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MEMORANDUM

10-8268 T1 CBD Metro White Bay Option 20090921.doc

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	Sydney Metro	NO OF PAGES:	2
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Dear Peter

CBD Metro
White Bay - Alternative Alignment Option

1 Introduction

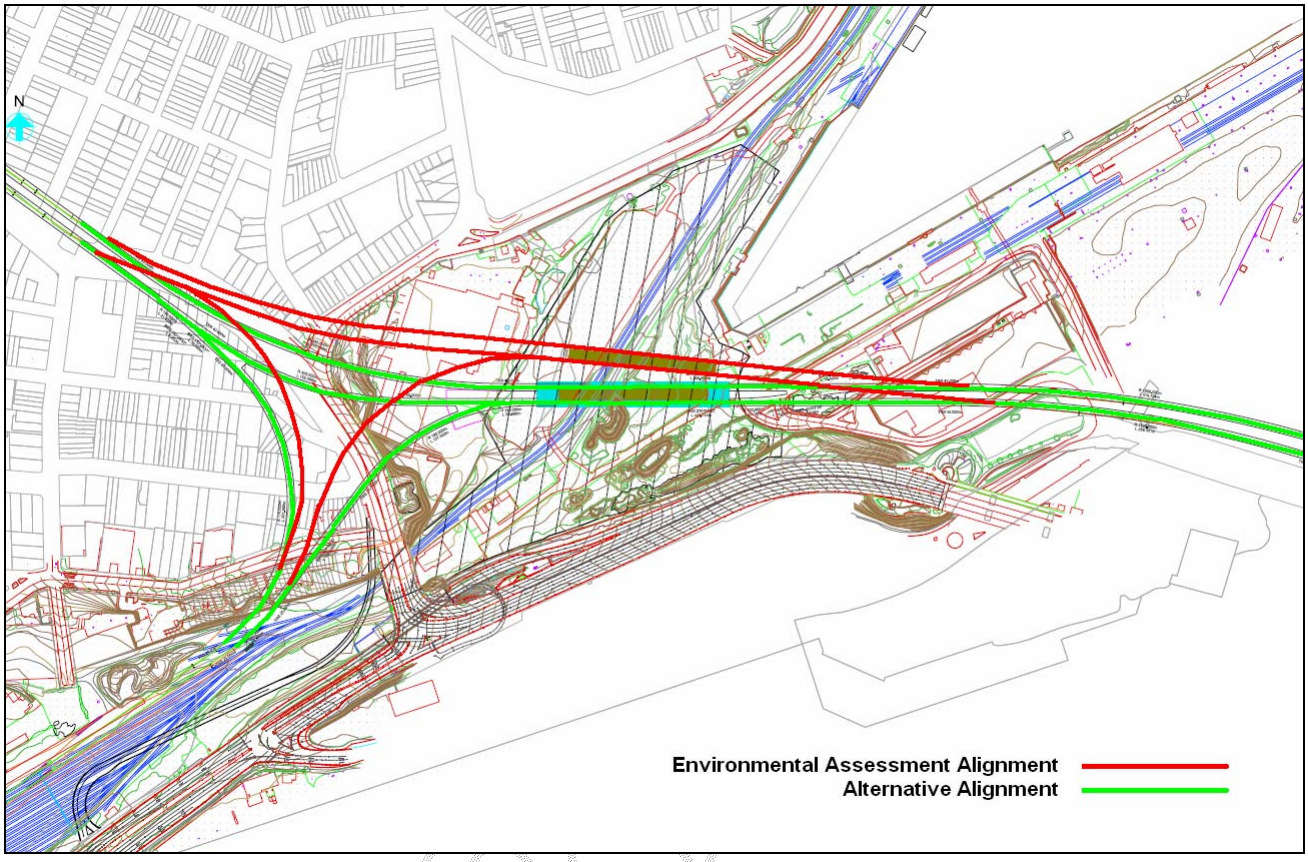
An alternative CBD Metro track alignment is currently being considered near White Bay (between the Anzac Bridge and Gordon Street Rozelle).

The purpose of this report is to calculate the ground-borne noise and vibration levels during operations and determine whether the future ground-borne noise and vibration levels comply with the design goals.

2 Description of Alignment Options

A sketch of the Environmental Assessment and Alternative alignments near White Bay is provided in **Figure 1**.

