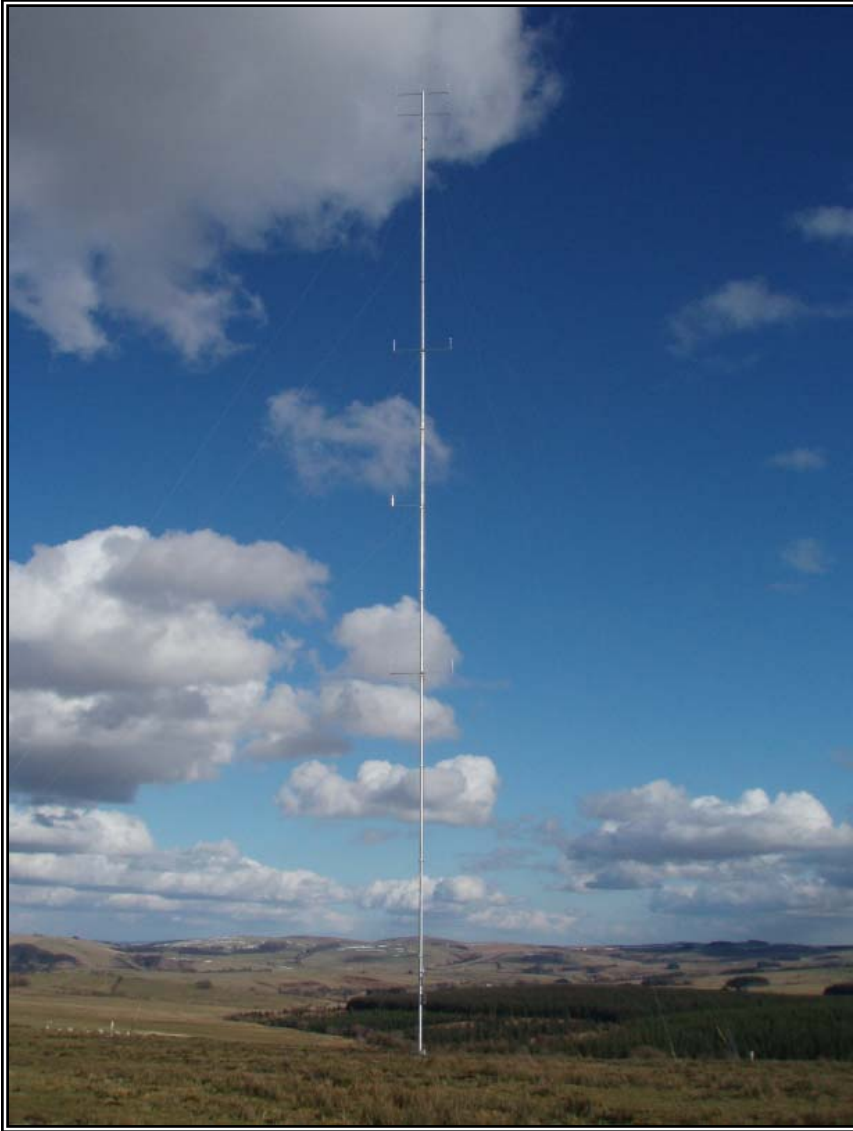




(Illustrative only)

Mynydd Fforch-dwm

Temporary 90m Meteorological Monitoring Mast

Design and Access Statement

Applicant: Naturalis Energy Developments Ltd

March 2022

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Report Status:	Draft V1	V2	V3
Prepared By:	Lesley Rice	Lesley Rice	
Approved for Issue By:	Michael Phillips	Michael Phillips	
Date:	02/03/2022	14/03/2022	
Version:	E05723-DOC-MfD Temporary Met Mast Design and Access Statement-V1-20220302-MP.doc	E05723-DOC-MfD Temporary Met Mast Design and Access Statement-V2-20220308-MP.doc	

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1 Development Details

- 1.1 The proposed location for the meteorological monitoring mast at Mynydd Fforch-dwm (the 'Site') is on privately owned land bordered by commercial forestry to the north-east of the village of Tonmawr and 4km due south of Resolven in the County Borough of Neath Port Talbot. The location of the mast is shown in Figure 1: Site Location.
- 1.2 The Mynydd Fforch-dwm met mast application (the 'Proposal') is to seek temporary planning permission for a period of 3 years. The purpose of the proposed temporary met mast would be to record wind resource data for the prospective Site, including recording wind speed and direction at different heights above ground level to inform accurate predictions of the wind resource comparable with the anticipated hub height of on-site wind turbines. The wind monitoring regime requires a single temporary mast, which may be supported over time by other remote monitoring equipment (e.g., Lidar) that is ground-based.

