

Response to the Examining Authority's Written Question ExQ 1.8.18 by William David Moore

The [Examining Authority's written questions and requests for information \(ExQ1\)](#) contained the following:

*“ExQ 1.8.18. **Tabular Comparison for Noise Effects** It is stated that there are a number of deficiencies in the applicant's methodology for noise assessments and corrections to dB levels are suggested accordingly. Could Dr David Moore and Mr William Moore provide a tabular comparison of the overall effects in terms of noise at NSRs between the Applicant's stated levels of effect and those predicated (sic) using suggested revised methodologies?”*

I interpret this as a request that I attempt to correct all the deficiencies I've identified in the applicant's report which relate to stated current sound levels at the NSRs, projected noise levels at the NSRs and to create corrected impact assessments. There are many, very significant deficiencies throughout the report and the only feasible way to correct all of them would be to write a new noise report.

I don't have access to the raw data measured at NMP4 & NMP3. I can't isolate the measured sound of the train pass bys and apply attenuation corrections to them to generate ambient sound levels at the NSRs. The applicant should have corrected this problem after the PEIR consultation, but in the 21 months since, the applicant has made no attempt to do so.

I don't have access to all the outputs of the operational noise model.

I'm constrained by the information supplied by the applicant and published by the Planning Inspectorate.

I will do what I can with the available information where it is realistic to do so.

Operational noise assessment - Weekend, night-time (2300-0700)

Specific and background levels

The specific noise levels have been taken from the report's Table 10.42. The background sound level has been taken from the report's Table 10.42.

Impulsive rating penalties

Impulsive rating penalties have been allocated by applying the method disclosed and used in the [West Midlands Rail Freight Interchange Environmental Statement On Noise](#) and Vibration, as listed in my [Written Representation](#). Using this method, an LAFmax level due to an impulsive element of at least 10 dB above the current ambient sound level is required for a +9 dB impulsive penalty. The ambient sound level of 44 dB has been taken from the report's Table 10.23. To perform these calculations, the LAFmax levels due to impulsive noise have been taken from the report's Table 10.47.

Impulsive Penalty Allocation - Weekend, night-time (2300-0700)

NSR	Ambient sound level (dB)	Predicted LAFmax noise level (dB)	Impulsive rating penalty (dB)
1	44	64	+9
2	44	61	+9
3	44	58	+9
4	44	61	+9
5	44	-	-
6	44	61	+9
7	44	64	+9
8	44	61	+9
24	44	70	+9
25	44	64	+9
26	44	65	+9

Tonal rating penalties

As I explained in my written representation, the applicant has not provided any predicted LAFmax levels due to tonal elements (including reversing alarms and crane alarms) so I can't perform similar calculations to apply tonal rating penalties. I have therefore had to take the report's tonal rating penalties from Paragraph 10.157. I have used the report's numbers but I don't have confidence in them so they're followed by a question mark.

Operational noise assessment - Weekend, night-time (2300-0700)

NSR	Specific noise level (dB)	Impulsive rating penalty (dB)	Tonal rating penalty (dB)	Rating level (dB)	Background sound (dB)	Excess over background sound (dB)	Magnitude of impact
1	52	+9	+2?	63	37	+26	High
2	51	+9	+2?	62	37	+25	High
3	48	+9	+2?	59	37	+22	High
4	50	+9	+2?	61	37	+24	High
5	-	-	-	-	-	-	-
6	50	+9	+2?	61	37	+24	High
7	50	+9	+2?	61	37	+24	High
8	48	+9	+2?	59	37	+22	High
24	57	+9	+4?	70	37	+33	High
25	49	+9	+2?	60	37	+23	High
26	49	+9	+2?	60	37	+23	High

Assessment Outcome & Context

The highest rating level without mitigation is 70 dB, which is 33 dB above the background sound level, these are major adverse impacts which are significant.

Applying a 12 dB reduction in rating levels due to a partially open window results in an internal rating level of 58 dB, this is 28 dB above the night-time limit for bedrooms expressed as the WHO's guideline level for a good night's sleep. BS 8233 contains a similar limit.

The current ambient sound level is 44 dB, with the noise climate dominated by distant road noise and natural sources eg. birdsong. There is currently no industrial noise.

The applicant's proposed operational noise would cause the village to be dominated by industrial noise. The character of the village would be utterly transformed, the noise would be extremely intrusive, causing extensive changes in behaviour, regular sleep disturbance and likely health problems.

