MILLER GOODALL
ACOUSTICS AND AIR QUALITY

21st July 2021

Kirklees Council

Dear Chris,

Land off Penistone Road Lepton 2020/60/92307/W

This letter is provided address concerns raised by Reliance Precision Engineering Ltd in relation to planning ref. 2020/60/92307/W. This letter relates to noise and vibration only.

We understand that the following email was received from Kate Mansell of Kirklees Council in May 2021:

"Their concerns are essentially threefold:

Traffic
Noise (complaints from future residents)
Vibration

Looking at the Noise Assessment, whilst it does take Reliance Precision into account in terms of the impact it might have on future occupiers, it does not really address the converse – i.e. how the scheme ensures that the continued operation of Reliance Precision will be unaffected. There is a line in the D&A but could we go further – talk about the distance between the proposed housing and Reliance Precision? Could we have flank elevations towards them to minimise opening windows? Any other measures that could stop future occupiers from raising issues about RP if they were to operate 24 hours a day (which they are entitled to do).

The noise assessment does not really address the vibration impact at all. It concludes that a suitable and commensurate level of protection against noise and vibration will be provided to the occupants of the proposed dwellings and the site is suitable for development but it does not explain how that conclusion has been reached with regard to vibration. Due the sensitivity of the PR operation, they are concerned about the effect of vibration from traffic on the road closest to them. Can that be measured and their concerns addressed?"

The email refers to a review of a Noise Assessment prepared by Miller Goodall Ltd dated 21st August 2020 (report ref 102384).

Subsequent to the submission of the report, Environmental Health did review the report and commented on 2nd September 2020 (responding ref. WK/292921735). The queries identified by Environmental Health related to the monitoring methodology and uncertainty related to the Covid-19 pandemic but recognised that the mitigation accounted for the uncertainty. Queries were also raised about ventilation, thermal comfort and noise levels in external amenity areas. All points raised were addressed in detail and the email contained an invitation for further dialogue. To date, no further response with further queries have been raised. From this, we understand that Environmental Health were satisfied. The queries did not identify industrial and commercial noise from Reliance Precision Limited as a concern not addressed by the by Miller Goodall report ref 102384.

Potential Impact of Noise from Reliance Precision Limited on Proposed Development

Reliance Precision Limited also commissioned a noise assessment, which was undertaken by Nova Acoustics, dated 16/10/2021. The report concluded that noise from Reliance Precision Limited would result in a low impact during the daytime and a significant adverse impact during the night-time when assessed to BS 4142:2014+A1:2019. It explains that the hours of operation are 05:30-22:45 Monday to Thursday, and 05:30-16:15 on Friday's, with occasionally weekend overtime, but that they have permission to operate 24/7.

The following assessments are given within the report:

Field to the North of Site			
Description	**Day Time Assessment (dB)**	**Night Time Assessment (dB)**	**Notes**
Rating Sound Level	28.0 to 37.0	28.0 to 37.0	Acoustic feature corrections as shown in Table 9.0.
Background Sound Level	45.0	26.0	As shown in Table 1.0.
Excess of Rating over Background Sound Level	-17.0 to -8.0	+2.0 to +11.0	The assessment indicates 'Negligible Impact' During the Day Time and 'Significant Adverse Impact Dependent on Context' During the Night Time.

Table 10.0 – BS4142:2014 Noise Assessment – Field to the North of Site

Field to the East of Site			
Description	**Day Time Rating Sound Level (dB)**	**Night Time Rating Sound Level (dB)**	**Notes**
Rating Sound Level	27.0 to 38.0	27.0 to 38.0	Acoustic feature corrections as shown in Table 9.0.
Background Sound Level	45.0	26.0	As shown in Table 1.0.
Excess of Rating over Background Sound Level	-18.0 to -7.0	+1.0 to +12.0	The assessment indicates 'Negligible Impact' During the Day Time and 'Significant Adverse Impact Dependent on Context' During the Night Time.

Table 11.0 – BS4142:2014 Noise Assessment – Field to the East of Site

The assessment above is based on the external impact, since BS 4142:2014+A1:2019 is an assessment based primarily on external noise levels. The above identifies the impact is 'Significant Adverse Impact Dependent on Context', but this is not followed by any discussion or consideration of context.

