Appendix 9.1 Email Consultation with OIC Environmental Health

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Simon

Apologies for delay in responding – please see comments below

Paul

Paul Turner
Environmental Health Officer
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From: Simon Waddell <simon.waddell@itpenergised.com>
Sent: 22 October 2019 17:07
To: Paul Turner <Paul.turner@orkney.gov.uk>
Cc: Rebecca Todd <rebecca.todd@itpenergised.com>; Roy Ferguson <Roy.Ferguson@itpenergised.com>; Lindsay Smith <Lindsay.Smith@itpenergised.com>; Gregor Massie <Gregor.Massie@itpenergised.com>
Subject: Quanterness wind farm - baseline proxies and adoption of fixed minimum limit - daytime period

Good afternoon Paul,

Further to our previous correspondence, we would seek to agree with you the use of baseline monitoring locations as proxies for deriving noise limits for noise sensitive receptors (NSRs) in the study area.

Figure 1 shows the representative NSRs (black and white circular symbols) at which we propose to evaluate operational noise against baseline levels measured at Quanterness Farm within the blue box. At the remaining NSRs, outside the blue box, we propose to evaluate against baseline levels measured at Mou Ness.

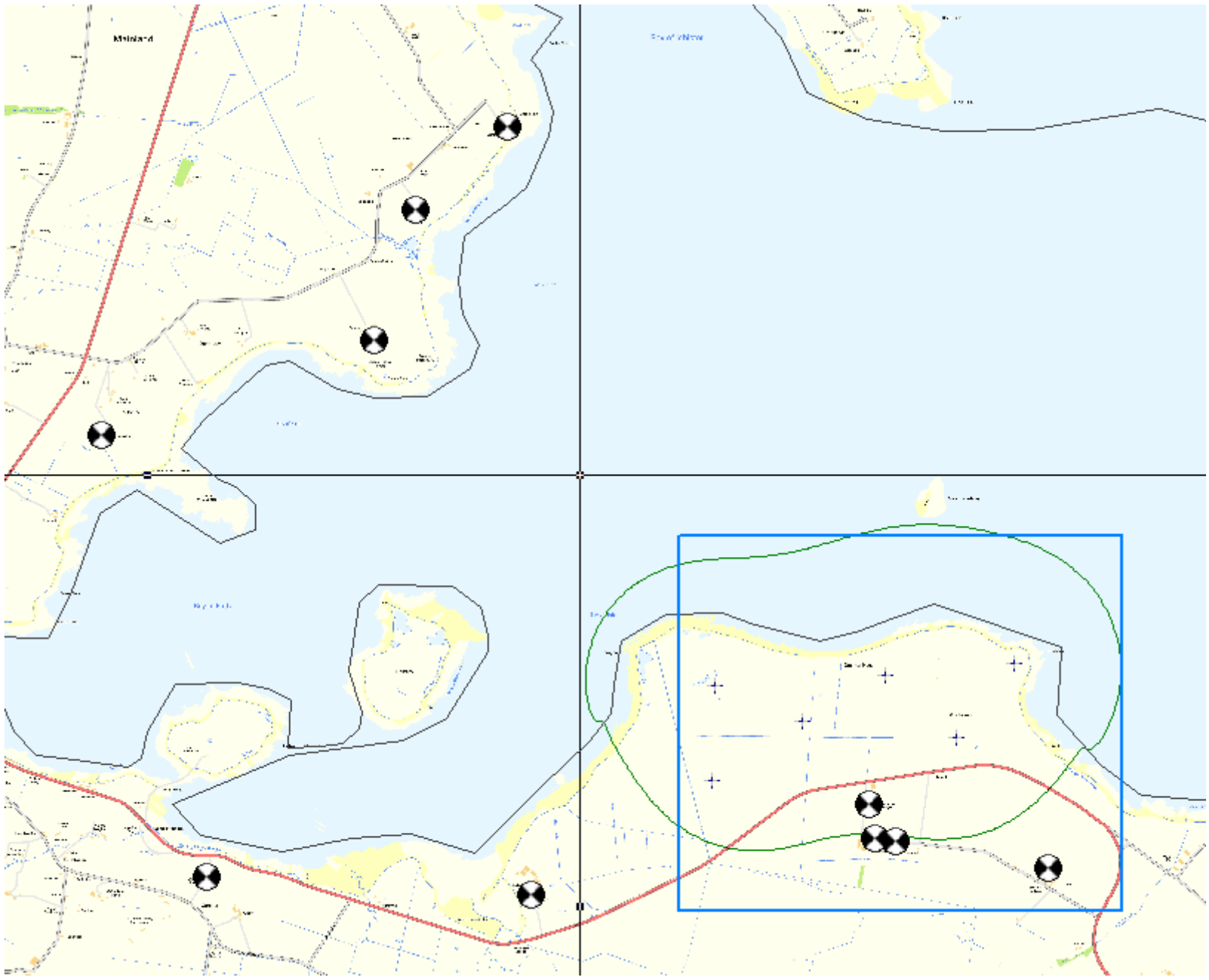
The 35 dBL_{A90} operational noise contour at 9m/s (turbine maximum sound power level) is shown as a green line. – Sorry but I am unsure how you have calculated this 35dB noise contour, do we have a make and model of turbine decided (news to me) or is this just an initial indicative contour based on a “candidate” turbine?

