

Appendix 9.1 Email Consultation with OIC Environmental Health

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This Appendix provides a record of the agreement of different aspects of the assessment. Excerpts from email strings are provided to make the record more concise and reduce duplication.

Agreement of baseline noise monitoring locations:

From: Simon Waddell

Sent: 08 October 2019 15:37

To: Paul Turner <Paul.turner@orkney.gov.uk>

Cc: Sweeny.Johnston@orkney.gov.uk; Rebecca Todd <Rebecca.Todd@itpenergised.com>; Roy Ferguson <Roy.Ferguson@itpenergised.com>; Lindsay Smith <Lindsay.Smith@itpenergised.com>; David Hannon <David.Hannon@orkney.gov.uk>

Subject: ITPE noise survey - Hoy

Good afternoon Paul,

I plan to be back on site on Monday afternoon/evening to collect the noise meters from Quanterness, and will aim to deploy them again at three locations on Hoy on the morning of Tuesday 15th October. I provide the suggested locations below. Please can you advise whether you are likely to be able to meet me at site again and if you consider that the proposed locations will be sufficient to characterise the noise environment?

Little Scews - 330090,994835

Primary School - 330677,992752

Upper Seattir - 329799,992082

Many thanks,

Simon

Agreement of which locations are representative of which properties. Discussion regarding treatment of potential contribution to baseline noise levels from existing wind turbines.

From: Paul Turner <Paul.turner@orkney.gov.uk>
Sent: 18 May 2020 13:12
To: Simon Waddell <simon.waddell@itpenergised.com>
Cc: David Hannon <David.Hannon@orkney.gov.uk>; Roy Ferguson <Roy.Ferguson@itpenergised.com>
Subject: RE: Hoy wind farm - further consultation

Classification: OFFICIAL

Simon,

Please see my [thoughts/comments below](#).

Paul

Paul Turner
Environmental Health Officer
Orkney Islands Council
School Place
KIRKWALL
Orkney
KW15 1NY

01856 873535 ext 2805

From: Simon Waddell <simon.waddell@itpenergised.com>
Sent: 14 May 2020 15:03
To: Paul Turner <Paul.turner@orkney.gov.uk>
Cc: David Hannon <David.Hannon@orkney.gov.uk>; Roy Ferguson <Roy.Ferguson@itpenergised.com>
Subject: Hoy wind farm - further consultation

Good afternoon Paul,

I hope this finds you well in these strange times!

