



Consultant Advice

From: Renzo Arango **Date:** 18 Feb. 15 **File No:** S30229\001\W-121\ca150217s0019 **Pages:** 3
Project: Hornsby Ku-Ring-Gai Chase Hospital - Acoustics Consultancy Services **No:** J-030[1.0]

	Attention	Company	Email
To:	Zoran Stepanovski	Richard Crookes Constructions	stepanovskiz@richardcrookes.com.au
cc:	John Kan	Norman Disney & Young	j.kan@ndy.com
	Adam Paolino	Norman Disney & Young	a.paolino@ndy.com

Acoustics – Assessment of Stand-by Generator

Zoran,

Following our phone discussion on 16th February 2015, we understand the barrier treatment discussed in NDY correspondence J-028 ca150202s0021 has been reconsidered by Richard Crookes Constructions and that NDY have been requested to re-review this noise mitigation option. As such, without prejudice, we provide the following recommendations regarding the stand-by generator noise compliance with the project Development Consent Conditions.

We note that this option, which was discussed at the site meeting on Friday 6th February 2015, was rejected as it was understood that the perimeter block work wall to the site could not be higher than 1.2 metres. A higher wall was subject to a Section 96 application to Council which would potentially not be approved, in addition to noting significant time constraints with completing the application. We also note that construction of an enclosed plant room is not feasible.

This review has been undertaken on the basis of the technical information provided to NDY to date regarding noise emission levels from the generator/ canopy manufactured by SDMO. These recommendations are on the basis that the selected diesel generator/ acoustic canopy does not fulfil the project acoustic requirements for noise emission.

Noise Emission Criteria

With reference to NDY correspondence J-029 dated 10th February, the applicable Development Consent Conditions for the operation of the diesel generator is Part E, Conditions E3 and E4 – Noise Control – Plant and Machinery. The recommendations in this review are based on compliance with these noise Conditions.

Noise Barrier and Mechanical Treatments

- The location, extent and height of the noise barrier shown in Figure 1 is acceptable to meet the compliance condition for maintenance operation only. This is on the basis that the barrier treatment is as per recommendations discussed in NDY correspondence J-028 ca150202s0021 and the operation of the plant for maintenance is as per Section 8 of the NDY Detailed Design Acoustic Report (refer also to Aconex Correspondence RCC-GCOR-004628, dated 29th January 2015).
- The barrier construction should achieve a minimum sound insulation performance of 40 dB R_w as outlined in CAN J-028.



- Additional noise control measures to the generator canopy (which are non-architectural measures) are required to meet the Development Consent Conditions (Part E, Condition E3 and E4 – Noise Control – Plant and Machinery). These measures are discussed in NDY CAN - J-028 and J-029 and are confirmed as follows:
 - An additional exhaust muffler that achieves a minimum 13 dBA overall noise reduction; and
 - Additional silencers to the air inlet and discharges which achieve a minimum 9 dBA overall noise reduction.
- The generator manufacturer should confirm that there are no tonal components present in the noise frequency spectrum (in one third octave centre band frequencies) produced by the generator. Tonal components will affect the level of additional noise control measures required to achieve the Development Consent Conditions. For information, only overall dB values and one octave centre band frequencies were supplied to NDY for review. Frequency tonal components should be identified and assessed as per standard ISO 1996-2:2007.

Stand-by Generator Orientation

- It is recommended that the generator should be oriented in such a manner that the exhaust and air discharge are aimed away from Burdett Street (refer to Figure 1). It is also advised that based on the height of the noise barriers noted above, that the exhaust should be aimed vertically (i.e. upwards).

