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RAMSGATE BEACH HOTEL - 277 THE GRAND PARADE, RAMSGATE

DA ACOUSTIC ASSESSMENT

13 September 2024

BRONXX

TM657-05F01 DA Acoustic Assessment (r1)

35 1982-2017 ACOUSTIC ENGINEERING EXCELLENCE

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Contents

1 Introduction

Renzo Tonin & Associates (RTA) was engaged to undertake an assessment of potential noise impacts associated with the proposed mixed use development at 277 The Grand Parade, Ramsgate.

This report forms part of the support documentation being prepared for a new Development Application (DA).

This assessment addresses:

- External noise impacts (road traffic noise from Grand Parade and Ramsgate Road) on the proposed development and determines building shell acoustic treatments to ensure a suitable level of internal acoustic amenity is provided for future occupants.
- Operational noise emissions associated with the proposed development and the potential impacts on surrounding noise sensitive receivers.

The work documented in this report was carried out in accordance with RTA's Quality Assurance System, which is based on Australian Standard / NZS ISO 9001. A glossary of acoustic terms used in this report is detailed in APPENDIX A.

The report is based on drawings by FJC Studio dated August 2024.

2 Project Overview and Site Description

The DA seeks consent for the demolition of the existing Coles Ramsgate development on site, to enable the construction of a new mixed-use development.

The subject site is located within the Bayside Council local government area (LGA) and is bounded by The Grand Parade to the east, Ramsgate Road to the north, existing commercial properties (203-207, 209, 211 & 213 Ramsgate Road, Ramsgate Beach) to the west and existing residential properties (86-88 Alfred Street, Sans Souci) to the south.

The Grand Parade is a major sub-arterial road, with the section of carriageway adjoining the site comprising of five-lanes and noted as carrying high volumes of traffic. Ramsgate Road is a four-lane sub-arterial road with medium to high volumes of traffic.

It is proposed to construct a new six-storey mixed-use hotel property on site comprising of:

- Three levels of basement carparking
- Ground level anchor retail/supermarket tenancy and F&B tenancy, including outdoor dining.
- Level 1-5 will consist of apartments.

Access to the basement carpark and loading dock is proposed at the north-west corner of the site, via the existing council carpark adjoining Ramsgate Road. The loading dock and proposed ramps (to the basement carpark and loading dock) and completely enclosed.

The nearest noise sensitive development to the site are the apartments located to the north (across Ramsgate Road, approximately 60m from the site boundary) at 154-162 Ramsgate Road, Ramsgate Beach. These residences are directly opposite the proposed Food and Beverage outdoor dining area.

In addition, there are also residences to the south of the site at 86-88 Alfred Street, Sans Souci.

Figure 2-1 illustrates the subject site, surrounds and noise monitoring locations.

Figure 2-1: Locations of project site, surrounding noise sensitive properties and noise surveys (source: Nearmap Limited)

3 Existing Noise Environment

3.1 Methodology

The noise environment of an area varies over time.

- The NSW Environmental Protection Authority's (EPA) *Noise Policy for Industry* (NPfI) [6] outlines standard time periods over which the background and ambient noise levels are to be determined, which is as follows:
  - Day: 07:00 – 18:00 Monday to Saturday and 08:00 – 18:00 Sundays & Public Holidays
  - Evening: 18:00 – 22:00 Monday to Sunday & Public Holidays
  - Night: 22:00 – 07:00 Monday to Saturday and 22:00 – 08:00 Sundays & Public Holidays

  As such, the existing background and ambient noise levels on the site will be summarised in accordance with the NPfI.
- Relevant time periods for the assessment of road traffic noise impacts are provided in NSW Department of Planning and Environment (DPE) publications *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Transport and Infrastructure SEPP) [4] and Development Near Rail Corridors and Busy Roads – Interim Guideline (ISEPP[1] Guideline) [3] and are as follows:
  - Day: 7:00 – 22:00 (15-hour period)
  - Night: 22:00 – 7:00 (9-hour period)

Noise survey location considerations included site topography, contributions from environmental noise sources (road traffic, building services plant and equipment etc.) and representative secure locations for the identified surrounding sensitive receivers (see Section 2).

- Given the extent of building services plant noise associated with existing Coles Ramsgate, refrigerated container adjacent to the loading dock, commercial properties at 203 – 213 Ramsgate Road, there was no feasible monitoring location along the western or southern boundaries of the site (including the roof of Ramsgate Coles), to gauge the representative ambient or background noise levels. Additionally, there was no secure location along the northern or eastern boundaries of the site to monitor existing road traffic noise levels from The Grand Parade and Ramsgate Road.
- Hence attended noise surveys were conducted at six representative locations around the site during three different time periods, to gauge the existing ambient and background noise levels. A Type 1 NTi Audio XL2 Audio and Acoustic Analyser was used for the attended noise surveys and was calibrated before and after the measurements using a Bruel & Kjaer Type 4231 calibrator. No significant deviation in calibration was noted.
- Historical noise survey results in the RTA database were also reviewed for long-term unattended noise monitoring conducted at 262 The Grand Parade. Two noise monitors were installed at the property (illustrated as LNM in Figure 2-1) – LNM1 approximately 25m from the kerb @ 4.5m above ground level and LNM2 approximately 55m from the kerb @ 1.5m above ground level (shielded from The

[1] The DPE interim guideline reference the Infrastructure SEPP which was superseded by the Transport and Infrastructure SEPP in April 2022).

Grand Parade by existing property on site). Detailed noise monitoring information attached in APPENDIX B for reference.

3.2 Background/Ambient Noise Levels

The results of the attended noise surveys and historical long-term noise monitoring are summarised in Table 3-1. Period representative background L_{A90} and ambient L_{Aeq} noise levels for the long-term monitoring, were determined in accordance with the procedures of the NPfI.

Table 3-1: Measured background and ambient noise levels

Measurement	Time Period	Representative Noise Levels	
		Background Noise Levels, dB(A)L_{90}	Ambient Noise Levels, dB(A)L_{eq}
ANM1 – The Grand Parade (approx. 4m from the kerb @ 1.5m above ground level) [1]			
9 June 2022 (between 6:30am and 8:00am)	Day (7am-6pm)	61	72
14 June 2022 (between 9:20pm and 11:00pm)	Evening (6pm-10pm)	54	66
	Late Evening (10pm-12am)	45	66
16 June 2022 (between 2:45am and 4:00am)	Night (10pm-7am)	40	65
ANM3 (along southern boundary of site, adjacent to Coles loading dock) and LNM [2]			
LNM2 (1st to 8th November 2013) [3]	Day (7am-6pm)	45	54
	Evening (6pm-10pm)	46	54
	Late Evening (10pm-12am)	42	50
	Night (10pm-7am)	37	49
ANM4 – Ramsgate Road (approx. 25m from the kerb @ 1.5m above ground level) [4]			
9 June 2022 (between 6:30am and 8:00am)	Day (7am-6pm)	56	60
14 June 2022 (between 9:20pm and 11:00pm)	Evening (6pm-10pm)	48	56
	Late Evening (10pm-12am)	43	53
16 June 2022 (between 2:45am and 4:00am)	Night (10pm-7am)	38	49
ANM5 – Alfred Street (between properties 86-88 & 90-92 Alfred Street @ 1.5m above ground level) [5]			
14 June 2022 (between 9:20pm and 11:00pm)	Evening (6pm-10pm)	40	47
	Late Evening (10pm-12am)	37	42

Notes:

1. Noise level measurements at this location are representative of the traffic noise impacts from The Grand Parade on the development site and background noise levels at receivers R1(East), facing The Grand Parade.
2. Noise level measurements at this location are representative of the background noise levels at receivers R1(Middle), screened from The Grand Parade by other apartments in the development and directly adjoining southern façade of proposed development.
3. The attended noise survey measurements during the day and evening periods at location ANM3 were analysed to be similar (within 2dB(A) with the attended measurements being higher) to the noise levels measured by noise monitor LNM2. Hence, adopting a conservative approach, the noise levels measured by LNM2 will be used for this location.
4. Noise level measurements at this location are representative of the background noise levels at R2 (multi-storey residential properties 156-162 Ramsgate Road, Ramsgate Beach).
5. Noise level measurements at this location are representative of the background noise levels at receivers R1(West), facing Alfred Street.

The mixed-use hotel development is proposed to include F&B tenancies and hotel amenity areas (restaurant, function space, pool), which are expected as licensed premises. Noise provisions associated with the operations of licensed premises are governed by Liquor & Gaming NSW (L&GNSW) and presented in Section 5.1.1. Background noise levels summarised in accordance with the L&GNSW criteria (Spectral representation of the), are presented below.

Table 3-2: Spectra background noise levels

Period	Overall dB(A)L_{90}	Octave band centre frequency – Hz, dB(Z)								
		31.5	63	125	250	500	1k	2k	4k	8k
ANM1 – The Grand Parade (approx. 4m from the kerb @ 1.5m above ground level)										
Day (7am-6pm)	61	70	69	63	61	56	56	53	46	36
Evening (6pm-10pm)	54	63	62	54	50	49	52	46	34	22
Late Evening (10pm-12am)	45	57	56	51	44	43	41	34	25	22
ANM3 (along southern boundary of site, adjacent to Coles loading dock) and LNM										
Day (7am-6pm)	45	53	52	43	42	43	40	39	29	21
Evening (6pm-10pm)	46	55	53	45	43	44	42	39	30	24
Late Evening (10pm-12am)	42	51	50	47	38	41	38	32	23	20
ANM4 – Ramsgate Road (approx. 25m from the kerb @ 1.5m above ground level)										
Day (7am-6pm)	56	65	65	60	54	52	53	48	40	27
Evening (6pm-10pm)	48	54	54	52	47	46	44	39	30	25
Late Evening (10pm-12am)	43	52	52	50	45	41	38	32	23	20
ANM5 – Alfred Street (between properties 86-88 & 90-92 Alfred Street @ 1.5m above ground level)										
Evening (6pm-10pm)	40	49	49	49	40	38	34	29	20	19
Late Evening (10pm-12am)	37	46	45	44	38	35	32	26	18	17

Notes:

1. Operating hours of all F&B tenancies and hotel amenities areas will be restricted to before midnight (i.e. no operations between midnight and 7am), hence spectra background noise levels for the overnight period (midnight to 7am) is not included.

3.3 External (Road Traffic) Noise Levels

The results of the attended traffic noise surveys, summarised in accordance with DPE Transport and Infrastructure SEPP and ISEPP Guideline time periods, are presented in Table 3-3.

Table 3-3: Road traffic noise levels

Noise Monitoring	Representative Traffic Noise Levels	
Location	**Day (7am-10pm)**	**Night (10pm-7am)**
ANM1 – The Grand Parade (approx. 4m from kerb @ 1.5m above ground)	72 $L_{Aeq,15hr}$	68 $L_{Aeq,9hr}$
ANM2 – Ramsgate Road (approx. 6m from kerb @ 1.5m above ground)	64 $L_{Aeq,15hr}$	59 $L_{Aeq,9hr}$

4 External Noise Intrusion Assessment

Given the site's proximity to The Grand Parade and Ramsgate Road, sub-arterial carriageways with medium – heavy volumes of traffic, there is potential for impacts on the internal acoustic amenity of future occupants.

The site lies well outside (more than 2000m) the ANEF 20 contour of the current Sydney Airport ANEF 2033 map[2] and thus lies within the "Acceptable" zone for hotel type developments, under the provisions of Australian Standard AS2021:2015 *"Acoustics – Aircraft noise intrusion – Building siting and construction"*.

This section provides a discussion of the relevant acoustic criteria and presents the result of a preliminary noise intrusion assessment.

4.1 Assessment Criteria

4.1.1 Transport and Infrastructure SEPP and ISEPP Guideline

The Transport and Infrastructure SEPP requires an acoustic assessment for developments adjacent to busy roads. Map 16 of the *Traffic volume maps for Infrastructure SEPP* [3] classifies The Grand Parade as a carriageway carrying more than 40,000 Annual Average Daily Traffic (AADT) and hence mandatory for assessment against the noise provisions of the SEPP.

