

10 December 2015

610 13569 Letter (CNIA spotcheck summary) 2015.12.10.docx

Sydney Motorway Corporation
Level 18, 101 Miller Street
NORTH SYDNEY NSW 2060

Attention: David Kelly

Dear David

**WestConnex M4 East
Construction Noise Strategy
Noise Logger Spotchecks**

Sydney Motorway Corporation (SMC) and Roads and Maritime Services (RMS) have requested SLR undertake spot-checks of predicted construction noise from the M4 East works. The purpose of this check is to check that the proposed mitigation measures designed for the receivers exposed to the highest construction noise levels also address impacts at greater distances further back in the catchment.

I trust the information contained in this letter meets your immediate requirements, however please feel free to contact me with any further queries.

Yours sincerely



ROBERT HALL
Associate

Checked/
Authorised by: MH

Additional Noise Logging Locations

Additional logger surveys have been undertaken within the M4 East study area. In total, an additional 14 noise loggers were deployed at various times between 13 and 26 October 2015 and the results were outlined in SLR letter report *610.13569 M4 East Additional Noise Logging Summary 20151030* to SMC dated 30 October 2015. The noise logger results are summarised in **Table 1**.

Table 1 Summary of unattended noise logging results - 16 October to 26 October 2015

LOC ID	NCA	Address	RBL (dBA) ¹			LAeq (dBA) ²		
			Day	Eve	Night	Day	Eve	Night
ADD01	01	10 Welfare Street, Homebush West	51	49	46	58	57	55
ADD02	03	38 Loftus Crescent, North Strathfield	44	40	37	61	60	57
ADD03	04	50 Underwood Road, Homebush	47	45	37	65	63	59
ADD04	04	18 Elliott Street, North Strathfield	42	42	41	54	55	50
ADD05	06	5 Carrington Street, North Strathfield	43	42	39	55	54	50
ADD06	09	5 Thornleigh Avenue, Concord	42	40	38	55	54	49
ADD07	09	15 Edward St, Concord	42	42	39	54	54	50
ADD08	12	12 Luke Avenue, Burwood	50	50	43	59	59	58
ADD09	12	6 Loftus Street, Concord	49	47	41	60	59	54
ADD10	12	174 Queens Road, Canada Bay	57	50	42	70	69	65
ADD11	13	28 Page Avenue, Ashfield	47	46	40	58	57	55
ADD12	14	5 Wolseley Street, Haberfield	45	45	42	57	55	54
ADD13	14	26 Walker Avenue, Haberfield	41	43	37	55	54	51
ADD14	18	1 Walker Avenue, Haberfield	45	45	39	58	57	54

Note 1. A total of 15 noise loggers were originally deployed as part of this study; however, one noise logger malfunctioned so this has been excluded from the results discussed in this study.
2. RBL noise levels have been derived from a total of 7 valid days of noise logging data between 16 October and 26 October as per the definitions in the NSW Industrial Noise Policy.

Overview of approach to establishing NCAs

Historically, RMS has used NCAs on road projects to assist in identifying feasible and reasonable noise mitigation measures for construction noise. The standard approach is to evaluate construction noise levels against criteria determined at the most exposed receivers in the catchment. The use of an NCA is noted as not being an *Interim Construction Noise Guideline* (ICNG) requirement.

Rather than refining the NCA's further into additional smaller, somewhat arbitrary catchment zones with assigned RBLs and criteria, RMS, has proposed to use the additional noise logging locations to provide a spot check to determine whether the proposed mitigation designed for receivers with the highest construction noise exposure is appropriate at other locations in the catchment.

RMS believes that this approach better takes into account the complex variability of RBL across a catchment. This changes the definition of an NCA to a zone where receivers are affected by the same construction works rather than having the same RBL. This revised definition provides a logical zone for community consultation about the work site.

This approach also avoids the issue of defining criteria at further arbitrarily grouped receivers which may over or under estimate noise impacts. The impacts and mitigation can be refined in further detail during the development of the CNVMP and again following verification measurements of actual construction noise or in response to community concerns. A key refinement task in the CNVMP will be confirming receivers that are eligible for alternative accommodation.

The following assessment evaluates construction noise levels relative to the RBL at the spot check locations and evaluates if the mitigation identified for the NCA in the EIS is appropriate and whether additional mitigation is required. This provides a bounded risk based approach to identifying feasible and reasonable noise mitigation and likely impacts for the NCA.

Construction noise strategy - spot-check scenarios

The key triggers at the spot check locations that would require consideration of additional construction noise mitigation are the following:

- Daytime Works.

For daytime works, mitigation (other than letterbox drops) is controlled by highly noise affected receivers (>75dBA) where respite periods may need to be considered. This scenario is summarised in Section 10 of the M4E noise and vibration technical paper.

- Long Term 24/7 Works

Consideration of at-property treatments where LAeq(15minute) from long term 24/7 works exceeds RBL + 5 dBA (ie above the NML). This is a key consideration for mitigation requirements.

- Short Duration, High Noise Works

Additional offers of alternative accommodation. This may be made where the night-time construction LAeq(15minute) exceeds the RBL by more than 30 dBA.

It is noted that these scenario spot-checks are only indicative of the Planning Stage information, and would need to be confirmed during the CNVMP.

Spot-check summary

The EIS construction noise model was used to predict worst-case construction noise levels at the location of the additional noise loggers. Using these predictions, the spot-check scenario validations were undertaken as outlined in **Table 2**.