Operational noise assessment, with mitigation - Weekend, night-time (2300-0700)

Specific and background levels

Turning now to the scenario with mitigation, the specific noise levels with mitigation have been taken from the report's Table 10.57. As the report's Paragraph 10.284 makes clear, the report's predicted specific noise levels with mitigation do not include the gantry cranes. This means I'm having to use specific noise levels which are known to be too low because not all operational noise sources are included.

The background sound levels have been taken from the report's Table 10.57.

Impulsive rating penalties

Impulsive rating penalties have been applied using the same method as in the pre-mitigation scenario, but with mitigated impulsive noise levels taken from Table 10.61. With mitigation applied, the applicant has not applied impulsive rating penalties at any NSR.

Impulsive Penalty Allocation, with mitigation - Weekend, night-time (2300-0700)

NSR	Ambient sound level (dB)	Predicted LAFmax noise level (dB)	Impulsive rating penalty (dB)
1	44	64	+9
2	44	60	+9
3	44	no data	+9 (deduced)
4	44	59	+9
5	44	-	-
6	44	60	+9
7	44	63	+9
8	44	61	+9
24	44	68	+9
25	44	62	+9
26	44	65	+9

Tonal rating penalties

As I explained in my written representation, the applicant has not provided any predicted LAFmax level due to tonal elements so I can't perform similar calculations to apply tonal rating penalties. With mitigation applied, the report does not apply tonal rating penalties at any NSR. A tonal LAFmax level of 39 dB would be required for a 2 dB tonal penalty. A tonal

LAFmax level of 44 dB would be required for a 4 dB tonal penalty. A tonal LAFmax level of 54 dB would be required for a 6 dB tonal penalty. I have left question marks in the tonal rating penalty column.

Operational noise assessment, with mitigation - Weekend, night-time (2300-0700)

NSR	Specific noise level (dB)	Impulsive rating penalty (dB)	Tonal rating penalty (dB)	Rating level (dB)	Background sound (dB)	Excess over background sound (dB)	Magnitude of impact
1	47	+9	?	56	37	+19	High
2	44	+9	?	53	37	+16	High
3	41	+9 (deduced, data not provided)	?	50	37	+13	High
4	43	+9	?	52	37	+15	High
5	-	-	-	-	-	-	-
6	43	+9	?	52	37	+15	High
7	43	+9	?	52	37	+15	High
8	42	+9	?	51	37	+14	High
24	47	+9	?	56	37	+19	High
25	43	+9	?	52	37	+15	High
26	44	+9	?	53	37	+16	High

Assessment Outcome & Context

The highest rating levels with mitigation are 56 dB, which is 19 dB above the background sound level, these are major adverse impacts which are significant.

