is assessed to be not significant. However, the Applicant is committed to installing a shadow flicker control module to the turbines concerned in order to be able to avoid shadow flicker effects, should investigation of a complaint demonstrate that it is required.
- 4.7 A planning condition would provide an appropriate control to ensure that any complaints would be investigated within a reasonable timescale and that the rectification of any substantiated shadow flicker issue would be implemented promptly and effectively.

Telecommunications and Television Interference

- 4.8 British Telecom (BT), Mobile Broadcast Network Limited (MBNL), Virgin Media O2, Vodafone, Dwr Cymru (Welsh Water) and Joint Radio Company (JRC) have confirmed they have no objections to the Proposed Development.

- 4.9 Arqiva provided details of their communications infrastructure in the area, accompanied by an objection to one turbine location. The subsequent 2D analysis has shown that wind turbine 1 infringes the exclusion zone associated with the link path. Suitable mitigation for this has been analysed and a viable response has been identified by the operator.
- 4.10 Impacts on television reception are likely to be small and may not be noticeable at all in practice, because terrestrial coverage in the area is provided by a large number of relay transmitters due to the varying terrain which affects coverage. The wind turbine development is not positioned between a transmitter and an area for which it provides coverage.
- 4.11 Impacts on satellite television reception are not anticipated because dwellings are not located within the shadow zones associated with the proposed wind turbines.

Safety

- 4.12 Generally where mine workings are identified in areas for planned development, if the mining has taken place between 20 to 30 metres below the surface, a medium risk is identified, and where deeper than 30 metres, it is regarded as a low risk. According to published geological sections, the mine abandonment plans and borehole records, the shallowest seam present below the Site is indicated to be approximately 65 metres below surface. Therefore, the former mine workings represent a low risk.
- 4.13 It is not considered that the Site is vulnerable to natural disasters or extreme weather events. Wind turbines are designed to withstand extreme weather conditions, with mechanisms to shut-down the turbines during extreme wind, and to conduct lightning to the ground during storm conditions, for example.
- 4.14 A specialist study has assessed the potential for glint and glare impacts from the solar component of the Proposed Development. The study concluded that no impacts are predicted upon road safety or for residential amenity, and no mitigation is necessary.

Landscape and Visual

- 4.15 The Proposed Development would introduce additional, larger turbines to the south west of the existing and consented Ffynon Oer, Pen y Cymoedd and Melin Court wind farms.

Construction/Decommissioning Stage Effects

- 4.16 Construction and decommissioning stage effects would be substantively the same. The greatest effects would arise from the standing turbines and the cranes used to erect these during the final stages of construction – by which point the effects would be the same as for those during operation, and again during removal of the wind turbines in the future. They would involve short-term activities and effects which would not be significant.

Operational Stage Effects

Effects on Landscape Character

- 4.17 Significant effects are predicted on the Cwm Afan and Cwm Pelenna landscape character areas which would be host to three of the turbines and the solar panels at Mynydd Blaenafon. This would be due to the change from its present state to a renewable energy development, and a sense of proximity to the turbines from lower lying areas in and around Tonmawr and Efail-fach.

Visual Effects

- 4.18 Significant visual effects are predicted for receptors within 2 km of the Site to the west, east and north, and 3 km to the south. The receptor groups within this area include:
- Users of PRow and access land across the Site and within 2 km who would experience close view of the turbines from open stretches of rights of way and access land.
 - Tonmawr (southwest) - where residents and visitors would have open views towards the two closest turbines, solar panels and access track from Tonmawr Road and from Dan y Coed and more restricted views from Johns Terrace and Blaenafon Terrace.
 - Local road and PRow users south and southeast of Cimla (southwest) who would have views of turbines from local roads and footpaths where not screened by hedges and trees, and from the open access land at Foel Fynyddau.

Designated Areas

- 4.19 Effects on the Bannau Brycheiniog National Park, Gower Peninsula AONB, Historic Parks and Gardens and Special Landscape Areas within 15 km of the Site have been assessed. No significant effects would arise upon these national or local landscape designations.

Night-time Effects

- 4.20 The Proposed Development includes an aviation lighting scheme which will gain approval from the (Civil Aviation Authority (CAA) to reduce visual effects compared to the standard CAA requirement.
- 4.21 The only significant night-time effects would be on people staying at the camp site or in the glamping pods at Bryn Bettws Lodge, where they would have close open views of the turbine lights set against a dark sky as they move about the site.

Cumulative Effects

- 4.22 Existing, consented and proposed developments within 30 km of the Site have been considered within the landscape and visual assessment. The majority of developments are existing or consented wind turbines that are taken into account in the LVIA. Wind farms in planning include Melin Court and Foel Trawsant, which are minor modifications to consented schemes, and which would not be expected to alter cumulative effects.
- 4.23 Other developments in the planning system that have been identified are at sufficient distance from the Site that cumulative effects would not arise. A number of pre-application projects were also identified, but being distant and not visible from the assessment viewpoints, it is considered that cumulative effects would not arise.
- 4.24 One project identified as requiring detailed consideration is Y Bryn wind farm, located 2.6 km to the southeast of the Site. This proposal has been assessed on the turbine layout published for EIA scoping, which has subsequently been reduced to 18 proposed turbines. There would be no change to the significant effects arising from the Proposed Development in combination with Y Bryn wind farm. The only differences would be minor reductions to non-significant effects in areas close to the Y Bryn site.

Noise and Vibration

- 4.25 This section summarises the likely significant effects at nearby dwellings with respect to the noise and vibration associated with the construction, operation and decommissioning of the Proposed Development.

Construction

- 4.26 Construction noise has been assessed using a desk-based study of a construction programme using standard methods. Most of the proposed construction activities would generally occur at large distances from residential properties, such that predicted change in noise levels experienced is considered temporary, and negligible to minor.
- 4.27 Activities associated with road upgrades, cable laying and construction of new site access track will occur at shorter distances to some properties. Most of the track upgrade work is relatively limited and would be completed in a very short time, in particular for properties along Railway Terrace. The predicted noise levels represent a very short term period when activity is closest to these receptors.
- 4.28 The construction of the new site access to the turbines on Mynydd Blaenafon will involve more earthworks over a longer duration, occurring in relatively close proximity to some properties in Tonmawr. Whilst work to build the section of the track within 60 metres of Brynhyfryd House is likely to last less than one month, noise levels between 75 to 85 decibels could be created. Some activities such as vibratory ground compaction could create perceptible levels of vibration at Brynhyfryd House, although not at levels likely to lead to any building damage. This could therefore represent a moderate impact, which is not a significant effect.

Construction vehicle road noise

- 4.29 Construction-related traffic passing to and from the Proposed Development would also represent a potential source of noise to surrounding properties.
- 4.30 Based on the prediction methodology in BS 5288, the worst-case predicted noise level due to heavy vehicles moving on the access track nearest to Brynhyfryd House is less than 53 decibels, representing a negligible impact. Heavy vehicles moving on Fforch-dwm Road could result in noise levels of up to 60 decibels at properties alongside this route, which corresponds to a minor impact.
- 4.31 The effect of traffic on other roads was assessed using the Control of Road Traffic Noise methodology. A maximum increase of 1.6 decibels in the day-time average noise level was predicted on Ton-Mawr Road. Based on the criteria set out in the Design Manual for Roads and Bridges, this predicted short-term change in traffic noise levels corresponds to a minor impact. For the other roads considered, the predicted increase was of less than 0.5 decibel, which corresponds to a negligible impact.

Wind turbine noise levels

- 4.32 Operational wind turbine noise levels have been assessed using relevant guidelines and good practice, on the basis of new and historical baseline survey data and site-specific considerations. This included consideration of other wind turbines at Pen y Cymoedd. It was concluded that wind turbines of the type and size which would be installed can operate within the guideline limits, including when considering other turbine noise as a cumulative effect. Operational wind turbine noise is therefore considered to be not significant in EIA terms.
- 4.33 Potential noise from the switching station/control building and solar array was assessed in line with the relevant standard, BS 4142. The noise level at the nearest dwelling would be associated with a minor effect at most, which is not significant. The addition of these sources to that of the wind turbines would not affect the outcome of the assessment and operational noise would remain not significant.