4.1.2 Australian standards

For occupancies that are not covered in the guidelines and standards presented above, the internal design sound levels from Australian/New Zealand Standard AS/NZS 2107:2016 "*Acoustics - Recommended design sound levels and reverberation times for building interiors*" (AS/NZS 2107:2016) [8] are adopted.

AS/NZS 2107:2016 recommends design criteria for conditions affecting the acoustic environment within building interiors to ensure a healthy, comfortable and productive environment for the occupants and the users. The design sound levels recommended take into account the function of the area(s) and apply to the sound level measured within the space unoccupied but ready for occupancy.

The standard notes that where the traffic noise levels vary over a 24-hour period, an appropriate measurement period should be selected. Criteria relevant to the proposed development are presented below.

[2] https://assets.ctfassets.net/v228i5y5k0x4/UFaa5ZMQUKCKmCocmsus4/d6d07ad9d11e960b2fae07bd050f076e/Sydney_Airport_Australian_Noise_Exposure_Forecast_2033.pdf

[3] https://roads-waterways.transport.nsw.gov.au/about/environment/reducing-noise/traffic-volume-maps-for-infrastructure-sepp.html

Table 4-1: Internal design sound levels

Building type and activity	Satisfactory design sound level ($L_{Aeq,t}$)
Commercial and Retail Areas	
Supermarkets	<55
Café and Restaurants	40 to 50

4.2 Recommended Acoustic Treatments (External Noise Intrusion)

Internal noise levels were calculated based on the road traffic noise level incident on the building façades, spectral characteristics of the external noise, building fabric design (area of building element exposed to noise) and internal area (room) sound absorption characteristics.

The following acoustic treatments are required to achieve compliance with the internal noise goals identified in Table 4-1.

4.2.1 Glazed windows and doors

The minimum glazing specification for the proposed development is detailed in the table below.

The installation of façade elements in building openings and the design of window mullions, door frames and perimeter seals, must not reduce the sound insulation of the glazing assembly (i.e. glass, frame and seals) below the R_w values nominated.

Key items to note to prevent this include:

- Acoustic seals nominated for all external windows and doors, are required to be fitted with Q-lon type acoustic seals or equivalent rubber bulb acoustic seals. **Mohair of fin type seals are not acceptable for the windows and doors requiring acoustic seals**.

- Perimeter of opening around façade element is acoustically sealed i.e. space between frame (before architraves are installed for windows) and wall structure is sealed with silicone or polyurethane acoustic sealant and foam backing rod.

The glazing specification is indicative only and other constructions that provide the same or better sound transmission loss performance are also acceptable. The window/door supplier/manufacturer shall provide evidence that the glazing system proposed has been tested in a registered laboratory, with results showing compliance with the minimum listed R_W requirements. Also, the glazing installer should certify that the window/doors have been constructed and installed in a manner equivalent to the tested samples.

Table 4-2: Preliminary façade glazing specification

Level	Space	Minimum Acoustic Performance of Glazing Assembly[1]	Indicative Glazing Configuration	Acoustic Seals
Ground level	Retail 1	R_W 29	6mm	Yes
	Retail 2	R_W 33	10mm	Yes
	Hotel Lobby	R_W 29	6mm	Yes
	Supermarket	R_W 29	6mm	Yes
Apartments				
Eastern Facade	Bedrooms – Glass Doors	R_W 43	12mm/10mm airgap/10.38mm laminated insulated glazed unit.	Yes
	Bedrooms – Awning Windows with Fixed glass below.	R_W 36	12.38mm laminated.	Yes
	Living Room – Grand Parade Frontage **Includes North/South frontage for X.06 and X.09 apartments.**	R_W 38	12.5mm laminated.	Yes
South Facade	Bedrooms – Glass Doors	R_W 35	10.38mm laminated.	Yes
	Bedrooms – Awning Windows with Fixed glass below.	R_W 35	10.38mm laminated.	Yes
	Living Room **South frontage for X.09 apartments.**	R_W 38	12.5mm laminated.	Yes
	Living Room **South Frontage for X.10 apartments**	R_W 35	10.38mm laminated.	Yes
North Facade	Bedrooms – **X.05 and X.06 apartment** – Glass Doors.	R_W 38	12.5mm laminated.	Yes
	Bedrooms – **X.05 and X.06 apartment** Awning Windows with Fixed glass below.	R_W 36	12.38mm laminated.	Yes
	Bedrooms – **Remaining Apartments** – Glass Doors.	R_W 35	10.38mm laminated.	Yes
	Bedrooms – **Remaining Apartments** Awning Windows with Fixed glass below.	R_W 35	10.38mm laminated.	Yes
	Living Room – **North frontage for X.06**	R_W 38	12.5mm laminated.	Yes
	Living Room – **Remaining Apartments**	R_W 35	10.38mm laminated.	Yes
West Façade and Façade Facing Courtyard	Bedrooms	R_W 31	6.38mm laminated.	Yes
	Living Room	R_W 31	6.38mm laminated.	Yes

Notes:

1. The minimum acoustic performance corresponds to the cumulative performance of the glazing assembly i.e. glass, frame and seals.

2. Higher acoustic performance may be required to function space façade glazing, to control environmental noise emissions from proposed operations. Please refer to Section 0.

NOTES FOR GLAZING CONSTRUCTIONS:

1. The information in this table is provided for consent/approvals process and cost planning and shall not be used for construction unless otherwise approved in writing by the acoustic consultant.
2. The design in this table is preliminary and a comprehensive assessment shall be conducted prior to Construction Certification.
3. Before committing to any form of construction or committing to any builder, advice should be sought from an acoustic consultant to ensure that adequate provisions are made for any variations which may occur as a result of changes to the form of construction where only an "estimate" is available for the sound insulation properties of recommended materials.
4. The glazing supplier shall ensure that installation techniques will not diminish the RW performance of the glazing when installed on site.
5. The above glazing thicknesses should be considered the minimum thicknesses to achieve acoustical ratings. Greater glazing thicknesses may be required for structural loading, wind loading etc.

4.2.2 External walls

All external wall elements are currently proposed to be of masonry construction (in-situ concrete, concrete blockwork or similar). Masonry construction will provide adequate sound insulation (in principle, external wall constructions with a sound isolation rating 15dB higher than the recommended glazing specifications, are sufficient to maintain the acoustic performance of the overall facade system) against site road traffic noise and no further upgrade is required for acoustic purposes. There should not be vents on the internal skin of external walls. All penetrations in the internal skin of external walls should be acoustically sealed (i.e. airtight).

If light-weight external wall systems are proposed during subsequent stages of design, this will need to be reviewed in detail at the Construction Certificate (CC) stage, to determine minimum constructions (additional insulation and/or linings).

4.2.3 Roof and ceiling

The proposed concrete roof is also acoustically acceptable and does not require any additional treatments.

4.2.4 Ventilation requirements

Other than on the courtyard facades, it will be necessary that windows to apartments are kept closed in order to maintain internal noise levels that meet the requirements of the SEPP/Development Near Rail Corridors and Busy Roads. For these apartments, supplementary ventilation to meet AS1168 requirements should be supplied.

5 Noise Emission Assessment

This section examines noise emissions from the site and their potential impact on nearby development.

Key noise sources associated with the operations of proposed development include:

- Activity noise from licensed premises (ground floor F&B.
- Building services plant and equipment.
- Activity noise from loading dock operations and waste collection.
- Additional traffic on surrounding public roads generated by the development.

5.1 Assessment Criteria

5.1.1 Licensed premises (F&B areas)

Noise emissions from licensed premises in NSW, such as restaurants, bars, and clubs, should aim to comply with the standard noise criteria set by the L&GNSW. The L&GNSW, through the Liquor Act 2007, is the regulatory authority that deals with noise pollution issues pertaining to licensed premises. The L&GNSW criteria applies to noise emissions associated with activities from licensed premises i.e. music and patron noise but excludes noise impacts from mechanical plant/equipment. Noise emissions are assessed in terms of the noise limits set out in the L&GNSW's 'Standard Noise Condition' which states as follows:

> *"The LA10* noise level emitted from the licensed premises shall not exceed the background noise level in an Octave Band Centre Frequency (31.5Hz – 8kHz inclusive) by more than 5dB between 7:00am and 12:00 midnight at the boundary of any affected residence.*
>
> *The LA10* noise level emitted from the licensed premises shall not exceed the background noise level in an Octave Band Centre Frequency (31.5Hz – 8kHz inclusive) between 12:00 midnight and 7:00am at the boundary of any affected residence.*
>
> *Notwithstanding compliance with the above, the noise from the licensed premises shall not be audible within any habitable room in any residential premises between the hours of 12:00 midnight and 7:00am.*
>
> *Interior noise levels which still exceed safe hearing levels are in no way supported or condoned by the Liquor Administration Board.*
>
> *This is a minimum standard. In some instances, the Board may specify a time earlier than midnight in respect of the above condition.*
>
> **For the purposes of this condition, the LA10 can be taken as the average maximum deflection of the noise emission from the licensed premises."*

Based on the noise emissions criteria stated above and the spectra background noise levels presented in Table 3-2, the noise emission goals for the licensed premises in this development are as follows:

Table 5-1: Licensed premises noise emission goals

Receiver	Time Period	Overall dB(A)	Octave band Centre Frequency – Hz, dB(Z) L10(15 minute)								
			31.5	63	125	250	500	1k	2k	4k	8k
R2	7am to 6pm (56BG + 5 dB)	61	70	70	65	59	57	58	53	45	32
	6pm to 10pm (48BG + 5 dB)	53	59	59	57	52	51	49	44	35	30
	10pm to 12am (43BG + 5 dB)	48	57	57	55	50	46	43	37	28	25

5.1.2 NSW EPA Noise Policy for Industry (non-licensed premises, building services plant, loading dock and waste collection)

The EPA publication NPfI [6] is the most commonly adopted noise emission guideline to control general operational noise from developments. The NPfI assessment procedure has two components:

- Controlling intrusive noise impacts in the short-term for residential properties, and
- Maintaining noise level amenity (long-term) for residences and other land uses.

In accordance with the NPfI, noise impact should be assessed against the project noise trigger level, which is the lower value of the project intrusiveness noise levels and project amenity noise levels.

5.1.2.1 Intrusiveness noise trigger level

The intrusiveness of a noise source may generally be considered acceptable if the equivalent continuous (energy-average) A-weighted level of noise from the source (represented by the $L_{Aeq,15min}$ descriptor) does not exceed the background noise level measured in the absence of the source by more than 5dB(A). The project intrusiveness noise level, which is only applicable to residential receivers, is determined as follows:

$L_{Aeq,15min}$ Intrusiveness noise level = Rating Background Level (RBL) plus 5 dB(A)

Based on the measured background noise levels detailed in Table 3-1 above, the intrusiveness noise trigger levels for surrounding nearest affected residential receivers are presented below.

Table 5-2: Project intrusiveness noise trigger levels

Receivers	Intrusiveness noise level, dB(A)$L_{eq(15min)}$		
	Day (7am to 6pm)	Evening (6pm to 10pm)	Night (10pm to 7am)
R1(East)	61+ 5 = 66	54 + 5 = 59	40 + 5 = 45
R1(Middle) & R1(West)	45+ 5 = 50	46 + 5 = 51 corrected to 50[1]	37 + 5 = 42
R2	56+ 5 = 61	48 + 5 = 53	38 + 5 = 43

Notes:

1. In accordance with the guidance provide in Section 2.3 of the NPfI.

5.1.2.2 Amenity noise trigger level

The project amenity noise levels for different time periods of the day are determined in accordance with Section 2.4 of the NPfI. The NPfI recommends amenity noise levels ($L_{Aeq,period}$) for various receivers including residential, commercial and industrial receivers and sensitive receivers such as schools, hotels, hospitals, churches and parks. These "recommended amenity noise levels" represent the objective for total industrial noise experienced at a receiver location. However, when assessing a single industrial development and its impact on an area, "project amenity noise levels" apply.

