

APPENDIX E

Noise and Vibration Impact Assessment

PREFACE

The technical working papers for the proposed ILC at Enfield were prepared during the first half of 2005. These were prepared in response to the requirements for the preparation of an Environmental Impact Statement (EIS) under Part 4 of the Environmental Planning & Assessment Act, 1979 (EP&A Act). Specific requirements for the EIS were issued on 1 March 2005 by the (then) Director- General of Infrastructure, Planning and Natural Resources.

The EP& A Act was amended on 1 August 2005 by the creation of Part 3A of the Act, and the Department of Infrastructure, Planning and Natural Resources was dissolved on 26 August 2005 and replaced by the Department of Planning and the Department of Natural Resources.

The proposed ILC at Enfield has since been declared a major project, pursuant to SEPP (Major Projects) 2005 and Sydney Ports has subsequently lodged an application under Part 3A of the Act.

Editorial changes to the technical working papers to reflect the changes in legislation or changes in Government departments have not been made.

The following should be considered when reading the technical papers:

- The Director-General's requirements issued under Part 4 are now deemed to have been issued under Part 3A, and any reference to the Director-General's requirements should be read as a reference to Director-General's requirements issued under Part 3A;
- Any reference to an EIS under Part 4 of the Act should be read as a reference to an Environmental Assessment under Part 3A of the Act;
- Any reference to the Department of Infrastructure, Planning and Natural Resources should be read as a reference to either the Department of Planning or the Department of Natural Resources, as appropriate.

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INTERMODAL LOGISTICS CENTRE AT ENFIELD ENVIRONMENTAL IMPACT STATEMENT NOISE AND VIBRATION IMPACT ASSESSMENT

TB867-01F04 (REV 12) FINAL EIS REPORT.DOC

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EXECUTIVE SUMMARY

Sydney Ports Corporation proposes to redevelop the former Enfield Marshalling Yards into an Intermodal Logistics Centre (ILC). This noise and vibration impact assessment assesses the environmental noise impact of the proposed construction and operation of the ILC.

The proposed ILC will provide for the shuttle transfer of containers to and from the port areas of Port Botany. The site is mostly surrounded by existing industry, which forms a buffer between the ILC and nearby residential areas to the east of Cosgrove Road and west of Roberts Road. Existing major arterial roads, Roberts Road and Liverpool Road (Hume Highway), and freight rail lines to Port Botany already service the site.

The scope of this assessment includes the environmental noise and vibration impact of the proposed construction activities, onsite operational activities and offsite road traffic associated with the ILC.

Noise levels were modelled using the ENM (Environmental Noise Model) computer program. Modelled noise emissions were then assessed against the relevant noise criteria set out in the NSW 'Industrial Noise Policy' (INP), Environmental Criteria for Road Traffic Noise' (ECRTN) and 'Environmental Noise Control Manual' (ENCM). Where necessary, recommendations were provided as to the appropriate noise mitigation measures to incorporate into the ILC design and construction.

Construction noise potentially exceeds the construction noise criteria, dependent on the duration of the construction works and the plant and equipment used. A Construction Noise Management Plan will be developed once construction activities are defined, to manage noise impact from construction activities.

Minimal traffic noise impact is expected to occur from increased traffic generated along Roberts Road and Liverpool Road. Traffic noise complies with the ECRTN.

Noise impact generated from the operation of the site was also determined, based on expected worst-case scenario events. Where exceedances above the set noise criteria are expected, recommended noise control solutions have been provided in-principle to reduce noise impacts to residential receivers. Recommended noise attenuation methods include reduction of noise at the source, construction of noise barriers and implementation of a Noise Management Plan.

Due to the distances between the ILC and nearest residences, it is highly unlikely that vibration from construction and operation activities on site will be an issue.

Cosgrove Road Residences

There is potential for noise levels generated by the proposed ILC to exceed the noise criteria at residences in Cosgrove Road, unless mitigation measures are applied. A noise barrier with a nominal height of approximately **5 metres**, constructed along the appropriate portion of the eastern boundary of the site, in combination with mitigation of noise sources themselves, would be required to reduce noise levels to compliant levels for residences to the south east.

Residences east of Cosgrove Road (& north of Dean Reserve)

There is also potential for noise levels generated by the proposed ILC to exceed the noise criteria at residences in Gregory Street, east of Cosgrove Road, unless mitigation measures are applied. Mitigation of ILC on site noise sources would be required to reduce noise levels for residences to the east. A 1dB exceedance of the criteria is expected once mitigation measures have been applied.

Wentworth Street Residences

Residences in Wentworth Street are already acoustically shielded from the site by an existing 4.5m noise barrier running along the southern end of the western boundary of the New Enfield Marshalling Yards site, along the western edge of Wentworth Street. Retention of this barrier would be sufficient to reduce noise levels to compliant levels for Wentworth Street residences.

Residences west of Roberts Road (& north of Norfolk Road)

Noise levels generated by the proposed ILC to residences west of Roberts Road (north of Norfolk Road) may potentially exceed the noise criteria. A noise barrier with a nominal height of approximately **5 metres** constructed along the western boundary of the New Enfield Marshalling Yards site (nearest to Roberts Road), in combination with noise mitigation measures applied to the on site ILC noise sources, would be required to reduce noise levels for residences surrounding the Jean Street area. A 1dB exceedance of the noise criteria is predicted to remain after all recommended noise mitigation measures have been applied.

1. INTRODUCTION

Renzo Tonin & Associates were engaged to conduct an environmental noise and vibration assessment of the proposed construction and operation of the Enfield Intermodal Logistics Centre (ILC). More specifically, this report quantifies the noise impact from road traffic and site operation noise associated with the proposed freight handling facility and assesses the potential impact on neighbouring premises close to the site. The report is to be used in the preparation of an Environmental Impact Statement for the proposed development.

This report summarises the results of noise monitoring undertaken over 10 days at representative residential premises near the site potentially affected by the proposal to determine existing background and ambient noise and existing background, ambient and road traffic noise.

Noise sources related to the construction of the ILC were identified and noise emissions were calculated at the potentially most affected neighbouring premises. Similarly, noise sources related to the operation of the ILC were identified and noise emissions were modelled to the potentially most affected neighbouring premises using well recognised and accepted noise modelling software. Noise modelling took into account the source of the activity, the locations, orientations and directivity of the noise sources, ground topography, shielding provided by buildings and structures, distance, air absorption and a range of different meteorological conditions scenarios.

Modelled noise emissions were then assessed against the relevant noise criteria set out in the NSW Industrial Noise Policy (INP, Environment Protection Authority 1999), NSW Environmental Noise Control Manual (ENCM, Environment Protection Authority 1994) and NSW Environmental Criteria for Road Traffic Noise (ECRTN, Environment Protection Authority 2000), in accordance with the Director General's requirements. Assessment was also carried out to the internal noise criteria found in Australian Standard 2107:2000 – *Acoustics – Recommended design sound levels and reverberation times for building interiors*, as requested by Strathfield Council.

The noise and vibration impact of construction and operation of the ILC is assessed and, where necessary, recommendations are provided as to the appropriate noise mitigation measures to incorporate into the ILC design and construction.

The work documented in this report was carried out in accordance with the Renzo Tonin & Associates Quality Assurance System, which is based on Australian Standard / NZS ISO 9001.

2. PROJECT DESCRIPTION

2.1 BACKGROUND INFORMATION

The NSW State Government's *Port Freight Plan for Sydney* expresses the need to achieve a modal shift in freight handling towards more movements by rail. In accordance with this, Sydney Ports Corporation proposes to redevelop the former Enfield Marshalling Yards into an Intermodal Logistics Centre, providing for the shuttle transfer of containers to and from the port areas of Port Botany. The supplementary cargo handling facility would assist in reducing the impact of vehicle congestion at Botany and on roads in the inner and middle western areas of Sydney.

The site is situated in a predominantly industrial area, with some residential areas located near the site. It is in close proximity to major arterial roads linking to the greater Western Sydney region, including Roberts Road and the Hume Highway. Dedicated freight rail infrastructure links the site with the Port Botany port.

At capacity, the proposed Enfield Intermodal Logistics Centre (ILC) will be capable of providing container handling capability of 300,000 TEU per annum. This equates to an approximate 102 truck movements in and out of the ILC in the peak hour. Approximately 10 to 20 train movements per day between Enfield and Port Botany are anticipated, with a possible regional train approximately 3 times per week.

The relevant consent authority for the project is The Minister for Infrastructure and Planning.

This report forms part of the Environmental Impact Statement for the site, which is to be lodged along with the Development Application for the proposed development. In accordance with the Director General's requirements, construction and operational noise impact from the ILC will be assessed in accordance with the NSW Industrial Noise Policy (INP), Environmental Noise Control Manual (ENCM) and Environmental Criteria for Road Traffic Noise (ECRTN).

2.2 SITE DESCRIPTION

The proposed site is the former Enfield Marshalling Yards which is bound by industrial land to the east and west and mixed industrial/residential to the north and south. Roberts Road bounds a part of the northern end of the site. Punchbowl Road bounds the southern end of the site.

The nearest affected residential locations were identified as:

- Residences on Cosgrove Road, south of Coxs Creek Channel;
- Residences on Punchbowl Road, adjacent to the rail line and opposite the site;
- Residences on Wentworth Street (south), adjacent to the southern end of site;
- Residences on Norfolk Road and Roberts Road;
- Residences on Rebecca Road and Roberts Road;
- Residences on Margaret Street, backing onto Roberts Road; and
- Residences in Gregory Street, Therry Street and McEncroe Street, Strathfield South (adjacent to Cooks River Reserve).

Other locations of sensitive-use within close proximity to the site include:

- Strathfield High School Liverpool Road, Strathfield;
- Begnell Park Cosgrove Road, Strathfield South;
- Matthews Park Cnr Roberts Road and Amarina Avenue, Greenacre; and
- Greenacre Bowling Club Cnr Moondo Street and Roberts Road, Greenacre.

For further clarification see **Figure 1**, a locality map of the site showing surrounding land use.

2.3 HOURS OF OPERATION

2.3.1 Construction

Proposed construction hours are between 7am and 6pm Monday to Saturday. ENCM guidelines state that construction activities on Saturday should only occur between 8am and 1pm, unless the activities are inaudible at the nearest residential premises. Sydney Ports intends to seek approval from DIPNR for extended construction hours on Saturday.

No construction work is to take place on Sundays or Public Holidays.

Construction work will be broken up into stages as follows:

- Stage 1 Site Preparation. This stage will involve the removal of any unsuitable or contaminated material from site, the preparation of stormwater detention basins and the preparation of sealed haul roads. This stage is expected to last 4 months;
- Stage 2 Earthworks & Drainage. This stage will involve earthworks and the construction of drainage systems, walls and embankments. This stage is expected to last 11 months;
- Stage 3 Road & Rail Infrastructure. This stage will involve the relocation of the rail line, the construction of rail sidings, warehouse pavement works, road pavement works and bridge construction. This stage is expected to last 8 months;
- Stage 4– Warehousing & Final Works. This stage will involve the construction of warehouses and other buildings on site and final landscaping works. This stage is expected to last 13 months; and
- Stage 5 Commercial/ Light Industrial Buildings. This stage will involve the construction of commercial and light industrial buildings. Separate approvals will be required for these ancillary developments, thus construction noise impact for Stage 5 is not assessed herein in any detail for this stage.

2.3.2 Operation

The facility will operate up to 24 hours per day, 7 days per week.

2.4 NOISE ISSUES

The ILC will accommodate a peak of approximately 102 truck movements in the peak hour of operation of the Enfield ILC, when maximum throughput capacity of the facility is reached around the year 2016 (reference: *Traffic Impact Assessment, Intermodal Logistics Centre, Enfield*, prepared by SKM, May 2005). There will be approximately 10 to 20 shuttle train movements between Port Botany and Enfield per day at capacity. These trains will be approximately 600m long and will arrive and depart from the southern end of the site. Shuttle trains will dominate train movements on site. Longer trains (approximately 1,000m long), bound for rural NSW, will

approach the site from the south and depart to the north. These regional train movements will occur approximately 3 times per week. Trucks will enter and exit entrances in Wentworth Street and Cosgrove Road. Containers will be unloaded and/or loaded at the ILC.

The loading/unloading area is located in the centre of the intermodal site. Containers will be stacked in suitable configurations for easy accessibility to the loading/unloading area. Empty containers will be stored in stacks in two storage areas located in the north-western and south-western corners of the site, as depicted in **Figure 2**. Large trucks carrying full or empty containers (B-doubles and articulated trucks) will enter at the centre of the site, then drive to the north to the terminal load/unload area or to the western side of one of the warehouses on site for loading/unloading. Smaller trucks carrying loose materials and goods will enter at the centre of the site, then drive to the eastern side of one of the warehouses on site for loading/unloading. Trucks are expected to spend approximately 1-2 hours on site, with a maximum of approximately 36 large trucks and 16 small trucks on site in an hour. Loading and unloading of trains will take approximately 2-3 hours, depending on the length of the train.

Potential noise emissions from the facility during the construction period and during the operational period are outlined below.

- Construction noise during the development of infrastructure on the site from operation of construction equipment and vehicles.
- Operational noise from essentially four main sources, including:
 - Intermittent noise from general operations at the site, including vehicle movement on site, vehicle weighing, loading and unloading containers using typical equipment such as forklift, reach stacker and gantry crane;
 - Continuous noise from mechanical plant associated with the site office and staff amenities;
 - Road traffic noise from additional truck movements and other road vehicles associated with the site on public roads;
 - Rail noise generated by train movement, coupling clangs and idling locomotives on site. Rail noise impact beyond the site boundaries is not assessed as part of this report. Rail noise is discussed in the EIS document.

2.5 VIBRATION ISSUES

Activities undertaken on the site during both the construction and operation stage of the project will cause ground vibration. However, depending on the type of activities undertaken, ground vibration is only potentially significant within approximately 25 metres of the activity. The types of activities carried out on site during the construction and operation stage are unlikely to cause significant ground vibration beyond 25 metres from the source.

The nearest potentially affected residential premises to the proposed ILC are approximately 50 metres away. Therefore, it is unlikely that ground vibration will be an issue on this site and is not further discussed in this report.





3. EXISTING ACOUSTIC ENVIRONMENT

Background noise varies over the course of any 24 hour period, typically from a minimum at 3am in the morning to a maximum during morning and afternoon traffic peak hours. Therefore, the NSW 'Industrial Noise Policy' (INP) requires that the level of background and ambient noise be assessed separately for the daytime, evening and night-time periods. The INP defines these periods as follows:

- Day is defined as 7:00am to 6:00pm, Monday to Saturday and 8:00am to 6:00pm Sundays & Public Holidays:
- Evening is defined as 6:00pm to 10:00pm, Monday to Sunday & Public Holidays;
- Night is defined as 10:00pm to 7:00am, Monday to Saturday and 10:00pm to 8:00am . Sundays & Public Holidays.

Traffic noise measurements were conducted to determine whether existing traffic noise levels already exceed the traffic noise criteria. Traffic noise levels are assessed separately for daytime and night time periods, defined by the NSW 'Environmental Criteria for Road Traffic Noise' (ECRTN) as follows:

- Day is defined as 7:00am to 10:00pm;
- Night is defined as 10:00pm to 7:00am.

3.1 NOISE MONITORING LOCATIONS

Noise measurements were taken at the nearest or potentially most affected residential locations. In this case the nearest and potentially most affected locations are:

6 Jean Street, Strathfield South Location M1 Back vard facing Roberts Road, free field measurement. Noise environment dominated by 'urban hum', predominantly existing traffic noise from Roberts Road. 42 Norfolk Road, Strathfield South Location M2 Front yard facing Norfolk Road, free field measurement. Noise environment dominated by 'urban hum', predominantly existing traffic noise from Roberts Road. Location M3 14 Wentworth Street (south), Greenacre Back yard facing proposed ILC site, free field measurement. Noise environment dominated by 'urban hum', predominantly existing industrial noise from the quarry to the east of the residence. 124B Dean Street. Strathfield South Location M4 Back yard, free field measurement. Noise environment dominated by 'urban hum', predominantly existing light industrial noise and traffic noise from Dean Street. Location M5 43 Blanche Street, Strathfield South Back yard facing Cosgrove Road, free field measurement and approximately 60m from Cosgrove Road. Noise environment dominated by 'urban hum', predominantly existing traffic noise from Cosgrove Road. 40 Bazentin Street, Belfield Location M6 Back yard facing, free field measurement. Noise environment dominated by 'urban hum', predominantly existing traffic noise from Punchbowl Road, with

some rail noise.

- Location M7
 554 Liverpool Road (Hume Highway), Strathfield
 Front yard facing Liverpool Road, 1m from residential facade and
 approximately 15m from Liverpool Road. Noise environment dominated by
 existing traffic noise from Liverpool Road.
- Location M8 **1 Hume Highway, Strathfield** Front yard facing the Hume Highway, 1m from residential facade and approximately 10m from the Hume Highway. Noise environment dominated by existing traffic noise from the Hume Highway.
- Location M9 20 Rebecca Road, Strathfield South Front yard facing Roberts Road, 1m from residential facade and approximately 25m from Roberts Road. Noise environment dominated by existing traffic noise from Roberts Road (north of Norfolk Road).
- Location M10 118 Roberts Road, Strathfield South Front yard facing Roberts Road, 1m from residential facade and approximately 10m from Roberts Road. Noise environment dominated by existing traffic noise from Roberts Road (south of Norfolk Road).

To quantify the existing ambient noise environment, long-term (unattended) noise monitoring was conducted over ten days, between Tuesday 15 and Thursday 25 February 2005 at Locations M2 and M7 to M10. Noise monitoring was conducted at Locations M1 and M3 to M6 between Wednesday 16 and Friday 26 February 2005. **Figure 1** shows the long term monitoring locations marked as 'M1' to 'M10'.

In addition to the above, short term, attended measurements were carried out at each measurement location to assist in defining the existing acoustic environment and to ascertain the contribution of existing industrial noise to that environment. Short term measurements were conducted immediately prior to collection of the noise monitor.

3.1.1 Noise Monitoring Instrumentation

RTA Technology noise monitors were installed on site to monitor ambient noise levels (at each selected location). The noise monitoring equipment used here complies with Australian Standard 1259.2-1990 "Acoustics - Sound Level Meters" and is designated as a Type 2 instrument suitable for field use.

A noise monitor consists of a sound level meter and a computer housed in a weather resistant enclosure. Ambient noise levels were recorded at a rate of 10 samples per second. Every 15 minutes, the data is processed statistically and stored in memory.

All noise monitors were calibrated prior and subsequent to the measurement period using a Bruel & Kjaer Type 4230 calibrator. No significant drift in calibration was observed.

Short term measurements were conducted with a Norsonics SA 110 and Brüel & Kjear 2231 sound level analyser. Statistical noise levels were acquired in both overall and octave band frequencies. These instruments comply with Australian Standard 1259.2-1990 "Acoustics - Sound Level Meters – Part 2: Integrating - averaging" and is designated as Type 1 instrument having an accuracy suitable for field and laboratory use.

The sound level analyser was calibrated prior and subsequent to the measurements using a Bruel & Kjaer Type 4231 calibrator. No significant drift in calibration was observed.

3.1.2 Noise Monitoring Interpretation

Appendix A of this report presents a description of acoustic terms. The graphically recorded output from long term noise monitoring is included in Appendix B to this report.

The graphs in Appendix B were analysed to determine a single assessment background level (ABL) for each day, evening and night period, in accordance with the NSW INP. That is, the ABL is best established by determining the lowest tenth-percentile level of the L_{90} noise data acquired over each period of interest. **Table 3.2** of **Section 3.3** presents individual ABL's for each assessment period.

The background noise level or rating background level (RBL) representing the day, evening and night assessment periods is based on the median of individual ABLs determined over the entire monitoring period. The resultant data is considered representative of the background noise levels for the area and hence suitable for use in this noise impact assessment.

The existing L_{eq} ambient noise level was calculated for each day, evening and night period, in accordance with the NSW INP. An overall representative L_{eq} noise level is determined by logarithmic averaging each assessment period for the entire monitoring period.

In calculating the RBL and L_{eq} ambient noise levels, the INP requires that measurements affected by extraneous noise, wind (greater than 5m/s) or rain must be excluded from the recorded data. In addition to this, where data is excluded from recorded data, the INP 'Data Exclusion Rule' should be followed which may invalidate a whole day, evening or night period.

The Bureau of Meteorology provided meteorological data for Canterbury AWS, considered representative of the site, for the duration of the noise monitoring period. This data was analysed and periods that experienced adverse weather were excluded from the monitoring results.

In order to assess existing traffic noise, $L_{Aeq(15hr)}$ and $L_{Aeq(9hr)}$ traffic noise descriptors were measured for arterial roads and $L_{Aeq(1hr)}$ were measured for collector roads. The existing traffic noise levels are presented in **Table 3.3** of **Section 3.3**.

3.2 NOISE ASSESSMENT LOCATIONS

In some assessment locations, the existing noise environment was characterised based on noise levels measured at the nearest representative monitoring locations. For example, noise monitoring undertaken at 6 Jean Street was considered representative of noise levels at the identified nearest and potentially worst affected location on the corner of Jean Street and Roberts Road. In summary, the monitoring locations reflect the noise environment experienced in the vicinity of the selected assessment locations surrounding the site. This methodology is considered reasonable and satisfactorily meets the NSW Department of Environment and Conservation's (DEC) noise policy requirements.

The noise monitoring and equivalent assessment locations are summarised in **Table 3.1** below. The type of assessment carried out at each assessment location is also identified in the table, which was determined from the site inspection and from aerial photographs depicting land use surrounding the site.

	Assessment Location Related Noise Monitoring Location Assessment Type							
	Residential Locations							
A1	A1 Eastern end of Jean Street, M1 6 Jean Street, Strathfield South Strathfield South			Construction/ Industrial				
A2	Eastern end of Ivy Street, Strathfield South	M2	42 Norfolk Road, Strathfield South	Construction/ Industrial				
A3	2 Wentworth St (south), Greenacre	М3	14 Wentworth St (south), Greenacre	Construction/ Industrial				
A4	Eastern end of Gregory Street, Strathfield South	M4	124B Dean Street, Strathfield South	Construction/ Industrial				
A5	Western end of Blanche Street, Strathfield South	M5	43 Blanche Street, Strathfield South	Construction/ Industrial				
A6	40 Bazentin Street, Belfield	M6	40 Bazentin Street, Belfield	Construction/ Industrial				
A7	554 Liverpool Road (Hume Highway), Strathfield	M7	554 Liverpool Road (Hume Highway), Strathfield	Road Traffic				
A8	1 Hume Highway, Strathfield	M8	1 Hume Highway, Strathfield	Road Traffic				
A9	20 Rebecca Road, Strathfield South	M9	20 Rebecca Road, Strathfield South	Road Traffic				
A10	118 Roberts Road, Strathfield South	M10	118 Roberts Road, Strathfield South	Road Traffic				
	Sen	sitive L	and Use Locations					
A11	Begnell Park, Cosgrove Rd, Strathfield South	M5	43 Blanche Street, Strathfield South	Industrial				
A12	Matthew Park, Roberts Rd, Greenacre	M10	118 Roberts Road, Strathfield South	Industrial/Road Traffic				
A13	Greenacre Bowling Club, Roberts Rd	M10	118 Roberts Road, Strathfield South	Industrial/Road Traffic				
A14	Strathfield South High, Corner Roberts Rd and Liverpool Rd	M7	554 Liverpool Road (Hume Highway), Strathfield	Industrial/Road Traffic				
A15	St Anne's School, St Anne's Square, Strathfield South	M4	124B Dean Street, Strathfield South	Industrial				

Table 3.1– Summary of Assessment Locations and their Related Noise Monitoring Locations

Figure 1 shows the assessment locations marked as 'A1' to 'A15'.

3.3 AMBIENT NOISE LEVELS

Table 3.2 presents the existing L_{eq} ambient noise level, calculated for each day, evening and night period, in accordance with the NSW EPA's INP. An overall representative L_{eq} noise level is determined by logarithmic averaging each assessment period for the entire monitoring period. It is noted that ambient noise levels measured during this period included existing industry noise from the New Enfield Marshalling Yards and other surrounding industry.

Noise Monitoring Location		L ₉₀ Back	ground Nois	se Levels	L _{eq} Ambient Noise Levels			
		Day 7am - 6pm	Evening 6pm - 10pm	Night 10pm - 7am	Day 7am - 6pm	Evening 6pm - 10pm	Night 10pm - 7am	
M1	6 Jean Street	49	49	43	59	59	52	
M2	42 Norfolk Road	48	47	42	61	61	55	
М3	14 Wentworth St (south)	44	42	37	61	63	48	
M4	124B Dean Street	44	42	40	60	56	53	
M5	43 Blanche Street	41	41	38	55	60	46	
M6	40 Bazentin Street	41	40	36	56	64	49	

Table 3.2 – Measured Existing Background (L_{90}) & Ambient (L_{eq}) Noise Levels, dB(A)

Notes: 1. Day is defined as 7:00am to 6:00pm, Monday to Saturday; 8:00am to 6:00pm Sundays & Public Holidays.

2. Evening is defined as 6:00pm to 10:00pm, Monday to Sunday & Public Holidays.

3. Night is defined as 10:00pm to 7:00am, Monday to Saturday; 10:00pm to 8:00am Sundays & Public Holidays.

At Locations M1 to M6, the noise monitor was positioned outdoors in the open, away from building facades, in accordance with general environmental noise measurement requirements.

