

Table 31 Traffic Movements with and without ILC Operation

Road	Assessment Period	2005 without ILC ¹		Approved 2016 with ILC ¹		2016 without ILC		2017 with ILC (MOD 14)	
		Measured Movement	% Heavy Vehicles	Estimated Movement	% Heavy Vehicles	Estimated Movement	% Heavy Vehicles	Estimated Movement	% Heavy Vehicles
Liverpool Road (Hume Highway)	Daytime (15hour) ²	39125	6%	58206	6%	57819	6%	58793	6%
	Night-time (9hour) ²	6300	6%	9645	7%	9553	7%	10280	7%
Roberts Road	Daytime (15hour) ²	55252	11%	54928	11%	53767	10%	54813	11%
	Night-time (9hour) ²	10600	13%	10408	12%	10133	11%	10676	12%
Cosgrove Road	Daytime (15hour) ²	- ³	- ³	88'89	12%	8502	10%	8918	13%
	Night-time (9hour) ²	- ³	- ³	1684	12%	1592	11%	2055	10%

Note 1: Based on "Table 11-11 Traffic Movements per Year With and Without the ILC" from EA (2005).

Note 2: Daytime 7:00 am to 10:00 pm, Night-time 10:00 pm to 7:00 am

Note 3: No baseline traffic data were provided for Cosgrove Road from EA (2005).

8.4.2 Predicted Road Traffic Noise

Traffic noise levels at the potentially noise affected residential and non-residential receivers have been predicted in accordance with the RNP's accepted CoRTN model, as implemented by SoundPLAN. **Table 32** presents the existing 2016 traffic noise levels without the ILC operation, the "allowable traffic noise levels" based an increase of 2 dB allowance, the predicted overall traffic noise levels with the proposed MOD 14 operation and the noise increase due to the additional traffic generated by the proposed MOD 14 operation at each assessment location.

Table 32 Predicted Traffic Noise Levels

ID	Location	Period	Existing Traffic Noise Levels (2017 without ILC)	Allowable Traffic Noise Level	Approved Predicted Traffic Noise Levels (2016 with ILC)	Predicted Noise Level (2016 with ILC MOD 14 Operation)	Noise Increase due to ILC MOD 14 Operation	Difference between the Approved Predicted Noise Levels and the MOD 14 Predicted Noise Levels
A4	Eastern end of Gregory Street	Daytime LAeq(15hour)	59	60	- ¹	59	0.1	NA
		Night-time LAeq(9hour)	55	57	- ¹	56	0.3	NA
A7	554 Liverpool Road	Daytime LAeq(15hour)	73	75	72	72	0.1	0.1
		Night-time LAeq(9hour)	69	71	69	69	0.3	0.3
A8	1 Robinson Street	Daytime LAeq(15hour)	71	73	71	71	0.1	0.0
		Night-time LAeq(9hour)	69	71	69 ²	69	0.3	0.2
A9	20 Rebecca Road	Daytime LAeq(15hour)	72	74	72	72	0.3	0.1
		Night-time LAeq(9hour)	69	70	69	69	0.2	0.1
A10	118 Roberts Road	Daytime LAeq(15hour)	70	72	70	70	0.2	0.0
		Night-time LAeq(9hour)	67	69	67	67	0.3	0.1
A13	Greenacre Bowling Club, Roberts Road	Daytime LAeq(15hour)	76	78	76	76	0.2	0.0

Notes: 1. No traffic noise predictions provided for Cosgrove Road from EA (2005).

2. The EA presented a noise level of 66 dBA, assumed to be a typographical error as it is below the existing no ILC noise level. A calculated noise level of 69 dBA is shown in the table.

The noise predictions presented in **Table 32** shows that the traffic noise levels are likely to be increased in the range of 0.1 dB to 0.3 dB at assessment locations due to the proposed ILC MOD 14 operation. Such minor traffic noise increases are much lower than the 2 dB allowance in accordance with Section 3.4 of the RNP. Therefore, traffic noise generated by the proposed MOD 14 operation complies with the NSW RNP.

The noise predictions presented in **Table 32** also shows that the traffic noise levels from the proposed MOD 14 operation will remain the same or below the approved traffic noise levels presented in 2005 EA for the daytime period, and likely to be increased by up to 0.3 dB at assessment locations during night-time period.