BS 4142:2014+A1:2019 identifies the following pertinent contextual factor:

The absolute level of the sound – During the night-time, the impact will occur internally within bedrooms. The internal level within bedrooms is more relevant (and potentially of more importance) when considering the night-time impact. Assuming 13 dB attenuation for an open window, the absolute level of the sound (not the Rating Level, which is inclusive of acoustic feature corrections), 32 dB would be 19 dB. This would be under worst-case conditions since trickle ventilators have been specified at the worst-case plots for background ventilation instead of open windows. The default assessment position would therefore be closed windows, with open trickle ventilators, which would reduce the level further below 19 dB.

Note that even in the open window scenario, BS 8233:2014 and ProPG:2014 criteria for internal noise levels in bedrooms during the night-time (30 dB $L_{Aeq,8hour}$) would be achieved. Even if the acoustic feature corrections (resulting in an increase of 5 dB) were included, the criteria would still be achieved.

The Background Sound Level used within the assessment is also the modal value for the night-time period. BS 4142:2014+A1:2019 states –

"Among other considerations, diurnal patterns can have a major influence on background sound levels and, for example, 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."

The most sensitive hours of the night for sleep purposes are the early hours of sleep, and the hours approaching the end of sleep. During the middle of the night, when Background Sound Levels are typically at their lowest the excess of the Rating Level over the Background Sound Level will be at its greatest. However, provided that noise levels are low internally (as they are in this case) the risk of disturbance is lower.

While the approach taken may be more suitable for the daytime where external amenity is of greater importance, internal noise levels within bedrooms form a crucial part of the context of a night-time assessment and are a key factor when determining the final outcome of the assessment. While we see that the excess of the Rating Level over the Background Sound Level indicates that there may be a significant adverse impact, examination of the context demonstrates that the outcome of the assessment is likely to be adverse or low.
With regards to the Rating Level, we would question if it would be typical for a worst-case daytime Rating Level, where the site is fully staffed, all activities are operational simultaneously and a HGV enters the site every hour, to be representative of overtime during the night-time hours.

We would also comment that HGV delivery data has been based on a delivery to a Waitrose store. We would expect the delivery measurements to therefore be inclusive of refrigeration plant, usually in the form of a diesel powered unit attached to the trailer (see example below). In our experience, the refrigeration plant can often constitute a significant noise that affects the overall delivery level. We would anticipate that deliveries to Reliance Precision Limited would not typically consist of refrigerated food products, and suggest that in reality, the delivery noise levels at the site are likely to be lower. Given that the Nova Acoustics Report states that a HGV would enter the site every hour, and that attended measurements were made at the site, it is unclear why measurements of a delivery relevant to Reliance Precision Limited were not undertaken on-site.

Figure 1: Example of a Thermo-King refrigeration unit

It is however, acknowledged that the report is unclear about the location of the HGV within the noise model, and that it is possible that due to on-site screening that the Rating Level may not reduce.

Further to the assessment by Nova Acoustics above, we have also undertaken additional assessment based on the modelling undertaken by Nova Acoustics. We estimate that the specific sound level predicted by Nova Acoustics to existing sensitive properties to the North East would be 31dB $L_{Aeq,Tr}$. The specific sound level predicted to the properties associated with this development would be around 33dB $L_{Aeq,Tr}$. Taking into account the feature corrections (+5dB) attributed by NOVA Acoustics the

Rating Level from existing sensitive and proposed sensitive properties would be 36dB and 38dB $L_{Ar,Tr}$ respectively.

Comparison with the night-time background $L_{A90,t}$ adopted by NOVA Acoustics of 26dB, the impact for both existing sensitive and proposed sensitive would be potential for significant adverse impact depending on context.

This conclusion therefore reduces the weight of argument by Reliance Precision Engineering that the proposed development constrains their potential to expand working into the night-time period as it is clear that any expansion into the night-time period has the potential to have a significant adverse impact on existing residents. Therefore, their ability to operate during the night-time is already constrained by existing sensitive development, rather than the proposed new residential development introducing a new constraint.

If working in the night-time was proposed going forward into the future, mitigation measures would be needed to control impacts. Investment in any mitigation measures should consider source reductions first (i.e. quieter machinery), pathway reductions secondly (i.e. barriers, enclosures) and then protection of receivers lastly. Any reductions secured at the source will benefit through quieter plant or enclosures will benefit all receptors, including the proposed development.

