ACOUSTICS AND AIR

SOUTHERN SYDNEY FREIGHT LINE:

OPERATIONAL NOISE AND VIBRATION MANAGEMENT PLAN

Rob Bullen

WILKINSON MURRAY

Operational Noise and Vibration Management Plan

- One of a number of Management Plans required under the Conditions of Approval for the SSFL

- To be prepared no later that 6 months from commencement of construction (or as otherwise agreed by the Director-General)

- Currently being prepared by Wilkinson Murray

- Based on the noise assessment principles adopted in the project's Environmental Impact Statement, but updated and including more detailed modelling and assessment

WILKINSON MURRAY

The ONVMP Must Contain:

Done or well under-way

- Identification of sensitive receivers
- Identification of objectives for sensitive receivers
- Prediction of operational noise & vibration at sensitive receivers
- Examination of all "reasonable and feasible" mitigation measures
- Identification of specific mitigation measures (e.g. barriers) demonstrating best practice
- A Source Control Plan identifying
  - a program of condition monitoring for freight trains
  - targets and procedures to implement best practice for control of noise emission
- Procedures for complaint management
- Procedures for reviewing the adequacy of the above measures

To be done

WILKINSON MURRAY

Note:

Vibration levels from freight train passbys are well below standard criteria for both human comfort and building damage at all relevant locations.

Vibration will be covered in the ONVMP, but this presentation will concentrate on noise impacts.

WILKINSON MURRAY

Sensitive Receivers and Objectives

A "sensitive receiver" is any residence, school, child care centre, place of worship or similar building. Receivers are generally residences, but also include Casula Regional Arts Centre.

Noise objectives are as in the approved EIS, and as per DECC goals for rail noise.

At any residence:

- L_{Amax} should not exceed 80 dBA
- $L_{Aeq,24h}$ should not exceed 55 dBA

Typical current levels at residences

- L_{Amax} 87 – 93 dBA
- $L_{Aeq,24hr}$ 64 – 70 dBA

WILKINSON MURRAY

Sensitive Receivers and Objectives

For Casula Regional Arts Centre the criterion is

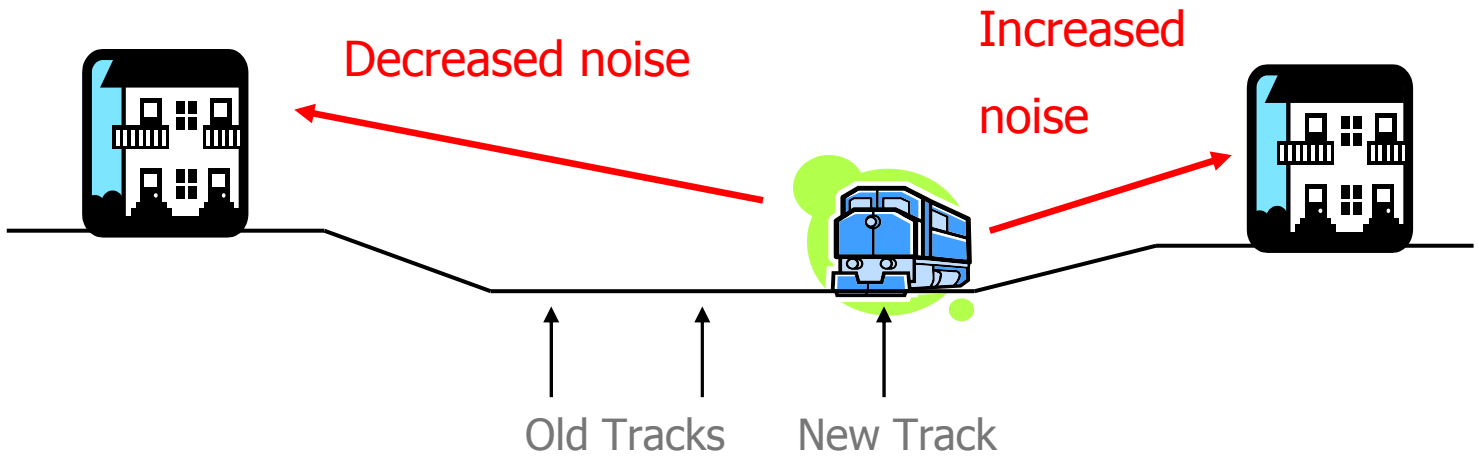
- L_{Amax} should not exceed 77 dBA

Current L_{Amax} level is approximately 90 dBA

WILKINSON MURRAY

When are Mitigation Measures "Reasonable and Feasible"?

- Where the project **reduces** existing noise levels (or does not increase them), physical mitigation measures (barriers) are not required.
- Where the project **increases** existing noise levels, mitigation should be designed with the intention of meeting the project goals



WILKINSON MURRAY

When are Mitigation Measures "Reasonable and Feasible"?

An **increase** in noise level means either:

- an immediate increase following opening of the SSFL; or
- an increase up to 10 years after opening compared with what would have been the case in the absence of the SSFL.