9 VIBRATION

Ground vibration will be generated from both construction and operational activities from the Enfield ILC site. However, a review of the construction and operational equipment lists (**Table 12** and **Table 10**) has shown that no significant ground vibration generate equipment will be used for the proposed MOD 14 construction or operation activities. In addition, ground vibration is potentially significant within approximately 25 metres from the activities. The nearest potential vibration affected residential receiver is located approximately 50 metres away from the Enfield ILC site. It is unlikely that the proposed MOD 14 construction and operational activities will cause significant ground vibrations at the nearest residential properties and therefore will not be further discussed in this assessment.

10 CONCLUSION

SLR has undertaken a noise impact assessment for the proposed modification (MOD 14) of the existing operation at Enfield ILC. The assessment has considered predicted noise of the proposed operations against the maximum allowable operational noise contributions prescribed under the Project Approval (Condition 2.17).

For construction activities associated with MOD 14 during standard working hours, the predicted worst-case construction noise levels are likely to exceed the CNML by up to 30 dBA at assessment locations and the HNAL are likely to be exceeded by up to 6 dBA only at location A5. The worst-case construction noise levels are predicted as up to 81 dBA at location A5 which is the same as predicted noise levels in the EA (2005). No further construction noise impact is expected at the assessable locations compare with EA.

For MOD 14 operational activities during daytime period, the predicted LAeq(15minute) intrusive noise levels comply with the Project Approval Condition 2.17 at all assessment locations under neutral weather conditions. Under enhanced weather conditions, minor noise exceedance of up to 2 dBA were found at assessment location A5. Compliance of the MCoA 2.17 daytime external amenity LAeq(period) criteria was achieved under both neutral and enhanced weather conditions.

During evening period, the predicted operational intrusive noise levels LAeq(15minute) and amenity noise levels LAeq(period) comply with the Project Approval Condition 2.17 at all assessment locations under both neutral and enhanced weather conditions.

During night-time period, the predicted operational intrusive noise levels LAeq(15minute) are likely to exceed the MCoA 2.17 noise criteria by up to 2 dBA at assessment location A1 under neutral weather conditions, and up to 5 dBA, 2 dBA and 3 dBA at assessment location A1, A3 and A5 under enhanced weather conditions. Minor amenity LAeq(period) exceedance of up to 3 dBA were found at assessment location A1 under enhanced weather conditions. Minor night-time sleep disturbance LA1(1minute) noise exceedance of up to 4 dBA were found at location A1 under neutral weather conditions. Under enhanced weather conditions, minor night-time sleep disturbance LA1(1minute) noise exceedance of up to 4 dBA and 3 dBA were found at location A1 and A5.

MOD 14 proposes a change in truck-to-truck freight movements for proposed warehouses with no direct interface with rail sidings. The incremental change in noise level has been examined compared to MOD 12 operations and the net MOD 14 impacts summarised as follows.

- The LAeq(15minute) intrusive noise levels are expected to increase by the minor amount of up to 0.8 dBA during daytime and evening periods and up to 0.4 dBA during night-time period.
- The LAeq(period) amenity noise levels are expected to increase by the minor amount of up to 0.6 dBA during the daytime and evening periods and up to 0.9 dBA during night-time period.

The predicted exceedances of intrusiveness criteria are unlikely to result in significant impacts on residents due to the following considerations:

- i. The locations (A1 and A3) at which exceedances are predicted are close to existing arterial roads and/or freight rail sources that are not part of the Enfield ILC site than they are to the ILC itself. Baseline ambient noise levels measured in 2005 are higher than the worst-case predicted contributions of the ILC at these locations.
- ii. The intrusiveness criteria which apply to location A1 under MCoA 2.17 may be overly conservative because they are derived from rating background levels measured at a site (M1, 6 Jean Street) which is 75m further away from the major Roberts Road noise source than the assessment location used for modelling predictions.
- iii. The predicted worst-case intrusive noise levels from MOD 14 operation at location A5 is lower than the noise predictions from the original EA (2005) under weather enhanced conditions. Thus, there will be no significant noise impact on location A5 due to the proposed MOD 14 operation.

Noise management measures have been recommended and described in **Section 8.3.5** of this report to minimise predicted noise impacts. These are considered to be the extent of reasonable and feasible options at this time. It has been recommended to undertake operator-attended noise measurements to validate the noise predictions following commencement of site operation. With implementation of the recommended mitigation measures, it is unlikely that there would be any exceedance of the noise limits identified in the existing conditions of approval.

