Torfichen Wind Farm

Technical Appendix 12.8

Draft Planning Conditions

Author	Mike Craven
Date	5th October 2023
Ref	04726-6563851

Contents

1 Introduction

1.1.1 In the event that the Proposed Development is successful in gaining planning consent, the decision notice would likely contain appropriately worded noise conditions, written so as to be in accordance with Circular WGC 016/2014 'The Use of Planning Conditions for Development Management' [1].

1.1.2 Such conditions would provide a degree of protection to nearby residents should noise from the proposed wind farm cause disturbance. To that end, presented below are a set of relevant, precise and enforceable conditions that RES suggest as appropriate. The form of condition wording suggested has been used for many wind farm developments and the final conditions attached to the consent would be according to the discretion of the decision maker.

2 Draft Planning Condition

The rating level of noise immissions from the combined effects of the wind turbines (including the application of any tonal penalty) when determined in accordance with the attached Guidance Notes (to this condition), shall not exceed the values for the relevant integer wind speed, set out in, or derived from, the Tables attached to this condition at any dwelling which is lawfully existing or has planning permission at the date of this consent and:

a. The Company shall continuously log power production, wind speed and wind direction, all in accordance with Guidance Note 1(d). These data shall be retained for a period of not less than 24 months. The Company shall provide this information in the format set out in Guidance Note 1(e) to the Planning Authority on its request, within 14 days of receipt in writing of such a request.

b. No electricity shall be exported until the Company has submitted to the Planning Authority for written approval a list of proposed independent consultants who may undertake compliance measurements in accordance with this condition. Amendments to the list of approved consultants shall be made only with the prior written approval of the Planning Authority.

c. Within 21 days from receipt of a written request from the Planning Authority following a complaint to it from an occupant of a dwelling alleging noise disturbance at that dwelling, the Company shall, at its expense, employ a consultant approved by the Planning Authority to assess the level of noise immissions from the wind farm at the complainant's dwelling in accordance with the procedures described in the attached Guidance Notes. The written request from the Planning Authority shall set out at least the date, time and location that the complaint relates to and any identified atmospheric conditions, including wind direction, and include a statement as to whether, in the opinion of the Planning Authority, the noise giving rise to the complaint contains or is likely to contain a tonal component.

d. The assessment of the rating level of noise immissions shall be undertaken in accordance with an assessment protocol that shall, prior to the commencement of any measurements, have been submitted to and approved in writing by the 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 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 Planning Authority under paragraph (c), and such others as the independent consultant considers likely to result in a breach of the noise limits.

e. Where a dwelling to which a complaint is related is not listed in the Tables attached to these conditions, the Company shall submit to the Planning Authority for written approval proposed noise limits selected from those listed in the tables to be adopted at the complainant's dwelling for compliance checking purposes. The proposed noise limits shall be those limits selected from the Tables specified for a listed location which is the geographically nearest dwelling to the complainant's dwelling, unless otherwise agreed with the Planning Authority due to location-specific factors.

f. The Company shall provide to the Planning Authority the independent consultant's assessment of the rating level of noise immissions undertaken in accordance with the Guidance Notes within 2 months of the date of the written request of the Planning Authority for compliance measurements to be made under paragraph (c), unless the time limit is extended in writing by the Planning Authority. Unless otherwise agreed in writing by the Planning Authority, the assessment shall be accompanied by all data collected for the purposes of undertaking the compliance measurements, such data to be provided in the format set out in Guidance Note 1(e) of the Guidance Notes, with the exception of audio data, which shall be supplied in the format in which it is recorded. The instrumentation used to undertake the measurements shall be calibrated in accordance with Guidance Note 1(a) and certificates of calibration shall be submitted to the Planning Authority with the independent consultant's assessment of the rating level of noise immissions.

g. Where a further assessment of the rating level of noise immissions from the wind farm is required pursuant to Guidance Note 4(c), the Company shall submit a copy of the further assessment within 21 days of submission of the independent consultant's assessment pursuant to paragraph (d) above unless the time limit has been extended in writing by the Planning Authority.

