



Acoustic Assessment for Rotor Diameter Planning Variation at Upper Ogmore Wind Farm

Author: Mike Craven

Date: 14 July 2023

Ref: 02959-6057497

This document ("Report") has been prepared by the Engineering and Technical division of Renewable Energy Systems Ltd. Renewable Energy Systems Ltd ("RES TEC") shall not be deemed to make any representation regarding the accuracy, completeness, methodology, reliability or current status of any material contained in this ("Report"), nor does RES TEC assume any liability with respect to any matter or information referred to or contained in the Report. Any person relying on the Report ("Recipient") does so at their own risk, and neither the Recipient nor any party to whom the Recipient provides the Report or any matter or information derived from it shall have any right or claim against RES TEC or any of its affiliated companies in respect thereof. Recipient shall treat all information in the Report as confidential.

Revision History

Issue	Date	Author	Nature & Location of Change	Reference
01	31 May 2023	Mike Craven	Finalised Version	02959-5636853
02	14 July 2023	Mike Craven	Minor Edits	02959-5636853

CONTENTS

1. INTRODUCTION	2
2. PLANNING CONDITIONS	2
3. PREDICTIONS	4
4. ASSESSMENT	6
5. MITIGATION/CURTAILMENT	8
6. CONCLUSIONS	11
7. REFERENCES	12
APPENDIX A - DECISION NOTICE & PLANNING CONDITIONS	13
APPENDIX B - ORIGINAL ACOUSTIC ASSESSMENT	14

1. INTRODUCTION

An acoustic assessment of Upper Ogmores Wind Farm has been performed to determine whether the project is predicted to comply with planning conditions relating to noise, as specified within the planning consent documentation issued by Welsh Ministers on behalf of the Welsh Government. The report is intended to support a planning application to vary the rotor diameter of the turbine to be installed at the site.

The assessment methodology follows applicable guidance on operational noise from wind turbines in the UK i.e. the Institute of Acoustics - A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise (IOA GPG).

In instances where the predicted noise levels are above the limiting requirements of the planning conditions, for the scenario where the turbines are assumed to be operating unrestricted, mitigation measures, in the form of curtailment of the candidate turbine to be installed at the site, have been determined and reported here such that the limits are predicted to be met.

2. PLANNING CONDITIONS

The planning condition noise limits for the Upper Ogmores Wind Farm at dwellings neighbouring the development are specified within Tables A1 to A6 and B1 to B6 of the planning consent documentation for the site (Ref. qA1452991) [1] as provided at Appendix A of this report. The limiting values are referenced to standardised 10 m height wind speeds.

The noise limits are also specified in relation to wind direction for daytime and night-time periods respectively and are applied with the intention of limiting noise associated with the operation of the development when considered in the context of other operational and/or planned wind farm sites in the vicinity of Upper Ogmores. Effectively, the limits are set to help to ensure that overall cumulative operational noise levels do not exceed overall cumulative noise limits specified as part of planning guidance, whereas specific planning condition limits can only apply to the certain development for which the conditions are applicable.

The resultant limits are relatively low in many instances, often less than 30 dB L_{A90} for daytime periods. Such levels may be particularly difficult to measure in practice as the influence of other noise sources such as traffic, wind induced noise, birdsong, including other general environmental noise sources and operational noise from other wind farms in the area can easily corrupt the measurements. This could make any specific determination of compliance or otherwise with the planning condition limits via typical measurement practices difficult to be asserted with any certainty.

Conditions 29 to 38 and the associated Guidance Notes attached to the planning permission documentation relate to the procedures involved with the assessment and the measurement of noise associated with the operation of the development should an allegation of noise disturbance be received. The conditions are summarised as follows:

- Condition 29 refers to the noise limits applicable at dwellings neighbouring the site, adding that any dwellings not listed within the tables attached to the consent can be assumed to have the same limits as the closest dwelling for which values are available, unless otherwise agreed with the relevant Local Planning Authority (LPA).
- Condition 30 specifies that an independent consultant will be required to assess, via measurement, the operational noise levels associated with the operation of the development in the event of an alleged disturbance and/or if a complaint is received in relation to the operation of the Upper Ogmores site or the neighbouring Llynfi Afan wind farm. However, it would seem appropriate for any potential measurement campaign to focus on the site for which any potential complaints or alleged disturbance is directed as the operators of Upper Ogmores wind farm do not have any direct influence or control over the operation of other neighbouring wind farm development.

- Condition 31 states that the findings of the independent consultants' assessment referred to above and any associated data should be provided to the LPA in a form that allows verification of the results.
- Condition 32 requires that, in the event of an identified breach of the planning noise limits, a scheme for remedial mitigation/curtailment of the turbines to be submitted to and approved by the LPA.
- Condition 33, similarly to part of Condition 29, states that where a complainants' dwelling is not listed within the relevant tables attached to the consent, the noise limits applied to the dwelling should be agreed in writing with the LPA.
- Condition 34 requires that a protocol for the measurement of noise resulting from the operation of the wind farm(s) to be submitted and approved in writing prior any measurement and assessment works being undertaken. The condition also requires the meteorological and operational conditions under which the disturbance is alleged and the character of the noise causing the disturbance (i.e. in respect of any potential tonal noise) to be identified.
- Condition 35 requires that wind speed, wind direction and power generation information is supplied to the LPA to enable a check of any assessment works in respect of whether the site complies with the noise limits. The condition also requires that this information is retained by the operator for a nominal period.
- Condition 36, similarly to Condition 30, requires an independent consultant, approved in writing by the LPA, to assess the noise levels associated with the operation of the wind farm in accordance with the planning conditions, guidance notes and a specified, pre-approved, assessment protocol.
- Condition 37 states that, in the instance where the proposed turbine model for installation at the site has higher sound power levels or that the noise associated with the operation of the turbines may be more tonal than that assumed within the Environmental Statement (ES) supporting the planning application for the site, a revised noise assessment shall be submitted to the LPA. The report should detail show the operational noise levels associated with the installation of the alternative candidate turbine and any associated mitigation/curtailment required to comply with the planning condition noise limits, as detailed within this report.
- Conditions 38 states that the site operator will designate someone to act as point of contact between the LPA and the site with respect to the process and discharge, where possible, of conditions 30 through 35 described above, in relation to operational noise, and in relation to any noise complaints associated with the construction and decommissioning of the development.
- The Guidance Notes attached to the planning consent document sets out the noise limits, includes an overview of the rationale for the setting of these values, and provides the general procedure for noise compliance measurements to be undertaken in the event of an alleged disturbance, including for any potential penalties should tonal noise (i.e. a hum, whine or whistle) be present at a potential complainants dwelling.

Further to the above, the acoustic assessment that supported the original planning application for the development is provided at Appendix B. A direct comparison between the assessment provided here and the original works is not possible as the basis of assessment has changed, via the consenting process, in terms of the rationale for setting specific noise limits for Upper Ogmores operating in isolation (as discussed within the planning consent documentation for the site). However, both assessments result in overall cumulative operational noise levels that would be expected to meet the overall requirements of ETSU-R-97 and are similar in that sense.

3. PREDICTIONS

The propagation model described within ISO 9613-2 [2] has been used to undertake predictions of the expected noise levels resulting from the operation of the development. The model accounts for geometric spreading, atmospheric absorption, ground and barrier effects. The specific assumptions used and interpretation of the propagation prediction methodology, as detailed in an Acoustics Bulletin article, authored by a group of independent acousticians experienced in wind farm noise issues in February 2009 [3], as reaffirmed in the IOA GPG [4], has been used.

The recommended assumptions include the use of atmospheric absorption values corresponding to temperature of 10 °C, a relative humidity of 70 % as defined within ISO9613-1 [5], the application of a +3 dB correction should propagation across a valley occur and the limitation of barrier attenuation to -2 dB where there is no direct line-of-sight between a source and receiver due to the intervening topography. The resultant predicted noise levels are considered conservative in nature as an appropriate level of uncertainty has been applied to the candidate turbine source noise levels and the effects of trees and other non-terrain related shielding have not been considered.

A ground absorption coefficient of $G=0.5$ and a receiver height of 4 m is assumed. Furthermore, the resultant predicted dB L_{Aeq} noise levels have been converted to dB L_{A90} values by subtracting 2 dB to allow for comparison with the limits. All inline with the recommendations of the IOA GPG.

Additionally, rather than making a conservative assumption that properties are always downwind of the wind farm, a more detailed assessment, which incorporates the effects of wind direction has been undertaken. This accounts for the fact that noise levels at a property will be less when the property is crosswind or upwind of the development. The directional attenuation factors applied, as shown at Table 1, are consistent with the recommendations of the IOA GPG; with reductions in noise of around 2 dB when a receiver is crosswind, and up to 10 dB when a receiver is upwind of a particular turbine. The IOA GPG also states that upwind reductions in noise level will only come into play gradually at distances of between 5 and 10 tip heights. As a result, the attenuation factors applied have been adjusted by the distance between the source and receiver accordingly.

Table 1 - Directional Attenuation

Directional Offset from Directly Downwind, °	0	30	60	90	120	150	180	210	240	270	300	330
Directional Attenuation Factor, dB	0	0	0	-2	-6.7	-9.3	-10	-9.3	-6.7	-2	0	0

The dwelling locations considered as part of the assessment are listed at Table 2 below. These correspond to that specified as part of the planning conditions for the development and RES house layout reference DWALuog005.

Table 2 - House Locations

House ID	OSGB Co-ordinates		House ID	OSGB Co-ordinates	
	X / m	Y / m		X / m	Y / m
H1	290444	193183	H9	289368	196146
H2	294341	195716	H10	287709	192104
H3	293130	193296	H11	290048	193644
H4	289909	193514	H12	287062	195082
H5	293425	193458	H13	289431	196124
H6	289339	196040	H14	290404	193174
H7	290069	193653	H15	293626	193025

House ID	OSGB Co-ordinates		House ID	OSGB Co-ordinates	
	X / m	Y / m		X / m	Y / m
H8	290722	193207			

The consented turbine locations considered as part of the assessment provided herein are shown at Table 3. These correspond to RES turbine layout reference PWALuog075.

Table 3 - Turbine Locations

Turbine ID	OSGB Co-ordinates		Turbine ID	OSGB Co-ordinates	
	X / m	Y / m		X / m	Y / m
T1	290447	194753	T5	292241	194567
T2	290975	194891	T6	292513	194333
T3	291597	194671	T7	291182	194634
T4	292020	194782			

The predictions assume the installation of Nordex N117 3.6 MW turbines with a hub height of 91.5 m at the consented locations shown at Table 3. The corresponding source noise levels, as obtained from documentation supplied by the turbine manufacturer [6], assuming the use of serrated trailing edge (STE) blade modifications and with a +2 dB allowance for uncertainty included, are shown at Table 4. This approach concurs with the approach recommended within the IOA GPG and is considered to provide a reasonably conservative basis of assessment. The source noise information has been supplied with direct reference to specific standardised 10 m height wind speeds which allows for comparison with the planning condition noise limits. Furthermore, it is possible to operate this model of turbine in a variety of operational modes which may be implemented for numerous parameters not limited to wind speed, direction and time. The source noise levels for a variety of the noise modes which could be implemented at the wind farm, including for the applied uncertainty discussed earlier, are also shown.

Table 4 - Nordex N117 Sound Power Levels, dB L_{WA}

Turbine Mode	Standardised 10 m Height Wind Speed, m.s ⁻¹									
	3	4	5	6	7	8	9	10	11	12
Mode 0 (M0)	94.5	96.5	102.0	105.0	105.5	105.5	105.5	105.5	105.5	105.5
Mode 1 (M1)	94.5	96.5	102.0	105.0	105.0	105.0	105.0	105.0	105.0	105.0
Mode 2 (M2)	94.5	96.5	102.0	104.5	104.5	104.5	104.5	104.5	104.5	104.5
Mode 3 (M3)	94.5	96.5	102.0	104.0	104.0	104.0	104.0	104.0	104.0	104.0
Mode 4 (M4)	94.5	96.5	102.0	103.5	103.5	103.5	103.5	103.5	103.5	103.5
Mode 5 (M5)	94.5	96.5	101.0	101.0	101.0	101.0	101.0	101.0	101.0	101.0
Mode 6 (M6)	94.5	96.5	100.5	100.5	100.5	100.5	100.5	100.5	100.5	100.5
Mode 7 (M7)	94.5	96.5	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mode 8 (M8)	94.5	96.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5	99.5
Mode 9 (M9)	94.5	96.5	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0
Mode 10 (M10)	94.5	96.5	98.5	98.5	98.5	98.5	98.5	98.5	98.5	98.5
Mode 11 (M11)	94.5	96.5	98.0	98.0	98.0	98.0	98.0	98.0	98.0	98.0
Mode 12 (M12)	94.5	96.5	97.5	97.5	97.5	97.5	97.5	97.5	97.5	97.5

The octave band noise levels, as also supplied by the turbine manufacturer [7], corresponding to the maximum noise output of the N117 3.6 MW turbine considered here, operating unrestricted and incorporating the uncertainty described earlier, are shown at Table 5. These octave band noise levels have been adjusted to represent the overall noise levels specified for other/lower wind speeds and for

other operational noise modes by subtracting the relative difference between the maximum noise level for unrestricted operation and the level corresponding wind speed/mode of interest from each overall octave band level.

Table 5 - Octave Band Sound Power Levels, dB L_{WA}

Turbine	Overall, dB L _{WA}	Centre of Octave Band, Hz							
		63	125	250	500	1k	2k	4k	8k
N117	105.5	86.2	92.4	95.3	95.8	98.6	100.0	99.0	89.7

The candidate turbine is assumed not to have any tonal noise output that would attract a penalty at neighbouring residences under the scheme specified by the Guidance Notes attached to the planning consent for the site. A warranty or guarantee will be obtained from the manufacturer which limits the level of tonal noise associated with the operation of the individual turbines (or the site as a whole), should the candidate model of turbine be installed. This will help to ensure tonal noise would not require a penalty under the requirements of the Guidance Notes to the planning conditions and provide appropriate recourse with the turbine manufacturer should tonal noise be present.

4. ASSESSMENT

Table 6 shows the resultant maximum predicted turbine noise levels for any given wind direction using the assumptions detailed at Section 3 above.

Table 6 - Maximum Predicted Turbine Noise Levels, dB L_{A90}

House ID	Standardised 10 m Height Wind Speed, m.s ⁻¹									
	3	4	5	6	7	8	9	10	11	12
H1	17.6	19.6	25.1	28.1	28.6	28.6	28.6	28.6	28.6	28.6
H2	12.5	14.6	20.1	23.0	23.5	23.5	23.5	23.5	23.5	23.5
H3	18.2	20.2	25.7	28.7	29.2	29.2	29.2	29.2	29.2	29.2
H4	20.0	22.0	27.5	30.5	31.0	31.0	31.0	31.0	31.0	31.0
H5	18.2	20.2	25.7	28.7	29.2	29.2	29.2	29.2	29.2	29.2
H6	13.7	15.7	21.2	24.2	24.7	24.7	24.7	24.7	24.7	24.7
H7	21.4	23.4	28.9	31.9	32.4	32.4	32.4	32.4	32.4	32.4
H8	17.1	19.1	24.6	27.6	28.1	28.1	28.1	28.1	28.1	28.1
H9	15.0	17.0	22.5	25.5	26.0	26.0	26.0	26.0	26.0	26.0
H10	8.9	10.9	16.4	19.4	19.9	19.9	19.9	19.9	19.9	19.9
H11	21.2	23.3	28.8	31.7	32.2	32.2	32.2	32.2	32.2	32.2
H12	6.5	8.5	14.0	17.0	17.5	17.5	17.5	17.5	17.5	17.5
H13	15.3	17.3	22.8	25.8	26.3	26.3	26.3	26.3	26.3	26.3
H14	18.3	20.3	25.8	28.8	29.3	29.3	29.3	29.3	29.3	29.3
H15	18.1	20.1	25.6	28.6	29.1	29.1	29.1	29.1	29.1	29.1

Tables 7 & 8 show the minimum margin of predicted compliance with the planning condition noise limits for any given wind direction and for the daytime and night-time time periods respectively. A positive number indicates that the predicted noise levels are above the relevant noise limit for a particular wind direction and/or range of wind directions.