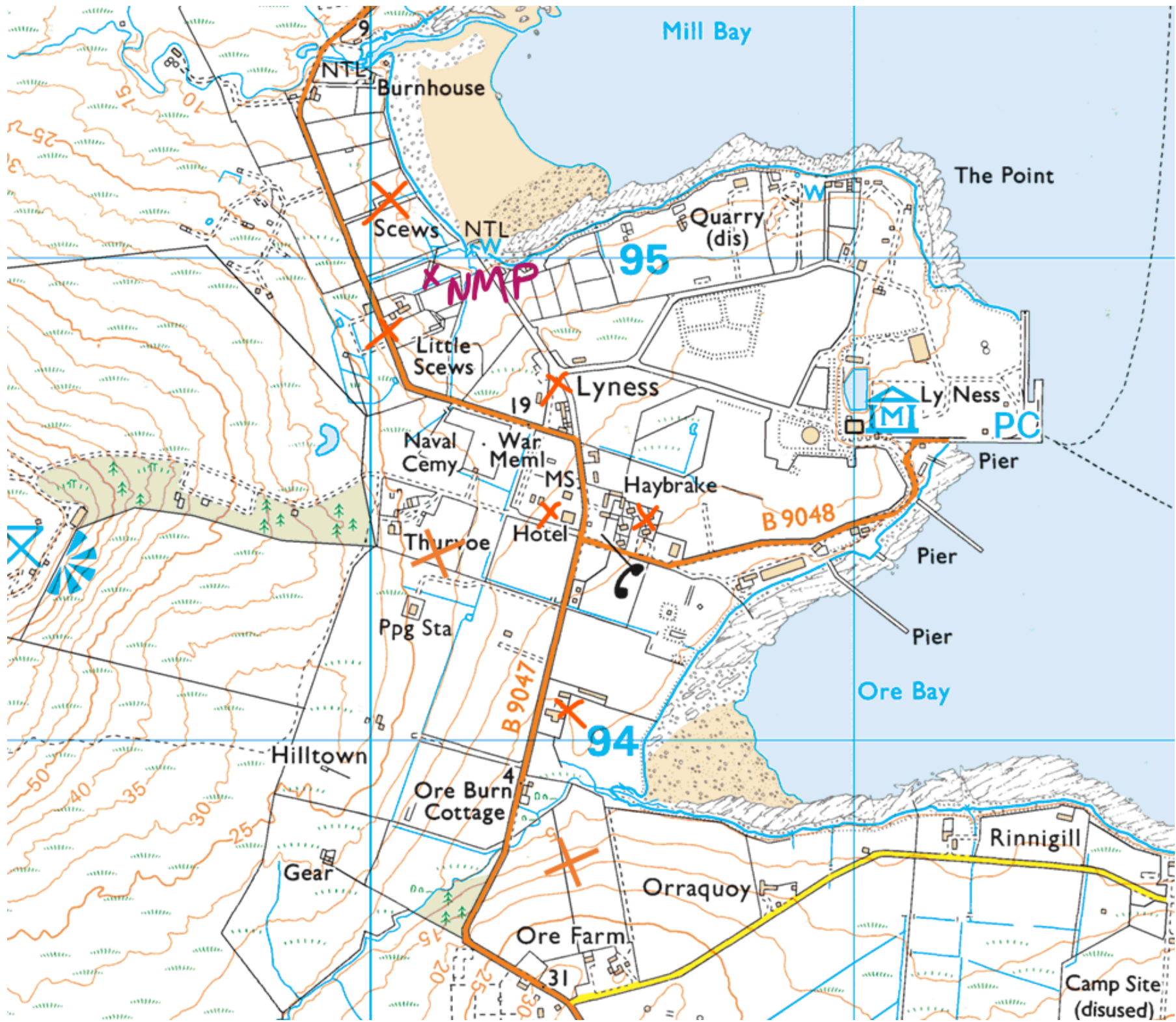
Further to our last meeting on site at Hoy, at the commissioning of the baseline survey, I would like to share with you our records of the survey, our initial findings from evaluation of the baseline data and agree our approach to the assessment.

