Appendix C

Construction traffic noise assessment

global environmental solutions

Northern Sydney Freight Corridor Program

Epping to Thornleigh Third Track Project

Input to Submissions Report

Construction Traffic Noise Impact Assessment

Report Number 610.10578-R5

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Transport for NSW
Locked Bag 6501
ST LEONARDS NSW 2065

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Northern Sydney Freight Corridor Program

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PREPARED BY:

SLR Consulting Australia Pty Ltd
ABN 29 001 584 612
2 Lincoln Street Lane Cove NSW 2066 Australia

(PO Box 176 Lane Cove NSW 1595 Australia)
T: 61 2 9428 8100 F: 61 2 9427 8200
E: sydney@slrconsulting.com www.slrconsulting.com

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610.10578-R5	Revision 0	19 February 2013	Joshua Ridgway	Briony Croft Robert Hall	Briony Croft

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1 INTRODUCTION

SLR Consulting Australia Pty Ltd (SLR Consulting) has been engaged by Transport for NSW (TfNSW) to assess the potential noise and vibration impacts associated with operation and construction of the Epping to Thornleigh Third Track (ETTT) Project as part of the Northern Sydney Freight Corridor (NSFC) Program. The impacts have been assessed and are reported in SLR Consulting Report *610.10578-R3 Northern Sydney Freight Corridor Program, Epping to Thornleigh Third Track Project, Environmental Noise and Vibration Impact Assessment, Construction and Operation* dated 5 September 2012.

This report acts as an addendum to that report and addresses issues regarding noise impacts from construction traffic on public roads raised in Submissions following Public Exhibition of the Environmental Impact Statement (EIS) for the ETTT project.

2 SUMMARY OF ISSUES

The following table outlines the issues considered in this report.

Table 1 Summary of Issues Considered

Item	Raised by	Issue Description	Response Provided in
1	EPA	S.15: An assessment of the potential impact of construction traffic noise is required, together with a discussion of potential mitigation and management measures.	**Section 4**
2	EPA	S.25: Cumulative impacts associated with construction traffic noise have not been adequately considered in the EIS. This issue should be addressed in the Submissions Report..	**Section 5**

3 CONSTRUCTION TRAFFIC NOISE IMPACT ASSESSMENT METHODOLOGY

When trucks and other vehicles are operating within the boundaries of the rail corridor construction sites, noise levels for the proposed works are assessed in accordance with the *Interim Construction Noise Guideline* (ICNG) and TfNSW's *Construction Noise Strategy*. That is, road vehicle noise contributions are included in the overall predicted $L_{Aeq(15minute)}$ construction noise emissions. This assessment is included in the Construction Noise and Vibration chapter of *Northern Sydney Freight Corridor Program, Epping to Thornleigh Third Track Project, Environmental Noise and Vibration Impact Assessment, Construction and Operation*, Technical Paper 2 of the EIS, dated 5 September 2012.

When construction related traffic moves onto the public road network, a different noise assessment methodology is appropriate as vehicle movements would be regarded as "additional road traffic" rather than as part of the construction site. The ICNG does not provide specific guidance in relation to acceptable noise levels associated with construction traffic. For assessment purposes, guidance is taken from the EPA's *NSW Road Noise Policy* (RNP).

The criteria for freeway/arterial/sub-arterial and local roads are set out in **Table 2**.

Table 2 RNP Road Traffic Noise Criteria for Residential Land Uses

Road Category	Type of Project/Land Use	Day (7.00 am to 10.00 pm)	Night (10.00 pm to 7.00 am)
Freeway/arterial/ sub-arterial roads	Existing residences affected by **additional traffic** on existing freeways/arterial/sub-arterial roads generated by land use developments	$L_{Aeq(15hour)}$ 60 dBA (external)	$L_{Aeq(9hour)}$ 55 dBA (external)
Local roads	Existing residences affected by **additional traffic** on existing local roads generated by land use developments	$L_{Aeq(1hour)}$ 55 dBA (external)	$L_{Aeq(1hour)}$ 50 dBA (external)

Predicted construction traffic noise emissions from both heavy vehicle and light vehicle movements from the ETTT project have been assessed against the criteria set out in **Table 2**.