Table 1 Daytime & Night-time Noise Limits, dB L_{A90}

House ID	Standardised 10 m height Wind Speed, $m.s^{-1}$									
	3	4	5	6	7	8	9	10	11	12
Daytime										
H1	35.0	35.0	35.0	36.5	40.1	43.6	47.0	49.9	52.1	53.5
H2	35.0	35.0	35.0	36.5	40.1	43.6	47.0	49.9	52.1	53.5
H3	35.0	35.0	35.0	36.5	40.1	43.6	47.0	49.9	52.1	53.5
H4	35.0	35.0	35.0	36.5	40.1	43.6	47.0	49.9	52.1	53.5
H5	35.0	35.0	35.0	36.5	40.1	43.6	47.0	49.9	52.1	53.5
H6	35.0	35.0	37.1	39.9	43.0	46.1	48.9	51.3	53.1	53.9
H7	35.0	35.0	37.1	39.9	43.0	46.1	48.9	51.3	53.1	53.9
H8	35.0	35.0	35.0	36.5	40.1	43.6	47.0	49.9	52.1	53.5
H9	35.0	35.0	35.0	36.5	40.1	43.6	47.0	49.9	52.1	53.5
H10	35.0	35.0	35.0	36.5	40.1	43.6	47.0	49.9	52.1	53.5

House ID	Standardised 10 m height Wind Speed, $m.s^{-1}$									
	3	4	5	6	7	8	9	10	11	12
H11	35.0	35.0	35.0	36.5	40.1	43.6	47.0	49.9	52.1	53.5
H12	35.0	35.0	37.1	39.9	43.0	46.1	48.9	51.3	53.1	53.9
H13	35.0	35.0	35.0	36.5	40.1	43.6	47.0	49.9	52.1	53.5
H14	35.0	35.0	35.0	36.5	40.1	43.6	47.0	49.9	52.1	53.5
H15	35.0	35.0	35.0	36.5	40.1	43.6	47.0	49.9	52.1	53.5
H16	35.0	35.0	35.0	36.5	40.1	43.6	47.0	49.9	52.1	53.5
H17	35.0	35.0	35.0	36.5	40.1	43.6	47.0	49.9	52.1	53.5
H18	35.0	35.0	35.0	36.5	40.1	43.6	47.0	49.9	52.1	53.5
H19	45.0	45.0	45.0	45.0	45.0	45.0	45.6	48.1	49.8	50.6
H20	35.0	35.0	37.1	39.9	43.0	46.1	48.9	51.3	53.1	53.9
H21	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H22	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H23	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H24	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H25	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H26	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H27	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H28	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H29	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H30	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H31	35.0	35.0	37.1	39.9	43.0	46.1	48.9	51.3	53.1	53.9
H32	35.0	35.0	37.1	39.9	43.0	46.1	48.9	51.3	53.1	53.9
H33	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H34	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H35	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H36	35.0	35.0	37.1	39.9	43.0	46.1	48.9	51.3	53.1	53.9
H37	35.0	35.0	37.1	39.9	43.0	46.1	48.9	51.3	53.1	53.9
H38	35.0	35.0	37.1	39.9	43.0	46.1	48.9	51.3	53.1	53.9
H39	35.0	35.0	37.1	39.9	43.0	46.1	48.9	51.3	53.1	53.9
H40	35.0	35.0	37.1	39.9	43.0	46.1	48.9	51.3	53.1	53.9
H41	35.0	35.0	37.1	39.9	43.0	46.1	48.9	51.3	53.1	53.9
H42	35.0	35.0	37.1	39.9	43.0	46.1	48.9	51.3	53.1	53.9
H43	35.0	35.0	37.1	39.9	43.0	46.1	48.9	51.3	53.1	53.9
H44	35.0	35.0	37.1	39.9	43.0	46.1	48.9	51.3	53.1	53.9