Table 7 - Minimum Margin of Compliance - Daytime, dB

House ID	Standardised 10 m Height Wind Speed, m.s ⁻¹									
	3	4	5	6	7	8	9	10	11	12
H1	-9.9	-7.9	-4.5	-2.6	1.1	0.7	-5.6	-7.1	-7.1	-7.1
H2	-15.0	-12.9	-7.4	-5.4	-6.9	-7.1	-7.1	-7.1	-7.1	-7.1
H3	-9.3	-7.3	-3.9	-4.4	-5.5	-5.5	-5.5	-5.5	-5.5	-5.5
H4	-7.5	-6.3	-3.4	2.9	2.4	1.9	1.1	0.8	0.8	0.8
H5	-9.3	-7.3	-4.3	-4.5	-6.0	-6.3	-6.3	-6.3	-6.3	-6.3
H6	-13.8	-11.8	-6.3	-3.3	-2.8	-2.8	-3.9	-5.1	-5.1	-5.1
H7	-6.1	-5.4	-1.3	4.4	3.7	3.2	2.6	2.4	2.4	2.4
H8	-10.4	-8.4	-4.4	-3.8	0.6	0.2	-7.0	-7.0	-7.0	-7.0
H9	-12.5	-10.5	-5.0	-2.0	-1.5	-1.5	-2.7	-3.8	-3.8	-3.8
H10	-18.6	-16.6	-11.1	-8.1	-7.6	-7.6	-7.6	-7.6	-7.6	-7.6
H11	-6.3	-5.6	-1.5	4.2	3.5	3.0	2.4	2.2	2.2	2.2
H12	-21.0	-19.0	-13.5	-10.5	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0
H13	-12.2	-10.2	-4.7	-1.7	-1.2	-1.2	-2.4	-3.5	-3.5	-3.5
H14	-9.2	-7.2	-3.6	-1.6	1.8	1.4	-4.6	-5.7	-5.7	-5.7
H15	-9.4	-7.4	-4.4	-5.3	-6.8	-7.1	-7.1	-7.1	-7.1	-7.1

Table 8 - Minimum Margin of Compliance - Night-time, dB

House ID	Standardised 10 m Height Wind Speed, m.s ⁻¹									
	3	4	5	6	7	8	9	10	11	12
H1	-15.4	-13.4	-7.9	-5.4	-6.9	-7.2	-7.2	-7.2	-7.2	-7.2
H2	-20.5	-18.4	-12.9	-10.0	-9.5	-9.5	-9.5	-9.5	-9.5	-9.5
H3	-14.8	-12.8	-7.3	-5.2	-6.3	-6.6	-6.6	-6.6	-6.6	-6.6
H4	-13.0	-11.0	-5.5	-5.6	-7.1	-7.4	-7.4	-7.4	-7.4	-7.4
H5	-14.8	-12.8	-7.3	-5.2	-6.7	-7.0	-7.0	-7.0	-7.0	-7.0
H6	-19.3	-17.3	-11.8	-8.8	-8.3	-8.3	-8.3	-8.3	-8.3	-8.3
H7	-11.6	-9.6	-4.1	-4.9	-5.7	-6.1	-6.1	-6.1	-6.1	-6.1
H8	-15.9	-13.9	-8.4	-5.4	-6.7	-7.0	-7.0	-7.0	-7.0	-7.0
H9	-18.0	-16.0	-10.5	-7.5	-7.0	-7.0	-7.0	-7.0	-7.0	-7.0
H10	-24.1	-22.1	-16.6	-13.6	-13.1	-13.1	-13.1	-13.1	-13.1	-13.1
H11	-11.8	-9.7	-4.2	-4.8	-5.7	-6.1	-6.1	-6.1	-6.1	-6.1
H12	-26.5	-24.5	-19.0	-16.0	-15.5	-15.5	-15.5	-15.5	-15.5	-15.5
H13	-17.7	-15.7	-10.2	-7.2	-6.7	-7.1	-7.1	-7.1	-7.1	-7.1
H14	-14.7	-12.7	-7.2	-4.5	-6.1	-6.4	-6.4	-6.4	-6.4	-6.4
H15	-14.9	-12.9	-7.4	-5.3	-6.8	-7.1	-7.1	-7.1	-7.1	-7.1

The results show that the predicted turbine noise levels, when accounting for the effects of wind direction (see Section 3), are above the daytime planning condition noise limits by up to 4.4 dB for a standardised 10 m height wind speeds above 6 m.s⁻¹ and one or more wind direction sectors (see Table 7). This occurs at dwellings located to the southwest of the development (i.e. dwellings in the vicinity of H1, H4, H7, H8, H11 and H14) for northerly and easterly wind directions whereas the prevailing

wind direction is south westerly, as is typical for the UK in general. The night-time noise limits are complied with in all instances (see Table 8).

As a result of the predicted noise levels being above the planning condition limits at certain residences for daytime periods and specific wind speeds and directions, one potential curtailment strategy is shown at Section 5 below. This demonstrates that operational noise levels can meet the limiting requirements of the planning conditions provided that the turbines to be installed at the site are operated in a certain way.

5. MITIGATION/CURTAILMENT

A mitigation/curtailment strategy has been determined, which accounts for the wind regime at the site, the planning condition noise limits, the various power curves and overall noise levels associated with the operational modes detailed at Table 4, with a view to minimising the potential losses in generating capacity resulting from the potential implementation of the strategy.

The proprietary in-house RES methodology for determining the curtailment scenario incorporates machine learning techniques to provide an expected best outcome in terms of potential overall generating capacity whilst maintaining compliance with the limiting requirements in relation to operational noise. An initial derived curtailment strategy is shown at Table 9.

Where no particular mode of operation is indicated or a turbine is not referenced, the turbines are assumed to be operating unrestricted, i.e. no curtailment is required to meet the planning condition noise limits for the corresponding wind speeds and directions.

Table 9 - Potential Daytime Curtailment Strategy

Wind Direction (°)	Standardised 10 m Height Wind Speed, m.s ⁻¹									
	3	4	5	6	7	8	9	10	11	12
Turbine 1										
0	-	-	-	M12	M8	M7	M5	M8	M8	M8
30	-	-	-	M12	M8	M7	M5	M8	M8	M8
60	-	-	-	M4	M5	-	-	M5	M5	M5
90	-	-	-	M4	M5	-	-	M5	M5	M5
120	-	-	-	-	-	-	-	-	-	-
150	-	-	-	-	-	-	-	-	-	-
180	-	-	-	-	-	-	-	-	-	-
210	-	-	-	-	-	-	-	-	-	-
240	-	-	-	-	-	-	-	-	-	-
270	-	-	-	-	-	-	-	-	-	-
300	-	-	-	M7	M5	M5	M2	M2	M2	M2
330	-	-	-	M8	M7	M8	M7	M5	M5	M5
Turbine 2										
0	-	-	-	M5	M4	-	-	-	-	-
30	-	-	-	M5	M2	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-
90	-	-	-	-	-	-	-	-	-	-
120	-	-	-	-	-	-	-	-	-	-
150	-	-	-	-	-	-	-	-	-	-
180	-	-	-	-	-	-	-	-	-	-

Wind Direction (°)	Standardised 10 m Height Wind Speed, m.s ⁻¹									
	3	4	5	6	7	8	9	10	11	12
210	-	-	-	-	-	-	-	-	-	-
240	-	-	-	-	-	-	-	-	-	-
270	-	-	-	-	-	-	-	-	-	-
300	-	-	-	M2	-	-	-	-	-	-
330	-	-	-	M6	M2	M1	-	-	-	-
Turbine 3										
0	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	M2	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-
90	-	-	-	-	-	-	-	-	-	-
120	-	-	-	-	-	-	-	-	-	-
150	-	-	-	-	-	-	-	-	-	-
180	-	-	-	-	-	-	-	-	-	-
210	-	-	-	-	-	-	-	-	-	-
240	-	-	-	-	-	-	-	-	-	-
270	-	-	-	-	-	-	-	-	-	-
300	-	-	-	-	-	-	-	-	-	-
330	-	-	-	-	-	-	-	-	-	-
Turbine 4										
0	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	M2	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-
90	-	-	-	-	-	-	-	-	-	-
120	-	-	-	-	-	-	-	-	-	-
150	-	-	-	-	-	-	-	-	-	-
180	-	-	-	-	-	-	-	-	-	-
210	-	-	-	-	-	-	-	-	-	-
240	-	-	-	-	-	-	-	-	-	-
270	-	-	-	-	-	-	-	-	-	-
300	-	-	-	-	-	-	-	-	-	-
330	-	-	-	-	-	-	-	-	-	-
Turbine 7										
0	-	-	-	M8	M7	M7	M5	M4	M4	M4
30	-	-	-	M8	M7	M7	M5	M4	M4	M4
60	-	-	-	-	-	-	-	-	-	-
90	-	-	-	-	-	-	-	-	-	-
120	-	-	-	-	-	-	-	-	-	-
150	-	-	-	-	-	-	-	-	-	-
180	-	-	-	-	-	-	-	-	-	-
210	-	-	-	-	-	-	-	-	-	-

Wind Direction (°)	Standardised 10 m Height Wind Speed, m.s ⁻¹									
	3	4	5	6	7	8	9	10	11	12
240	-	-	-	-	-	-	-	-	-	-
270	-	-	-	-	-	-	-	-	-	-
300	-	-	-	-	-	-	-	-	-	-
330	-	-	-	M7	M6	M4	-	-	-	-

There are many other approaches or combinations of applied noise modes which would allow the predicted noise levels associated with the site to meet the requirements of the planning conditions in terms of noise. There may also be limitations as to the number of potential mitigation combinations that can be implemented at the site. As such, the curtailment strategy provided is not exhaustive and amendments can be expected depending on various site and turbine/machinery related specifics. The curtailment information provided here is only intended to demonstrate that the noise limits specified as part of the planning conditions can clearly be met in practice for the candidate turbine model considered here.

Table 10 shows the resultant predicted maximum turbine noise levels for any given wind direction with the curtailment strategy detailed above in place.

Table 10 - Maximum Predicted Turbine Noise Levels inc. Daytime Curtailment, dB L_{A90}

House ID	Standardised 10 m Height Wind Speed, m.s ⁻¹									
	3	4	5	6	7	8	9	10	11	12
H1	17.6	19.6	25.1	27.8	27.6	28.6	28.6	27.6	27.6	27.6
H2	12.5	14.6	20.1	23.0	23.5	23.5	23.5	23.5	23.5	23.5
H3	18.2	20.2	25.7	28.7	29.2	29.2	29.2	29.2	29.2	29.2
H4	20.0	22.0	27.5	30.1	30.3	31.0	31.0	30.3	30.3	30.3
H5	18.2	20.2	25.7	28.7	29.2	29.2	29.2	29.2	29.2	29.2
H6	13.7	15.7	21.2	24.2	24.7	24.7	24.7	24.7	24.7	24.7
H7	21.4	23.4	28.9	31.5	31.0	32.4	32.4	31.0	31.0	31.0
H8	17.1	19.1	24.6	27.4	27.5	28.1	28.1	27.5	27.5	27.5
H9	15.0	17.0	22.5	25.5	26.0	26.0	26.0	26.0	26.0	26.0
H10	8.9	10.9	16.4	19.4	19.9	19.9	19.9	19.9	19.9	19.9
H11	21.2	23.3	28.8	31.3	30.9	32.2	32.2	30.9	30.9	30.9
H12	6.5	8.5	14.0	17.0	17.5	17.5	17.5	17.5	17.5	17.5
H13	15.3	17.3	22.8	25.8	26.3	26.3	26.3	26.3	26.3	26.3
H14	18.3	20.3	25.8	28.4	27.9	29.3	29.3	27.9	27.9	27.9
H15	18.1	20.1	25.6	28.6	29.1	29.1	29.1	29.1	29.1	29.1

Table 11 shows the minimum margin of predicted compliance with the daytime noise limits detailed within the planning consent document for the development for any given wind direction and with the curtailment strategy detailed above in place. This demonstrates that the daytime planning condition noise limits can be met for all wind directions.

Table 11 - Minimum Margin of Compliance inc. Daytime Curtailment, dB

House ID	Standardised 10 m Height Wind Speed, m.s ⁻¹									
	3	4	5	6	7	8	9	10	11	12
H1	-9.9	-7.9	-4.5	-5.1	-1.5	-1.1	-7.1	-7.1	-7.1	-7.1
H2	-15.0	-12.9	-7.4	-5.4	-6.9	-7.1	-7.1	-7.1	-7.1	-7.1
H3	-9.3	-7.3	-3.9	-4.4	-5.5	-5.5	-5.5	-5.5	-5.5	-5.5
H4	-7.5	-6.3	-3.4	-1.2	-1.0	-1.1	-1.4	-1.5	-1.5	-1.5
H5	-9.3	-7.3	-4.3	-4.5	-6.1	-6.3	-6.3	-6.4	-6.4	-6.4
H6	-13.8	-11.8	-6.3	-3.5	-3.8	-2.8	-3.9	-5.1	-5.1	-5.1
H7	-6.1	-5.4	-1.3	0.0	0.0	0.0	-0.1	0.0	0.0	0.0
H8	-10.4	-8.4	-4.4	-5.2	-1.1	-1.3	-7.0	-7.0	-7.0	-7.0
H9	-12.5	-10.5	-5.0	-2.3	-2.7	-1.5	-2.7	-3.8	-3.8	-3.8
H10	-18.6	-16.6	-11.1	-8.1	-7.6	-7.6	-7.6	-7.6	-7.6	-7.6
H11	-6.3	-5.6	-1.5	-0.1	-0.1	-0.2	-0.3	-0.2	-0.2	-0.2
H12	-21.0	-19.0	-13.5	-10.5	-10.0	-10.0	-10.0	-10.0	-10.0	-10.0
H13	-12.2	-10.2	-4.7	-2.0	-2.2	-1.2	-2.4	-3.5	-3.5	-3.5
H14	-9.2	-7.2	-3.6	-3.8	-1.2	-1.0	-5.7	-5.7	-5.7	-5.7
H15	-9.4	-7.4	-4.4	-5.3	-6.8	-7.1	-7.1	-7.1	-7.1	-7.1

6. CONCLUSIONS

An assessment based on the consented site layout and relevant acoustic emission data for the Nordex 117 3.6 MW turbine with a 91.5 m hub height shows that the predicted operational noise levels for Upper Ogmere Wind Farm operating unrestricted are above the planning condition limits at some dwellings located to the southwest of the development and for certain wind directions. As a result, a mitigation/curtailment strategy has been determined that allows the noise limits to be met whilst maximizing the potential generating capacity of the site. The curtailment strategy provided is not exhaustive and amendments can be expected depending on various site and turbine/manufacturer specific limitations.

7. REFERENCES

- [1] Minister for Climate Change - Welsh Government, Letter Ref. qA1452991 - App Ref. DNS/3213662, 28th September 2022
- [2] International Organization for Standardization, ISO 9613-2 - Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation, 1996
- [3] Acoustics Bulletin, "Prediction and Assessment of Wind Turbine Noise, Agreement About Relevant Factors for Noise Assessment from Wind Energy Projects", Acoustics Bulletin Vol. 34 No. 2, March/April 2009
- [4] Institute of Acoustics, "A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise", May 2013
- [5] International Organization for Standardization, ISO 9613-1 - Acoustics - Attenuation of sound during propagation outdoors - Part 1: Calculation of the absorption of sound by the atmosphere, 1993
- [6] Nordex, "Noise level, Power curves, Thrust curves", Nordex N117/3600 Serrated Trailing Edge Operational Modes, Document Ref: F008_256_A13_EN Revision 09, 22 June 2021
- [7] Nordex, "Octave sound power levels", Nordex N117/3600 Serrated Trailing Edge - Operational Modes, Document Ref: F008_256_A17_EN, Revision 02, 22 June 2021

APPENDIX A - DECISION NOTICE & PLANNING CONDITIONS



Ein cyf/Our ref qA1452991
Eich Cyf/Your ref: GR/BRS.4254

Mr Chris Jackson
Renewable Energy Systems Limited
Cedar House
Greenwood Close
Cardiff Gate Business Park
Cardiff
CF23 8RD

E-mail: Chris.Jackson@res-group.com

28 September 2022

Dear Mr Jackson,

**TOWN AND COUNTRY PLANNING ACT 1990 - SECTION 62D AND SECTION 62F
THE DEVELOPMENTS OF NATIONAL SIGNIFICANCE (WALES) REGULATIONS 2016
APPLICATION BY: CHRIS JACKSON OF RENEWABLE ENERGY SYSTEMS LIMITED
SITE: LAND AT UPPER OGMORE, BETWEEN ABERGWYNFI, BLAENGARW AND
NANT-Y-MOEL, BRIDGEND AND NEATH PORT TALBOT
APPLICATION REF: DNS/3213662_DNS**

**COMMONS ACT 2006, SECTION 16 APPLICATION BY DUCHY OF LANCASTER AND
JONATHAN PUGH FOR THE PROPOSED DEREGISTRATION AND EXCHANGE OF
LAND AT MYNYDD LLANGEINOR COMMON, GARW VALLEY AND OGMORE VALLEY,
BRIDGEND
APPLICATION REF: DNS/3213662 _S16COMMON**

1. Consideration has been given to the report of the Inspector, Richard E. Jenkins BA (Hons) MSC MRTPI who held hearings to examine the planning application and the Commons Act 2006, Section 16 application.
2. In accordance with sections 62D and 62F of the Town and Country Planning Act 1990 and Regulation 3 of The Developments of National Significance (Specified Criteria and

Canolfan Cyswllt Cyntaf / First Point of Contact Centre:
0300 0604400

Bae Caerdydd • Cardiff Bay
Caerdydd • Cardiff
CF99 1SN

Gohebiaeth.Julie.James@llyw.cymru
Correspondence.Julie.James@gov.Wales

Rydym yn croesawu derbyn gohebiaeth yn Gymraeg. Byddwn yn ateb gohebiaeth a dderbynnir yn Gymraeg yn Gymraeg ac ni fydd gohebu yn Gymraeg yn arwain at oedi.

