

APPENDIX B

Workshop presentations

Post Construction Noise Monitoring

Sapphire to Woolgoolga

Noise workshop



- Welcome
- Purpose of today's workshop
 - invite input on the noise monitoring locations
 - explain the process for the post opening noise assessment and next steps
 - Clarify / answer any questions you may have on the post opening noise assessment process

Process to date



- The review of the operational noise measures was carried out by the Leighton Fulton Hogan Joint Venture, based on the detailed design.
- The Operational Noise Management Report was first published in December 2011 and revised in December 2013.

Process to date continued



- There have been regular community information sessions during the construction phase of the project.
- The most recent was held in March this year.
- The post opening noise assessment process was discussed at the meeting held in March.

- Process to date
 - Environmental Assessment 2007
 - Noise and Vibration Impact Assessment (Wilkinson Murray)
 - Project Approval January 2009
 - Included requirements for
 - the review of operational noise measures and
 - noise assessment after opening the highway

Current status



- As discussed in March, Roads and Maritime have proceeded with engaging a consultant to carry out the noise assessment as early as possible.
- The upgrade section of the highway was opened on July 30 2014. The Woolgoolga Bypass was opened on 16 December 2013.
- Renzo Tonin have now been engaged and are here to detail the process and take feedback.

Next steps



- This workshop is one of three this week.
- Community input to date, technical advice and the outcomes from today will feed into the final noise monitoring locations.
- The outcomes will be shared on the project website.
- Today we hope to achieve a shared understanding about where the noise monitors will be located and why.
- Noise monitoring will start in October.

Next steps continued



- Renzo Tonin will prepare a report following analysis of data.
- Roads and Maritime will make this information available and provide opportunities to discuss the outcomes.
- If levels are found to be greater than those projected, further consultation will be undertaken with those residents affected, and additional noise mitigation measures will be carried out where required.

Engine brake noise testing



- Roads and Maritime have requested Renzo Tonin to carry out engine brake noise testing as part of a state-wide initiative.
- Specialised engine brake noise loggers will be installed at 4 locations along the project, close to the road and where engine braking is a common occurrence.

Engine break noise testing continued



- The loggers will be set up to record data and sound during an engine braking event.
- The recorded data and sounds are inputted into a software application to determine the levels, time and number of occurrences.

Pacific Highway Upgrade – Sapphire to Woolgoolga



Post Construction
Noise Monitoring

Overview

- Regulatory requirements
- Purpose of monitoring
- What does a noise model consider?
- Noise monitoring
- Engine brake noise testing

Regulatory Requirements

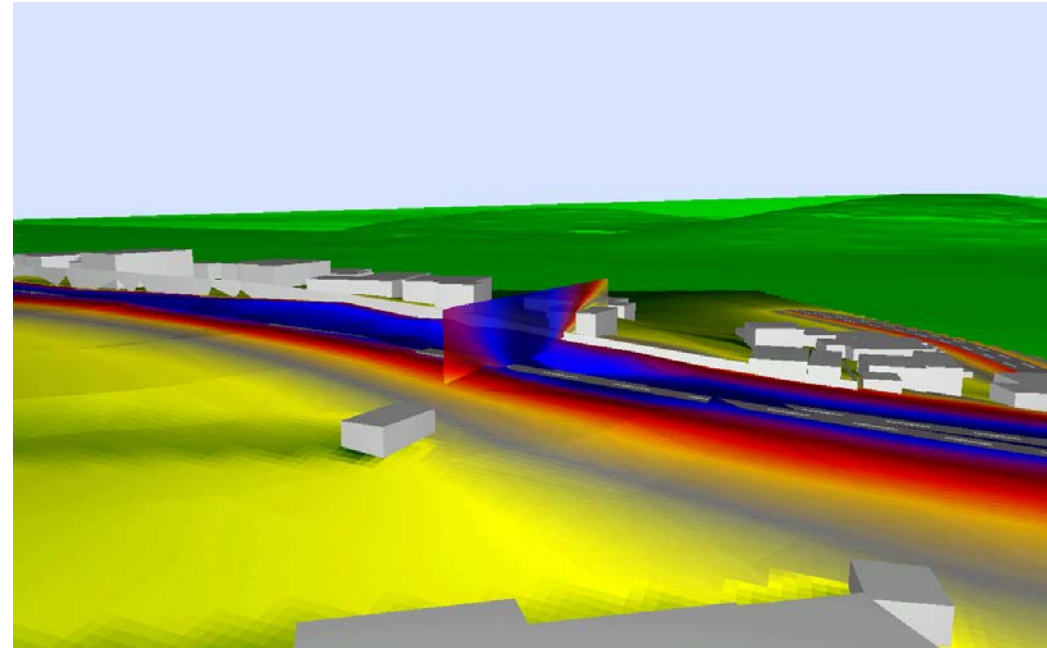
- **Minister's Conditions of Approval (MCoA), Condition 3.2** - operational noise monitoring within 1 year after opening
- **Statement of Commitments** - operational noise monitoring required 6 months – 1 year after opening
- Department of Planning has agreed to a shorter timeframe for noise monitoring to respond to community concerns
- To meet the MCoA and Statement of Commitments, noise monitoring will be undertaken at representative locations along the project
- This work is being carried out by Renzo Tonin & Associates, noise specialists, who have not been involved in any stages of the environmental assessment or design processes for the project