Characterisation of baseline environment, allocation of proxy data

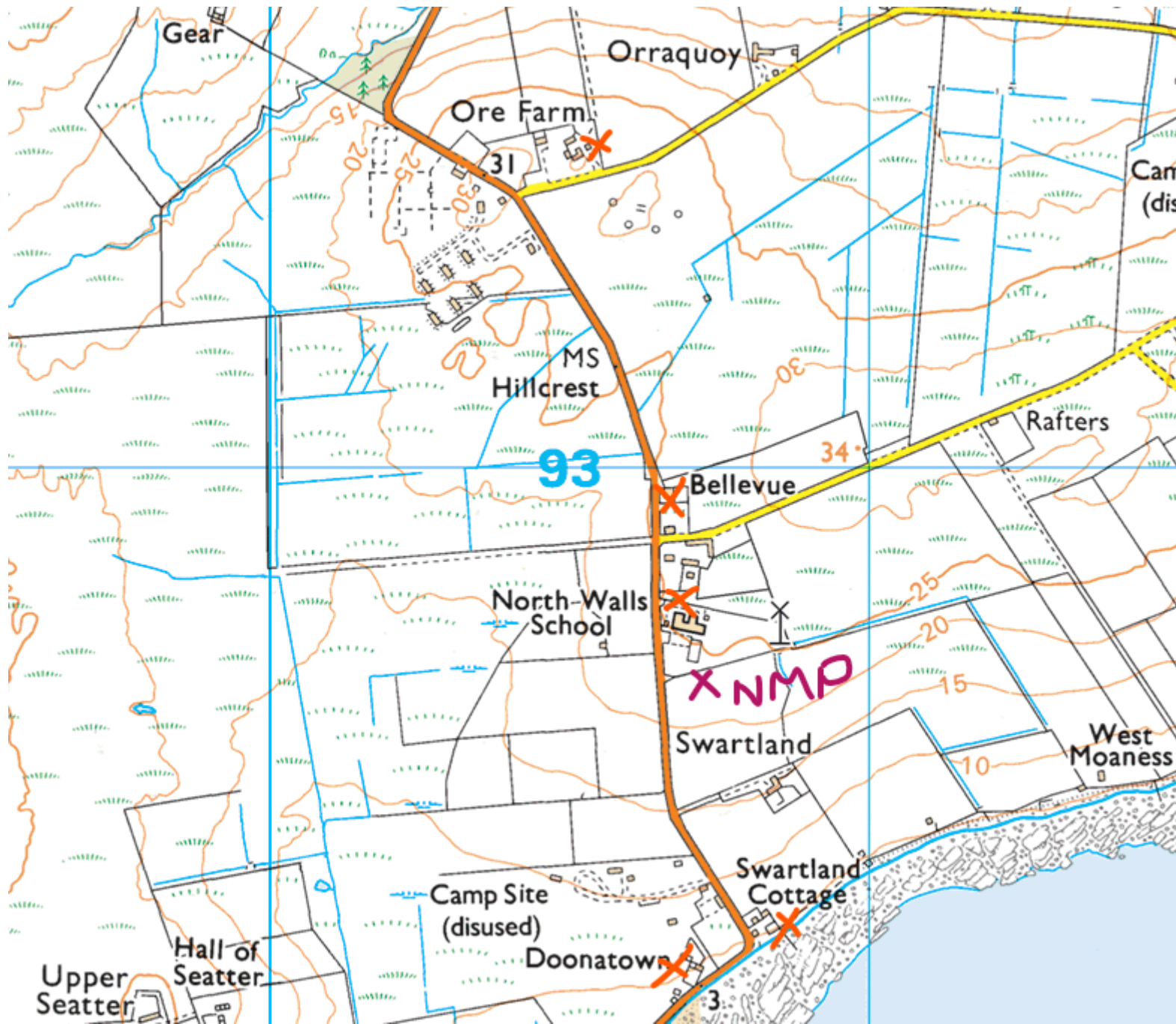
Firstly, please see attached our record sheet. I trust that this tallies with your recollections, but please let me know if you have any comments. All monitoring equipment was installed at locations representative of the quietest part of each property, seeking to minimise noise from extraneous sources, such as vegetation, boiler flues, watercourses, existing turbines etc, and in accordance with the requirements of the IoA Good Practice Guide.

I provide below screenshots showing the monitoring locations (in purple mark up) and the receptor locations for which we propose to use the NMPs as proxies to characterise the noise environment (orange mark up).

Figure 1 - NMP1 – Little Sews – Representative of Lyness



NMP2 – North Walls School – Representative of North Walls/Bellevue, Ore Farm, Swartland and Doonatown



NMP3 – Upper Seatter – Representative of Upper Seatter, Stoneyquoy, Muirs, North Ness and Little Ayre.