Noise levels at NSRs within the blue box are considered to experience a similar noise environment to Quanterness Farm, where background noise is predominantly affected by the wind. The logic behind this will need to be carefully discussed in the final acoustic report, on a visual assessment you would expect Rennibister/Rennibister Cottage to be within the blue box (controlled by Quanterness Farm levels) and this would be my assumption especially given the proximity of Rennibister properties to the road. My gut feeling is Rennibister and Rossmyre properties should be in within the blue box.

Noise levels at NSRs outside the blue box are considered to experience a similar noise environment to Mou Ness, at which is influenced both by the wind and also noise from the sea. – See above

Analysis of background levels shows that quiet daytime background levels at Quanterness Farm are higher than at Mou Ness under low wind speed conditions, attributed to the influence of road traffic. At wind speeds above 7m/s Mou Ness background levels are higher than at Quanterness Farm, attributed to the influence of noise from the sea. As discussed, further analysis will be undertaken to consider the effect of noise noise from existing turbines on measured baseline levels at both monitoring locations. - Noted

Figure 1 – Allocation of representative baseline data to representative NSRs



Finally, please could you confirm whether you would seek to apply the 35 dB or 40 dB fixed minimum ETSU limit during the daytime period? Our starting point would be "flat 35dB(A) or Background + 5dB", if a developer wanted to apply for a base line minimum over 35dB(A) we would expect the developer to make a case for that in the acoustic report having regard to ETSU-R-97 and IoA Guidance etc (and any relevant case Law etc.), having said that we are aware the IoA supplementary guidance avoided the subject – Please note the fixed part of the limit is not 35 dB(A) **OR** 40dB(A), it is in the range 35 to 40dB(A).

Many thanks,

Simon

Classification: OFFICIAL

Simon,

Apologies for delay in getting back to you on the proposed visit to install noise monitoring kit etc. on or about 24 September 2019.

I will try to be available on the day you come up, we are a stretched a bit thin on the ground here and it is difficult to 100% sure of my availability.

I think the proposed noise monitoring positions are probably OK subject to on site checks, and I agree two locations should be sufficient.

For your information:-

HATSTON Enercon E44 900kW turbine on 45m hub is conditioned to flat 35dB LA90 limit and no background noise measurements were carried out prior to development. I can confirm we have had no complaints about this turbine to date and it appears to be fully operational all the time. There are one or two small turbines near the Enercon, but this will not be of concern to us. Planning ref. 09/092/PPF

RENNIBISTER Enercon E44 900kW turbine on 45m hub (pre development application to increase to 55m Hub refused) is also conditioned to flat 35 dB LA90 (planning ref 12/108/TPP), also no complaints to date and appears to be operating al the time.