Purpose of Monitoring

- Noise monitoring and classified traffic monitoring results will be used to check the noise model
- Once checked the noise model will be used to determine the post-construction noise levels at all properties for the opening year (ie. 2014)
- The post-construction noise levels will be compared to the opening year modelled noise levels determined during detailed design
- All properties will be analysed and evaluated using the post-construction noise model
- The comparison of results shall determine the adequacy of the noise mitigation measures implemented

What Does a Noise Model Consider?

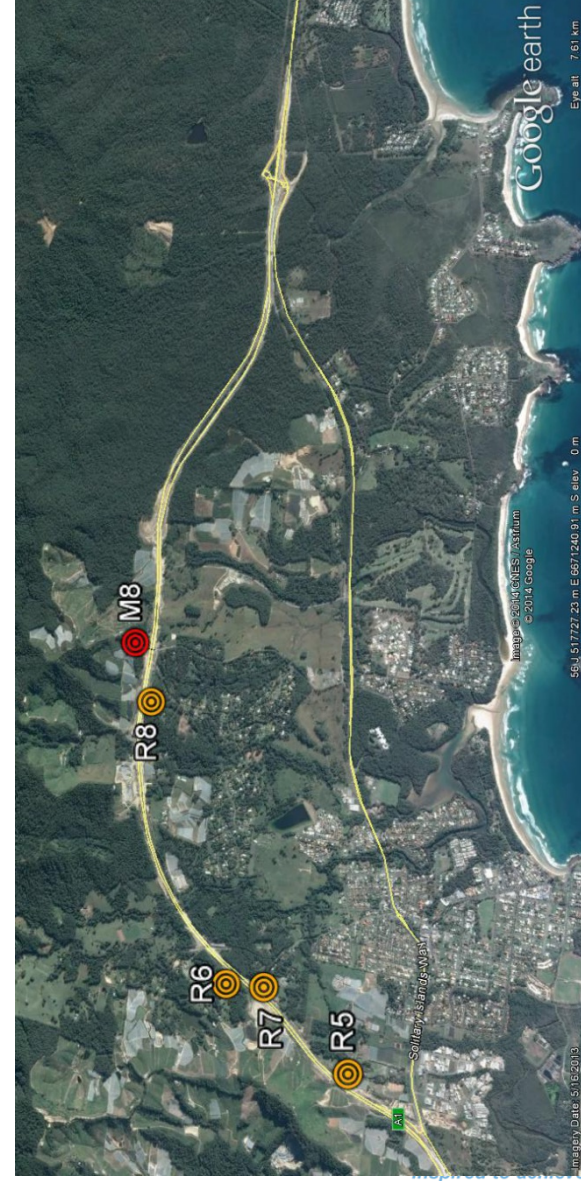
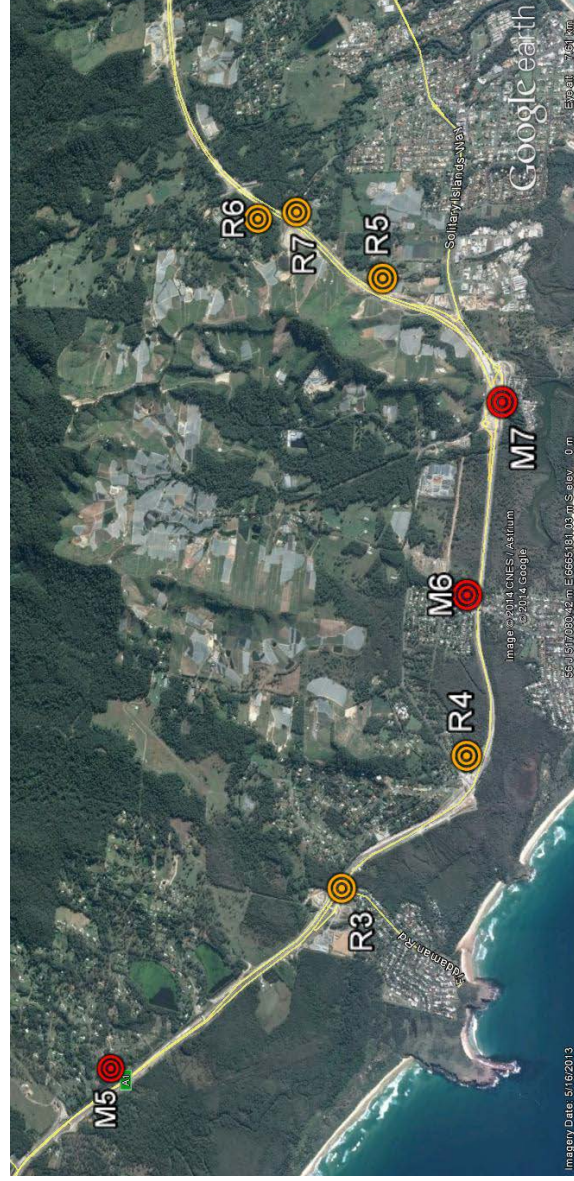
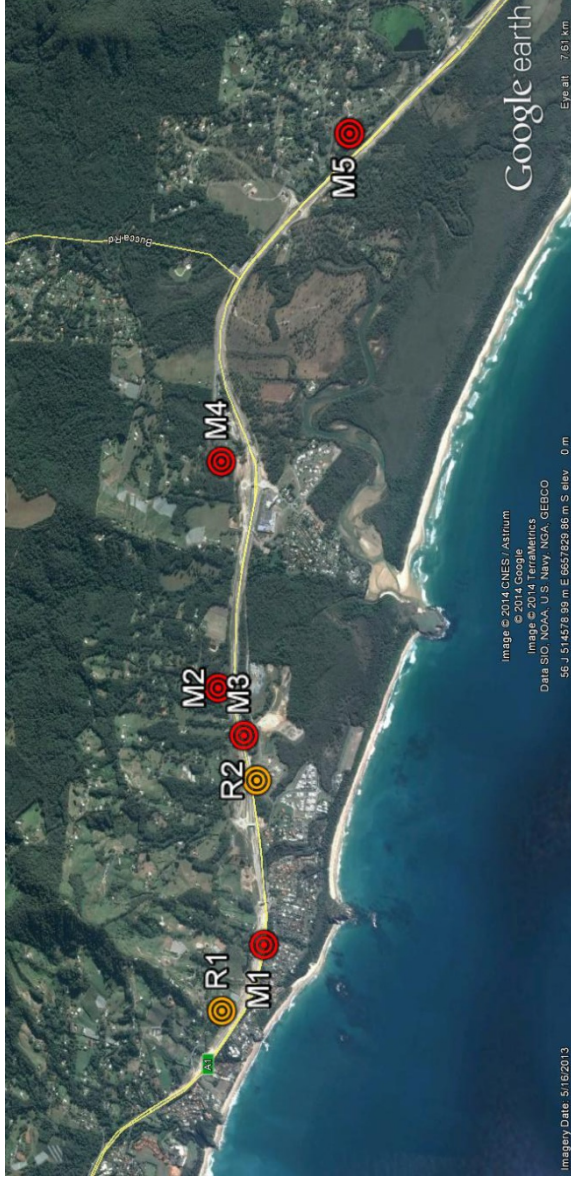
- ground topography (eg. mounds, cuttings etc)
- traffic volumes
- percentage of heavy vehicles
- vehicle speeds
- noise walls, retaining walls etc
- buildings
- reflections from walls, buildings etc