To ensure that the total industrial noise level (existing plus new) remain within the recommended amenity noise levels for an area, the project amenity noise level that applies for each new industrial noise source is determined as follows:

$$L_{Aeq,period}\ Project\ amenity\ noise\ level = L_{Aeq,period}\ Recommended\ amenity\ noise\ level - 5dB(A)$$

However, in developments close to busy roads, the traffic noise levels may be high enough to effectively mask noise from industrial sources. When the existing traffic noise levels exceed the recommended amenity noise level by 10dB, the project amenity noise level may be derived from the traffic L_{Aeq} as follows:

$$L_{Aeq,period}\ High\ traffic\ project\ amenity\ noise\ level = L_{Aeq,period}\ (traffic) - 15dB(A)$$

Furthermore, given that the intrusiveness noise level is based on a 15-minute assessment period and the project amenity noise level is based on day, evening and night assessment periods, the NPfI provides the following guidance on adjusting the $L_{Aeq,period}$ level to a representative $L_{Aeq,15minute}$ level in order to standardise the time periods.

$$L_{Aeq,15minute} = L_{Aeq,period} + 3dB(A)$$

NPfI recommended amenity noise levels for the project site and surrounding land uses are summarised below,

Table 5-3: Project amenity noise trigger levels

Period / Land Use Type	Recommended Amenity Noise Level [1]	Project amenity Noise Level	High Traffic Noise Level	Traffic noise exceed the Recommended Amenity Noise Level by more than 10dB?	High traffic project amenity noise level
	dB(A)$L_{eq(period)}$	dB(A)$L_{eq(period)}$	dB(A)$L_{eq(period)}$		dB(A)$L_{eq(15min)}$
R1(East) – Free Standing Residences (Suburban Residential)					
Day	55	55 – 5 = 50	72	Yes	72 – 15 + 3 = 60
Evening	45	45 – 5 = 40	66	Yes	66 – 15 + 3 = 54
Night	40	40 – 5 = 35	65	Yes	65 – 15 + 3 = 53
R1(Middle) & R1(West) - Free Standing Residences (Suburban Residential)					
Day	55	55 – 5 = 50	54	No	50 + 3 = 53
Evening	45	45 – 5 = 40	50	No	40 + 3 = 43
Night	40	40 – 5 = 35	49	No	35 + 3 = 38
R2 (Apartments – Urban Residential)					
Day	60	60 – 5 = 55	60	No	55 + 3 = 58
Evening	50	50 – 5 = 45	56	No	50 + 3 = 53
Night	45	45 – 5 = 40	49	No	40 + 3 = 43

Notes:

1. Recommended amenity levels are based on Suburban amenity area.

5.1.2.3 Maximum noise level assessment (sleep disturbance impacts)

Loading dock operations are proposed during the early morning peirod (6am to 7am), hence the potential for sleep disturbance from maximum noise level events during this period must be considered. In accordance with NPfI, a detailed maximum noise level event assessment should be undertaken where the subject development night-time noise levels at a residential location exceed:

- $L_{Aeq,15min}$ 40dB(A) or the prevailing RBL plus 5dB, whichever is the greater, and/or
- L_{AFmax} 52dB(A) or the prevailing RBL plus 15dB, whichever is the greater.

Where there are noise events found to exceed the initial screening level, further analysis is undertaken to identify:

- The likely number of events that might occur during the night assessment period,
- The extent to which the maximum noise level exceeds the rating background noise level.

5.1.2.4 NPfI project noise trigger levels

In accordance with the NPfI, the project noise trigger levels have been determined (lower i.e. more stringent value of the project intrusiveness and amenity noise levels) and are presented in Table 5-4.

Table 5-4: NPfI Project trigger levels (non-licensed premises, building services plant, loading dock and waste collection)

Receiver	Project Specific Noise Limits, dB(A)$L_{eq(15min)}$		
	Day (7am-6pm)	Evening (6pm-10pm)	Night (10pm-7am)
R1(East)	60	54	45
R1(Middle) & R1(West)	50	43	38
R2	58	53	43

The project sleep disturbance assessment levels are presented in Table 5-5.

Table 5-5: Sleep disturbance assessment levels

Receiver	Time Period	Assessment Level, dB(A)$L_{eq(15min)}$	Assessment Level, dB(A)L_{Max}
R2 [1]	Night	38 + 5 = 43	38 + 15 = 53

Notes:

1. The proposed development will shield receiver R1 from the loading dock operations and operational noise impacts are only expected for receivers R2.

5.1.3 Traffic noise generation

For land use developments with the potential to create additional traffic on surrounding road network, noise impacts associated with the additional traffic is assessed with reference to the EPA publication *Road Noise Policy* (RNP) [5]. Section 2.3.1 of this policy sets out road traffic noise assessment criteria for residential land uses.

As discussed in Section 2, both Ramsgate Road and The Grand Parade fall under the classification of arterial/sub-arterial roads and not local roads, and hence the resulting criteria is as follows.

Table 5-6: RNP noise goals for additional traffic generated by the site

Road Category	Type of Project/Land Use	Assessment Criteria, dB(A)	
		Day (7am to 10pm)	Night (10pm to 7am)
Freeway/arterial/sub-arterial roads	3. Existing residences affected by additional traffic on existing freeways/arterial/sub-arterial roads generated by land use developments	$L_{Aeq,(15\ hour)}$ 60 (external)	$L_{Aeq,(9\ hour)}$ 55 (external)

Further to the above, the RNP states the following for land use developments generating additional traffic:

> *"For existing residences and other sensitive land uses affected by additional traffic on existing roads generated by land use development, any increase in the total traffic noise level should be limited to 2 dB above that of the corresponding 'no build option'."*

The RNP states that in assessing feasible and reasonable mitigation measures, an increase of up to 2 dB represents a minor impact that is considered barely perceptible to the average person.

5.2 Assessment of Noise Emissions

5.2.1 Licensed Premises (Ground Floor Food and Beverage)

Potential licensed premises associated with the subject proposal include:

- Ground Floor F&B tenancies – Operational noise emissions from these outlets will be subject to tenancy specific development applications, however an assessment in principle is provided to demonstrate that these tenancies are capable of being used for their intended purpose, without excessive noise impacts.

Typical activity noise sources associated with uses above include patron speech and potentially amplified music. To predict noise emissions from the operation of these premises (cumulatively), the following assumptions are adopted:

- Hours of operation for F+B premises up to midnight.
- Only low background music is proposed for all outdoor areas (65dB(A)L_{10}).

Table 5-7: Assumed outdoor areas background music spectrum

Source	Overall dB(A)	Octave band Centre Frequency – Hz, dB(Z) L10								
		31.5	63	125	250	500	1k	2k	4k	8k
Sound pressure level (SPL) of background music in outdoor areas (@ 1m from any speaker)	65	68	68	68	60	60	60	58	54	47

- The following patron speech source levels are assumed for outdoor areas:

Table 5-8: Assumed outdoor areas patron speech noise spectrum

Source	Overall dB(A)	Octave band Centre Frequency – Hz, dB(Z) L10								
		31.5	63	125	250	500	1k	2k	4k	8k
Sound power level (SWL) of raised voice per patron in F&B tenancies	77	62	62	70	70	76	73	68	59	47

Notes:

1. Assumed source noise spectrum is representative of raised speech levels from patrons in a crowded F&B tenancy alfresco space (primarily seated), with background music only.

- A noise level of 80 dB(A)L_{10} SPL is assumed for internal area of an F+B tenancy (crowded space, background music).
- Thick single glazing (10mm, R_w 33) is assumed for the ground floor Food and Beverage Tenancy.

5.2.2 Noise emission predictions up to 10pm

Noise from the operation of the Ground Floor Food and Beverage Tenancy is assessed below.

Predictions made based on the following:

- F&B tenancies in use, with outdoor area at capacity (52 people).
- Internal noise level within the F+B tenancy of 80dB(A), with entry doors open (approx. 6m^2).

The critical noise receiver is R2, the apartments directly opposite the outdoor dining area, on the opposite side of Ramsgate Road.

Table 5-9: Operations until 10pm @ R2

Noise Source	Noise Level Emissions to R2 (158-162 Ramsgate Road) – dBL_{10}									
	31.5	**63**	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**	**A-wt**
Contribution 1 – 52 diners, outside	33	33	41	41	47	45	39	30	18	48
Contribution 1 – Noise Breakout from Inside Via Open Doors.	24	24	32	32	38	35	30	21	9	39
Total Noise Level at Resident - dBL_{10}	**34**	**34**	**42**	**42**	**48**	**45**	**40**	**31**	**19**	***49***
Permissible Noise Level (48BG+5dB)	***59***	***59***	***57***	***52***	***51***	***49***	***44***	***35***	***30***	***53***
Complies?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Provided that the acoustic controls detailed in Section 5.3 are adopted, noise emissions will comply with Office of Liquor and Gaming requirements.

5.2.2.1 Noise emission predictions 10pm-12am operation

Noise from the operation of the Ground Floor Food and Beverage Tenancy is assessed below.

Predictions made based on the following:

- F&B tenancies in use, with outdoor area limited to 20 people.
- Internal noise level within the F+B tenancy of 80dB(A), with entry doors open (approx. 6m^2).

The critical noise receiver is R2, the apartments directly opposite the outdoor dining area, on the opposite side of Ramsgate Road.

Table 5-10: Operations until 12am @ R2

Noise Source	Noise Level Emissions to R2 (158-162 Ramsgate Road) – dBL_{10}									
	31.5	**63**	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**	**A-wt**
Contribution 1 – 52 diners, outside	29	29	37	37	43	40	35	26	14	44
Contribution 1 – Noise Breakout from Inside Via Open Doors.	24	24	32	32	38	35	30	21	9	39
Total Noise Level at Resident - dBL_{10}	**30**	**30**	**38**	**38**	**44**	**42**	**36**	**27**	**15**	***45***
Permissible Noise Level (43BG+5dB)	***57***	57	55	50	46	43	37	28	25	***48***
Complies?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Provided that the acoustic controls detailed in Section 5.3 are adopted, noise emissions will comply with Office of Liquor and Gaming requirements.

5.2.3 Mechanical services plant and equipment

Noise from building services plant and equipment is assessed with reference to the EPA NPfI (Section 5.1.2) and must comply with the noise emission goals presented in Table 5-4.

Details of the mechanical plant and equipment are not typically designed at DA stage. Therefore, the noise impacts from mechanical plant and equipment should be undertaken during the Detailed Design stage of the project. Compliance with EPA requirements will be achievable through typical plant/equipment acoustic treatments (acoustic treatment of plant room ventilation openings, induct acoustic lining, noise screens to equipment casings on roof tops etc).

5.2.4 Loading dock

An enclosed loading dock is proposed on ground level, adjacent to the supermarket tenancy (along western boundary of site). Access to the loading dock is proposed via a separate door adjacent to the access to the basement carparking.

The loudest activity associated with loading dock operations will be from vehicle noise associated with deliveries. We have been advised of the following loading dock operations:

- Deliveries associated with the development will access the loading dock from Ramsgate Road, using the western connection between existing Service Road and Ramsgate.
- 12.5 HRV is the largest vehicle type proposed (associated with the supermarket).

Operational noise emissions to the R2 residential receivers are presented below, based on the following assumptions:

- The worst case scenario to be considered would be a Heavy Rigid Vehicle arriving/leaving the loading dock in the night period. It is assumed it takes approximately 30 seconds for the truck to drive into or out of the loading dock.
- There will be no more than one movement into/out of the dock in a 15 minute period.
- 12.5 HRV arriving/departing assumed as 98dB(A)SWL. This is typical for a Coles or Woolworths heavy rigid delivery truck moving a 5-10km/h.
- Dock door is closed once the truck enter the dock.
- Peak noise events such as vehicle starting and doors closing would occurring within the dock (behind closed garage door). The critical maximum noise level event will occur as the truck enters/exits the dock.

Table 5-11: Predicted noise emissions from loading dock operations

Receiver	Time period	Noise Criteria	Predicted Noise Levels	Comment
R2 (158-162 Ramsgate Road)	Night	43dB(A)$L_{eq(15min)}$ 53dB(A)L_{max}	40dB(A)$L_{eq(15min)}$ 54dB(A)L_{max}	See below.

A 1dB(A) exceedance of the "Background+15dB(A)" criteria is anticipated in the event a truck enters the site at night time.

As per section 5.1.2.3, more detailed review is warranted. In this case:

- The degree of exceedance is 1dB(A), which would not be perceptibly different to a noise level strictly meeting the 53dB(A) target.