It is noted that the construction noise predictions at the spot-check locations take no account of shielding provided by fences outside of the road corridor (eg residential fences) and the noise levels may therefore be significantly over predicted and conservative. The noise model only included relevant refinement at the nearest receivers most exposed to the construction works as identified in the EIS.

Table 2 Spot-checks at logger locations

Logger Location	NCA	Worst-case predicted construction noise level LAeq(15minute) (dBA)							Long term 24/7 works (night-time)		Short duration, high noise works (night-time)							
		Site Establishment	Temp Road & intersection Mods	Compounds	Roadworks	Tunnelling	Demolition Acquisition Buildings	Fixed Facilities	CHECK 2 criteria (RBL + 5 dB)	Tunnelling	CHECK 3 criteria (RBL + 30 dB)	Site Establishment	Temp Road & intersection Mods	Compounds	Roadworks	Tunnelling	Demolition Acquisition Buildings	Fixed Facilities
ADD01	01	69	<30	44	67	<30	<30	<30	51	-	76	-	-	n/a	-	-	n/a	-
ADD02	03	45	<30	36	45	<30	<30	<30	42	-	67	-	-	n/a	-	-	n/a	-
ADD03	04	68	<30	59	67	42	<30	<30	42	-	67	Y	-	n/a	-	-	n/a	-
ADD04	04	63	<30	54	63	45	<30	<30	46	-	71	-	-	n/a	-	-	n/a	-
ADD05	06	76	39	62	79	49	<30	<30	44	Y	69	Y	-	n/a	Y	-	n/a	-
ADD06	09	74	38	58	77	66	31	<30	43	Y	68	Y	-	n/a	Y	-	n/a	-
ADD07	09	80	38	67	84	69	<30	<30	44	Y	69	Y	-	n/a	Y	-	n/a	-
ADD08	12	74	61	66	<30	46	38	34	48	-	73	Y	-	n/a	-	-	n/a	-
ADD09	12	72	45	64	<30	58	34	34	46	Y	71	Y	-	n/a	-	-	n/a	-
ADD10	12	80	46	73	<30	70	43	36	47	Y	72	Y	-	n/a	-	-	n/a	-
ADD11	13	73	42	66	58	58	<30	<30	45	Y	70	Y	-	n/a	-	-	n/a	-
ADD12	14	81	40	74	62	62	<30	<30	47	Y	72	Y	-	n/a	-	-	n/a	-
ADD13	14	81	46	64	85	54	34	<30	42	Y	67	Y	-	n/a	Y	-	n/a	-
ADD14	18	83	46	76	72	58	34	<30	44	Y	69	Y	-	n/a	Y	-	n/a	-

The information presented in **Table 2** indicates the following:

- **Long term 24/7 works.** The RBL + 5 dB (ie above above NML)) is exceeded at the following locations:
 - ADD05, ADD06 and ADD07 which are in the vicinity of the Concord Road tunnel site
 - ADD09 and ADD10 which are in the vicinity of the Cintra Park tunnel site
 - ADD11, ADD12, ADD13 and ADD14 which are in the vicinity of the Northcote Street tunnel site
- **Short duration, high noise works (night-time).** RBL+30 dBA is potentially exceeded at locations generally throughout the study area during noise intensive site establishment works, if required to be undertaken during the night-time at the outer extents of the works areas. This reflects the large works area for this construction scenario. RBL+30dBA is potentially exceeded at the following locations during noise intensive road works if required to be undertaken during the night-time at the outer extents of the works areas:
 - ADD05, ADD06 and ADD07 which are in the vicinity of the Concord Road interchange
 - ADD13 and ADD14 which are in the vicinity of the Wattle Street interchange

Discussion

The spot-checks indicate potential long-term NML exceedances in the NCAs surrounding the tunnel sites. This is consistent with the outcomes of the EIS Noise and Vibration Technical Paper which recommends noise mitigation measures for the benefit of all NCAs surrounding the tunnel sites (refer to Section 10.8.3 in the EIS noise and vibration technical paper). Receivers above the NML in each NCA are identified in Appendix Q and Appendix R of the noise and vibration technical paper. Mitigation in the form of acoustic sheds and temporary hoarding is considered feasible and reasonable for these sites. Note that additional noise logger ADD12 indicated lower RBLs than assumed in the EIS, however the proposed mitigation at this site was also shown to meet the nominated NML exceedance limits at receivers in NCA13 opposite Parramatta Road (with receivers also located close to the site) which were based on the lower RBLs at L13 (daytime 46dBA, evening 46 dBA, night-time 38 dBA). The mitigation measures are considered adequate for this site (at this stage) noting that the EIS predicted no NML exceedances for the 'with mitigation' case in this location. The impacts and mitigation would be refined in further detail during the development of the CNVMP and again following verification measurements of actual construction noise or in response to community concerns.

The spot-checks also indicate potential short duration, high noise impacts in the NCAs surrounding the site establishment and road works, should these works be required during the night-time at the outer extents of the works areas. This is consistent with the outcomes of the EIS noise and vibration technical paper. It is anticipated that the finalised requirements for out of hours works (OOHWs) would be determined at a later design stage. We understand that any OOHWs would be subject to a separate approval on a case-by-case basis and would likely require approval under the project's Environment Protection Licence (EPL).

Conclusion

The mitigation requirements at the spot-check locations have been reviewed. It was found that the recommended noise mitigation measures as outlined in the EIS noise and vibration technical paper are appropriate for the proposed works.