It is understood that heavy vehicles will not be required to wait at idle while on public roads. Therefore, noise impacts associated with idling heavy vehicles are not considered in this assessment.

One of the objectives of the RNP is to protect sensitive receivers against excessive decreases in amenity as the result of a project by applying relevant noise increase criteria. In assessing feasible and reasonable mitigation measures, an increase of up to 2 dB represents a minor impact that is considered barely perceptible to the average person.

On this basis, construction traffic Noise Management Levels (NMLs) set at 2 dB above the existing road traffic noise levels during the daytime and night-time periods are considered appropriate to identify the onset of potential noise impacts. Where the road traffic noise levels are predicted to increase by more than 2 dB as a result of construction traffic, consideration will be given to applying feasible and reasonable noise mitigation measures to reduce the potential noise impacts.

4 ETTT CONSTRUCTION TRAFFIC NOISE ASSESSMENT

4.1 Arterial and Sub-arterial roads

The estimated peak vehicle numbers for both heavy and light construction vehicles on each of the roads that make up the main access routes to the site access points are shown for arterial and sub-arterial roads in **Table 3**. These estimated peak vehicle numbers are based on the estimated hourly construction vehicle trips on a typical working weekday provided in *Epping to Thornleigh Third Track – Traffic & Transport Assessment*, Technical Paper 4 of the EIS, dated September 2012. All vehicle numbers are both directions combined.

Annual Average Daily Traffic (AADT) data from the Roads and Maritime Services (RMS) website has been used to determine the existing traffic volumes on the main access routes to the ETTT sites in order to determine any increase in traffic noise levels (shown in **Table 4**) and assess it against the 2 dB increase criteria.

Table 3 Construction Vehicle Numbers – Arterial and Sub-Arterial Roads

Vehicle Route	Road Type	Peak Construction Traffic			Existing Peak Vehicles per hour		
		Heavy Vehicles per Hour (7 am to 6 pm)	Light Vehicles per hour (3 pm to 7 pm)	Light Vehicles per hour (6 am to 7 am)	Heavy Vehicles per Hour (7 am to 6 pm)	Light Vehicles per hour (3 pm to 7 pm)	Light Vehicles per hour (6 am to 7 am)
Epping Road	Arterial	4	5	17	161	1946	555
Beecroft Road – South of M2 Motorway	Sub-arterial	8	9	34	239	2883	822
Beecroft Road – North of M2 Motorway	Sub-arterial	10	17	68	166	1998	569

Note 1: All traffic numbers are both directions combined. Existing hourly peak traffic has been estimated from daily AADT data for comparison with the construction traffic hourly data.

Table 4 Estimated Peak Traffic Noise Increase – Arterial and Sub-Arterial Roads

Vehicle Route	Road Type	Increase due to ETTT Construction Traffic	
		$L_{Aeq(15hour)}$ Daytime (dBA)	$L_{Aeq(9hour)}$ Night-time (dBA)
Epping Road	Arterial	no change	no change
Beecroft Road – South of M2 Motorway	Sub-arterial	no change	no change
Beecroft Road – North of M2 Motorway	Sub-arterial	0.1 dBA	0.1 dBA

Noise from construction vehicle movements on the arterial and sub-arterial roads (Epping Road and Beecroft Road) is not predicted to increase existing noise levels on Epping Road or on Beecroft Road south of the M2 Motorway. Construction vehicle movements on Beecroft Road north of the M2 Motorway are expected to increase existing noise levels by 0.1 dB during both the daytime and night-time periods. The predicted noise level increase due to ETTT construction traffic on all identified arterial and sub-arterial roads is considered negligible.

4.2 Local Roads

The estimated peak vehicle numbers for both heavy and light construction vehicles on each of the roads that make up the main access routes to the site access points are shown for local roads in **Table 5**. These estimated peak vehicle numbers are based on the estimated hourly construction vehicle trips on a typical working weekday provided in *Epping to Thornleigh Third Track – Traffic & Transport Assessment*, Technical Paper 4 of the EIS, dated September 2012. All vehicle numbers are both directions combined.