Barrier designs in the ONVMP are based on:

- For existing noise - measurements at 10 locations for the EIS plus large database of noise levels from freight trains;
- For noise from the SSFL – computer modelling of noise from the new tracks;
- ARTC estimates of number of movements with and without the SSFL

Because this is uncertain, we require noise monitoring as part of ONVMP

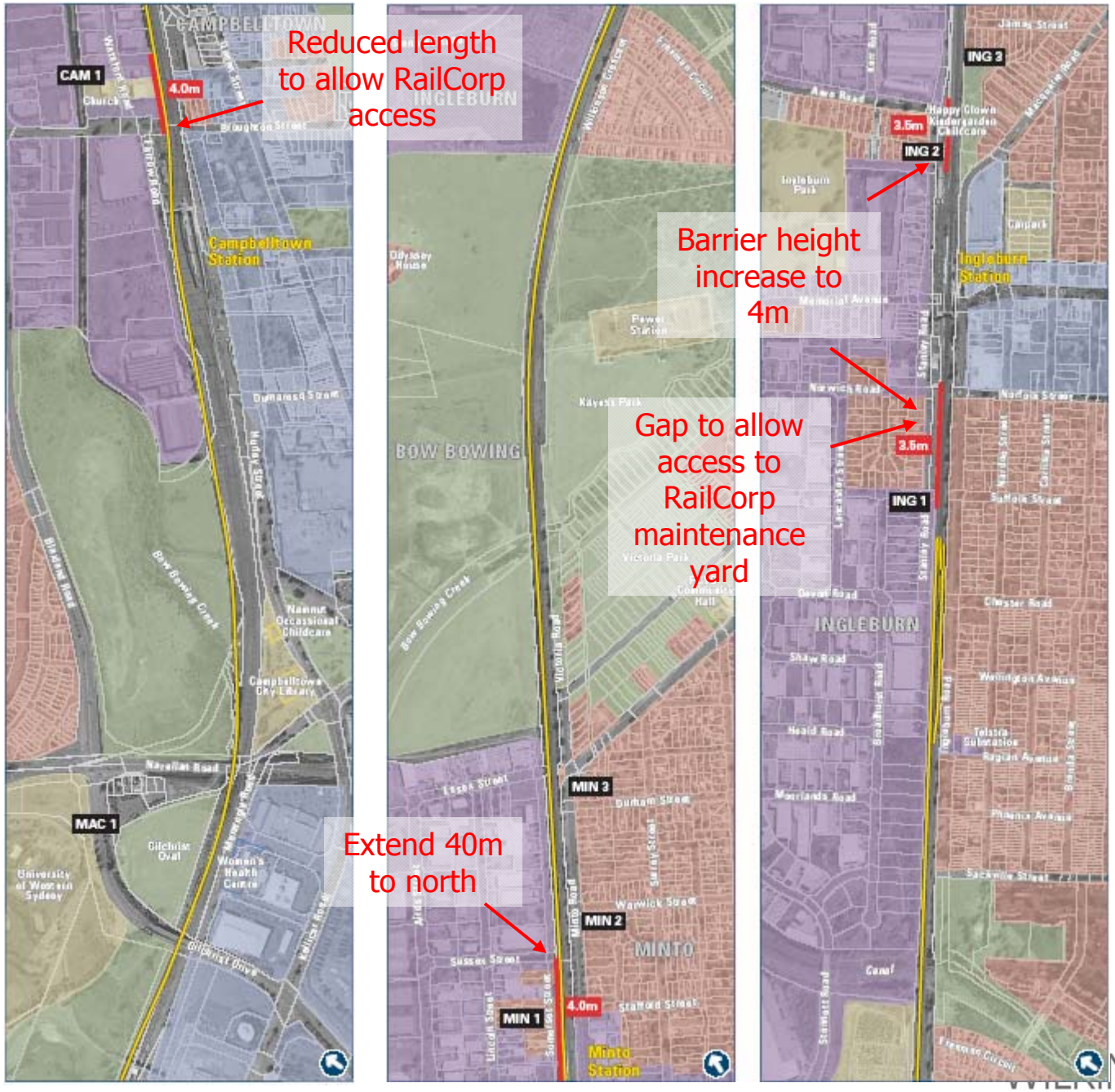
WILKINSON MURRAY

When are Mitigation Measures “Reasonable and Feasible”?

- In general a barrier more than about 4m above rail level (4.2m above ground) is not considered feasible from an engineering point of view.

- In all cases the provision of barriers is subject to urban design and other local considerations. For example, it is not “reasonable and feasible” to hinder access to a station where the benefit for residents is small.