Traffic noise levels were measured at residential locations potentially affected by road traffic noise from the proposal. Traffic noise levels for day $(L_{Aeq(15hr)})$ and night $(L_{Aeq(9hr)})$ periods in accordance with the ECRTN are presented in **Table 3.3**.

	Road Traffic	Distance	L _{eq} Traffic Noise Levels, dB(A)			
Noise Monitoring Location	Noise Source	from Road (m)	Day	Night		
M7 554 Liverpool Road	Liverpool Road	15	$L_{Aeq,15hr} = 71$	$L_{Aeq,9hr} = 67$		
M8 1 Hume Highway	Hume Highway	10	$L_{Aeq,15hr} = 70$	$L_{Aeq,9hr} = 67$		
M9 20 Rebecca Road	Roberts Road	25	$L_{Aeq,15hr} = 72$	$L_{Aeq,9hr} = 69$		
M10 118 Roberts Road	Roberts Road	10	$L_{Aeq,15hr} = 70$	$L_{Aeq,9hr} = 67$		

Table 3.3 – Measured Existing Road Traffic (L_{eq}) Noise Levels

Notes: 1. Existing traffic noise levels measured at 1m from the residential facade

2. Day is defined as 7:00am to 10:00pm; Night is defined as 10pm to 7am

Noise monitoring was conducted only at residential receiver locations. Therefore, corrections (distance and angle of view to roads) were applied to the measured noise levels to establish existing traffic noise levels at other potentially noise sensitive locations affected by road traffic noise on Roberts Road and Hume Highway (Liverpool Road), as presented in **Table 3.4**.

Table 3.4 – Established Existing Road Traffic (L_{eq}) Noise Levels at Assessment Locations, dB(A)

	Assessment Locations	Noise levels measured	Road Traffic	Distance from	L _{eq} Traffic Noise Levels	
		at:	NOISE SOULCE	Koau (iii)	$L_{Aeq,15hr}$	$L_{Aeq,9hr}$
A12	Matthew Park, Roberts Rd, Greenacre	M10	Roberts Rd	35	67	64
A13	Greenacre Bowling Club, Roberts Rd	M10	Roberts Rd	10	74	70
A14	Strathfield South High, Corner Roberts Rd and Liverpool Rd	M7	Liverpool Rd / Hume Hwy	10	74	68

Note: Calculated existing traffic noise levels are corrected to represent 'free field' noise levels. The calculated traffic noise level at Strathfield South High School does not take into account noise barriers surrounding school grounds.

4. INDUSTRIAL NOISE ASSESSMENT

4.1 INDUSTRIAL NOISE CRITERIA

4.1.1 Operational Criteria

The assessment procedure in terms of the NSW INP has two components:

- Controlling intrusive noise impacts in the short term for residences (Intrusiveness Criteria); and
- Maintaining noise level amenity for particular land uses for residences and other land uses (Amenity Criteria).

It should be noted that the Amenity Criteria are used to limit continuing increases in noise levels within an area already affected by industrial noise. The Amenity Criteria therefore control the potential cumulative impact of proposed new industrial sources in areas with existing industry. In the case of the proposed ILC, the *cumulative impact* of the existing New Enfield Marshalling Yards facility with the ILC is taken into consideration by assessing noise impact from the proposed ILC against the Amenity Criteria.

The Amenity Criteria are determined in accordance with Chapter 2 of the NSW INP. The INP recommends base acceptable noise levels for various receivers, including residential, commercial, industrial receivers and sensitive receivers such as schools, hospitals, churches and parks (the base recommended noise levels for urban residential receivers are 60, 50 and 45 dB(A) for day, evening and night respectively). These base noise criteria are then adjusted by up to 10dB depending on the extent of existing industrial noise impact upon the receiver, to ensure that the proposed new industry does not significantly increase industrial noise levels in the area. If an area is already exposed to higher levels of industrial, the Amenity Criteria are stricter, thereby limiting future increases in industrial noise and preventing 'background noise creep'. In this way the cumulative impacts of existing and known future industrial noise sources are minimised.

The Intrusiveness Criteria are determined from the background noise level plus 5 dB(A) at each location during the Day, Evening and Night.

In this noise impact assessment, industrial noise from the site is assessed at eleven locations (A1-6 and A11-15), as detailed below.

As discussed in **Section 3.2**, existing noise levels at the assessment locations were based on noise levels measured at the nearest and most relevant monitoring locations to the assessment locations. The noise monitoring locations that best represent the existing noise environment of each assessment location were determined on site and are presented here.

In accordance with the INP, noise impact should be assessed in terms of both the intrusiveness and amenity noise criteria. **Table 4.1** lists the NSW INP Industrial Noise Criteria, based on the ambient noise monitoring carried out at the nearest affected residential locations.

Strathfield Council have requested assessment to be carried out to the internal criteria in Australian Standard 2107:2000 – *Acoustics* – *Recommended design sound levels and reverberation times for building interiors*, in addition to those in the INP. Recommended indoor noise levels in AS2107 are 30 to 40 dB(A) for living areas and 30 to 35 dB(A) for sleeping areas of residential premises near major roads. Applying a conservative 10 dB(A) reduction through an open window to the strictest criteria in **Table 4.1** below shows that the INP (outdoor) criteria are similar to the indoor criteria prescribed in AS2107. The INP criteria can therefore be used as the governing criteria.

	Location	Intru: L	siveness Cı _{Aeq,15min} dB(riteria A)	Amenity Criteria ¹ L _{Aeq,period} dB(A)			
		Day	Evening	Night	Day	Evening	Night	
A1	Eastern end of Jean Street	54	54	48	54	49	42	
A2	Eastern end of Ivy Street	53	52	47	52	51	45	
A3	2 Wentworth St (south)	49	47	42	52	53	38	
A4	Eastern end of Gregory Street	49	47	45	52	46	43	
A5	Western end of Blanche Street	46	46	43	58	50	37	
A6	40 Bazentin Street	46	45	41	58	54	39	
A11	Begnell Park	-	-	-		50		
A12	Matthew Park	-	-	-		50		
A13	Greenacre Bowling Club	-	-	-		55		
A14	Strathfield South High School	-	-	-	;	35 (internal))	
A15	St Anne's School	-	-	-	:	35 (internal))	

Table 4.1 – NSW INP Industrial Noise Criteria, dB(A)

Notes: 1. Amenity Criteria modified in accordance with Tables 2.1 and 2.2, NSW INP, and the residential locations have been categorised as 'Urban'.

2. **Bold** typeface indicates strictest criteria for each location.

4.1.2 Sleep Arousal Criteria

Noise emanating from the site operations after 10:00pm and before 7:00am, has the potential for creating sleep arousal.

The NSW INP does not address the issue of sleep arousal. The NSW "Environmental Noise Control Manual" (ENCM), however makes the general observation that a person's sleep can be significantly disrupted by noise. Scientific research has established that short-duration or intermittent noise is more disturbing to sleep than continuous noise of similar acoustic energy.

Chapter 19 of the ENCM provides guidelines for assessing sleep disturbance resulting from short-duration high-level noises which occur at night (10:00pm to 7:00am according to the DEC) as follows:

"Noise control should be applied with the general intent to protect people from sleep arousal. To achieve this, the L_1 level of any specific noise source should not exceed the background noise level (L_{90}) by more than 15 dB(A) when measured outside the bedroom window."

By way of explanation, the L_1 noise level is an approximation to the average maximum noise level or L_{avmax} produced by the event as observed by noting and averaging the peak excursions of the indicator on a sound level meter produced by the sound in question.

We are in general agreement with the ENCM guideline. However, recent research shows that low-level noises, even though they exceed the background by more than 15dB(A) do not necessarily cause sleep arousal [see Carter et al, Acoustics Australia vol 20 No 2 August 1992 pp49-55]. It is noted that the ENCM guideline was written in 1985 and there has been new research carried out since then on sleep disturbance, as set out in Appendix B of the "Environmental Criteria for Road Traffic Noise" (ECRTN). The ENCM sleep arousal criterion is currently being reviewed as the general opinion is that this criterion is conservatively low.

The recent research shows that if the emergence level is less than 53dB(A) internally within a bedroom (corresponding to approximately 65dB(A) externally), it has less capacity to disturb despite it emerging more than 15dB(A) above the background noise level. Therefore, a suitable criterion which will ensure that 90% of the population (including the aged) are protected in their sleep, is:

- An emergence level of "background plus 15dB(A)" outdoors, and
- Where the emergence level is less than 65dB(A), a value of 65dB(A) outdoors.

Notwithstanding the above, the sleep arousal criteria described in the ENCM is used here for the purpose of this noise impact assessment. This is a conservative approach.

Table 4.2 below summarises the sleep intrusiveness criteria that may be applied to the nominated residential premises. These levels are assessable outdoors at the facades of residential premises.

	Location	L₁ Criteria, dB(A)				
Indu	strial Noise Assessment Locations					
A1	Eastern end of Jean Street	L ₁ ≤ 43 + 15 = 58				
A2	Eastern end of Ivy Street	L ₁ ≤ 42 + 15 = 57				
A3	2 Wentworth St (south)	L ₁ ≤ 37 + 15 = 52				
A4	Eastern end of Gregory Street	L ₁ ≤ 40 + 15 = 55				
A5	Western end of Blanche Street	L ₁ ≤ 38 + 15 = 53				
A6	40 Bazentin Street	L ₁ ≤ 36 + 15 = 51				

 Table 4.2 – Sleep Intrusiveness Criteria

4.2 INDUSTRIAL NOISE SOURCES

4.2.1 Vehicle Movements on Site

Vehicle movement (trucks and cars) will generate intermittent noise from the site. Vehicle movement will include trucks moving to and from the loading and unloading areas, trucks engaged in washing and refuelling activities, and cars moving in and out of parking areas. Trucks will consist of small trucks (rigid vehicles), semi trailers and B-doubles.

The sound power levels generated by vehicle movement on site as used in the predictive noise modelling for this project are presented in **Table 4.3** below.

Noise Source	Туре	A-weighted Sound Power Level	Octave Band Centre Frequency (Hz) Sound Power Levels, dB(lin) re: 10 ⁻¹² Watts								
		dB(A)	31.5	63	125	250	500	1000	2000	4000	8000
Large truck carrying 1-2	L_{eq}	102	96	96	101	104	99	97	94	88	82
containers (10-20km/hr)	L ₁	107	101	101	106	109	104	102	99	93	87
Small truck (10-20km/hr) ³	L _{eq}	85	79	79	84	87	82	80	77	71	65
Truck idling	L _{eq}	97	68	68	82	83	88	92	92	87	81
	L ₁	100	71	71	85	86	91	95	95	90	84
Car (40km/hr)	SEL	103	125	113	114	99	98	94	94	92	88



Notes: 1. Source: Renzo Tonin & Associates past project files & database

2. All measurements were conducted in the tree tiera 3. Small truck L_1 noise levels would be equivalent to or less than large truck L_1 noise levels

4.2.2 Trains on Site

Trains on site will generate intermittent noise from the site. Typically, 48-Class locomotives (normal configuration will consist of two locomotives pulling the train) are expected to be used as 'shuttle trains' between Port Botany and the ILC. 81-Class locomotives (up to three engines per train) will typically be used on all trains bound for rural NSW. Noise levels generated by trains on site are presented in Table 4.4 below.

It has been assumed, for the purposes of noise modelling, that the noise levels produced by the 48-Class and 81-Class locomotives while idling would be the same.

Noise Source	Туре	A-weighted Sound Power Level	Octave Band Centre Frequency (Hz) Sound Power Levels, dB(lin) re: 10 ⁻¹² Watts								
		dB(A)	31.5	63	125	250	500	1000	2000	4000	8000
81 Class Locomotive	L _{eq}	100	103	107	104	101	98	93	89	88	90
idling on track	L ₁	114	117	121	118	115	112	107	103	102	104
48 Class Locomotive	L _{eq}	100	103	107	104	101	98	93	89	88	90
idling on track	L ₁	114	117	121	118	115	112	107	103	102	104
Coupling Clang	L ₁	116	105	109	110	110	113	109	110	105	87

Notes: 1. Source: Renzo Tonin & Associates past project files & database

4.2.3 Loading and Unloading Activities

Noise generated by loading and unloading containers will be almost continuous during the operational hours of the facility, although the level of activity will vary from daytime to evening and night time. Noise levels generated by loading and unloading activities, using typical equipment proposed for future use, presented in Table 4.5 below.

Indicative Equipment	Туре	A-weighted Sound Power Level	I Octave Band Centre Frequency (Hz) er Sound Power Levels, dB(lin) re: 10 ⁻¹² Watt					z) Vatts			
		dB(A)	31.5	63	125	250	500	1000	2000	4000	8000
Large Container Forklift	L _{eq}	109	112	112	110	106	107	104	102	98	94
(Terminal and warehouse use)	L ₁	120	123	124	120	116	117	115	112	111	109
Empty Container Forklift	L _{eq}	107	110	110	108	104	105	102	100	96	92
(Empty container storage use)	L ₁	118	121	122	118	114	115	113	110	109	107
Small LPG Forklift	L _{eq}	90	-	92	87	83	87	86	83	76	-
(Internal warehouse use)	L ₁	92	-	94	89	85	89	88	85	78	-
Pooch Stocker	L _{eq}	106	110	111	107	103	105	101	97	96	87
Reach Slacker	L ₁	111	115	116	112	108	110	106	102	101	92
Contra Crono	L _{eq}	108	100	102	105	110	108	101	89	87	84
Gantry Crane	L ₁	110	102	104	107	112	110	103	91	89	86
Motal Clange	L _{eq}	84	88	91	91	82	82	80	73	67	60
ivietal Clarigs	L ₁	116	120	123	123	114	114	112	105	99	92

Table 4.5 – Sound Power Levels - Loading & Unloading of Trucks & Trains

Notes: 1. Source: Renzo Tonin & Associates past project files & database.

2. All measurements were conducted in the free field.

3. All forklift, stacker and crane data excludes reversing alarms.

4.2.4 Vehicle Weighing, Washing and Refuelling

A fuel and wash station will be provided in the centre of the site for use if necessary. There is provision for two weighbridges on site, on in the northern and one in the southern half of the site. Noise generated from truck weighing and refuelling is expected to be insignificant. Noise levels generated by vehicle washing on site is presented in **Table 4.6** below.

Table 4.6 –	Sound Power	Levels -	Washing an	d Refuelling	of Vehicles
	oouna i onoi	201010	maoning an	anonaoning	

Noise Source	Туре	A-weighted Sound Power Level		Octave Band Centre Frequency (Hz) Sound Power Levels, dB(lin) re: 10 ⁻¹² Watts				z) Vatts			
		dB(A)	31.5	63	125	250	500	1000	2000	4000	8000
Commercial Power	L _{eq}	93	88	86	87	87	88	87	87	86	85
Washer	L ₁	102	97	95	96	96	97	95	96	95	94

Notes: 1. Source: Renzo Tonin & Associates past project files & database 2. All measurements were conducted in the free field

4.2.5 Mechanical Plant & Public Address Systems

Mechanical plant (eg air conditioner) and public address (PA) systems are likely to be installed at the office administration buildings. The mechanical plant will provide air conditioning to the building during office hours, generally between 7am and 10pm. PA systems would only be used for emergency drills and not for general staff announcements.

For the total site noise to comply with the noise criteria set for this project, noise emission from mechanical plant shall be limited to a level at least 5 decibels below the strictest noise criterion during the period when the plant shall be operational. This has been determined for each nominated residential receiver, and a maximum permissible noise level for plant determined, based on the distance between source and receiver, in order to achieve the noise criteria. Assuming there is to be up to five (5) items of plant that could add together and cumulatively impact upon the nearest affected residential locations, the noise level generated by each plant item shall therefore be less than **85dB(A)** when measured at a distance of 1m from the plant.

Appropriate acoustic treatment shall be implemented, as required, to ensure compliance with this noise limit. In general, noise controls for mechanical plant are standard and commercially available, and can be readily added to silence noisy plant. Such noise control treatment may include any of the following, depending on the severity of the noise exceedance, which can be determined during commissioning noise tests:

- installation of commercially available silencers;
- installation of acoustic screens and barriers between plant and sensitive neighbouring premises; and
- installation of partially-enclosed or fully-enclosed acoustic enclosures over plant.

As the PA system may be used at night time, noise emission from the system shall be restricted to 5 decibels below the strictest noise criterion during the night time period. This has been determined for each nominated residential receiver, based on the distance between source and receiver, in order to achieve the noise criteria.

Assuming there is to be up to two (2) loudspeakers that could add together and cumulatively impact upon the nearest affected residential locations, the sound level emitted by each loudspeaker shall therefore be limited to a maximum level of **88dB(A)** when measured at a distance of 1m from the loudspeaker. This is a fairly stringent limit so for it to work it would require that multiple low-volume speakers be used, positioned to face downwards and located at a low height (see **Section 4.5** for more details).

4.3 INDUSTRIAL NOISE MODELLING SCENARIOS

For noise modelling purposes the following worst-case scenarios for any 15-minute period during the assessment period were assumed:

- 1) Worst case rail 3 x 81 Class locomotives idling on western line, at the northern end of the line;
 - 2 x 48 Class locomotives idling on eastern line, at the northern end of the line;
 - 4 x large trucks and 3 x small trucks¹ driving around the Enfield ILC road system between the intermodal terminal itself, the warehousing area, empty container storage areas and moving off site. All vehicles assumed to have an average speed of 20km/hour;
 - 5 x large trucks and 1 x small truck idling at intermodal terminal load/ unload area (with 2 x metal clangs per truck) and in the terminal, warehouse and empty container storage queuing areas;
 - 3 x container forklifts², 2 x reach stackers, 3 x gantry cranes operating continuously at the Enfield ILC load/ unload area;
 - 6 x container forklifts operating continuously at empty container storage areas (2 areas);
 - 4 x large forklifts operating continuously across all Warehouses;

- 1 x commercial power washer cleaning stationary truck;
- Mechanical plant and PA system associated with site office and staff amenities operating on site;
- Car parking activities associated with staff car parks.

2) Normal case - rail

- 2 x 48 Class locomotives idling at either end of the eastern line;
- 4 x large trucks and 3 x small trucks driving around the Enfield ILC road system between the intermodal terminal itself, the warehousing area, empty container storage areas and moving off site. All vehicles assumed to have an average speed of 20km/hour;
- 5 x large trucks and 1 x small truck idling at intermodal terminal load/ unload area (with 2 x metal clangs per truck) and in the terminal, warehouse and empty container storage queuing areas;
- 3 x container forklifts, 2 x reach stackers, 3 x gantry cranes operating continuously at the Enfield ILC load/ unload area;
- 6 x forklifts operating continuously at empty container storage area;
- 4 x large forklifts operating continuously across all Warehouses;
- 1 x commercial power washer cleaning stationary truck;
- Mechanical plant and PA system associated with site office and staff amenities operating on site;
- Car parking activities associated with staff car parks.

Notes:

- Based on truck arrival profile data provided by SKM. Trucks on site peak at 51 trucks/hr (2pm – 3pm), which corresponds to approximately 13 trucks per 15 minutes. It has been assumed that 50% of trucks will be idling and 50% moving around the site at any time.
- 2. Where multiple forklifts, trucks and inter-terminal vehicles operate concurrently in one area (Warehousing, terminal etc.) they will be modelled as scattered over that area, rather than as a single point.

Note that small forklifts (LPG type) operating inside Warehouses will have no significant impact on overall noise levels from the site and therefore have not been included in the above noise modelling scenarios.

Noise source locations are shown in Figures 3 and 4 following.





4.4 PREDICTED NOISE LEVELS

4.4.1 Typical Site Operation

Industrial noise emissions from typical ILC operations were determined by modelling the noise sources, receptor locations and topographical features of the intervening area using the ENM (Environmental Noise Model) computer program. The program calculates the contribution of each noise source at each specified receptor point and allows for the prediction of the total noise from a site.

The ENM computer program is endorsed by the DEC and its environmental noise predictions have been verified on many past occasions in the field. It is recommended that further validation of the computer model for the ILC be carried out during the construction phase of the project. This would verify that the model is accurate for detailed design of noise mitigation measures specific to this site.

Noise levels were modelled considering expected worst case scenarios, where either most or all plant operate simultaneously, depending on the likelihood of such an occurrence. That is, if it is likely that all plant may be operating concurrently, then all plant were also modelled concurrently.

As a further exercise, the noise levels resulting from adverse meteorological conditions potentially increasing noise emissions at the nearest residences, were computed as per the NSW INP's requirements.

Noise predictions were prepared for each of the following meteorological scenarios:

- 1. Calm & isothermal conditions (acoustically neutral) no wind and no temperature inversion
- 2. Slight to gentle breeze 3m/s wind velocity at 10m from ground (as per INP's default wind conditions), westerly and south-easterly direction.

Noise contour plots were prepared for worst case operations under calm and isothermal conditions.

A study of the frequency of temperature inversions in the region surrounding the site was carried out. It was found that during the winter months of 2004, 'F-Class' and 'G-Class' temperature inversions occurred during less than 30% of the winter nights. Therefore, temperature inversions need not be considered under this assessment, in accordance with the INP.

Wind is considered to be a feature of an area if source-to-receiver wind speeds (at 10m height) of 3m/s or below occur for at least 30% of the time. Wind speeds and wind directions in the region surrounding the site were investigated. It was found that in Autumn, Winter and Spring winds blowing from the west, with speeds less than 3m/s, occur for approximately 35% of the time. In Autumn, Winter and Spring, winds blowing from directions other than westerly, of speeds less than 3m/s, occur for less than 30% of the time. Therefore, only winds blowing from the west need to be considered under this assessment for Autumn, Winter and Spring.

During Summer, it was found that winds blowing from the south-east, with speeds less than 3m/s, occur for approximately 30% of the time. Winds from other directions occur for less than 30% of the time. Therefore, for Summer, winds blowing from the south-east need to be considered under this assessment.

Noise predictions are presented herein for two different meteorological scenarios, namely the non-adverse ('acoustically neutral') conditions and the adverse ('wind') conditions. Note that the non-adverse and wind condition scenarios apply during daytime, evening and night.

The following assumptions are made in the modelling:

- Overall and sound spectral data for each item of plant available in our library and project files and summarised above;
- Calm-isothermal (acoustically neutral) conditions Temperature = 18°C, Humidity = 63%, Windspeed = 0m/s, as entered in ENM for noise modelling;
- Slight wind conditions Temperature = 18°C, Humidity = 63%, Windspeed = 3m/s at 10m from ground level, for the two prevalent wind directions – westerly and south-easterly, as entered in ENM for noise modelling;
- Terrain Category of 'Urban', as entered into ENM for noise modelling.

Table 4.7 below presents the predicted operational noise levels at night at each residence from Scenario 1 – Worst Case. As the same operations may occur during the day and night, potential noise impacts only need to be assessed against the more stringent criteria, that being the night time criteria.

Noise contour plots are provided in Appendix D for the worst case scenario.

Distance attenuation and noise shielding effects (buildings, existing barriers) are taken into consideration. The following assumptions were made regarding the operating times of equipment on site:

- All idling sources were modeled as operating for 100% of each Intrusiveness or Amenity period.
- Forklifts, gantry cranes, reach stackers and moving trucks were modeled as follows:
 - Intrusive assessment (15 minute) modeled at 90% load. Over a typical 'worst case' 15 minute period this translates to each item operating for 13.5 minutes.
 - Amenity assessment (Day, Evening, Night) modeled at 90% load, and operating for 84% of each time period to allow for operator breaks and change-over periods. This translates to each item operating for 76% of a typical 'worst case' Day, Evening and Night period.

		'Intrusi	ve' Noise	Levels, L	Aeq(15min)	Amen	ity Noise	Levels, L ₄	eq(night)
	Location	Criteria	Calm & iso- thermal	Wind - W	Wind - SE	Criteria	Calm & iso- thermal	Wind - W	Wind - SE
A1	Eastern end of Jean St	48	51	47	60	42	51	48	60
A2	Eastern end of Ivy St	47	46	40	55	45	45	39	55
A3	2 Wentworth St (south)	42	40	44	34	38	39	43	33
A4	Eastern end of Gregory St	45	42	57	43	37	42	56	42
A5	Western end of Blanche St	43	49	56	44	43	48	55	43
A6	40 Bazentin St	41	43	53	37	39	42	52	36
A11	Begnell Park	-	-	-	-	50	48	55	43
A12	Matthew Park	-	-	-	-	50	40	34	48
A13	Greenacre Bowling Club	-	-	-	-	55	32	28	33
A14	Strathfield South High School	-	-	-	-	45 ³	41	44	52
A15	St Anne's School	-	-	-	-	45 ³	42	56	42

Table 4.7 – Cumulative Noise Impact Assessment – Scenario 1 – Night, dB(A)

Note:

1. Bold font indicates exceedance with NSW EPA Industrial Noise Criteria, either the Intrusive, the Amenity or both criteria.

2. 'Worst-case' scenario - assuming all noise sources operate concurrently. This may not actually occur in practice.

4. Westerly wind found to be a feature of the area during autumn, winter and spring months; south easterly wind found to be a feature of the area during summer months

The results show that noise exceedances will be experienced under the modelled Scenario 1 -Worst Case operational scenario and noise mitigation will be necessary to reduce noise emission from the site. Westerly winds increase noise levels at receivers A3 to A6, but reduce noise levels at receivers A1 and A2. The reverse is true for south-easterly winds.

The largest noise contributors were found to be idling locomotives and loading/ unloading operations, in particular container forklifts operating in the northern and southern empty container storage areas.