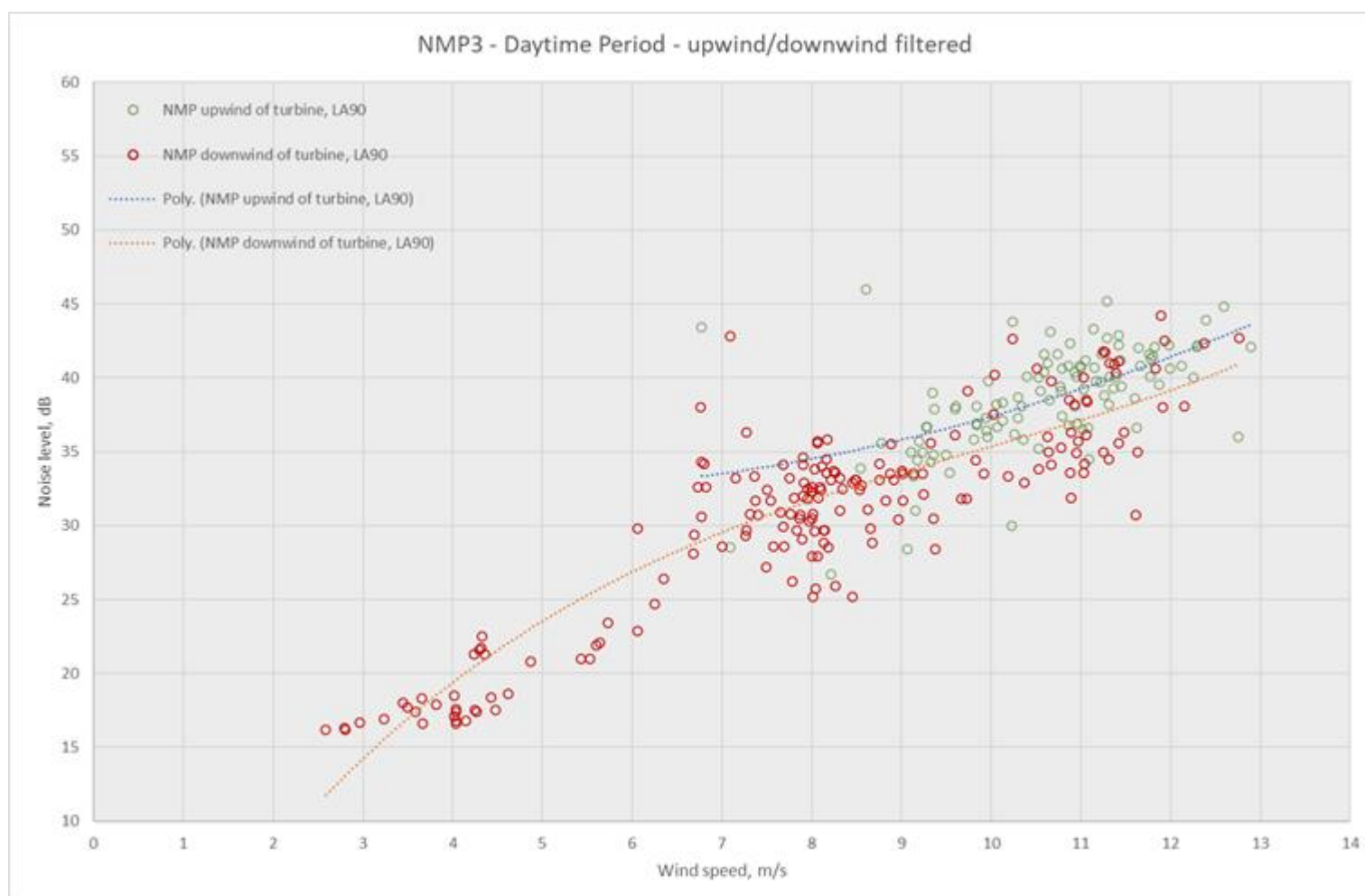
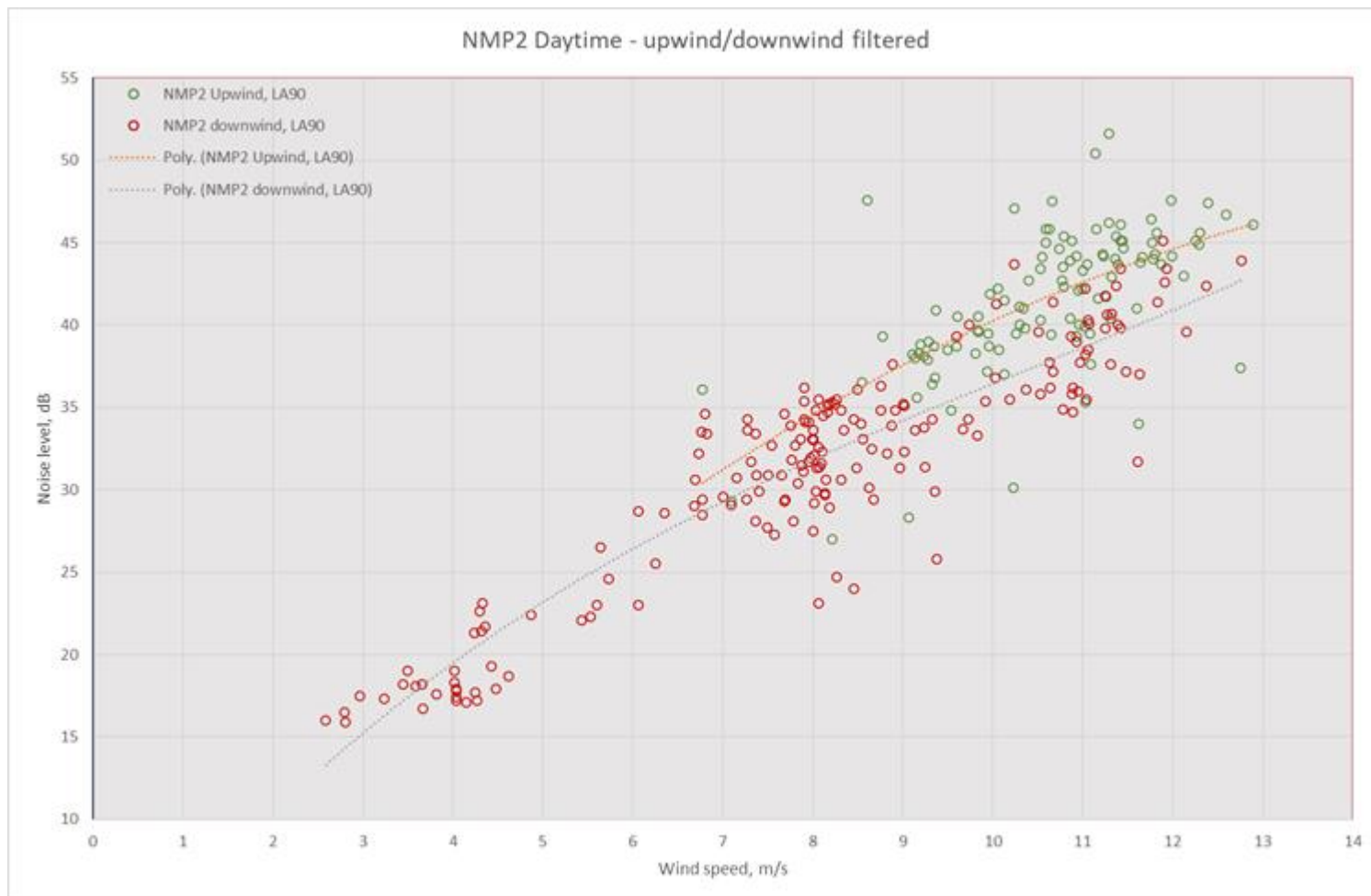
Please confirm whether you agree with the above?