- With an external noise level of 54dB(A)L_{max}, the noise level that would be expected inside a bedroom (windows open) would be approximately 43dB(A)L_{max},

- At 43dB(A), the we note the EPA Road Noise Policy (Section 5.4) provides the following guidance with respect to internal noise levels within apartments:

  From the research on sleep disturbance to date it can be concluded that:
  - maximum internal noise levels below 50–55 dB(A) are unlikely to awaken people from sleep
  - one or two noise events per night, with maximum internal noise levels of 65–70 dB(A), are not likely to affect health and wellbeing significantly.

- Given the anticipated noise level as a result of the vehicle movement is 43dB(A), thisis well below levels identified by the EPA as a risk of sleep disturbance and is justifiable.

5.2.5 Additional traffic generation

The RNP notes that in assessing feasible and reasonable mitigation measures, an increase of up to 2 dB represents a minor impact that is considered barely perceptible to the average person.

In order for traffic noise to increase by more than the permissible 2dB, additional road traffic on the street associated with the proposed development, would need to increase by more than 60 percent. Based on the future peak traffic movements illustrated in Figure 6 of the project traffic assessment report "*Proposed Mixed Use Development – 277 The Grand Parade, Ramsgate Beach – Traffic and Parking Assessment*" [9], peak period (AM or PM) additional traffic generation associated with the development is under 40%.

Hence, the projected traffic generation associated with the site are not expected to increase the existing traffic noise levels and no adverse impacts are predicted.

5.3 Recommendations

5.3.1 Ground Floor F& B areas

Operational noise emissions from these outlets will be subject to tenancy specific development applications, however the following noise control recommendations and management strategies are shall be considered to evaluate cumulative operational noise impacts.

- All tenancies to cease operation by midnight.
- Usage of outdoor areas as follows:
  - Up to 10pm – up to 52 people.
  - 10pm-12am – up to 20 people.
- Music in internal areas not to exceed 70dB(A)L_{10}.
- Outdoor dining areas to be located in areas where there is an awning over.

5.3.2 Loading dock

- Vehicles are not recommended to be left idling once inside the loading dock, with engine turned off as soon as practicable.
- Alternative to beeper warning alarms must be considered for all heavy vehicles accessing the loading dock (e.g. broadband alarms, variable level alarms).
- Waste collection associated with commercial tenancies is only permitted after 7am and before 6pm.
- Loading dock door motor to be vibration isolated using Embelton NRD mounts.
- Loading dock door recommended to be solid, not perforated.
- Loading Dock and Supermarket Back of House vibration isolation:
  - Vibration isolation is recommended for Loading dock and Back of House areas located below apartments where there will be used of pallet jackets (to prevent structure borne noise to apartments above).
  - This is to consist of a floating slab separated from the structural slab using 2 layers of Embelton Supershearflex pads or equal.
- Carboard press to be located on isolated slab, or installed on 2 layers of Embelton Supershearflex pads or equal.

5.3.3 Mechanical services plant and equipment

Detailed acoustic review to be conducted of all plant and equipment at CC stage (once equipment items are selected/designed).

Noise from building services plant and equipment is to comply with the EPA NPfI (as detailed in Section 5.1.2) .

6 Conclusion

Renzo Tonin & Associates has completed an acoustic assessment of the proposed mixed-use development at 277 The Grand Parade, Ramsgate.

This assessment has considered:

- External noise impacts (road traffic noise from The Grand Parade and Ramsgate Road) to the proposed occupied areas of the development. Details regarding acoustic treatment are provided in Section 4.2.

- Noise emissions from the operations of the development (Food and Beverage tenancy, loading dock and noise from building services plant/equipment). Details regarding acoustic treatment/management controls are provided in Section 5.3.

As such, the proposed development is suitable at the site from an acoustic viewpoint.

References

[1]. Bayside Council. (2011). Rockdale Development Control Plan 2011, Sydney.

[2]. Craft Architecture. (2022). *Ramsgate Beach Hotel – 277 The Grand Parade, Ramsgate* DA Drawings *(revision 9 dated 13 July 2022),* Sydney.

[3]. Department of Planning and Environment. (2008). *Development Near Rail Corridors and busy Roads – Interim Guideline*. Sydney

[4]. Department of Planning and Environment. (2021b). State Environmental Planning Policy (Transport and Infrastructure) 2021. NSW Government.

[5]. Environment Protection Authority. (2011). *Road Noise Policy*, Sydney.

[6]. Environment Protection Authority. (2017). *Noise Policy for Industry*, Sydney.

[7]. Office of Liquor Gaming & Racing. (2009). *Sound advice – Reducing the risk of noise disturbance (October 2009)*, NSW Government.

[8]. Standards Australia. (2016). '*Acoustics – Recommended design sound levels and reverberation times for building interiors*' (AS/NZS 2107:2016), Standards Australia.

[9]. Transport and Traffic Planning Associated. (2022). *Proposed Mixed Use Development 277 The Grand Parade, Ramsgate Beach – Traffic and Parking Assessment (Revision B)*, Sydney

APPENDIX A Glossary of terminology

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

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 common sounds in our daytime environment: threshold of hearing — 0 dB — The faintest sound we can hear 10 dB — Human breathing almost silent — 20 dB 30 dB — Quiet bedroom or in a quiet national park location generally quiet — 40 dB — Library 50 dB — Typical office space or ambience in the city at night moderately loud — 60 dB — CBD mall at lunch time 70 dB — The sound of a car passing on the street loud — 80 dB — Loud music played at home 90 dB — The sound of a truck passing on the street very loud — 100 dB — Indoor rock band concert 110 dB — Operating a chainsaw or jackhammer extremely loud — 120 dB — Jet plane take-off at 100m away threshold of pain — 130 dB 140 dB — Military jet take-off at 25m away
dB(A)	A-weighted decibels. The A- weighting noise filter simulates the response of the human ear at relatively low levels, where the ear is not as effective in hearing low frequency sounds as it is in hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human 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	Frequency is synonymous to pitch. Sounds have a pitch which is 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.
L_{Max}	The maximum 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.

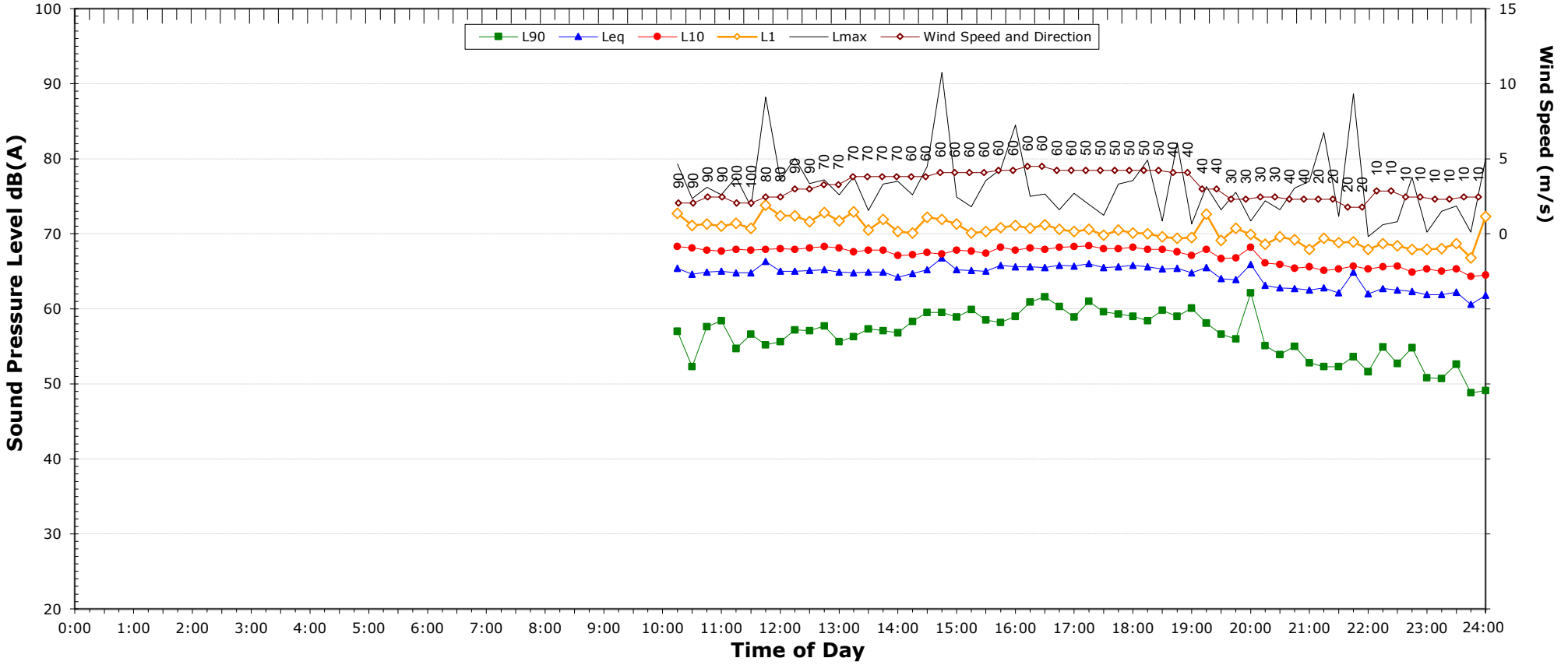
L_{90}	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L90 noise level expressed in units of dB(A).
L_{Aeq} or L_{eq}	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time, which would produce the same energy as a fluctuating sound level. When A-weighted, this is written as the L_{Aeq}.
Rw	Weighted Sound Reduction Index A measure of the sound insulation performance of a building element. It is measured in very controlled conditions in a laboratory. The term supersedes the value STC which was used in older versions of the Building Code of Australa. Rw is measured and calculated using the procedure in ISO 717-1. The related field measurement is the DnT,w. The higher the value the better the acoustic performance of the building element.
Sound	A fluctuation of air pressure which is propagated as a wave through air.
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 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 of 1 pico watt.
Sound pressure level	The level of noise, usually expressed in decibels, as measured by a standard sound level meter with a microphone referenced to 20 mico Pascal.
Transmission Loss	The sound level difference between one room or area and another, usually of sound transmitted through an intervening partition or wall. Also the vibration level difference between one point and another. For example, if the sound level on one side of a wall is 100dB and 65dB on the other side, it is said that the transmission loss of the wall is 35dB. If the transmission loss is normalised or standardised, it then becomes the Rw or Raw or DnT,w.