Figure 1 Horizontal Alignment Sketch of Environmental Assessment and Alternative Alignments



On the basis of the above sketch, it can be seen that the Environmental Assessment option is located on a more northern alignment compared with the Alternative option at White Bay Station. Additionally, the horizontal alignments of the east and west depot connections are also different for the Alternative option.

For the western depot connection, the Alternative alignment is located beneath a larger number of residential receivers compared with the Environmental Assessment alignment. For the eastern depot connection, the Alternative alignment is located beneath a smaller number of residential receivers compared with the Environmental Assessment alignment. For both depot connections, the distance between the ground surface and rail is greater than 20 m at all receiver locations on the northern side of Lilyfield Road where the Alternative alignment varies from the Environmental Assessment Alignment.

For the main alignment (between White Bay and Rozelle), both tracks are located beneath residential receivers on the western side of Victoria Road (opposite Robert Street) for the Alternative option. For the Environmental Assessment option, the main alignments avoided these receivers, however pass beneath several residential receivers in Crescent Street (on the northern side of Victoria Road). Crescent Street receivers are located further from the Alternative alignment.

3 Operational Noise and Vibration Assessment

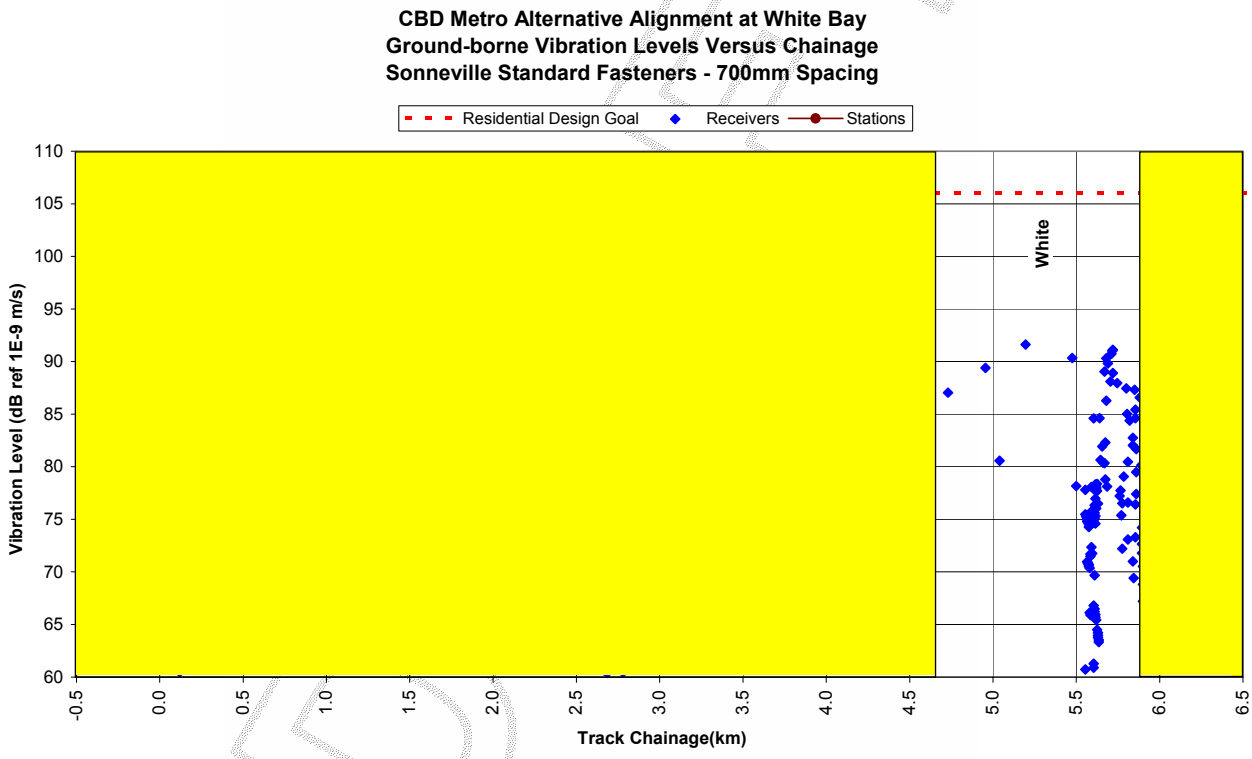
The calculation process for determining the ground-borne noise and vibration levels during train operations is described in the Noise and Vibration technical paper in the Environmental Assessment.