2 Guidance

- 2.1 This DAS has been prepared following the guidelines established in *Design and Access Statements in Wales – Why, What and How* (April 2017), published by the Design Commission for Wales on behalf of Welsh Government. The guide responds to the legislative requirements for DASs under the Planning (Wales) Act 2015, and is a guidance document to enable developers to meet the objectives of good design set out in Planning Policy Wales Edition 11, February 2021 and TAN 12: Design.
- 2.2 The purpose of the DAS is to demonstrate and communicate, on behalf of the Applicant, the nature, location and scale of the development proposal and to explain the design process undertaken, which has responded to local characteristics and resulted in the meeting of good design standards for this form of development.
- 2.3 The information contained herein explains the design concept for the scheme alongside an understanding of the site and its broader context, and how the final design of the scheme was achieved. Information on the delivery of the component parts to the Site is also set out in the Access section.

3 The Proposal

- 3.1 The Proposal is to install and operate a temporary monopole meteorological monitoring mast, up to 90m tall and anchored to the ground by steel guy lines, for a period of up to 3 years, the purpose of which is to record the wind resource across the Site.
- 3.2 The met mast is a single, monopole structure held in place by guy lines, each of which is anchored to the ground using wooden ground anchors. A single solar array to the south of the mast will provide the power requirements for the mast and anemometry.

4 Context

- 4.1 The proposal Site is on elevated land between the Vale of Neath to the north and the Afon Afan to the south. The privately owned agricultural land is bordered by commercial forestry to the north-east of the village of Tonmawr and 4km due south of Resolven in the County Borough of Neath Port Talbot. The proposed mast location is Easting 282189: Northing 197750 and has a base elevation of 314m Above Ordnance Datum (AOD).
- 4.2 The land here forms part of an upland plateau that reaches eastwards toward the Pen y Cymoedd wind farm, and which slopes in a general westerly direction towards the Nant Blaenpelenna and thereafter towards Neath. The landscape is dominated by commercial forestry, alongside some upland farmsteads and scattered properties. The main centres of population are lower down in the incised river valleys that typically drain in a westerly direction.
- 4.3 The land at the Site is primarily composed of semi-improved pasture, dominated by semi-improved acid grassland and semi-improved neutral grassland, with only very limited nature conservation value. Around the Site are woodland habitats, principally coniferous woodland plantation but also some smaller blocks of other woodland habitats.
- 4.4 There are three notable streams in the vicinity, with Nant Cwm-y-pant in the south-west, Nant y Cywion in the north-east and Nant Blaenpelenna in the north-west.
- 4.5 Other habitats present in the survey area included areas of marshy grassland, wet modified bog and acid/neutral flush, but none would be affected by the Proposal. Please see Supporting Evidence – MFD Wind Farm Habitats and Species Report for further details.
- 4.6 A single footpath is located approx. 300m south and east of the proposed mast location along Cwm y Pant. There are no other current uses to the land at the proposed location.
- 4.7 The Site is not located within an area protected for its landscape, nature conservation or historic landscape, although some heritage features on the periphery of the Site have been recorded. The Site is within Pre-Assessed Area 9, which is identified by Future Wales: The National Plan to 2040 as an area suitable for large-scale wind energy.

5 Interpretation

- 5.1 The potential development area for the met mast was defined following an independent appraisal of the wind monitoring regime and in lieu of a site inspection by the installation providers. The Site was confirmed as the preferred location from both wind analysis and technical installation perspectives.
- 5.2 No constraints or particular land-use planning sensitivities were identified in respect of the proposed location of the mast, and its location is far from residential areas will ensure it is not visible to receptors in the lower valley areas. Some views of the mast would be gained for receptors on the upland plateau and rights of way, but such views would not

be unduly harmed by the met mast, which is very slight in form and would be for a temporary period only.