APPENDIX B Noise Monitoring Results

EXISTING AMBIENT NOISE LEVELS

L1 - 262 The Grand Parade, Ramsgate, NSW (Front)

Friday, 1 November 2013



NSW Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night[2]
	7am-6pm	6pm-10pm	10pm-7am
L_{90}	-	52.3	38.8
Leq	-	64.2	60.6

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 ≥ 15dB(A)

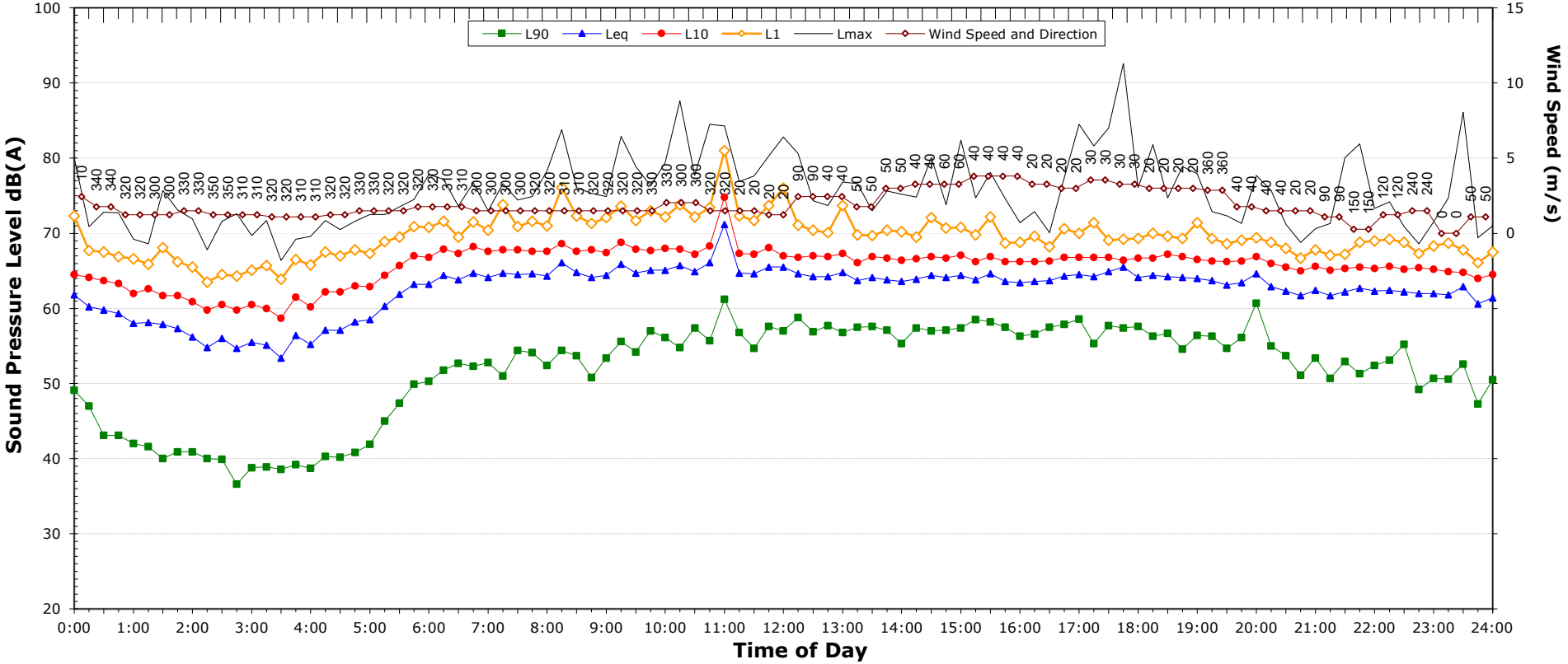
NSW Road Noise Policy (1m from facade)		(see note 3)
Descriptor	Day	Night[2]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	67.5	63.1
$L_{eq\ 1hr}$ upper 10 percentile	68.2	66.8
$L_{eq\ 1hr}$ lower 10 percentile	65.4	57.7

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	71.7	to	80.0
Lmax - Leq (Range)	15.1	to	18.3

EXISTING AMBIENT NOISE LEVELS

L1 - 262 The Grand Parade, Ramsgate, NSW (Front)

Saturday, 2 November 2013



NSW Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night[2]
	7am-6pm	6pm-10pm	10pm-7am
L_{90}	53.7	51.1	39.6
Leq	64.9	63.2	59.7

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 ≥ 15dB(A)

NSW Road Noise Policy (1m from facade)		(see note 3)
Descriptor	Day	Night[2]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	67.0	62.2
$L_{eq\ 1hr}$ upper 10 percentile	69.2	64.7
$L_{eq\ 1hr}$ lower 10 percentile	64.8	58.9

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	74.9	to	86.1
Lmax - Leq (Range)	16.2	to	25.5

Data File: 2013-11-01_SLM_000_123_Rpt_Report.txt

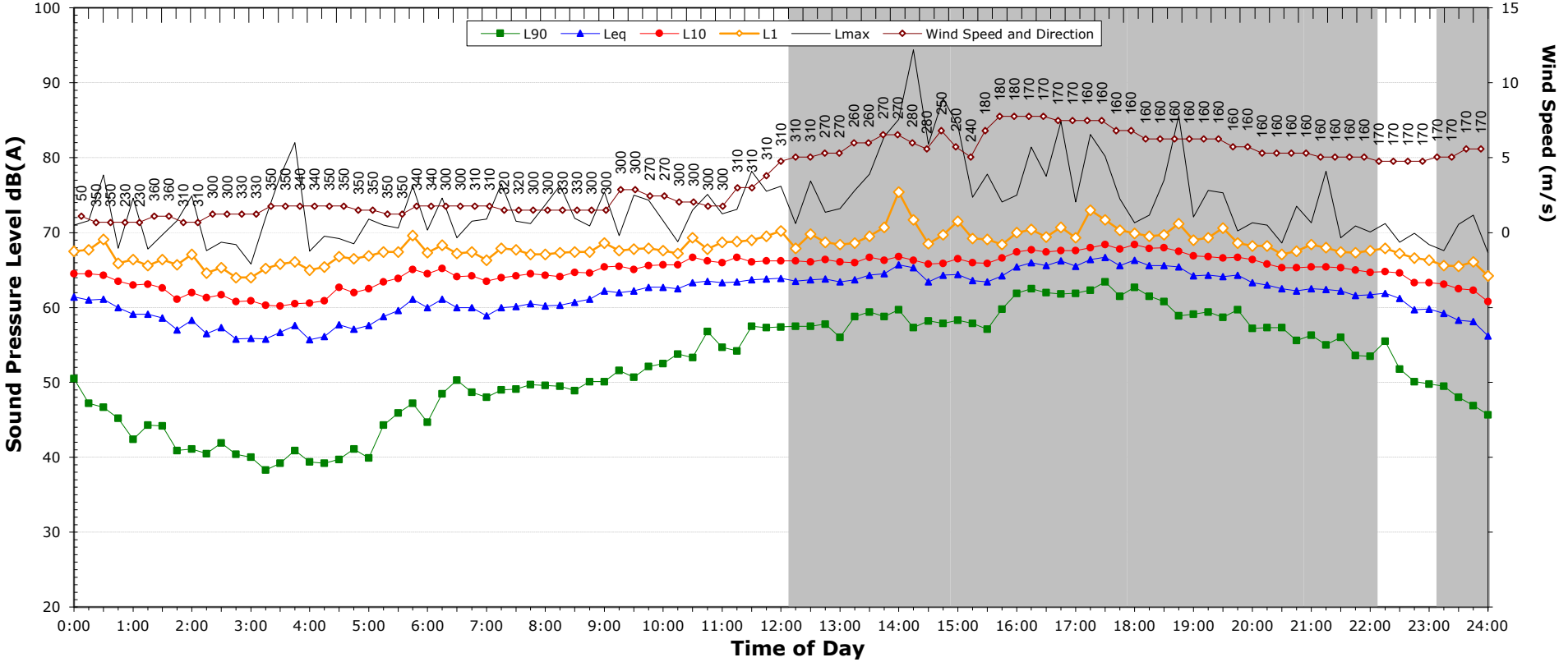
TG502-01 (rev 0) Location L1 - Front Logger

Template QTE-05B (rev 104) Sydney Logger Graphs

EXISTING AMBIENT NOISE LEVELS

L1 - 262 The Grand Parade, Ramsgate, NSW (Front)

Sunday, 3 November 2013



NSW Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night[2]
	7am-6pm	6pm-10pm	10pm-7am
L_{90}	-	-	-
Leq	-	-	-

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 ≥ 15dB(A)

NSW Road Noise Policy (1m from facade)		(see note 3)
Descriptor	Day	Night[2]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	64.8	62.2
$L_{eq\ 1hr}$ upper 10 percentile	66.2	65.6
$L_{eq\ 1hr}$ lower 10 percentile	62.7	56.1

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	73.0	to	79.2
Lmax - Leq (Range)	18.8	to	20.3

Data File: 2013-11-01_SLM_000_123_Rpt_Report.txt

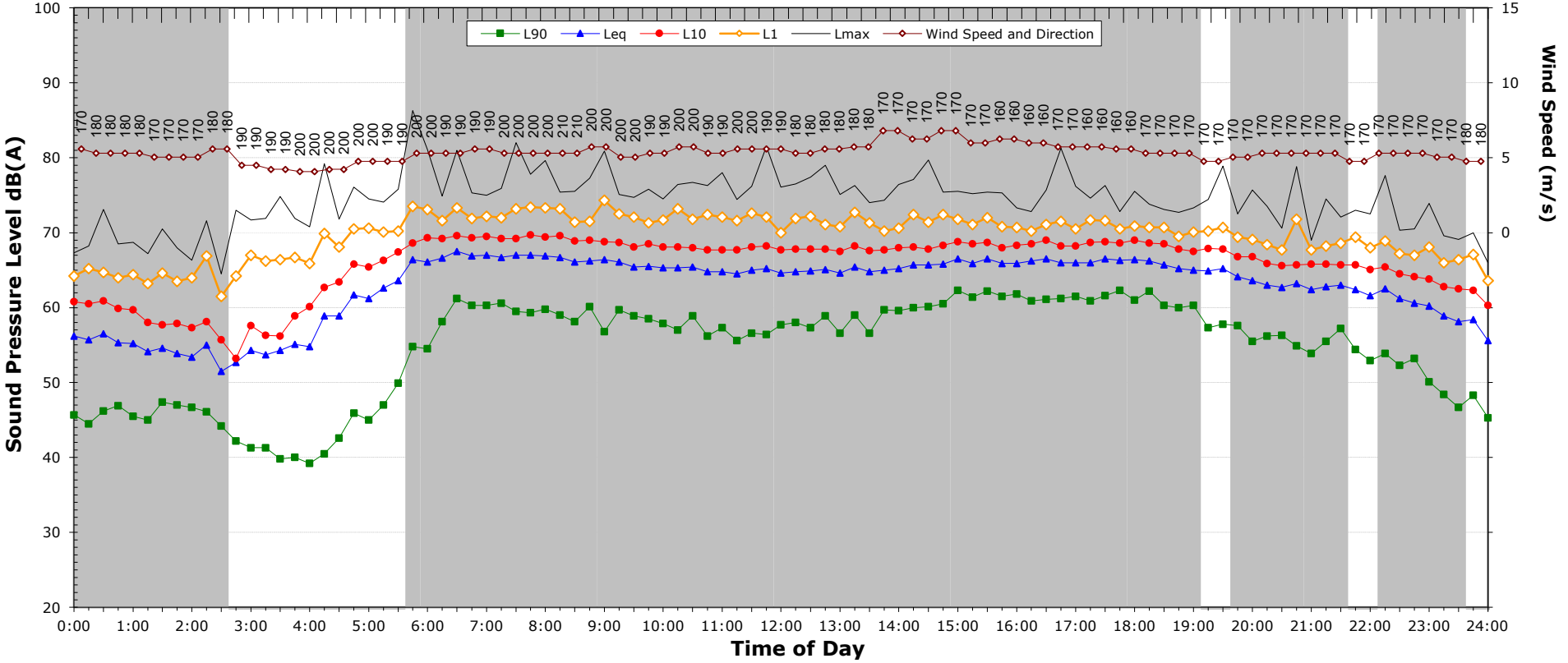
TG502-01 (rev 0) Location L1 - Front Logger

Template QTE-05B (rev 104) Sydney Logger Graphs

EXISTING AMBIENT NOISE LEVELS

L1 - 262 The Grand Parade, Ramsgate, NSW (Front)

Monday, 4 November 2013



NSW Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night[2]
	7am-6pm	6pm-10pm	10pm-7am
L_{90}	-	-	-
Leq	-	-	-

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 ≥ 15dB(A)

NSW Road Noise Policy (1m from facade)		(see note 3)
Descriptor	Day	Night[2]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	66.3	64.3
$L_{eq\ 1hr}$ upper 10 percentile	67.6	69.6
$L_{eq\ 1hr}$ lower 10 percentile	64.5	55.5

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	72.9	to	92.1
Lmax - Leq (Range)	17.5	to	27.0