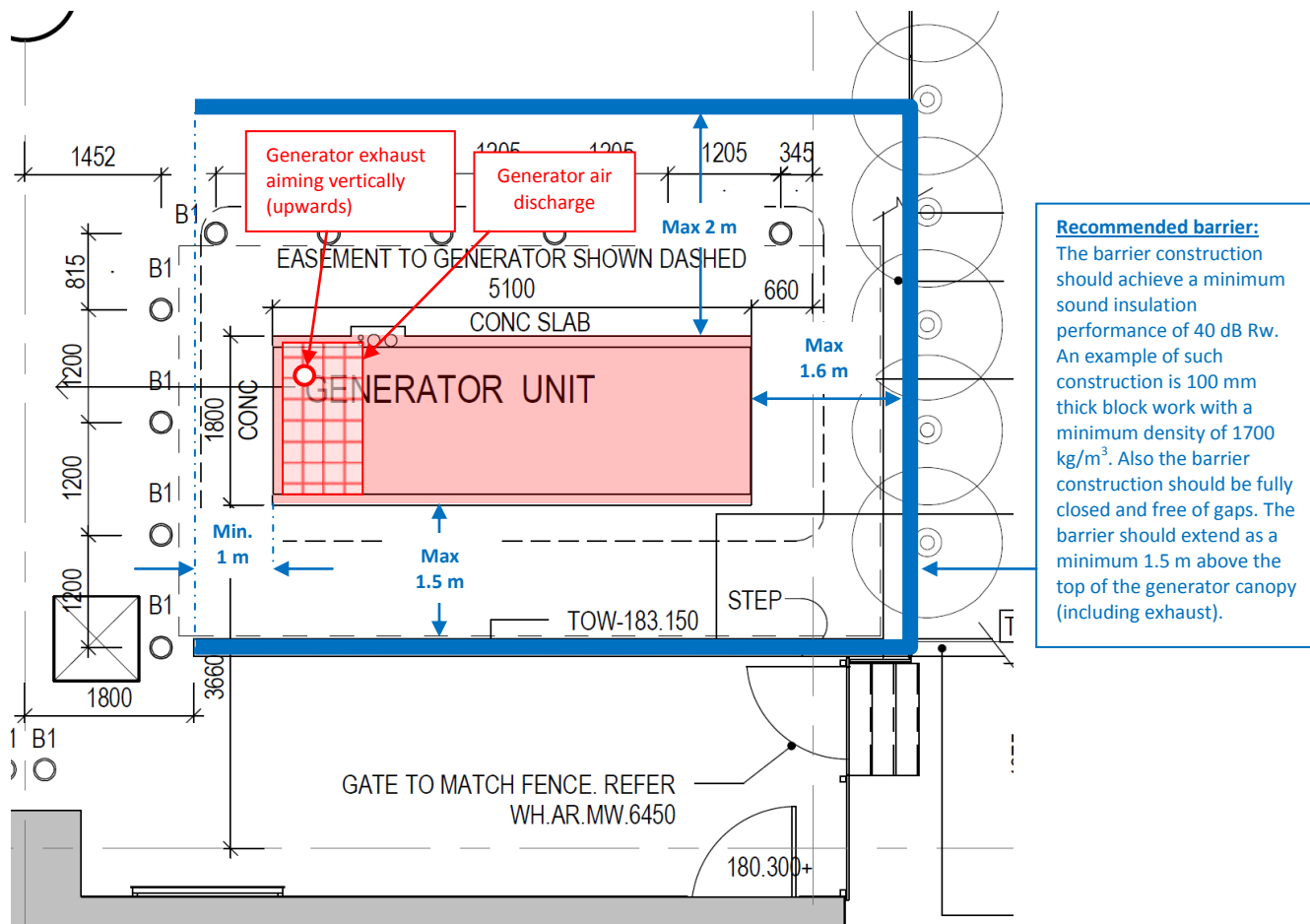
Conclusion

As discussed, the architectural noise control measures outlined above i.e noise barriers are required for daytime maintenance operation, with noise emission level predicted to achieve compliance with the noise emission criteria for maintenance, with no further acoustic treatment required to the generator canopy.

However, based on the generator and acoustic canopy selection, the outcome of the review still indicates that additional noise control measures are required for the generator for compliance with the Development Consent Conditions. These measures are outlined above and also discussed in NDY correspondence J-028 ca150202s0021 and reiterated in NDY correspondence J-029 ca150209s0002.

Consequently, overall compliance cannot be achieved based only on architectural treatment (in particular for Consent Condition E3). Based on the generator/ canopy selection and previous correspondences (J-028 and J-029), NDY has provided the maximum feasible noise control measures to achieve compliance with the Development Consent Conditions, given the constraints of the project.

Figure 1: Recommended barrier layout (not to scale)



Regards,

NORMAN DISNEY & YOUNG

Renzo Arango
Acoustics Engineer
r.arango@ndy.com