

MEMO

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Attention:	Gareth Jones	Cross Reference:	Rp 002 20220549		
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From:	Liam Kemp	No. Pages:	3	Attachments:	No
Subject:	Maximum noise levels for transformers				

This memo provides supplementary information to the recent report¹ (the Report) prepared by Marshall Day Acoustics Pty Ltd (MDA) for the proposed upgrades at the existing Red Cliffs Terminal Station.

The Report included a summary of initial noise modelling. The outcomes of the modelling were that noise from the site is predicted to exceed mandatory noise limits. Noise modelling that informed this outcome was based on the use of representative transformer test sound data for the proposed new “B1”/ “B2” units. These units, and the upgraded Transformer 3, will be the dominant noise sources at the site.

However, noise from the smaller proposed transformers (“U1”/“U2”), proposed batteries, the existing reactors and transformers at the adjacent Murray Link site all contribute to the noise in the area.

AusNet has asked MDA to provide an indication of the maximum allowable noise levels from transformers B1, B2 in order to explore the potential to procure sufficiently low-noise units.

It is also understood that Transformer 3 is also planned to be replaced in the future with a new unit (“B3”) that will be of the same duty as B1/B2. Therefore, we have estimated the maximum allowable noise level for all three transformers, B1, B2 and B3.

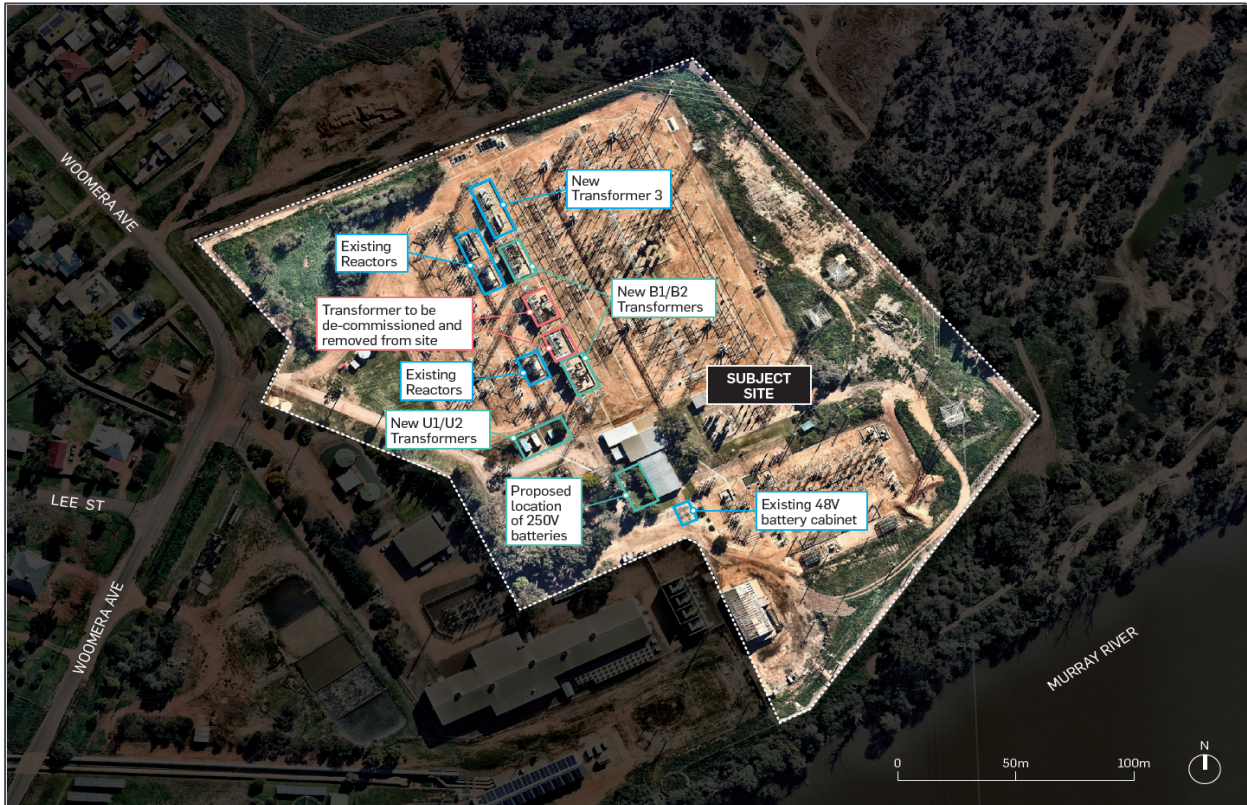
A site layout is shown in Figure 1.

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¹ Rp 002 20220549 - Red Cliffs Terminal Station - Acoustic assessment dated 1 December 2023

Figure 1: Site layout



General environmental duty

The general environmental duty applies to all Victorians under the Environment Protection Act 2017 and requires all reasonably practicable measures to be implemented to minimise the risk of harm from noise. This applies separately and concurrently to noise limit compliance – it is not necessarily deemed to be fulfilled where noise limits are achieved. Further information is provided in the Report.

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Maximum allowable levels

We have reviewed the noise model that was developed in preparation of the Report. The noise modelling methodology is summarised in detail in the Report.

The following key items have been considered:

- Reflective surfaces (such as buildings and firewalls)
- Contribution from other equipment (as identified in detail in the Report)
- Contribution from transformers at Murray Link (as measured by MDA and summarised in the Report)

Based on review of the noise model, the predicted maximum allowable level for each of the transformers B1, B2 and B3 is provided in Table 1.

The maximum provided level is for the transformers at full rated duty (current and voltage; dB $L_{WA, SN}$) in order to achieve predicted compliance during the night period which has the most onerous noise limit.

Table 1: Maximum allowable level, dB $L_{WA, SN}$

Units	Rating, MVA	Report input	Indicative maximum allowable noise level
Transformers B1 & 2	150	93	79
Transformer 3 / B3	140 / 150	96	79

The predicted maximum allowable noise level is significantly below the input level used for the Report. They assume that the maximum penalty for 5dB tonality would be applicable to the site, as discussed in the report.

Recommendations and limitations

The predicted maximum noise level is provided above for information and is indicative. It may be used to provide an indication of the maximum sound power levels required for the largest transformers assuming no other physical noise mitigation is provided, however does not necessarily reflect the finalised allowable level.

The reason for this is that the contribution from all other noise sources becomes more important cumulatively, once the noise levels for the largest transformers are reduced significantly. Therefore, revisions to other noise source inputs will affect the maximum allowable level for the largest transformers. Applying noise mitigation to other equipment may allow for an increase in maximum allowable noise level for the large transformers. Conversely, higher levels than anticipated for other equipment may result in a reduced maximum noise level for the large transformers. The frequency spectrum may also impact the maximum overall level.

Further acoustic review of the entire site is required in coordination with the project team based on refinements to the overall noise model.

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