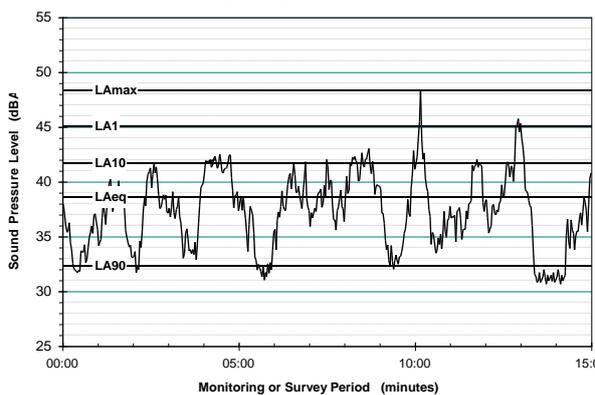
SLR has also undertaken a traffic noise impact assessment for the proposed modification (MOD 14) of the existing operation at Enfield ILC. The assessment has considered predicted traffic noise of the proposed operations against the noise criteria in accordance with NSW RNP. The existing 2016 traffic noise levels without the ILC operation exceed the NSW RNP daytime or night-time noise criteria at the assessment locations. The 2 dB allowance has been applied to the existing 2016 traffic noise level as the "Allowable Traffic Noise Level". The traffic noise increases are predicted in the range of 0.1 dB to 0.3 dB at the assessment locations due to the additional traffic generated by the proposed MOD 14 operation. Therefore, the traffic noise from the proposed Enfield ILC MOD 14 operation complies with the NSW RNP. The predicted MOD 14 traffic noise levels at the assessment locations will remain the same or below the approved traffic noise levels presented in the original EA (2005) during the daytime period and likely to be increased by up to 0.2 dB during the night-time period. Given a 2 dBA change in noise level is 'just' noticeable by most people, a 0.2 dB change will not be noticeable.

ACOUSTIC TERMINOLGY

This Report makes repeated reference to certain noise level descriptors, in particular the LA10, LA90 and LAeq and LAmix noise levels.

- The LA10 is the A-weighted sound pressure level exceeded 10% of a given measurement period and is utilised normally to characterise typical maximum noise levels.
- The LAeq is essentially the average sound level. It is defined as the steady sound level that contains the same amount of acoustical energy as a given time-varying sound over the same measurement period. The LAeq(15hour) is the measurement parameter used to describe the road traffic noise level over the entire daytime (7:00 am to 10:00 pm) period. The LAeq(9hour) is the measurement parameter used to describe the road traffic noise level over the entire night-time (10:00 pm to 7:00 am) period. Similarly, the LAeq(1hour) is the measurement parameter used to describe the road traffic noise level during the loudest 1-hour period during the daytime or night-time periods.
- The LA90 noise level is the A-weighted sound pressure level exceeded 90% of a given measurement period and is representative of the average minimum background sound level (in the absence of the source under consideration), or simply the “background” level.
- The LAmix noise level is the maximum A-weighted noise level associated with road traffic movements.

Graphical Display of Typical Noise Indices



Typical Noise Levels

The following table presents examples of typical noise levels.

Typical Noise Levels		
Sound Pressure Level (dBA)	Typical Source	Subjective Evaluation
130	Threshold of pain	Intolerable
120	Heavy rock concert	Extremely noisy
110	Grinding on steel	noisy
100	Loud car horn at 3 m	Very noisy
90	Construction site with pneumatic hammering	
80	Kerb side of busy street	Loud
70	Loud radio or television	
60	Department store	Moderate to
50	General Office	Quiet
40	Inside private office	Quiet to
30	Inside bedroom	Very quiet
20	Unoccupied recording studio	Almost silent

A-Weighting or dBA Noise Levels

The overall level of a sound is usually expressed in terms of dBA, which is measured using the “A-weighting” filter incorporated in sound level meters. These filters have a frequency response corresponding approximately to that of human hearing. People’s hearing is most sensitive to sounds at mid frequencies (500 Hz to 4000 Hz), and less sensitive at lower and higher frequencies. Thus, the level of a sound in dBA is a good measure of the “loudness” of that sound. Different sources having the same dBA level generally sound about equally as loud, although the perceived loudness can also be affected by the character of the sound (eg the loudness of human speech and a distant motorbike may be perceived differently, although they are of the same dBA level).