Also shown in **Table 5** for reference are the existing peak vehicles per hour on these roads, where this information is available from hourly vehicle volumes at key intersections. The existing peak hour is unlikely to coincide directly with the peak construction traffic times. For this reason, the construction traffic noise contribution has been calculated in the absence of existing traffic and is shown in **Table 6**.

Table 5 Estimated Peak Construction Vehicle Numbers – Local Roads

Vehicle Route	Road Type	Peak Construction Vehicles per Hour			Existing Vehicles per hour during AM Peak Period[1]
		Heavy Vehicles (7 am to 6 pm)	Light Vehicles (3 pm to 7 pm)	Light Vehicles (6 am to 7 am)	
Old Beecroft Road	Local	4	9	34	30
Cheltenham Road	Local	12	17	68	353
The Crescent – East of Cheltenham Road	Local	4	9	34	Not available
The Crescent – West of Cheltenham Road	Local	8	9	34	Not available
Wongala Crescent	Local	4	9	34	Not available
Yarrara Road [2]	Local	4	9	34	1141

Note 1: Existing vehicles per hour during the AM peak period is based on peak hour traffic volumes reported in Figure 2.8 of *Epping to Thornleigh Third Track – Traffic & Transport Assessment*, Technical Paper 4 of the EIS, dated September 2012.

Note 2: Yarrara Road is a sub-arterial road, but no daily AADT data is available. It has therefore been assessed with the local roads on the basis of peak hourly traffic data.

Table 6 Peak Construction Traffic Noise Contribution at Nearest Receiver – Local Roads

Vehicle Route	Nearest Receiver Distance to Road (m)	ETTT Construction Vehicles Only	
		$L_{Aeq(1hour)}$ Daytime (dBA) – Light and Heavy Vehicles	$L_{Aeq(1hour)}$ Night-time (dBA) – Light Vehicles Only
Old Beecroft Road	12	53	**54**
Cheltenham Road	13	**56**	**54**
The Crescent – East of Cheltenham Road	16	52	**53**
The Crescent – West of Cheltenham Road	9	**56**	**55**
Wongala Crescent	13	52	**54**
Yarrara Road	7	55	**56**

Note 1: Existing vehicles per hour during the AM peak period is based on peak hour traffic volumes reported in Figure 2.8 of *Epping to Thornleigh Third Track – Traffic & Transport Assessment*, Technical Paper 4 of the EIS, dated September 2012.

The peak 1-hour construction vehicle movements along the roads in **Table 6** indicate the potential for exceedance of the local road $L_{Aeq(1hour)}$ RNP Road Traffic Noise Criteria by up to 1 dB during the daytime and up to 6 dB during the night-time. The potential night-time impact is restricted to the one hour of proposed light vehicle movements between 6:00 am and 7:00 am, with no other traffic movements proposed during the night-time period. Heavy vehicle movements would occur after 7:00 am.

Cheltenham Road and Yarrara Road have relatively high existing peak traffic flows in comparison to the peak construction vehicles per hour. On these roads, it is unlikely that peak construction vehicle movements will increase the existing traffic noise level significantly in either the daytime or night-time periods.

Existing peak traffic numbers for Wongala Crescent and The Crescent (both east and west) are not available. Old Beecroft Road has an existing peak traffic flow of approximately the same number of vehicles per hour as the peak one hour period of construction traffic. On these roads, noise from construction traffic is likely to be noticeable and all feasible and reasonable mitigation measures should be implemented. Existing traffic noise should be confirmed during the development of site-specific Construction Noise and Vibration Management Plans in the detailed design stage.

5 CUMULATIVE CONSTRUCTION TRAFFIC NOISE ASSESSMENT

The ETTT project is proposed to be constructed concurrently to the North West Rail Link (NWRL) project, therefore, the cumulative noise impacts from construction traffic from these two projects has been considered. Cumulative impacts with the NWRL project have been assessed with consideration of the predicted NWRL construction road traffic noise. Information relating to the NWRL project has been taken from the corresponding EIS for NWRL (*Environmental Impact Statement Stage 1-Major Civil Construction Works* Volume 1A).