- 5.3 The key characteristics and constraints to the Site and its immediate environs include:
- Commercial forestry
 - Watercourses
 - Topography and habitats
 - Rights of way, one of which is approx. 300m to the south, and a further right of way below the edge of the plateau 500m to the north
 - Single property at Fforch-dwn Farm
- 5.4 In the wider context, the nature of mast may result in potential visual effects beyond the immediate site boundary and over a wider geographical area. Visual effects to a variety of receptors, such as protected landscapes, national trails and residences, and national monuments, and physical impacts on, for example transport networks and aviation, are taken under consideration. However, based on its location and nature, it is unlikely that the mast will be visible to a wider area except in an easterly direction towards Pen y Cymoedd Wind Farm. From the wind farm, the open views towards the north and west will be affected slightly by the presence of the mast, but no harm to views is expected, particularly in light of the temporary period of mast operation and its very slight form in an expansive landscape.

6 Design

Context of the Development - Purpose of the Installation

- 6.1 Mounted at various heights on the mast are a number of instruments which measure wind speed and direction. The wind speed data at three differing heights is recorded, accessed remotely, and thereafter utilised to calculate the wind resource.
- 6.2 In association with other remote sensing equipment or off-site wind data, the mast will establish an understanding of the typical wind flows, directions and speeds across the development site in order to determine the viability of the wind resource for a wind energy scheme.

Siting and Layout of the Met Mast

- 6.3 The location of the proposed mast has been selected to acquire the best wind profile data for the prospective development site. The mast location has been appraised to ensure that:
- Sensitive habitats and species would be unaffected;
 - Reasonable access is available off the public road to allow plant, personnel and mast trailer to reach the mast location;
 - Provide for a setback distance from forestry in order to minimise turbulence;

- Avoidance of Scheduled Ancient Monuments, public rights of way, microwave transmitter links, core paths, watercourses and waterbodies, TV transmitter links; and
 - Sufficient level area to lay out and install the mast, and lift the mast into the prevailing wind without any impediment by other on-site features.
- 6.4 The proposal Site is not located with any statutorily protected areas for landscape or ecology, and is not within an area at risk of flooding. There are no Special Protection Areas or SSSIs which afford protection to avian species within 5km of the Site boundary.
- 6.5 The mast has been located sufficient distance from the single right of way along Cwm y Pant as to both avoid impeding users and to give sufficient separation so as not to cause an overbearing effect on users.
- 6.6 The layout arrangement of the proposed mast and guy wires is shown in Figure 2. The guy wires will be arranged in a X pattern around the mast with the NE – SW guys facing the prevailing wind direction, as shown in the layout in Figure 2. This arrangement is preferred in order to lift and install the mast from the north-east under typical wind directions from the south-west.

Met Mast Description, including Scale

- 6.7 The met mast selected for this development site is a 90m steel monopole mast held up by high tensile guy wires. The main pole is approx. 225mm diameter steel tube with a galvanised finish, tapering towards the top at approx. 200mm diameter. Guy wires are also galvanised steel wire.
- 6.8 There is a short section of galvanised chain joining the guy wires to the eight wooden anchors placed at distances of 25m and 50m from the base of the mast. The wooden ground anchors are approx. 1.5m long x 50cm wide x 30cm deep and are placed in excavated holes 2.5m deep, 2.0m long and 1.5m wide. In addition, a lifting anchor is located at 20m from the mast and which will be removed following installation. Please see the elevation schematic for a typical drawing of a met mast in Figure 3.
- 6.9 The Applicant has selected a monopole, guyed mast for the Site to negate the need for a lattice-style mast at this stage which would be more intrusive and would require a concrete foundation. The proposed mast will therefore have considerably less physical and visual impact than the alternative lattice option.
- 6.10 At several levels, including the top of the mast, booms (also steel) are installed for the mounting of anemometry which record the wind resource at different heights. the locations of the booms and anemometry on Figure 3 are indicative at the current time and may be varied according to the Applicant's requirements.
- 6.11 The data from the anemometry is recorded is stored in the data loggers, secure boxes attached near to the bottom of the mast, which also house telecommunications equipment and batteries. The data loggers are accessed remotely.