3.1 Ground-borne Vibration Assessment

On the basis of the ground-borne vibration modelling assumptions, the proposed speed profile and the vertical and horizontal alignments for the Alternative alignment, **Figure 2** presents a summary of the predicted ground-borne vibration levels for buildings located above or near the alignment between Anzac Bridge and Gordon Street. The modelling results indicate that compliance with the ground-borne vibration goals will be achieved for all sensitive receiver locations above or near the alignment.

For the western and eastern depot connections, the predicted ground-borne vibration levels are below 90 dB_V at all receivers.

Figure 2 Predicted Ground-borne Vibration Levels (Standard Attenuation Track) - Alternative Alignment at White Bay



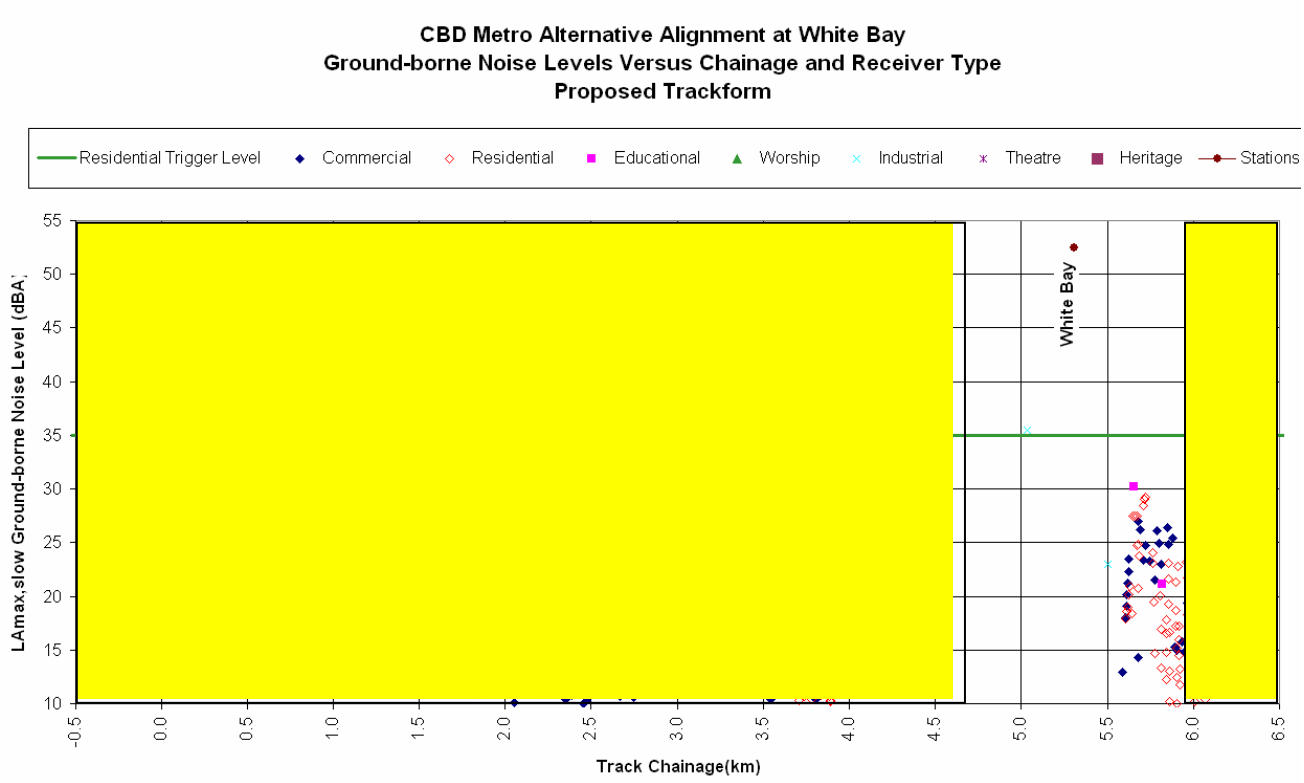
Note: Calculated vibration levels in the shaded regions are the same as indicated in the Environmental Assessment.

3.2 Ground-borne Noise Assessment

Consistent with the Environmental Assessment, a high attenuation trackform is proposed for both depot connections (near Lilyfield Road) and the main alignment (near Robert/Gordon Street) in order to achieve compliance with the ground-borne noise design goals.