Two of the NWRL construction sites (and site access roads) would be located in close proximity to the proposed ETTT construction traffic routes. These site locations comprise the construction sites for the Epping Services Facility and Cheltenham Services Facility.

Site access for the NWRL Epping Services Facility is proposed via Carlingford Road and Beecroft Road (using the sections both north and south of the M2 Motorway). Carlingford Road is not designated as a main access route for the ETTT site access so only construction traffic noise on Beecroft Road from the NWRL and ETTT projects is considered to have the potential for cumulative noise impacts at this site.

Site access for the Cheltenham Services Facility is via Beecroft Road and Kirkham Street. Kirkham Street is not designated as a main access route for the ETTT site access so only construction traffic noise on Beecroft Road from the NWRL and ETTT projects is considered to have potential for cumulative noise impacts at this site.

Cumulative construction traffic noise from the Epping Services Facility, the Cheltenham Services Facility, and the ETTT project on Beecroft Road (both north and south of the M2 Motorway) are assessed in **Table 7**. The estimated peak vehicle numbers for ETTT are those used in **Table 3** and the NWRL numbers are based on anticipated daily heavy vehicle and light vehicle movements provided in Chapter 9 of NWRL *Environmental Impact Statement Stage 1-Major Civil Construction Works* Volume 1A.

Table 7 Combined Peak Construction Traffic Numbers – ETTT and NWRL

Vehicle Route	Road Type	Peak Construction Traffic ETTT + NWRL			Existing Peak Vehicles per hour		
		Heavy Vehicles per Hour (7 am to 6 pm)	Light Vehicles per hour (3 pm to 7 pm)	Light Vehicles per hour (6 am to 7 am)	Heavy Vehicles per Hour (7 am to 6 pm)	Light Vehicles per hour (3 pm to 7 pm)	Light Vehicles per hour (6 am to 7 am)
Beecroft Road – South of M2 Motorway	Sub-arterial	29	35	136	239	2883	822
Beecroft Road – North of M2 Motorway	Sub-arterial	31	43	170	166	1998	569

Note 1: All traffic numbers are both directions combined. Existing hourly peak traffic has been estimated from daily AADT data for comparison with the construction traffic hourly data.

Table 8 Estimated Cumulative Traffic Noise Increase – ETTT and NWRL

Vehicle Route	Road Type	Increase due to ETTT + NWRL Construction Traffic	
		$L_{Aeq(15hour)}$ Daytime (dBA)	$L_{Aeq(9hour)}$ Night-time (dBA)
Beecroft Road – South of M2 Motorway	Sub-arterial	0.1 dBA	0.1 dBA
Beecroft Road – North of M2 Motorway	Sub-arterial	0.2 dBA	0.1 dBA

Predicted noise increases on Beecroft Road from cumulative construction vehicle movements from both the NWRL project and the ETTT project are expected to be up to 0.2 dB which is considered negligible.

6 MITIGATION MEASURES

The RNP recognises that there are generally more opportunities to minimise noise impacts from new roads and road corridors, especially those in greenfield locations, through judicious road design and land use planning. The scope to reduce noise impacts from existing roads and corridors is more limited. Additionally, as noise impacts from construction traffic are temporary, permanent mitigation measures are not deemed reasonable.

Reasonable and feasible general mitigation measures for construction traffic noise impacts may include:

- Conducting public communications to inform the community and local residents of vehicle movements and anticipated impacts from construction traffic.
- Traffic management.
- Restriction of heavy vehicle movements at certain times.
- Management of vehicle queues / relocation of vehicle queues away from sensitive receivers.
- Temporary noise barriers around high traffic areas, such as site entrances.

- Briefing of the work team in order to create awareness of the locality of sensitive receivers and the importance of minimising noise emissions, such as ensuring vehicle radios are turned down, car doors are not slammed, vehicles are driven in a sensible manner, etc.
- Encouraging the use of alternative modes of travel to the work sites, such as public transport. Encouraging car-pooling where alternatives are not practical.

The above mitigation measures and other reasonable and feasible mitigation measures should be considered during the development of site-specific Construction Noise and Vibration Management Plans in the detailed design stage.