Noise from the proposal complies with the criteria at sensitive receivers A11 to A15 in calm conditions. Depending on wind direction, exceedances may still occur at the receivers A11, A14 and A15.

It should be noted that the modelled noise levels at residential receivers were tested for characteristics including tonality and dominant low frequency as noise emission containing these characteristics can cause greater annoyance than other noise at the same level. The test, based on Table 4.1 of the NSW *INP* found that tonal and low frequency characteristics were not present in predicted noise emissions from the site to residential receivers. Therefore, no modifying factor correction has been applied.

Noise mitigation recommendations are provided in **Section 4.5** of this report.

^{3.} Equivalent to internal criteria of 35dB(A).

Table 4.8 below presents the predicted operational noise levels at night at each residence for Scenario 2 – Normal Case.

		ʻIntrusi	ve' Noise	Levels, L	Aeq(15min)	Amenity Noise Levels, L _{Aeq(night)}				
Location		Criteria	Calm & iso- thermal	Wind - W	Wind - SE	Criteria	Calm & iso- thermal	Wind - W	Wind - SE	
A1	Eastern end of Jean St	48	51	47	60	42	50	47	59	
A2	Eastern end of Ivy St	47	45	39	54	45	44	38	54	
A3	2 Wentworth St (south)	42	40	44	34	38	39	43	33	
A4	Eastern end of Gregory St	45	42	57	43	37	42	56	42	
A5	Western end of Blanche St	43	49	56	44	43	48	55	43	
A6	40 Bazentin St	41	43	53	37	39	42	52	36	
A11	Begnell Park	-	-	-	-	50	48	55	43	
A12	Matthew Park	-	-	-	-	50	40	34	48	
A13	Greenacre Bowling Club	-	-	-	-	55	31	27	32	
A14	Strathfield South High School	-	-	-	-	45 ³	41	44	52	
A15	St Anne's School	-	-	-	-	45 ³	42	56	42	

Table 4.8 – Cumulative Noise Impact Assessment – Scenario 2 – Night, dB(A)

Note: 1. Bold font indicates exceedance with NSW EPA Industrial Noise Criteria, either the Intrusive, the Amenity or both criteria.

2. 'Normal-case' scenario - assuming all noise sources operate concurrently. This may not actually occur in practice.

3. Equivalent to internal criteria of 35dB(A).

4. Westerly wind found to be a feature of the area during autumn, winter and spring months; south easterly wind found to be a feature of the area during summer months

The results show that noise exceedances will be experienced under the modelled Scenario 2 -Normal Case operational scenario and noise mitigation will be necessary to reduce noise emission from the site. The largest noise contributors were found to be idling 48 class locomotives and loading/ unloading operations. Although under Scenario 2, only the 48 Class locomotives are present, other noise sources (namely the forklift activities) contribute to the overall level such that there is little to no reduction in noise impact compared to Scenario 1.

The noise character was tested, based on Table 4.1 of the NSW INP and found that tonal and low frequency characteristics were not present in predicted noise emissions from the site to residential receivers. Therefore, no modifying factor correction has been applied.

Noise mitigation recommendations are provided in **Section 4.5** of this report.

4.4.2 Sleep Intrusiveness

This section presents maximum noise level predictions (in terms of the L_1 descriptor, an approximation to the average maximum noise level) for the purposes of assessing potential sleep disturbance impacts. L_1 operational noise levels were predicted based on L_1 noise data contained in Renzo Tonin & Associates databases and entered into a computer noise model developed by Renzo Tonin & Associates. The dominant source of L_1 noise is expected to be the operation of container forklifts loading and unloading containers, producing L_1 noise levels of up

to 120dB(A). Forklift and truck reverse alarms are also of concern, producing L_1 noise levels of approximately 107dB(A)

	Table 4.9 – Sleep Arousal Assessment – Industrial Noise Sources												
			Sleep	Predi	Predicted Noise Levels, L ₁								
	Location	Period	Arousal Criteria, L ₁	Calm & isothermal	Wind - W	Wind - SE							
A1	Eastern end of Jean St	Night	58	60	56	69							
A2	Eastern end of Ivy St	Night	57	42	36	51							
A3	2 Wentworth St (south)	Night	52	39	43	33							
A4	Eastern end of Gregory St	Night	55	50	65	51							
A5	Western end of Blanche St	Night	53	61	68	56							
A6	40 Bazentin St	Night	51	51	61	45							

The results are summarised in **Table 4.9** below, with the sleep arousal criteria summarised from Chapter 4.3 of this report.

1. Bold font indicates exceedance with the NSW Sleep Arousal Criteria

2. 'Worst-case' scenario – assuming all noise sources operate concurrently. This may not actually occur in practice.

The results presented in **Table 4.9** above show that instantaneous noise generated by industrial noise sources on site may exceed the sleep arousal criteria at residences under calm condition (A1 and A5) and under adverse wind conditions (A1 and A4 to A6). However, under calm and isothermal conditions the levels remain below 65dB(A), which is considered to be the level that could cause sleep arousal based on more recent research (see Section 4.1.2 of this report). That is, predicted noise levels are below that which cause awakening in 90% of the population.

Therefore, although the predicted levels may exceed the EPA limits they are not considered loud enough to cause an impact upon surrounding residents. Nevertheless, recommendations for appropriate noise mitigation are provided in Section 4.5 to aid in reducing the likelihood of sleep disturbance occurring.

4.5 **RECOMMENDATIONS**

Note:

The following recommendations provide in-principle noise control solutions to reduce noise impacts to residential receivers. This information is presented for the purpose of DIPNR approvals process and cost planning and shall not be used for detailed design unless otherwise authorised by the acoustic consultant.

The advice provided here is in respect of acoustics only. Supplementary professional advice may need to be sought in respect of fire ratings, structural design, buildability, fitness for purpose and the like.

Noise mitigation and management methods must be implemented at the proposed ILC to obtain an acceptable noise environment at the receiver (ie, a person, a group of people, a community or a measuring device), consistent with economic, practical and operational considerations.

There are a number of methods available to mitigate noise from the ILC, including:

- Reducing noise at source, and
- Acoustic mounds or barriers.

The recommended noise mitigative treatment methods are described below.

4.5.1 Reducing noise at the source

It is recommended that the idling of 48-class shuttle train locomotives at the northern end of the intermodal terminal be restricted as much as possible. 48-class locomotives should detach from the northern end of the train as soon as possible upon arrival at the ILC site and move to the south end of the train. This will reduce the propagation of locomotive idling noise from the site to the residential receivers directly to the north and north-east (e.g. near receiver A1).

Furthermore, mobile plant used permanently on site, including container forklifts, reach-stackers and gantry should be installed with noise-kits comprising of engine compartment treatment, 'residential' grade high performance mufflers and engine air-intake treatment, if available and feasible. This can reduce noise levels from each source by 5-10dB(A).

In addition to this, it is recommended that all mobile plant on site be installed with variable reverse alarms or flashing lights, as appropriate to meet occupational health and safety requirements, whilst minimising noise generated on site at night time.

4.5.2 Acoustic mounds or barriers

Noise barriers would be suitable to treat noise emission from the site to residences on Cosgrove Road and to the north of the site. The existing 4.5m high noise barrier on the western boundary of the site, near the Wentworth Street residences should be adequate to mitigate noise emission from the site in combination with treatment of the source, as recommended in Section 4.5.1 above.

A masonry or steel wall, such as a double-sided metal or fibrous cement sheet fence, precast concrete wall or similar, is adequate for use as an acoustic barrier.

An earth mound would also provide a suitable noise barrier. Earth mounds are an effective means of controlling noise, but require considerable width of land for their construction. If the extra land were not available, an earth mound would not be an option.

Residences in Cosgrove Road

In order to mitigate noise to the nearest affected residential receivers on Cosgrove Road noise barriers would be required, as shown in Figure 5. A barrier along the eastern boundary of the site should be constructed to a nominal height of approximately 5 metres. The barrier should be as close to the site boundary as possible (and therefore as close to residences as possible) in order to maximize its effectiveness in noise mitigation.

It should be noted that this barrier could be a wall or, if there is sufficient space, an earth mound. However, should this barrier be moved away from the edge of Cosgrove Road towards the centre of the ILC site, its height would need to be increased. For example, if the barrier was moved 60m west, away from the edge of Cosgrove Road, its height would need to be increased to approximately 6m.

A combination of earth mounding and noise walls could be incorporated into the proposed landscaping area along the southern end of the Cosgrove Road boundary of the site. The earth mounding could then be incorporated into the proposed ecological area at the mound's southern end.

Residences West of Roberts Road (& north of Norfolk Road)

A barrier could be constructed to reduce noise emission to residents along Roberts Road towards the northern end of the site. The location of this barrier should be on the western boundary of the New Enfield Marshalling Yards site, running approximately between Rebecca
Road and Liverpool Road. The nominal height of the barrier is 5 metres above ground level. The length of the barrier is approximately 320m.

The barrier location is shown in Figure 5 following.

4.5.3 PA System

Noise management measures are recommended below to minimise impact from the public address systems:

- The PA system should only be used in the case of emergency and not for general staff announcements;
- Loudspeakers should be small, low powered and selected to have a highly directional polar coverage pattern with minimal side spillage of sound;
- Loudspeakers should in general be positioned above work areas facing downwards towards the work area;
- An electronic dynamic sound limiting device should be fitted to the public address sound amplification system to ensure sound levels do not exceed the limits set in Section 4.2.5 of this report, regardless of the loudness of the operator's voice.

4.6 PREDICTED NOISE LEVELS WITH MITIGATION MEASURES

Table 4.10 below shows the modelled noise reduction from a variety of noise mitigation measures. Mufflers capable of a 6dB(A) reduction (a conservative estimate) were applied to all forklifts, reach stackers and gantry cranes (see Section 4.5.1). The noise barriers modelled are as follows:

- 5m high earth mounding and wall along the southern Cosgrove Road site boundary, joining the ecological area at the barrier's southern end.
- 5m high noise wall along western boundary of New Enfield Marshalling Yards site.

	Location	6dB Reduction Mufflers	Noise Barriers
A1	Eastern end of Jean St	-5	-5
A2	Eastern end of Ivy St	-5	0
A3	2 Wentworth St (south)	-5	0
A4	Eastern end of Gregory St	-4	0
A5	Western end of Blanche St	-5	-3
A6	40 Bazentin St	-5	0
A11	Begnell Park	-5	-3
A12	Matthew Park	-5	0
A13	Greenacre Bowling Club	-4	0
A14	Strathfield South High School	-4	0
A15	St Anne's School	-4	0

 Table 4.10 – Modelled Reduction due to Noise Mitigation Measures, dB(A)

Table 4.10 summarises predicted noise levels at the nearest affected residential receivers following implementation of a combination of 6dB(A) mufflers applied to the appropriate plant and the noise barriers, with two 48 class locomotives idling at the southern end of the Intermodal Terminal.

Location		'Intrusive' Noise Levels, L _{Aeq(15min)}				Amenity Noise Levels, L _{Aeq(night)}			
		Criteria	Calm & iso- thermal	Wind - W	Wind - SE	Criteria	Calm & iso- thermal	Wind - W	Wind - SE
A1	Eastern end of Jean St	48	43	39	52	42	43	40	52
A2	Eastern end of Ivy St	47	41	35	50	45	41	35	51
A3	2 Wentworth St (south)	42	34	38	28	38	34	37	27
A4	Eastern end of Gregory St	45	38	53	39	37	38	52	38
A5	Western end of Blanche St	43	42	49	37	43	41	48	36
A6	40 Bazentin St	41	38	48	32	39	37	47	31
A11	Begnell Park	-	-	-	-	50	41	48	36
A12	Matthew Park	-	-	-	-	50	35	29	43
A13	Greenacre Bowling Club	-	-	-	-	55	28	24	29
A14	Strathfield South High School	-	-	-	-	45 ³	37	40	48
A15	St Anne's School	-	-	-	-	45 ³	38	52	38

Table 4.11 – Cumulative Noise Impact Assessment – Scenario 1 With Mitigation Measures,
dB(A)

Note: 1. Bold font indicates exceedance with NSW EPA Industrial Noise Criteria, either the Intrusive, the Amenity or both criteria.

2. 'Worst-case' scenario - assuming all noise sources operate concurrently. This may not actually occur in practice.

3. Equivalent to internal criteria of 35dB(A).

Noise emission from the site, with noise mitigation measures applied, will comply with the amenity noise criteria under calm-isothermal conditions at all receivers, except for 1dB(A) exceedances at A1 and A4. A 1dB(A) exceedance is considered minor and insignificant, as a change in noise level of 1dB(A) is inaudible under field conditions.

With noise mitigation measures applied, noise emission complies with the intrusiveness noise criteria under calm-isothermal conditions at all receivers.

In both the amenity and intrusiveness assessments, under the most adverse wind conditions (i.e. wind blowing from source to receiver), exceedances of the noise criteria still exist. Westerly winds cause exceedances at A4 to A6 (6 to 15dB(A)) and A15 (7dB(A)) and south-easterly winds cause exceedances at A1 (up to 10dB(A)) and A2 (up to 6dB(A)).

Table 4.12 below summarises resulting impacts (under calm, isothermal conditions, assessed against the Amenity criteria) from the ILC operating at full capacity with noise mitigation measures in place and specifies the approximate number and locations of residences effected.

|--|

Area	Residential Locations	ILC Noise Levels (with Mitigation Measures), dB(A)	Number of Houses Effected	Exceedance of INP Amenity Criteria
A1	East end of Rebecca road and residences north of Norfolk Road, on the western side of Roberts Road	43	Approx. 70	1
A4	Therry St, St Annes Square, Gregory St, Dunlop St	38	Approx. 70	1

Where a noise exceedance is caused by adverse weather conditions, increasing the height of noise barriers provides minimal to no acoustic benefit for surrounding residential areas. To adequately reduce noise emission during adverse meteorological conditions would require the enclosing of site operations, which is not considered reasonable or feasible in this case as little overall benefit would be gained for such large expenditure.

To further manage noise impacts, an Environmental Noise Management Plan should be developed for the site, which covers a series of practical management measures that can be successfully implemented and maintained throughout the operational life of the facility, including, but not limited to, the following issues:

- *Noise Goals* Operational noise should aim to comply with the noise goals set in Section 4.1.1 of this report;
- Silenced Equipment The use of alternative quieter technologies is preferred over noisy methods. The quietest reasonably available operational equipment should be selected and where possible residential class mufflers should be used on mobile plant. Noise from loud plant should also be silenced to residential standards and their operators should be instructed to operate the equipment in the quietest way possible. Noise control kits should be fitted to noisy mobile equipment and shrouds or screens provided around stationary plant. Mufflers will be fitted to all mobile plant operating on site, including forklifts, reach stackers and gantry cranes;
- Equipment Maintenance and Operation All plant and equipment should be inspected regularly to ensure that they are in good running order, regularly maintained and free of defective components to minimise noise emissions. Noise compliance monitoring for all major equipment on site should also be undertaken during the lifetime of the project. Any equipment not in use for extended periods shall be switched off;
- Complaints Handling Procedure A complaints handling procedure should be developed for the site;
- Community Consultation Good relations with people living and working in the vicinity of the sites should be established at the beginning of the project and be maintained throughout the lifetime of the project, as this is of paramount importance. Keeping people informed of progress and taking complaints seriously and dealing with them expeditiously is critical. The personnel selected to liaise with the community should be adequately trained and experienced in such matters.



5. ROAD TRAFFIC NOISE ASSESSMENT

5.1 ROAD TRAFFIC NOISE CRITERIA

The L_{eq} noise level or the "equivalent continuous noise level" correlates best with the human perception of annoyance associated with traffic noise. The NSW "Environmental Criteria for Road Traffic Noise" (ECRTN) uses the L_{Aeq(15hr)}, L_{Aeq(9hr)} and L_{Aeq(1hr)} to assess traffic noise impact. The ECRTN is used to assess the potential traffic noise impact from the site.

Table 1 in the ECRTN - "Road Traffic Noise Criteria for Proposed Road or Residential Land Use Developments" divides land use developments into different categories and lists the respective criteria for each case. Roberts Road and Liverpool Road/Hume Highway are categorised as 'arterial' roads. The applicable criteria are summarised in **Table 5.1** and **Table 5.2** following.

Type of	Criteria, dB(A)		Where Criteria are Already Eveneded		
Development	Day	Night	where Chiena are Already Exceeded		
7. Land use developments with potential to create additional traffic on existing freeways/arterials	L _{Aeq(15hr)} 60	L _{Aeq(9hr)} 55	Where feasible, existing noise levels should be mitigated to meet the noise criteria. Examples of applicable strategies include appropriate location of private access roads; regulating times of use; using clustering; using 'quiet' vehicles; and using barriers and acoustic treatments.		
(Liverpool Rd & Roberts Rd)			to an increase in existing noise levels of more than 2 dB		

Table 5.1 - DEC Road Traffic Noise Criteria, dB(A)

The ECRTN also sets guidelines for the assessment of traffic noise on sensitive land use developments. These criteria are applicable to Strathfield High School, Matthews Park and Greenacre Bowling Club.

Table 5.2 - DEC Road Traffic Noise Criteria for Sensitive Land Use Developments

Type of	Criteria, dB(A)		Noise Mitigation Measures		
Development	Day	Night	Noise mitigation measures		
Existing school	L _{eq(1hr)} 45 ¹ -		To achieve internal noise criteria in the short-term, the most practicable mitigation measures are often related to building or facade treatments.		
			exhaust noise from in-service vehicles, limitations on exhaust brake use, and restricting access for sensitive areas or during sensitive times to low noise vehicles can be applied to mitigate		
Active recreation (eg golf courses)	L _{eq(15hr)} 60 ² -		noise impacts across the road system. Other measures include improved planning, design and construction of sensitive land use developments; reduced new vehicle emission standards; greater use of public transport; and alternative methods of freight haulage. These medium- to long-term strategies apply equally to mitigating internal and external noise levels.		
Passive recreation and school playgrounds	L _{eq(15hr)} 55 ²	-	Where existing levels of traffic noise exceed the criteria, all feasible and reasonable noise control measures should be evaluated and applied. Where this has been done and the internal or external criteria (as appropriate) cannot be achieved, the proposed road or land use development should be designed so as not to increase existing road traffic noise levels by more than 2dB(A) for redeveloped roads or land use development with potential to create additional traffic.		

Source: NSW DEC "Environmental Criteria for Road Traffic Noise" (May 1999).

Notes: 1. Internal noise criteria

2. External noise criteria

5.2 ROAD TRAFFIC NOISE SOURCES

It is estimated that approximately 102 truck movements will occur in the peak hour of operation of the Enfield ILC, when maximum throughput capacity of the facility is reached around the year 2016. Trucks will consist of rigid vehicles, semi trailers and body-doubles. Truck movement will be fairly continuous.

The proposed primary truck route will be via Roberts Road, Norfolk Road and Wentworth Street. The proposed secondary truck route will be via Liverpool Road (Hume Highway) and Cosgrove Road.

Roberts Road and Liverpool Road are categorised as Arterial Roads under the ECRTN. Norfolk Road, Wentworth Street and Cosgrove Road are categorised as Collector Roads. Norfolk Road, Wentworth Street and Cosgrove Road are located in industrial areas and there are no residences located along the proposed truck route on these streets.

Figure 2 shows the proposed truck routes.

Noise predictions are based on a method developed by the United Kingdom Department of Environment entitled "Calculation of Road Traffic Noise (1988)" known as the CORTN (1988) method. This method has been adapted to Australian conditions and extensively tested by the Australian Road Research Board. The model predicts noise levels for free flowing traffic and a modified method has been developed which enables an accurate prediction of noise from high truck exhausts to be taken into account. The method predicts the $L_{10, 1hour}$ noise levels, and a correction of -3dB(A) is applied to obtain the $L_{eq, 1 hour}$ noise levels for every hour in a 24 hour day.

The $L_{eq(1 \text{ hour})}$ noise levels for the time period 7.00am to 10.00pm are then collated and logarithmically averaged to derive the daily $L_{eq(15 \text{ hour})}$ noise level. Similarly, the $L_{eq(1 \text{ hour})}$ noise levels for the time period 10.00pm to 7.00am are collated and logarithmically averaged to derive the night time $L_{eq(9 \text{ hour})}$ noise level.

The noise prediction model takes into account:

- traffic volume and heavy vehicle forecasts;
- vehicle speed;
- road gradient;
- location of the noise sources on the two carriageways;
- the differing source heights of cars and trucks;
- relative levels and angles of view of the road from the receiver's position;
- reflections from barriers, cuttings, roadside structures etc;
- attenuation from barriers (natural and purpose built) and cuttings, where appropriate and noted; and
- correction for shielding due to intervening buildings between the road and receivers, where appropriate and noted.

Details of assumptions used in the CORTN method for noise contour predictions are given in Appendix E.

Traffic forecast information was provided by *Sinclair Knight Merz Pty Ltd* for vehicles entering and leaving the ILC. The ECRTN requires traffic noise impact to be assessed at the project opening, then at 10 years after opening. Forecast traffic volumes have been provided for the year 2016, as it is anticipated that the maximum throughput capacity of the ILC will be reached in 2016. Existing traffic volumes have been provided by *Sinclair Knight Merz Pty Ltd* based on traffic counts carried out in 2005. In this case, the existing (2005) traffic data are taken as representative of the traffic volumes at the year of opening, with the 2016 traffic data representative of traffic volumes 10 years after opening, in accordance with the requirements of the ECRTN.

Table 5.3 below summarises the existing traffic movements and projected traffic movements on Roberts Road (between Hume Highway and Punchbowl Road) and Liverpool Road (Hume Highway, between Stacey Street and Coronation Parade) for 2016.

	Accessment	2005 Wit	hout ILC	2016 With ILC			
Road	Period	Measured Volume	% Heavy Vehicles	Projected Volume	% Heavy Vehicles		
Liverpool	Day (15hr) ¹	39,125	6	58,206	6		
Road (Hume	Night (9hr) ²	6,300	6	9,645	7		
Highway)	Peak 1 Hour ³	3,868	6	5,657	6		
	Day (15hr) ¹	55,252	11	54,928	11		
Roberts Road	Night (9hr) ²	10,600	13	10,408	12		
	Peak 1 Hour ³	4,665	10	4,599	6		
Notes:	Notes: 1. Day is defined as 7am to 10pm						

 Table 5.3 – Traffic Movements per Year With and Without the ILC

Day is defined as 7am to 10pm
 Night is defined as 10pm to 7am

2. Night is defined as 10pm to 7am

3. Peak hour traffic movements over 1hour period

Note that one truck movement refers to either the inbound trip or the outbound trip of a truck. For every single truck that visits the site, there are 2 truck movements, that is 1 movement into the ILC and 1 movement out of the ILC.

5.3 PREDICTED ROAD TRAFFIC NOISE

Based on the existing and proposed traffic volume data provided by *Sinclair Knight Merz Pty Ltd* in their assessment of transport impacts, the following predicted increases in road traffic noise levels have been determined for the above routes.

Traffic noise levels modelled using the traffic noise model at assessment locations A7 to A10 (on Roberts Road between Hume Highway and Punchbowl Road and on Hume Highway, between Stacey Street and Coronation Parade) were validated against existing, measured traffic noise levels. These traffic noise levels (summarised in Section 3.3) were measured concurrently with the traffic volume counts in February 2005. Existing noise levels currently exceed the noise criteria for arterial roads specified by the ECRTN. The proposed ILC is not responsible for the level of existing traffic noise generated along Roberts Road and Liverpool Road. Noise barriers along either road to attenuate existing traffic noise would not be feasible, as this would restrict driveway access to the roads from existing residences.

Where existing noise levels are already exceeded, and all reasonable and feasible mitigation measures have been considered, the ECRTN provides for a 2dB(A) allowance over existing traffic noise levels. That is, the noise criteria for this project become 2dB(A) above the existing traffic noise levels at the assessment locations.

Table 5.4 below presents the existing traffic noise level at each assessment location, and then the 'Allowable Traffic Noise Level' based on an increase of 2dB(A) above existing traffic noise levels. Total traffic noise levels are predicted, including additional traffic from the site, at each assessment location and compared to the 'Allowable Traffic Noise Level'.

Noise levels at Strathfield High School were not modelled as there is an existing noise barrier surrounding the school, at least 4m in height. Based on previous experience and modelling of walls of similar height, resulting noise levels generated by traffic movements by the proposed development to the school would be insignificant.

A	Assessment Location	Period	Existing Traffic Noise Level	Allowable Traffic Noise Level	Predicted Traffic Noise (with proposal)	Noise Exceedance
A7	554 Liverpool Road	Day (15hrs)	71	73	72	Nil
		Night (9hrs)	67	69	69	Nil
A8	1 Hume Highway	Day (15hrs)	70	72	71	Nil
		Night (9hrs)	67	69	66	Nil
A9	20 Rebecca Road	Day (15hrs)	72	74	72	Nil
		Night (9hrs)	69	71	69	Nil
A10	118 Roberts Road	Day (15hrs)	70	72	70	Nil
		Night (9hrs)	67	69	67	Nil
A12	Matthews Park	Day (1hr _{peak})	69	71	69	Nil
A13	Greenacre Bowling Club	Day (1hr _{peak})	76	77	76	Nil

Table 5.4 – Predicted Traffic Noise Levels at Worst Affected Residences and Sensitive Locations on Roberts Road and Liverpool Road in 2016, LAeq(period) dB(A)

Existing traffic noise levels at all locations exceed the ECRTN criteria ($L_{Aeq(15hr)}$ 60/ $L_{Aeq(9hr)}$ 55 for residences). As all reasonable and feasible mitigation measures have been considered, the ECRTN allows a 2dB(A) increase in traffic noise levels. The results in **Table 5.4** show that where the facility is operating at capacity, traffic noise generated by the proposed development will not increase by more than 2dB(A). Therefore, traffic noise generated by the proposal complies with the ECRTN.

