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13/10/25

Dear Steve

Re: Dm/25/1794 – Whitemans Green Co-Operative, Cuckfield, West Sussex

Thank you for passing on the comments from the local planning authority relating to the acoustic assessment for Co-op Whitemans Green, Didcot (report ref: B5874 2025-10-03 Co-op Didcot R). I have duplicated the comments below:

The acoustic survey was only conducted over a period of one and a half hours, and therefore the background sound level determined can't be considered as being representative. The survey carried out by NSL determined more realistic background levels, and I would be happy for any plant to be designed using the information contained in their report dated 11 March 2025.

Given the very low background sound levels identified during the nighttime at this site, I appreciate that it won't be possible to ensure that noise generated by the plant will not exceed the background level in accordance with BS 4142. I therefore recommend that the company that installs the plant ensures that the cumulative plant rating noise level (running on the plant's highest setting) at the façade of noise sensitive receptors does not exceed 30 dB $L_{Aeq,15 mins}$, at nighttime (23.00 - 07.00 hours) and 41 dB $L_{Aeq,1 hour}$, during the daytime (07.00 - 23.00 hours). If this is acceptable to the applicants please let me know and I will draft a suitable condition.

The comments correctly identify BS 4142:2014 + A1:2019 as the appropriate standard for fixed plant installations of this type but fail to mention or consider the context in which the sound will be experienced. This is a key requirement of BS 4142 and therefore underpins the assessment in our report.

As you are aware, I was on the Drafting Panel of the current version of BS 4142 so am very familiar with this standard and how it is intended to be applied. As the standard makes clear, the comparison between rating and background levels provides only an 'Initial Estimate' of the impact of the sound, which must then be reviewed to take account of the context in which the sound will be experienced. The local authority's response, which considers only the difference between the rating and background sound levels, completely fails to consider the context.

Although NSL's report mentions context six times, these are all as part of the review of BS 4142 and five of which are excerpts from BS 4142 itself. There is no other mention or consideration of context in the remainder of the report which fails to take any consideration of context as part of the assessment.

Representative background sound level

One of the Drafting Panel's concerns was that some local authorities and acoustic consultants were using sound levels measured during the middle of the night, or even the lowest measured background sound level, in order to set criteria; whereas the most noise sensitive part of the night is the start or end, when people are going to, or awakening from sleep. This is why the current version of the standard specifically states that *'the middle of the night can be distinctly different (and potentially of lesser importance) compared to the start or end of the night-time period for sleep purposes'*.

Similarly, the most noise sensitive times during the day are likely to be the evening when the residual sound level is lower than earlier in the day and people may wish to sit outdoors. This means that some of the most noise sensitive times of the day and night are likely to be around perhaps 8pm to 10pm and 11pm to midnight. Our surveys are therefore focussed around these times. Our surveys are also fully attended so that the acoustic environment can be properly assessed at these times, and the sound level is measured ten times per second which enables specific events to be identified, analysed accordingly, and which gives a good indication of the sound level characteristics at this most critical time.

NSL's surveys are unattended so there is little understanding of the acoustic environment, despite this being critical in order to inform the consideration of context, and the measurement method used provides only one background sound level every 15 minutes, so NSL's report only provides only 8 background sound level measurements throughout the 2 hour period from 8pm to 10pm and only 4 between 11pm and midnight. By contrast, ACC's attenuated survey and rolling 15-minute background sound level analysis provides 18,000 sound level data points per half hour of measurement and 9,000 rolling background sound levels. NSL's poor quality data means that although their survey showed that:

- the background sound level fell to around 24 dB early on Saturday 22/2/25 morning;
- around 20 dB slightly earlier during the following night;
- but remained around 45 dB throughout the following Sunday to Monday night;

the only explanation of the higher levels during the third night is 'adverse weather effects'. It should also be noted that the average residual level similarly fell to around 35 dB during the first two nights but remained around 50 dB throughout the third night.

Setting aside this anomaly, we should focus on the start and end of the night time period as stated in BS 4142. During the first night, the NSL data gives background sound levels at these times of around

25 to 40 dB; perhaps a decibel or two lower during the second night; but around 45 dB during the third night. Once again, without a competent acoustician being present during these times it is not possible to determine what is a 'representative' background sound level.

Whilst the EHO is correct that a background sound level of around 20 dB L_{A90} is low, this is not representative for this assessment, and a more representative level of around 30 dB L_{A90} (as used in our report) is not particularly quiet.

You can see from this that the first sentence in the local authority's response is fundamentally incorrect. Measurements and fully attended observations focussed during the 1½ most noise sensitive hours of the day and night time provide representative data for a BS 4142 assessment. Nearly 72 hours unattended measurements, the vast majority of which cover time periods that are irrelevant, provide poorer quality data that, in this particular case, probably raise as many questions as they answer.

The table below compares the representative background sound levels and plant criteria identified in our report, NSL's, and the local authority's approach:

	L_{A90} Day	L_{A90} Night	L_{Aeq} Day	L_{Aeq} Night	Criterion Day	Criterion Night	Notes
ACC	30	34	47-48	45-47	42	35	Criteria based on context
NSL	24	41			41	30	Criteria based on background with lower limit of 30 dB
LPA					41	30	

Interestingly, our report identifies a lower 'representative' background sound level than NSL's during the day because our data is focussed on the most noise sensitive time whereas NSL's is confused by superfluous data during the noisier majority of the day time period which is less noise sensitive. Our and NSL's day time criteria are similar but for different reasons. Our criterion is based on a consideration of the context, which includes the residual sound level (which should be reported as part of a BS 4142 assessment), whereas NSL's simply copies the background sound level with no consideration of context.