Where will Noise Monitoring be Conducted?

- Noise monitoring is planned to be conducted in **October 2014**
- Where possible, noise monitoring will be at the same 8 locations presented in the Operational Noise Management Report (ONMR). Additional locations have also been identified for monitoring and will be reviewed through this consultation process
- Weather conditions will be monitored at 2 locations (southern & northern ends of project) to obtain site specific weather data

Proposed Noise Monitoring Locations



Noise Monitoring Equipment

- Noise monitoring carried out in accordance with:
 - Australian Standards
 - State Government policies and guidelines
- Noise loggers consist of sound level meters housed in weather resistant cases where noise levels are measured continuously, data stored and the sound of unusual events recorded
- The logger is calibrated prior and subsequent to the monitoring period to ensure its measurements are correct



Noise Monitoring Procedure

- Minimum seven (7) valid days of monitoring
- Adverse weather and non-traffic noise influences are excluded from the monitoring data
- Noise monitors placed at 1m from the most exposed building facade and at a height of 1.5m above the floor level



Long term (unattended) noise monitor at 1m from facade

Noise Monitoring Procedure continued

- Where a location is a multi-storey dwelling or elevated dwelling, then concurrent short term (attended) noise measurements are conducted on the upper level (eg. first level) and long-term (unattended) at ground floor level, to check against modelled results



Concurrent short term (attended) noise measurements