We welcome receiving correspondence in Welsh. Any correspondence received in Welsh will be answered in Welsh and corresponding in Welsh will not lead to a delay in responding.

Prescribed Secondary Consents) (Wales) Regulations 2016, the application was made to the Welsh Ministers for determination.

3. The Inspector held Hearings on 23, 24 and 29 June 2021 and made a site visit on 15 April and 29 September 2021. The Inspector recommends both planning permission and Commons Act 2006 Section 16 consent be granted subject to conditions. A copy of the Inspector's report ("IR") is enclosed. All references to paragraph numbers, unless otherwise stated, relate to the IR.

DNS Application

Main Considerations

4. I agree the main considerations are those listed at IR 160:
 - The effect of the proposed development upon:
 - Landscape character and visual amenity;
 - The living conditions of the occupiers of neighbouring residential properties, having particular regard to noise impact;
 - Ecological and biodiversity interests;
 - Cultural heritage assets;
 - Traffic flows and highway safety, particularly through the construction phase; and,
 - Whether any identified harm in respect of the above matters would be outweighed by the benefits and other matters in favour of the scheme, particularly the in-principle policy support for large-scale wind farm development and the contribution towards renewable energy generation.

Landscape Character and Visual Amenity

5. The application site lies 12km to the south of the Brecon Beacons National Park ("BBNP") and within the Northern Uplands Special Landscape Area ("SLA"). The site is also located within the Mynydd Llangeinwyr Uplands Landscape Character Area ("LCA"). That designation has been informed by aspect areas within "LANDMAP", which is maintained by Natural Resources Wales ("NRW"), and is the extant baseline which maps and classifies landscapes in terms of their key characteristics and evaluates their importance on a national to local scale on specified themes. The relevant aspect areas comprises remote uplands between the Garw and Ogmere Valleys. (IR 161)
6. The Inspector notes the application is supported by a comprehensive Landscape and Visual Impact Assessment ("LVIA") which considers the likely significant effects on the landscape and overall character of the area. The Inspector has no reason to dispute the methodology used in the preparation of the LVIA. The Inspector notes it is also common ground the LVIA is more site specific and up to date than the other available evidence, including Bridgend County Borough Council's ("CBC") adopted Supplementary Planning Guidance ("SPG"): Renewables in the Landscape. (IR 162-163)

Landscape Character

7. The Inspector notes localised significant landscape effects are predicted during the construction stage, affecting the site itself and the local area of the Mynydd

Llangeinwyr Uplands LCA, and is satisfied the evidence indicates such effects would relate to relatively short timescales. Due to local topography, effects on the landscape character of the nearby valleys, and of other adjacent LCAs/aspect areas, would be minor (not significant), reducing to negligible (not significant) at distances over 1-2 km. (IR 164)

8. In terms of operational effects, significant effects on landscape are predicted to occur across the site, with a major (significant) effect. The Inspector notes the effects of the access tracks, substation, control building, and Energy Storage Facility (“ESF”) would be more localised but would contribute to a major effect at the site level. The effect on the surrounding Mynydd Llangeinwyr Uplands LCA is also anticipated to be major (significant), as the turbines, and associated development would increase the existing level of human influence arising from the existing mast and Llynfi Afan Wind Farm across the northern part of the LCA. Effects would reduce to minor and not significant in the southern part of this LCA. (IR 165)
9. The Inspector notes the development would be located on high ground between the Garw and Ogmore Valleys, and the presence of additional turbines on the skylines would affect the character of these valley landscapes. The scale of the effect on the Ogmore valley would be large due to turbines being introduced to an open skyline, on the opposite side of the valley to the existing Pant y Wal turbines. From the Garw valley, turbines would be set further back from the valley side, and the scale of the effect is anticipated to be medium. The level of effect in the northern part of both valleys is judged to be moderate (significant), reducing to minor (not significant) south of Blaengarw in the Garw valley and south of Price Town in the Ogmore Valley. Due to the relationship between the proposed development and the existing Llynfi Afan Wind Farm, effects on landscape character would be more pronounced to the south and east of the site than to the north and west. (IR 166)
10. The Inspector notes the development would be seen behind Llynfi Afan when viewed from the north and west and would not, therefore, change the predominant character of the landscape. Effects on the Mynydd y Gelli LCA are assessed as minor (not significant), mainly due to the fact this LCA is already occupied by Llynfi Afan Wind Farm. Effects on the Llynfi and Garw Uplands LCA to the south-west are anticipated to be moderate (significant) across a small area at Mynydd Caerau, and not significant elsewhere. The proposed development would appear larger and closer than Llynfi Afan when viewed from the south and east, occasionally emphasising the presence of the existing turbines. Moderate (significant) effects are predicted across the central part of the Mynydd Llangeinwyr Uplands to the south, and Ogmore Forest and Surrounding Uplands LCAs to the east, where the Pant y Wal Wind Farm is already an influence. To the north east, topography would screen views of the proposed development from nearer areas. (IR 167)
11. The Inspector is of the view the operational phase of development would therefore result in significant effects on landscape character across an area extending no more than 2km from the proposed turbines and much less to the north and west. The Inspector considers the area where significant effects would occur is approximately bounded by the ridge of Craig Ogwr to the east, the summit of Mynydd William Meyrick, the settlement of Price Town, the south end of the main ridge of Mynydd Llangeinwyr, the settlement of Blaengarw, the summit of Mynydd Caerau, and the hairpin bend on the A4107 to the north. The Inspector considers beyond this area, effects on landscape character would reduce to minor or negligible. (IR 168)
12. The Inspector has had full regard to the issue of cumulative impacts. The impact of the development would be limited across Werfa and the upper Afon Valley, although to

the south-east the effect on the Ogmore Valley would be greater due to turbines being proposed on a currently open skyline. The Inspector notes there are several consented and unconsented wind farm schemes in the study area, however, these would not be seen within the immediate landscape context and do not form part of the same LCA as the proposed development so would be unlikely to give rise to significant cumulative impacts upon landscape character. In terms of the total cumulative effects, the Inspector considers the proposed development would clearly add to the overall number of turbines in the area and would intensify the local influence of wind energy development. However, the Inspector is of the view it would not extend the influence of wind turbines into currently unaffected areas, nor would it introduce wind turbines into a landscape type that is currently unaffected. As such, the Inspector is of the view no further cumulative effects on landscape character have been identified, beyond those already discussed in the assessment against the landscape baseline. (IR 169-170)

13. The Inspector has had regard to the concerns raised by LPAs that the development would give rise to conflict with Policies SP4: Conservation and Enhancement of the Natural Environment and ENV3: Special Landscape Areas of the adopted Bridgend Local Development Plan ("LDP"). However, the Inspector is satisfied, whilst the development would result in landscape impacts across the northern part of the designated SLA, the open upland character would be largely unaffected despite the addition of vertical elements and associated infrastructure into the landscape. (IR 171)
14. Future Wales was published on 24 February 2021 and forms an important and integral part of the development plan framework for the area. Future Wales acknowledges the impacts of a climate and ecological emergency and identifies key priorities, risks and opportunities to achieve the sustainable management of natural resources, including addressing climate change and biodiversity decline. It also states decision makers must give significant weight to the need to meet both Wales' international commitments and Welsh Government's ("WG") target to generate 70% of consumed electricity by renewable means by 2030 in order to combat the climate emergency. (IR 27-30)
15. The Inspector notes the application site has been included within the 'Pre-Assessed Areas for Wind Energy' identified by Future Wales and Policy 17 clarifies, within such areas, the likely impact on the landscape has been modelled and has found them to be capable of accommodating development in an acceptable way. The Inspector is satisfied there is no evidence to lead to an alternative conclusion. The Inspector also notes the policy states there should be a presumption in favour of large-scale wind energy development in these areas, subject to the criteria set out in Policy 18 of Future Wales. For the avoidance of any doubt, Policy 18 expressly omits any test in respect of landscape impacts for wind energy proposals located within the 'Pre-Assessed Areas for Wind Energy'. (IR 172)

Visual Amenity

16. The Inspector notes, during construction, significant (moderate) effects are predicted to affect sensitive receptors at locations within 1.5km of the turbines which overlook the site, including those from nearby settlements. The Inspector is of the view construction activity other than turbine erection is unlikely to be more widely visible, and effects at all other locations are predicted to be not significant, construction impacts would also be time-limited. (IR 173)
17. The LVIA viewpoint assessment identifies significant operational effects on sensitive visual receptors up to 4.8km from the site, with effects judged as major being limited to within 2km. Minor (not significant) effects were identified at locations up to 11.5km

from the proposed development, and effects at more distant viewpoints have been judged to be negligible. The Inspector considers these effects arise principally from the presence of the wind turbines in views, with visibility of the substation, control building and ESF being much more localised. (IR 174)

18. The Inspector notes receptors at Blaengarw and Pontycymer would view the western part of the development above the upper slopes which enclose the valley. The Inspector also notes the development would be seen in the context of the existing Llynfi Afan wind farm in most views. To the east of the site is the Ogmore Valley and the settlement of Nant-y-moel. Effects at Viewpoint 5 (numbers as specified in the LVIA) are predicted to be major (significant), due to the appearance of the turbines on the skyline which forms part of the setting to the village. Similarly, significant effects are predicted from viewpoints in the eastern part of the settlement, on the valley slope. Open views of the turbines would be available from Price Town, though from slightly further away, and significant effects would be experienced by people moving about this settlement. The Inspector notes, there are views of Pant y Wal Wind Farm to the southeast from both settlements and these turbines and the proposed development would appear on the skyline, but both would occupy a relatively small angle of view, and it is considered viewers would not experience being surrounded by wind turbines. (IR 175-176)
19. From the linear settlement of Ogmore Vale to the south, the Inspector notes moderate (significant) effects may be experienced where turbines are viewed in long views along the linear streets in this settlement, though elsewhere the view is likely to be limited by existing buildings, meaning effects would not be significant. The Inspector also notes to the north-west of the site, the settlements of Blaengwynfi and Abergwynfi have close views of Llynfi Afan Wind Farm. The Inspector is of the view the proposed turbines would appear to be visually grouped with the existing wind farm, and effects at Viewpoint 6 in the upper part of Blaengwynfi are predicted to be moderate (significant). The Inspector notes the LVIA illustrates there would be limited visibility from the Rhondda to the north-east and effects are not predicted to be significant, however, effects at Viewpoint 13, in open space to the south of the settlement of Penrhys are assessed as minor (not significant), and effects experienced from within the settlement would be similar or less. The Inspector also notes the proposed development would be seen in the context of, and sometimes behind, Llynfi Afan, and therefore the scale of change has been assessed as small or imperceptible. The Inspector is satisfied effects on views from within settlements such as Maesteg, Cwmfelin and Llangynwyd are not predicted to be significant. (IR 177-180)
20. Much of the application site is identified as open access land and there are several public rights of way crossing Werfa, Mynydd y Gelli and Mynydd Llangeinwyr. The Inspector is of the view walkers using this area would experience a large scale of change in view during construction and during operation, due to the presence of wind turbines and the associated infrastructure. The Inspector notes effects are likely to be major (significant) as identified at Viewpoint 2 Mynydd Llangeinwyr. Walkers accessing the surrounding hills, such as Mynydd William Meyrick (Viewpoint 7) and Pen y Foel (Viewpoint 10) are predicted to experience moderate (significant) effects where open views of the development are available. The Inspector is satisfied, at greater distances, significant effects are unlikely, including from the long-distance walks in the west and south of the study area. (IR 181-183)
21. The Ogwr Ridgeway long-distance walk passes through several sections of the zones of theoretical visibility to the south of the site. The Inspector notes views north would include the proposed development on high ground, in the context of the Llynfi Afan turbines. Effects are predicted to be minor (not significant). Further south, the Bridgend

Circular Walk passes through sections of the zones of theoretical visibility between 11-15km from the proposed development, around Sarn and the M4. The Inspector notes effects are predicted to be minor (not significant). (IR 184)

22. Cyclists using the National Cycle Network Routes 883 and 884 in the Ogwr and Garw valleys respectively would have intermittent views of the turbines as they travel north. The Inspector notes effects on views are predicted to be moderate (significant) in the northern-most parts of the routes, but not significant over most of their length. The Inspector is satisfied people visiting the Brecon Beacons would not experience significant effects due to the distances involved and the intervening wind farms. (IR 185)
23. Views of the development would be available travelling north on the A4061 through the Ogmore valley, with turbines seen on the skyline at the head of the valley. Travelling south there would be no view of the proposed development until the hairpin bend south of the A4107 junction. Turning this bend, the Inspector notes the proposed development would be fully visible at close range, from the section of road which traverses the head of the valley. The Inspector is of the view road users are of lower susceptibility to changes in view, and effects on users of this road would be locally moderate (significant) for the section at the head of the valley. The A4107 runs east to west immediately north of the site. The Inspector notes views of the turbines would be a feature of the route between the hairpin bend and the A4061 junction. Users of this road already have views of the Llynfi Afan turbines at close range, though the proposed development would increase the amount of development visible. Effects are predicted to be moderate (significant) along a 3km section of this road. (IR 186-187)
24. In terms of cumulative impact, the Inspector states the majority of the cumulative baseline is made up of wind farms which are already in operation. The Inspector is satisfied the proposed development would rarely introduce views of wind turbines where they are not already a feature. For similar reasons, the Inspector does not consider the proposal gives rise to significant sequential effects on views through the study area, since it would almost always be seen in the context of an operational development. As with the effects on landscape, the Inspector considers effects on views are likely to be greater to the south and east, from where the development would appear in front of and larger than the Llynfi Afan development. From the north and west, the Inspector considers the proposed development would generally be seen as part of the existing wind farm. The Inspector is of the view consented yet unimplemented wind farm developments, as well as unconsented schemes, would not significantly alter the context of the proposed development. (IR 188)
25. The Inspector notes concern has been raised the development would have potential for visual dominance and overbearing impacts for local communities and recreational users. However, the Inspector is satisfied the development would generally be seen within the context of the existing wind farm developments and considers the development would not be overbearing or overly oppressive, either alone or in combination with other wind farm developments, for any community, individual property, or recreational user. To this extent, the Inspector does not consider the development would give rise to unacceptable adverse impacts. The development would therefore be compliant with the provisions of Policy 18 of Future Wales. For the same reasons, the Inspector also finds no fundamental conflict with Policies SP2 or Policy ENV18 of the adopted Bridgend LDP or the provisions of the adopted Neath Port Talbot LDP. (IR 189)