Ecology

Baseline

- 4.34 There are no designated sites such as Special Protection Areas (SPAs) or Ramsar sites located within 20 km of the Site and with which potential connectivity may be considered.
- 4.35 There are two Local Nature Reserves (LNR) within 5 km of the Site; Bryn Tip (3.78 km south) and Eaglesbush Valley (4.57 km west). Bryn Tip is a former colliery which contains species rich grasslands which support rare and protected plant and animal species, Eaglesbush Valley is designated for oak woodland valley interests.
- 4.36 There are three non-statutory designated sites within 1 km of the Site: Tyle'r Waum Site of Interest for Nature Conservation (SINC), Cwm Blaenpelenna SINC and Tonmawr Minewater Treatment & Surrounding Habitats SINC. Tyle'r Waum SINC is within the Site, Cwm Blaenpelenna SINC is adjacent to part of the northern Site boundary and Tonmawr Minewater Treatment & Surrounding Habitats SINC is located to the west of the Site.
- 4.37 Existing records of protected and notable species obtained from the South East Wales Biodiversity Records Centre (SEWBRc) included records of:
- Eleven protected/sensitive plant and liverwort species, many of which are associated with the Tyle'r Waun and Cwm Blaenpelenna SINCs;
 - Three invasive/non-native plant species;
 - Two reptile species; and,
 - Twenty-three invertebrate species.
- 4.38 The following baseline ecological field surveys have therefore been completed within the Proposed Development site to confirm the presence and distribution of ecological receptors:
- Phase 1 Habitat survey;
 - National Vegetation Classification (NVC) survey;
 - Terrestrial mammal searches;
 - Bat activity survey; and
 - Reptile survey.

Potential Effects

- 4.39 CIEEM guidelines (2018) specify that it is not necessary to carry out a detailed assessment of impacts on ecological receptors that are widespread, unthreatened and/ or resilient to impacts of a development proposal.
- 4.40 As such, the assessment presented within this section considers the potential for significant effects upon designated sites for nature conservation and ecological receptors which are considered 'important' on the basis of relevant guidance and professional judgement.
- 4.41 The assessment presented within this section considers in detail the potential for significant effects upon bat species in relation to the construction, operation and decommissioning of the Proposed Development.
- 4.42 The potential for significant effects upon all other identified ecological receptors is considered highly unlikely and therefore scoped out of detailed assessment.

- 4.43 Baseline bat activity surveys have established that the Site is subject to low levels of bat activity. The open and semi-improved nature of grassland habitats to be lost from within the Site provide low foraging and commuting interests to bats, with adjacent habitats including woodland edges providing higher value habitats for foraging and commuting bat species.
- 4.44 Overall habitat losses for bats will therefore be very small, relative to the availability of comparable habitats remaining within the Site and the extent of preferable habitats within the surrounding area.
- 4.45 The solar component of the Proposed Development is not predicted to have any significant effect upon bats during operation. The assessment of operational impacts upon bats therefore focusses on potential effects from the operation of proposed wind turbines.
- 4.46 Operational wind turbines can affect bats in a number of ways, although the main concerns to species populations relates to collision mortality, barotrauma (i.e. injury caused by a change in air pressure) and other injuries resulting from collision with, or flying in very close proximity to moving turbines.
- 4.47 Based on activity levels recorded and subsequent analysis, death or injury levels for bat species are considered to be low. The Proposed Development is not considered to represent a site of concern to bat collision risks following the approach to assessment set out in Joint Agency guidance (2021).
- 4.48 It is however, acknowledged that low risk sites can still result in bat casualties, but for which buffer distances from habitat features is considered adequate mitigation to avoid significant operational mortality risks to bats at most low-risk locations.
- 4.49 Monitoring data from the adjacent at Pen y Cymoedd Wind Farm has demonstrated that bat fatalities do occur locally, and therefore the cumulative effects have the potential to become significant. Subsequently, it is proposed there will be a reduced idling speed for the proposed turbines. Joint Agencies guidance states that this method may reduce fatality rates by up to 50% and is recommended where there remains uncertainty over the risk posed to bats.
- 4.50 With the implementation of reduced idling speeds at the proposed turbines, no significant cumulative effects upon bats are predicted to occur. Post-construction monitoring is proposed to assess bat activity from the outset of the operational phase of the Proposed Development, over a period to be agreed with PEDW, in consultation with NRW. This will assess bat activity and the efficacy of mitigation.
- 4.51 The Proposed Development would include the following habitat management measures and biodiversity net benefits:
- Enhancement of moorland habitats;
 - Enhancement of habitat for reptiles and amphibians;
 - Manage mosaic habitat;
 - Monitoring SINC condition; and
 - Enhancement of opportunities for nesting and foraging birds.

Ornithology

- 4.52 The ornithology assessment is based on the Guidelines for Ecological Impact Assessment (EclIA) in the United Kingdom (CIEEM, 2018). CIEEM guidelines stipulate that it is not necessary to carry out a detailed assessment of impacts upon ornithological receptors that are sufficiently widespread, unthreatened and resilient to impacts of the Proposed

Development. As such, the assessment considers effects upon designated sites and ornithological receptors that are considered 'important' on the basis of baseline information, relevant guidance, literature, professional judgement of the authors and opinions of statutory advisory bodies provided through consultations in relation to the Proposed Development and, where relevant, other wind farm developments.

- 4.53 Where ornithological receptors are not considered so important as to warrant a detailed assessment, or where they would not be significantly affected on the basis of baseline information (e.g., passerine species), these are 'scoped out' of the assessment.
- 4.54 Ornithological field surveys of important and legally protected species identified during desk study and in consultation with Natural Resources Wales (NRW), Neath Port Talbot County Borough Council (NPTCBC) and Planning and Environment Decisions Wales (PEDW) have been carried out.

Site designated for nature conservation

- 4.55 Alongside the information in the Ecology section above, there are three designated sites for nature conservation with qualifying ornithological interest are located within 10 km of the Site:
- Crymlyn Burrows Site of Special Scientific Interest (SSSI) (8.3 km west from the Site) - overwintering wader interest;
 - Mynydd Ty-Isaf SSSI (8.7 km east from the Site) - un-named Schedule 1 breeding raptor interest; and
 - Crymlyn Bog Ramsar site and SSSI (9.5 km west from the Site) - important populations of reed warbler and sedge warbler interests.

Records and Studies

- 4.56 The Biodiversity Records Centre provided records of 30 bird species, including barn owl, hen harrier, peregrine and honey-buzzard. No records related to the presence of breeding sites of such species are documented within 1 km of the Site.
- 4.57 A review of Pen y Cymoedd operational monitoring reports identified the presence of breeding nightjar and very low flight activity of honey-buzzard, with sporadic evidence of breeding typically more than 4 km from the locality, and no breeding evidence at all during the most recent monitoring (MPS Ecology, 2021).
- 4.58 Moorland breeding bird surveys (MBBSs) were undertaken in 2019 and 2021. These recorded a narrow assemblage of breeding passerines, but no breeding ground-nesting waders or waterfowl. Most breeding passerines recorded within the Site are species which are associated with habitats including woodland, hedgerows and treelines.
- 4.59 Populations of passerine species are not considered to be significantly impacted by onshore wind farms (NatureScot, 2017 and 2018), with the potential for significant effects upon such species scoped out of detailed assessment. All birds will be considered through the adoption of good practice measures to ensure nesting birds are protected during works associated with the Proposed Development.
- 4.60 The solar array component of the Proposed Development is located on semi-improved acid grassland. Ground-nesting passerines (like skylark) recorded during the surveys, are reported as using habitats within solar farms, and there is no evidence for displacement of breeding birds by solar farms (RSPB, 2020). It is therefore considered that species like skylark will continue to use grassland habitats associated with the solar array, which may continue to

provide nesting and foraging opportunities, whilst with time, as the planted trees mature, much of the MB area will become largely unsuitable.