House ID	Standardised 10 m height Wind Speed, $m.s^{-1}$									
	3	4	5	6	7	8	9	10	11	12
H45	35.0	35.0	37.1	39.9	43.0	46.1	48.9	51.3	53.1	53.9
H46	35.0	35.0	37.1	39.9	43.0	46.1	48.9	51.3	53.1	53.9
H47	35.0	35.0	37.1	39.9	43.0	46.1	48.9	51.3	53.1	53.9
H48	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H49	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H50	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H51	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H52	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H53	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H54	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H55	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H56	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H57	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H58	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H59	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H60	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H61	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H62	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H63	35.0	35.0	35.0	36.5	40.1	43.6	47.0	49.9	52.1	53.5
H64	35.0	35.0	35.0	36.5	40.1	43.6	47.0	49.9	52.1	53.5
H65	35.0	35.0	35.0	36.5	40.1	43.6	47.0	49.9	52.1	53.5
H66	35.0	35.0	35.0	36.5	40.1	43.6	47.0	49.9	52.1	53.5
H67	35.0	35.0	35.0	36.5	40.1	43.6	47.0	49.9	52.1	53.5
H68	35.0	35.0	35.0	36.5	40.1	43.6	47.0	49.9	52.1	53.5
H69	35.0	35.0	35.0	36.5	40.1	43.6	47.0	49.9	52.1	53.5
H70	35.0	35.0	37.1	39.9	43.0	46.1	48.9	51.3	53.1	53.9
H71	35.0	35.0	37.1	39.9	43.0	46.1	48.9	51.3	53.1	53.9
H72	35.0	35.0	37.1	39.9	43.0	46.1	48.9	51.3	53.1	53.9
H73	35.0	35.0	37.1	39.9	43.0	46.1	48.9	51.3	53.1	53.9
H74	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
H75	35.0	35.0	35.0	36.5	39.6	42.7	45.6	48.1	49.8	50.6
Night-time										
H1	43.0	43.0	43.0	43.0	43.0	43.0	44.7	48.1	50.9	52.6
H2	43.0	43.0	43.0	43.0	43.0	43.0	44.7	48.1	50.9	52.6

House ID	Standardised 10 m height Wind Speed, $m.s^{-1}$									
	3	4	5	6	7	8	9	10	11	12
H3	43.0	43.0	43.0	43.0	43.0	43.0	44.7	48.1	50.9	52.6
H4	43.0	43.0	43.0	43.0	43.0	43.0	44.7	48.1	50.9	52.6
H5	43.0	43.0	43.0	43.0	43.0	43.0	44.7	48.1	50.9	52.6
H6	43.0	43.0	43.0	43.0	43.0	43.0	45.2	47.7	49.8	51.3
H7	43.0	43.0	43.0	43.0	43.0	43.0	45.2	47.7	49.8	51.3
H8	43.0	43.0	43.0	43.0	43.0	43.0	44.7	48.1	50.9	52.6
H9	43.0	43.0	43.0	43.0	43.0	43.0	44.7	48.1	50.9	52.6
H10	43.0	43.0	43.0	43.0	43.0	43.0	44.7	48.1	50.9	52.6
H11	43.0	43.0	43.0	43.0	43.0	43.0	44.7	48.1	50.9	52.6
H12	43.0	43.0	43.0	43.0	43.0	43.0	45.2	47.7	49.8	51.3
H13	43.0	43.0	43.0	43.0	43.0	43.0	44.7	48.1	50.9	52.6
H14	43.0	43.0	43.0	43.0	43.0	43.0	44.7	48.1	50.9	52.6
H15	43.0	43.0	43.0	43.0	43.0	43.0	44.7	48.1	50.9	52.6
H16	43.0	43.0	43.0	43.0	43.0	43.0	44.7	48.1	50.9	52.6
H17	43.0	43.0	43.0	43.0	43.0	43.0	44.7	48.1	50.9	52.6
H18	43.0	43.0	43.0	43.0	43.0	43.0	44.7	48.1	50.9	52.6
H19	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	46.0
H20	43.0	43.0	43.0	43.0	43.0	43.0	45.2	47.7	49.8	51.3
H21	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H22	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H23	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H24	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H25	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H26	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H27	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H28	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H29	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H30	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H31	43.0	43.0	43.0	43.0	43.0	43.0	45.2	47.7	49.8	51.3
H32	43.0	43.0	43.0	43.0	43.0	43.0	45.2	47.7	49.8	51.3
H33	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H34	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H35	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H36	43.0	43.0	43.0	43.0	43.0	43.0	45.2	47.7	49.8	51.3