[Paul Turner] I have no objection to the allocation of the Noise Sensitive Receptors (NSRs) to Noise Monitoring Positions (NMPs) as per your figures.

Having observed the installation of Noise Monitoring kits in the field I have no adverse comments to make on the deployment of the equipment and agree this was done in line with good practice etc.

Consideration of cumulative turbine noise in baseline measurements

There are existing turbines potentially within audible range of NMP2 and NMP3. To examine the effect of turbine noise on measured noise levels, we have filtered the monitoring data to exclude rainfall, and split the measured data between upwind and down-wind conditions (broadly a north-south split at both monitoring locations). The filtered data is provided for the daytime period both NMPs in the following charts (note – insufficient data for a comparison during the night-time period):



The red datasets are when the NMP is downwind of the turbine(s), and the green datasets are when the NMP is upwind of the turbines. The charts show that there is little difference between upwind and downwind conditions, and marginally higher noise levels occur when the NMP is upwind of the turbines.

We therefore suggest that the influence of the turbines on the baseline noise environment at these locations is negligible, and that no further corrections are required to baseline data to derive noise limits.

Please can you confirm whether you agree?

[Paul Turner] I am currently NOT able to agree with this statement:-

On face value the charts show a clear difference of ca. 2dB (NMP3) and ca.4dB (NMP2) between upwind and downwind conditions, I do not agree that these differences are negligible – in this respect larger scale/clearer charts and inclusion of the Polynomial equations would have helped.

Unless I am misinterpreting something, the charts appear to show that when the NMP is Upwind of the Turbine(s) the noise levels are higher, and Lower noise levels when downwind. I would have thought the opposite would be the case?