WILKINSON MURRAY



BARIER DESIGN IN THE ONVMP

(showing changes since the EIS)

(1)

WILKINSON MURRAY

BARIER DESIGN IN THE ONVMP

(showing changes since the EIS)

(2)

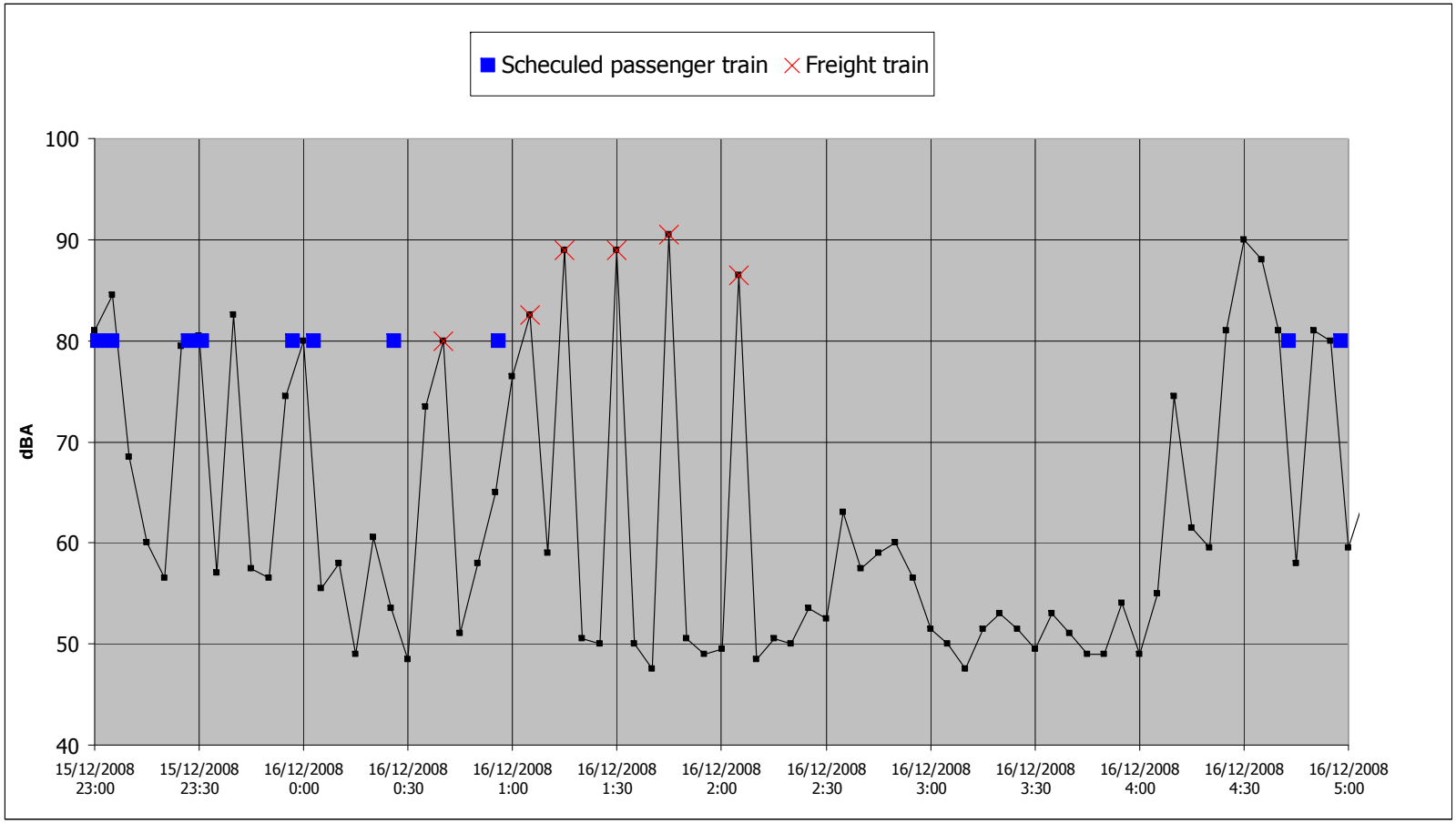
WILKINSON MURRAY

How Does the Noise Monitoring Work?

- Noise monitoring programs will be conducted at 1, 2, 5 and 10 years after opening of the SSFL.
- Locations will be at least the 10 sites monitored in the EIS (or equivalent locations).
- Currently, use unattended monitors left for 7 days. Estimates of freight train levels are derived from night-time data, to avoid contamination by other noise.
- This technique allows estimation of the average noise level to within 1 – 2 dBA.

WILKINSON MURRAY

Example Noise Monitoring Results



WILKINSON MURRAY

How Does the Noise Monitoring Work?

- After each monitoring period, measured noise levels will be compared with levels predicted for that site in the ONVMP, and with levels measured for the EIS.

- If there is a clear increase in noise level (compared with levels in the absence of the SSFL) then:
  - the area in which the increase occurs will be determined from further measurements and/or monitoring; and
  - barriers will be retrospectively installed, consistent with practice in other areas.

WILKINSON MURRAY

Other Matters in the ONVMP

- Source Control Plan – likely to include:
  - targets for noise from individual vehicles, at least as stringent as those used in modelling
  - requirement for testing of all vehicles before entering service to confirm compliance with the targets
  - requirement for re-testing all vehicles after each maintenance

- Complaint management – likely to include:
  - definition of roles and responsibilities for responding to noise complaints
  - procedures for recording noise complaints and, where necessary, alerting appropriate personnel
  - procedures for investigation of complaints, reporting back to the complainant and initiating action where required

WILKINSON MURRAY

WILKINSON MURRAY