A summary of the predicted ground-borne noise levels with the proposed trackform is provided in **Figure 3** for buildings located above or near the alignment between the Anzac Bridge and Gordon Street. The modelling results indicate that compliance with the ground-borne noise goals will be achieved for all sensitive receiver locations above or near the alignment.

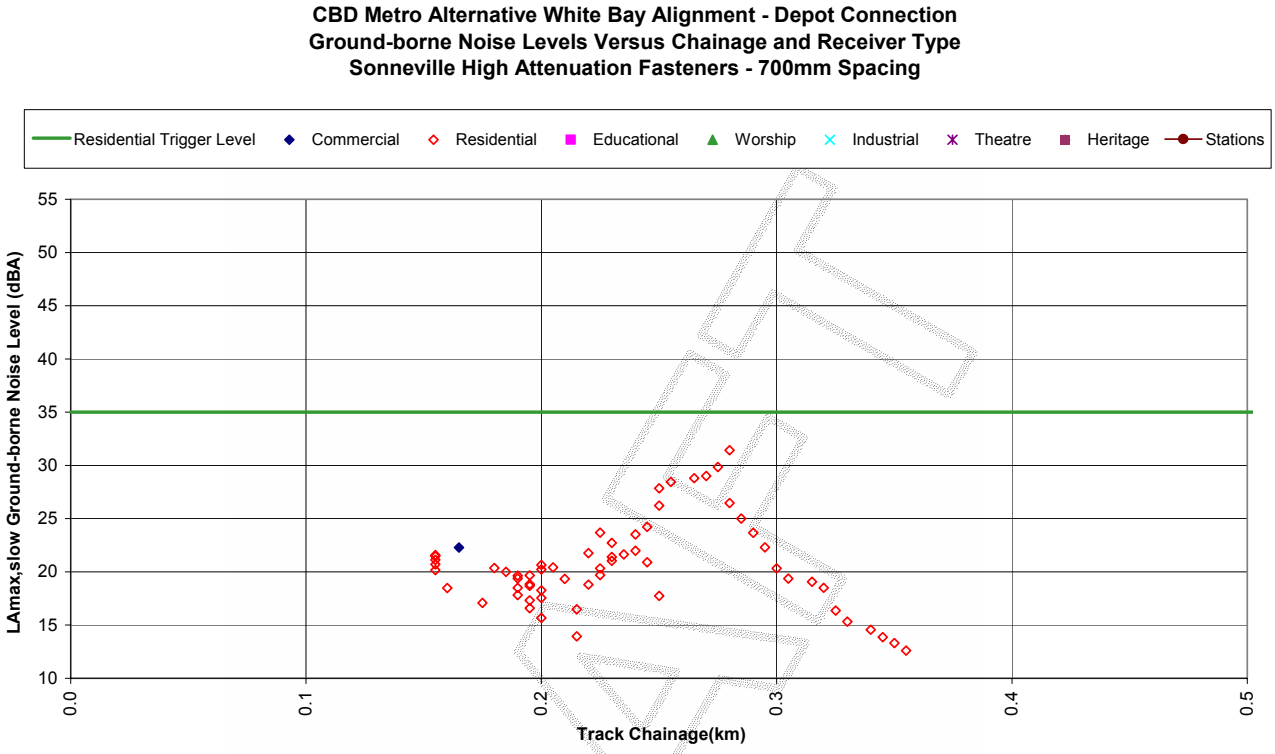
Figure 3 Predicted Ground-borne Noise Levels (Proposed Track) - Alterative Alignment at White Bay



Note: Calculated Ground-borne noise levels in the shaded regions are the same as indicated in the Environmental Assessment

The predicted ground-borne noise levels at the Depot Connections are provided in **Figure 4**. The modelling results indicate that compliance with the ground-borne noise goals will be achieved for all sensitive receiver locations above or near the alignment.

Figure 4 Predicted Ground-borne Noise Levels for Depot Connections - Alterative Alignment at White Bay



4 Conclusion for Ground-borne Noise and Vibration Assessment during Operations

The ground-borne noise and vibration modelling indicates that a trackform design which incorporates high attenuation rail fasteners will be sufficient to achieve compliance with the ground-borne noise and vibration goals at all sensitive receiver locations between the Anzac Bridge and Gordon Street, Rozelle for the Alternative alignment option at White Bay.

This is consistent with the ground-borne noise and vibration assessment for the alignment assessed in the main body of the Environmental Assessment.