BURNESS – Small WTG to NNE is a C&F CF20 on 20m mast (Planning ref 11/775/TPP). We will need to assess how best to avoid impacts from this on site, the SW corner of the curtilage to Burness (grid ref. 338744 1015747) is about 280m from the turbine, the turbine has a MCS/BWEA Acoustic label giving SWL = 89.0dB@ 8m/s wind speed and a noise slope of 2.97dB per m/s, indicating ca. 94.9dB @ 10 m/s wind speed with no noise penalty. We may be able to determine on site that with careful positioning we can gain a good noise barrier from the buildings between the small turbine and NMP2.

INGASHOWE – Small WTG (Xzeres 10kW), from what I see it spends as much time down as up, and far away enough to not be a concern to us.

Let me know nearer the day what the plan is, if you need to send equipment up in advance (e.g. if you are flying up) feel free to courier it to me c/o of the council and I will look after it for you until you get here.

Regards

Paul

Paul Turner

Environmental Health Officer

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From: Simon Waddell <simon.waddell@itpenergised.com>
Sent: 02 December 2019 15:05
To: Paul Turner <Paul.turner@orkney.gov.uk>
Subject: RE: 19/175/SCO Quanterness Orkney

Good afternoon Paul,

I hope you're well. I called but I understand you're currently out and about.

I have now had review comments back on the Quanterness noise assessment, one of which is regarding the Hatston Industrial Estate turbine (09/092/PPF).

I note that you requested that all cumulative turbines be assumed to operate at their full planning noise limit, rather than using the manufacturer-supplied noise data.

The Hatston turbine is consented to the simplified ETSU limit of 35 dB at the nearest sensitive receptor, however, there are no residential properties close to the turbine. If we assume that the turbine operates at 35 dB at the nearest residential property, approximately 700 m away at Hatston Park/Hatston Farm. This results in a somewhat excessive sound power level 5 dB higher than the reported sound power levels.

We predicted noise levels for the Rennibister turbine (same turbine model as Hatston) at the closest non-associated residential property using the reported sound power level data and found the predicted level to be above the 35 dB noise limit, therefore using the reported data is considered to be a robust approach.

Given the remoteness of this turbine from residential properties, would you be satisfied in this instance to use the reported sound power level, including the usual conservative GPG treatment of all data, rather than assuming that the turbine operates at its theoretical noise limit?

I'd welcome a call should you wish to discuss the above.

With thanks and regards,

Simon

Classification: OFFICIAL

Simon,

Hatston Wind Turbine.

In this instance I agree that using the permitted limit of 35dB(A) when the nearest noise sensitive dwelling is ca. 650/700m away will result in unrealistic predictions of noise impacts.

Therefore, for the Hatston turbine, I have no objection to the use of manufacturers Sound Power Data provided that data is treated in the same way as it would be for a new development under the IoA Good Practice Guides/Supplementary Good Practice Guides.

Regards

Paul

Email chain finishing 13th Jan 2020:

Classification: OFFICIAL

Simon,

At this stage, based on what we have discussed and your latest response below, I have no further adverse comments.

As ever:- This advice is provided without prejudice to any decision the council may make in the future in its capacity as the Planning Authority and nothing in this email should be taken as a presumption that Planning Permission will be granted.

Regards

Paul

Paul Turner

Environmental Health Officer

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From: Simon Waddell <simon.waddell@itpenergised.com>
Sent: 13 January 2020 10:38
To: Paul Turner <Paul.turner@orkney.gov.uk>
Cc: Stuart McGowan <stuart.mcgowan@itpenergised.com>; Rebecca Todd <rebecca.todd@itpenergised.com>
Subject: RE: Commercially confidential - Derivation of Quanterness noise limits

Good morning Paul,

Thanks for your detailed and considered response.

We note that you are satisfied with the derivation of the noise limits at NSRs 1 - 13, with the exception of NSR7.

To address your concerns regarding the noise limits at NSR7 Rennibister Farm, we will set a specific noise limit that takes account of the available headroom, assuming that the Rennibister turbine meets its 35 dB noise limit at NSR8 Rennibister Cottage.

We have reviewed the planning conditions for the Rennibister turbine, and note that the consented limits are 45 dBL_{A90} (daytime and night-time) at Rennibister Farm, and 35 dBL_{A90} (daytime and night-time) at non-FI properties.