- 4.61 Breeding raptor and owl searches were undertaken on the Site and a 2 km buffer in 2019 and 2021, where accessible, in accordance with NatureScot guidance (2017). In 2019, the Study Area was found to support a single red kite breeding territory, but which was not present in 2021.
- 4.62 Surveys of the MFD area of the Proposed Development between March 2015 and February 2016 by Avian Ecology Ltd., recorded churring nightjar to the east of the Site boundary, and typically low flight activity of a narrow range of raptors and owls, including red kite, peregrine and merlin. Of the species recorded during Vantage Point flight activity surveys, only red kite was recorded with more than two flights.
- 4.63 Vantage Point flight activity surveys to establish the level and distribution of potential "at collision risk" target species flight activity were undertaken between March 2019 and February 2020 (Year 1) and between March 2021 and February 2022 (Year 2).
- 4.64 Detailed analysis of collision mortality risks has been undertaken for red kite, given this was the only target species for which four or more "at collision risk" flights were recorded in any one survey year. Accordingly, collision mortality risks for all other target species recorded during baseline surveys can be concluded as inconsequential at any population level without the requirement for detailed analysis.

Assessment

- 4.65 Design considerations have been incorporated to avoid or minimise adverse effects upon ornithological receptors. The Proposed Development is sensitive to those bog/flush/marsh habitats in the east of the Site, with the turbines located predominantly in grassland grazed by livestock in the MFD area. The proposed turbines are also positioned so there will be a suitable separation distance between the turbines and forest where trees have been planted on MB (which has potential to be used by breeding raptors). The turbines have also been located at least 300 metres from the nearest red kite nest site (identified in 2019, but not active in 2021).
- 4.66 Overall construction phase disturbance/displacement to red kite is considered to represent no more than a short-term, low magnitude effect at the regional population level, which is of minor adverse significance and not significant in the context of the EIA.
- 4.67 Potential operational ornithological effects associated with the Proposed Development are considered to relate to collision mortality risks and disturbance/ displacement of birds from the Site area and surroundings as a result of the operation of the Proposed Development. Overall, operational phase disturbance/displacement and collision mortality to red kite is considered to represent no more than a Long-term, Low magnitude effect at the regional population level, which is of minor adverse significance and not significant in the context of the EIA.
- 4.68 No significant residual effects are predicted to occur upon red kite or any other important ornithological receptor as a result of the construction, operation or decommissioning of the Proposed Development, either alone or cumulatively with the effect of other developments.

Geology, Hydrology, Hydrogeology and Peat

- 4.69 A detailed review of the Site hydrological, hydrogeological and geological settings has included data and information held by NPTCBC and Natural Resources Wales, as well as the findings from detailed and site-specific investigations.
- 4.70 The proven baseline conditions have informed the site design. For example, areas of deep peat and peaty soils have been avoided to reduce the amount affected by excavation. However, some infrastructure of the scheme has to be situated in areas of shallow peat or peaty soils (generally less than 0.5 metres deep). Excavation of peat in any instance will result in some ecological and biodiversity losses, as well as depletion of carbon reserves. A soils and peat management plan submitted with the application sets out good mitigation practices, in particular for the peat resource. With the use of this managed approach, the magnitude of change to this high sensitivity receptor would be negligible, which is assessed as a minor residual effect.
- 4.71 The construction of turbines involves excavating a void and infilling with cemented materials to create a solid turbine base. This means that subsurface lateral flows of water may be altered by the foundations. The depth of the foundations is not considered enough to have any impact on the groundwater flows in the bedrock saturated zone.
- 4.72 The siting of turbines away from slopes or low-lying topography where groundwater flow is more prevalent means that measures to reduce impacts on subsurface flows are inherent in the scheme design. It is considered the potential effects to shallow subsurface flow pathways and groundwater at the turbine locations represents a low magnitude of change on a low sensitivity receptor so the effect is minor, which is not significant in EIA terms.
- 4.73 The risk of a pollution incident occurring will be managed using standard good practice (set out in a Construction Environment Management Plan). With the pollution prevention measures that will be employed, it is considered that the effect during construction would represent a negligible effect and is not significant.
- 4.74 During the operational phase of the Proposed Development, routine maintenance of infrastructure would be required. This may include work such as maintaining drainage devices, removing sedimentation from structures and turbine maintenance.
- 4.75 The assessment has concluded that all potential impacts are not significant, provided that best practice guidance and mitigation measures are implemented.

Archaeology and Cultural Heritage

- 4.76 The potential for significant effects on historic assets resulting from the construction and operation of the Proposed Development has been assessed.
- 4.77 The works required to enhance the track for access to MFD could directly impact the Scheduled Monument of Cwm Pelenna Colliery Ventilation Furnace. To mitigate this, it is recommended that a 'floating road' scheme is utilised. This would avoid direct physical effects upon this part of the Scheduled Monument.
- 4.78 An access track on MB could also directly impact the non-designated medieval platform situated within the western area of the Site. This is poorly preserved and is not a historic asset of the highest significance. To mitigate, it is recommended that an archaeological mitigation is undertaken to record and monitor any ground works associated with the construction of the access track.
- 4.79 No other known archaeological remains will be physically affected by the proposals. However, there is the potential of encountering previously unrecorded archaeological remains within the

Site. In the first instance, it is recommended that the areas to be developed should be the subject of a geophysical survey in order to identify any areas of potential interest.

- 4.80 Additionally, the likelihood of increased traffic and activity of the Proposed Development could cause a minor to moderate adverse effect upon Cwm Pelenna Colliery Ventilation Furnace and Cwm Pelenna Ventilation Stack, which is not a significant effect.

Transport and Access

- 4.81 This section considers the likely significant effects on transport and access associated with the construction, operation and decommissioning of the Proposed Development.
- 4.82 The existing traffic data has been used to forecast the future baseline to enable the impact and effect of construction traffic on the local road network to be considered. The assessment found that the greatest amount of traffic associated with construction would occur in the fifth month of the construction programme. At that time, it is forecast that an average of 143 Heavy Goods Vehicle movements and 27 car/light van movements per day will be required to move construction materials and workers to and from the Site.
- 4.83 No capacity issues are expected on any of the roads assessed as a result of the additional vehicle movements associated with the proposal. A series of traffic management measures have been proposed in a Travel Plan to help mitigate the construction traffic flows.

Socio-economic effects

- 4.84 The Mynydd Fforch Dwm scheme is predicted to bring benefits that are likely to be substantial for the local area. This will be supported by a community benefit fund, or shared ownership.
- 4.85 Employment during the construction phase will be predominantly through direct job involvement, with support for indirect jobs also. Direct jobs are those related to activities such as construction workers, technical specialists, crane operators, Health & Safety consultants and engineers. Indirect jobs are supported in the supply chain or those that offer specific services to the sector.
- 4.86 Across the 35 year lifespan of the development, the input to the economy across the UK would be some £40,741,000, £30,065,000 of which would be retained in Wales and £4,891,000 in the local area (within c.10 kilometres of the site).
- 4.87 The predicted contribution to the economy can be used to forecast the number of jobs that could be supported by the proposal. During the period of design and construction, the scheme would directly support 109 jobs in Wales, 19 of which could be in the local area. When completed and in operation, over a 35 year period, it would sustain some 429 jobs in Wales, of which 55 could be in the local area.
- 4.88 The Government has a target for increasing local ownership of renewable projects. Given the variation in arrangements that a shared ownership approach might take, community benefit funds are a simple way to express how a community might gain from energy generation. As most developers adopt the Renewable UK protocol, such a model would be expected to provide up to £175K per annum, or £4.4 million over the 35 year lifespan of the development. Such funds can be used by the community for anything considered important to them. It presents opportunities for substantial investment in local amenities, as well as for economic regeneration and development. Elsewhere, allocations have been used to support local voluntary groups, sports teams and clubs, village halls and community centres, and equipment for schools. They have also been used to support community cooperatives, such

as shops, training provision for local residents and infrastructure investment such as high speed broadband.