Noise Impact

26. An assessment of the acoustic impact from both the construction and operation of the proposed development has been undertaken, taking into account the identified nearest residential properties. In terms of construction impacts, the evidence indicates noise levels at the nearest residential properties could exceed construction noise criteria. However, the Inspector notes, mitigation measures have been identified and could be secured through the imposition of suitably worded planning conditions. An acoustic assessment of the proposed energy storage facility in accordance with BS 4142: 2014 shows the impact would be low and the levels insignificant in comparison to the cumulative wind farm noise levels. (IR 190)
27. The Inspector notes there are no concerns, regarding the operational noise assessment for the proposed development acting in isolation, and cumulative noise levels represent the more significant assessment in this case. (IR 191 – 194)
28. In assessing cumulative noise levels, the Inspector notes questions were raised at the Hearings over the exact uncertainty allowance used in respect of existing developments. No cogent evidence was provided that provides assurance noise levels at existing sites would not increase in the future. Therefore, the Inspector finds Bridgend CBC's approach, which assumes existing sites are operating at their predicted noise levels for each sector with an additional 5 dB uncertainty added, is necessary to protect the local community from unacceptable noise impacts. (IR 195 – 201)
29. The Inspector notes the curtailment necessary to meet the suggested noise limits would inevitably limit the energy yield relative to an unrestricted scheme and the approach advocated by Bridgend CBC would clearly represent a greater restriction than suggested by the applicant. However, the applicant has confirmed the reduction using the Bridgend CBC's approach, at some 2.9152 GWh/ annum or 770 homes per year, would not impact upon the viability of the scheme. Neither would it be a significant reduction in yield compared to the applicant's methodology which would stand at a reduction of some 2.2626 GWh/ annum or 660 homes per annum. (IR 202)
30. The Inspector states the operational noise limits for each affected property can be derived by subtracting the assumed noise level from all other wind farm development from the overall cumulative ETSU-R-97 noise limits. Utilising this methodology, the proposal seeks to provide different noise limits for six wind direction sectors. Despite initial concerns being raised by both Bridgend and Neath Port Talbot CBCs ("the Councils") with regards to the proposed consideration of wind direction, evidence has been submitted to demonstrate it represents a feasible approach which would meet the tests set out in WG Circular 16/2014. The Inspector notes, the monitoring of wind direction has been proven to be no more difficult to monitor than wind speed and such an approach has been successfully adopted elsewhere in the United Kingdom ("UK"). Such evidence has satisfied the Councils' concerns and the Inspector has no reason to reach a different conclusion. (IR 203)
31. The Inspector is of the view the proposed development would be acceptable in noise planning terms subject to the noise limits proposed being met and is satisfied the noise limits identified could be complied with through appropriate curtailment on the individual turbines. The Inspector concludes the proposed development would not cause material harm to the living conditions of occupiers of nearby residential properties by reason of noise impact and the proposal would be compliant in this respect with the aims of both Planning Policy Wales ("PPW") and Policy 18 of Future

Wales, and broadly consistent with the aims of the relevant LDPs, including Policies SP2 and ENV18 of the adopted Bridgend LDP and Policies BE1 and EN8 of the adopted Neath Port Talbot LDP. (IR 204)

Ecology and Biodiversity

32. PPW, Future Wales and Technical Advice Note ("TAN") 5 identify the planning system's role in helping reverse the decline in biodiversity and increasing the resilience of ecosystems by ensuring appropriate mechanisms would be in place to both protect against loss and to secure enhancement. Addressing the consequences of climate change should be a central part of any measures to conserve biodiversity and the resilience of ecosystems. (IR 205)
33. Policy 17 of Future Wales sets out a presumption in favour of large-scale wind energy developments within the 'Pre-assessed Areas for Wind Energy' subject to the criteria of Policy 18 being satisfied. Policy 18 provides a criteria-based policy for renewable and low carbon energy development of national significance, with criterion 3 seeking to prevent adverse effects on the integrity of internationally designated sites. Criterion 4 of the policy seeks to prevent unacceptable adverse impacts on national statutory designated sites for nature conservation, protected habitats and species and criterion 5 requires such proposals to include biodiversity enhancement measures to provide a net benefit for biodiversity. The inspector also highlights the relevant policies of the Bridgend and Neath Port Talbot LDPs. (IR 206-207)

Designated Sites

34. The Inspector states there are no sites designated for ecological interest on the application site. The Inspector notes there is no evidence to suggest the development would have an adverse impact on the Blackmill Woodlands Special Area of Conservation ("SAC") and Special Site of Scientific Interest ("SSSI"), and the Severn Estuary Special Protection Area ("SPA"). The Inspector notes there are four statutory sites of nature conservation within 5km and there are also eight local authority designated Sites of Importance for Nature Conservation ("SINCs") within 2km of the site and an additional five sites which meet SINC criteria within Neath Port Talbot. (IR 208)
35. The Inspector notes the site has sensitive hydrological receptors including unnamed tributaries leading towards the Afon Garw, Afan Afan and Ogwr Fawr and has peat accumulations present within the locality of the site. The Mynydd Ty-isaf SSSI is located immediately north of the site to the north of the A4107 and has a slightly lower elevation than the application site. Suitable prevention measures would therefore be necessary to prevent the movement of dust, mud and silty run-off from the site. Such measures could be adequately provided through a Construction and Environment Management Plan ("CEMP") which could be secured through the imposition of a suitably worded planning condition. Subject to a comprehensive CEMP, the Inspector is satisfied any national and local sites would not be subject of unacceptable adverse impacts. (IR 209)

Habitats and Species

36. The ecological assessment considers potential effects on habitats and protected species at each stage of the construction, operational and decommissioning phases of the development. Despite no objections from NRW, the Inspector notes significant concerns have been raised through the LIRs in respect of the survey work. In particular, the Councils' ecologists contend there is a lack of an up to date baseline to

effectively assess the ecological impacts. The Inspector is of the view the Phase 1 Habitat Survey generally accords with best practice and the surveys were undertaken at an appropriate time of year. (IR 210-211)

37. The Inspector considers the Honey Buzzard Survey deviates from established guidance although it is generally agreed the site provides suboptimal breeding habitat for the honey buzzard and there are no records of honey buzzards being recorded locally. The Inspector considers the age of the data is consistent with established guidance and has been partially updated by vantage point survey work undertaken in 2020. Whilst a full update would have been advantageous, NRW has confirmed it would have been unlikely to show any significant change given the nature of the site and the extent of the works being proposed and the Inspector has no reason to come to a different conclusion on this particular matter. (IR 212)
38. A range of bird species typical of upland moorland habitats were recorded during the surveys. The assessment has concluded effects of displacement and collision risk are likely to be minimal. The Inspector notes the use of the airspace by kestrel indicates it is possible an effect on the local population will occur if other wind farms in the area are also impacting on the population. However, the combination of the CEMP, Environmental Management Plan ("EMP") and completed unilateral undertaking would ensure an off-site area of enhanced kestrel habitat would be provided to provide both mitigation and enhancement in respect of such matters. (IR 213)
39. The Inspector notes bat survey work was undertaken in 2019. Having regard to the evidence available in this case, NRW has not requested such updates and the Inspector is satisfied the submitted evidence is proportionate. The overall risk to all species of bat recorded at Upper Ogmere has been assessed as being low. (IR 214)
40. Concerns have been raised by the Councils in respect of Great Crested Newt. The Inspector notes, however, such concerns regarding false negative results are largely anecdotal. NRW considers the Environmental DNA ("eDNA") surveys of ponds within 250m of the site boundary to be appropriate and in accordance with published guidance. (IR 215)
41. Neath Port Talbot CBC has expressed concern regarding the impacts on water vole and reptiles during the widening of the access track, and NRW has noted the water vole survey work does not fully accord with best practice. The Inspector notes, nevertheless, NRW is satisfied with the water vole surveys undertaken in June 2016, August 2016 and May 2020 and the development has been designed to avoid watercourses and could be subject to pollution prevention measures for those habitats. Furthermore, the Inspector notes a detailed approach to avoiding impacts on such habitats and species, including that at the access track, could be secured through a CEMP and/ or EMP. As such, the Inspector is therefore satisfied such an approach would be both proportionate and reasonable. (IR 216)
42. The Inspector notes the LIRs have indicated insufficient consideration has been given to stag's horn and clubmoss. Whilst Neath Port Talbot CBC has indicated such species have been recorded along the access track, the applicant states their evidence does not indicate a need for further investigation. In light of the available evidence, the Inspector is satisfied the approach advocated through the requirements of the CEMP to be proportionate and appropriate. The construction phases would result in the loss of small areas of improved grassland, acid and marshy grassland and wet modified bog. However, the evidence indicates this would have a minimal impact on the habitats present. With regard to concerns raised about the felling of trees along the access track, the Inspector is satisfied the evidence suggests this would be kept to

a minimum and would only affect actively managed commercial plantation approaching felling age. (IR 217)

43. Neath Port Talbot CBC has raised concerns regarding an area of modified bog ('Black Bog') resulting from the widening of the access track. However, the area of bog is some 35 metres distant from the track and maximum widening in this location would only be some 0.4 metres. There is an existing trackside drainage ditch between the track and the bog. However, the Inspector is satisfied any impacts on surrounding vegetation could adequately controlled through a CEMP. The Inspector notes concerns have also been raised in respect of hydrological impacts, however, concludes the widening of the access track would not result in a material change to hydrological flows. The CEMP also offers a degree of control over such matters. (IR 218)
44. The Inspector considers the development would have an impact on peat bogs which are identified within national policy as features of significant nature conservation interest. However, the Inspector notes consideration has been given to the impacts of the proposals on peat locally and no turbines would be located near deep peat (depth greater than 0.5m). The evidence indicates the section of track which crosses a deeper area of peat (up to 0.8m deep) would have minimal hydrological impact on the peat bodies given the local topography, presence of the A4107 and proximity to watercourses. The track would also be floated over the peat with flow balancing pipes and large stone installed to maintain flows. (IR 219)
45. The Inspector notes particular attention has been paid to the risk of affecting peat, surface water hydrology and receiving watercourses during the design of the infrastructure layout and in the impact assessment. The length of floated track over the deeper peat (0.4 to 0.8m) would be approximately 110m. NRW has confirmed that it is supportive of this approach. The Inspector is satisfied all other concerns could be satisfactorily addressed through a CEMP and EMP, including the requirement for a 'Borrow Pit Management Plan'. The Inspector concludes on this issue that overall, construction and operational phase ecological and ornithological effects would be localised and would not amount to unacceptable adverse impacts. (IR 220)
46. Ecological enhancements would also be provided through a Biodiversity Enhancement Management Plan (BEMP), deliverable through the signed unilateral undertaking. The Inspector is satisfied the identified works provide a framework which would commit the developer to carry out such works. The solicitor for Bridgend CBC has confirmed that the document is sufficient to ensure that ecological enhancement works are carried out and the Inspector is satisfied the undertaking meets the legislative and policy tests for planning obligations. (IR 221)
47. On this basis and having regard to the wider environmental benefits which would arise from the production of renewable, low carbon energy, the Inspector finds that the development would be in general conformity with the aims of national policy, including Policy 18 of Future Wales which requires biodiversity enhancement measures to provide a net benefit for biodiversity. The Inspector also considers, subject to mitigation measures, there would be no material conflict with the policies of the adopted Bridgend and Neath Port Talbot LDPs. (IR 222)

Cultural Heritage

48. The application is supported by an Archaeological and Heritage Desk Based Assessment and an Assessment of the Significance of the Impact of the Development on the Historic Landscape. Cadw concurs with the assessment that there would be a

slight, but not significant, impact on The Rhondda; and Margam Mountain Registered Historic Landscape, and the Inspector has no reason to come to a different conclusion. (IR 223)

49. The Inspector notes Cadw also agrees with the applicant's evidence in respect of the impact upon the numerous scheduled monuments located within 5km of the application site. It is agreed the significant impacts of the proposed development on some scheduled monuments could be adequately off-set by the preparation of a 'Monument Management Plan' which could be required by a planning condition and implemented during the construction and operational phases. Therefore, subject to the preparation of a 'Monument Management Plan', the Inspector is of the view the harm caused by the proposed development is acceptable. (IR 224-225)
50. The evidence indicates Glamorgan-Gwent Archaeological Trust identified some archaeological potential within the footprint of the development. Nevertheless, no objection has been raised to the submitted application and the Inspector is satisfied a scheme of mitigation could be secured through the imposition of a planning condition. (IR 226)
51. The Inspector concludes there would not be any unacceptable impacts on heritage assets and, no material conflict with national or development plan policy, including Policy SP5 of the adopted Bridgend LDP and Policy SP21 of the adopted Neath Port Talbot LDP. (IR 227)

Traffic and Highway Safety

52. The Inspector notes the principal issues in respect of traffic and highway safety relate to construction traffic. The proposed access route for abnormal loads is from Swansea Docks, which has been used previously for wind farm component deliveries. The abnormal load route would avoid areas of concern outlined through pre-application discussions. Subject to certain details being agreed and implemented through the imposition of planning conditions, the Inspector is satisfied there would not be any unacceptable traffic or highway implications arising from the development and the development would be generally consistent with the aims of national and local planning policy relating to such matters. (IR 228-230)

Other Material Considerations

53. The application is supported by a shadow flicker assessment which has been prepared using a well-established methodology. The assessment identifies there would be no inhabited houses within 1,100m of any proposed turbines, meaning no shadow flicker is predicted. As nothing has been submitted to counter such evidence, the Inspector is satisfied that no mitigation measures would be necessary in respect of such a matter. (IR 231)
54. The Inspector notes the applicant's Geo-environmental Preliminary Assessment identified past and current industrial land uses. The Inspector is satisfied any infill is unlikely to consist of contaminants due to their locations within a forestry area. The areas proposed for track widening are expected to be limited in area and depth. Existing drainage would be reinstated adjacent to the widened areas and the hydrology would be unchanged. In the context of the low risk of land contamination from past and present industrial land uses within the area of influence, combined with the minor nature of the proposed development works, the Inspector is satisfied the potential impact of land contamination would be very low and a further assessment and development of a conceptual site model is unjustified. The Inspector also finds it

would be disproportionate in this case to impose conditions more normally associated with major construction works in areas of known significant historic industrial use. However, the Inspector considers a condition dealing with unexpected land contamination is justified. (IR 232-233)

Benefits & Other Matters in Favour of the Development

55. Future Wales recognises Wales' potential to generate energy from renewable and low carbon sources, including on-shore wind energy. Future Wales states that, when determining planning applications for renewable and low carbon energy development, decision-makers must give significant weight to the need to meet Wales' international commitments and WG's target to generate 70% of consumed electricity by renewable means by 2030 to combat the climate emergency. (IR 234)
56. The development proposed is estimated to produce sufficient energy to power nearly 22,000 homes each year over its operational lifespan and to displace some 38,500 tonnes of CO₂ a year, equivalent to an estimated 29,200 newly registered cars. The Inspector is of the view this represents a substantial contribution to the production of energy from a renewable resource and to the reduction in greenhouse gas emissions. The Inspector concludes such a contribution would result in substantial environmental benefits and would be significant in the context of the Welsh Government targets and its commitment to address the climate emergency. (IR 235)
57. The Inspector notes, in addition to such contributions, the battery storage facility would ensure the supply of energy generated by the development can be controlled to add greater flexibility to address issues between peak demand and supply. The benefits of an increased use of energy storage to provide a balance in this respect is recognised as a significant benefit in national planning policy. The Inspector concludes, in accordance with the aims of national planning policy, the contributions towards an efficient and clean supply of energy weigh substantially in favour of the development. (IR 236)
58. The Inspector is of the view the proposal also offers economic and social benefits. Specifically, it is estimated the proposed development would involve a capital spend of £22.49 million (nominal prices), of which £8.18 million (nominal prices) will be realised in Wales. It is estimated the 10-month construction phase would create or sustain an estimated 104- 86 job years of employment, £3.44- 2.81 million in wages and £3.52- £2.93 million in Gross Value Added ("GVA") to the Welsh economy. The development is also expected to create or sustain the equivalent of 35 direct job years of employment, £1.49 million in direct wages and £4.58 million in direct GVA over its 35-year operational lifespan. The development would also provide significant tax revenues. (IR 237)

Late Representations

59. The Welsh Ministers received a late representation from Cardiff Airport and National Air Traffic Service ("NATS") on 12 November 2021. The representation raised concerns regarding the impact of the proposal on radar performance leading to possible safety or service delivery issues. After discussions between NATS and the applicant, NATS confirmed it had no objections to the proposal subject to the addition of a condition requiring the submission of a radar mitigation strategy, and for the development to be carried out in accordance with the approved mitigation strategy.
60. On 2 August 2022, Welsh Ministers wrote to interested parties, under Regulation 15 of the Developments of National Significance (Wales) Regulations 2016, to afford them

the opportunity to comment on the additional information and the wording of a suggested condition. No objections were received. Comments were received from Bridgend CBC suggesting an amendment to the wording to include a trigger for the implementation of the mitigation scheme and to ensure the mitigation scheme is maintained throughout the lifetime of the development.