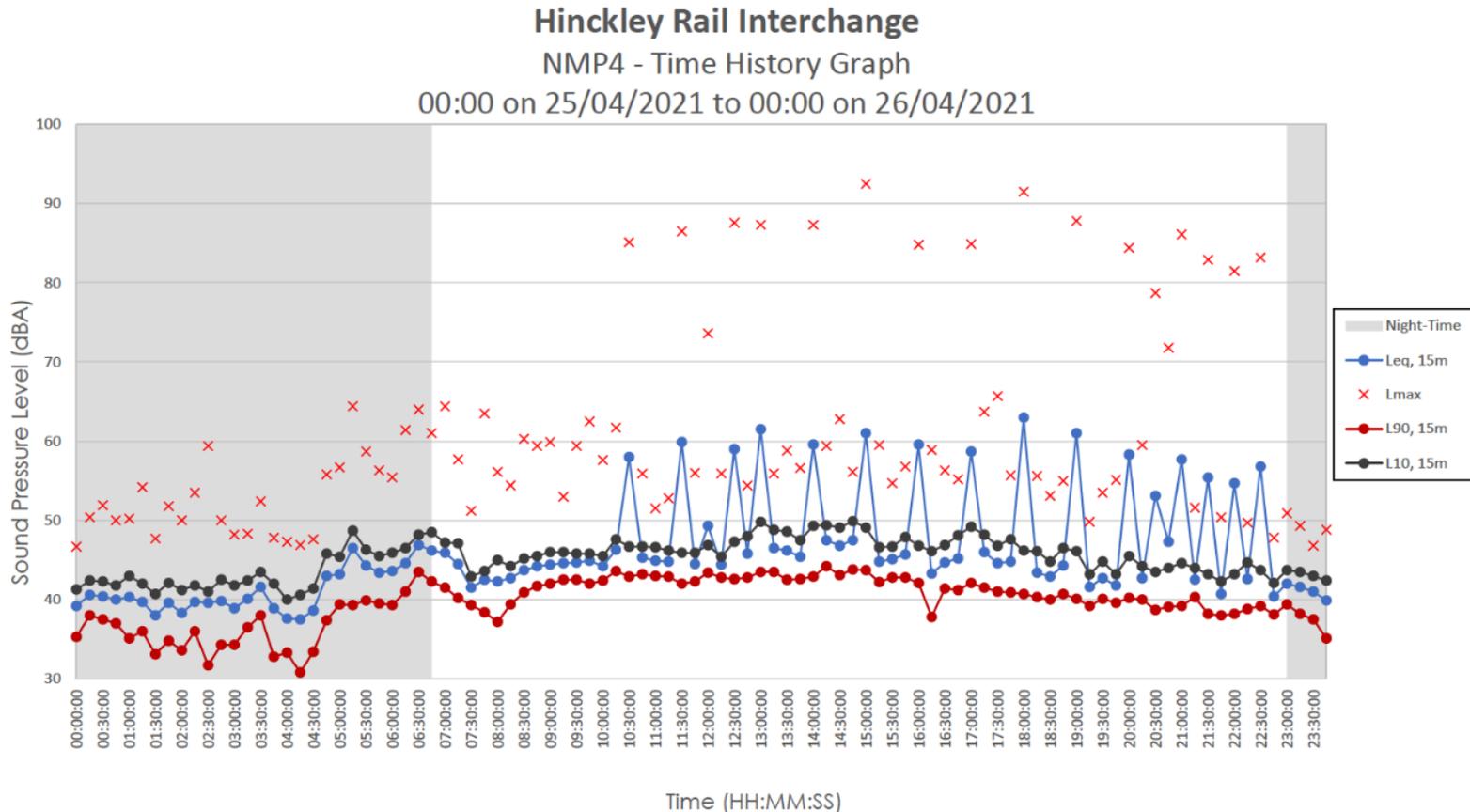
Applying a 12 dB reduction in rating levels due to a partially open window results in internal rating levels of 44 dB, this is 14 dB above the night-time limit for bedrooms expressed as the WHO's guideline level for a good night's sleep. BS 8233 contains similar limits.

The current ambient sound level is 44 dB, with the noise climate dominated by distant road noise and natural sources eg. birdsong. There is currently no industrial noise.

The applicant's proposed operational noise would cause the village to be dominated by industrial noise. The sound would be highly perceptible at all times and the character of the village would be utterly transformed, causing sleep disturbance and changes in behaviour.

Operational noise assessment - Weekend, daytime (0700-2300)

The summary results page for this time period is shown below.



Specific and background levels

The specific noise levels have been taken from the report's Table 10.41. The background sound levels have been taken from the report's table 10.41.

Impulsive rating penalties

Impulsive rating penalties have been allocated by applying the method disclosed and used in the The West Midlands Rail Freight Interchange Environmental Statement On Noise and Vibration, as discussed in my written representation. An LAFmax level due to an impulsive element of at least 10 dB above current ambient level is required for a +9 dB impulsive penalty. The ambient sound level of 53.7 dB has been taken from the report's Table 10.59. To perform these calculations, the LAFmax levels due to impulsive noise have been taken from the report's Table 10.47.

Applying this method to the headline ambient sound level in the report of 53.7 dB for the weekend daytime would be inappropriate for two reasons:

1. The ambient sound levels contain large spikes due to the sound of unattenuated train pass bys measured ~12 metres from the railway line. These sounds would be far lower once attenuated to the NSRs.

- The train pass bys are inherently brief; this is why LA10 levels do not spike along with the LAeq level. Their brevity means they would have no impact on the general perceptibility of impulsive or tonal noise throughout the daytime.

Given the above, an ambient sound level of 45 dB has been selected, 4 dB above the background sound level of 41 dB. This is the ambient level which would be heard when there aren't trains passing by i.e. at almost all times. It is this level which would determine the perceptibility of impulsive and tonal noise. The impulsive penalties applied due to the below headline ambient sound level have been labelled with a (*).

NSRs 1, 7 & 24-26 have the highest impulsive rating penalty even using the headline ambient sound level in the report and they therefore have no label.