Data File: 2013-11-01_SLM_000_123_Rpt_Report.txt

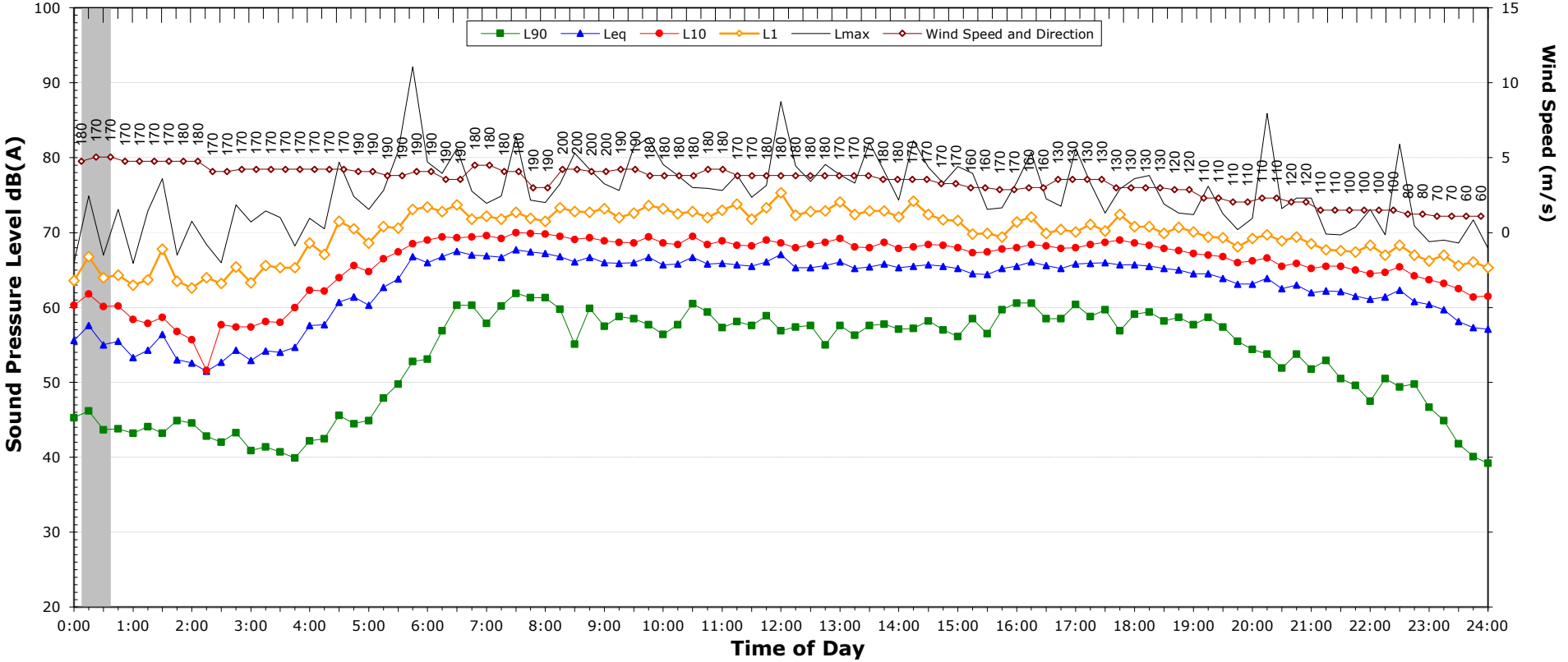
TG502-01 (rev 0) Location L1 - Front Logger

Template QTE-05B (rev 104) Sydney Logger Graphs

EXISTING AMBIENT NOISE LEVELS

L1 - 262 The Grand Parade, Ramsgate, NSW (Front)

Tuesday, 5 November 2013



NSW Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night[2]
	7am-6pm	6pm-10pm	10pm-7am
L_{90}	56.4	49.6	37.8
Leq	65.9	63.5	61.6

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 ≥ 15dB(A)

NSW Road Noise Policy (1m from facade)		(see note 3)
Descriptor	Day	Night[2]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	67.9	64.1
$L_{eq\ 1hr}$ upper 10 percentile	69.4	69.8
$L_{eq\ 1hr}$ lower 10 percentile	64.9	55.8

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	73.5	to	84.2
Lmax - Leq (Range)	17.5	to	22.1

Data File: 2013-11-01_SLM_000_123_Rpt_Report.txt

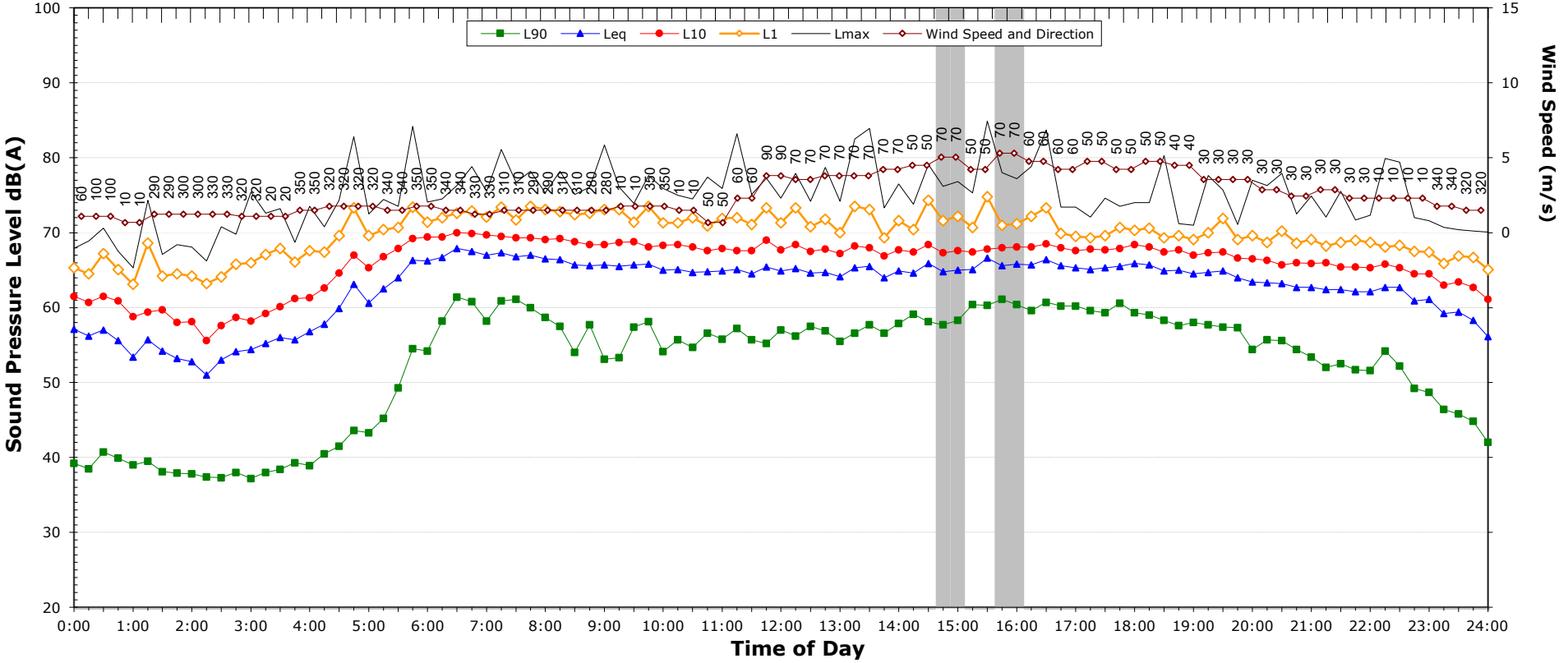
TG502-01 (rev 0) Location L1 - Front Logger

Template QTE-05B (rev 104) Sydney Logger Graphs

EXISTING AMBIENT NOISE LEVELS

L1 - 262 The Grand Parade, Ramsgate, NSW (Front)

Wednesday, 6 November 2013



NSW Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night[2]
	7am-6pm	6pm-10pm	10pm-7am
L_{90}	54.4	51.7	40.1
Leq	65.5	63.8	61.3

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

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

NSW Road Noise Policy (1m from facade)		(see note 3)
Descriptor	Day	Night[2]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	67.6	63.8
$L_{eq\ 1hr}$ upper 10 percentile	68.9	68.9
$L_{eq\ 1hr}$ lower 10 percentile	65.1	55.5

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	70.1	to	85.4
Lmax - Leq (Range)	16.3	to	26.5

Data File: 2013-11-01_SLM_000_123_Rpt_Report.txt

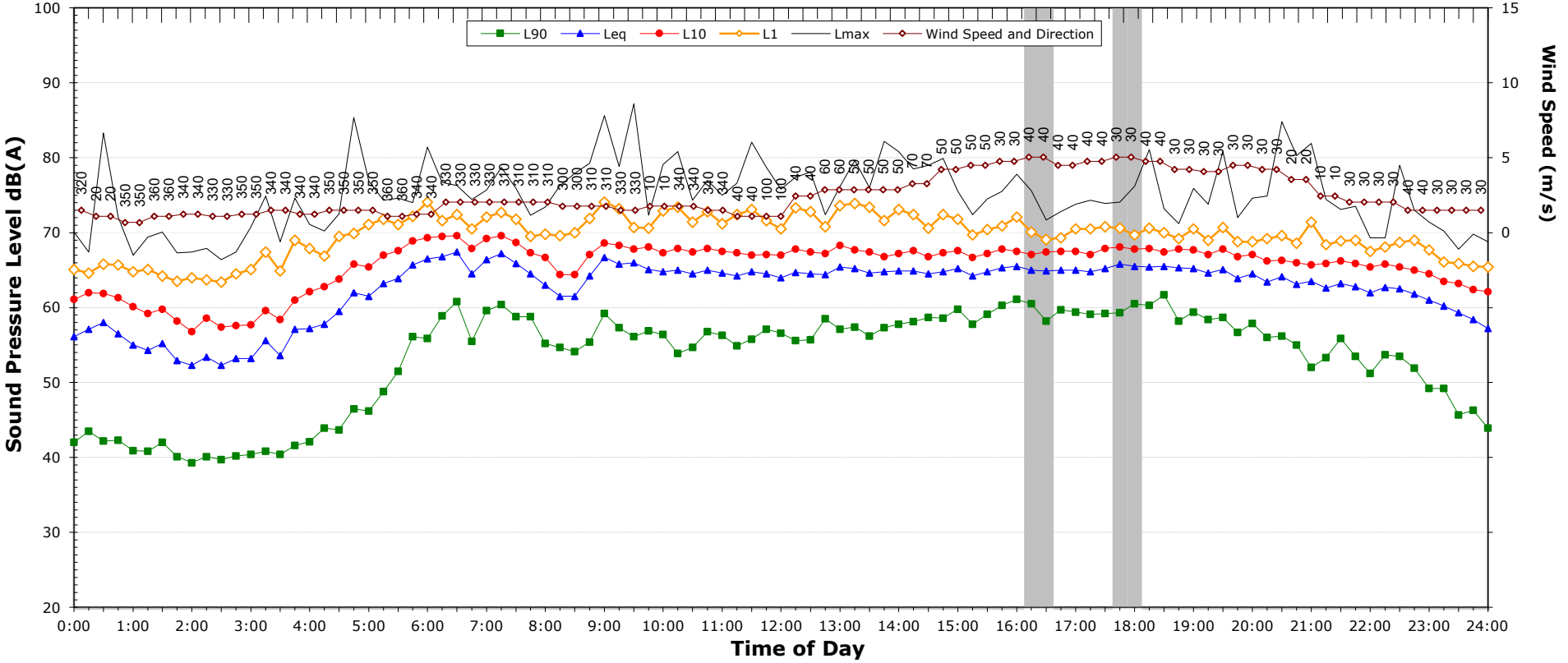
TG502-01 (rev 0) Location L1 - Front Logger

Template QTE-05B (rev 104) Sydney Logger Graphs

EXISTING AMBIENT NOISE LEVELS

L1 - 262 The Grand Parade, Ramsgate, NSW (Front)

Thursday, 7 November 2013



NSW Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night[2]
	7am-6pm	6pm-10pm	10pm-7am
L_{90}	54.8	52.0	-
Leq	64.9	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 in free-field; tabulated results facade corrected