61. These comments have been considered and a condition addressing this matter is included in condition 39 of Annex A.

Planning Conditions

62. I am satisfied, subject to minor amendments, the conditions recommended by the Inspector meet the relevant tests in WG Circular 016/2014: The Use of planning Conditions for Development Management. (IR238-242)
63. The applicant submitted a signed and dated Unilateral Undertaking ("UU") which secures the submission of a BEMP prior to the commencement of development. The BEMP would include a natural sediment management initiative and wider habitat creation works in the Upper Garw Valley, and Water Vole conservation works. It would provide ecological enhancements on land outside the application boundary. The unilateral undertaking was prepared following a period of consultation with the Councils and NRW and the Inspector is satisfied such covenants meet the tests set out in national policy and the statutory tests set out under the Community Infrastructure Regulations 2010 in that they are reasonable and necessary to satisfy the requirements of development plan policy. (IR 239-243)
64. I also note condition 4 specifies the decommissioning element of the scheme which includes the submission of a Decommissioning and Site Restoration Scheme.

Summary of Conclusions – DNS Application

65. The Inspector has found the development could be accommodated within the landscape in an acceptable manner. This reaffirms the site's positioning within a 'Pre-Assessed Area for Wind Energy' where the likely impacts on the landscape have been modelled and found to be acceptable. The Inspector is satisfied the visual effects of the development would be locally significant, however, the turbines would be largely seen within the context of existing wind farm developments. The Inspector has considered cumulative visual impacts and, for the reasons set out above, is satisfied they would not be overbearing or oppressive for any community, individual or recreational user, either alone or in combination with other developments. To this extent, the Inspector concludes the development would not give rise to unacceptable adverse visual impacts and would therefore be broadly compliant with the provisions of Policy 18 of Future Wales and other LDP policies. (IR 244)
66. The Inspector is satisfied cumulative noise impacts could be effectively mitigated through the imposition of suitably worded planning conditions. The Inspector therefore considers the development would not cause any material harm to the living conditions of the occupiers of nearby residential properties by reason of noise impact and the development would be generally consistent with relevant development plan policies and the provisions of PPW. (IR 245)
67. The Inspector is satisfied the development would not have an unacceptable adverse effect on any internationally designated site. Furthermore, subject to conditions, the Inspector considers there would be no unacceptable adverse impacts on nationally designated sites for nature conservation, habitats, or species. The Inspector is also

satisfied localised impacts could be mitigated to an acceptable level and ecological enhancement measures could be provided through the submitted unilateral undertaking and associated suite of planning conditions and wider environmental benefits would arise from the production of renewable, low carbon energy. The Inspector is of the view that impacts on peat bogs have been minimised through design and would be subject of mitigation measures secured through conditions. (IR 246)

68. The Inspector is content that the effects of the proposed development upon cultural heritage assets can be mitigated through planning conditions and there would not be any policy conflict in this respect. Similarly, the Inspector considers the development would not give rise to any unacceptable traffic or highway safety issues subject to planning conditions. (IR 247)
69. I am satisfied the impact on the radar in relation to Cardiff Airport will be mitigated by the submission of a radar mitigation scheme required by condition 39 in Annex A below.
70. The proposed development would assist in realising WG's support for developing large scale renewable and low carbon energy to meet future energy needs and the Inspector considers it would make a valuable contribution towards meeting renewable energy targets and would assist in combatting the climate emergency. The battery storage facility which forms an integral element of the overall scheme would also provide necessary flexibility which is supported by national policy. In addition, the development would offer social and economic benefits. The Inspector considers these matters weigh substantially in favour of the development and significantly outweigh the localised harms identified. (IR 248)

The Common Land Application

71. The secondary application submitted under Section 16 of the Commons Act 2006 seeks to de-register some 16.81ha of common land to make way for the proposed wind farm infrastructure and to provide temporary construction areas.
72. Section 16(1) of the Commons Act 2006 provides that the owner of any land registered as common land may apply for the land (release land) to cease to be so registered. If the area of release land is greater than 200m² a proposal must be made to replace it with other land to be registered as common land (replacement land). The WG has issued guidance on 'Common Land Consent'. Welsh Ministers seek to adhere to guidance in processing and determining applications, it is noted every application must be considered on its own merits and a determination may, in exceptional circumstances, depart from the guidance if it appears appropriate to do so.
73. To off-set the deregistration of common land, the application proposes to register some 16.81ha of replacement land which directly borders the existing common. The replacement land would be available from the start of the construction period, with the applicant's evidence indicating that grazing and public access would be able to continue around the wind farm infrastructure once the construction works have been completed. (IR 250)

Main Considerations

74. I agree the main considerations in the determination of the common land application are those listed at IR 252:

- The effect on the interests of those persons having rights in relation to, or occupying, the release land;
- The effect on the interests of the neighbourhood;
- The effect upon matters of public interest;
- Whether a more acceptable outcome could be achieved by adopting a different approach; and
- Whether any identified harm would be justified by other relevant matters, including the benefits arising from the development proposed through the associated DNS application.

The effect on the interests of those persons having rights in relation to, or occupying, the release land

75. The Inspector notes the de-registration of the release land is required to allow for the following components of the proposed wind farm development: four wind turbine towers; new site tracks between Turbines 1, 2, 3 and 7; drainage works; swales and drainage ditches next to the access tracks; on site electrical network of underground cabling; marker posts and signposts for diversions of footpaths; fencing of works; tracks for vehicular access; crane assembly areas; laydown areas; cable tranches; spoil storage; wooden poles carrying and electricity line connecting the development to the network. (IR 253)
76. Full details of the rights over the release land are set out in the 'Register of Common Land'. The Inspector notes the evidence indicates the majority of the common is under-grazed and this is confirmed by the flora and fauna on the land, and the condition of the upland dry and wet heath habitat. The details of the consultation exercises undertaken are set out in the application submission document entitled 'Common Land Report', which also sets out full details of how the common is hefted and what impact the development would have on those hefts. (IR 254-55)
77. The Inspector confirms there has been no objection from the owners of the release land and the applicant has reached agreement with each of the active commoners. The area of the proposed replacement land is equal to the area of the release land, providing an equivalent amount of land over which to graze their livestock as they currently enjoy, and would revert naturally to upland pasture, consistent with the wider areas of common land. The evidence indicates there would not be any financial detriment to the graziers. (IR 256)
78. Having regard to the mitigation proposed through the provision of replacement common land, grazing compensation during construction, and the set-back distances of the turbines from the existing communications masts and infrastructure, the Inspector considers the proposal would not unacceptably interfere with the interests of those graziers and commoners with rights over the common land or those exercising their rights of common over it. However, the Inspector is of the view there would be a minor negative impact with respect to loss of public access for those that utilise the release land for recreational purposes. (IR 257-258)

Interest of the Neighbourhood

79. Consideration is given to whether the works would mean local people would be prevented from using the common in the way that they are used to. Furthermore, the guidance requires consideration to be given to whether the works would interfere with the future use and enjoyment of the land. The common is accessible to the public under Section 193 of the Law of Property Act 1925 and the Countryside and Rights of Way Act 2000 Act. Given the proposal to deregister the release land, the

neighbourhood would no longer have the rights to use the common in the way that they are used to. The Inspector notes although fencing around the development site would be temporary, with enhanced access to the common being provided eventually, deregistration of the land means it would not be subject of the restrictions and rights afforded by the Commons Act 2006. (IR 259-260)

80. The Inspector notes the temporarily fenced areas proposed as part of the construction phase would not prevent access to the land to the south, west and north of the working area, thus allowing the neighbourhood to enjoy the common as a whole. The replacement land abuts the existing common and would offer an equivalent area of land the public does not currently have access to. The Inspector considers the registering of this land would, to this limited extent, offer a benefit to the neighbourhood which needs to be weighed against the harm arising from the deregistration of the release land. (IR 261)
81. The Inspector is of the view that the registering of the replacement land would, in part, offset the harm incurred by the proposed deregistration of the release land. However, the fencing of the release land during construction, and the potential for prolonged fencing, leads the Inspector to conclude there would be a minor negative impact on the interests of the neighbourhood arising from the removal of the release land from the common. In coming to this conclusion, the Inspector is mindful of its linear and widely dispersed nature. The Inspector concludes given the application seeks to deregister the release land, it would be unreasonable to impose a condition to restrict fencing as this would, in effect, result in similar restrictions to land within a common. (IR 262)

The Public Interest

Nature Conservation

82. The Inspector is of the view the proposal would not have an unacceptable adverse impact on features of ecological importance and no ecological concerns have been raised by statutory consultees in respect of the common land application. The Inspector finds that there would not be a negative impact on the public interest in these terms. (IR 263)

Landscape

83. The release land is widely dispersed and linear in nature, reflective of the fact that the deregistration is necessary to facilitate access routes to wind farm infrastructure. As such, it would inevitably have an effect on landscape character. Nonetheless, the Inspector considers the release land is influenced by existing windfarm development within the wider area. Notwithstanding this, the Inspector is of the view the site can accommodate the proposed wind turbines and associated infrastructure in an acceptable manner. As such, the Inspector is satisfied there would be no unacceptable landscape impacts on the public. (IR 264)

Public Rights of Access

84. The Inspector considers the proposal would have a minor negative impact in relation to public rights of access. (IR 265)

Archaeological Remains and features of Historic Interest

85. The Inspector is satisfied public interest would not be unacceptably affected in these terms. (IR 266)

Public Interest Conclusion

86. Overall, the Inspector concludes there would be a minor negative impact in respect of the public rights of access in relation to matters of public interest. (IR 267)

Alternative Scheme

87. It is necessary to consider whether a more acceptable outcome could be achieved by adopting a different approach to the proposed deregistration and provision of replacement common land. Based on the available evidence, and considering the nature of the development, and the fact the release land comprises the area strictly necessary to occupy the wind farm infrastructure and undertake necessary construction, the Inspector is satisfied there is no alternative scheme before them which would reduce the overall impacts. (IR 268)

Other Relevant Matters, including the Benefits of the Development

88. The Inspector notes the policy support for renewable energy development and states the development is estimated to produce sufficient energy to power nearly 22,000 homes each year of its lifespan and displace some 38,500 tonnes of CO2 per year. This would significantly contribute towards efforts to combat the climate emergency and should therefore attract substantial weight. In addition, the Inspector is of the view the development would provide significant social and economic benefits. The Inspector concludes that, collectively, such matters weigh substantially in favour of the common land application. (IR 269)

Summary of Conclusions - Common Land Application

89. The Inspector concludes the application would lead to a minor negative impact on the rights and interests of the neighbourhood and the public with regard to public access and recreation. However, despite only being a temporary form of development with a lifespan of some 35 years, the Inspector considers the overall public benefits of the development subject of the DNS application would significantly outweigh such concerns. Having considered all matters raised and representations received, the Inspector concludes the application should be allowed and a deregistration and exchange order made, subject only to planning permission being granted for the development proposed through the DNS application.

Conclusion and Decision

90. I agree with the Inspector's appraisal of the main considerations, the conclusions of the IR and the reasoning behind them, and I accept the recommendation. Therefore, I hereby grant planning permission for DNS/3213662_DNS, subject to the conditions in Annex A to this decision letter.
91. I agree with the Inspector's appraisal of the considerations and conclusions in relation to the secondary application made under section 16 of the Commons Act 2006 for the deregistration and exchange of common land at Mynydd Llangeinor Common, Garw Valley and Ogmores Valley, Bridgend (CL26) as discussed in paragraphs 71-89 of this decision letter. Therefore, I hereby grant the application made under Section 16 to

deregister 16.81 hectares of common land at Mynydd Llangeinor Common, Garw Valley and Ogmore Valley, Bridgend (CL26) and to offer in exchange an area of 16.81ha.

92. I enclose a copy of the Order made under Section 17(1) and 17(2) of the Commons Act 2006, which has today been sent to Bridgend CBC and all other parties who appeared at the Hearings.
93. The Welsh Ministers' decision on this application will be published as required by regulation 19 of the Deregistration and Exchange of Common Land and Greens (Procedure) (Wales) Regulations 2012.
94. This letter does not convey any approval or consent which may be required under any enactment, by-law, order, regulation or private agreement other than sections 16 and 17 of the Commons Act 2006.

Well-being of Future Generations (Wales) Act 2015 ("WFG Act")

95. The Welsh Ministers must, in accordance with the WFG Act, carry out sustainable development. In reaching my decision on the application, I have taken into account the ways of working set out at section 5(2) of the WFG Act and 'SPSF1: Core Guidance, Shared Purpose: Shared Future – Statutory Guidance on the WFG Act'. My assessment against each of the ways of working is set out below.

Looking to the long-term

96. The decision takes account of the long-term objective and commitment of Wales's target to generate 70% of consumed electricity by renewable means by 2030 in order to combat the climate emergency.

Taking an integrated approach

97. I have considered the impacts from this decision on the WG's well-being objectives, which incorporate the well-being goals set out in section 4 of the WFG Act. Where an objective is not set out, the effect of this decision is neutral.

Impact on well-being objectives

- Build an economy based on the principles of fair work, sustainability and the industries and services of the future – positive effect
- Build a stronger, greener economy as we make maximum progress towards decarbonisation – positive effect
- Embed our response to the climate and nature emergency in everything we do – positive effect.

Involving people/Collaborating with others

98. Within the framework of a statutory decision-making process, which is governed by prescribed procedures, the application was subject to publicity and consultation, providing the opportunity for public and stakeholder engagement. Representations received through these procedures have been considered and taken into account in making a determination on this application.

Prevention

99. The decision takes account of the need to increase renewable energy production and combat the climate emergency, as well as increasing energy security.
100. In reaching this decision I note the duty to carry out sustainable development under section 2 of the Planning (Wales) Act 2015 and I consider the decision accords with the sustainable development principle set out in the WFG Act. In accordance with section 3(2) of the WFG Act and the well-being objectives of the Welsh Ministers, the decision will help “Build a stronger, greener economy as we make maximum progress towards decarbonisation”.
101. I have taken the Environmental Statement and all other environmental information provided into account in the consideration of this application, as required by the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 2017.
102. A copy of this letter has been sent to the Councils and to those persons and organisations appearing at the Hearings.

Yours sincerely



Julie James AS/MS
Y Gweinidog Newid Hinsawdd
Minister for Climate Change

Annex A – DNS Conditions

1. The development shall begin not later than five years from the date of this decision.

Reason: To conform with the requirements of Section 91 of the Town and Country Planning Act 1990.

2. The development shall be carried out in accordance with the following list of approved plans and in accordance with the recommendations and measures contained within the following approved supporting documents:

- Figure 1.2 Planning Application Boundary, Drawing No: 02959D2405-03;
- Figure 2.2 Turbine Layout, Drawing No: 02959D2227-04;
- Figure 3.1 Infrastructure Layout, Drawing No: 02959D1001-03;
- Figure 3.2 Wind Turbine Elevation, Drawing No: 02959D2903-01;
- Figure 3.3 Wind Turbine Foundation, Drawing No: 02959D2303-01;
- Figure 3.4 Crane Hardstanding General Arrangement, Drawing No: 02959D2302-01;
- Figure 3.5 Access Track Typical Details, Drawing No: 02959D2301-01;
- Figure 3.6 Substation Building and Compound, Drawing No: 02959D2230-01;
- Figure 3.7 Energy Storage Layout Plan, Drawing No: 02959D2217-02;
- Figure 3.8 Energy Storage Elevations, Drawing No: 02959D2218-02;
- Figure 3.9 Site Entrance, Drawing No: 02959D2407-01;
- Figure 3.10 Temporary Construction Compound Layout Plan, Drawing No: 02959D2237-02;
- Figure 3.11 Indicative Borrow Pit Details, Drawing No: 02959D2235-01;
- Figure 3.12 Cable Trench Details, Drawing No: 02959D2241-01;
- Figure 9.3 Forestry Track Widening Details 1-12, Drawing No: 02959D2404-04;
- Figure 9.4 Typical Forestry Track Widening Detail, Drawing No: 02959D2304-01;
- Figure 12.2b Common Land Swap Plan, Drawing No: 02959D2223 – Revision 6.

Reason: To ensure that the development is carried out in accordance with the approved documents, plans and drawings submitted with the application.

3. The permission hereby granted shall expire 35 years from the date when electrical power is first exported ('first export date') from the development to the electricity grid network. Written confirmation of the first export date shall be provided to the Local Planning Authority no later than one calendar month after the event.

Reason: In the interests of the character and appearance of the area - Policies SP2, SP4, ENV3 and ENV18 of the adopted Bridgend LDP.