Consideration of cumulative noise in setting of noise limits

We propose to address cumulative noise in the assessment stage by subtracting the noise contribution of the existing turbines from the total ETSU noise limit derived from the background noise level (measured by us). The assumed noise contribution for existing turbines will consider the noise limits for each wind speed applicable to these turbines, but also accounting for headroom between limits and likely operational noise levels based on IoA Good Practice Guidance.

We note that the existing turbines comprise the Hoy Community turbine at Ore Brae (08/249/PPF), and the 6kW turbine at North Walls School.

Consent was granted in 2012 for two turbines at Binga Fea. Development commenced; however, no turbines have been erected. There is now an agreement in place with the landowner at Binga Fea that precludes further development of the consent. Consequently and in agreement with David Barclay, these turbines have been excluded from the cumulative assessments within the EIA.

Please can you advise if there are any other cumulative turbines you wish us to consider in our assessment?

[Paul Turner] I am content that (on the basis Binga Fea will not be developed) the only other turbines which need to be assessed as potentially cumulative are the ones identified.

The existing turbines are consented to a 'simplified ETSU' limit of 35 dBL_{A90} at wind speeds of up to 10 m/s. We recognise that it is unlikely that the noise assessments of these turbines considered their cumulative operation, however, given the size of these turbines, the separation distances between them and the orientation of the turbines in relation to receptors, we assume that the noise limits will be met cumulatively.

We therefore propose to subtract the (assumed cumulative) consented noise limit of 35 dBL_{A90} from the derived noise limits at properties potentially affected by noise from existing turbines to derive the residual noise limit applicable to the closest properties to the existing turbines. We propose to use predictive modelling to determine at which properties the cumulative correction will apply, on the assumption that the 35 dBL_{A90} limit is met at the closest receptors.

Please can you confirm whether you accept this approach?

[Paul Turner] From memory, at the time of application for the community turbine (Enercon E44) it was assumed that, due to the orientation of the turbines in relation to each other and noise receptors, the risk of simultaneous noise impacts at receptors was negligible.

I am content that the assessment of cumulative risks should be based on the consented 35dB LA90 noise levels at 10m/s wind speed at nearest noise sensitive receptors. In effect assuming the consented turbines are operating at their permitted maximum noise impact level.

Provided the appropriate precautionary assumptions are made (e.g. assessments in line with IoA Good Practice Guides) correcting the flat 35dB LA90 level for distance (further receptors) and wind speed (lower noise levels at lower wind speeds - using Enercon E44 data) is acceptable.

I hope the above meets with your approval, and would greatly appreciate it if you could confirm by response whether you accept our proposed approach. Alternatively, should you wish to discuss any aspect of the above please don't hesitate to call me.

Many thanks in advance,

Simon

Further discussion regarding subtraction of predicted noise levels due to existing turbines from measured background levels to determine 'true baseline'.

From: Paul Turner <Paul.turner@orkney.gov.uk>
Sent: 22 May 2020 15:12
To: Simon Waddell <simon.waddell@itpennergised.com>
Subject: RE: Hoy wind farm - further consultation

Classification: OFFICIAL

Simon,

As I now understand it:-

The "background" noise data you have is actually background plus any influence from the existing two turbines identified as potentially cumulative, and, directional filtering has not provided suitable data to use for correcting "background plus turbine(s)" to "background only", not least because in some cases the upwind dataset gives higher noise levels than the downwind dataset (probably due to onshore wind conditions).

Therefore we are looking for a method to correct "downwind background plus existing turbine(s)" to "background only, downwind conditions", and you are suggesting using the SWL for the existing turbine(s) and predictive modelling to correct the measured data.

Subject to some precautionary comments I have no objection to this approach:-

- Any modelling should be based on a precautionary ETSU-R 97 combined with IoA GPG & SGPG approach using ISO 9613-2
- An assessment of any Valley Effects as per IoA GPG pg. 21 between existing turbine(s) and receptors should be made and if necessary corrected for (from my knowledge of the area I accept this is unlikely but no harm in double checking).