Impulsive Penalty Allocation - Weekend, daytime (0700-2300)

NSR	Ambient sound level (dB)	Predicted LAFmax noise level (dB)	Impulsive rating penalty (dB)
1	53.7	64	+9
2	45*	61	+9*
3	45*	58	+9*
4	45*	61	+9*
5	45*	No data	Deduced +9*
6	45*	61	+9*
7	53.7	64	+9
8	45*	61	+9*
24	53.7	70	+9
25	53.7	64	+9
26	53.7	65	+9

Tonal rating penalties

As I explained in my written representation, the applicant has not provided any predicted LAFmax levels due to tonal elements, so I can't perform calculations to apply tonal rating penalties. I have therefore had to take the report's tonal rating penalties from Paragraph 10.157. I have used the report's numbers but left a question mark after them.

Operational noise assessment - Weekend, daytime (0700-2300)

NSR	Specific noise level (dB)	Impulsive rating penalty (dB)	Tonal rating penalty (dB)	Rating level (dB)	Background sound (dB)	Excess over background sound (dB)	Magnitude of impact
1	49	+9	+2?	60	41	+19	High

2	50	+9*	+2?	61	41	+20	High
3	48	+9*	+2?	59	41	+18	High
4	50	+9*	+2?	61	41	+20	High
5	49	+9* (deduced, data not provided)	+2?	60	41	+19	High
6	49	+9*	+2?	60	41	+19	High
7	51	+9	+2?	62	41	+21	High
8	49	+9*	+2?	60	41	+19	High
24	57	+9	+4?	70	41	+29	High
25	52	+9	+2?	63	41	+22	High
26	49	+9	+2?	60	41	+19	High

Assessment Outcome & Context

The highest rating level without mitigation is 70 dB, which is 29 dB above background, these are major adverse impacts which are significant. These rating levels are far in excess of the 55 dB WHO guideline level for serious annoyance. BS 8223 contains a limit of 50 dB for outdoor residential areas with an upper limit for noisier areas of 55dB. The area is not currently a noisier area.

Applying a 12 dB reduction in rating levels due to a partially open window results in internal rating levels of 58 dB, this is 23 dB above the daytime limit of 35 dB for living rooms and bedrooms contained within BS 8233.

The measured ambient sound level during this time period was 53.7 dB. However, the context of these ambient sound levels needs to be considered:

These ambient sound levels are caused by the sound of extremely close proximity train pass bys. These ambient sound levels would be far lower once the measured sound of the train pass bys are attenuated to the NSRs.

The train pass bys are also inherently brief so they would have no impact on the general perceptibility of the proposed operational noise. The proposed noise would be highly perceptible at almost all times due to current ambient sound levels of ~45 dB.

There is currently no industrial noise. The applicant's proposed operational noise would cause the village to be dominated by industrial noise. It would be the dominant noise in the area, and the character of the village would be utterly transformed, the noise would be extremely intrusive and the consequent changes in behaviour would be extensive. There would likely be health problems.

Operational noise assessment, with mitigation - Weekend, daytime (0700-2300)

Specific and background levels

Turning now to the scenario with mitigation, the specific noise levels have been taken from the report's Table 10.56. As the report's Paragraph 10.284 makes clear, the report's predicted specific sound with mitigation does not include the gantry cranes. This means I'm having to use specific sound levels which are known to be too low because not all operational noise is included.

The background sound levels have been taken from the report's table 10.56.

Impulsive rating penalties

Impulsive rating penalties have been applied using the same method as in the pre-mitigation scenario, but with mitigated impulsive LAFmax noise levels taken from Table 10.61. With mitigation applied, the applicant has not applied impulsive rating penalties at any NSR.

The impulsive penalties applied due to the below headline ambient sound level have been labelled with a (*).

NSRs 1, 24 & 26 have the highest impulsive rating penalty even using the headline ambient sound level in the report and they therefore have no label.

Impulsive Penalty Allocation, with mitigation - Weekend, daytime (2300-0700)

NSR	Ambient sound level (dB)	Predicted LAFmax noise level (dB)	Impulsive rating penalty (dB)
1	53.7	64	+9
2	45*	60	+9*
3	45*	No data	Deduced +9*
4	45*	59	+9*
5	45*	-	-
6	45*	60	+9*
7	45*	63	+9
8	45*	61	+9*
24	53.7	68	+9
25	45*	62	+9*
26	53.7	65	+9

Tonal rating penalties

As I explained in my written representation, the applicant has not provided any predicted LAFmax level due to tonal elements so I can't perform similar calculations to apply tonal rating penalties. A tonal LAFmax level of 40 dB would be required for a 2 dB tonal penalty. A tonal LAFmax level of 45 dB would be required for a 4 dB tonal penalty. A tonal LAFmax level of 55 dB would be required for a 6 dB tonal penalty. I have left question marks in the tonal rating penalty column. With mitigation applied, the report does not apply tonal rating penalties at any NSR.