5.3.1 Maximum Night Time Noise Levels

The ECRTN noise does not specify a night-time L_{max} noise limit or noise goal. This is because research conducted to date in this field has not been definitive and the relationship between maximum noise levels, sleep disturbance and subsequent health effects is not currently well defined. According to the policy however, the likely maximum or peak noise levels from new freeway or arterial roads are to be broadly assessed and reported for the night-time period, which is generally considered by the DEC as being 10pm to 7am.

Noise monitoring carried out at the noise monitoring locations identified in Section 3.1 indicated L_{max} traffic noise levels at night along these sections of Liverpool Road and Roberts Road reached maximum levels as shown in **Table 5.5**. Maximum noise levels at night have been predicted using existing L_{max} noise level data and taking into consideration the proposed increase in heavy vehicle movements during the night once the ILC reaches full capacity.

Nearest Affected Residences		Noise Levels at Receiver Location			
		Current Maximum Levels	Predicted Maximum Levels		
A7	554 Liverpool Road	75-83	75-83		
A8	1 Hume Highway	80-85	80-85		
A9	20 Rebecca Road	75-85	75-85		
A10	118 Roberts Road	80-85	80-85		

Table 5.5 – Maximum Night Time Noise Levels – Road Traffic Noise, dB(A)

Night time heavy vehicle movements are predicted to increase along Liverpool Road (between Stacey Street and Coronation Parade) and decrease slightly along Roberts Road (between Hume Highway and Punchbowl Road) (see **Table 5.3**), due to the operation of the proposed ILC. Additional traffic movements caused by the site operations are not expected to change the existing night time maximum noise level environment.

6. CONSTRUCTION NOISE ASSESSMENT

6.1 CONSTRUCTION NOISE CRITERIA

The NSW Environmental Noise Control Manual (ENCM, Environment Protection Authority 1994) is used to assess noise generated during the construction phase. Chapter 171 of the ENCM states the following:

6.1.1 Level Restrictions

- i) Construction period of 4 weeks and under. The L₁₀ level measured over a period of not less than 15 minutes when the construction site is in operation must not exceed the background level by more than 20 dB(A).
- ii) Construction period greater than 4 weeks and not exceeding 26 weeks. The L₁₀ level measured over a period of not less than 15 minutes when the construction site is in operation must not exceed the background level by more than 10 dB(A).
- iii) Construction period greater than 26 weeks.

The L_{10} level measured over a period of not less than 15 minutes when the construction site is in operation must not exceed the background level by **more than 5 dB(A)**.

Construction is proposed to be carried out in a number if stages, as outlined in **Section 2.3.1** of this report. Each stage overlaps with the next for a period of time, with a total construction period of up to 27 months for completion of the proposed ILC. The construction noise criteria are summarised in **Table 6.1** below, based on the proposed construction period.

	Location	Length of Construction Period - Greater than 26 weeks
A1	Eastern end of Jean Street, Strathfield South	54
A2	Eastern end of Ivy Street, Strathfield South	53
A3	2 Wentworth St (south), Greenacre	49
A4	Eastern end of Gregory Street, Strathfield South	49
A5	Western end of Blanche Street, Strathfield South	46
A6	40 Bazentin Street, Belfield	46

Table 6.1 – Summary of Construction Noise Criteria, dB(A)

6.1.2 Time Restrictions

Proposed construction hours are between 7am and 6pm Monday to Saturday. ENCM guidelines state that construction activities on Saturday should only occur between 8am and 1pm, unless the activities are inaudible at the nearest residential premises. Sydney Ports intends to seek approval from DIPNR for extended construction hours on Saturday.

No construction work is to take place on Sundays or Public Holidays.

6.2 CONSTRUCTION NOISE SOURCES

A summary of construction activities in each stage and the proposed length of each construction stage is given in Section 2.3.1 of this report. **Table 6.2** below lists the plant and equipment

involved in the construction of the proposed Enfield Intermodal Logistics Centre during each activity of each stage. These were used as sources in modelling potential construction noise.

Phase	Activity	Major items of plant and equipment	Hours of Use
Stage 1 – Site	Sealed haul roads	Grader, roller (drum), water cart, trucks, dozer	7.00am-6.00pm Mon to Sat
preparation	Stormwater detention ponds	Dozer, compactor (sheep's foot), excavator, water cart and trucks	7.00am-6.00pm Mon to Sat
	Removal / landfarming contaminated material	Excavators, water carts, dozer and trucks	7.00am-6.00pm Mon to Sat
	Removal of unsuitable material from stockpiles, landscaping mounds / acoustic barriers, prepare light industrial / commercial area	Dozers, excavators, water carts, compactors (sheep's foot), articulated truck (on site) and trucks (off site)	7.00am-6.00pm Mon to Sat
Stage 2 – Earthworks & drainage	Earthworks	Dozer, excavators, water carts, compactors (sheep's foot), articulated trucks and scrapers	7.00am-6.00pm Mon to Sat
	Stormwater trunk drainage system	Excavators, water cart, rollers (drum), backhoe and crane	7.00am-6.00pm Mon to Sat
	Relocation of services	Excavator, backhoe and trucks	7.00am-6.00pm Mon to Sat
	Retaining walls / embankments	Excavator, roller, dozer and trucks	7.00am-6.00pm Mon to Sat
Stage 3 – Road & rail infra- structure	Off-site access works	Roadworks - Graders, rollers (drum), water carts, excavator, backhoe, trucks and asphalting machines – Overbridge - Cranes, piling equipment (cast in- situ), excavator, backhoe, trucks and concrete pumps.	7.00am-6.00pm Mon to Sat
	Reinforced earth wall for road embankment	Dozer, excavator, compactor (sheep's foot), roller (drum), water cart, trucks, light crane and Franna crane	7.00am-6.00pm Mon to Sat
	Northern bridge	Dozer, piling equipment (cast in-situ), excavator, crane, backhoe, trucks and concrete pumps	7.00am-6.00pm Mon to Sat
	Install services and relocate rail line	Excavator, backhoe, trucks and rail machinery	7.00am-6.00pm Mon to Sat
	Railway line and sidings	Excavator, dozer, grader, trucks, concrete pump and rail machinery	7.00am-6.00pm Mon to Sat
	Container pavement works	Graders, rollers (drum), water carts, backhoe, trucks, concrete kerb machines and asphalting machines	7.00am-6.00pm Mon to Sat
	Internal road pavement works	Graders, rollers (drum), water carts, backhoe, trucks, concrete kerb machines and asphalting machines	7.00am-6.00pm Mon to Sat
Stage 4–	Warehousing and	Crane, piling equipment (cast in-situ),	7.00am-6.00pm

Table 6.2 – Construction Plant and Equipment – Stages 1 – 4

Phase	Activity	Major items of plant and equipment	Hours of Use
Warehousing & final works	administration areas	grader, excavator, water cart, trucks and concrete pumps	Mon to Sat
	Warehouse pavement works	Grader, roller (drum), water cart, backhoe, trucks, concrete kerb machines and asphalting machines	7.00am-6.00pm Mon to Sat
	Final landscaping	Backhoes, bobcats and minor smaller equipment	7.00am-6.00pm Mon to Sat

Table 6.3 lists all construction plant and equipment likely to be used during the total construction period for the proposed ILC, with their associated sound power levels.

Plant		Sound Power Levels, dB(A) re: 10 ⁻¹² Wa		
Item	Plant Description	Range	Typical (Mid-Point), L _{A10}	
1	Piling Drilling Rig	112-124	114	
2	Mobile Crane	110-115	113	
3	Scraper	110-115	113	
4	Compactor	110-115	113	
5	Pavement Laying Machine	110-114	112	
6	Concrete Kerb Machines	110-114	112	
7	Bulldozer	105-118	112	
8	Tracked Excavator	105-115	110	
9	Grader	105-115	110	
10	Concrete Truck	108-110	109	
11	Water Cart	106-108	107	
12	Rollers	100-113	107	
13	Asphalt Truck	106	106	
14	Truck (>20tonne)	103-108	106	
15	Concrete Pump	100-109	105	
16	Backhoe	100-108	104	

 Table 6.3 - Typical Construction Equipment & Sound Power Levels

Note: 1. The sound power data within the column marked "Typical (Mid-Point)" has been used in this study to calculate typical construction noise levels at the nominated assessment locations.

The sound power levels for the majority of activities presented in the above table are based on maximum levels given in Table D2 of Australian Standard 2436 - 1981 "Guide to Noise Control on Construction, Maintenance and Demolition Sites", information from past projects and information held in our library files.

6.3 CONSTRUCTION NOISE ASSESSMENT

Construction noise levels predicted to the nearest affected residences are presented in **Table 6.4** below. It is noted that construction noise levels predicted here include acoustic losses due to

distance. Shielding from intervening structures and additional noise control treatments for construction plant are not considered. It is recommended that all plant items have their noise emission levels measured before they are used on site as a check against noise predictions.

The cumulative construction noise from each activity is presented below. The plant and equipment used in each activity are listed in **Table 6.2** above. It has been assumed that all plant in each activity operates at once, in line with a conservative assessment. For each stage, construction noise sources have been modelled at their closest likely point to residences, taking into account the scope of works of each particular stage.

Construction	(Typical) Proposed Equipment		₀ Const Affecte	ruction ed Resi	Noise a dences	at Neare , dB(A)	est
Activity			A2	A3	A4	A5	A6
Criteria	Greater than 26 weeks – L_{90} + 5dB(A)	54	53	49	49	46	46
Stage 1 – Site	Sealed haul roads	67	53	59	53	72	66
preparation	Stormwater detention ponds	44	48	60	48	66	57
	Removal / landfarming contaminated material	70	56	62	56	75	69
Removal of unsuitable material from stockpiles, landscaping mounds / acoustic barriers, prepare light industrial / commercial area		74	60	66	61	79	73
Stage 2 –	Earthworks	76	62	68	62	81	75
Earthworks & drainage	Stormwater trunk drainage system	70	56	63	57	75	69
	Relocation of services	65	51	57	52	70	64
	Retaining walls / embankments	68	54	60	55	73	67
Stage 3 -	Off-site access works	66	56	62	59	70	61
Road & rail	Reinforced earth wall for road embankment	72	59	65	59	78	72
	Northern bridge	50	55	59	52	57	53
	Install services and relocate rail line	54	51	49	47	49	45
	Railway line and sidings	58	55	53	51	53	49
	Container pavement works	73	59	65	60	78	72
	Internal road pavement works	65	54	60	57	69	57
Stage 4-	Warehousing and administration areas	67	55	62	59	71	59
Warehousing & final works	Warehouse pavement works	63	52	59	56	67	56
	Final landscaping	60	46	52	47	65	59

Table 6.4– Predicted Noise Levels from Untreated Construction Plant, dB(A)

Note: **Bold** typeface indicates exceedance of the noise criteria.

The results show that construction noise potentially exceeds the construction noise criteria, dependent on the plant and equipment used, as follows:

Stage 1 – SiteSite preparation works will occur over 4 months. The most significant
noise generators are compacters, bulldozers, excavators and graders.

Exceedances potentially occur at all assessment locations during Stage 1 as many activities are not limited to one particular area and

could occur across the site (e.g. the construction of sealed haul roads).

The worst exceedances are predicted to be experienced at receiver A5, residences on Cosgrove Road and to the south east of the site.

• Stage 2 – Earthworks and drainage works will occur over 10 months. The most significant noise generators are compacters, scrapers, excavators and cranes.

Again, as earthworks will occur site wide, exceedances potentially occur at all assessment locations during Stage 2.

The worst exceedances are predicted to be experienced at receiver A5.

 Stage 3 – Road & rail infrastructure
 Road and rail infra-structure works will occur over 8 months. The most significant noise generators are associated with piling and pavement laying activities, in addition to compacters, cranes and bulldozers.

The worst exceedances are predicted to be experienced at receiver A5.

Stage 4– Warehousing and final works will occur over 13 months. The most significant noise generators are associated with piling and pavement laying activities, in addition to backhoes.

The worst exceedances are predicted to be experienced at receiver A5.

Recommendations for treatment of construction noise are provided in Section 6.4. It is recommended that all plant items have their noise emission levels measured before they are used on site as a check against noise predictions. A Construction Noise Management Plan will be developed prior to commencement of construction, to ensure that noise impact from construction activities is minimised.

6.4 **RECOMMENDATIONS**

6.4.1 General Physical Noise Control Measures

Implementation of noise control measures, such as those suggested in Australian Standard 2436-1981 "Guide to Noise Control on Construction, Maintenance and Demolition Sites", are expected to reduce predicted construction noise levels. Reference to Australian Standard 2436-1981, Appendix E, Table E1 suggests possible remedies and alternatives to reduce noise emission levels from typical construction equipment. Table E2 in Appendix E presents typical examples of noise reductions achievable after treatment of various noise sources. Table E3 in Appendix E presents the relative effectiveness of various forms of noise control treatment.

Table 6.5 below presents noise control methods, practical examples and expected noise reductions according to AS2436 and according to Renzo Tonin & Associates' opinion based on experience with past projects.

Noise Control Method	Practical Examples	Typical noise reduction possible in practice		Maximum no possible i	ise reduction n practice
		AS 2436	Renzo Tonin & Assoc.	AS 2436	Renzo Tonin & Assoc.
Screening	Acoustic barriers such as earth mounds, temporary or permanent noise barriers	7 to 10	5 to 10	15	15
Acoustic Enclosures	Engine casing lagged with acoustic insulation and plywood	15 to 30	10 to 20	50	30
Engine Silencing	Residential class mufflers	5 to 10	5 to 10	20	20
Substitution by alternative process	Use electric motors in preference to diesel or petrol	15 to 25	15 to 25	60	40

Table 6.5 – Relative Effectiveness of Various Forms of Noise Control, dB(A)

The Renzo Tonin & Associates' listed noise reductions are conservatively low and should be referred to in preference to those of AS2436, for this assessment.

Table 6.6 below identifies possible noise control measures, which are applicable on the construction plant likely to be used on site.

Plant Description	Screening	Acoustic Enclosures	Silencing	Alternative Process
Piling Drilling Rig	~	x	~	~
Mobile Crane	~	~	~	x
Scraper	~	x	~	x
Compactor	~	x	~	x
Pavement Laying Machine	~	x	~	x
Concrete Kerb Machines	~	x	~	x
Bulldozer	~	x	~	x
Tracked Excavator	~	x	~	x
Grader	~	x	~	x
Concrete Truck	~	x	~	x
Water Cart	~	x	~	x
Rollers	~	x	~	x
Asphalt Truck	~	x	~	x
Truck (>20tonne)	~	x	~	x
Concrete Pump	~	~	~	~
Backhoe	~	х	~	x

Table 6.6 – Noise Control Measures for Likely Construction Plant

To ensure efficient noise attenuation performance is achieved using any of the methods listed above, it is recommended acoustic engineers work closely with the construction contractors and carry out preliminary testing prior to commencement of works.

6.4.2 Construction Noise Management Measures

In addition to the physical controls and measures described above, a construction noise management plan should be developed for the site, addressing the following issues:

- *Noise Goals* Construction noise should aim to comply with the noise goals set in Section 6.1.1 of this report;
- Time Restrictions for Construction Activities Construction activities should occur between 7am and 6pm Monday to Friday and between 7am and 6pm Saturday if construction noise is inaudible on residential premises, otherwise 8am to 1pm Saturday. Sydney Ports intends to seek approval from DIPNR for construction hours of 7am to 6pm on Saturday. There shall be no construction activities on Sundays or public holidays, unless separate approval has been sought from DIPNR, and those activities don't generate offensive noise (noise which is clearly discernible over other surrounding industrial and background noise);
- Community Liaison Information should be provided prior to the commencement of construction work informing potentially affected residents of the type, expected noise emissions, times and duration of any construction work. Any community queries, concerns or complaints regarding likely noise and vibration emissions will also be addressed at this point;
- Silenced Equipment The use of alternative quieter construction technologies is preferred over noisy methods. The quietest reasonably available construction equipment should be selected and where possible residential class mufflers will be used. Noise from loud plant should also be silenced to residential standards and their operators should be instructed to operate the equipment in the quietest way possible. Noise control kits should be fitted to noisy mobile equipment and shrouds or screens provided around stationary plant;
- Equipment Maintenance and Operation All plant and equipment should be inspected regularly to ensure that they are in good running order, regularly maintained and free of defective components to minimise noise emissions. Also any equipment not in use for extended periods during construction work shall be switched off;
- Noise Monitoring Noise compliance monitoring for all major equipment and activities on site should also be undertaken during the construction stage of the project;
- *Equipment Location* Noisy plant and equipment should be located as far as possible from noise sensitive areas, optimising attenuation effects from topography, natural and purpose built barriers and materials stockpiles;
- Project Planning and Erection of Barriers Construction should be programmed so that noise barriers or mounding required to control noise are built as soon as possible. Temporary noise barriers should also be erected where required;
- Working Hours Restriction on Noisy Equipment The hours of operation of particularly noisy equipment should be restricted. Work outside normal hours (7am to 6pm Monday – Saturday) should only be carried out in special circumstances and after liaison with DIPNR and the local community;
- Complaints Handling Procedure A complaints handling procedure should be developed for the site;
- *Community Consultation* Good relations with people living and working in the vicinity of the sites should be established at the beginning of the works and be maintained throughout the works, as this is of paramount importance. Keeping people informed of progress and taking

complaints seriously and dealing with them expeditiously is critical. The personnel selected to liaise with the community should be adequately trained and experienced in such matters;

7. CUMULATIVE NOISE IMPACT ASSESSMENT

Research has found that people tend to react differently to noise from different sources, therefore there is a need to assess noise differently for each type of noise source. This is the rationale behind the NSW DEC providing separate policies that set different guidelines for each noise type. For example, the DEC recommends different noise criteria for industrial, traffic, rail and other noise types. Also, the DEC's INP takes cumulative impact into account with its Amenity Criteria, which considers all existing industrial noise sources at each noise assessment location and sets noise criteria that avoid the cumulative build-up or 'creep' of industrial noise over time in an area (see also Section 4.1.1 of this report).

Therefore, by following the policy guidelines, noise impact from each noise source is minimised to acceptable levels, thus minimising cumulative noise impacts upon receivers.

Currently, there are no known development proposals in the area in addition to the ILC which could contribute to the area's acoustic environment. Therefore, there are expected to be no cumulative effects from this proposal.

8. CONCLUSION

Renzo Tonin & Associates have completed an assessment of environmental noise impact from the proposed Enfield Intermodal Logistics Centre, to be located on the former Enfield Marshalling Yards, Strathfield South.

Noise impact from the proposed development upon the potentially most affected noise sensitive residential locations, has been quantified and compared to the noise guidelines set by the DEC for construction and operation of the site, including industrial and road traffic noise.

Construction noise emission from the site may exceed the NSW DEC noise criteria without appropriate mitigative measures. Activities such as earthworks (Stage 2 - 10 months) and pavement works (Stage 3 - 8 months) are expected to produce the highest noise impacts. **Section 6.4** provides recommendations to aid in minimising the predicted construction noise impacts, however some exceedances of the construction noise criteria may still remain after the incorporation of noise mitigation measures.

Operational noise emission from the site may exceed the NSW DEC noise criteria without appropriate mitigative measures. Dominant noise sources were found to be the idling of trains and plant operating in the loading/ unloading area. Sleep arousal may also occur under particular adverse weather conditions.

Noise management measures therefore are recommended in **Section 4.5** of this report to minimise adverse noise impacts where they may occur. Following the incorporation of recommended noise management measures, some noise exceedances may remain. Under calm conditions, 1dB exceedances are expected at Jean Street and Gregory Street. A 1dB(A) exceedance is considered minor and insignificant, as a change in noise level of 1dB(A) is inaudible under field conditions. Westerly winds may produce exceedances of up to 15 dB at Gregory Street during Autumn, Winter and Spring. These winds occur for approximately 35% of the time in Autumn, Winter and Spring. During Summer, south-easterly winds may produce exceedances of up to 10 dB at Jean Street. These winds occur for approximately 30% of the time in Summer.

Future road traffic noise levels will comply with the NSW ECRTN criteria at all assessment locations.

APPENDIX A – GLOSSARY OF ACOUSTIC TERMS

The following is a brief description of the technical terms used to describe noise to assist in understanding the technical issues presented.

- Weather effects that enhance noise (that is, wind and temperature Adverse Weather inversions) that occur at a site for a significant period of time (that is, wind occurring more than 30% of the time in any assessment period in any season and/or temperature inversions occurring more than 30% of the nights in winter).
- Ambient Noise The all-encompassing noise associated within a given environment at a given time, usually composed of sound from all sources near and far.
- Assessment Period The period in a day over which assessments are made.
- Assessment Point A point at which noise measurements are taken or estimated. A point at which noise measurements are taken or estimated.
- Background Noise Background noise is the term used to describe the underlying level of noise present in the ambient noise, measured in the absence of the noise under investigation, when extraneous noise is removed. It is described as the average of the minimum noise levels measured on a sound level meter and is measured statistically as the A-weighted noise level exceeded for ninety percent of a sample period. This is represented as the L₉₀ noise level (see below).
- Decibel [dB] The units that sound is measured in. The following are examples of the decibel readings of every day sounds:
 - 0dB The faintest sound we can hear
 - 30dB A quiet library or in a quiet location in the country
 - 45dB Typical office space. Ambience in the city at night
 - 60dB Martin Place at lunch time
 - 70dB The sound of a car passing on the street
 - 80dB Loud music played at home
 - 90dB The sound of a truck passing on the street
 - 100dB The sound of a rock band
 - 115dB Limit of sound permitted in industry
 - 120dB Deafening
- dB(A): A-weighted decibels The ear is not as effective in hearing low frequency sounds as it is hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high The sound level meter replicates the human frequency sounds. response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter.
- Frequency is synonymous to pitch. Sounds have a pitch which is Frequency peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.

Impulsive noise	Having a high peak of short duration or a sequence of such peaks. A sequence of impulses in rapid succession is termed repetitive impulsive noise.
Intermittent noise	The level suddenly drops to that of the background noise several times during the period of observation. The time during which the noise remains at levels different from that of the ambient is one second or more.
L _{max}	The maximum sound pressure level measured over a given period.
L _{min}	The minimum sound pressure level measured over a given period.
L ₁	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
L ₁₀	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
L ₉₀	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L_{90} noise level expressed in units of dB(A).
L _{eq}	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time.
Reflection	Sound wave changed in direction of propagation due to a solid object obscuring its path.
SEL	Sound Exposure Level (SEL) is the constant sound level which, if maintained for a period of 1 second would have the same acoustic energy as the measured noise event. SEL noise measurements are useful as they can be converted to obtain Leq sound levels over any period of time and can be used for predicting noise at various locations.
Sound	A fluctuation of air pressure which is propagated as a wave through air.
Sound Absorption	The ability of a material to absorb sound energy through its conversion into thermal energy.
Sound Level Meter	An instrument consisting of a microphone, amplifier and indicating device, having a declared performance and designed to measure sound pressure levels.
Sound Pressure Level	The level of noise, usually expressed in decibels, as measured by a standard sound level meter with a microphone.
Sound Power Level	Ten times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power.
Tonal noise	Containing a prominent frequency and characterised by a definite pitch.

APPENDIX B - NOISE MONITORING METHODOLOGY

Noise Monitoring Equipment

All long term noise monitoring was conducted using RTA Technology noise loggers. The noise monitoring equipment used here complies with Australian Standard 1259.2-1990 "Acoustics - Sound Level Meters" and is designated as a Type 2 instrument suitable for field use.

A noise monitor consists of a sound level meter and a computer housed in a weather resistant enclosure. Ambient noise levels were recorded at a rate of 10 samples per second. Every 15 minutes, the data is processed statistically and stored in memory. The equipment was calibrated prior and subsequent to the measurement period using a Bruel & Kjaer Type 4230 calibrator. No significant drift in calibration was observed.

Meteorology During Monitoring

Measurements affected by extraneous noise, wind (greater than 5m/s) or rain were excluded from the recorded data in accordance with the INP. The Bureau of Meteorology provided meteorological data, which is considered representative of the site, for the duration of the noise monitoring period.

Noise vs Time Graphs

Noise almost always varies with time. Noise environments can be described using various descriptors to show how a noise ranges about a level. In this report, noise values measured or referred to include the L_{10} , L_{90} , and L_{eq} levels. The statistical descriptors L_{10} and L_{90} measure the noise level exceeded for 10% and 90% of the sample measurement time. The L_{eq} level is the equivalent continuous noise level or the level averaged on an equal energy basis. Measurement sample periods are usually ten to fifteen minutes. The Noise -vs- Time graphs representing measured noise levels at the noise monitoring locations in Appendix C illustrate these concepts.

Noise levels are commonly measured in units of A-weighted decibels or dB(A). The <u>"A-weighting"</u> refers to a standardised amplitude versus frequency curve used to "weight" sound measurements to represent the response of the human ear. The human ear is less sensitive to low pitch sound than it is to high pitch sound. Overall A-weighted measurements quantify sound with a single number to represent how people subjectively hear different frequencies at different levels.