- 4.89 The expected social and economic impacts generated by the Mynydd Fforch Dwm wind farm are mostly positive. Where there are negative impacts, which relate to access to recreation and footpaths beyond the temporary construction phase, these are assessed to be of minor significance.

5 Cumulative Effects

- 5.1 The assessment has considered the potential for effects in combination with other developments identified within 30 kilometres of the Site.
- 5.2 For landscape receptors, the only project identified as requiring detailed consideration was the Y Bryn wind farm, a proposal for wind turbines located 2.6km to the southeast of the Site. The assessment found that there would be no increase to the significant effects of MFD when considered with the inclusion of the Y Bryn wind farm. The only difference to effects assessed would be minor reductions to non-significant effects in areas close to the Y Bryn site.
- 5.3 The wider cumulative assessments for other environmental topics also concluded that no additional significant adverse effects are likely to occur from the implementation of the Proposed Development when considered in combination with nearby existing or approved developments.

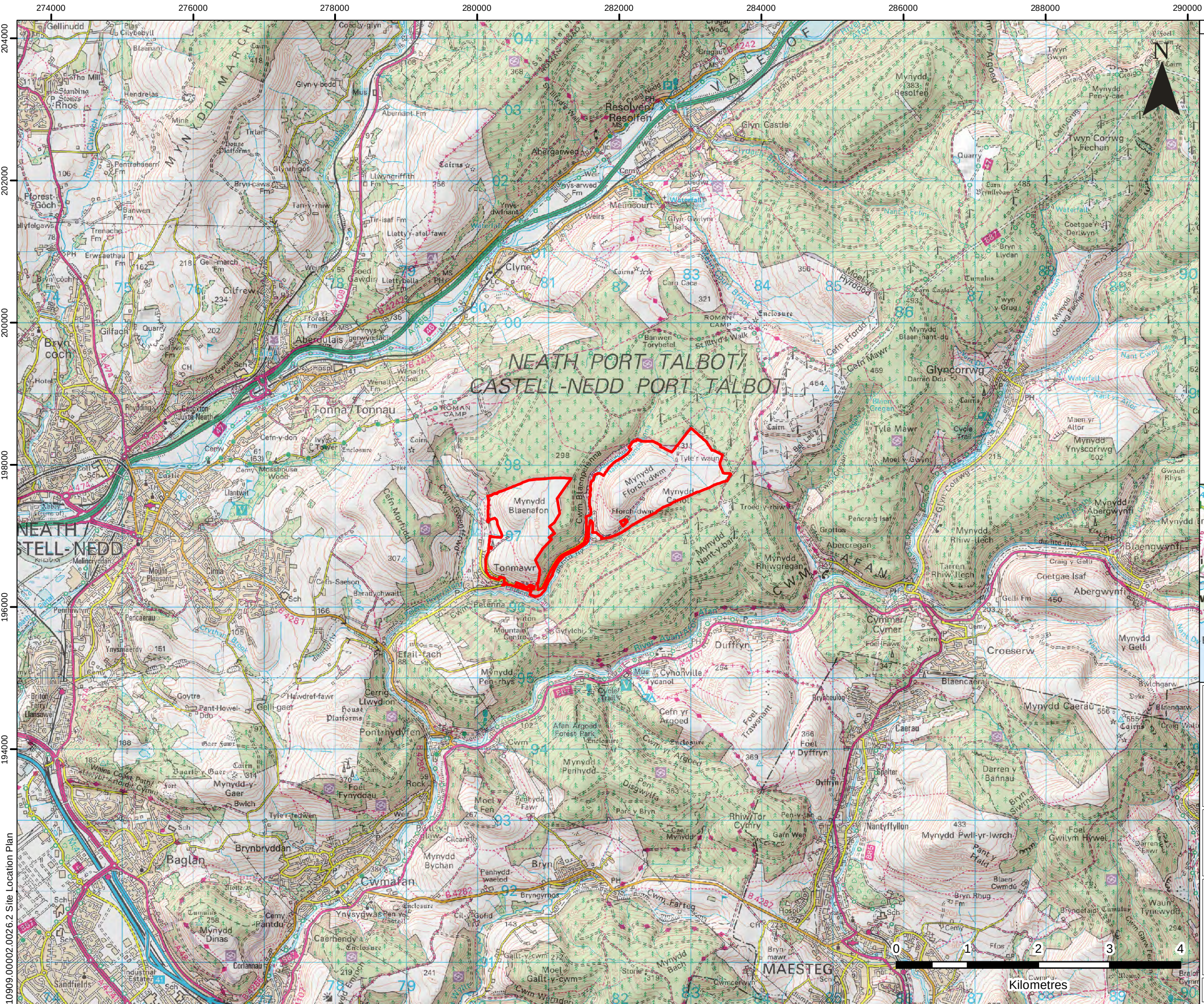
6 Conclusion

- 6.1 The ES has considered how the environment and the local community would be affected by the Proposed Development.
- 6.2 A range of likely effects have been predicted to occur as a result of the Proposed Development, both beneficial and adverse.
- 6.3 Residual effects on visual receptors remain adverse at places in close proximity the proposed scheme. Residual effects that are assessed as significant beneficial are for the positive effects on economic activity and employment, and the social impacts deriving from community benefits. Mitigation measures have been identified either within the scheme design or additionally to minimise or offset identified adverse effects where possible.
- 6.4 The following Tables provide a summary of the mitigation measures and the residual effects on the identified receptors for the construction period, and for the development when operational.

Summary for the assessment of effects during the construction period			
Receptor	Mitigation / enhancement	Residual Effect	Significant?
Noise and vibration			
Brynhyfryd House	Temporary localised solid screening and measures to minimise site access track construction noise and vibration at Brynhyfryd House. Liaison with closest affected residents and monitoring of levels during relevant construction phase. Noise insulation (or costs thereof) if high residual impacts remain likely.	Temporary minor, Adverse	Not Significant
Other residential properties	None required.	Temporary minor, Negligible	Not Significant
Ecology			
Bats	Not required.	Minor, Adverse	Not significant
Ornithology			
Red Kite	Good practice protocols included as part of the CEMP to ensure legislative compliance for breeding birds as part of the CBBPP.	Minor, Adverse	Non-significant

Summary for the assessment of effects during the construction period			
Receptor	Mitigation / enhancement	Residual Effect	Significant?
Geology, hydrology and hydrogeology and peat			
Soils and Geology	The site design process has ensured that the level of peat extraction is minimised. Appropriate peat management practice will be adhered to minimising loss of peat resources. Adherence to Guidance in the Soil and Peat Management Plan.	Minor, Adverse	Not significant
Ordinary Watercourses in vicinity of the site	Adherence to industry standard good practice and design to incorporate appropriate drainage to maintain local hydrology.	Minor, Adverse	Not significant
Ordinary Watercourses in vicinity of the site	Adherence to industry standard good practice and guidance as well as measures defined in the Soil and Peat Management Plan.	Minor, Adverse	Not significant
Ordinary Watercourses in vicinity of the site	Adherence to industry standard good practice and Ordinary Watercourse Consent for all new crossings.	Minor, Adverse	Not significant
Ordinary Watercourses in vicinity of the site	Adherence to industry standard good practice and measures defined in the CEMP.	Negligible	Not significant
Downstream Main Rivers	Adherence to industry standard good practice and measures defined in the Soil and Peat Management Plan.	Minor, Adverse	Not significant
Downstream Main Rivers	Surface water drainage will be implemented as part of the CEMP and will be installed prior to development.	Negligible	Not significant
Downstream Main Rivers	Adherence to industry standard good practice and measures defined in the CEMP.	Negligible	Not significant
Groundwater	Adherence to industry standard good practice and measures defined in the CEMP.	Negligible	Not significant
Groundwater	Adherence to industry standard good practice and lining of foundation excavations prior to concrete pouring.	Negligible	Not significant
Private Water Supplies	Adherence to industry standard good practice and lining of foundation excavations prior to concrete pouring. Water quality monitoring to be undertaken prior and during construction.	Minor or Negligible	Not significant
Ground Water Dependent Terrestrial Ecology	Adherence to industry standard good practice and design to incorporate appropriate drainage to maintain local hydrology.	Minor	Not significant
Heritage			
Cwm Pelenna Colliery Ventilation Furnace (GM458) Cwm Pelenna Ventilation Stack (22888)	A 'floating road' scheme to be designed that would not involve any direct impacts to the Scheduled Monument	None - with mitigation implemented	Not significant
Non-designated medieval platform site (00693w)	Monitor and record during ground works	None - with mitigation implemented	Not significant
Transport and access			
Users of Fforch-dwm Road and Ton-Mawr Road	Construction Transport Management Plan Measures (CTMP) including improved signage, driver training, speed limits in sensitive areas and public information. Reducing movements through Staff Travel Plan.	Minor	Not significant and short term
Residents of Fforch-dwm Road	CTMP measures including driver training, speed limits in sensitive areas and public information.	Minor	Not significant and short term
Public Rights of Way	Path Management Plan and CTMP measures.	Minor	Not significant and short term