In addition to the above I would comment as follows:-

- The noise measurement location at NMP2 was selected on site to be as sheltered from the small WTG as possible by existing buildings.
- Planning application 11/728/TPP (Binga Fea Wind Farm) has background (Community WTG not operational) noise data, this data may be of use as a comparator to quality check your own data (accepting the NMPs may not be identical).
- I am not aware of any compliance monitoring having been undertaken for the existing turbines.

Regards

Paul

Discussion of approach to addressing cumulative noise issues and apportionment of noise limits

From: Simon Waddell <simon.waddell@itpenergised.com>
Sent: 03 June 2020 16:14
To: Paul Turner <Paul.turner@orkney.gov.uk>
Cc: David Hannon <David.Hannon@orkney.gov.uk>; Roy Ferguson <Roy.Ferguson@itpenergised.com>
Subject: Hoy Wind Farm - agreement of approach regarding cumulative noise

Good afternoon Paul,

I hope you're well, I just called to discuss further the approach to cumulative noise.

As we discussed on our last call, if we apportion the overall noise limit (daytime 35 dB or background +5 dB, whichever is the higher, night-time 43 dB or background +5 dB, whichever is the higher) according to consented simplified-ETSU noise limits for existing turbines, then the noise budget available at properties close to the Gable End Theatre turbine is used up by the existing turbine.

The result of this situation is that the small turbine is effectively sterilising the area from development of a substantial wind farm.

Having reviewed the noise condition set in the planning consent for the Binga Fea development, we are keen to adopt a similar approach. We therefore propose the following:

- The overall noise limit, including the Hoy Wind Farm, the Gable End Theatre turbine and the Hoy Community Turbine, will be 35 dB / background +5 dB during the daytime, and 43 dB / background +5 dB during the night-time period.
- The representative background level used to derived daytime and night-time noise limits will be that measured by ITPnergised in 2019 (we have cross-checked this against levels measured and reported in support of the Binga Fea development, and the two sets of data are similar) at three locations, with monitoring locations used as proxies for the noise sensitive receptors as previously agreed.
- The overall noise limit will include developments 08/249/PPF and 09/369/PP, as well as Hoy Wind Farm.

As discussed, given the orientation of the receptors with regard to the Hoy Wind Farm and the Gable End Theatre turbine, it will not be possible for the receptors to be simultaneously down-wind of both the Hoy Wind Farm and the Gable End Theatre turbine, therefore directivity will limit cumulative noise effects.

If you could confirm by response if you are happy to accept this approach, that would be greatly appreciated. If you have any questions please don't hesitate to call me.

With thanks and regards,

Simon

Seeking to agree use of 40 dB Fixed Minimum Daytime Noise Limit to address issue whereby cumulative existing turbines are using all of the available noise 'headroom'

From: Simon Waddell <simon.waddell@itpennergised.com>

Sent: 15 June 2020 16:01

To: Paul Turner <Paul.turner@orkney.gov.uk>

Cc: Stuart McGowan <stuart.mcgowan@itpennergised.com>; Roy Ferguson <Roy.Ferguson@itpennergised.com>; David Hannon <David.Hannon@orkney.gov.uk>

Subject: Hoy Wind Farm - use of 40 dB Fixed Minimum Limit - COMMERCIAL IN CONFIDENCE

COMMERCIAL IN CONFIDENCE

Good afternoon Paul,

Thank you for your time earlier.

As discussed, I provide a spreadsheet which shows:

- Derivation of overall noise limits;
- Predicted noise levels (including at one receptor where valley correction has been determined to apply);
- Determination of available headroom, and apportionment of noise limits where headroom exists;
- Evaluation of predicted operational noise levels considering a 35 dB Fixed Minimum Limit (FML), and considering a 40 dB FML.

I also provide a draft figure which shows the location of the NSRs referred to in the spreadsheet.

The evaluation shows:

- predicted levels for the Hoy wind farm operating in isolation meet the 35 dB / background +5 dB noise limits at all NSRs;
- using an overall 35 dB FML to derive apportioned noise limits for NSR14 – NSR20 results in substantial exceedances (up to 8.2 dB) at wind speeds of 5m/s – 8m/s, given the cumulative contribution of the Gable End Theatre turbine (NSR16 – NSR20) and the Hoy Community turbine (NSR14 & NSR15), which are using all of the available headroom; and
- using a FML of 40 dB means that headroom is available, and the apportioned noise limit can therefore be met at all wind speeds by a comfortable margin.