<u>Background noise</u> is the term used to describe the noise measured in the absence of the noise under investigation. It is described as the average of the minimum noise levels measured on a sound level meter and is measured statistically as the A-weighted noise level exceeded for ninety percent of a sample time period. This is represented as the L_{90} noise level.

APPENDIX C – NOISE MONITORING RESULTS

6 Jean St, Strathfield South

BACKGROUND & AMBIENT NOISE MONITORING RESULTS NSW EPA's 'INDUSTRIAL NOISE POLICY', 2000

	L90 Ba	L90 Background Noise Levels ⁵		Leq Ar	mbient Nois	e Levels
Day	Day	Evening	Night	Day	Evening	Night
Wednesday-16-February-2005	55.4	49.6	44.6	58.7	55.3	53.9
Thursday-17-February-2005	51.4	48.3	40.0	55.7	54.5	51.0
Friday-18-February-2005	49.1	48.0	45.2	64.5	65.2	50.9
Saturday-19-February-2005	46.1	-	42.5	57.1	-	50.6
Sunday-20-February-2005	50.5	53.4	42.8	61.2	60.5	50.8
Monday-21-February-2005	46.3	49.5	44.6	54.3	54.3	52.7
Tuesday-22-February-2005	49.3	49.8	40.7	56.1	55.3	52.2
Wednesday-23-February-2005	48.4	47.9	42.1	55.0	53.9	51.8
Thursday-24-February-2005	48.7	47.4	43.7	55.4	54.5	52.8
Friday-25-February-2005	49.0	-	-	55.7	-	-
Saturday-26-February-2005	-	-	-	-	-	-
Sunday-27-February-2005	-	-	-	-	-	-
Monday-28-February-2005	-	-	-	-	-	-
Tuesday-01-March-2005	-	-	-	-	-	-
Wednesday-02-March-2005	-	-	-	-	-	-
Thursday-03-March-2005	-	-	-	-	-	-
Representative Level	49	49	43	59	59	52

Notes:

1. Day is taken to be 7:00am to 6:00pm

2. Evening is taken to be 6:00pm to 10:00pm.

3. Night is taken to be the remaining periods.

4. Partial day's monitoring

5. Assessment Background Level (ABL)

6. Rating Background Level (RBL) for L90 and logarithmic average for Leq

TRAFFIC NOISE MONITORING RESULTS NSW EPA 'ENVIRONMENTAL CRITERIA FOR ROAD TRAFFIC NOISE', 1999

	Leq Nois	se Levels	ls Leq 1hr Noise Levels				
Day	Day	Night	Day - Up	Day - Low	Night - Up	Night - Low	
Wednesday-16-February-2005	58.4	56.4	61.2	57.7	59.4	53.4	
Thursday-17-February-2005	57.9	53.5	58.8	55.7	57.2	48.7	
Friday-18-February-2005	67.1	53.4	75.4	55.4	55.5	52.0	
Saturday-19-February-2005	59.6	53.1	66.5	52.3	55.4	50.7	
Sunday-20-February-2005	63.6	53.3	70.4	56.4	56.8	51.1	
Monday-21-February-2005	56.8	55.2	59.2	54.2	57.3	52.2	
Tuesday-22-February-2005	58.5	54.7	61.8	55.3	58.6	50.7	
Wednesday-23-February-2005	57.3	54.3	59.1	55.2	57.9	51.4	
Thursday-24-February-2005	57.7	55.3	60.0	54.6	60.2	52.0	
Friday-25-February-2005	58.2	-	60.1	55.8	-	-	
Saturday-26-February-2005	-	-	-	-	-	-	
Sunday-27-February-2005	-	-	-	-	-	-	
Monday-28-February-2005	-	-	-	-	-	-	
Tuesday-01-March-2005	-	-	-	-	-	-	
Wednesday-02-March-2005	-	-	-	-	-	-	
Thursday-03-March-2005	-	-	-	-	-	-	
Representative Weekday	60.7	54.8	67.2	55.6	58.3	51.7	
Representative Weekend	62.1	53.2	68.9	54.8	56.1	50.9	
TB867-01S07 (rev0) 6 Jean Style							

EXISTING AMBIENT NOISE LEVELS 6 Jean St, Strathfield South Wednesday, 16 February 2005



EPA Industrial Noise Policy (Free Field)						
Descriptor	Day Evening Night					
	7am-6pm	6pm-10pm	10pm-7am			
L90	55.4	49.6	44.6			
Leq	58.7	55.3	53.9			

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected 4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax- Leq $\ge 15dB(A)$

EPA Traffic Noise Policy (1m from facade) (see note				
	Day	Night ²		
Descriptor	7am-10pm	10pm-7am		
Leq 15 hr and Leq 9 hr	58.4	56.4		
Leq 1hr upper 10 percentile	61.2	59.4		
Leq 1hr lower 10 percentile	57.7	53.4		

Night Time Maximum Noise Levels (see note 4					
Lmax (Range)	67.5	to	80.0		
Lmax - Leq (Range)	16.5	to	25.3		

6 Jean St, Strathfield South Thursday, 17 February 2005



EPA Industrial Noise Policy (Free Field)						
Descriptor	Day Evening Night ²					
	7am-6pm	6pm-10pm	10pm-7am			
L90	51.4	48.3	40.0			
Leq	55.7	54.5	51.0			

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	m facade)	(see note 3)
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	57.9	53.5
Leq 1hr upper 10 percentile	58.8	57.2
Leq 1hr lower 10 percentile	55.7	48.7

Night Time Maximum Noise Levels (see note 4)			
Lmax (Range)	67.1	to	71.5
Lmax - Leq (Range)	16.3	to	21.8

EXISTING AMBIENT NOISE LEVELS 6 Jean St, Strathfield South Friday, 18 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	49.1	48.0	45.2	
Leq	64.5	65.2	50.9	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq \geq 15dB(A)

EPA Traffic Noise Policy (1m fro	m facade)	(see note 3)
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	67.1	53.4
Leq 1hr upper 10 percentile	75.4	55.5
Leq 1hr lower 10 percentile	55.4	52.0

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	65.3	to	73.5
Lmax - Leq (Range)	15.2	to	22.5

TB867-01S07 (rev0) 6 Jean St.xls

6 Jean St, Strathfield South Saturday, 19 February 2005



Time of Day

EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	46.1	-	42.5	
Leq	57.1	-	50.6	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Night ²	
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	59.6	53.1
Leq 1hr upper 10 percentile	66.5	55.4
Leq 1hr lower 10 percentile	52.3	50.7

Night Time Maximum Noise Levels (se			
Lmax (Range)	65.2	to	65.2
Lmax - Leq (Range)	17.0	to	17.0

6 Jean St, Strathfield South Sunday, 20 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	50.5	53.4	42.8	
Leq	61.2	60.5	50.8	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m from facade)		(see note 3)
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	63.6	53.3
Leq 1hr upper 10 percentile	70.4	56.8
Leq 1hr lower 10 percentile	56.4	51.1

Night Time Maximum Noise Levels (see note			
Lmax (Range)	66.4	to	69.8
Lmax - Leq (Range)	15.2	to	19.9

6 Jean St, Strathfield South Monday, 21 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	46.3	49.5	44.6	
Leq	54.3	54.3	52.7	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	(see note 3)	
Day		Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	56.8	55.2
Leq 1hr upper 10 percentile	59.2	57.3
Leq 1hr lower 10 percentile	54.2	52.2

Night Time Maxim	evels.	(see note 4)	
Lmax (Range)	to	83.6	
Lmax - Leq (Range)	18.5	to	31.0

6 Jean St, Strathfield South Tuesday, 22 February 2005



EPA Industrial Noise Policy (Free Field)					
Descriptor	Day	Evening	Night ²		
	7am-6pm	6pm-10pm	10pm-7am		
L90	49.3	49.8	40.7		
Leq	56.1	55.3	52.2		

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m from facade)		(see note 3)
Day		Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	58.5	54.7
Leq 1hr upper 10 percentile	61.8	58.6
Leq 1hr lower 10 percentile	55.3	50.7

Night Time Maxim	(see note 4)		
Lmax (Range)	to	71.3	
Lmax - Leq (Range)	15.2	to	19.8

6 Jean St, Strathfield South Wednesday, 23 February 2005



Time of Day

EPA Industrial Noise Policy (Free Field)					
Descriptor	Day Evening Nig 7am-6pm 6pm-10pm 10pm		Night ²		
			10pm-7am		
L90	48.4	47.9	42.1		
Leq	55.0	53.9	51.8		

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Night ²	
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	57.3	54.3
Leq 1hr upper 10 percentile	59.1	57.9
Leq 1hr lower 10 percentile	55.2	51.4

Night Time Maxim	(see note 4)		
Lmax (Range)	to	70.7	
Lmax - Leq (Range)	16.2	to	18.9

6 Jean St, Strathfield South Thursday, 24 February 2005



Time of Day

EPA Industrial Noise Policy (Free Field)				
Descriptor	Day Evening		Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	48.7	47.4	43.7	
Leq	55.4	54.5	52.8	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m from facade) (see no		
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	57.7	55.3
Leq 1hr upper 10 percentile	60.0	60.2
Leq 1hr lower 10 percentile	54.6	52.0

Night Time Maximum Noise Levels (see note				
Lmax (Range)	to	78.1		
Lmax - Leq (Range)	15.5	to	20.6	

6 Jean St, Strathfield South Friday, 25 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	49.0	-	-	
Leq	55.7	-	-	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m from facade)		(see note 3)
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	58.2	-
Leq 1hr upper 10 percentile	60.1	-
Leq 1hr lower 10 percentile	55.8	-

Night Time Maximum Noise Levels (see note 4)					
Lmax (Range)	-	to	-		
Lmax - Leq (Range)	-	to	-		

42 Norfolk St, South Strathfield

BACKGROUND & AMBIENT NOISE MONITORING RESULTS NSW EPA's 'INDUSTRIAL NOISE POLICY', 2000

	L90 Background Noise Levels ⁵			Leq Ambient Noise Levels		
Day	Day	Evening	Night	Day	Evening	Night
Tuesday-15-February-2005	47.7	46.3	40.4	61.9	60.7	55.8
Wednesday-16-February-2005	47.9	47.4	39.1	60.2	58.7	54.7
Thursday-17-February-2005	47.8	48.8	42.2	61.2	60.2	55.0
Friday-18-February-2005	50.4	49.1	43.1	61.6	60.3	54.7
Saturday-19-February-2005	47.5	-	39.0	60.7	-	52.0
Sunday-20-February-2005	42.2	46.0	41.5	61.0	61.4	54.4
Monday-21-February-2005	47.0	45.7	41.7	61.5	60.8	54.4
Tuesday-22-February-2005	46.3	45.3	40.1	60.6	60.9	55.1
Wednesday-23-February-2005	46.7	49.6	42.2	60.9	60.5	55.2
Thursday-24-February-2005	49.0	-	-	61.4	-	-
Friday-25-February-2005	-	-	-	-	-	-
Saturday-26-February-2005	-	-	-	-	-	-
Sunday-27-February-2005	-	-	-	-	-	-
Monday-28-February-2005	-	-	-	-	-	-
Tuesday-01-March-2005	-	-	-	-	-	-
Wednesday-02-March-2005	-	-	-	-	-	-
Representative Level	48	47	42	61	61	55

Notes:

1. Day is taken to be 7:00am to 6:00pm

2. Evening is taken to be 6:00pm to 10:00pm.

3. Night is taken to be the remaining periods.

4. Partial day's monitoring

5. Assessment Background Level (ABL)

6. Rating Background Level (RBL) for L90 and logarithmic average for Leq

TRAFFIC NOISE MONITORING RESULTS NSW EPA 'ENVIRONMENTAL CRITERIA FOR ROAD TRAFFIC NOISE', 1999

	Leq Noise Levels		Leq 1hr Noise Levels					
Day	Day	Night	Day - Up	Day - Low	Night - Up	Night - Low		
Tuesday-15-February-2005	64.0	58.3	64.5	62.9	63.0	49.6		
Wednesday-16-February-2005	62.4	57.2	63.8	60.2	61.5	52.6		
Thursday-17-February-2005	63.5	57.5	65.1	61.4	61.6	52.6		
Friday-18-February-2005	63.9	57.2	65.3	61.3	59.4	54.3		
Saturday-19-February-2005	63.2	54.5	66.0	60.4	56.8	52.4		
Sunday-20-February-2005	63.5	56.9	67.0	58.6	61.1	51.2		
Monday-21-February-2005	63.9	56.9	65.2	61.3	60.9	52.3		
Tuesday-22-February-2005	63.2	57.6	66.2	59.5	61.6	51.2		
Wednesday-23-February-2005	63.3	57.7	65.0	61.0	61.7	51.4		
Thursday-24-February-2005	63.9	-	65.2	63.1	-	-		
Friday-25-February-2005	-	-	-	-	-	-		
Saturday-26-February-2005	-	-	-	-	-	-		
Sunday-27-February-2005	-	-	-	-	-	-		
Monday-28-February-2005	-	-	-	-	-	-		
Tuesday-01-March-2005	-	-	-	-	-	-		
Wednesday-02-March-2005	-	-	-	-	-	-		
Representative Weekday	63.5	57.5	65.1	61.5	61.5	52.2		
Representative Weekend	63.4	55.9	66.5	59.6	59.5	51.9		
EXISTING AMBIENT NOISE LEVELS 42 Norfolk St, South Strathfield Tuesday, 15 February 2005



EPA Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night ²
	7am-6pm 6pm-10pm		10pm-7am
L90	47.7	46.3	40.4
Leq	61.9	60.7	55.8

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected 4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax- Leq $\ge 15dB(A)$

EPA Traffic Noise Policy (1m from facade) (see note 3		
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	64.0	58.3
Leq 1hr upper 10 percentile	64.5	63.0
Leq 1hr lower 10 percentile	62.9	49.6

Night Time Maximum Noise Levels (see note 4)				
Lmax (Range)	to	84.8		
Lmax - Leq (Range)	17.4	to	28.4	

Wednesday, 16 February 2005 100 100 -Leq 90 90 Sound Pressure Level dB(A) 80 80 70 70 60 60 50 50 40 40 30 30 20 20 0:00 2:00 9:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:0(24:00) 1:00 3:00 4:00 5:00 6:00 7:00 8:00 **Time of Day**

42 Norfolk St, South Strathfield

EPA Industrial Noise Policy (Free Field)			
Descriptor	Day Evening Nigh		
	7am-6pm	6pm-10pm	10pm-7am
L90	47.9	47.4	39.1
Leq	60.2	58.7	54.7

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m from facade)		(see note 3)
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	62.4	57.2
Leq 1hr upper 10 percentile	63.8	61.5
Leq 1hr lower 10 percentile	60.2	52.6

Night Time Maxim	evels.	(see note 4)	
Lmax (Range)	to	82.8	
Lmax - Leq (Range)	20.0	to	27.7

EXISTING AMBIENT NOISE LEVELS 42 Norfolk St, South Strathfield

Thursday, 17 February 2005



EPA Industrial Noise Policy (Free Field)			
Descriptor	Day Evening 7am-6pm 6pm-10pm		Night ²
			10pm-7am
L90	47.8	48.8	42.2
Leq	61.2	60.2	55.0

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq \geq 15dB(A)

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	63.5	57.5
Leq 1hr upper 10 percentile	65.1	61.6
Leq 1hr lower 10 percentile	61.4	52.6

Night Time Maxim	evels	(see note 4)	
Lmax (Range)	74.1	to	82.8
Lmax - Leq (Range)	18.6	to	27.6

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EXISTING AMBIENT NOISE LEVELS 42 Norfolk St, South Strathfield Friday, 18 February 2005



EPA Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night ²
	7am-6pm	6pm-10pm	10pm-7am
L90	50.4	49.1	43.1
Leq	61.6	60.3	54.7

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m from facade) (see		
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	63.9	57.2
Leq 1hr upper 10 percentile	65.3	59.4
Leq 1hr lower 10 percentile	61.3	54.3

Night Time Maximum Noise Levels (see				
Lmax (Range)	to	87.4		
Lmax - Leq (Range)	18.2	to	31.6	

42 Norfolk St, South Strathfield

Saturday, 19 February 2005



Time of Day

EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Night ²		
	7am-6pm	6pm-10pm	10pm-7am	
L90	47.5	-	39.0	
Leq	60.7	-	52.0	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m from facade) (see note 3				
	Night ²			
Descriptor	7am-10pm	10pm-7am		
Leq 15 hr and Leq 9 hr	63.2	54.5		
Leq 1hr upper 10 percentile	66.0	56.8		
Leq 1hr lower 10 percentile	60.4	52.4		

Night Time Maximum Noise Levels (see note 4)				
Lmax (Range)	74.2	to	83.9	
Lmax - Leq (Range)	22.1	to	29.6	

EXISTING AMBIENT NOISE LEVELS 42 Norfolk St, South Strathfield Sunday, 20 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day Evening Night ²			
	7am-6pm	6pm-10pm	10pm-7am	
L90	42.2	46.0	41.5	
Leq	61.0	61.4	54.4	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq \geq 15dB(A)

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Night ²	
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	63.5	56.9
Leq 1hr upper 10 percentile	67.0	61.1
Leq 1hr lower 10 percentile	58.6	51.2

Night Time Maxim	evels	(see note 4)	
Lmax (Range)	71.2	to	78.2
Lmax - Leq (Range)	17.0	to	23.5

rev 32

 $\underbrace{\operatorname{Honday, 21 February 2005}}_{\operatorname{Honday, 21 February 2005}}$

EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	47.0	45.7	41.7	
Leq	61.5	60.8	54.4	

3:00

4:00

5:00

6:00

2:00

NOTES:

7:00

8:00

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq \geq 15dB(A)

EPA Traffic Noise Policy (1m from facade) (see note 3				
	Night ²			
Descriptor	7am-10pm	10pm-7am		
Leq 15 hr and Leq 9 hr	63.9	56.9		
Leq 1hr upper 10 percentile	65.2	60.9		
Leq 1hr lower 10 percentile	61.3	52.3		

9:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:0($24{:}00$) Time of Day

100

90

80

70

60

50

40

30

20

Έ

Night Time Maximum Noise Levels (see note 4)				
Lmax (Range)	71.7	to	80.2	
Lmax - Leq (Range)	20.0	to	24.6	

EXISTING AMBIENT NOISE LEVELS 42 Norfolk St, South Strathfield Monday 21 February 2005

100

90

Sound Pressure Level dB(A)

40

30

20

rev 32

0:00

1:00

EXISTING AMBIENT NOISE LEVELS 42 Norfolk St, South Strathfield Tuesday, 22 February 2005



Ti	ime	of	Day
			_

EPA Industrial Noise Policy (Free Field)				
Descriptor	Day Evening Night ²			
	7am-6pm	6pm-10pm	10pm-7am	
L90	46.3	45.3	40.1	
Leq	60.6	60.9	55.1	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m from facade) (see note a				
	Night ²			
Descriptor	7am-10pm	10pm-7am		
Leq 15 hr and Leq 9 hr	63.2	57.6		
Leq 1hr upper 10 percentile	66.2	61.6		
Leq 1hr lower 10 percentile	59.5	51.2		

Night Time Maximum Noise Levels (see note 4)					
Lmax (Range)	to	81.7			
Lmax - Leq (Range)	19.9	to	25.8		

EXISTING AMBIENT NOISE LEVELS 42 Norfolk St, South Strathfield Wednesday, 23 February 2005



Time of Day

EPA Industrial Noise Policy (Free Field)						
Descriptor	Day	Evening	Night ²			
	7am-6pm	6pm-10pm	10pm-7am			
L90	46.7	49.6	42.2			
Leq	60.9	60.5	55.2			

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m from facade) (see note				
	Day	Night ²		
Descriptor	7am-10pm	10pm-7am		
Leq 15 hr and Leq 9 hr	63.3	57.7		
Leq 1hr upper 10 percentile	65.0	61.7		
Leq 1hr lower 10 percentile	61.0	51.4		

Night Time Maximum Noise Levels (see note 4)					
Lmax (Range)	to	83.3			
Lmax - Leq (Range)	18.3	to	25.7		

EXISTING AMBIENT NOISE LEVELS 42 Norfolk St, South Strathfield

Thursday, 24 February 2005



EPA Industrial Noise Policy (Free Field)					
Descriptor	Day	Evening	Night ²		
	7am-6pm	6pm-10pm	10pm-7am		
L90	49.0	-	-		
Leq	61.4	-	-		

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected 4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq $\ge 15dB(A)$

EPA Traffic Noise Policy (1m fro	m facade)	(see note 3)
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	63.9	-
Leq 1hr upper 10 percentile	65.2	-
Leq 1hr lower 10 percentile	63.1	-

Night Time Maximum Noise Levels (see no				
Lmax (Range)	-	to	-	
Lmax - Leq (Range)	-	to	-	

14 Wentworth St, Greenacre

BACKGROUND & AMBIENT NOISE MONITORING RESULTS NSW EPA's 'INDUSTRIAL NOISE POLICY', 2000

	L90 Background Noise Levels ⁵			Leq Ai	mbient Nois	e Levels
Day	Day	Evening	Night	Day	Evening	Night
Wednesday-16-February-2005	61.6	40.1	35.1	66.0	50.6	46.8
Thursday-17-February-2005	44.2	41.8	37.2	64.6	50.2	47.4
Friday-18-February-2005	48.9	42.1	38.2	64.2	50.9	47.6
Saturday-19-February-2005	44.1	-	35.1	59.5	-	42.6
Sunday-20-February-2005	40.3	45.1	36.8	61.3	59.8	44.1
Monday-21-February-2005	39.9	42.1	38.4	53.5	69.2	53.5
Tuesday-22-February-2005	41.1	41.0	36.5	52.8	66.8	44.4
Wednesday-23-February-2005	43.6	40.8	39.6	54.4	63.5	46.8
Thursday-24-February-2005	44.7	41.7	38.9	57.7	52.5	47.0
Friday-25-February-2005	49.4	-	-	60.0	-	-
Saturday-26-February-2005	-	-	-	-	-	-
Sunday-27-February-2005	-	-	-	-	-	-
Monday-28-February-2005	-	-	-	-	-	-
Tuesday-01-March-2005	-	-	-	-	-	-
Wednesday-02-March-2005	-	-	-	-	-	-
Thursday-03-March-2005	-	-	-	-	-	-
Representative Level	44	42	37	61	63	48

Notes:

1. Day is taken to be 7:00am to 6:00pm

2. Evening is taken to be 6:00pm to 10:00pm.

3. Night is taken to be the remaining periods.

4. Partial day's monitoring

5. Assessment Background Level (ABL)

6. Rating Background Level (RBL) for L90 and logarithmic average for Leq

TRAFFIC NOISE MONITORING RESULTS NSW EPA 'ENVIRONMENTAL CRITERIA FOR ROAD TRAFFIC NOISE', 1999

	Leq Noise Levels		Leq 1hr N	oise Levels		
Day	Day	Night	Day - Up	Day - Low	Night - Up	Night - Low
Wednesday-16-February-2005	60.3	49.3	68.5	53.1	52.7	44.9
Thursday-17-February-2005	65.8	49.9	70.9	49.5	56.0	44.0
Friday-18-February-2005	65.9	50.1	70.5	50.9	55.9	45.4
Saturday-19-February-2005	62.0	45.1	68.2	55.3	48.4	40.4
Sunday-20-February-2005	63.7	46.6	71.7	50.9	48.7	41.3
Monday-21-February-2005	65.8	56.0	73.7	50.7	64.9	45.0
Tuesday-22-February-2005	63.6	46.9	71.8	49.0	50.2	41.6
Wednesday-23-February-2005	61.6	49.3	69.0	51.3	53.1	44.9
Thursday-24-February-2005	59.3	49.5	62.5	50.7	55.5	44.2
Friday-25-February-2005	62.5	-	65.0	59.0	-	-
Saturday-26-February-2005	-	-	-	-	-	-
Sunday-27-February-2005	-	-	-	-	-	-
Monday-28-February-2005	-	-	-	-	-	-
Tuesday-01-March-2005	-	-	-	-	-	-
Wednesday-02-March-2005	-	-	-	-	-	-
Thursday-03-March-2005	-	-	-	-	-	-
Representative Weekday	63.7	51.1	70.1	53.2	58.3	44.4
Representative Weekend	62.9	45.9	70.3	53.6	48.5	40.9

EXISTING AMBIENT NOISE LEVELS 14 Wentworth St, Greenacre Wednesday, 16 February 2005



EPA Industrial Noise Policy (Free Field)						
Descriptor	Day	Evening	Night ²			
	7am-6pm	6pm-10pm	10pm-7am			
L90	61.6	40.1	35.1			
Leq	66.0	50.6	46.8			

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected 4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax- Leq $\ge 15dB(A)$

EPA Traffic Noise Policy (1m from facade) (see note a				
	Night ²			
Descriptor	7am-10pm	10pm-7am		
Leq 15 hr and Leq 9 hr	60.3	49.3		
Leq 1hr upper 10 percentile	68.5	52.7		
Leq 1hr lower 10 percentile	53.1	44.9		

Night Time Maximum Noise Levels (see note 4)					
Lmax (Range)	to	75.9			
Lmax - Leq (Range)	19.2	to	30.4		

14 Wentworth St, Greenacre Thursday, 17 February 2005



EPA Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night ²
	7am-6pm	6pm-10pm	10pm-7am
L90	44.2	41.8	37.2
Leq	64.6	50.2	47.4

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

Graphed data measured in free-field; tabulated results facade corrected
Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	65.8	49.9
Leq 1hr upper 10 percentile	70.9	56.0
Leq 1hr lower 10 percentile	49.5	44.0