4. Within 35 years and six months following the date of first export, or within six months of the cessation of electricity generation by the facility, whichever is the sooner, the turbines and all associated infrastructure and works hereby approved shall be removed from the site and the land returned to its former agricultural status, in accordance with a decommissioning and site restoration scheme which has first been submitted to and approved in writing by the Local Planning Authority. The decommissioning plan shall include pollution control measures. All existing and new planting implemented as part of the approved scheme shall be retained. The developer shall notify the Local Planning Authority in writing no later than one month

following cessation of power production. The approved restoration scheme shall be implemented in full within 12 months of the cessation of electricity generation.

Reason: In the interest of the character and appearance of the area - Policies SP2, SP4, ENV3 and ENV18 of the adopted Bridgend LDP.

5. If any wind turbine fails to produce electricity to the grid for a continuous period of 12 months, the wind turbine and its associated ancillary equipment shall be removed from the site within a period of 6 months from the end of that 12 month period.

Reason: In the interest of the character and appearance of the area - Policies SP2, SP4, ENV3 and ENV18 of the adopted Bridgend LDP.

6. No wind turbine shall be erected and no external transformer unit installed until details of the make, model and external appearance (including colour and surface finish) of the wind turbines and any unit transformer housing have been submitted to and approved in writing by the Local Planning Authority. The development shall be carried out and retained in accordance with the approved details.

Reason: In the interest of the character and appearance of the area - Policies SP2, SP4, ENV3 and ENV18 of the adopted Bridgend LDP.

7. All wind turbines blades shall rotate in a clockwise direction.

Reason: In the interest of the character and appearance of the area - Policies SP2, SP4, ENV3 and ENV18 of the adopted Bridgend LDP.

8. Notwithstanding the design or colour approved by the Local Planning Authority pursuant to Condition No.6, above, all wind turbines shall be of a 3 bladed configuration and shall be of a semi-matt finish and shall not display any prominent name, sign, symbol or logo on any external surfaces.

Reason: In the interest of the character and appearance of the area - Policies SP2, SP4, ENV3 and ENV18 of the adopted Bridgend LDP.

9. Except during installation and maintenance, the turbines shall not be illuminated. There shall be no permanent illumination on the site at any time.

Reason: In the interest of the character and appearance of the area - Policies SP2, SP4, ENV3 and ENV18 of the adopted Bridgend LDP.

10. Subject to the allowance for micro-siting provided by this condition, the turbines shall be erected at the coordinates indicated on Figure 2.2 Turbine Layout (Reference: 02959D2227-04).

- (i) Any variations to the indicated position of any turbine(s) shall be permitted by up to 50m in any direction, subject to the written approval of the Local Planning Authority.
 - (ii) In determining the final position of the turbines, the developer must consult BT and, subject to substantive responses to that consultation being provided within 30 days, shall have due regard to minimising impacts of the turbines on delivery of the Emergency Services Network. Within 30 days of receipt of BT's consultation responses, the developer shall provide a written explanation of the reasons for the final micro-siting of the Turbines and how any BT consultation responses have been taken into account.

- (iii) A plan showing the position of the turbines as built shall be submitted to the Local Planning Authority within one month of the first export date.

Reason: In the interest of the character and appearance of the area - Policies SP2, SP4, ENV3 and ENV18 of the adopted Bridgend LDP and Policies EN6 and EN7 of the adopted Neath Port Talbot LDP.

11. No development shall take place until the proposed means of access onto the A4107 has been laid out as detailed on Drawing No: 02959D2407-01. The means of access shall be completed in permanent materials for a distance of no less than 20m from the edge of the classified route A4107.

Reason: In the interest of the character and appearance of the area and highway safety - Policies SP2, SP3, SP4, ENV3 and ENV18 of the adopted Bridgend LDP.

12. Notwithstanding the details approved under Drawing No: 02959D2407-01, no development shall commence until the proposed means of access onto the A4107 has been laid out with visibility splays of 2.4m x 120m in both directions.

Reason: In the interests of highway safety - Policies SP2, SP3 and ENV18 of the adopted Bridgend LDP.

13. No structure, erection or planting exceeding 0.9m in height above adjacent carriageway level shall be placed within the required vision splay areas.

Reason: In the interests of highway safety - Policies SP2, SP3 and ENV18 of the adopted Bridgend LDP.

14. No development shall commence until a scheme of road markings detailing the edge of carriageway across the junction bell mouth has been submitted to and agreed in writing by the Local Planning Authority. The approved scheme shall be completed in permanent materials in accordance with the approved layout prior to the approved development being brought into beneficial use.

Reason: In the interests of highway safety - Policies SP2, SP3 and ENV18 of the adopted Bridgend LDP.

15. No development shall commence until a scheme for junction warning signs on the Eastbound approach to the proposed site access has been submitted to and agreed in writing by the Local Planning Authority. The approved scheme shall be completed prior to the approved development being brought into beneficial use.

Reason: In the interests of highway safety - Policies SP2, SP3 and ENV18 of the adopted Bridgend LDP.

16. No works shall commence on site until a scheme of temporary traffic management, including traffic speed reduction measures on the classified route A4107 at and on the approaches to the proposed site access, has been submitted to and approved in writing by the Local Planning Authority. The approved scheme shall be implemented prior to construction of the proposed access and retained during the construction of the proposed development.

Reason: In the interests of highway safety - Policies SP2, SP3 and ENV18 of the adopted Bridgend LDP.

17. Details showing the entrance/ gates set back not less than 20 metres from the nearside edge of carriageway and the area between the gates and the edge of highway completed in permanent materials shall be approved in writing by the Local Planning Authority before any works commence. The details shall be implemented in accordance with those approved by the Local Planning Authority.

Reason: In the interests of highway safety - Policies SP2, SP3 and ENV18 of the adopted Bridgend LDP.

18. No development shall take place, until a Construction Transport Management Plan ("CTMP") has been submitted to and approved in writing by the Local Planning Authority. The approved CTMP shall be adhered to throughout the construction period and shall provide for:

- a) The routing of HGV construction traffic to and from the site in order to avoid the A4061 south of its junction with the A4107 and the A4063 south of its junction with the A4107;
- b) details of the number and frequency of HGV movements along the A4107;
- c) the parking of vehicles of site operatives and visitors;
- d) loading and unloading of plant and materials;
- e) storage of plant and materials used in constructing the development;
- f) wheel washing facilities;
- g) measures to control the emission of dust and dirt during construction; and
- h) the provision of temporary traffic and pedestrian management along the A4107.

Reason: In the interests of highway safety - Policies SP2 and SP3 of the adopted Bridgend LDP and Policy TR2 of the adopted Neath Port Talbot LDP.

19. No development, including any vegetation clearance or tree felling, shall take place until a Construction Environment Management Plan ("CEMP") has been submitted to and approved in writing by the Local Planning Authority. The development shall only be carried out in strict accordance with the approved CEMP. The CEMP shall address the following:

- i. Noise and vibration associated with the construction of the development, in accordance with British Standard 5228, 2009: Code of Practice for Noise and Vibration Control on Construction and Open Sites - Part 1 - Noise, Part 2 – Vibration;
- ii. The management of foul and surface water, temporary and permanent drainage details and details of the hydrological and hydraulic calculations to control flow rates;
- iii. The protection and conservation of soil in order to prevent pollution of the water environment, including details of the pollution prevention techniques to be deployed during the construction and restoration phases;
- iv. Details of the timing and methods of works for cable trenches and foundations;
- v. Borrow pit management arrangements;
- vi. Dust management arrangements;
- vii. Arrangements for the disposal of surplus materials;
- viii. A construction noise management plan, including identification of access routes, locations of material laydown areas, equipment to be employed, operations to be carried out, mitigation measures and a scheme for the monitoring of noise;
- ix. Temporary site illumination, including measures to reduce light-spill onto sensitive ecological receptors;

- x. Access arrangements from the access track onto the A4107 which shall include the maintenance of the existing asphalt surface for the first 20 metres measured back from nearest edge of metalled carriageway, the creation and maintenance of visibility splays and temporary speed reduction measures within the vicinity of the track exit;
- xi. Arrangements for wheel cleaning facilities and keeping the site access onto the A4107 and adjacent public highway clean;
- xii. Details of forestry track widening, including layout plans;
- xiii. Arrangements for the protection of breeding birds, reptiles, water vole, and clubmoss populations on both the site and access track, including pre-construction surveys and mechanisms to take remedial action and monitor outcomes;
- xiv. Measures to minimise and where possible avoid impacts on areas of wet modified bog and deep peat (over 50cm in depth) on both the site and access track;
- xv. Details of the re-use of extracted peat with priority given to support existing peat resources and peat/ bog habitat;
- xvi. Methods and timescales for habitat reinstatement in any areas needed temporarily during the construction process; and
- xvii. A prescription and timeline for the removal of Japanese knotweed from the vicinity of the access track.

Reason: In the interest of highway safety, the character and appearance of the area and nature conservation - Policies SP2 and SP3 of the adopted Bridgend LDP and Policies EN6, EN7, EN8 and TR2 of the adopted Neath Port Talbot LDP.

20. No development shall take place until a site investigation in respect of land stability has been carried out in accordance with a methodology first submitted to and approved in writing by the Local Planning Authority. The results of the site investigation shall be submitted to the Local Planning Authority before any development begins. If any land instability issues are found during the site investigation, a Report specifying the measures to be taken to remediate the site to render it suitable for the development shall be submitted to and approved in writing by the Local Planning Authority. Remedial measures shall be undertaken in accordance with the approved details prior to the commencement of the development.

Reason: In the interests of highway safety - Policies SP2 and ENV18 of the adopted Bridgend LDP.

21. Should any contaminated material be observed during construction which has not been previously identified, then development shall cease and the Local Planning Authority immediately informed. A desk study, site investigation and risk assessment to determine the nature and extent of the contamination should be undertaken in accordance with methodologies which have been first submitted to and approved in writing by the Local Planning Authority. The results of the desk study, site investigation and risk assessment, and a Report specifying the measures to be taken to remediate the site to render it suitable for the development, shall be submitted to and approved in writing by the Local Planning Authority. Remedial action, which may include measures to protect surface and ground water interests, shall be undertaken in accordance with the approved details prior to development recommencing.

Reason: In the interest of public safety and nature conservation – Policies SP2, SP4, ENV6 and ENV7 of the adopted Bridgend CBC LDP and Policies SP16 and EN8 of the adopted Neath Port Talbot LDP.

22. No development shall commence until a scheme for the comprehensive and integrated drainage of the site, including the means of drainage from all hard surfaces and structures within the site and accesses to the local highway network, has been submitted to and approved in writing by the Local Planning Authority. The approved scheme shall be implemented and retained for the duration of the construction works and operation of the development.

Reason: In the interest of adequate site drainage - Policies SP2, SP4, ENV6 and ENV18 of the adopted Bridgend LDP and Policies SP15, SP16, EN6 and EN8 of the adopted Neath Port Talbot LDP.

23. No development shall take place until a scheme for the protection of public rights of way during the construction period, including safety signage and repair of damage caused during construction, has been submitted to and approved in writing by the Local Planning Authority. During the construction period the development shall be carried out in accordance with the approved scheme.

Reason: In the interests of the protection of public rights of way - Policies SP2, SP3 and PLA9 of the adopted Bridgend LDP and Policy BE1 of the adopted Neath Port Talbot LDP.

24. No development shall commence, including any vegetation clearance, until an Ecological Management Plan ("EMP") has been submitted to and approved in writing by the Local Planning Authority. The EMP shall set out the management and monitoring arrangements for all relevant ecological features, set out detailed enhancement measures proposed and include timescales for implementation. The development shall be carried out in accordance with the approved details.

The EMP shall include, but not be limited to, the following:

- a) Description and evaluation of ecological features, present or to be created on site, to be managed;
- b) Details of the desired condition of features, present and to be created at the site, using attributes with measurable targets to define favourable condition;
- c) Aims and objectives of management;
- d) Ecological trends and constraints on site that might influence management and achieving favourable condition of the retained and new features to be created on site;
- e) Identification of appropriate management options for achieving aims and objectives, including management prescriptions;
- f) Details of the monitoring of habitats, species and conservation enhancement measures. Where the results from monitoring show that conservation aims and objectives of the EMP are not being met, the EMP shall set out how contingencies and/ or remedial action will be identified, agreed and implemented so that the development still delivers the fully functioning biodiversity objectives of the originally agreed scheme;
- g) Details of the body or organisation responsible for implementation of the plan, including management and maintenance responsibilities of the EMP and ensure compliance with all relevant regulatory and other requirements, method statements and plans, and to report to the principal contractor and statutory consultees;
- h) Preparation of a work scheme detailing the timescale for delivery of the initiatives identified within the EMP, including all species and habitat

management and monitoring and habitat aftercare, and a five year rolling programme with specified timescales for each element;

- i) Details of the periodic review of effectiveness of the EMP, with a written report submitted to the Local Planning Authority every 5 years, and any revisions to the plan to be agreed in writing by the Local Planning Authority prior to implementation.

The above shall be provided for the following initiatives:

- i. Upper Garw Valley - Natural Sediment Management initiative and wider habitat creation works
 - Contribute towards implementation of natural sediment management schemes in Upper Garw to reduce the quantity of excess fine sediment entering the river system and improve water quality.
 - Slow down water-flow into the catchment.
 - Implementation of measures at the head of the Garw Valley (the northern end of Cwm Garw) and along the western side of Mynydd Llangeinwyr.
 - Measures shall include installation of gully blocks, channel stuffing and leaky barriers to reduce scour and siltation of watercourse and pools further down the catchment.
 - Improvement of water quality, rewetting and reducing erosion of marshy grassland and bog habitats, improvement of habitat for water vole, breeding passerines (such as grasshopper warbler), reptiles and wetland invertebrates.
 - Implementation of measures along Mynydd Llangeinwyr, including land which extends over 5.5km to the south of the wind farm, to include biodiversity gain through wetland habitat creation and the erection of kestrel boxes, with associated net benefits to species such as water vole and kestrel.

Locations of initiatives, as indicated on Drawing No.02959-RES_IMP-DR-EN-001, to be agreed in writing with the Local Planning Authority following feasibility work and optioneering study.

- ii. Water Vole Conservation Works
 - Objective of increasing the extent of optimal habitat for water vole within the application site and, in particular, land in the eastern part of the application area, increasing the size and resilience of the population.
 - The feasibility of proposed water vole conservation measures shall be carefully considered and assessed. Measures to include localised water management measures such as gully blocks, channel stuffing, leaky barriers and stock management measures.
 - Conservation measures to be submitted to and agreed in writing with the Local Planning Authority.

Locations of initiatives, as indicated on Drawing No.02959-RES_IMP-DR-EN-001 to be agreed in writing with the Local Planning Authority following feasibility work and optioneering study.

- iii. Operational mitigation to reduce bird and bat strike

- Between dusk and dawn between 1 April and 31 October each year, all turbine blades shall be 'feathered' when wind speeds are below the cut in speed of the operational turbines. This shall involve pitching the blades to 90 degrees and/ or rotating the blades parallel to the wind direction to reduce the blade rotation speeds below two revolutions per minute whilst idling.

Reason: To maintain and improve the appearance of the area in the interests of visual and residential amenity and to promote nature conservation - Policies SP2, ENV5, ENV6 and ENV18 of the adopted Bridgend LDP.

25. No development shall take place until the applicant, or their agents or successors in title, has secured the implementation of a programme of archaeological work in accordance with a written scheme of investigation which has been first submitted to and approved in writing by the Local Planning Authority.

Reason: To identify and record any features of archaeological interest discovered during the works, in order to mitigate the impact of the works on the archaeological resource - Policies SP2, SP5, and ENV18 of the adopted Bridgend LDP and Policy 21 of the adopted Neath Port Talbot LDP.

26. No development shall take place until a Monument Management Plan covering the Designated Historic Assets within the application site has been submitted to and approved in writing by the Local Planning Authority. The Monument Management Plan shall include measures to protect and manage historic assets on site, proposals to improve access to the historic assets including details of interpretation/information panels and a programme of works. The site shall be developed in accordance with the approved Monument Management Plan.

Reason: To mitigate the impact of the works on the Designated Historic Assets on site - Policies SP2, SP5, and ENV18 of the adopted Bridgend LDP and Policy 21 of the adopted Neath Port Talbot LDP.

27. Construction works which are audible at the boundary of any residential receptor shall not take place outside the hours of 8:00am to 18:00pm Monday to Friday, 8:00am to 1:00pm on Saturday. No construction work shall be conducted on Sundays or Bank Holidays. Outside of these hours, development shall be limited to turbine testing, commissioning works, emergency work and dust suppression.