Summary for the assessment of effects of the completed development			
Receptor	Mitigation / enhancement	Residual Effect	Significant?
Landscape character areas			
Cwm Afan and Cwm Pelenna (includes the Site)	Inherent design	Major/moderate, Adverse	Significant
Mynydd Bychan Feol Fynyddau Mynydd Resolfen, Craig-y-Llyn & Mynydd Ynyscorrwg	Inherent design	Moderate/minor, Adverse	Not significant
Visual receptors			
Users of PRoW and access land across the Site and within 2km (includes Site)	Inherent design	Major/moderate, Adverse	Significant
Tonmawr (0.8km, South West)	Inherent design	Major, Adverse	Significant
Local road and PRoW users south and southeast of Cimla (3km, South West)	Inherent design	Major/moderate, Adverse	Significant
Visitors to Miners Museum and users of nearby routes and access land; Wildfox Resort; Cilfrew, Mynydd Marchywel and Sarn Helen; Caerau and users of footpaths and access land at Mynydd Pwll-yr-lwrch; Neath	Inherent design	Moderate/minor, Adverse	Not significant
Key routes			
Celtic Way; Cistercian Way, NCR 47, St Iltyd's Way	Inherent design	Moderate, Adverse	Not significant
Landscape designations			
Vale of Neath SLA Dulais Valley SLA	Inherent design	Moderate/minor, Adverse	Not significant
Visual receptors at night			
Mountain Centre at Bryn Bettws Lodge (night-time) (1.5km, South)	Inherent design	Major/Moderate, Adverse	Significant
Tonmawr, local roads southeast of Cimla, Cilfrew	Inherent design	Moderate/minor, Adverse	Not significant
Croeserw, Caerau	Inherent design	Negligible	Not significant
Noise and vibration			
Residential properties	Selection of turbine model to meet acceptable noise limits (ETSU R 97)	Negligible	Not Significant
Ecology			
Bats	Not required.	Minor, Adverse	Not significant
Ornithology			
Red Kite - displacement/disturbance	Not required.	Minor, Adverse	Not significant
Red Kite – collision mortality	Not required.	Minor, Adverse	Not significant
Geology, hydrology, hydrogeology and peat			
Ordinary Watercourses in vicinity of the site	Maintain vegetation beneath the solar array, implement surface water drainage.	Negligible	Not significant
Groundwater	Site drainage to maximise infiltration and maintain shallow hydrology regimes.	Minor, Adverse	Not significant
Heritage			
Cwm Pelenna Colliery Ventilation Furnace Cwm Pelenna Ventilation Stack	Not required.	Moderate/minor, Adverse	Not significant
Socio-economics			
Economic impact / Employment	None required	Major/moderate, Beneficial	Significant
Skills and experience	None required	Minor, Beneficial	Not significant
Social impacts / local community	Community fund	Major, Beneficial	Significant
Tourism and Recreation	Improved access / signage	Minor, Beneficial	Not significant



LEGEND

Site Boundary

4/5 LOCHSIDE VIEW
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MYNYDD FFORCH DWM

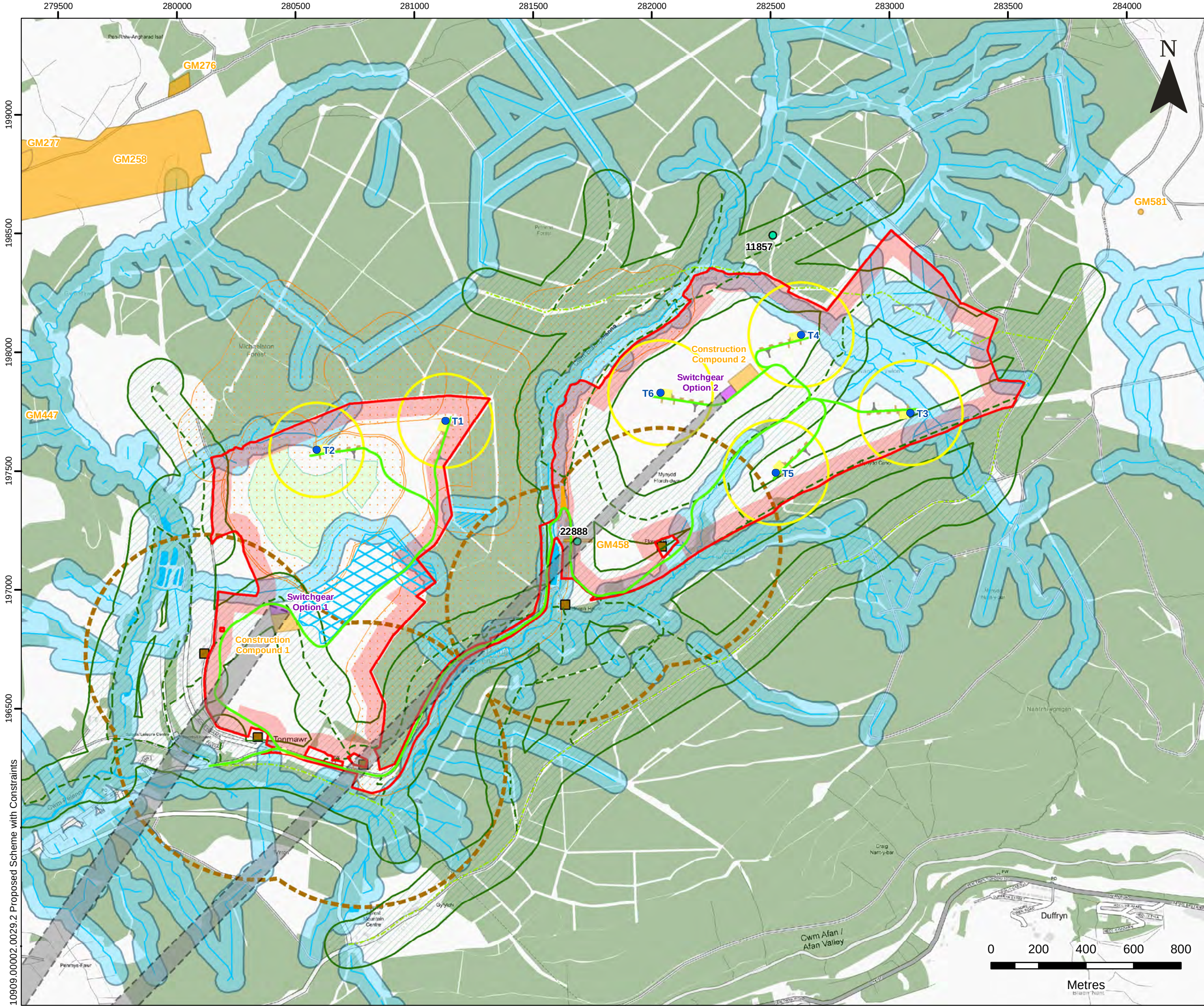
FOR PLANNING

SITE LOCATION

NTS FIGURE 1

Scale 1:50,000 @ A3

Date MAY 2023



LEGEND

Proposed Turbine Location

Site Boundary

Potential Solar Development Area

Proposed Switchgear Building Location

Temporary Construction Compound

Proposed Access Track

Proposed Crane Pad

Proposed Hardstanding Area

Proposed Turning Head

Proposed Switchback Location

Proposed Standard HGV Turning Area

Potential Substation Communications Mast Clearance Zone

Proposed Turbine Location (Topples Standoff)