House ID	Standardised 10 m height Wind Speed, $m.s^{-1}$									
	3	4	5	6	7	8	9	10	11	12
H37	43.0	43.0	43.0	43.0	43.0	43.0	45.2	47.7	49.8	51.3
H38	43.0	43.0	43.0	43.0	43.0	43.0	45.2	47.7	49.8	51.3
H39	43.0	43.0	43.0	43.0	43.0	43.0	45.2	47.7	49.8	51.3
H40	43.0	43.0	43.0	43.0	43.0	43.0	45.2	47.7	49.8	51.3
H41	43.0	43.0	43.0	43.0	43.0	43.0	45.2	47.7	49.8	51.3
H42	43.0	43.0	43.0	43.0	43.0	43.0	45.2	47.7	49.8	51.3
H43	43.0	43.0	43.0	43.0	43.0	43.0	45.2	47.7	49.8	51.3
H44	43.0	43.0	43.0	43.0	43.0	43.0	45.2	47.7	49.8	51.3
H45	43.0	43.0	43.0	43.0	43.0	43.0	45.2	47.7	49.8	51.3
H46	43.0	43.0	43.0	43.0	43.0	43.0	45.2	47.7	49.8	51.3
H47	43.0	43.0	43.0	43.0	43.0	43.0	45.2	47.7	49.8	51.3
H48	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H49	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H50	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H51	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H52	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H53	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H54	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H55	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H56	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H57	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H58	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H59	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H60	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H61	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H62	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H63	43.0	43.0	43.0	43.0	43.0	43.0	44.7	48.1	50.9	52.6
H64	43.0	43.0	43.0	43.0	43.0	43.0	44.7	48.1	50.9	52.6
H65	43.0	43.0	43.0	43.0	43.0	43.0	44.7	48.1	50.9	52.6
H66	43.0	43.0	43.0	43.0	43.0	43.0	44.7	48.1	50.9	52.6
H67	43.0	43.0	43.0	43.0	43.0	43.0	44.7	48.1	50.9	52.6
H68	43.0	43.0	43.0	43.0	43.0	43.0	44.7	48.1	50.9	52.6
H69	43.0	43.0	43.0	43.0	43.0	43.0	44.7	48.1	50.9	52.6
H70	43.0	43.0	43.0	43.0	43.0	43.0	45.2	47.7	49.8	51.3

House ID	Standardised 10 m height Wind Speed, $m.s^{-1}$									
	3	4	5	6	7	8	9	10	11	12
H71	43.0	43.0	43.0	43.0	43.0	43.0	45.2	47.7	49.8	51.3
H72	43.0	43.0	43.0	43.0	43.0	43.0	45.2	47.7	49.8	51.3
H73	43.0	43.0	43.0	43.0	43.0	43.0	45.2	47.7	49.8	51.3
H74	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0
H75	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.8	46.0

Table 3 Co-Ordinate Locations of the Dwellings Listed in Table 1

House ID	House Name	OSGB Co-Ordinates	
		X (m)	Y (m)
H1	Garvald Farmhouse	335211	651228
H2	Blackhope Farmhouse	333864	651644
H3	Blackhope Cottage	333927	651737
H4	1 Moorfoot Farm Cottages	329773	652291
H5	Moorfoot House	329718	652441
H6	Tathieknowe Chalet	336065	652476
H7	Nithlea	336575	652517
H8	Huntly Cottage	330111	652629
H9	Mauldslie Farm	330824	653018
H10	Mauldslie West Cottage	331001	653064
H11	Mauldslie Hill Cottage	331016	653079
H12	Heriot Cleuch	337672	654098
H13	Gladhouse Reservoir House	330006	654361
H14	The Small Cottage	329955	654369
H15	White Cottage	330051	654438
H16	2 Gladhouse Mains Cottage	330084	655029
H17	1 Gladhouse Mains Cottage	330141	655106
H18	Howburn Cottage	330939	655225
H19	Outerston Hill	333529	655670
H20	Whitelaw	336353	656439
H21	5 Yorkston Cottages	331592	656572
H22	Shepherds Cottage	331519	656578
H23	North Cottage	331593	656601
H24	Yorkston Farm	331495	656669
H25	Thimble Cottage	332786	656889