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	65.7	to	84.0
Lmax - Leq (Range)	16.9	to	35.5

EXISTING AMBIENT NOISE LEVELS

14 Wentworth St, Greenacre Friday, 18 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	48.9	42.1	38.2	
Leq	64.2	50.9	47.6	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq \geq 15dB(A)

EPA Traffic Noise Policy (1m from facade) (see note		
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	65.9	50.1
Leq 1hr upper 10 percentile	70.5	55.9
Leq 1hr lower 10 percentile	50.9	45.4

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	65.9	to	82.2
Lmax - Leq (Range)	17.1	to	32.6

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EXISTING AMBIENT NOISE LEVELS 14 Wentworth St, Greenacre

Saturday, 19 February 2005



Time of Day

EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	44.1	-	35.1	
Leq	59.5	-	42.6	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m from facade) (see note		
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	62.0	45.1
Leq 1hr upper 10 percentile	68.2	48.4
Leq 1hr lower 10 percentile	55.3	40.4

Night Time Maximum Noise Levels (see note 4)				
Lmax (Range)	65.4	to	66.4	
Lmax - Leq (Range)	17.9	to	23.6	

EXISTING AMBIENT NOISE LEVELS 14 Wentworth St, Greenacre

Sunday, 20 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	40.3	45.1	36.8	
Leq	61.3	59.8	44.1	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	63.7	46.6
Leq 1hr upper 10 percentile	71.7	48.7
Leq 1hr lower 10 percentile	50.9	41.3

Night Time Maximum Noise Levels (see note 4				
Lmax (Range)	82.2	to	82.8	
Lmax - Leq (Range)	16.9	to	38.3	

EXISTING AMBIENT NOISE LEVELS 14 Wentworth St, Greenacre Monday, 21 February 2005



EPA Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night ²
	7am-6pm	6pm-10pm	10pm-7am
L90	39.9	42.1	38.4
Leq	53.5	69.2	53.5

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	65.8	56.0
Leq 1hr upper 10 percentile	73.7	64.9
Leq 1hr lower 10 percentile	50.7	45.0

Night Time Maxim	evels	(see note 4)	
Lmax (Range)	65.8	to	97.0
Lmax - Leq (Range)	16.1	to	34.6

14 Wentworth St, Greenacre Tuesday, 22 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	41.1	41.0	36.5	
Leq	52.8	66.8	44.4	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	63.6	46.9
Leq 1hr upper 10 percentile	71.8	50.2
Leq 1hr lower 10 percentile	49.0	41.6

Night Time Maxim	(see note 4)		
Lmax (Range)	68.0	to	78.6
Lmax - Leq (Range)	19.0	to	35.0

14 Wentworth St, Greenacre Wednesday, 23 February 2005



Time of L

EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	43.6	40.8	39.6	
Leq	54.4	63.5	46.8	

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq \geq 15dB(A)

EPA Traffic Noise Policy (1m from facade) (see		
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	61.6	49.3
Leq 1hr upper 10 percentile	69.0	53.1
Leq 1hr lower 10 percentile	51.3	44.9

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	65.3	to	78.8
Lmax - Leq (Range)	17.9	to	29.6

NOTES:

14 Wentworth St, Greenacre Thursday, 24 February 2005



Time of Day

EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	44.7	41.7	38.9	
Leq	57.7	52.5	47.0	

NOTES:

 $Leq \ge 15dB(A)$

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

Graphed data measured in free-field; tabulated results facade corrected
Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-

	Day	Night
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	59.3	49.5
Leq 1hr upper 10 percentile	62.5	55.5
Leq 1hr lower 10 percentile	50.7	44.2

(see note 3)

EPA Traffic Noise Policy (1m from facade)

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	67.4	to	84.4
Lmax - Leq (Range)	15.3	to	31.4

14 Wentworth St, Greenacre Friday, 25 February 2005



EPA Industrial Noise Policy (Free Field)					
Descriptor	Day	Evening	Night ²		
	7am-6pm	6pm-10pm	10pm-7am		
L90	49.4	-	-		
Leq	60.0	-	-		

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected 4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq $\ge 15dB(A)$

EPA Traffic Noise Policy (1m from facade) (see				
	Day	Night ²		
Descriptor	7am-10pm	10pm-7am		
Leq 15 hr and Leq 9 hr	62.5	-		
Leq 1hr upper 10 percentile	65.0	-		
Leq 1hr lower 10 percentile	59.0	-		

Night Time Maxim	Levels	(see note 4)	
Lmax (Range)	-	to	-
Lmax - Leq (Range)	-	to	-

124B Dean St, Sth Strathfield

BACKGROUND & AMBIENT NOISE MONITORING RESULTS NSW EPA's 'INDUSTRIAL NOISE POLICY', 2000

	L90 Ba	ckground Nois	e Levels⁵	Leq Ar	mbient Nois	e Levels
Day	Day	Evening	Night	Day	Evening	Night
Thursday-16-February-1905	46.4	41.1	35.3	50.9	49.1	43.2
Friday-17-February-1905	42.2	40.2	38.5	51.1	48.8	53.6
Saturday-18-February-1905	44.2	44.8	39.1	59.8	50.6	47.2
Sunday-19-February-1905	40.6	-	39.5	59.3	-	57.0
Monday-20-February-1905	40.4	-	41.2	59.6	-	50.5
Tuesday-21-February-1905	43.7	41.8	42.5	53.1	51.2	47.9
Wednesday-22-February-1905	45.0	43.3	40.3	54.7	57.5	55.6
Thursday-23-February-1905	43.4	41.9	38.2	53.7	61.3	53.2
Friday-24-February-1905	43.4	41.2	41.2	67.0	53.3	48.3
Saturday-25-February-1905	45.2	-	-	54.1	-	-
Sunday-26-February-1905	-	-	-	-	-	-
Monday-27-February-1905	-	-	-	-	-	-
Tuesday-28-February-1905	-	-	-	-	-	-
Wednesday-01-March-1905	-	-	-	-	-	-
Thursday-02-March-1905	-	-	-	-	-	-
Friday-03-March-1905	-	-	-	-	-	-
Representative Level	44	42	40	60	56	53

Notes:

1. Day is taken to be 7:00am to 6:00pm

2. Evening is taken to be 6:00pm to 10:00pm.

3. Night is taken to be the remaining periods.

4. Partial day's monitoring

5. Assessment Background Level (ABL)

6. Rating Background Level (RBL) for L90 and logarithmic average for Leq

TRAFFIC NOISE MONITORING RESULTS NSW EPA 'ENVIRONMENTAL CRITERIA FOR ROAD TRAFFIC NOISE', 1999

	Leq Noi	se Levels		Leq 1hr N	oise Levels	
Day	Day	Night	Day - Up	Day - Low	Night - Up	Night - Low
Thursday-16-February-1905	51.7	45.7	53.5	47.9	52.4	39.7
Friday-17-February-1905	53.1	56.1	57.0	49.4	64.4	43.4
Saturday-18-February-1905	61.0	49.7	70.5	52.6	52.8	45.3
Sunday-19-February-1905	61.8	59.5	66.9	50.1	62.5	48.4
Monday-20-February-1905	62.1	53.0	76.4	48.4	59.9	45.5
Tuesday-21-February-1905	55.1	50.4	57.9	52.0	54.0	47.4
Wednesday-22-February-1905	58.2	58.1	63.8	52.4	65.2	47.4
Thursday-23-February-1905	59.7	55.7	66.6	52.6	61.1	49.9
Friday-24-February-1905	68.2	50.8	76.7	52.4	54.9	47.2
Saturday-25-February-1905	56.6	-	58.7	54.3	-	-
Sunday-26-February-1905	-	-	-	-	-	-
Monday-27-February-1905	-	-	-	-	-	-
Tuesday-28-February-1905	-	-	-	-	-	-
Wednesday-01-March-1905	-	-	-	-	-	-
Thursday-02-March-1905	-	-	-	-	-	-
Friday-03-March-1905	-	-	-	-	-	-
Representative Weekday	61.8	54.3	71.5	51.1	61.1	46.7
Representative Weekend	60.3	57.0	67.5	52.6	59.9	47.1

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EXISTING AMBIENT NOISE LEVELS 124B Dean St, Sth Strathfield Thursday, 16 February 1905



EPA Industrial Noise Policy (Free Field)					
Descriptor	Day	Evening	Night ²		
	7am-6pm	6pm-10pm	10pm-7am		
L90	46.4	41.1	35.3		
Leq	50.9	49.1	43.2		

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected 4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax- Leq $\geq 15dB(A)$

EPA Traffic Noise Policy (1m from facade) (see note 3				
	Day	Night ²		
Descriptor	7am-10pm	10pm-7am		
Leq 15 hr and Leq 9 hr	51.7	45.7		
Leq 1hr upper 10 percentile	53.5	52.4		
Leq 1hr lower 10 percentile	47.9	39.7		

Night Time Maximum Noise Levels (see note 4				
Lmax (Range)	to	71.8		
Lmax - Leq (Range)	15.3	to	25.6	

124B Dean St, Sth Strathfield Friday, 17 February 1905

100 100 -Lea 90 90 Sound Pressure Level dB(A) 80 80 70 70 60 60 50 50 40 40 30 30 20 20 0:00 9:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:0(24:00) 1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00 **Time of Day**

EPA Industrial Noise Policy (Free Field)					
Descriptor	Day	Evening	Night ²		
	7am-6pm	6pm-10pm	10pm-7am		
L90	42.2	40.2	38.5		
Leq	51.1	48.8	53.6		

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

 Graphed data measured in free-field; tabulated results facade corrected
Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq ≥ 15dB(A)

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	53.1	56.1
Leq 1hr upper 10 percentile	57.0	64.4
Leq 1hr lower 10 percentile	49.4	43.4

Night Time Maxim	evels	(see note 4)	
Lmax (Range)	to	68.8	
Lmax - Leq (Range)	16.0	to	24.8

EXISTING AMBIENT NOISE LEVELS 124B Dean St, Sth Strathfield



EPA Industrial Noise Policy (Free Field)					
Descriptor	Day	Evening	Night ²		
	7am-6pm	6pm-10pm	10pm-7am		
L90	44.2	44.8	39.1		
Leq	59.8	50.6	47.2		

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq \geq 15dB(A)

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	61.0	49.7
Leq 1hr upper 10 percentile	70.5	52.8
Leq 1hr lower 10 percentile	52.6	45.3

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	66.3	to	73.4
Lmax - Leq (Range)	16.2	to	27.2

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124B Dean St, Sth Strathfield

Sunday, 19 February 1905



Time of Day

EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	40.6	-	39.5	
Leq	59.3	-	57.0	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m from	m facade)	(see note 3)
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	61.8	59.5
Leq 1hr upper 10 percentile	66.9	62.5
Leq 1hr lower 10 percentile	50.1	48.4

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	to	76.1	
Lmax - Leq (Range)	17.2	to	20.2

EXISTING AMBIENT NOISE LEVELS 124B Dean St, Sth Strathfield Monday, 20 February 1905



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	40.4	-	41.2	
Leq	59.6	-	50.5	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	62.1	53.0
Leq 1hr upper 10 percentile	76.4	59.9
Leq 1hr lower 10 percentile	48.4	45.5

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	to	71.2	
Lmax - Leq (Range)	15.9	to	21.1

EXISTING AMBIENT NOISE LEVELS 124B Dean St, Sth Strathfield Tuesday, 21 February 1905



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	43.7	41.8	42.5	
Leq	53.1	51.2	47.9	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m from facade)		(see note 3)
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	55.1	50.4
Leq 1hr upper 10 percentile	57.9	54.0
Leq 1hr lower 10 percentile	52.0	47.4

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	to	69.7	
Lmax - Leq (Range)	15.1	to	23.6

EXISTING AMBIENT NOISE LEVELS 124B Dean St, Sth Strathfield Wednesday, 22 February 1905



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	45.0	43.3	40.3	
Leq	54.7	57.5	55.6	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	58.2	58.1
Leq 1hr upper 10 percentile	63.8	65.2
Leq 1hr lower 10 percentile	52.4	47.4

Night Time Maximum Noise Levels (see not				
Lmax (Range)	65.6	to	75.3	
Lmax - Leq (Range)	15.1	to	24.9	

124B Dean St, Sth Strathfield Thursday, 23 February 1905



Т	ime	of	Day
			_

EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	43.4	41.9	38.2	
Leq	53.7	61.3	53.2	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m from facade) (see note 3)				
Day		Night ²		
Descriptor	7am-10pm	10pm-7am		
Leq 15 hr and Leq 9 hr	59.7	55.7		
Leq 1hr upper 10 percentile	66.6	61.1		
Leq 1hr lower 10 percentile	52.6	49.9		

Night Time Maximum Noise Levels (see note 4)				
Lmax (Range)	65.1	to	72.9	
Lmax - Leq (Range)	15.6	to	20.0	

EXISTING AMBIENT NOISE LEVELS 124B Dean St, Sth Strathfield

Friday, 24 February 1905



Time of Day

EPA Industrial Noise Policy (Free Field)				
Descriptor	Day Evening		Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	43.4	41.2	41.2	
Leq	67.0	53.3	48.3	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m from facade) (see note 3)				
	Day	Night ²		
Descriptor	7am-10pm	10pm-7am		
Leq 15 hr and Leq 9 hr	68.2	50.8		
Leq 1hr upper 10 percentile	76.7	54.9		
Leq 1hr lower 10 percentile	52.4	47.2		

Night Time Maximum Noise Levels (see note 4)				
Lmax (Range)	66.7	to	72.4	
Lmax - Leq (Range)	15.2	to	25.8	

124B Dean St, Sth Strathfield Saturday, 25 February 1905



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	45.2	-	-	
Leq	54.1	-	-	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected 4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq $\ge 15dB(A)$

EPA Traffic Noise Policy (1m fro	m facade)	(see note 3)
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	56.6	-
Leq 1hr upper 10 percentile	58.7	-
Leq 1hr lower 10 percentile	54.3	-

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	-	to	-
Lmax - Leq (Range)	-	to	-

43 Blanche St, South Strathfield

BACKGROUND & AMBIENT NOISE MONITORING RESULTS NSW EPA's 'INDUSTRIAL NOISE POLICY', 2000

	L90 Ba	ackground Nois	e Levels ⁵	Leq A	mbient Nois	e Levels
Day	Day	Evening	Night	Day	Evening	Night
Wednesday-16-February-2005	44.5	37.8	31.3	50.1	54.7	44.7
Thursday-17-February-2005	40.5	38.4	38.1	49.3	52.5	45.2
Friday-18-February-2005	42.6	42.2	36.7	53.7	52.3	44.1
Saturday-19-February-2005	39.8	-	35.1	56.4	-	41.8
Sunday-20-February-2005	38.4	48.2	37.3	60.3	59.3	45.0
Monday-21-February-2005	42.0	41.1	39.7	50.8	65.6	46.6
Tuesday-22-February-2005	40.8	41.1	38.8	54.3	61.8	45.4
Wednesday-23-February-2005	39.9	39.1	38.7	60.0	59.4	46.0
Thursday-24-February-2005	41.7	40.9	42.3	49.1	57.8	48.7
Friday-25-February-2005	41.6	-	-	49.5	-	-
Saturday-26-February-2005	-	-	-	-	-	-
Sunday-27-February-2005	-	-	-	-	-	-
Monday-28-February-2005	-	-	-	-	-	-
Tuesday-01-March-2005	-	-	-	-	-	-
Wednesday-02-March-2005	-	-	-	-	-	-
Thursday-03-March-2005	-	-	-	-	-	-
Representative Level	41	41	38	55	60	46

Notes:

1. Day is taken to be 7:00am to 6:00pm

2. Evening is taken to be 6:00pm to 10:00pm.

3. Night is taken to be the remaining periods.

4. Partial day's monitoring

5. Assessment Background Level (ABL)

6. Rating Background Level (RBL) for L90 and logarithmic average for Leq

TRAFFIC NOISE MONITORING RESULTS NSW EPA 'ENVIRONMENTAL CRITERIA FOR ROAD TRAFFIC NOISE', 1999

	Leq No	se Levels		Leq 1hr N	oise Levels	
Day	Day	Night	Day - Up	Day - Low	Night - Up	Night - Low
Wednesday-16-February-2005	56.8	47.2	60.7	46.0	54.8	40.2
Thursday-17-February-2005	52.9	47.7	58.7	46.9	52.7	45.4
Friday-18-February-2005	56.0	46.6	62.4	49.8	49.8	42.9
Saturday-19-February-2005	58.9	44.3	67.3	47.6	47.7	41.6
Sunday-20-February-2005	62.8	47.5	71.4	45.0	51.5	43.8
Monday-21-February-2005	62.4	49.1	70.6	49.9	53.1	46.1
Tuesday-22-February-2005	60.1	47.9	68.2	48.4	52.1	44.3
Wednesday-23-February-2005	62.4	48.5	70.7	47.3	53.4	44.5
Thursday-24-February-2005	55.9	51.2	62.4	49.0	52.9	48.3
Friday-25-February-2005	52.0	-	52.9	50.8	-	-
Saturday-26-February-2005	-	-	-	-	-	-
Sunday-27-February-2005	-	-	-	-	-	-
Monday-28-February-2005	-	-	-	-	-	-
Tuesday-01-March-2005	-	-	-	-	-	-
Wednesday-02-March-2005	-	-	-	-	-	-
Thursday-03-March-2005	-	-	-	-	-	-
Representative Weekday	58.8	48.6	66.5	48.8	52.9	45.1
Representative Weekend	61.3	46.2	69.8	46.5	50.0	42.8

EXISTING AMBIENT NOISE LEVELS 43 Blanche St, South Strathfield Wednesday, 16 February 2005



EPA Indust	Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	44.5	37.8	31.3	
Leq	50.1	54.7	44.7	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected 4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax- Leq $\ge 15dB(A)$

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	56.8	47.2
Leq 1hr upper 10 percentile	60.7	54.8
Leq 1hr lower 10 percentile	46.0	40.2

Night Time Maximum Noise Levels (see note 4)				
Lmax (Range)	66.1	to	79.8	
Lmax - Leq (Range)	18.7	to	27.5	

43 Blanche St, South Strathfield Thursday, 17 February 2005



EPA Indust	A Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	40.5	38.4	38.1	
Leq	49.3	52.5	45.2	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	m facade)	(see note 3)
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	52.9	47.7
Leq 1hr upper 10 percentile	58.7	52.7
Leq 1hr lower 10 percentile	46.9	45.4

Night Time Maximum Noise Levels (see note 4				
Lmax (Range)	65.2	to	71.1	
Lmax - Leq (Range)	16.3	to	27.6	

EXISTING AMBIENT NOISE LEVELS 43 Blanche St, South Strathfield

Friday, 18 February 2005



EPA Indust	EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²		
	7am-6pm	6pm-10pm	10pm-7am		
L90	42.6	42.2	36.7		
Leq	53.7	52.3	44.1		

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq \geq 15dB(A)

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	56.0	46.6
Leq 1hr upper 10 percentile	62.4	49.8
Leq 1hr lower 10 percentile	49.8	42.9

Night Time Maximum Noise Levels (see note 4)				
Lmax (Range)	65.2	to	69.5	
Lmax - Leq (Range)	19.4	to	25.4	

TB867-01S06 (rev0) 43 Blanche St.xls
43 Blanche St, South Strathfield Saturday, 19 February 2005



Time of Day

EPA Industrial Noise Policy (Free Field)				
Descriptor	Day Evening		Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	39.8	-	35.1	
Leq	56.4	-	41.8	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	58.9	44.3
Leq 1hr upper 10 percentile	67.3	47.7
Leq 1hr lower 10 percentile	47.6	41.6

Night Time Maxim	evels	(see note 4)	
Lmax (Range)	to	66.4	
Lmax - Leq (Range)	15.2	to	22.6

EXISTING AMBIENT NOISE LEVELS 43 Blanche St, South Strathfield Sunday, 20 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day Evening		Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	38.4	48.2	37.3	
Leq	60.3	59.3	45.0	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	62.8	47.5
Leq 1hr upper 10 percentile	71.4	51.5
Leq 1hr lower 10 percentile	45.0	43.8

Night Time Maxim	evels	(see note 4)	
Lmax (Range)	to	72.8	
Lmax - Leq (Range)	15.1	to	29.8

EXISTING AMBIENT NOISE LEVELS 43 Blanche St, South Strathfield Monday, 21 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day Evening		Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	42.0	41.1	39.7	
Leq	50.8	65.6	46.6	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	62.4	49.1
Leq 1hr upper 10 percentile	70.6	53.1
Leq 1hr lower 10 percentile	49.9	46.1

Night Time Maxim	evels	(see note 4)	
Lmax (Range)	to	71.2	
Lmax - Leq (Range)	15.4	to	26.9

43 Blanche St, South Strathfield Tuesday, 22 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day Evening		Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	40.8	41.1	38.8	
Leq	54.3	61.8	45.4	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	60.1	47.9
Leq 1hr upper 10 percentile	68.2	52.1
Leq 1hr lower 10 percentile	48.4	44.3

Night Time Maxim	evels	(see note 4)	
Lmax (Range)	to	72.8	
Lmax - Leq (Range)	17.1	to	26.5

43 Blanche St, South Strathfield Wednesday, 23 February 2005



Т	ime	of	Day
			_

EPA Industrial Noise Policy (Free Field)						
Descriptor	Day	Evening	Night ²			
	7am-6pm	6pm-10pm	10pm-7am			
L90	39.9	39.1	38.7			
Leq	60.0	59.4	46.0			

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	m facade)	(see note 3)
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	62.4	48.5
Leq 1hr upper 10 percentile	70.7	53.4
Leq 1hr lower 10 percentile	47.3	44.5

Night Time Maximum Noise Levels (see note 4)					
Lmax (Range)	72.5	to	72.5		
Lmax - Leq (Range)	15.1	to	21.6		

43 Blanche St, South Strathfield Thursday, 24 February 2005



Time of Day

EPA Industrial Noise Policy (Free Field)						
Descriptor	Day	Evening	Night ²			
	7am-6pm	6pm-10pm	10pm-7am			
L90	41.7	40.9	42.3			
Leq	49.1	57.8	48.7			

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	m facade)	(see note 3)
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	55.9	51.2
Leq 1hr upper 10 percentile	62.4	52.9
Leq 1hr lower 10 percentile	49.0	48.3

Night Time Maximum Noise Levels (see note 4)						
Lmax (Range)	65.6	to	74.8			
Lmax - Leq (Range)	16.3	to	26.4			

43 Blanche St, South Strathfield Friday, 25 February 2005



EPA Industrial Noise Policy (Free Field)							
Descriptor	Day	Evening	Night ²				
	7am-6pm	6pm-10pm	10pm-7am				
L90	41.6	-	-				
Leq	49.5	-	-				

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	m facade)	(see note 3)
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	52.0	-
Leq 1hr upper 10 percentile	52.9	-
Leq 1hr lower 10 percentile	50.8	-

Night Time Maximum Noise Levels (see				
Lmax (Range)	-	to	-	
Lmax - Leq (Range)	-	to	-	

40 Bazentin St, Belfield

BACKGROUND & AMBIENT NOISE MONITORING RESULTS NSW EPA's 'INDUSTRIAL NOISE POLICY', 2000

	L90 Background Noise Levels ⁵			Leq Ambient Noise Levels		
Day	Day	Evening	Night	Day	Evening	Night
Wednesday-16-February-2005	46.9	38.9	34.5	54.4	54.3	46.4
Thursday-17-February-2005	40.2	38.0	36.0	51.9	50.4	47.4
Friday-18-February-2005	40.9	41.8	36.2	52.1	58.5	48.5
Saturday-19-February-2005	40.6	-	38.1	56.7	-	45.7
Sunday-20-February-2005	39.7	52.4	39.3	63.0	59.3	43.8
Monday-21-February-2005	40.8	41.3	36.9	51.2	67.0	47.2
Tuesday-22-February-2005	40.5	42.5	35.5	54.0	68.9	51.7
Wednesday-23-February-2005	39.3	38.7	35.4	51.2	64.8	50.6
Thursday-24-February-2005	40.2	38.7	37.9	52.4	61.7	52.0
Friday-25-February-2005	42.8	-	-	55.1	-	-
Saturday-26-February-2005	-	-	-	-	-	-
Sunday-27-February-2005	-	-	-	-	-	-
Monday-28-February-2005	-	-	-	-	-	-
Tuesday-01-March-2005	-	-	-	-	-	-
Wednesday-02-March-2005	-	-	-	-	-	-
Thursday-03-March-2005	-	-	-	-	-	-
Representative Level	41	40	36	56	64	49

Notes:

1. Day is taken to be 7:00am to 6:00pm

2. Evening is taken to be 6:00pm to 10:00pm.

3. Night is taken to be the remaining periods.

4. Partial day's monitoring

5. Assessment Background Level (ABL)

6. Rating Background Level (RBL) for L90 and logarithmic average for Leq

TRAFFIC NOISE MONITORING RESULTS NSW EPA 'ENVIRONMENTAL CRITERIA FOR ROAD TRAFFIC NOISE', 1999

	Leq Noise Levels			Leq 1hr Noise Levels		
Day	Day	Night	Day - Up	Day - Low	Night - Up	Night - Low
Wednesday-16-February-2005	56.8	48.9	58.9	53.9	52.9	43.5
Thursday-17-February-2005	54.0	49.9	56.8	50.1	53.3	46.4
Friday-18-February-2005	56.7	51.0	62.7	51.3	55.3	42.1
Saturday-19-February-2005	59.2	48.2	67.2	50.0	52.1	42.0
Sunday-20-February-2005	65.4	46.3	73.2	50.1	49.8	43.9
Monday-21-February-2005	63.7	49.7	71.7	51.4	55.0	43.1
Tuesday-22-February-2005	65.6	54.2	74.8	50.7	61.5	44.3
Wednesday-23-February-2005	62.1	53.1	70.3	50.1	59.5	44.6
Thursday-24-February-2005	59.7	54.5	66.4	51.4	58.6	43.5
Friday-25-February-2005	57.6	-	60.0	54.3	-	-
Saturday-26-February-2005	-	-	-	-	-	-
Sunday-27-February-2005	-	-	-	-	-	-
Monday-28-February-2005	-	-	-	-	-	-
Tuesday-01-March-2005	-	-	-	-	-	-
Wednesday-02-March-2005	-	-	-	-	-	-
Thursday-03-March-2005	-	-	-	-	-	-
Representative Weekday	61.1	52.1	69.0	51.9	57.7	44.1
Representative Weekend	63.3	47.3	71.1	50.1	51.1	43.1

EXISTING AMBIENT NOISE LEVELS 40 Bazentin St, Belfield Wednesday, 16 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	46.9	38.9	34.5	
Leq	54.4	54.3	46.4	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected 4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax- Leq $\ge 15dB(A)$

EPA Traffic Noise Policy (1m from facade) (see note 3)			
	Day	Night ²	
Descriptor	7am-10pm	10pm-7am	
Leq 15 hr and Leq 9 hr	56.8	48.9	
Leq 1hr upper 10 percentile	58.9	52.9	
Leq 1hr lower 10 percentile	53.9	43.5	

Night Time Maximum Noise Levels (see note 4)				
Lmax (Range)	65.4	to	77.2	
Lmax - Leq (Range)	17.2	to	32.5	

40 Bazentin St, Belfield Thursday, 17 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	40.2	38.0	36.0	
Leq	51.9	50.4	47.4	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m from facade) (see note		
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	54.0	49.9
Leq 1hr upper 10 percentile	56.8	53.3
Leq 1hr lower 10 percentile	50.1	46.4

Night Time Maximum Noise Levels (see note 4				
Lmax (Range)	65.6	to	78.6	
Lmax - Leq (Range)	19.0	to	27.8	

EXISTING AMBIENT NOISE LEVELS 40 Bazentin St, Belfield

Friday, 18 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	40.9	41.8	36.2	
Leq	52.1	58.5	48.5	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq \geq 15dB(A)

EPA Traffic Noise Policy (1m fro	m facade)	(see note 3)
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	56.7	51.0
Leq 1hr upper 10 percentile	62.7	55.3
Leq 1hr lower 10 percentile	51.3	42.1

Night Time Maxim	evels.	(see note 4)	
Lmax (Range)	69.5	to	80.5
Lmax - Leq (Range)	16.7	to	27.7

TB867-01S10 (rev0) 40 Bazentin St.xls

40 Bazentin St, Belfield Saturday, 19 February 2005



Time of Day

EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	40.6	-	38.1	
Leq	56.7	-	45.7	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m from facade) (see note		
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	59.2	48.2
Leq 1hr upper 10 percentile	67.2	52.1
Leq 1hr lower 10 percentile	50.0	42.0

Night Time Maximum Noise Levels (see note 4)				
Lmax (Range)	67.1	to	69.0	
Lmax - Leq (Range)	19.4	to	23.8	

EXISTING AMBIENT NOISE LEVELS 40 Bazentin St, Belfield Sunday, 20 February 2005



EPA Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night ²
	7am-6pm	6pm-10pm	10pm-7am
L90	39.7	52.4	39.3
Leq	63.0	59.3	43.8

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	65.4	46.3
Leq 1hr upper 10 percentile	73.2	49.8
Leq 1hr lower 10 percentile	50.1	43.9

Night Time Maxim	evels	(see note 4)	
Lmax (Range)	-	to	-
Lmax - Leq (Range)	16.7	to	20.1

EXISTING AMBIENT NOISE LEVELS 40 Bazentin St, Belfield Monday, 21 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	40.8	41.3	36.9	
Leq	51.2	67.0	47.2	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	63.7	49.7
Leq 1hr upper 10 percentile	71.7	55.0
Leq 1hr lower 10 percentile	51.4	43.1

Night Time Maxim	evels	(see note 4)	
Lmax (Range)	65.5	to	75.6
Lmax - Leq (Range)	to	24.5	

EXISTING AMBIENT NOISE LEVELS 40 Bazentin St, Belfield Tuesday, 22 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	40.5	42.5	35.5	
Leq	54.0	68.9	51.7	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	65.6	54.2
Leq 1hr upper 10 percentile	74.8	61.5
Leq 1hr lower 10 percentile	50.7	44.3

Night Time Maximum Noise Levels (see note 4)				
Lmax (Range)	67.3	to	78.3	
Lmax - Leq (Range)	18.8	to	26.1	

EXISTING AMBIENT NOISE LEVELS 40 Bazentin St, Belfield

Wednesday, 23 February 2005



Time of Day

EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	39.3	38.7	35.4	
Leq	51.2	64.8	50.6	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m from facade) (see note 3		
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	62.1	53.1
Leq 1hr upper 10 percentile	70.3	59.5
Leq 1hr lower 10 percentile	50.1	44.6

Night Time Maximum Noise Levels (see note 4)				
Lmax (Range)	65.2	to	79.1	
Lmax - Leq (Range)	19.6	to	28.0	

40 Bazentin St, Belfield Thursday, 24 February 2005



Time of Day

EPA Industrial Noise Policy (Free Field)					
Descriptor	Day	Evening	Night ²		
	7am-6pm	6pm-10pm	10pm-7am		
L90	40.2	38.7	37.9		
Leq	52.4	61.7	52.0		

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	59.7	54.5
Leq 1hr upper 10 percentile	66.4	58.6
Leq 1hr lower 10 percentile	51.4	43.5

Night Time Maxim	evels	(see note 4)		
Lmax (Range)	Range) 65.8 to			
Lmax - Leq (Range)	18.2	to	25.8	

40 Bazentin St, Belfield Friday, 25 February 2005



EPA Industrial Noise Policy (Free Field)					
Descriptor	Day	Evening	Night ²		
	7am-6pm	6pm-10pm	10pm-7am		
L90	42.8	-	-		
Leq	55.1	-	-		

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	m facade)	(see note 3)
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	57.6	-
Leq 1hr upper 10 percentile	60.0	-
Leq 1hr lower 10 percentile	54.3	-

Night Time Maxim	Levels	(see note 4)	
Lmax (Range)	to	-	
Lmax - Leq (Range)	-	to	-

554 Hume Hwy, Strathfield

BACKGROUND & AMBIENT NOISE MONITORING RESULTS NSW EPA's 'INDUSTRIAL NOISE POLICY', 2000

	L90 Ba	ckground Nois	e Levels ⁵	Leq Ambient Noise Levels		
Day	Day	Evening	Night	Day	Evening	Night
Tuesday-15-February-2005	58.8	58.2	43.4	67.9	67.2	62.9
Wednesday-16-February-2005	58.1	55.3	42.6	67.3	65.5	64.0
Thursday-17-February-2005	59.2	57.3	46.2	68.3	67.4	64.0
Friday-18-February-2005	58.9	59.3	49.5	69.7	76.6	67.2
Saturday-19-February-2005	56.1	-	44.5	66.8	-	60.3
Sunday-20-February-2005	50.6	60.3	44.7	65.3	67.8	61.6
Monday-21-February-2005	57.2	56.0	44.4	67.6	65.9	63.1
Tuesday-22-February-2005	57.2	54.6	41.6	67.8	66.1	62.9
Wednesday-23-February-2005	56.9	54.9	43.6	67.8	66.1	63.1
Thursday-24-February-2005	60.8	-	-	68.8	-	-
Friday-25-February-2005	-	-	-	-	-	-
Saturday-26-February-2005	-	-	-	-	-	-
Sunday-27-February-2005	-	-	-	-	-	-
Monday-28-February-2005	-	-	-	-	-	-
Tuesday-01-March-2005	-	-	-	-	-	-
Wednesday-02-March-2005	-	-	-	-	-	-
Representative Level	58	57	44	68	70	64

Notes:

1. Day is taken to be 7:00am to 6:00pm

2. Evening is taken to be 6:00pm to 10:00pm.

3. Night is taken to be the remaining periods.

4. Partial day's monitoring

5. Assessment Background Level (ABL)

6. Rating Background Level (RBL) for L90 and logarithmic average for Leq

TRAFFIC NOISE MONITORING RESULTS NSW EPA 'ENVIRONMENTAL CRITERIA FOR ROAD TRAFFIC NOISE', 1999

	Leq Nois	se Levels		Leq 1hr N	oise Levels	
Day	Day	Night	Day - Up	Day - Low	Night - Up	Night - Low
Tuesday-15-February-2005	70.3	65.4	70.8	69.0	69.3	60.7
Wednesday-16-February-2005	69.4	66.5	70.6	67.7	71.3	62.0
Thursday-17-February-2005	70.6	66.5	71.5	69.4	70.5	62.5
Friday-18-February-2005	74.5	69.7	80.5	69.8	72.1	63.1
Saturday-19-February-2005	69.3	62.8	70.9	67.1	64.6	61.4
Sunday-20-February-2005	68.0	64.1	71.6	63.1	69.0	59.9
Monday-21-February-2005	69.8	65.6	71.4	67.3	70.6	61.1
Tuesday-22-February-2005	70.0	65.4	71.0	67.8	69.8	60.9
Wednesday-23-February-2005	69.9	65.6	70.7	67.3	70.7	61.7
Thursday-24-February-2005	71.3	-	72.0	70.5	-	-
Friday-25-February-2005	-	-	-	-	-	-
Saturday-26-February-2005	-	-	-	-	-	-
Sunday-27-February-2005	-	-	0.0	-	-	-
Monday-28-February-2005	-	-	-	-	-	-
Tuesday-01-March-2005	-	-	-	-	-	-
Wednesday-02-March-2005	-	-	-	-	-	-
Representative Weekday	71.0	66.7	74.1	68.8	70.7	61.8
Representative Weekend	68.7	63.5	71.2	65.5	67.3	60.7

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EXISTING AMBIENT NOISE LEVELS 554 Hume Hwy, Strathfield Tuesday, 15 February 2005



EPA Industrial Noise Policy (Free Field)					
Descriptor	Day	Evening	Night ²		
	7am-6pm	6pm-10pm	10pm-7am		
L90	58.8	58.2	43.4		
Leq (see note 3)	67.9	67.2	62.9		

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured 1m from facade; tabulated results free-field corrected 4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax- Leq $\ge 15dB(A)$

EPA Traffic Noise Policy (1m from facade)				
	Day	Night ²		
Descriptor	7am-10pm	10pm-7am		
Leq 15 hr and Leq 9 hr	70.3	65.4		
Leq 1hr upper 10 percentile	70.8	69.3		
Leq 1hr lower 10 percentile	69.0	60.7		

Night Time Maxim	_evels	(see note 4)	
Lmax (Range)	to	87.0	
Lmax - Leq (Range)	15.0	to	22.9

EXISTING AMBIENT NOISE LEVELS 554 Hume Hwy, Strathfield Wednesday, 16 February 2005



EPA Industrial Noise Policy (Free Field)					
Descriptor	Day	Evening	Night ²		
	7am-6pm	6pm-10pm	10pm-7am		
L90	58.1	55.3	42.6		
Leq (see note 3)	67.3	65.5	64.0		

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured 1m from facade; tabulated results free-field corrected 4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq $\geq 15dB(A)$

EPA Traffic Noise Policy (1m from facade)			
	Day	Night ²	
Descriptor	7am-10pm	10pm-7am	
Leq 15 hr and Leq 9 hr	69.4	66.5	
Leq 1hr upper 10 percentile	70.6	71.3	
Leq 1hr lower 10 percentile	67.7	62.0	

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	to	90.1	
Lmax - Leq (Range)	to	22.5	

EXISTING AMBIENT NOISE LEVELS

554 Hume Hwy, Strathfield Thursday, 17 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	59.2	57.3	46.2	
Leq (see note 3)	68.3	67.4	64.0	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured 1m from facade; tabulated results free-field corrected 4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq $\geq 15dB(A)$

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	70.6	66.5
Leq 1hr upper 10 percentile	71.5	70.5
Leq 1hr lower 10 percentile	69.4	62.5

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	79.8	to	93.6
Lmax - Leq (Range)	15.8	to	29.8

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EXISTING AMBIENT NOISE LEVELS

554 Hume Hwy, Strathfield Friday, 18 February 2005



Time of Day

EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	58.9	59.3	49.5	
Leq (see note 3)	69.7	76.6	67.2	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

Graphed data measured 1m from facade; tabulated results free-field corrected
Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq ≥ 15dB(A)

EPA Traffic Noise Policy (1m fro	m facade)	(see note 3)
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	74.5	69.7
Leq 1hr upper 10 percentile	80.5	72.1
Leq 1hr lower 10 percentile	69.8	63.1

Night Time Maxim	evels.	(see note 4)	
Lmax (Range)	83.3	to	95.9
Lmax - Leq (Range)	16.1	to	23.8

EXISTING AMBIENT NOISE LEVELS

554 Hume Hwy, Strathfield Saturday, 19 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	56.1	-	44.5	

66.8

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured 1m from facade; tabulated results free-field corrected 4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax- $Leq \ge 15dB(A)$

EPA Traffic Noise Policy (1m fro	m facade)	(see note 3)
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	69.3	62.8
Leq 1hr upper 10 percentile	70.9	64.6
Leq 1hr lower 10 percentile	67.1	61.4

Night Time Maxim	evels.	(see note 4)	
Lmax (Range)	79.0	to	84.9
Lmax - Leq (Range)	17.6	to	23.0

Leg (see note 3)

De

60.3

EXISTING AMBIENT NOISE LEVELS 554 Hume Hwy, Strathfield Sunday, 20 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	50.6	60.3	44.7	
Leq (see note 3)	65.3	67.8	61.6	

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

Graphed data measured 1m from facade; tabulated results free-field corrected
Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq ≥ 15dB(A)

EPA Traffic Noise Policy (1m from facade)		(see note 3)
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	68.0	64.1
Leq 1hr upper 10 percentile	71.6	69.0
Leq 1hr lower 10 percentile	63.1	59.9

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	to	90.1	
Lmax - Leq (Range)	16.1	to	23.9

EXISTING AMBIENT NOISE LEVELS 554 Hume Hwy, Strathfield Monday, 21 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	57.2	56.0	44.4	
Leq (see note 3)	67.6	65.9	63.1	

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured 1m from facade; tabulated results free-field corrected 4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq $\ge 15dB(A)$

EPA Traffic Noise Policy (1m from facade)		(see note 3)
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	69.8	65.6
Leq 1hr upper 10 percentile	71.4	70.6
Leq 1hr lower 10 percentile	67.3	61.1

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	to	93.2	
Lmax - Leq (Range)	16.0	to	23.5

EXISTING AMBIENT NOISE LEVELS 554 Hume Hwy, Strathfield Tuesday, 22 February 2005



EPA Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night ²
	7am-6pm	6pm-10pm	10pm-7am
L90	57.2	54.6	41.6
Leq (see note 3)	67.8	66.1	62.9

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

Graphed data measured 1m from facade; tabulated results free-field corrected
Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq ≥ 15dB(A)

EPA Traffic Noise Policy (1m fro	(see note 3)	
Day		Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	70.0	65.4
Leq 1hr upper 10 percentile	71.0	69.8
Leq 1hr lower 10 percentile	67.8	60.9

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	80.8	to	91.5
Lmax - Leq (Range)	15.7	to	23.6

EXISTING AMBIENT NOISE LEVELS 554 Hume Hwy, Strathfield Wednesday, 23 February 2005



Time of Day

EPA Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night ²
	7am-6pm	6pm-10pm	10pm-7am
L90	56.9	54.9	43.6
Leq (see note 3)	67.8	66.1	63.1

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

Graphed data measured 1m from facade; tabulated results free-field corrected
Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq ≥ 15dB(A)

EPA Traffic Noise Policy (1m from facade) (set		
	Night ²	
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	69.9	65.6
Leq 1hr upper 10 percentile	70.7	70.7
Leq 1hr lower 10 percentile	67.3	61.7

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	80.3	to	93.2
Lmax - Leq (Range)	15.9	to	22.5

554 Hume Hwy, Strathfield Thursday, 24 February 2005



EPA Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night ²
	7am-6pm	6pm-10pm	10pm-7am
L90	60.8	-	-
Leq (see note 3)	68.8	-	-

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured 1m from facade; tabulated results free-field corrected 4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq $\geq 15dB(A)$

EPA Traffic Noise Policy (1m fro	(see note 3)	
Day		Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	71.3	-
Leq 1hr upper 10 percentile	72.0	-
Leq 1hr lower 10 percentile	70.5	-

Night Time Maxim	Levels	(see note 4)	
Lmax (Range)	-	to	-
Lmax - Leq (Range)	-	to	-

1 Hume Hwy, Strathfield

BACKGROUND & AMBIENT NOISE MONITORING RESULTS NSW EPA's 'INDUSTRIAL NOISE POLICY', 2000

	L90 Ba	ckground Nois	e Levels ⁵	Leq A	mbient Nois	e Levels
Day	Day	Evening	Night	Day	Evening	Night
Tuesday-15-February-2005	55.7	52.1	45.4	68.0	67.0	64.3
Wednesday-16-February-2005	57.7	49.2	40.5	67.6	65.1	64.0
Thursday-17-February-2005	55.4	50.1	45.4	67.6	66.1	64.4
Friday-18-February-2005	54.6	51.5	45.4	67.7	66.2	64.1
Saturday-19-February-2005	53.9	-	51.4	66.6	-	63.5
Sunday-20-February-2005	52.8	61.6	49.1	66.7	70.5	66.0
Monday-21-February-2005	57.3	53.7	49.6	68.9	66.6	64.7
Tuesday-22-February-2005	57.7	51.5	48.0	68.0	66.2	65.0
Wednesday-23-February-2005	56.8	48.9	46.9	68.1	65.7	64.5
Thursday-24-February-2005	57.4	-	-	68.5	-	-
Friday-25-February-2005	-	-	-	-	-	-
Saturday-26-February-2005	-	-	-	-	-	-
Sunday-27-February-2005	-	-	-	-	-	-
Monday-28-February-2005	-	-	-	-	-	-
Tuesday-01-March-2005	-	-	-	-	-	-
Wednesday-02-March-2005	-	-	-	-	-	-
Representative Level	56	52	47	68	67	65

Notes:

1. Day is taken to be 7:00am to 6:00pm

2. Evening is taken to be 6:00pm to 10:00pm.

3. Night is taken to be the remaining periods.

4. Partial day's monitoring

5. Assessment Background Level (ABL)

6. Rating Background Level (RBL) for L90 and logarithmic average for Leq

TRAFFIC NOISE MONITORING RESULTS NSW EPA 'ENVIRONMENTAL CRITERIA FOR ROAD TRAFFIC NOISE', 1999

	Leq Nois	se Levels		Leq 1hr N	oise Levels	
Day	Day	Night	Day - Up	Day - Low	Night - Up	Night - Low
Tuesday-15-February-2005	70.3	66.8	71.0	68.5	70.0	64.4
Wednesday-16-February-2005	69.5	66.5	70.7	67.1	70.4	63.8
Thursday-17-February-2005	69.8	66.9	70.8	68.0	70.3	64.1
Friday-18-February-2005	70.0	66.6	71.2	68.1	68.3	64.6
Saturday-19-February-2005	69.1	66.0	71.5	67.6	67.4	64.9
Sunday-20-February-2005	69.6	68.5	73.9	65.8	72.0	65.2
Monday-21-February-2005	71.0	67.2	72.8	68.7	71.0	63.9
Tuesday-22-February-2005	70.2	67.5	71.3	68.3	70.6	64.1
Wednesday-23-February-2005	70.1	67.0	71.4	67.6	70.5	63.9
Thursday-24-February-2005	71.0	-	71.4	70.8	-	-
Friday-25-February-2005	-	-	-	-	-	-
Saturday-26-February-2005	-	-	-	-	-	-
Sunday-27-February-2005	-	-	0.0	-	-	-
Monday-28-February-2005	-	-	-	-	-	-
Tuesday-01-March-2005	-	-	-	-	-	-
Wednesday-02-March-2005	-	-	-	-	-	-
Representative Weekday	70.3	66.9	71.4	68.5	70.2	64.1
Representative Weekend	69.4	67.4	72.8	66.8	70.3	65.0
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EXISTING AMBIENT NOISE LEVELS 1 Hume Hwy, Strathfield Tuesday, 15 February 2005



EPA Industrial Noise Policy (Free Field)					
Descriptor	Day	Evening	Night ²		
	7am-6pm	6pm-10pm	10pm-7am		
L90	55.7	52.1	45.4		
Leq (see note 3)	68.0	67.0	64.3		

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured 1m from facade; tabulated results free-field corrected 4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax- Leq $\ge 15dB(A)$

EPA Traffic Noise Policy (1m from facade)				
Day Night				
Descriptor	7am-10pm	10pm-7am		
Leq 15 hr and Leq 9 hr	70.3	66.8		
Leq 1hr upper 10 percentile	71.0	70.0		
Leq 1hr lower 10 percentile	68.5	64.4		

Night Time Maxim	(see note 4)		
Lmax (Range)	81.2	to	87.4
Lmax - Leq (Range)	16.1	to	20.7

1 Hume Hwy, Strathfield Wednesday, 16 February 2005



EPA Industrial Noise Policy (Free Field)					
Descriptor	Day	Evening	Night ²		
	7am-6pm	6pm-10pm	10pm-7am		
L90	57.7	49.2	40.5		
Leq (see note 3)	67.6	65.1	64.0		

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

Graphed data measured 1m from facade; tabulated results free-field corrected
Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq ≥ 15dB(A)

EPA Traffic Noise Policy (1m from facade)				
Day Nigh				
Descriptor	7am-10pm	10pm-7am		
Leq 15 hr and Leq 9 hr	69.5	66.5		
Leq 1hr upper 10 percentile	70.7	70.4		
Leq 1hr lower 10 percentile	67.1	63.8		

Night Time Maximum Noise Levels (see note			
Lmax (Range)	81.0	to	86.2
Lmax - Leq (Range)	16.1	to	21.2

1 Hume Hwy, Strathfield Thursday, 17 February 2005



EPA Industrial Noise Policy (Free Field)					
Descriptor	Day	Evening	Night ²		
	7am-6pm	6pm-10pm	10pm-7am		
L90	55.4	50.1	45.4		
Leq (see note 3)	67.6	66.1	64.4		

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

Graphed data measured 1m from facade; tabulated results free-field corrected
Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq ≥ 15dB(A)

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	69.8	66.9
Leq 1hr upper 10 percentile	70.8	70.3
Leq 1hr lower 10 percentile	68.0	64.1

Night Time Maxim	.evels	(see note 4)	
Lmax (Range)	80.4	to	87.8
Lmax - Leq (Range)	15.0	to	21.2

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EXISTING AMBIENT NOISE LEVELS

1 Hume Hwy, Strathfield Friday, 18 February 2005



Time of Day

EPA Industrial Noise Policy (Free Field)				
Descriptor	Day Evening		Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	54.6	51.5	45.4	
Leq (see note 3)	67.7	66.2	64.1	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured 1m from facade; tabulated results free-field corrected 4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq $\geq 15dB(A)$

EPA Traffic Noise Policy (1m from facade) (see note 3		
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	70.0	66.6
Leq 1hr upper 10 percentile	71.2	68.3
Leq 1hr lower 10 percentile	68.1	64.6

Night Time Maximum Noise Levels (see note 4)				
Lmax (Range)	81.9	to	88.4	
Lmax - Leq (Range)	16.4	to	20.7	

1 Hume Hwy, Strathfield Saturday, 19 February 2005



Time of Day

EPA Industrial Noise Policy (Free Field)				
Descriptor	Day Evening Nigl		Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	53.9	-	51.4	
Leq (see note 3)	66.6	-	63.5	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

Graphed data measured 1m from facade; tabulated results free-field corrected
Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq ≥ 15dB(A)

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	69.1	66.0
Leq 1hr upper 10 percentile	71.5	67.4
Leq 1hr lower 10 percentile	67.6	64.9

Night Time Maximum Noise Levels (see note 4)				
Lmax (Range)	81.5	to	85.4	
Lmax - Leq (Range)	15.2	to	19.8	

1 Hume Hwy, Strathfield Sunday, 20 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day Evening		Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	52.8	61.6	49.1	
Leq (see note 3)	66.7	70.5	66.0	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured 1m from facade; tabulated results free-field corrected 4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq $\geq 15dB(A)$

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	69.6	68.5
Leq 1hr upper 10 percentile	73.9	72.0
Leq 1hr lower 10 percentile	65.8	65.2

Night Time Maxim	(see note 4)		
Lmax (Range)	80.8	to	89.0
Lmax - Leq (Range)	15.6	to	22.1
EXISTING AMBIENT NOISE LEVELS

1 Hume Hwy, Strathfield Monday, 21 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	57.3	53.7	49.6	
Leq (see note 3)	68.9	66.6	64.7	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

EPA Traffic Noise Policy (1m from facade)		(see note 3)
Day		Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	71.0	67.2
Leq 1hr upper 10 percentile	72.8	71.0
Leq 1hr lower 10 percentile	68.7	63.9