Site Boundary 75 m Oversail Stand Off

Grade II Listed Building

Scheduled Monument

Bridleway

Byway

Footpath

Public Right of Way 100 m Stand Off

Noise Receptor

Noise Receptor Stand Off

Watercourse

Waterbody

Watercourse / Waterbody 50m Buffer

Woodland

Glastir Woodland Planting Area

Woodland Bat Buffer

REG
POWER
MANAGEMENT

SLR

4/5 LOCHSIDE VIEW
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MYNYDD FFORCH DWM

FOR PLANNING

PROPOSED SCHEME
WITH CONSTRAINTS

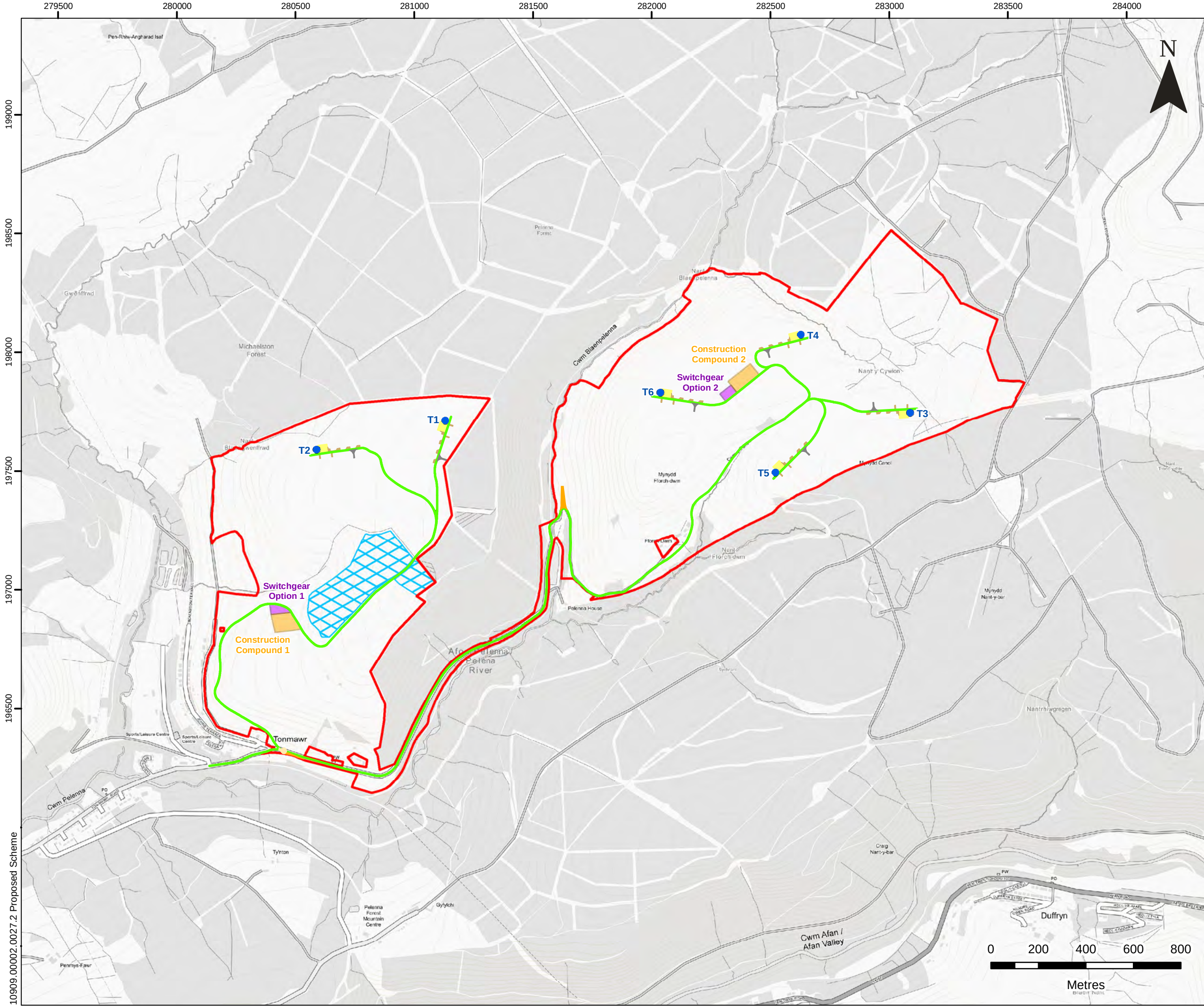
NTS FIGURE 2

Scale
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Date
APRIL 2023

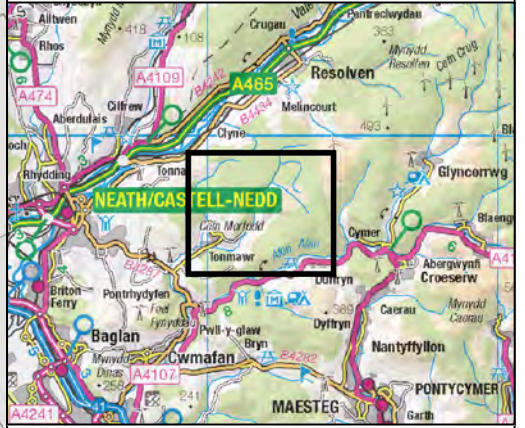
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LEGEND

- Proposed Turbine Location
- Site Boundary
- Potential Solar Development Area
- Proposed Switchgear Building Location
- Temporary Construction Compound
- Proposed Access
- Proposed Crane Pad
- Proposed Hardstanding Area
- Proposed Turning Head
- Proposed Switchback Location
- Proposed Standard HGV Turning Area