We therefore propose to adopt the 40 dB FML overall limit at NSR14 – NSR20 only.

We refer to the guidance in ETSU regarding the use of 35 or 40 dB FML as follows:

22. In low noise environments the day-time level of the LA_{90min} of the wind farm noise should be limited to an absolute level within the range of 35-40dB(A). The actual value chosen within this range should depend upon a number of factors:

- the number of dwellings in the neighbourhood of the wind farm
- the effect of noise limits on the number of kWh generated
- the duration and level of exposure.

- The number of dwellings in the neighbourhood is fairly low, and those at which we are proposing the higher FML is only six (excluding Gable End Theatre, which is presumably FI with its own turbine and is unlikely to be residential anyway). At the remaining NSRs we propose to assess against and report on the 35 dB FML.
- Using the 35 dB limit at all NSRs would result in the Hoy Wind Farm being substantially curtailed under 6, 7 & 8 m/s wind speeds during the daytime, when it is up-wind of cumulatively-impacted NSRs (i.e. westerly – north-westerly, and likely substantially curtailed in cross-wind conditions) – compared to the amount of electricity it would generate if cumulative turbines were not present (i.e. no curtailment required – it meets ETSU limits at all NSRs and all wind speeds);
- Duration of exposure at worst-affected NSRs (those affected by noise from Hoy Community turbine NSR14 & NSR15) will likely change very little, as Hoy and Hoy Community are in broadly similar orientation to these NSRs. Level of exposure at these NSRs would increase by 2.4 dB, assuming Hoy Community is meeting its noise limit (predictions show it isn't, but that's not our problem).
- Duration and level of exposure at NSRs affected by noise from Gable End Theatre will be aided by directivity corrections (opposite orientation of developments with regard to NSRs), such that actual cumulative effects would be limited, and worst-case (downwind propagation) increase in turbine noise would be 3.6 dB.

I note that this project has taken up a lot of your time to date, and thank you again for your continued assistance.

Best regards,

Simon

Simon Waddell | Principal Noise Consultant | ITP Energised

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NOTE: DUE TO [COVID 19 ADVICE](#) ITPENERGISED ARE WORKING FROM HOME. PLEASE CALL MOBILE NUMBERS

From: Paul Turner <Paul.turner@orkney.gov.uk>
Sent: 23 June 2020 16:48
To: Simon Waddell <simon.waddell@itpenergised.com>
Subject: RE: Hoy Wind Farm - use of 40 dB Fixed Minimum Limit - COMMERCIAL IN CONFIDENCE

Classification: OFFICIAL

Simon,

Once again apologies for slow response, every time I try to look at the latest information you have sent me I get distracted by something totally unrelated.

Due to the lack of time even now I feel I do not fully understand what you have provided, in particular the daytime noise data in tab 6 ("Evaluation") and how the Red (positive) numbers in the left table (35dB LA90 F.L. DAY) change to negative numbers in the right table (40dB LA90 F.L. DAY), as I say probably just lack of time to study the data properly.

At this stage I feel the best advice I can give, bearing in mind this is a pre-application discussion and the possibility that the full application may be called in by SG (as per Quanterness), is:-

1. I would be of the view that the Gable End Theatre is NOT a noise sensitive receptor and as such can be removed from any final assessment,
2. I would be of the view that Ore Burn Cottage (grid ref 330310 993890) is NOT a noise sensitive receptor. It has been vacant and derelict since at least 2005 and my colleagues in planning have confirmed that on this basis it will have lost its status in planning terms as a dwelling.
3. The arguments you put forward regarding the use of a fixed lower limit of 40dB LA90 daytime appear to fit in with the IoA GPG/SG approach and may be valid (subject to any Planning Appeals/Case Law I am currently not aware of) but this should be determined at a Planning Hearing.
4. I remain concerned/somewhat doubtful that lawful/enforceable planning conditions controlling three developments can be written, however this should be a discussion for Planning Experts and determined at a Planning Hearing.

Hope this helps (but probably not), as ever I am happy to discuss further.

Regards

Paul

Paul Turner
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KIRKWALL
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