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EastLink
Ventilation Station – Noise Breakout
Preliminary Design

REPORT FOR:
CWDC

BASSETT ACOUSTICS REPORT NO: MA0269/DC/I02



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INTRODUCTION

This report summarises the anticipated noise emission from the ventilation building structures for the purposes of the works application associated with the EastLink project. This report does not address noise transmission via air paths.

Break-out noise is the noise transfer of noise via a structural element i.e. through concrete cladding. Bassett Acoustics, work for CWDC, is responsible for the acoustic design of the vent stations breakout noise. This is noise passing through the walls of the station or anywhere other than the air-path.

This report is based on the following reference information:

- Graeme E Harding & Associates Pty Ltd (GEH) letter dated 7 July 2005 outlining the information require for the works approval associated with noise emissions.
- CW-DC Pty Ltd (CWDC) letter dated 18 August 2005 outlining the structural configuration of ventilation stations.

Information in these reports is not repeated for clarity and is quoted as required.

The cumulative noise levels associated with the air-path and break-out are considered.

SUPPORTING INFORMATION

This report is based on the following information:

- The dominant noise sources (for noise break-out) are the vent fans. The vent fans have a sound power level of 131 dB re 10^{-12} W (refer GEH report). Other noise sources are not significant for noise break-out.
- The critical night time noise limit is 51 dB(A) at nearby residences as estimated from the SEPP (Control of Noise from Commerce Industry and Trade) No. N1. (refer GEH report).
- Vent station structures have minimum 200 mm concrete walls and a minimum 250 mm concrete roof. Walls are shielded from the adjacent residences by a bridging slab. The roof is partly covered with soil. (Refer CWDC report)
- The predicted noise via the airborne noise path is approximately 39 dB(A) at nearby residences (refer GEH report).
- Preliminary noise wall design to reduce traffic noise at nearby residences (Bassett Acoustics design)

ASSESSMENT

A conservative noise model has been developed to assess noise at the nearby residences. This incorporates the preliminary noise wall design.

The predicted break-out noise level is less than 37 dB(A) at the nearby residences. This assumes all fans are operating and does not consider the air path.

The predicted air path noise level is 39 dB(A) (refer GEH report) and the combined level is 41 dB(A) (air path and break-out noise).

CONCLUSIONS

The predicted combined noise level is less than 41 dB(A) (at the nearby residences) based on the information summarised in the GEH report. This is significantly less than the estimated 51 dB(A) night time noise limit.

Noise break-out from the ventilation station structure is hence not considered to be significant and noise emissions can easily be controlled to acceptable limits.