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

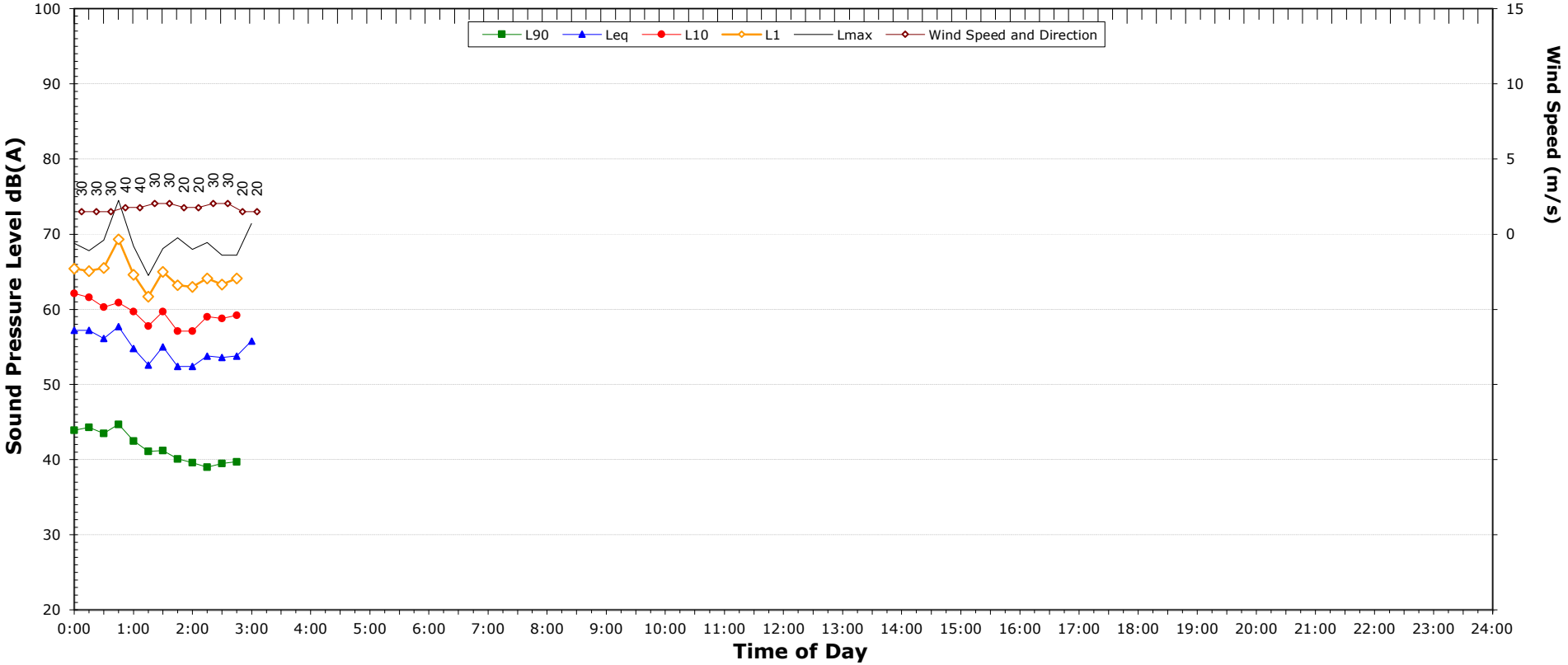
NSW Road Noise Policy (1m from facade)		(see note 3)
Descriptor	Day	Night[2]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	67.2	60.7
$L_{eq\ 1hr}$ upper 10 percentile	67.9	64.5
$L_{eq\ 1hr}$ lower 10 percentile	65.6	55.8

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	69.5	to	79.0
Lmax - Leq (Range)	16.2	to	17.9

EXISTING AMBIENT NOISE LEVELS

L1 - 262 The Grand Parade, Ramsgate, NSW (Front)

Friday, 8 November 2013



NSW Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night[2]
	7am-6pm	6pm-10pm	10pm-7am
L_{90}	-	-	-
Leq	-	-	-

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 ≥ 15dB(A)

NSW Road Noise Policy (1m from facade)	(see note 3)	
Descriptor	Day	Night[2]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	-	-
$L_{eq\ 1hr}$ upper 10 percentile	-	-
$L_{eq\ 1hr}$ lower 10 percentile	-	-

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

Data File: 2013-11-01_SLM_000_123_Rpt_Report.txt

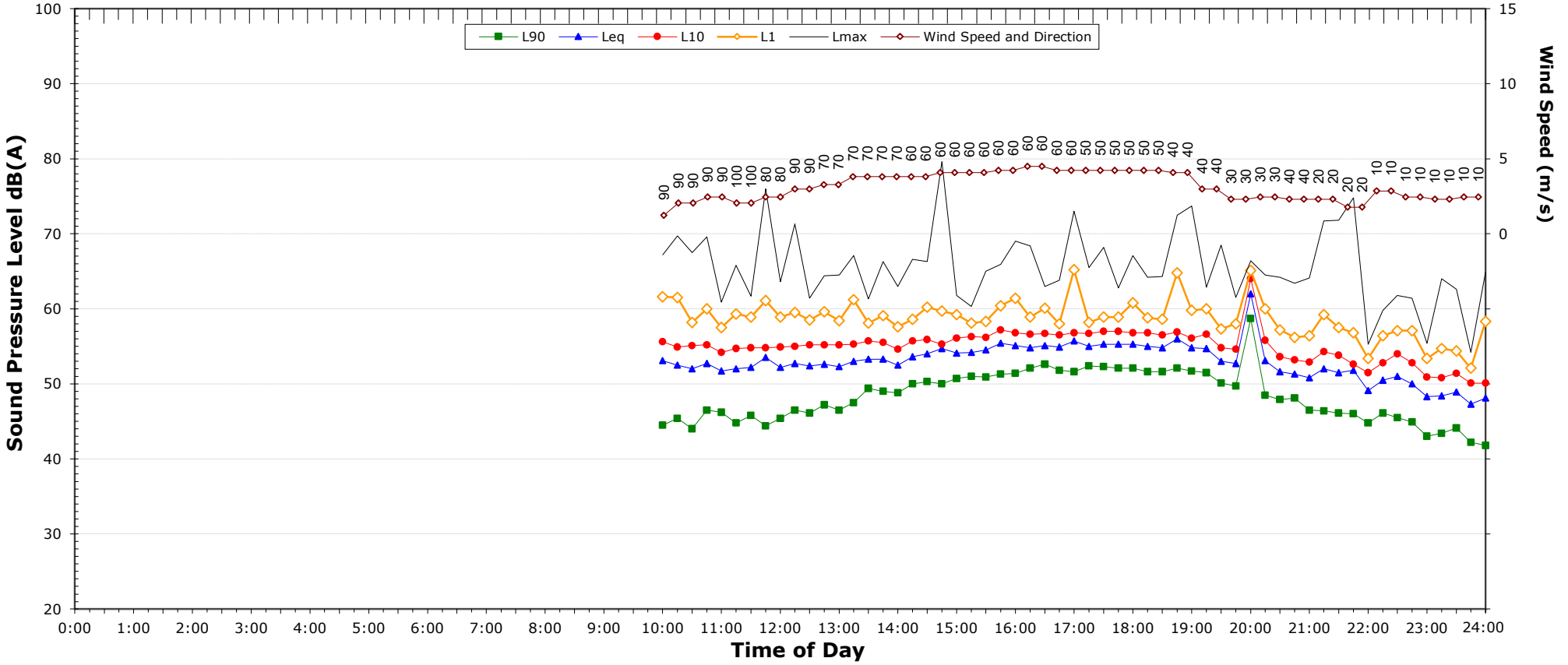
TG502-01 (rev 0) Location L1 - Front Logger

Template QTE-05B (rev 104) Sydney Logger Graphs

EXISTING AMBIENT NOISE LEVELS

L2 - 262 The Grand Parade Ramsgate, NSW (Rear)

Friday, 1 November 2013



NSW Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night[2]
	7am-6pm	6pm-10pm	10pm-7am
L_{90}	-	46.0	35.0
Leq	-	54.7	48.1

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 ≥ 15dB(A)

NSW Road Noise Policy (1m from facade)		(see note 3)
Descriptor	Day	Night[2]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	56.6	50.6
$L_{eq\ 1hr}$ upper 10 percentile	59.5	55.7
$L_{eq\ 1hr}$ lower 10 percentile	53.9	44.2

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	66.0	to	74.8
Lmax - Leq (Range)	16.0	to	21.6

Data File: 2013-11-01_SLM_000_123_Rpt_Report.txt

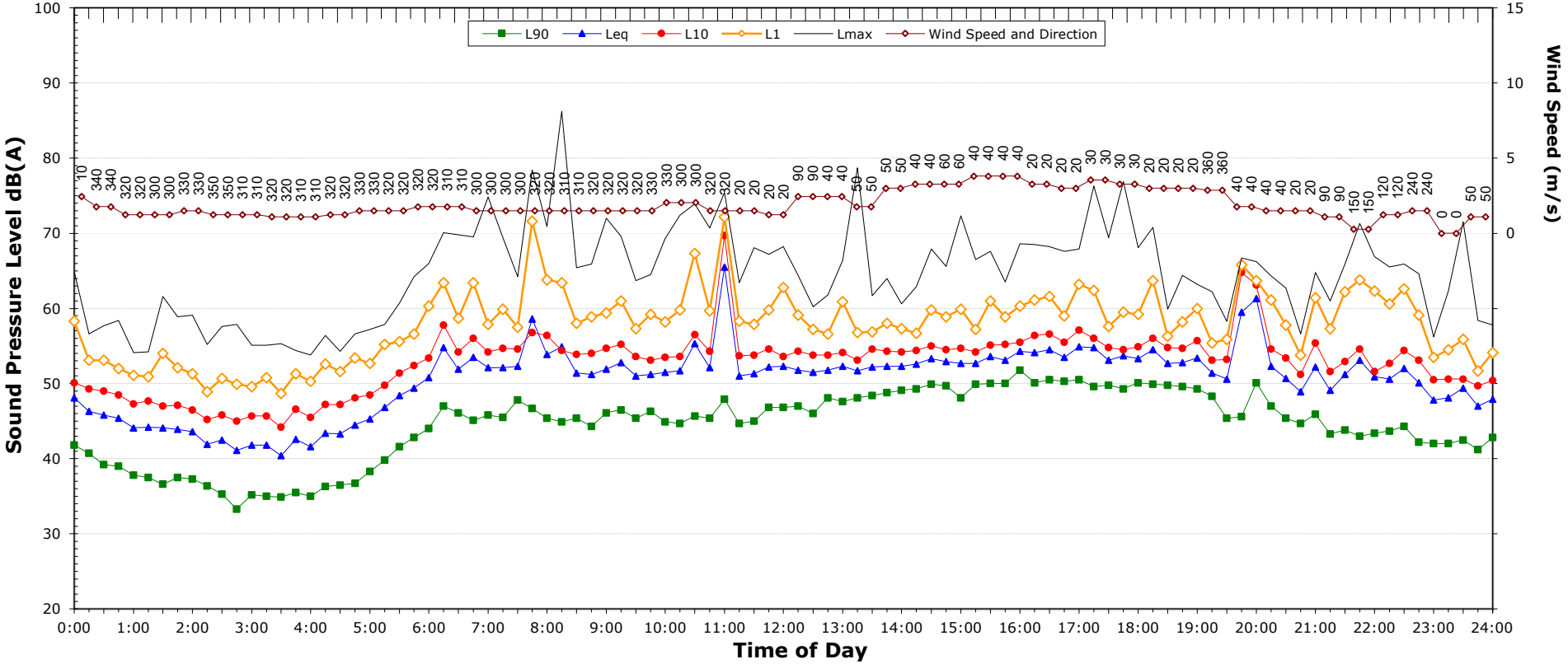
TG502-01 (rev 0) Location L2 - Rear Logger

Template QTE-05B (rev 104) Sydney Logger Graphs

EXISTING AMBIENT NOISE LEVELS

L2 - 262 The Grand Parade Ramsgate, NSW (Rear)

Saturday, 2 November 2013



NSW Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night[2]
	7am-6pm	6pm-10pm	10pm-7am
L_{90}	44.9	43.3	37.2
Leq	54.5	54.4	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 ≥ 15dB(A)

NSW Road Noise Policy (1m from facade)		(see note 3)
Descriptor	Day	Night[2]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	57.0	50.1
$L_{eq\ 1hr}$ upper 10 percentile	61.7	52.9
$L_{eq\ 1hr}$ lower 10 percentile	53.8	45.9

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	65.9	to	71.5
Lmax - Leq (Range)	15.5	to	23.3