Our night time criterion is similarly based on a consideration of context as required by BS 4142, whereas NSL's is simply the background sound level subject to a lower limit of 30 dB without any consideration of context which, in this case shows a residual level of around 45 dB and maximum levels of around 55 dB during the most noise sensitive part of the night.

Finally, it should also be noted that NSL's measurement location was a lamp post on Brock End approximately 40m from the store (because that was a convenient location to mount the sound level meter for 3 days) whereas ours was at a location selected to be representative of the acoustic

climate at the most noise sensitive dwellings during the survey which was also on Brock End, but about 35 m from NSL's lamp post and only about half the distance from Whitemans Green.

Worst case scenario

As the report notes the situation considered for the assessment is a 'worst case scenario' whereby it is assumed that all plant that may operate at any time is simultaneously operating at full capacity for the entire reference period of the assessment i.e. one hour during the day and 15 minutes at night. The report also uses measurements obtained between 22:10 and 22:40 for the day time assessment. In reality, the most noise sensitive part of the day is likely to be earlier in the evening when residents may wish to sit outside in their garden. At these times the background sound level will inevitably be higher than the quietest part of the day when these measurements were made.

In addition to this, the plant is only likely to operate at maximum capacity during hot summer conditions i.e. earlier in the day when the background sound level will be higher. When the plant is not operating at maximum capacity the fans operate at slower speed, resulting in significantly lower sound emission levels from the plant.

Despite this the local authority's response is that a theoretical 'worst case' scenario of plant operating at maximum capacity during the quietest period should be used for assessment purposes without any recognition of the fact that this is an artificial situation which is highly unlikely to ever occur in practice.

Planning policy and sustainable development

There is an underlying principle in planning policy which favours sustainable development. As our report notes, policies DP26 and DP29 of the Mid Sussex District Plan require that development does not cause significant harm to amenity nor create unacceptable levels of noise pollution. These policies are consistent with Government planning policy which advocates sustainable development. However, the approach of simply matching the background sound level is contrary to sustainable development principles.

Reducing noise from plant almost invariably increases the embodied carbon of a development due to multiple factors such as: the need for larger, slower, quieter equipment; the need for (additional) attenuation equipment such as acoustic barriers, attenuators and enclosures; and the increased energy consumption of the operational equipment due to the need to provide the required airflow through any attenuation measures and possibly the need for the plant to operate harder due to its capacity being reduced by such attenuation.

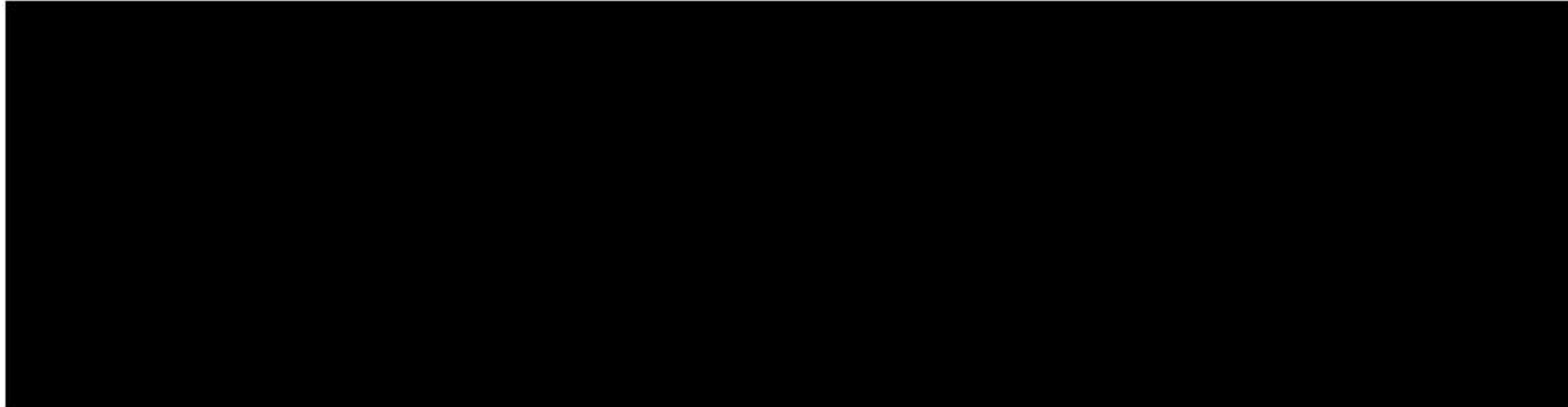
There is therefore a conflict between achieving low noise levels and maintaining the sustainability of a development, and a balance has to be struck between these competing demands. In practice, for situations such as this, the optimum balance is usually to identify what we term the 'Highest Suitable Level' which protects residents' amenity whilst minimising the need for attenuation and avoiding trying to achieve unnecessarily or unreasonably low acoustic criteria which provide no additional



benefit to the residents whilst increasing the adverse impacts on the sustainability of the development. Coincidentally, I will be presenting a paper on this specific topic at the Institute of Acoustics annual conference later this month.

I trust the above addresses the points raised by the local authority, and that the proposed plant can now be agreed to be suitable to protect the amenity of nearby residents.

Yours sincerely
For Acoustical Control Consultants Ltd



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