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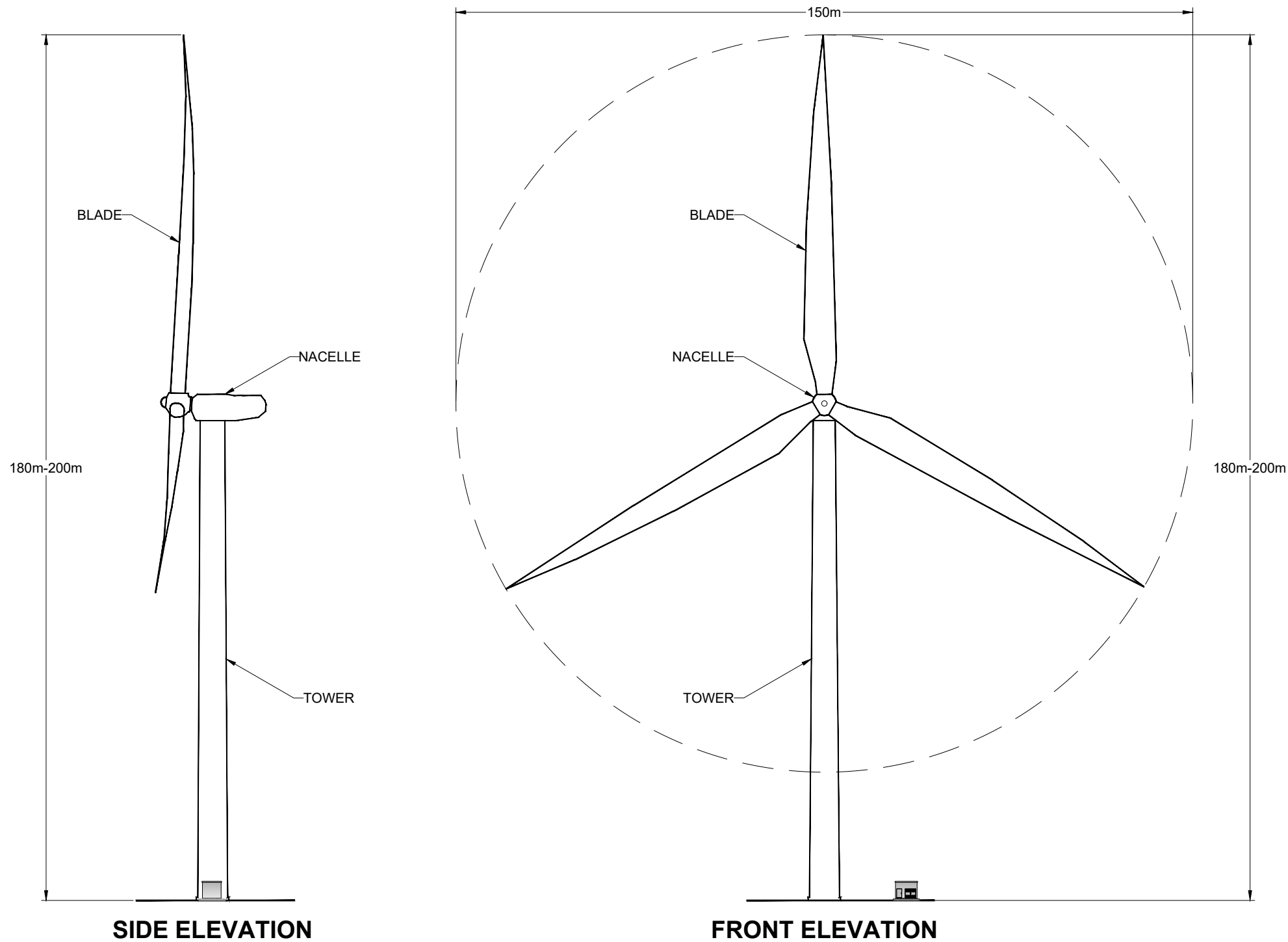
FOR PLANNING

PROPOSED SCHEME

NTS FIGURE 3

Scale
1:15,000 @ A3

Date
MAY 2023



Turbine ID	Easting	Northing	Tip Height(m)	Rotor Diameter (m)
1	281131	197711	180	150
2	280629	197599	180	150
3	283088	197744	200	150
4	282628	198074	200	150
5	282522	197493	200	150
6	282036	197830	200	150



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MYNYDD FFORCH DWM WIND FARM

PLANNING APPLICATION

TYPICAL TURBINE ELEVATION

NTS FIGURE 4

Scale
1:1000 @ A3

Date
APRIL 2023



Mynydd Fforch-Dwm

NTS Figure 5 Ecological
Statutory Designated Sites

Date:	16/05/2023
Paper size:	A3
Scale:	1:85,000



Key:

 Site Boundary

 10km Site Boundary Buffer

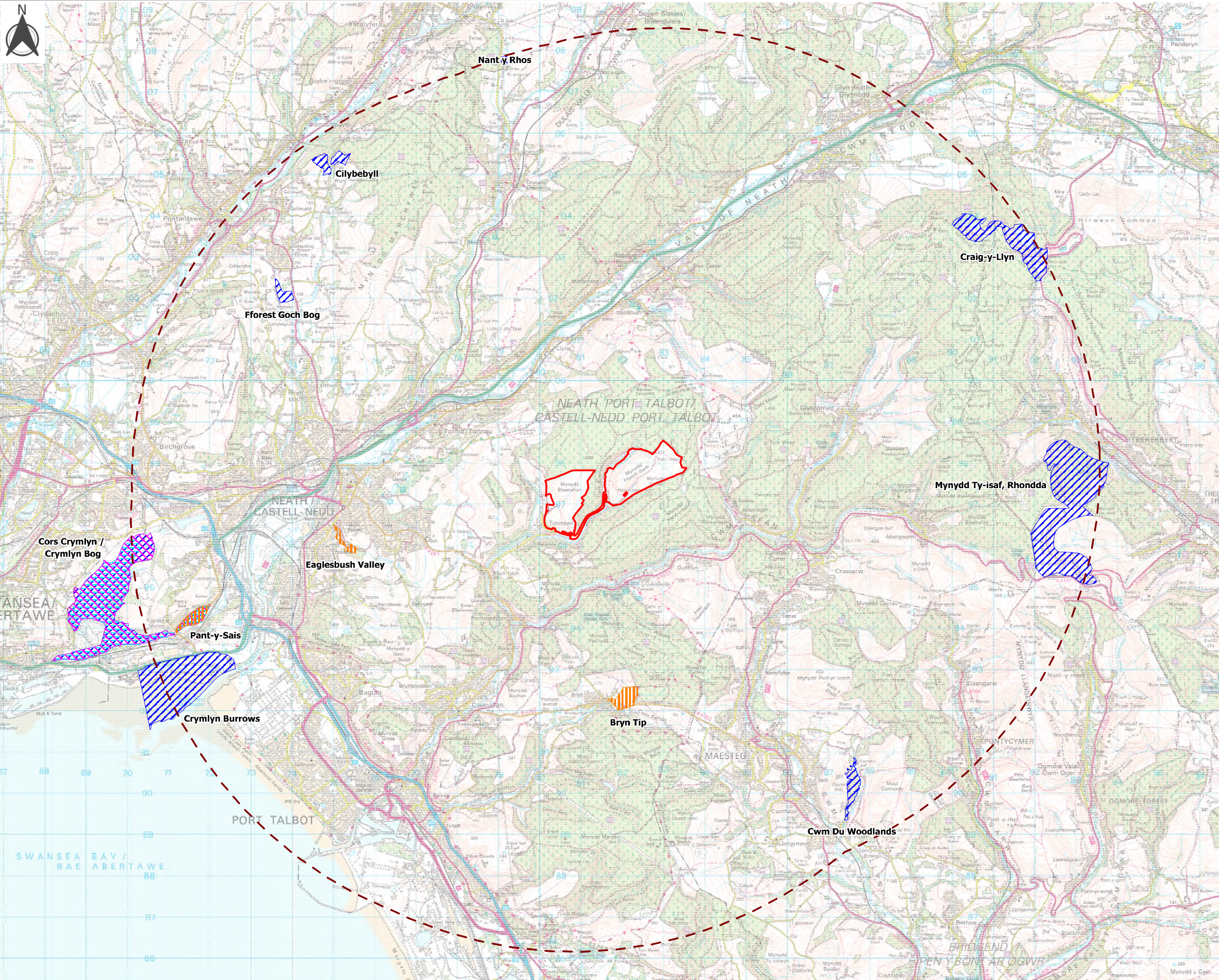
Designated Site

 Local Nature Reserve (LNR)

 Special Area of Conservation (SAC)

 Ramsar

 Site of Special Scientific Interest (SSSI)