As previously discussed, the maximum noise level the Rennibister turbine can generate at NSR8, while meeting the 35 dB noise limit at NSR7, is 41 dB.

The noise limit at NSR7 will therefore be;

- the primary noise limit (measured background +5 dB) log. minus the assumed maximum operational noise level of the Rennibister turbine (41 dB);
- **OR** 35 dB (FI noise limit minus 10 dB), *whichever is the higher*.

I trust that the above meets with your approval. The report has to go for final legal review before the end of today, therefore if you have any further reservations please let me know at your earliest convenience. I understand you will be back in the office later, so please feel free to give me a call to discuss if you have any questions.

Best regards,

Simon

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From: Paul Turner [mailto:Paul.turner@orkney.gov.uk]
Sent: 10 January 2020 17:00
To: Simon Waddell <simon.waddell@itpenergised.com>
Subject: RE: Commercially confidential - Derivation of Quanterness noise limits

Classification: OFFICIAL SENSITIVE

Simon,

Apologies it has taken me until so late in the day to get back to, other high priority work took precedence this morning.

I have had a good think about the approach you are proposing, and now comment as follows:-

I have come comments/observations regarding the Background noise levels as reported – Please see attached document, this document is my "thought process on paper" which I intend to leave on our internal systems so that if somebody else has to pick up this job down the line they can see what I was thinking.

1. I have not double checked all the calculations so I can not confirm everything is right in that respect, however nothing I have seen rings alarm bells.

2. Recent practice has been to restrict or limit noise levels in planning conditions to below background plus 5 where the predicted noise impacts from the development are significantly (typically at least 2 or 3dB or more) below the background plus 5 levels – i.e. there is a lot of headroom. This protects potential future developments and avoids unnecessary risk of blighting further development and usually only occurs at higher wind speeds after the turbine has reached its maximum sound power output.

3. I am content that the proposed approach to determining suggested Planning condition limits at NSR1, NSR2, NSR4, NSR6 & NSR9 is appropriate.

4. I am content that the proposed approach to determining suggested Planning condition limits at NSR5 & NSR8, NSR10, NSR11, NSR12, & NSR13 will produce adequate controls to prevent risk of noise creep.

5. Provide NSR3 is OCCUPIED by persons financially involved with the development I am content the proposed noise limits are justified

6. I have reservations about the adequacy of the proposed limits to control risk of excessive noise creep at NSR7, this NSR is already subject to relatively high levels of permitted noise from 12/108, my concern is noise creep beyond what would be permitted even if the occupiers were F.I. in the new development as well as the existing 12/108.

7. In your email of 10/01/2020, para 9.1.1 last sentence, you indicate "*Where properties own a specific turbine or cluster of turbines, noise limits at these properties have been assumed to be the financially-involved limit of '45 dB$L_{A90,10min}$ or background +5dB' as provided in ETSU"* (my emphasis). Strictly speaking this turbine (in reality this only applies to 12/108, the small turbines have no equivalent condition) has a flat 45 (day) / 43 (night) limit, any headroom discovered as a result of your background noise measurement can be considered available for the new development.

Regards

Paul

Paul Turner

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From: Simon Waddell <simon.waddell@itpenergised.com>
Sent: 10 January 2020 09:16
To: Paul Turner <Paul.turner@orkney.gov.uk>
Cc: Stuart McGowan <stuart.mcgowan@itpenergised.com>; Rebecca Todd <rebecca.todd@itpenergised.com>
Subject: RE: Commercially confidential - Derivation of Quanterness noise limits

Good morning Paul,

I've re-jigged the report and provide text detailing the noise limit apportionment process and assumptions made, included below, along with clarified tables showing noise limit derivation. Please note that there will be further technical and legal review of the report, such that the text may change from that provided below, however, if you confirm you are satisfied with the approach taken, the method described will be retained.

I'm working from home today but can be reached on my mobile if you'd like to discuss.