Night Time Maximum Noise Levels (see note			(see note 4)
Lmax (Range)	81.8	to	91.2
Lmax - Leq (Range)	15.2	to	22.1

1 Hume Hwy, Strathfield Tuesday, 22 February 2005



Time	of	Day
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EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	57.7	51.5	48.0	
Leq (see note 3)	68.0	66.2	65.0	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

EPA Traffic Noise Policy (1m fro	(see note 3)	
Day		Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	70.2	67.5
Leq 1hr upper 10 percentile	71.3	70.6
Leq 1hr lower 10 percentile	68.3	64.1

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	83.4	to	91.7
Lmax - Leq (Range)	17.8	to	23.7

1 Hume Hwy, Strathfield Wednesday, 23 February 2005



Time of Day

EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	56.8	48.9	46.9	
Leq (see note 3)	68.1	65.7	64.5	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

EPA Traffic Noise Policy (1m from facade) (se		
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	70.1	67.0
Leq 1hr upper 10 percentile	71.4	70.5
Leq 1hr lower 10 percentile	67.6	63.9

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	82.1	to	86.9
Lmax - Leq (Range)	16.1	to	19.0

1 Hume Hwy, Strathfield Thursday, 24 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	57.4	-	-	
Leq (see note 3)	68.5	-	-	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

EPA Traffic Noise Policy (1m fro	(see note 3)	
Day		Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	71.0	-
Leq 1hr upper 10 percentile	71.4	-
Leq 1hr lower 10 percentile	70.8	-

Night Time Maxim	Levels	(see note 4)	
Lmax (Range)	-	to	-
Lmax - Leq (Range)	-	to	-

20 Rebecca Rd, South Strathfield

BACKGROUND & AMBIENT NOISE MONITORING RESULTS NSW EPA's 'INDUSTRIAL NOISE POLICY', 2000

	L90 Background Noise Levels ⁵		Leq Ar	mbient Nois	e Levels	
Day	Day	Evening	Night	Day	Evening	Night
Tuesday-15-February-2005	59.5	58.2	44.5	67.8	67.2	66.4
Wednesday-16-February-2005	62.0	56.2	47.7	69.5	67.9	66.4
Thursday-17-February-2005	62.9	56.5	45.3	70.1	67.6	66.4
Friday-18-February-2005	62.0	57.0	47.0	69.5	66.9	65.4
Saturday-19-February-2005	60.2	-	44.6	68.5	-	63.9
Sunday-20-February-2005	59.2	65.0	44.9	69.1	70.1	68.1
Monday-21-February-2005	60.6	56.8	47.1	70.3	67.5	66.6
Tuesday-22-February-2005	62.2	57.3	44.4	69.6	67.7	66.9
Wednesday-23-February-2005	61.7	58.1	45.6	69.7	67.6	67.1
Thursday-24-February-2005	61.4	-	-	70.8	-	-
Friday-25-February-2005	-	-	-	-	-	-
Saturday-26-February-2005	-	-	-	-	-	-
Sunday-27-February-2005	-	-	-	-	-	-
Monday-28-February-2005	-	-	-	-	-	-
Tuesday-01-March-2005	-	-	-	-	-	-
Wednesday-02-March-2005	-	-	-	-	-	-
Representative Level	62	57	45	70	68	66

Notes:

1. Day is taken to be 7:00am to 6:00pm

2. Evening is taken to be 6:00pm to 10:00pm.

3. Night is taken to be the remaining periods.

4. Partial day's monitoring

5. Assessment Background Level (ABL)

6. Rating Background Level (RBL) for L90 and logarithmic average for Leq

TRAFFIC NOISE MONITORING RESULTS NSW EPA 'ENVIRONMENTAL CRITERIA FOR ROAD TRAFFIC NOISE', 1999

	Leq Nois	se Levels		Leq 1hr N	oise Levels	
Day	Day	Night	Day - Up	Day - Low	Night - Up	Night - Low
Tuesday-15-February-2005	70.2	68.9	70.5	69.6	73.0	64.4
Wednesday-16-February-2005	71.7	68.9	72.7	69.7	73.6	65.8
Thursday-17-February-2005	72.0	68.9	73.3	69.4	73.2	65.4
Friday-18-February-2005	71.6	67.9	72.8	68.9	70.8	64.3
Saturday-19-February-2005	71.0	66.4	72.7	69.4	68.4	64.1
Sunday-20-February-2005	71.7	70.6	74.2	69.8	74.6	67.1
Monday-21-February-2005	72.3	69.1	74.6	69.0	73.8	65.6
Tuesday-22-February-2005	71.7	69.4	73.7	69.6	73.6	66.1
Wednesday-23-February-2005	71.7	69.6	73.5	69.3	73.8	66.3
Thursday-24-February-2005	73.3	-	74.6	71.5	-	-
Friday-25-February-2005	-	-	-	-	-	-
Saturday-26-February-2005	-	-	-	-	-	-
Sunday-27-February-2005	-	-	-	-	-	-
Monday-28-February-2005	-	-	-	-	-	-
Tuesday-01-March-2005	-	-	-	-	-	-
Wednesday-02-March-2005	-	-	-	-	-	-
Representative Weekday	71.9	69.0	73.4	69.7	73.2	65.5
Representative Weekend	71.4	69.0	73.5	69.6	72.5	65.9

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EXISTING AMBIENT NOISE LEVELS 20 Rebecca Rd, South Strathfield Tuesday, 15 February 2005



EPA Industrial Noise Policy (Free Field)					
Descriptor	Day	Evening	Night ²		
	7am-6pm	6pm-10pm	10pm-7am		
L90	59.5	58.2	44.5		
Leq	67.8	67.2	66.4		

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

EPA Traffic Noise Policy (1m from facade) (see note 3				
	Day	Night ²		
Descriptor	7am-10pm	10pm-7am		
Leq 15 hr and Leq 9 hr	70.2	68.9		
Leq 1hr upper 10 percentile	70.5	73.0		
Leq 1hr lower 10 percentile	69.6	64.4		

Night Time Maximum Noise Levels (see note 4)				
Lmax (Range)	79.2	to	89.3	
Lmax - Leq (Range)	15.1	to	23.4	

EXISTING AMBIENT NOISE LEVELS 20 Rebecca Rd, South Strathfield Wednesday, 16 February 2005



EPA Industrial Noise Policy (Free Field)					
Descriptor	Day	Evening	Night ²		
	7am-6pm	6pm-10pm	10pm-7am		
L90	62.0	56.2	47.7		
Leq	69.5	67.9	66.4		

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	71.7	68.9
Leq 1hr upper 10 percentile	72.7	73.6
Leq 1hr lower 10 percentile	69.7	65.8

Night Time Maxim	(see note 4)		
Lmax (Range)	80.2	to	89.0
Lmax - Leq (Range)	15.5	to	24.6

EXISTING AMBIENT NOISE LEVELS 20 Rebecca Rd, South Strathfield Thursday, 17 February 2005



EPA Industrial Noise Policy (Free Field)					
Descriptor	Day	Evening	Night ²		
	7am-6pm	6pm-10pm	10pm-7am		
L90	62.9	56.5	45.3		
Leq	70.1	67.6	66.4		

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq \geq 15dB(A)

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	72.0	68.9
Leq 1hr upper 10 percentile	73.3	73.2
Leq 1hr lower 10 percentile	69.4	65.4

Night Time Maxim	evels	(see note 4)	
Lmax (Range)	79.1	to	88.4
Lmax - Leq (Range)	15.4	to	21.8

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EXISTING AMBIENT NOISE LEVELS 20 Rebecca Rd, South Strathfield Friday, 18 February 2005



Time of Day

EPA Industrial Noise Policy (Free Field)				
Descriptor	Day Evening		Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	62.0	57.0	47.0	
Leq	69.5	66.9	65.4	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Night ²	
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	71.6	67.9
Leq 1hr upper 10 percentile	72.8	70.8
Leq 1hr lower 10 percentile	68.9	64.3

Night Time Maxim	(see note 4)		
Lmax (Range)	78.8	to	90.0
Lmax - Leq (Range)	16.0	to	21.7

EXISTING AMBIENT NOISE LEVELS 20 Rebecca Rd, South Strathfield Saturday, 19 February 2005



Т	ïme	e of	Day
			_

EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	60.2	-	44.6	
Leq	68.5	-	63.9	

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Night ²	
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	71.0	66.4
Leq 1hr upper 10 percentile	72.7	68.4
Leq 1hr lower 10 percentile	69.4	64.1

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	80.4	to	85.1
Lmax - Leq (Range)	17.4	to	20.8

EXISTING AMBIENT NOISE LEVELS 20 Rebecca Rd, South Strathfield Sunday, 20 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day Evening		Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	59.2	65.0	44.9	
Leq	69.1	70.1	68.1	

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	(see note 3)	
Day		Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	71.7	70.6
Leq 1hr upper 10 percentile	74.2	74.6
Leq 1hr lower 10 percentile	69.8	67.1

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	82.3	to	84.9
Lmax - Leq (Range)	16.6	to	20.3

EXISTING AMBIENT NOISE LEVELS 20 Rebecca Rd, South Strathfield Monday, 21 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	60.6	56.8	47.1	
Leq	70.3	67.5	66.6	

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m from facade)		(see note 3)
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	72.3	69.1
Leq 1hr upper 10 percentile	74.6	73.8
Leq 1hr lower 10 percentile	69.0	65.6

Night Time Maximum Noise Levels (see				
Lmax (Range)	to	95.1		
Lmax - Leq (Range)	15.0	to	28.7	

EXISTING AMBIENT NOISE LEVELS 20 Rebecca Rd, South Strathfield Tuesday, 22 February 2005



Time o	of Day
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EPA Industrial Noise Policy (Free Field)					
Descriptor	Day	Evening	Night ²		
	7am-6pm	6pm-10pm	10pm-7am		
L90	62.2	57.3	44.4		
Leq	69.6	67.7	66.9		

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m from facade) (see note				
	Night ²			
Descriptor	7am-10pm	10pm-7am		
Leq 15 hr and Leq 9 hr	71.7	69.4		
Leq 1hr upper 10 percentile	73.7	73.6		
Leq 1hr lower 10 percentile	69.6	66.1		

Night Time Maxim	(see note 4)		
Lmax (Range)	to	94.0	
Lmax - Leq (Range)	15.8	to	28.7

EXISTING AMBIENT NOISE LEVELS 20 Rebecca Rd, South Strathfield Wednesday, 23 February 2005



Time of Day

EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	61.7	58.1	45.6	
Leq	69.7	67.6	67.1	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured in free-field; tabulated results facade corrected

EPA Traffic Noise Policy (1m fro	m facade)	(see note 3)	
	Day	Night ²	
Descriptor	7am-10pm	10pm-7am	
Leq 15 hr and Leq 9 hr	71.7	69.6	
Leq 1hr upper 10 percentile	73.5	73.8	
Leq 1hr lower 10 percentile	69.3	66.3	

Night Time Maxim	(see note 4)		
Lmax (Range)	to	89.0	
Lmax - Leq (Range)	15.7	to	19.5

EXISTING AMBIENT NOISE LEVELS 20 Rebecca Rd, South Strathfield Thursday, 24 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	61.4	-	-	
Leq	70.8	-	-	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

EPA Traffic Noise Policy (1m fro	m facade)	(see note 3)	
	Day	Night ²	
Descriptor	7am-10pm	10pm-7am	
Leq 15 hr and Leq 9 hr	73.3	-	
Leq 1hr upper 10 percentile	74.6	-	
Leq 1hr lower 10 percentile	71.5	-	

Night Time Maxim	Levels	(see note 4)	
Lmax (Range)	-	to	-
Lmax - Leq (Range)	-	to	-

BACKGROUND & AMBIENT NOISE MONITORING RESULTS NSW EPA's 'INDUSTRIAL NOISE POLICY', 2000

	L90 Ba	ckground Nois	e Levels⁵	Leq Ar	nbient Nois	e Levels
Day	Day	Evening	Night	Day	Evening	Night
Tuesday-15-February-2005	55.5	55.8	43.8	68.0	66.5	65.2
Wednesday-16-February-2005	58.9	51.7	46.9	68.5	64.9	64.3
Thursday-17-February-2005	58.5	53.1	41.0	68.2	65.4	64.3
Friday-18-February-2005	54.9	50.7	46.2	68.0	65.2	63.4
Saturday-19-February-2005	51.2	-	47.1	66.5	-	61.4
Sunday-20-February-2005	55.4	60.7	44.5	66.9	68.4	65.6
Monday-21-February-2005	54.7	53.4	45.0	68.1	65.5	64.5
Tuesday-22-February-2005	56.6	56.7	46.8	68.2	65.7	64.8
Wednesday-23-February-2005	57.4	51.8	43.5	68.2	65.4	64.6
Thursday-24-February-2005	56.7	-	-	68.6	-	-
Friday-25-February-2005	-	-	-	-	-	-
Saturday-26-February-2005	-	-	-	-	-	-
Sunday-27-February-2005	-	-	-	-	-	-
Monday-28-February-2005	-	-	-	-	-	-
Tuesday-01-March-2005	-	-	-	-	-	-
Wednesday-02-March-2005	-	-	-	-	-	-
Representative Level	56	53	45	68	66	64

Notes:

1. Day is taken to be 7:00am to 6:00pm

2. Evening is taken to be 6:00pm to 10:00pm.

3. Night is taken to be the remaining periods.

4. Partial day's monitoring

5. Assessment Background Level (ABL)

6. Rating Background Level (RBL) for L90 and logarithmic average for Leq

TRAFFIC NOISE MONITORING RESULTS NSW EPA 'ENVIRONMENTAL CRITERIA FOR ROAD TRAFFIC NOISE', 1999

	Leq Noi	se Levels		Leq 1hr N	oise Levels	
Day	Day	Night	Day - Up	Day - Low	Night - Up	Night - Low
Tuesday-15-February-2005	70.1	67.7	71.4	68.9	71.1	63.6
Wednesday-16-February-2005	70.4	66.8	71.7	67.0	71.1	63.5
Thursday-17-February-2005	70.1	66.8	71.0	66.9	70.7	64.1
Friday-18-February-2005	70.1	65.9	71.0	67.4	68.9	63.1
Saturday-19-February-2005	69.0	63.9	70.3	68.3	66.1	62.1
Sunday-20-February-2005	69.5	68.1	73.2	66.8	71.4	65.1
Monday-21-February-2005	70.1	67.0	71.3	67.1	71.3	64.0
Tuesday-22-February-2005	70.2	67.3	71.2	67.8	71.3	63.6
Wednesday-23-February-2005	70.1	67.1	71.5	66.8	71.1	64.0
Thursday-24-February-2005	71.1	-	71.7	70.6	-	-
Friday-25-February-2005	-	-	-	-	-	-
Saturday-26-February-2005	-	-	-	-	-	-
Sunday-27-February-2005	-	-	0.0	-	-	-
Monday-28-February-2005	-	-	-	-	-	-
Tuesday-01-March-2005	-	-	-	-	-	-
Wednesday-02-March-2005	-	-	-	-	-	-
Representative Weekday	70.3	67.0	71.4	68.0	70.9	63.7
Representative Weekend	69.3	66.5	72.0	67.6	69.5	63.9

EXISTING AMBIENT NOISE LEVELS 118 Roberts Rd, South Strathfield Tuesday, 15 February 2005



EPA Industrial Noise Policy (Free Field)					
Descriptor	Day	Evening	Night ²		
	7am-6pm	6pm-10pm	10pm-7am		
L90	55.5	55.8	43.8		
Leq (see note 3)	68.0	66.5	65.2		

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

EPA Traffic Noise Policy (1m from facade)			
	Day	Night ²	
Descriptor	7am-10pm	10pm-7am	
Leq 15 hr and Leq 9 hr	70.1	67.7	
Leq 1hr upper 10 percentile	71.4	71.1	
Leq 1hr lower 10 percentile	68.9	63.6	

Night Time Maxim	_evels	(see note 4)	
Lmax (Range)	82.3	to	86.4
Lmax - Leq (Range)	15.8	to	19.8

EXISTING AMBIENT NOISE LEVELS 118 Roberts Rd, South Strathfield Wednesday, 16 February 2005



EPA Industrial Noise Policy (Free Field)					
Descriptor	Day	Evening	Night ²		
	7am-6pm	6pm-10pm	10pm-7am		
L90	58.9	51.7	46.9		
Leq (see note 3)	68.5	64.9	64.3		

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

EPA Traffic Noise Policy (1m from facade)			
	Day	Night ²	
Descriptor	7am-10pm	10pm-7am	
Leq 15 hr and Leq 9 hr	70.4	66.8	
Leq 1hr upper 10 percentile	71.7	71.1	
Leq 1hr lower 10 percentile	67.0	63.5	

Night Time Maxim	evels	(see note 4)	
Lmax (Range)	81.8	to	89.1
Lmax - Leq (Range)	16.0	to	21.0

EXISTING AMBIENT NOISE LEVELS

Thursday, 17 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	58.5	53.1	41.0	
Leq (see note 3)	68.2	65.4	64.3	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

3. Graphed data measured 1m from facade; tabulated results free-field corrected 4. Night time Lmax values are shown only where Lmax > 65dB(A) and where Lmax-Leq $\geq 15dB(A)$

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	70.1	66.8
Leq 1hr upper 10 percentile	71.0	70.7
Leq 1hr lower 10 percentile	66.9	64.1

Night Time Maxim	.evels	(see note 4)	
Lmax (Range)	81.0	to	86.5
Lmax - Leq (Range)	15.3	to	21.8

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EXISTING AMBIENT NOISE LEVELS

Friday, 18 February 2005



Time	of	Day
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EPA Industrial Noise Policy (Free Field)					
Descriptor	Day	Evening	Night ²		
	7am-6pm	6pm-10pm	10pm-7am		
L90	54.9	50.7	46.2		
Leq (see note 3)	68.0	65.2	63.4		

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

EPA Traffic Noise Policy (1m from facade) (see note		
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	70.1	65.9
Leq 1hr upper 10 percentile	71.0	68.9
Leq 1hr lower 10 percentile	67.4	63.1

Night Time Maxim	.evels	(see note 4)	
Lmax (Range)	80.7	to	86.2
Lmax - Leq (Range)	15.3	to	19.7

EXISTING AMBIENT NOISE LEVELS

Saturday, 19 February 2005



Time of Day

EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	51.2	-	47.1	
Leq (see note 3)	66.5	-	61.4	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	69.0	63.9
Leq 1hr upper 10 percentile	70.3	66.1
Leq 1hr lower 10 percentile	68.3	62.1

Night Time Maxim	evels	(see note 4)	
Lmax (Range)	80.6	to	83.7
Lmax - Leq (Range)	15.4	to	21.2

EXISTING AMBIENT NOISE LEVELS 118 Roberts Rd, South Strathfield Sunday, 20 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	55.4	60.7	44.5	
Leq (see note 3)	66.9	68.4	65.6	

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	69.5	68.1
Leq 1hr upper 10 percentile	73.2	71.4
Leq 1hr lower 10 percentile	66.8	65.1

Night Time Maxim	evels	(see note 4)
Lmax (Range)	to	91.0
Lmax - Leq (Range)	to	25.4

EXISTING AMBIENT NOISE LEVELS 118 Roberts Rd, South Strathfield Monday, 21 February 2005



EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	54.7	53.4	45.0	
Leq (see note 3)	68.1	65.5	64.5	

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

EPA Traffic Noise Policy (1m fro	(see note 3)	
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	70.1	67.0
Leq 1hr upper 10 percentile	71.3	71.3
Leq 1hr lower 10 percentile	67.1	64.0

Night Time Maxim	evels	(see note 4)	
Lmax (Range)	to	87.9	
Lmax - Leq (Range)	16.5	to	19.8

EXISTING AMBIENT NOISE LEVELS 118 Roberts Rd, South Strathfield

Tuesday, 22 February 2005



Time of Day

EPA Industrial Noise Policy (Free Field)				
Descriptor	Day	Evening	Night ²	
	7am-6pm	6pm-10pm	10pm-7am	
L90	56.6	56.7	46.8	
Leq (see note 3)	68.2	65.7	64.8	

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

EPA Traffic Noise Policy (1m from facade) (see note 3)		
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	70.2	67.3
Leq 1hr upper 10 percentile	71.2	71.3
Leq 1hr lower 10 percentile	67.8	63.6

Night Time Maximum Noise Levels (see note 4)			(see note 4)
Lmax (Range)	82.5	to	92.9
Lmax - Leq (Range)	15.3	to	27.0

EXISTING AMBIENT NOISE LEVELS 118 Roberts Rd, South Strathfield Wednesday, 23 February 2005



Time of Day

EPA Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night ²
	7am-6pm	6pm-10pm	10pm-7am
L90	57.4	51.8	43.5
Leq (see note 3)	68.2	65.4	64.6

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

EPA Traffic Noise Policy (1m from facade) (see note 3		
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	70.1	67.1
Leq 1hr upper 10 percentile	71.5	71.1
Leq 1hr lower 10 percentile	66.8	64.0

Night Time Maximum Noise Levels (see note 4)			
Lmax (Range)	81.6	to	87.7
Lmax - Leq (Range)	15.2	to	20.3

118 Roberts Rd, South Strathfield Thursday, 24 February 2005



EPA Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night ²
	7am-6pm	6pm-10pm	10pm-7am
L90	56.7	-	-
Leq (see note 3)	68.6	-	-

NOTES:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.

2. "Night" relates to period from 10pm on this graph to 7am on the following graph.

EPA Traffic Noise Policy (1m from facade) (see note 3		
	Day	Night ²
Descriptor	7am-10pm	10pm-7am
Leq 15 hr and Leq 9 hr	71.1	-
Leq 1hr upper 10 percentile	71.7	-
Leq 1hr lower 10 percentile	70.6	-

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	-	to	-
Lmax - Leq (Range)	-	to	-

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APPENDIX E – CORTN88 TRAFFIC NOISE PREDICTION MODEL INPUT DATA

E1 – Existing traffic volumes and speeds

Existing traffic volumes were determined from Average Annual Daily Traffic (AADT) 24hr and hourly volumes provided in the Roads & Traffic Authority's Traffic Volume Manuals (1999). Traffic volumes were converted into 15hr and 9hr volumes for use in the CORTN88 computer model.

Road	Traffic Speed	15hr Volumes	9hr Volumes
Roberts Road	70km/h	55,252	10,600
Hume Hwy – West of Roberts Rd	80km/h	39,125	6,300
Hume Hwy – East of Roberts Rd (Liverpool Rd)	80km/h	41,583	9,210

Table E.1 – Existing Traffic Volumes and Speeds

E2 - Percentage (%) heavy vehicles

The percentage of heavy vehicles is 6% on Roberts Road and 4% on Liverpool Road, based on information provided in the ARUP Transportation Planning Traffic Analysis Report (March 2001).

E3 - Road gradient

The road gradient was assumed to be zero based on the site assessment.

E4 - Road surface treatment

It was assumed that Roberts Road and Liverpool Road are covered by a standard road surface such as dense graded asphaltic concrete (DGAC).

E5 - Traffic source locations

The location of the noise source line was calculated as per CORTN88, at a distance of 3.5m in from the edge of the nearest traffic lane. Each road carriageway (ie east bound and west bound/ north bound and south bound) were considered as separate noise source lines in the CORTN88 model.

<u>E6 – Traffic source heights</u>

The effectiveness of roadside barriers is dependent on the relative heights of the source, barrier and receiver. Therefore, if there is a barrier present, the height of the source is an important factor in determining receiver noise levels.

CORTN88 assumes that the acoustic centre of all vehicles is 0.5m from the ground. While this is a reasonable approximation for a car, it is too low for a heavy vehicle, and results in an over estimation of the attenuation due to barriers.

The major noise source from a typical heavy vehicle is the engine, the acoustic centre of which is at approximately 1.5m from the road surface level. Noise from the truck exhaust is at 3.6m from the ground.

In calculating the effect of a barrier, the total traffic noise level was partitioned into three parts as shown in **Table E2** below. The effect of the barrier on each component was calculated separately. Barrier calculations were also performed separately for traffic at the centre of each carriageway (ie source line), and the resulting noise levels added to give the total noise level in the presence of the barrier.

Table E2 lists the height of the acoustic centre above the road pavement nominated by CORTN88 for traffic noise sources - ie cars and trucks.

Table E.2 Heights of Traffic Noise Sources above Road Pavement Level

Vehicle Type	Source Height (m)
Cars	0.5
Truck Engines	1.5
Truck Exhausts	3.6

E7 - Ground reference levels and separation distances

Ground reference levels (RLs) and separation distances of the noise source to the receivers were determined from topographical maps.

In addition, noise levels were predicted at 1m from residence facades and 1.2m above the ground floor level. The height of this point above actual ground level was typically 1.5m for a single storey dwelling representative of the majority of residences in the surrounding area.

E8 - Ground type between the source and receivers

A combination of hard and soft ground types were used between the source and receivers were used in the model.

E9 - Angles of view from the road to receivers

Likely angles of view from the road to receivers were determined from the site assessment.

E10 - Modified CORTN88 for Australian Conditions

An Australian study, published as Australian Road Research Board (ARRB) Research Report No. 122, compared measured noise levels at various locations in Australia with the levels predicted by the CORTN88 method. This indicated that for sites where a correction for facade reflection is applicable (as in the case for predictions in this report), a correction of -1.7 dB(A) should be applied to CORTN88 results to provide the best estimate of noise levels under Australian conditions. This correction has been applied to calculated noise levels in this report.