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Addendum 1: Allegro Acoustics Response to TII Comments from Metrolink Hearing - Module 1

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Ground Borne Noise and Vibration

- ***TII Comment 1:*** *The points regarding ground borne noise at construction phase is not relevant as there are no ground level works. TII found it surprising that Allegro could not identify an appropriate reference scale. TII referred to a 2019 Guide to Specification Best Practice for Offices where at 11.4.2 cellular offices could have a noise level of up to 40dB. This guide is widely used in Ireland. The EIAR assessed noise during construction would be up to 40dB in the Property.*

  Allegro Acoustics Response:

  Allegro Acoustics understands the comment above to mean that the only source of construction stage ground borne noise at the Cadenza Building will be noise from the Tunnel Boring Machine. Can TII confirm that this interpretation is correct?

  Allegro Acoustics notes that the predicted construction stage noise level of 50dB $L_{Amax,s}$ while the Tunnel Boring Machine is in operation is above the 45dB $L_{Amax,s}$ construction stage threshold outlined by the TII in EIAR Table 14.3. A level of 45dB $L_{Amax,s}$ is noted in this table to be *Noticeable to all and disturbing to some.*

  It is therefore considered likely that the predicted construction stage noise level of 50dB $L_{Amax,s}$ is likely to cause disruption to users of the Cadenza Building while the Tunnel Boring Machine is in operation in the vicinity of the building.

- ***TII Comment 2:*** *The issue of blasting is not relevant here as blasting will not take place within 250m of the Property.*

  Allegro Acoustics Response: Noted.

- ***TII Comment 3:*** *A receptor is included at 14.5 at Seagrave House. TII acknowledges the property is misspelled as Segrave House.*

  Allegro Acoustics Response: Noted.

- ***TII Comment 4:*** *The Allegro report states there is no baseline vibration monitor for the area. TII feels this is not necessary as it does not anticipate vibration within the vicinity. Vibration is treated as an isolated phenomenon.*

  Allegro Acoustics Response: Noted.

- ***TII Comment 5:*** *The tunnel boring noise (around 50dB) is expected to last 2 weeks at the Property. Allegro called for construction times to be agreed between the parties. TII cannot accommodate this for engineering purposes.*

  Allegro Acoustics Response: As per Allegro Acoustics response to Comment 1 above, it is noted that the predicted construction stage noise level of 50dB $L_{Amax,s}$ is likely to cause disruption to users of the Cadenza Building while the Tunnel Boring Machine is in operation in the vicinity of the building.

- ***TII Comment 6:*** *Allegro felt the ground noise of 40dB was not acceptable. TII hopes the clarified reference guide allays these concerns and either way TII anticipates noise levels beneath this.*

  Allegro Acoustics Response:

  Allegro Acoustics' concern with the proposed 40dB $L_{Amax,s}$ criteria for ground borne noise is primarily for the operational phase of this project. The Cadenza building has been designed and built to provide a high level of acoustic comfort to the users of this space.

  The aforementioned *2019 Guide to Specification Best Practice for Offices* notes in Section 11.4.2 that the proposed 40dB $L_{Amax,s}$ criteria may still be perceptible and that *"each case must be examined carefully accounting for the occupants' uses and expectations"*. Allegro Acoustics does not feel that the proposed 40dB $L_{Amax,s}$ criteria appropriately allows for acoustic comfort in line with the expectation of the users of the Cadenza building.

  Section 11.4.2 of this document refers to the *ANC Guidelines, 'Measurement and Assessment of Ground-borne Noise & Vibration'*. The ANC Guidelines note in Table 18.10 that the proposed 40dB $L_{Amax,s}$ criteria is the **Significant Impact Threshold** for ground borne noise in an office setting.

  Allegro Acoustics notes that the users of the Cadenza building expect a high level of acoustic comfort to use the building appropriately. As such the ground borne noise criteria should be significantly below the 40dB $L_{Amax,s}$ **Significant Impact Threshold**.

Building	Significant Impact Threshold dB LAmax, slow
Theatres/large auditoria and concert halls	25
Sound recording/broadcast studios	30
Places of meeting for religious worship/courts/ lecture theatres/museums/small auditoria or halls	35
Offices/schools/colleges/hospitals/hotels/ libraries	40
Factories/warehouses	50

Table 18.10 Groundborne noise impact criteria for non-residential receptors.

Figure 1: Extract from the *ANC Guidelines, 'Measurement and Assessment of Ground-borne Noise & Vibration' 2nd Edition.*

Note: The tables shown in Figures 1 and 2 originate from the EIS report for the Dublin DART railway and are reprinted in the ANC Guidelines.

The ANC Guidelines note in Table 18.9 that a ground borne noise level of <35dB $L_{Amax,s}$ results in a **Negligible / Not Significant** impact in a residential setting.

Impact Classification	Groundborne Noise Level dB $L_{Amax,\ slow}$ (measured indoors, near the centre of any dwelling room on the ground floor)	
Negligible	< 35	Not Significant
Low	35-39	
Medium	40-44	Significant Impact
High	45-49	
Very High	>49	

Table 18.9 Groundborne noise impact criteria for residential receptors.

Figure 2: Extract from the *ANC Guidelines, 'Measurement and Assessment of Ground-borne Noise & Vibration' 2nd Edition.*

Allegro Acoustics notes that even though this table considers the criteria for residential receptors, human perception and reaction will not change according to function of the building. In addition, the nature of a high quality office environment requires limited noise levels for high attention and focusing.

On this basis Allegro Acoustics asks that the TII adopt an operational phase ground borne noise level criteria of ≤35dB $L_{Amax,s}$ criteria to the Cadenza Building to ensure that the likelihood that users of this space are negatively affected by the operation of the MetroLink is kept to a minimum and so that the acoustic comfort level that the building was designed to provide is maintained.

- ***TII Comment 7:*** *Allegro identified typos in TII's report. TII confirmed the baseline vibration units incorrectly references "mm" when it should say "m" but the numbers are otherwise correct.*

  Allegro Acoustics Response: Noted.

Airborne Noise and Vibration

- ***TII Comment 8:*** *No airborne noise monitoring in the vicinity as Property not within 300m of construction site so TII do not consider airborne noise to affect this.*

  Allegro Acoustics Response: Noted.

Additional Comments

Allegro Acoustics ask TII to confirm that they will carry out operational phase noise impact calculations that account for the realignment of the tunnel height and position at the Cadenza building.