House ID	House Name	OSGB Co-Ordinates	
		X (m)	Y (m)
H26	1 Outerston Cottages	332808	656898
H27	Esperston Farm	333817	656968
H28	Broadhead Cottage	331896	657057
H29	1 Esperston Cottage	334031	657125
H30	1 Kiln Cottage	333995	657506
H31	8 South Middleton Cottage	336436	657845
H32	2 Wester Middleton Cottage	336207	658023
H33	1 Halkerston Cottage	334936	658313
H34	Halkerston Farm	334700	658336
H35	1 Castleton Cottages	333141	658387
H36	Fala House	339075	656058
H37	Falahill Farmhouse	339085	656040
H38	7 South Middleton Cottage	336430	657852
H39	6 South Middleton Cottage	336426	657858
H40	5 South Middleton Cottage	336420	657865
H41	4 South Middleton Cottage	336415	657873
H42	3 South Middleton Cottage	336409	657880
H43	1 South Middleton Cottage	336397	657893
H44	Wester Middleton	336296	657964
H45	The Arches	336274	657979
H46	Graceview	336229	657997
H47	1 Wester Middleton Cottage	336214	658015
H48	2 Halkerston Cottage	334933	658319
H49	3 Halkerston Cottage	334931	658329
H50	2 Kiln Cottage	334004	657507
H51	3 Kiln Cottage	334017	657507
H52	4 Kiln Cottage	334026	657507
H53	2 Esperston Cottage	334043	657142
H54	3 Esperston Cottage	334054	657158
H55	4 Esperston Cottage	334064	657172
H56	Outerston Farm House	332990	657078
H57	3 Yorkston Farm Cottages	331546	656603
H58	2 Yorkston Farm Cottages	331562	656603
H59	1 Yorkston Farm Cottages	331573	656603

House ID	House Name	OSGB Co-Ordinates	
		X (m)	Y (m)
H60	4 Yorkston Cottages	331592	656580
H61	3 Yorkston Cottages	331592	656587
H62	2 Yorkston Cottages	331592	656593
H63	Toxside Schoolhouse	328868	653805
H64	Toxside Smithy	328594	653288
H65	Huntly Lodge	330051	652636
H66	2 Moorfoot Farm Cottages	329787	652295
H67	Peggies Cottage	329734	652313
H68	Smithy Cottage	329715	652322
H69	Gladhouse Cottage	329555	651439
H70	The Hirsel	336351	652397
H71	The Hayloft of Carcant House	336485	652464
H72	Carcant House	336489	652465
H73	Carcant House	336558	652416
H74	Outerston Farm Cottage	333022	657020
H75	2 Outerston Cottages	332797	656895

Note to Table 2: The geographical coordinate references are provided for the purpose of identifying the general location of dwellings to which a given set of noise limits applies.

Reason: To protect the amenity of the area.

Guidance Notes

These notes are to be read with and form part of the noise condition. 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 $L_{A90,10\text{-minute}}$ 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 UK adopted standard in force at the time of the measurements). Measurements shall be undertaken in such a manner to enable a tonal penalty to be applied in accordance with Guidance Note 3.

(b) The microphone should be mounted at 1.2 – 1.5 metres above ground level, fitted with a two-layer windshield or suitable equivalent approved in writing by the 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 3.5 metres away from the building facade or any reflecting surface except the ground at the approved measurement location. If consent of the complainant for access to their dwelling to undertake compliance measurements is withheld, the wind farm operator shall submit for the written approval of the Planning Authority details of the proposed alternative representative measurement location prior to the commencement of measurements and the measurements shall be undertaken at the approved alternative representative measurement location.