Overall, the Nova Acoustics report contains useful information and detail about noise emissions from Reliance Precision Limited, and also recommends mitigation within the commercial site. The glazing and ventilation specification outlined in the Miller Goodall Report was based on the available measurements, and also accounted for uncertainty relating to the ambient acoustic environment (due to Covid-19 related restrictions).

With the information provided within the Nova Acoustics Report, we would recommend that for the plots identified as needing mitigation, the minimum element normalised sound level difference of the trickle ventilators is increased to 35 dB $D_{ne,w}+C_{tr}$ (in Miller Goodall Report Ref. 102384, 27 dB was previously recommended). Based on the absolute noise level predictions within the Nova Acoustics Report (32 dB at the approximate location of the worst-case plots), the noise levels would be expected to be subjectively inaudible with closed windows and open trickle ventilators, therefore reducing the night-time impact to 'Low Impact' due to the façade attenuation.

For the site to the east of Reliance Precision Limited, we would recommend the same mitigation for the plots closest to the boundary.

Vibration Concerns

We understand from the comments that the concern is related to the possible disruption to precision engineering works within the premises due to an increase in vibration caused by traffic. At present, Reliance Precision Limited sits approximately 75m from the A629 Penistone Road.

The Transport Assessment for the site predicts the following traffic level increases:

- Weekday AM Peak: = 3.37%
- Weekday PM Peak: = 3.02%
- Weekday All Day: = 4.35%

To put these increases into context, DMRB states that a change in noise level of 1 dB $L_{A10,18hour}$ would result from a 25% increase of 20% decrease in traffic flow (assuming other factors remain unchanged). A change of 3 dB $L_{A10,18hour}$ is equivalent to a 100% increase or 50% decrease in traffic flow. A change of 3 dB correlates well with the threshold at which a change in noise level begins to become subjectively perceptible, meaning that the above increases would not result in a perceptible increase in road traffic noise from Penistone Road. For both the long-term and short-term, a DMRB assessment would identify the magnitude of noise impact as 'Negligible'.

Within this context, we anticipate no perceptible difference to vibration levels from Penistone Road as a result of the proposed development. We would also highlight that we are not aware of any situation where road traffic along a maintained A-road with a 40mph limit has caused vibration issues within

nearby buildings, and engineering sites such as Reliance Precision Engineering Limited often operate in industrial estates in close proximity to motorways, without the need for structural mitigation in relation to vibration.

A new residential access road would run to the north of the Reliance Precision Limited site to the north (approximately 40m away from the Reliance Precision Limited building) but given that this would not form a through-route to other main roads, the road would be insignificant compared to Penistone Road.

The understanding above meant that vibration did not form part of the scope of Miller Goodall report ref 102384.

At present, the most significant source of vibration outside the Precision Engineering Limited buildings would be from HGV deliveries to the site, which the Nova Acoustics assessment identifies as happening once an hour. If vibration caused by idling HGV's directly outside the building has not caused any vibration issues disrupting engineering works to date, then the increase in road traffic as a result of the development (which would result in a negligible effect) would not disrupt internal engineering works either.

Further to this, LA111 which provides guidance on the assessment of noise and vibration from construction, operation and maintenance of road schemes. The scope of document states that "Operational vibration is scoped out of the assessment methodology as a maintained road surface will be free of irregularities as part of project design and under general maintenance, so operational vibration will not have the potential to lead to significant adverse effects". Therefore, based on this statement we do not expect a newly constructed road to lead to significant adverse effects.

Conclusion

As a result of the further detailed information provided by the Nova Acoustics Assessment, an increase to the façade insulation specified in Miller Goodall Report Ref. 102384 has been recommended, to further reduce the risk of complaints from future residents regarding noise from Reliance Precision Limited. This would reduce noise levels within bedrooms during the night-time to levels that would not pose a barrier to the development or restrict the lawful operation of Reliance Precision Limited.

Concerns regarding the possibility of an increase in vibration levels causing disruption to engineering works were also discussed, leading to the conclusion that road traffic as a result of the development would not lead to a significant adverse impact at Reliance Precision Engineering Limited.

Kind regards,

Reid Malster,
Acoustic Consultant