Best regards,

Simon

Mobile: +44 (0) 7884 278145

Review of Cumulative Noise Limits

9.1.1 *Noise limits for the majority of identified cumulative developments were in accordance with the "simplified ETSU" approach, whereby noise levels due to small individual turbines or clusters of small turbines are conditioned to a simplified noise limit of a 'flat' 35 dB across the range of wind speeds at all properties. Where properties own a specific turbine or cluster of turbines, noise limits at these properties have been assumed to be the financially-involved limit of '45 dB$L_{A90,10min}$ or background +5dB' as provided in ETSU.*

Derivation of noise limits at NSRs

9.1.2 *Appropriate noise limits for the operational phase of the Proposed Development have been determined at each NSR by identifying what the controlling noise limit is, based on evaluation of existing noise limits applicable to cumulative developments. The following approach has been taken to derive appropriate noise limits:*

- ***Consented noise limits at named NSRs for cumulative developments.*** *Noise limits apply only at the NSRs named in the consented cumulative developments, and noise from the Proposed Development should not result in an exceedance of these limits. Given the simplified ETSU noise limits applicable to existing/consented turbines within the study area, no noise limits have been determined for named NSRs in their planning conditions.*
- ***No cumulative effect - derived noise limits using measured 2019 baseline noise levels.*** *At NSRs where it has been determined through prediction that no cumulative effects will occur, i.e. noise levels due to the Proposed Development are >10 dB above the noise levels from existing and consented cumulative turbines, then the assumed noise limit applicable to the Proposed Development is the ETSU limit derived from measured baseline noise levels, assuming a fixed minimum limit of '35 dB$L_{A90,10min}$ or background +5dB, whichever is the higher'*
- ***Potential cumulative effect – derived noise limits using measured 2019 baseline noise levels minus the existing consented noise limits applicable to other turbines.*** *At NSRs where potential cumulative effects have been identified, noise limits have been adopted such that the Proposed Development does not exceed any available 'headroom' in consented noise limits. Given the use of 'simplified ETSU' flat noise limits for cumulative turbines within the study area, NSRs at which cumulative effects may have assumed noise limits which do not vary with wind speed, and for which there is no existing baseline data. This assessment therefore relies on measured 2019 baseline noise levels; where 'background +5 dB' does not exceed 35 dB, the resultant noise limit has been set at 10 dB below the assumed noise limit of 35 dB. At higher wind speeds, where 'background +5 dB' exceeds 35 dB, the available headroom has been determined by logarithmic subtraction of 35 dB from the 'background +5 dB' noise limit.*

9.1.3 *We note that the small turbines may potentially operate at noise levels of up to 45 dB at properties with which they have financial involvement. This assessment has determined through prediction that operation of cumulative small turbines identified within the study area would result in exceedance of the 35 dB simplified ETSU limit at the closest non-FI properties, therefore it is considered that assuming that cumulative turbines do not exceed 35 dB at the closest non-FI property is appropriately robust.*

9.1.4 *The derivation of noise limits is shown in detail in Table 9.14 in Section 9.6 of this chapter.*

...

Operational noise limits – wind turbine noise

9.1.5 *The derived noise limits at Harwood and Mou Ness are provided in Table 9.14 for the range of operational wind speeds of the candidate turbine. The noise limits derived from measurements at NMPs have been allocated to NSRs on the basis of observations of the noise environment while setting up the SLMs.*

9.1.6 *As discussed in 9.5.39, allowance has been made within the noise limits for noise from cumulative turbines. Noise levels from cumulative turbines operating at their consented noise limits have been used to determine at which NSRs cumulative effects may occur. This is shown graphically in Figure 9.2. The results of this evaluation are as follows:*

- *NSR1, NSR2, NSR3, NSR4, NSR6, NSR9 – no potential cumulative effect;*
- *NSR5 – potential cumulative effects with Crowness turbine;*
- *NSR7 – predicted noise level due to Rennibister turbine >10 dB above predicted level due to Proposed Development, therefore no cumulative effect, however, noise limit for Proposed Development to be set such that this is confirmed by condition. Given that predictions indicate that the Rennibister turbine cannot use the full 45 dB FI limit at NSR7 Rennibister while meeting the 35 dB simplified ETSU noise limit at NSR8 Rennibister Cottage, the noise limit applicable at NSR8 has been applied at NSR7. This is considered to be a robust approach;*
- *NSR8 – potential cumulative effects with Rennibister turbine; and*
- *NSR10, NSR11, NSR12, NSR13 – potential cumulative effects with multiple small turbine developments*