(c) The $L_{A90,10\text{-minute}}$ measurements should be synchronised with measurements of the 10-minute arithmetic mean wind and operational data logged in accordance with Guidance Note 1(d), including the power generation data 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 at any on site meteorological mast(s), if

available, together with the arithmetic mean power generated by each turbine, all in successive 10-minute periods. 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, as determined from whichever source is agreed in writing with the Planning Authority as being most appropriate to the noise compliance measurements being undertaken, 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 Planning Authority in accordance with the noise condition shall be provided in comma separated values in electronic format.

(f) A data logging rain gauge shall be installed during the assessment of the levels of noise immissions. The gauge shall record over successive 10-minute periods synchronised with the periods of data recorded in accordance with Note 1(d).

Guidance Note 2

(a) The noise measurements shall be made so as to provide not less than 20 valid data points as defined in Guidance Note 2 (b).

(b) Valid data points are those measured in the conditions specified in the agreed written protocol under paragraph (d) of the noise condition but excluding any periods of rainfall measured in the vicinity of the sound level meter. Rainfall shall be assessed by use of a rain gauge that shall log the occurrence of rainfall in each 10-minute period concurrent with the measurement periods set out in Guidance Note 1.

(c) For those data points considered valid in accordance with Guidance Note 2(b), values of the $L_{A90,10\text{-minute}}$ noise measurements and corresponding values of the 10- minute standardised ten metre height wind speed, as derived from the site measured wind speed source(s) agreed in writing with the Planning Authority in accordance with

Guidance Note 1(d), shall be plotted on separate XY charts for each wind direction considered, 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 and direction.

Guidance Note 3

(a) Where, in accordance with the approved assessment protocol under paragraph (d) of the noise condition, noise immissions at the location or locations where compliance measurements are being undertaken contain or are likely to contain a tonal component, a tonal penalty is to be calculated and applied using the following rating procedure.

(b) For each 10-minute interval for which $L_{A90,10\text{-minute}}$ 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.

(c) 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.

(d) The average tone level above audibility shall be calculated for each wind speed bin, each bin being 1 metre per second wide and centred on integer wind speeds, for each wind direction. Samples for which the tones are below the audibility criterion, or no tone was identified, a value of zero audibility shall be substituted.

(e) The tonal penalty for each wind speed bin 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 and wind direction is the arithmetic sum of the measured noise level as determined from the best fit curve described in Guidance Note 2 and the penalty for tonal noise as derived in accordance with Guidance Note 3 at each integer wind speed and wind direction within the range specified by the Planning Authority in its written protocol under paragraph (d) of the noise condition.

(b) If no tonal penalty is to be applied then the rating level of the turbine noise at each wind speed and wind direction 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 the Tables attached to the noise conditions or the noise limits for a complainant's dwelling approved in accordance with paragraph (e) of the noise condition, 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 only.

(d) The wind farm operator shall ensure that all necessary wind turbines in the development are turned off for such period as the independent consultant requires to undertake any further noise measurements required under Guidance Note 4(c). If the number of turbines to be turned off are less than the total number of turbines on the site then this shall be agreed in advance with the Planning Authority.

(e) To this end, the steps in Guidance Note 2 shall be repeated with the required number of turbines shutdown in accordance with Guidance Note 4(d) in order to determine the background noise (L3) at each integer wind speed within the range requested by the Planning Authority in its written request under paragraph (c) and the approved protocol under paragraph (d) of the noise condition.

(f) 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:

(g) The rating level shall be re-calculated by arithmetically adding the tonal penalty (if any is applied in accordance with Note 3) to the derived wind farm noise L1 at that integer wind speed and wind direction.

(h) If the rating level after adjustment for background noise contribution and adjustment for tonal penalty (if required in accordance with Guidance Note 3 above) at any integer wind speed and wind direction lies at or below the values set out in the Tables attached to the conditions or at or below the noise limits approved by the Planning Authority for a complainant's dwelling in accordance with paragraph (e) of the noise condition then no further action is necessary. If the rating level at any integer wind speed and wind direction exceeds the values set out in the Tables attached to the conditions or the noise limits approved by the Planning Authority for a complainant's dwelling in accordance with paragraph (e) of the noise condition, then the development fails to comply with the conditions.

3 References

[1] Welsh Government (October 2014) Circular WGC 016/2014 'The Use of Planning Conditions for Development Management'