Reason: In the interests of the amenities of the area – Policies SP2, ENV7 and ENV18 of the adopted Bridgend LDP and Policies BE1 and EN8 of the adopted Neath Port Talbot LDP.

28. Within 28 days of a written request from the relevant Local Planning Authority, following a complaint alleging shadow flicker from an occupant of a dwelling which lawfully existed or had planning permission at the date of this permission, the wind farm operator shall, at its expense, commission and submit a report to the relevant Local Planning Authority assessing the reported shadow flicker event(s). Where the relevant Local Planning Authority confirms in writing that the incident of shadow flicker is affecting the living conditions of the resident(s), the wind farm operator shall, within 21 days, submit for approval a scheme of mitigation to the Local Planning Authority. The scheme shall be designed to mitigate the event of shadow flicker and to prevent its future recurrence and shall specify timescales for implementation. The scheme shall be implemented as approved.

Reason: In the interests of the amenities of the area – Policies SP2, ENV7 and ENV18 of the adopted Bridgend LDP and Policies BE1 and EN8 of the adopted Neath Port Talbot LDP.

29. The rating level of noise immissions from the combined effects of the wind turbines hereby permitted (the wind farm) (including the application of any tonal penalty) when determined in accordance with the attached Guidance Notes, shall not exceed the values for the relevant integer wind speeds set out in Tables A1 to A6 and B1 to B6 (attached to these conditions). Noise limits for dwellings which lawfully exist or have planning permission for construction at the date of this consent but are not listed in the Tables attached shall be those of the physically closest location listed in the Tables unless otherwise agreed in writing by the relevant Local Planning Authority. The coordinate locations to be used in determining the location of each of the dwellings listed in Tables A1 to A6 and B1 to B6 shall be those listed in Table C.

Reason: In the interests of the amenities of the area – Policies SP2, ENV7 and ENV18 of the adopted Bridgend LDP and Policies BE1 and EN8 of the adopted Neath Port Talbot LDP.

30. Within 21 days from receipt of a written request from the relevant Local Planning Authority, following a complaint from the occupant of a dwelling which lawfully existed or had planning permission at the date of this consent alleging noise disturbance at that dwelling from either the operational Llynfi Afan site or the wind farm hereby approved, the wind farm operator of the development hereby approved shall, at its expense, employ an independent consultant approved by the relevant Local Planning Authority to assess the level of noise immissions from the turbines of the hereby approved wind farm at the complainant's property following the procedures described in the attached Guidance Notes.

Reason: In the interests of the amenities of the area – Policies SP2, ENV7 and ENV18 of the adopted Bridgend LDP and Policies BE1 and EN8 of the adopted Neath Port Talbot LDP.

31. The wind farm operator shall provide to the relevant Local Planning Authority the independent consultant's assessment and conclusions of the rating level of noise immissions undertaken pursuant to Condition No.30, including all calculations, audio recordings and the raw data upon which those assessments and conclusions are based. The data shall be presented in a format that can be independently verified by the relevant Local Planning Authority and demonstrates compliance with each of the Tables A1 to A6 and B1 to B6. Such information shall be provided within 2 calendar months of the date of the written request from the relevant Local Planning Authority, unless otherwise extended in writing by the relevant Local Planning Authority.

Reason: In the interests of the amenities of the area – Policies SP2, ENV7 and ENV18 of the adopted Bridgend LDP and Policies BE1 and EN8 of the adopted Neath Port Talbot LDP.

32. Where, following receipt of the independent consultant's noise assessment required by Condition No.30, the relevant Local Planning Authority is satisfied of an established breach of the noise limits set out in the attached Tables A1 to A6 and B1 to B6, the wind farm operator shall within 21 days of written notification by the Local Planning Authority, submit a scheme of mitigation for approval. The scheme of mitigation shall include measures to mitigate the breach, measures to prevent its future recurrence and a timetable for implementation. The scheme shall be

implemented as approved and shall be retained thereafter unless otherwise agreed in writing by the relevant Local Planning Authority.

Reason: In the interests of the amenities of the area - Policies SP2, ENV7 and ENV18 of the adopted Bridgend LDP and Policies BE1 and EN8 of the adopted Neath Port Talbot LDP.

33. Where a dwelling to which a complaint is related is not listed in Table C, the wind farm operator shall submit to the relevant Local Planning Authority for written approval proposed noise limits selected from those listed in the Tables A1 to A6 and B1 to B6 to be adopted at the complainant's dwelling. The rating level of noise immissions resulting from the combined effects of the wind turbines when determined in accordance with the attached Guidance Notes shall not exceed the noise limits approved in writing by the relevant Local Planning Authority for the complainant's dwelling.

Reason: In the interests of compliance-checking and the amenities of the area - Policies SP2, ENV7 and ENV18 of the adopted Bridgend LDP and Policies BE1 and EN8 of the adopted Neath Port Talbot LDP.

34. The assessment of the rating level of noise immissions shall be undertaken in accordance with an assessment protocol that shall previously have been submitted to and approved in writing by the relevant Local Planning Authority. The protocol shall include the proposed measurement location identified in accordance with the Guidance Notes where measurements for compliance checking purposes shall be undertaken, whether noise giving rise to the complaint contains or is likely to contain a tonal component, and also the range of meteorological and operational conditions (which shall include the range of wind speeds, wind directions, power generation and times of day) to determine the assessment of rating level of noise immissions. The proposed range of conditions shall be those which prevailed during times when the complainant alleges there was disturbance due to noise, having regard to the written request of the relevant Local Planning Authority under Condition No.30, and such others as the independent consultant considers likely to result in a breach of the noise limits.

Reason: In the interests of the amenities of the area - Policies SP2, ENV7 and ENV18 of the adopted Bridgend LDP and Policies BE1 and EN8 of the adopted Neath Port Talbot LDP.

35. Wind speed, wind direction and power generation data shall be continuously logged and provided to the relevant Local Planning Authority within 14 days of any such request and shall be in a format that will allow the relevant Local Planning Authority to enable checks to be undertaken to verify compliance with Tables A1 to A6 and B1 to B6 and in accordance with the attached Guidance Notes. Such data shall be retained for a period of not less than 24 months.

Reason: In the interests of the amenities of the area - Policies SP2, ENV7 and ENV18 of the adopted Bridgend LDP and Policies BE1 and EN8 of the adopted Neath Port Talbot LDP.

36. For the purposes of demonstrating compliance with the levels stated in Tables A1 to A6 and B1 to B6, during the first 12 months of operation, the wind farm operator shall, at its expense, employ a consultant approved by the relevant Local Planning Authority to assess the level of noise immissions from the wind farm, according to a measurement protocol to be agreed with the relevant Local Planning Authority.

Reason: In the interests of the amenities of the area - Policies SP2, ENV7 and ENV18 of the adopted Bridgend LDP and Policies BE1 and EN8 of the adopted Neath Port Talbot LDP.

37. In the event that the sound power levels of the proposed turbine model for installation are higher, or the turbine model is more tonal, than the candidate turbine used in the acoustic assessment in Chapter 10 of the Upper Ogmere Wind Farm & Energy Storage Facility - Environmental Statement, a revised noise assessment report shall be submitted prior to the erection of the turbines, demonstrating that the predicted noise levels still indicate compliance with the limits stated in Tables A1 to A6 and B1 to B6. Should the revised assessment show that the limits stated in Tables A1 to A6 and B1 to B6 will be exceeded, a scheme of mitigation shall be submitted to and approved in writing by the relevant Local Planning Authority, demonstrating how compliance with the limits state in Tables A1 to A6 and B1 to B6 will be achieved. The scheme of mitigation shall be implemented in full prior to the turbines being brought into beneficial use and shall be retained for the lifetime of the development.

Reason: In the interests of the amenities of the area - Policies SP2, ENV7 and ENV18 of the adopted Bridgend LDP and Policies BE1 and EN8 of the adopted Neath Port Talbot LDP.

38. No development shall commence until details of a nominated representative for the development to act as a point of contact for local residents (in connection with Condition Nos. 30-35), together with the arrangements for notifying and approving any subsequent change in the nominated representative, have been submitted to and approved in writing by the relevant Local Planning Authority. The nominated representative shall have responsibility for liaison with the relevant Local Planning Authority in connection with any noise complaints made during the construction, operation and decommissioning of the wind farm.

Reason: In the interests of the amenities of the area - Policies SP2, ENV7 and ENV18 of the adopted Bridgend LDP and Policies BE1 and EN8 of the adopted Neath Port Talbot LDP.

39. No turbines shall be erected until a scheme for the mitigation of impact of the wind turbines on the operation of Cardiff Airport primary surveillance radar (the "radar mitigation scheme") has been submitted to and approved in writing by the Local Planning Authority. The development shall thereafter be operated fully in accordance with the approved radar mitigation scheme throughout the operational life of the development.

Reason: To ensure no unacceptable impacts on radar operations - Policy 18 (8) Future Wales.

Noise Planning Conditions - Tables of Noise Limits

The limits in each of the six 60 degree sectors are based on the assumptions that the existing sites are operating at their predicted noise levels for each sector, with an additional 5 dB uncertainty added capped at the level set by limits in their planning conditions.

The curtailment required to meet these limits, for the candidate turbine, results in an energy yield of 81.0848 GWh/annum, relative to the base case of no curtailment which results in a yield of 84.0000 GWh/annum. This reduction of 2.9152 GWh/annum would be the equivalent to a loss in the supply of renewable energy to some 770 homes each year (This figure is derived using the annual UK average domestic household consumption of electricity published by BEIS).

Tables A1 – A6: Noise Limits, Day-Time Hours 0700- 2300

Table A1 – Wind Direction ≥ 345 and < 45 degrees

	Standardised 10 m Height Wind Speed (m/s)											
Property	1	2	3	4	5	6	7	8	9	10	11	12
	Noise Limit (dB LA90,10 min)											
H1	27.5	27.5	27.5	27.5	29.7	30.7	27.5	27.9	34.2	35.9	35.9	35.9
H2	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
H3	27.5	27.5	27.5	27.5	30.0	33.9	35.9	36.2	36.2	36.2	36.2	36.2
H4	27.5	27.5	27.5	28.3	30.9	27.6	28.6	29.1	29.9	30.2	30.2	30.2
H5	27.5	27.5	27.5	27.5	30.0	33.9	35.9	36.2	36.2	36.2	36.2	36.2
H6	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.7	29.1	29.1	29.1
H7	27.5	27.5	27.5	29.2	30.2	27.5	28.7	29.2	29.8	30.0	30.0	30.0
H8	27.5	27.5	27.5	27.5	29.0	31.4	27.5	27.9	35.1	35.1	35.1	35.1
H9	27.5	27.5	27.5	27.5	27.5	27.5	27.6	27.5	27.7	29.1	29.1	29.1
H10	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
H11	27.5	27.5	27.5	29.0	30.3	27.5	28.7	29.2	29.8	30.0	30.0	30.0
H12	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
H13	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.7	28.9	28.9	28.9
H14	27.5	27.5	27.5	27.5	29.5	30.4	27.5	27.9	33.9	35.7	35.7	35.7
H15	27.5	27.5	27.5	27.5	30.0	33.9	35.9	36.2	36.2	36.2	36.2	36.2

Table A2 – Wind Direction ≥ 45 and < 105 degrees

	Standardised 10 m Height Wind Speed (m/s)											
Property	1	2	3	4	5	6	7	8	9	10	11	12
	Noise Limit (dB L _{A90,10 min})											
H1	27.5	27.5	27.5	27.5	29.7	33.6	32.9	32.9	35.9	35.9	35.9	35.9
H2	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
H3	27.5	27.5	27.5	27.5	27.6	31.5	33.5	33.8	33.8	33.8	33.8	33.8
H4	27.5	27.5	27.5	28.3	32.2	32.5	32.2	34.7	34.7	33.3	33.2	33.2
H5	27.5	27.5	27.5	27.5	27.5	29.0	31.0	31.3	31.3	31.3	31.3	31.3
H6	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	28.9	30.3	30.3	30.3
H7	27.5	27.5	27.5	29.2	32.5	31.5	31.0	34.0	33.6	31.4	31.3	31.3
H8	27.5	27.5	27.5	27.5	29.0	32.9	32.4	32.2	35.1	35.1	35.1	35.1
H9	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.6	29.2	30.3	30.3	30.3
H10	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
H11	27.5	27.5	27.5	29.0	32.6	31.6	31.2	34.0	33.7	31.7	31.5	31.5
H12	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
H13	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.8	29.5	30.6	30.6	30.6
H14	27.5	27.5	27.5	27.5	29.5	33.4	33.0	33.0	35.7	35.7	35.7	35.7
H15	27.5	27.5	27.5	27.5	27.5	29.0	31.0	31.3	31.3	31.3	31.3	31.3

Table A3 – Wind Direction ≥ 105 and < 165 degrees[illegible]

Table A4 – Wind Direction >= 165 and < 225 degrees

Property	Standardised 10 m Height Wind Speed (m/s)											
	1	2	3	4	5	6	7	8	9	10	11	12
	Noise Limit (dB L _{A90,10 min})											
H1	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
H2	27.5	27.5	27.5	27.5	27.5	28.4	30.4	30.7	30.7	30.7	30.7	30.7
H3	27.5	27.5	27.5	27.5	27.5	28.6	30.6	30.9	30.9	30.9	30.9	30.9
H4	27.5	27.5	27.5	27.5	27.5	27.8	29.8	30.2	30.2	30.2	30.2	30.2
H5	27.5	27.5	27.5	27.5	27.5	30.1	32.1	32.4	32.4	32.4	32.4	32.4
H6	27.5	27.5	27.5	27.5	27.5	29.4	30.6	27.6	28.6	29.8	29.8	29.8
H7	27.5	27.5	27.5	27.5	27.5	29.1	31.2	31.5	31.5	31.5	31.5	31.5
H8	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
H9	27.5	27.5	27.5	27.5	27.5	30.6	30.5	27.5	28.7	29.8	29.8	29.8
H10	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
H11	27.5	27.5	27.5	27.5	27.5	28.8	30.9	31.2	31.2	31.2	31.2	31.2
H12	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
H13	27.5	27.5	27.5	27.5	27.5	31.0	30.4	27.5	28.7	29.8	29.8	29.8
H14	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
H15	27.5	27.5	27.5	27.5	27.5	29.9	31.9	32.2	32.2	32.2	32.2	32.2

Table A5 – Wind Direction >= 225 and < 285 degrees

Property	Standardised 10 m Height Wind Speed (m/s)											
	1	2	3	4	5	6	7	8	9	10	11	12
	Noise Limit (dB L _{A90,10 min})											
H1	27.5	27.5	27.5	27.5	27.5	28.7	30.8	31.2	31.2	31.2	31.2	31.2
H2	27.5	27.5	27.5	27.5	27.5	28.4	30.4	30.7	30.7	30.7	30.7	30.7
H3	27.5	27.5	27.5	27.5	30.0	33.9	35.9	36.2	36.2	36.2	36.2	36.2
H4	27.5	27.5	27.5	27.5	27.5	27.5	29.1	30.8	29.8	30.0	30.0	30.0
H5	27.5	27.5	27.5	27.5	30.0	33.9	35.9	36.2	36.2	36.2	36.2	36.2
H6	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
H7	27.5	27.5	27.5	27.5	27.6	28.7	30.0	33.4	30.4	30.0	30.0	30.0
H8	27.5	27.5	27.5	27.5	27.5	28.7	30.7	31.1	31.1	31.1	31.1	31.1
H9	27.5	27.5	27.5	27.5	27.5	27.5	27.7	27.5	28.1	28.1	28.1	28.1
H10	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
H11	27.5	27.5	27.5	27.5	27.5	28.1	29.6	33.1	29.8	30.0	30.0	30.0
H12	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
H13	27.5	27.5	27.5	27.5	27.5	27.5	29.3	28.3	28.4	29.7	29.7	29.7
H14	27.5	27.5	27.5	27.5	27.5	28.6	30.7	31.0	31.0	31.0	31.0	31.0
H15	27.5	27.5	27.5	27.5	30.0	33.9	35.9	36.2	36.2	36.2	36.2	36.2