Sensitivity of People to Noise Level Changes

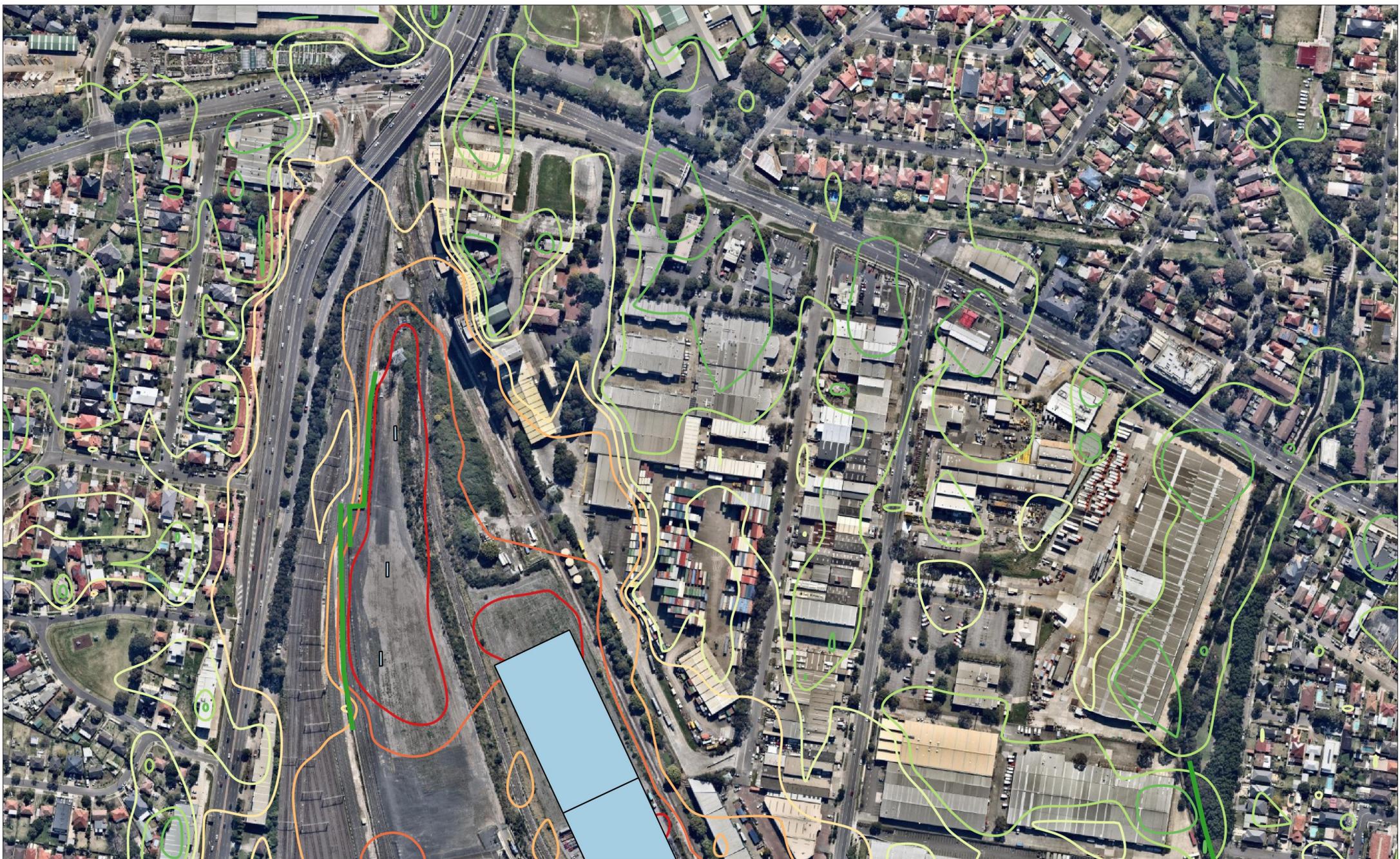
A change of up to 3 dBA in the level of a sound is difficult for most people to detect, whilst a 3 dBA to 5 dBA change corresponds to a small but noticeable change in loudness. A 10 dBA change corresponds to an approximate doubling or halving in loudness.

Appendix B1

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NOISE CONTOURS – DAYTIME CALM



2 LINCOLN STREET
 LANE COVE
 NSW 2066
 AUSTRALIA
 T: +61 2 9427 6100
 F: +61 2 0801
 www.slrconsulting.com

Project No.: 610.16722.00500
 Date: 17/01/2018
 Drawn by: YL
 Scale: 1:4,256
 Sheet Size: @A4
 Projection: GDA 1994 MGA Zone 56



Noise Contours

- 25 dBA
- 30 dBA
- 35 dBA
- 40 dBA
- 45 dBA
- 50 dBA
- 55 dBA
- 60 dBA

Legend

- Noise Barriers

Goodman Property Services (Aust) Pty Ltd

Enfield Intermodal Logistics Centre

Operational Noise Assessment - MOD 14
L_{Aeq} (15 min)
Daytime - Calm

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