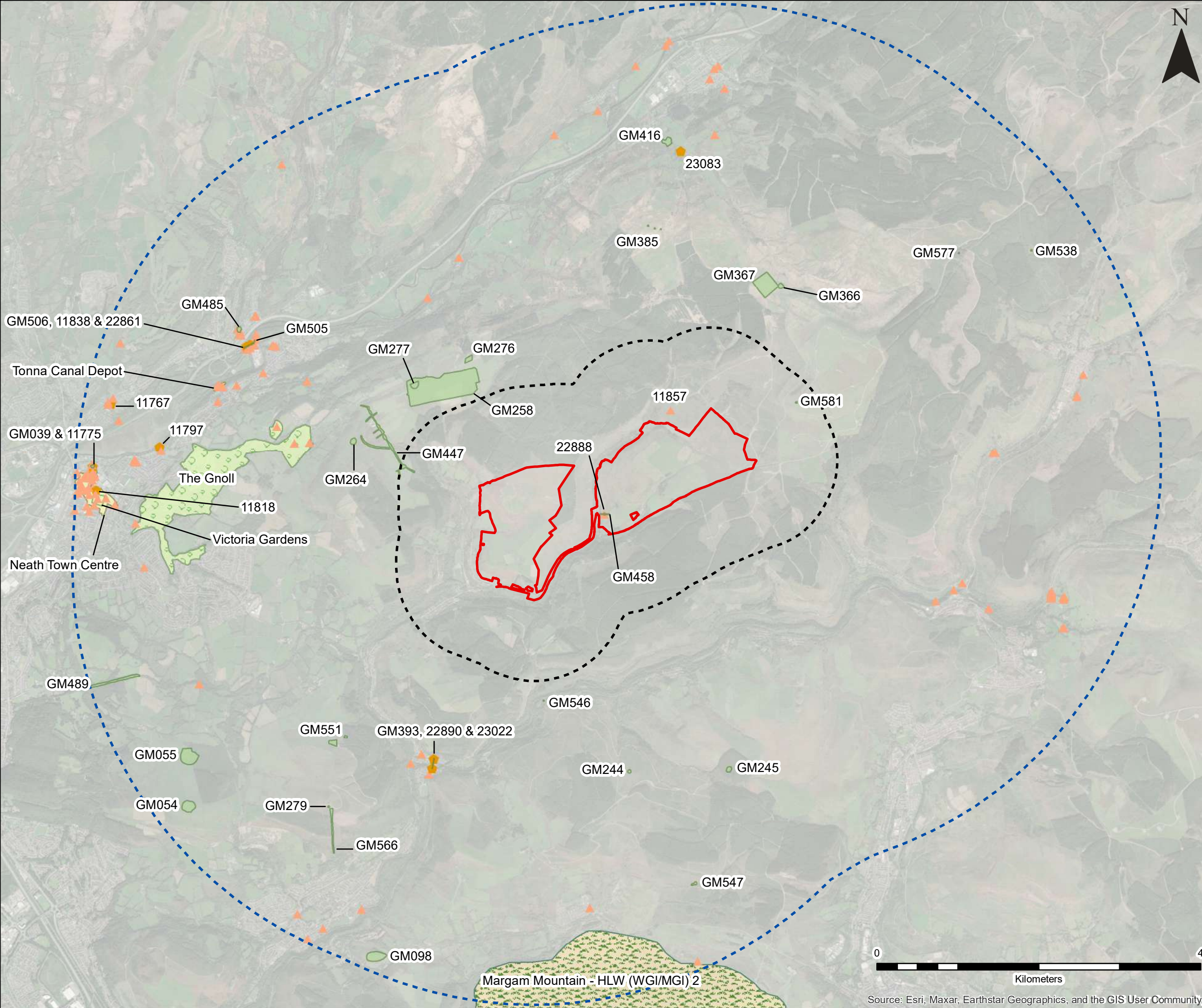
Drawn by: HD

Approved by: HF

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Walnut Tree Farm,
Northwich Road,
Lower Stretton
WA4 4PG





NOTE

1. DATA © CADW

LEGEND

SITE

STUDY AREA (1KM)

STUDY AREA (5KM)

GRADE II* LISTED BUILDING

GRADE II LISTED BUILDING

SCHEDULED MONUMENTS

REGISTERED PARK & GARDEN

CONSERVATION AREA

REGISTERED HISTORIC LANDSCAPE

GROUND FLOOR
HELMONT HOUSE
CHURCHILL WAY
CARDIFF, CF10 2HE
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Mynydd Fforch DWM

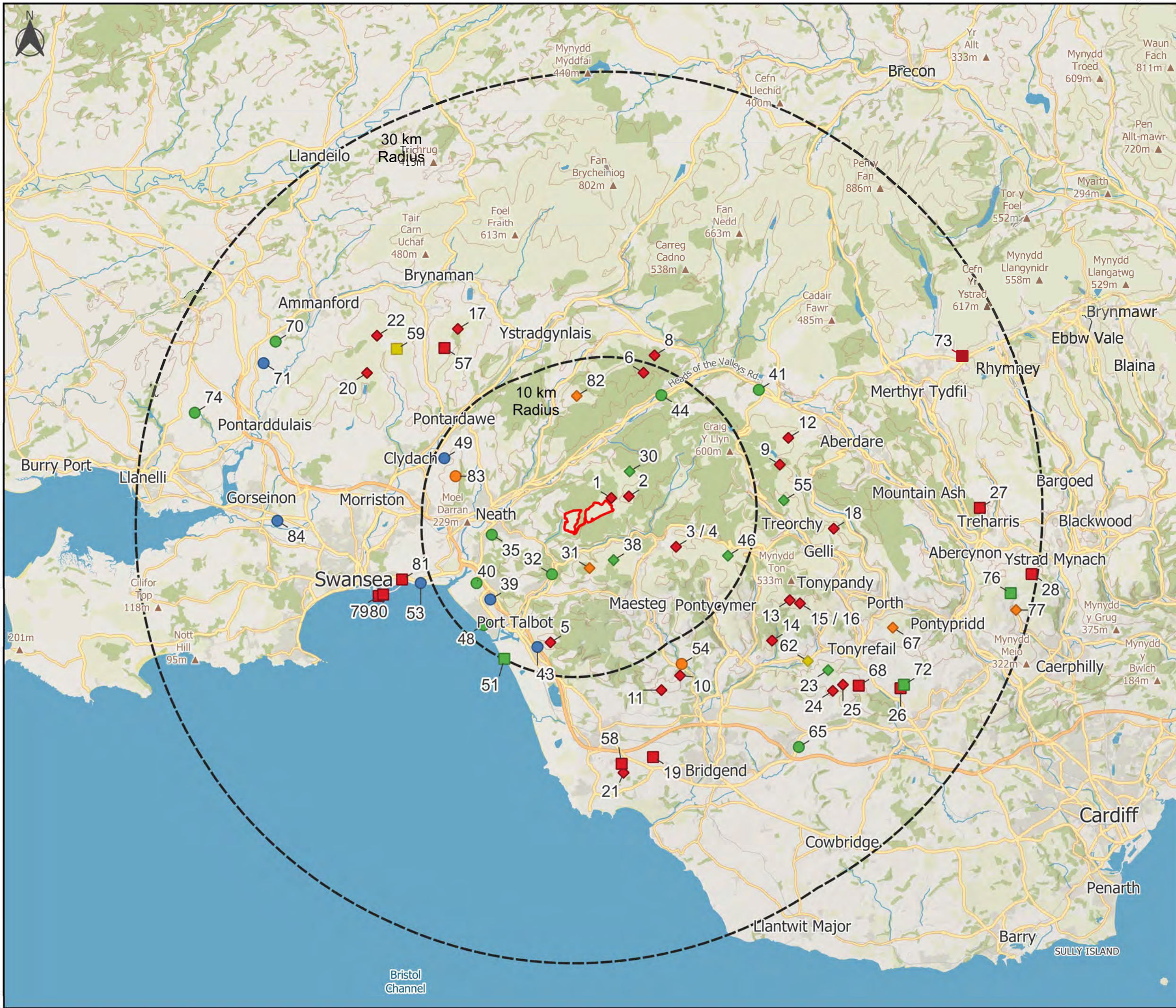
HISTORIC ENVIRONMENT DBA

DESIGNATED HISTORIC ASSETS

NTS FIGURE 6

Scale1:45,000 @ A3

DateAPRIL 2023



Mynydd Fforch-Dwm

NTS Figure 7: Cumulative Sites Plan

Date: 19-05-2023

Paper size: A3

Scale: 1:250,000

0 4,000 8,000 12,000 m

Key:

- Site Boundary
- Screening Wind Farm
- Screening Single Turbine
- Screening Non-wind
- Scoping Wind Farm
- Scoping Non-wind
- Submitted Non-wind
- Consented Wind Farm
- Consented Single Turbine
- Consented Non-wind
- Operational Wind Farm
- Operational Single Turbine

NB. the map omits screened-out site numbers.

REG
POWER
MANAGEMENT

Drawn by:	Rhys Williams
Approved by:	Peter Traves
Drawing reference:	NTS Figure 7
Version:	V7

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