9.1.7 *The approach to the allocation of NMP-derived noise limits has been agreed with OIC Environmental Health.*

Table 9.14 – Derivation of noise limits, dBL$_{A90,10min}$

Wind speed, m/s	Derived noise limit, dBL$_{A90,10min}$									
	3	4	5	6	7	8	9	10	11	12
NMP1 – Harwood										
Daytime	37.1	37.5	38.2	39.3	40.7	42.2	43.7	45.2	46.6	47.7
Night-time	43.0	43.0	43.0	43.0	43.0	43.0	43.0	44.6	47.4	49.9
Limit applicable at: NSR1 & NSR2 Quanterness Cottages, NSR4 Harwood, NSR6 Cassie House, NSR9 Ingashowe										
NMP1 - Harwood – background +5 dB noise limit, minus 35 dB contribution assumed from cumulative turbines.										
Daytime	33.8	33.8	35.4	37.3	39.3	41.2	43.1	44.8	46.3	47.5
Night-time	42.3	42.3	42.3	42.3	42.3	42.3	42.3	44.2	47.1	49.7
Limit applicable at: NSR5 Saverock, NSR7 Rennibister and NSR8 Rennibister Cottage										
NMP2 - Mou Ness – background +5 dB noise limit.										
Daytime	35.0	35.0	35.0	35.8	39.4	43.1	46.5	49.4	51.6	53.0
Night-time	43.0	43.0	43.0	43.0	43.0	43.0	46.2	48.9	50.7	51.7
Limit not applicable directly, given potential cumulative contributions from small turbines										
NMP2 - Mou Ness – background +5 dB noise limit, minus 35 dB contribution assumed from cumulative turbines.										
Daytime	25.0	25.0	25.0	28.3	37.5	42.4	46.2	49.2	51.5	53.0
Night-time	42.3	42.3	42.3	42.3	42.3	42.3	45.9	48.7	50.5	51.6
Limit applicable at: NSR10 Burness, NSR11 Quoys of the Ayre, NSR12 Mou Ness, NSR13 Burness Cottage										
Financially-Involved noise limit, derived from NMP1 Harwood baseline data										
Daytime	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.2	46.6	47.7
Night-time	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	47.4	49.9
Limit applicable at: NSR3 Quanterness Farm										

9.1.8 *The occupiers of Quanterness Farm will be financially involved in the Proposed Development, therefore the higher Financially Involved (FI) noise limit applies at this NSR.*

9.1.9 *Where it has been identified that no headroom is available (text in red) the cumulative noise limit has been set at 10 dB below the consented limit for cumulative turbines.*

From: Paul Turner [mailto:Paul.turner@orkney.gov.uk]
Sent: 09 January 2020 13:46
To: Simon Waddell <simon.waddell@itpenergised.com>
Subject: RE: Commercially confidential - Derivation of Quanterness noise limits

Classification: OFFICIAL

Simon

I am trying to get my head around your email and assess the possible implications/hazards.

Just now I am not sure if I understand the table for NSR7 and how the figures in line 2 have been derived. It looks to me like the numbers in line 2 are the same as line 2 for NSR5, but the description makes it sound like they should be more like line 1 in NSR5 (or FI limit – 10, whichever is higher)?

Regards

Paul

NSR7 – NOTE: Assumed to be FI with Rennibister turbine - 45 dB FI limit applies										
Quanterness-only limit (daytime)	37.5	38.2	39.3	40.7	42.2	43.7	45.2	46.6	47.7	37.5
Cumulative limit, FI limit minus 10 dB or background +5 dB, whichever is higher	35.0	35.4	37.3	39.3	41.2	43.1	44.8	46.3	47.5	35.4
Quanterness-only limit (night-time)	43.0	43.0	43.0	43.0	43.0	43.0	44.6	47.4	49.9	43.0
Cumulative limit, FI limit minus 10 dB or background +5 dB, whichever is higher	42.3	42.3	42.3	42.3	42.3	42.3	44.6	47.4	49.9	42.3

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