Operational noise assessment, with mitigation - Weekend, daytime (0700-2300)

NSR	Specific noise level (dB)	Impulsive rating penalty (dB)	Tonal rating penalty (dB)	Rating level (dB)	Background sound (dB)	Excess over background sound (dB)	Magnitude of impact
1	47	+9	?	56	41	+15	High
2	47	+9*	?	56	41	+15	High
3	44	+9* (deduced, data not provided)	?	53	41	+12	High
4	46	+9*	?	55	41	+14	High
5	45	+9* (deduced, data not provided)	?	54	41	+13	High
6	45	+9*	?	54	41	+13	High
7	47	+9*	?	56	41	+15	High
8	45	+9*	?	54	41	+13	High
24	50	+9	?	59	41	+18	High
25	47	+9*	?	56	41	+15	High
26	45	+9	?	54	41	+13	High

Assessment Outcome & Context

The highest rating level with mitigation is 18 dB above background, these are major adverse impacts which are significant. These rating levels are in excess of the 55 dB WHO guideline level for serious annoyance. BS 8223 contains a similar limit.

Applying a 12 dB reduction in rating levels due to a partially open window results in internal rating levels of 47 dB, this is 12 dB above the daytime limit of 35 dB for living rooms and bedrooms contained within BS 8233.

The measured ambient sound level during this time period was 53.7 dB. However, the context of these ambient sound levels needs to be considered:

These ambient sound levels are caused by the sound of extremely close proximity train pass bys. These ambient sound levels would be far lower once the measured sound of the train pass bys are attenuated to the NSRs.

The train pass bys are also inherently brief so they would have no impact on the general perceptibility of the proposed operational noise. The proposed noise would be highly perceptible at almost all times due to current ambient sound levels of ~45 dB.

There is currently no industrial noise. The applicant's proposed operational noise would cause the village to be dominated by industrial noise. It would be the dominant noise in the area, highly perceptible at almost all times and the character of the village would be utterly transformed, causing serious annoyance to residents as defined by the WHO, with consequent changes in behaviour.

Operational noise assessment - Weekday

The weekday assessment would be very similar to the weekend assessment, with similar background and rating levels, but the current ambient sound levels become increasingly wildly overstated due to higher numbers of train pass bys and the lack of application of attenuation corrections to those train pass bys.

The train pass bys are inherently brief so they would have no impact on the general perceptibility of the proposed operational noise. The proposed noise would be highly perceptible at almost all times due to current ambient sound levels in the low-mid forties.

Burbage Common & Woods (NMP3)

Operational noise assessment

I would like to do the same for the operational noise at NMP3 and its NSR 19 (Burbage Common & Woods), but I can't. As I explained in my written representation, the applicant hasn't provided LAFmax noise levels due to impulsive and tonal elements at NSR 19.

I'm sure the operational rating level would be well in excess of the report's 55dB rating level and the post-mitigation rating level of 45 dB. However, I can't do any calculations because the applicant hasn't supplied any data.

As the report's Paragraph 10.284 makes clear, the report's predicted specific sound levels with mitigation do not include the gantry cranes so the report's specific sound levels do not include all operational noise.

Tranquillity assessment

This means that I also can't go through the tranquillity assessment at Burbage Common & Woods, because the operational noise forms part of projected noise.

I also can't do what the report should have done in the tranquillity assessment: include all site noise and the noise of 21 additional freight train pass bys during the daytime (0700-2300).

The tranquillity assessment uses current and predicted LAeq levels. The applicant hasn't attenuated the measured sound of train pass bys, so the current ambient sound levels are wildly overstated. Until the sound of the train pass bys are attenuated, I can't use the ambient sound levels stated in the report.

Cumulative Impact

As I explained in my written representation, the noise report does not include a cumulative 'all in' calculation of predicted changes in sound levels at NSRs due to the cumulative effect of projected sources of sound during all time periods. These would include all noise from the site, increased road traffic noise and increased off-site rail movements.

I don't have the ability to do this, but I know it hasn't been done.