Table A6 – Wind Direction >= 285 and < 345 degrees

Property	Standardised 10 m Height Wind Speed (m/s)											
	1	2	3	4	5	6	7	8	9	10	11	12
	Noise Limit (dB L _{A90,10 min})											
H1	27.5	27.5	27.5	27.5	29.5	33.1	29.0	27.9	34.9	35.7	35.7	35.7
H2	27.5	27.5	27.5	27.5	27.5	28.4	30.4	30.7	30.7	30.7	30.7	30.7
H3	27.5	27.5	27.5	27.5	30.0	33.9	35.9	36.2	36.2	36.2	36.2	36.2
H4	27.5	27.5	27.5	28.0	31.9	27.5	28.6	29.6	30.4	30.6	30.6	30.6
H5	27.5	27.5	27.5	27.5	30.0	33.9	35.9	36.2	36.2	36.2	36.2	36.2
H6	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
H7	27.5	27.5	27.5	28.9	32.2	27.5	28.6	29.5	30.3	30.5	30.5	30.5
H8	27.5	27.5	27.5	27.5	28.8	32.7	30.5	28.9	35.0	35.0	35.0	35.0
H9	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
H10	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
H11	27.5	27.5	27.5	28.8	32.1	27.5	28.6	29.6	30.4	30.6	30.6	30.6
H12	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
H13	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
H14	27.5	27.5	27.5	27.5	29.2	33.0	28.5	27.9	34.7	35.5	35.5	35.5
H15	27.5	27.5	27.5	27.5	30.0	33.9	35.9	36.2	36.2	36.2	36.2	36.2

Tables B1 – B6: Noise Limits, Night-Time Hours 2300-0700

Table B1 – Wind Direction ≥ 345 and < 45 degrees

	Standardised 10 m Height Wind Speed (m/s)											
Property	1	2	3	4	5	6	7	8	9	10	11	12
	Noise Limit (dB L _{A90,10 min})											
H1	33.0	33.0	33.0	33.0	33.0	33.6	35.6	35.9	35.9	35.9	35.9	35.9
H2	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H3	33.0	33.0	33.0	33.0	33.0	33.9	35.9	36.2	36.2	36.2	36.2	36.2
H4	33.0	33.0	33.0	33.0	33.0	36.1	38.1	38.5	38.5	38.5	38.5	38.5
H5	33.0	33.0	33.0	33.0	33.0	33.9	35.9	36.2	36.2	36.2	36.2	36.2
H6	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H7	33.0	33.0	33.0	33.0	33.0	36.9	39.0	39.3	39.3	39.3	39.3	39.3
H8	33.0	33.0	33.0	33.0	33.0	33.0	34.8	35.1	35.1	35.1	35.1	35.1
H9	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H10	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H11	33.0	33.0	33.0	33.0	33.0	36.8	38.9	39.2	39.2	39.2	39.2	39.2
H12	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H13	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H14	33.0	33.0	33.0	33.0	33.0	33.4	35.4	35.7	35.7	35.7	35.7	35.7
H15	33.0	33.0	33.0	33.0	33.0	33.9	35.9	36.2	36.2	36.2	36.2	36.2

Table B2 – Wind Direction ≥ 45 and < 105 degrees[illegible]Table B3 – Wind Direction ≥ 105 and < 165 degrees[illegible]

Table B4 – Wind Direction >= 165 and < 225 degrees

Property	Standardised 10 m Height Wind Speed (m/s)											
	1	2	3	4	5	6	7	8	9	10	11	12
	Noise Limit (dB L _{A90,10 min})											
H1	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H2	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H3	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H4	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H5	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H6	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H7	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H8	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H9	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H10	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H11	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H12	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H13	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.4	33.4	33.4	33.4	33.4
H14	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H15	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0

Table B5 – Wind Direction >= 225 and < 285 degrees

Property	Standardised 10 m Height Wind Speed (m/s)											
	1	2	3	4	5	6	7	8	9	10	11	12
	Noise Limit (dB L _{A90,10 min})											
H1	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H2	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H3	33.0	33.0	33.0	33.0	33.0	33.9	35.9	36.2	36.2	36.2	36.2	36.2
H4	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H5	33.0	33.0	33.0	33.0	33.0	33.9	35.9	36.2	36.2	36.2	36.2	36.2
H6	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H7	33.0	33.0	33.0	33.0	33.0	33.0	33.6	34.0	34.0	34.0	34.0	34.0
H8	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H9	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H10	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H11	33.0	33.0	33.0	33.0	33.0	33.0	33.4	33.8	33.8	33.8	33.8	33.8
H12	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H13	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H14	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H15	33.0	33.0	33.0	33.0	33.0	33.9	35.9	36.2	36.2	36.2	36.2	36.2

Table B6 – Wind Direction >= 285 and < 345 degrees

Property	Standardised 10 m Height Wind Speed (m/s)											
	1	2	3	4	5	6	7	8	9	10	11	12
	Noise Limit (dB L _{A90,10 min})											
H1	33.0	33.0	33.0	33.0	33.0	33.4	35.4	35.7	35.7	35.7	35.7	35.7
H2	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H3	33.0	33.0	33.0	33.0	33.0	33.0	33.9	35.9	36.2	36.2	36.2	36.2
H4	33.0	33.0	33.0	33.0	33.0	35.8	37.9	38.2	38.2	38.2	38.2	38.2
H5	33.0	33.0	33.0	33.0	33.0	33.9	35.9	36.2	36.2	36.2	36.2	36.2
H6	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H7	33.0	33.0	33.0	33.0	33.0	36.7	38.3	38.4	38.4	38.5	38.5	38.5
H8	33.0	33.0	33.0	33.0	33.0	33.0	34.7	35.0	35.0	35.0	35.0	35.0
H9	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H10	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H11	33.0	33.0	33.0	33.0	33.0	36.6	38.2	38.3	38.4	38.4	38.4	38.4
H12	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H13	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0
H14	33.0	33.0	33.0	33.0	33.0	33.1	35.2	35.5	35.5	35.5	35.5	35.5
H15	33.0	33.0	33.0	33.0	33.0	33.9	35.9	36.2	36.2	36.2	36.2	36.2

Table C: Dwellings

ID	Address	Easting*	Northing*
H1	Brynbedw House	290444	193183
H2	1 Greenfield Terrace	294341	195716
H3	Nantymoel Farm	293130	193296
H4	Bryn Eglur	289909	193514
H5	60 Vale View Terrace	293425	193458
H6	13 Scotch Street	289339	196040
H7	14 Pwllgarn Terrace	290069	193653
H8	Residential Caravan	290722	193207
H9	Abergwynfi	289368	196146
H10	Blaen Cwmdu Farm	287709	192104
H11	Blaengarw	290048	193644
H12	Bryn Coed	287062	195082
H13	40 High Street	289431	196124
H14	30 Queen Street	290404	193174
H15	Ty-Talgarth	293626	193025

*Eastings and northings are included to show approximate location

Guidance for Noise Conditions

These notes are to be read with and form part of the noise conditions. They further explain the condition and specify the methods to be employed in the assessment of complaints about noise immissions from the wind farm. The rating level at each integer wind speed is the arithmetic sum of the wind farm noise level as determined from the best-fit curve described in Guidance Note 2 of these Guidance Notes and any tonal penalty applied in accordance with Guidance Note 3. Reference to ETSU-R-97 refers to the publication entitled “The Assessment and Rating of Noise from Wind Farms” (1997) published by the Energy Technology Support unit (ETSU) for the Department of Trade and Industry (DTI).

Guidance Note 1

(a) Values of the LA90,10-minute noise statistic should be measured at the complainant’s property, using a sound level meter of EN 60651/BS EN 60804 Type 1, or BS EN 61672 Class 1 quality (or the equivalent UK adopted standard in force at the time of the measurements) set to measure using the fast time weighted response as specified in BS EN 60651/BS EN 60804 or BS EN 61672-1 (or the equivalent UK adopted standard in force at the time of the measurements). This should be calibrated in accordance with the procedure specified in BS 4142: 1997 (or the equivalent standard thereof). Measurements shall be undertaken in such a manner to enable a tonal penalty to be applied in accordance with Guidance Note 3. These measurements shall be made in such a way to enable a tonal penalty to be applied in accordance with Guidance Note 3 to satisfy that the requirements of Guidance Note 3 shall also be satisfied.

(b) The microphone should be mounted at 1.2 - 1.5 m above ground level, fitted with a two layer windshield (or suitable alternative approved in writing from the relevant Local Planning Authority), and placed outside the complainant’s dwelling. Measurements should be made in “free-field” conditions. To achieve this, the microphone should be placed at least 3.5m away from the building facade or any reflecting surface except the ground at a location agreed with the relevant Local Planning Authority.

(c) The LA90,10min measurements shall be synchronised with measurements of the 10-minute arithmetic mean wind speed and with operational data logged in accordance with Guidance Note 1(d), including power generation information for each wind turbine, from the turbine control systems of the wind farm.

(d) To enable compliance with the conditions to be evaluated, the wind farm operator shall continuously log arithmetic mean wind speed in metres per second and wind direction in degrees from north at hub height for each turbine and arithmetic mean power generated by each turbine, all in successive 10- minute periods. Unless an alternative procedure is previously agreed in writing with the relevant Planning Authority, this hub height wind speed, averaged across all operating wind turbines, shall be used as the basis for the analysis. All 10 minute arithmetic average mean wind speed data measured at hub height shall be 'standardised' to a reference height of 10 metres as described in ETSU-R-97 at page 120 using a reference roughness length of 0.05 metres. It is this standardised 10 metre height wind speed data, which is correlated with the noise measurements determined as valid in accordance with Guidance Note 2, such correlation to be undertaken in the manner described in Guidance Note 2. All 10- minute periods shall commence on the hour and in 10- minute increments thereafter.

(e) Data provided to the relevant Local Planning Authority in accordance with the noise condition shall be provided in comma separated values in electronic format with the exception of audio data which shall be supplied in the format in which it is recorded.

Guidance Note 2

(a) The noise measurements shall be made so as to provide not less than 20 valid data points as defined in Note 2 paragraph (b). Such measurements shall provide valid data points for the range of wind speeds, wind directions, times of day and power generation requested by the Local Planning Authority. In specifying such conditions the relevant Local Planning Authority shall have regard to those conditions which were most likely to have prevailed during times when the complainant alleges there was disturbance due to noise or which are considered likely to result in a breach of the noise limits.

(b) Valid data points are those that remain after all periods during rainfall have been excluded. Rainfall shall be assessed by use of a rain gauge that shall log the occurrence of rainfall in each 10minute period concurrent with the measurement periods set out in Note 1 (c) and is situated in the vicinity of the sound level meter.

(c) For those data points considered valid in accordance with Guidance Note 2(b), values of the LA90, 10 minute noise measurements and corresponding values of the 10- minute wind speed, as derived from the standardised ten metre height wind speed averaged across all operating wind turbines using the procedure specified in Guidance Note 1(d), shall be plotted on an XY chart with noise level on the Y-axis and the standardised mean wind speed on the X-axis. A least squares, "best fit" curve of an order deemed appropriate by the independent consultant (but which may not be higher than a fourth order) should be fitted to the data points and define the wind farm noise level at each integer speed.

Guidance Note 3

Where, in the opinion of the Local Planning Authority, noise immissions at the location or locations where assessment measurements are being undertaken contain a tonal component, the following rating procedure shall be used:

(a) For each 10-minute interval for which LA90, 10-minute data have been determined as valid in accordance with Guidance Note 2 a tonal assessment shall be performed on noise immissions during 2 minutes of each 10-minute period. The 2-minute periods should be spaced at 10-minute intervals provided that uninterrupted uncorrupted data are available ("the standard procedure"). Where uncorrupted data are not available, the first available uninterrupted clean 2-minute period out of the affected overall 10-minute period shall be

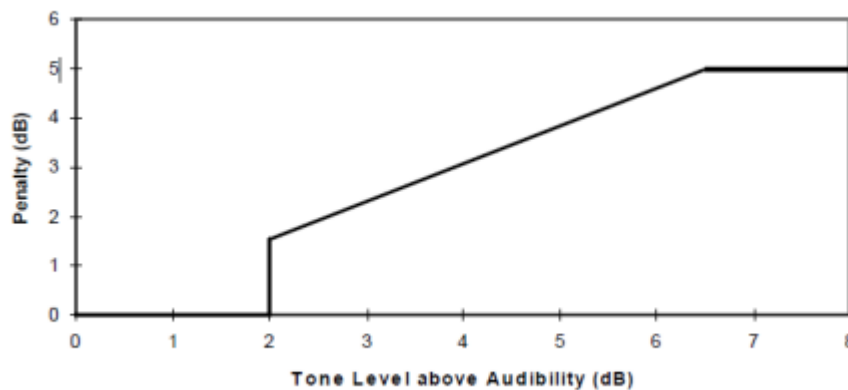
selected. Any such deviations from the standard procedure, as described in Section 2.1 on pages 104-109 of ETSU-R-97, shall be reported.

(b) For each of the 2-minute samples the tone level above or below audibility shall be calculated by comparison with the audibility criterion given in Section 2.1 on pages 104-109 of ETSU-R-97.

(c) The arithmetic average margin above audibility shall be calculated for each wind speed bin where data is available, each bin being 1 metre per second wide and centred on integer wind speeds. For samples for which the tones were below the audibility criterion or no tone was identified, a value of zero audibility shall be substituted.

(d) The tonal penalty shall be derived from the margin above audibility of the tone according to the figure below. The rating level at each wind speed shall be calculated as the arithmetic sum of the wind farm noise level, as determined from the best-fit curve described in Note 2, and the penalty for tonal noise.

(e) The tonal penalty is derived from the margin above audibility of the tone according to the figure below.



Guidance Note 4

(a) If a tonal penalty is to be applied in accordance with Guidance Note 3 the rating level of the turbine noise at each wind speed is the arithmetic sum of the measured noise level as determined from the best fit curve described in Note 2 and the penalty for tonal noise as derived in accordance with Guidance Note 3 at each integer wind speed within the range specified by the relevant Local Planning Authority in its written assessment protocol.

(b) If no tonal penalty is to be applied then the rating level of the turbine noise at each wind speed is equal to the measured noise level as determined from the best fit curve described in Guidance Note 2.

(c) In the event that the rating level is above the limit(s) set out in Tables A1 to A6 and B1 to B6 attached to the noise conditions or the noise limits for alternative agreed complainant's dwelling, the independent consultant shall undertake a further assessment of the rating level to correct for background noise so that the rating level relates to wind turbine noise immission from the site, hereby consented, only.

(d) The wind farm operator shall ensure that all the wind turbines in the development are turned off for such period as the independent consultant reasonably requires to undertake the further assessment or any other assessment to determine compliance with Tables A1 to

A6 and B1 to B6 as attached. The further assessment shall be undertaken in accordance with the following steps:

- i. Repeating the steps in Guidance Note 2, with the wind farm switched off, and determining the background noise (L3) at each integer wind speed within the range requested by the relevant Local Planning Authority in its written request and the approved protocol.
- ii. The wind farm noise (L1) at this speed shall then be calculated as follows where L2 is the measured level with turbines running but without the addition of any tonal penalty:

$$L_1 = 10 \log \left[10^{L_2/10} - 10^{L_3/10} \right]$$

- iii. The rating level shall be re-calculated by adding the tonal penalty (if any is applied in accordance with Guidance Note 3) to the derived wind farm noise L1 at that integer wind speed.
- iv. If the rating level after adjustment for background noise contribution and adjustment for tonal penalty (if required in accordance with note (iii) above) at any integer wind speed exceeds the values set out in Tables A1 to A6 and B1 to B6 or exceeds the noise limits approved by the relevant Local Planning Authority for an alternative agreed complainant's dwelling then the development fails to comply with the conditions.

Notification of initiation of development and display of notice

You must comply with your duties in section 71ZB (notification of initiation of development and display of notice: Wales) of the Town and Country Planning Act 1990. The duties include the following:

Notice of initiation of development

Before beginning any development to which this planning permission relates, notice must be given to the Local Planning Authority in the form set out in Schedule 5A to the Town and Country Planning (Development Management Procedure) (Wales) Order 2012 or in a form substantially to the like effect. The form sets out the details which must be given to the Local Planning Authority to comply with this duty.

Display of notice

The person carrying out development to which this planning permission relates must display at or near the place where the development is being carried out, at all times when it is being carried out, a notice of this planning permission in the form set out in Schedule 5B to the Town and Country Planning (Development Management Procedure) (Wales) Order 2012 or in a form substantially to the like effect. The form sets out the details the person carrying out development must display to comply with this duty.

The person carrying out development must ensure the notice is:

- (a) firmly affixed and displayed in a prominent place at or near the place where the development is being carried out;
- (b) legible and easily visible to the public without having to enter the site; and
- (c) printed on durable material. The person carrying out development should take reasonable steps to protect the notice (against it being removed, obscured or defaced) and, if need be, replace it.

APPENDIX B - ORIGINAL ACOUSTIC ASSESSMENT