Power Supply

- 6.12 A power supply to the mast for heating of the instrumentation and powering the data loggers will be required. A solar PV array, comprising wooden tables anchored to the ground and PV panels, will be sited on the south side of the mast, with stock-proof fencing to a height of 1m surrounding on all sides.
- 6.13 An illustration of the arrays is as shown below:

Photo 1: Typical Solar Power Supply Array



Security

- 6.14 Measures will be put in place to secure the mast site. Tamper proof shackles will be used on the anchors. These require a special tool to remove, and as such this prevents the mast being cut down via the anchors. Signage will also be displayed at the anchors, an example of which is shown on the photo below.
- 6.15 As shown in the example photos below, security spikes and anti-climb paint will be used to prevent anyone attempting to climb and tamper with the mast. It is important that the mast is secure, as tampering with the mast, in particular the high tensile guy wires, can cause serious injury.
- 6.16 Security cameras will not be attached to the mast due to GDPR requirements.

Photo 2: Anchor and signage



Photo 3: Security spikes, anti- climb paint and security cameras



7 Installation Procedure

- 7.1 At the sixteen (16) guy anchor points a large timber is placed at the bottom of each hole with a steel rod extending to just above ground level. The excavation is back filled using the material removed. No concrete is required. A further anchor point 20m from the base of the mast is excavated for the winch anchor. A small digger will be used in the excavations and restoration.
- 7.2 The mast is laid out on the ground along with the guy wires. A gin pole is used with a pulley on the upper end to lift the mast into position. The lower end of the pole is set in a shallow hole and positioned so that the upper end lies above the object to be lifted. There is no foundation at the base of the mast: the mast rests on a number of timbers laid on the ground.
- 7.3 The met mast is lifted into position and then secured using the guy wires, which in turn are anchored into the ground using timber ground anchors which are buried.
- 7.4 Following mast installation, the solar PV array is mounted on a timber frame and electrically connected to the mast instruments.
- 7.5 Installation time is typically up to three days.

8 Maintenance

- 8.1 The mast site will be visited every 6 months by a site engineer in a 4x4 vehicle. The visit will include instrument checks, a visual check of the mast, guyed wires and anchors, and also ensuring that site signage is still in place.
- 8.2 The instruments will also be monitored remotely, and should any instrumentation fail, additional site visits will be required.

9 Transport Access

- 9.1 Delivery of the components for the proposed monitoring mast will take place using a rigid lorry or four-wheel drive vehicle and trailer. The mast sections, guy wires, anemometry, fencing and solar panels will be conducted to the Site from the B4287 to the village of Tonmawr, and thereafter via a short section of C class road towards the bridge crossing over the Nant Blaenpelenna. A short section of farm track will complete the route to the development site.
- 9.2 It is anticipated that the total number of vehicle movements to / from the mast site would be no greater than 10 over the 3 day installation period, including personnel movements. Thereafter, one vehicle every 6 months would access the mast sites for essential maintenance.

- 9.3 There is no necessity for public access to the site via the highway for the purposes of the development, and parking spaces are not required. During delivery and installation, protection to users of the public footpath that coincides with the farm track to Fforch-dwn Farm will need to be assured by the site contractor.

10 Community Safety

- 10.1 The proposed mast site is located on private land but proximate to a right of way. Accordingly, site signage will be erected near to the footpath to warn public users during installation and operation advising on the need for safety around the mast and the guy wires.
- 10.2 During installation, the Site crews would be required to comply with current advisory guidelines on site working. Site risk assessments will be prepared and approved with the Applicant in advance of installation works commencing.

11 Decommissioning

- 11.1 At the end of three (3) years the met mast would be decommissioned. All above ground components will be dismantled and removed from Site. The decommissioning will require lowering of the mast to the ground, decoupling and dismantling of all equipment and guy wires, and separating the mast into sections for loading onto a trailer.
- 11.2 Typically, the anchors are removed from the ground, the holes are back-filled and resurfaced to the profile of the topography.