Data File: 2013-11-01_SLM_000_123_Rpt_Report.txt

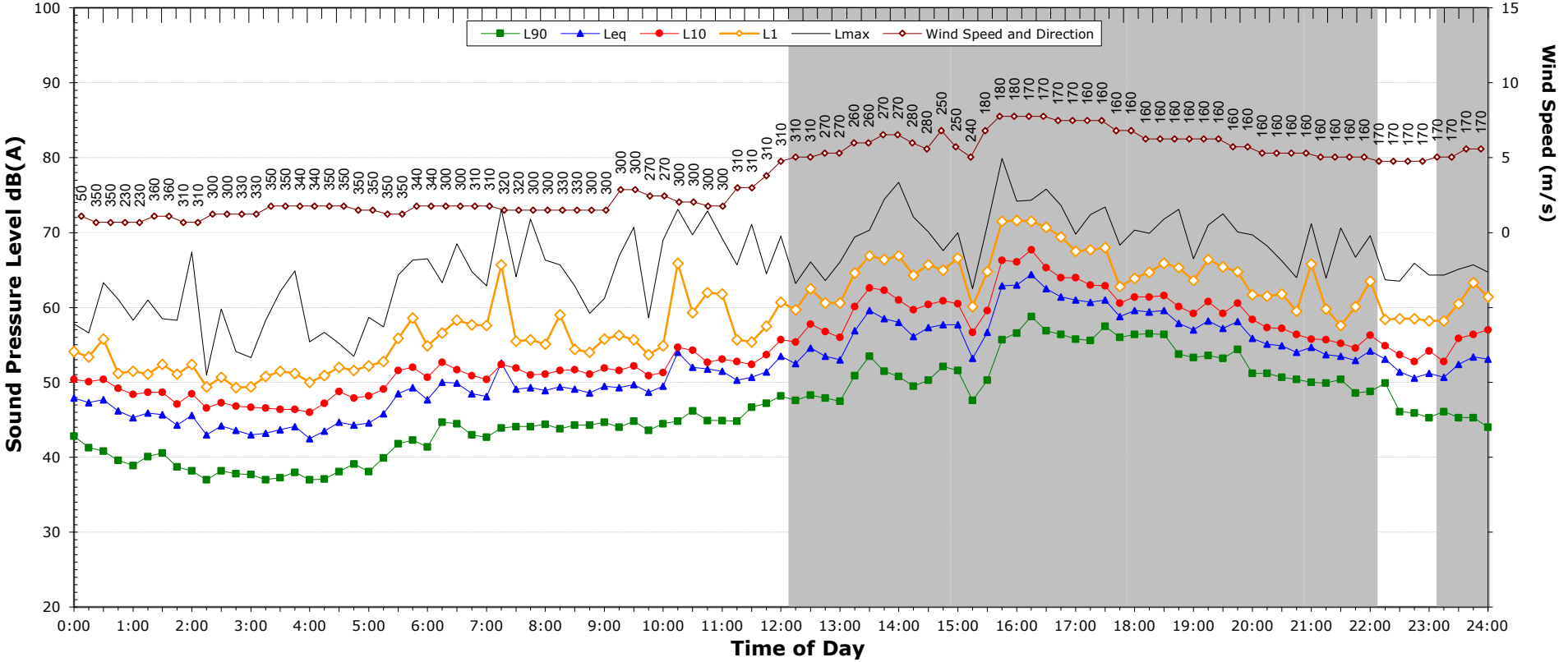
TG502-01 (rev 0) Location L2 - Rear Logger

Template QTE-05B (rev 104) Sydney Logger Graphs

EXISTING AMBIENT NOISE LEVELS

L2 - 262 The Grand Parade Ramsgate, NSW (Rear)

Sunday, 3 November 2013



NSW Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night[2]
	7am-6pm	6pm-10pm	10pm-7am
L_{90}	-	-	-
Leq	-	-	-

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 ≥ 15dB(A)

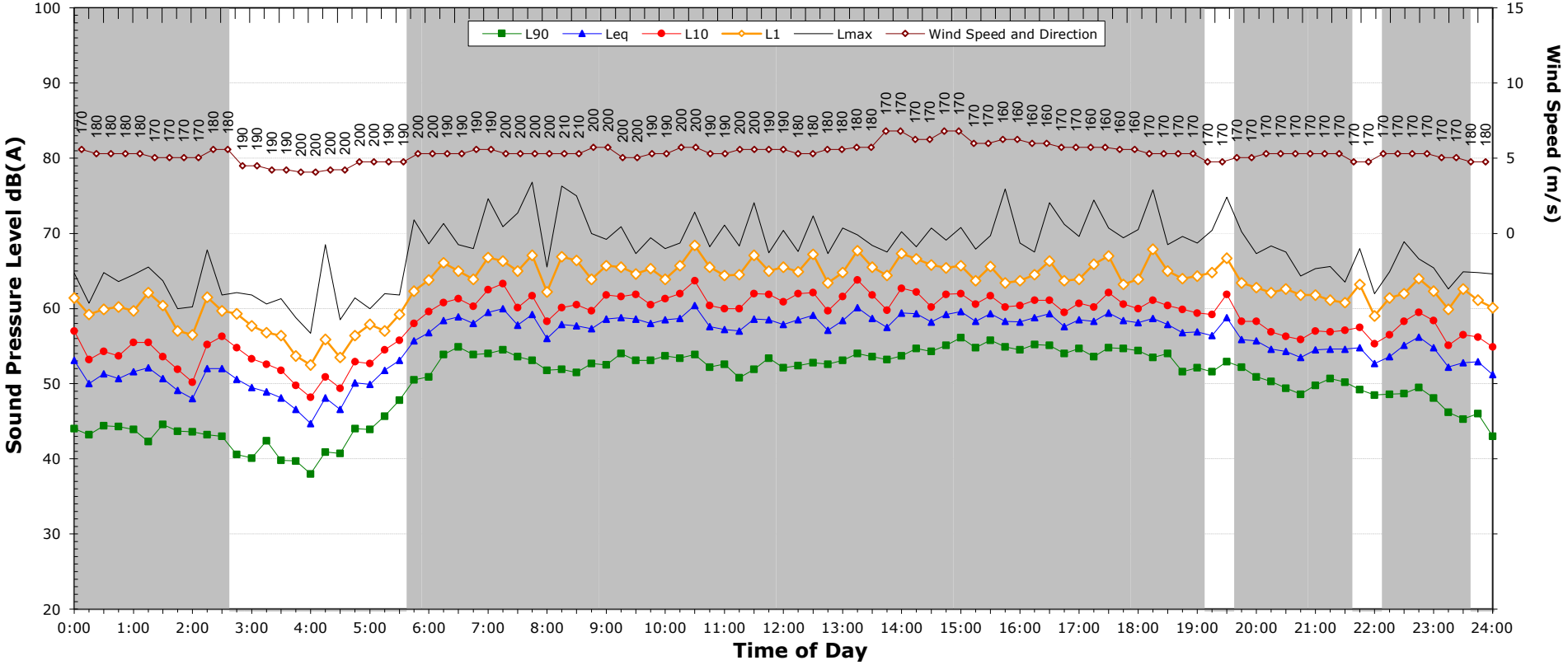
NSW Road Noise Policy (1m from facade)		(see note 3)
Descriptor	Day	Night[2]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	53.3	52.7
$L_{eq\ 1hr}$ upper 10 percentile	54.9	55.0
$L_{eq\ 1hr}$ lower 10 percentile	51.7	49.9

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	68.5	to	68.5
Lmax - Leq (Range)	19.6	to	19.6

EXISTING AMBIENT NOISE LEVELS

L2 - 262 The Grand Parade Ramsgate, NSW (Rear)

Monday, 4 November 2013



NSW Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night[2]
	7am-6pm	6pm-10pm	10pm-7am
L_{90}	-	-	-
Leq	-	-	-

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 ≥ 15dB(A)

NSW Road Noise Policy (1m from facade)		(see note 3)
Descriptor	Day	Night[2]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	58.7	53.8
$L_{eq\ 1hr}$ upper 10 percentile	60.3	57.9
$L_{eq\ 1hr}$ lower 10 percentile	56.4	49.3

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	67.6	to	78.7
Lmax - Leq (Range)	18.5	to	23.4

Data File: 2013-11-01_SLM_000_123_Rpt_Report.txt

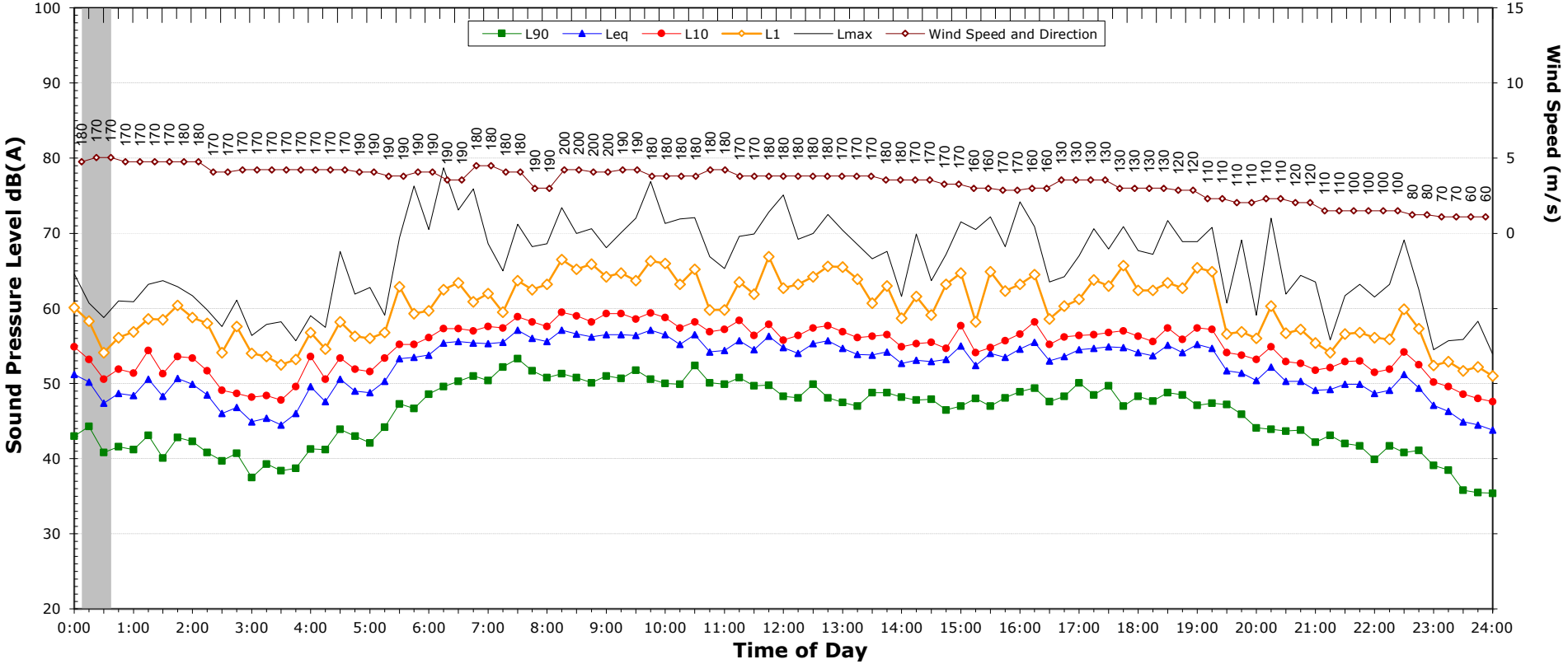
TG502-01 (rev 0) Location L2 - Rear Logger

Template QTE-05B (rev 104) Sydney Logger Graphs

EXISTING AMBIENT NOISE LEVELS

L2 - 262 The Grand Parade Ramsgate, NSW (Rear)

Tuesday, 5 November 2013



NSW Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night[2]
	7am-6pm	6pm-10pm	10pm-7am
L_{90}	47.0	41.7	33.5
Leq	55.1	52.2	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

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

NSW Road Noise Policy (1m from facade)		(see note 3)
Descriptor	Day	Night[2]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	57.0	51.2
$L_{eq\ 1hr}$ upper 10 percentile	59.1	57.0
$L_{eq\ 1hr}$ lower 10 percentile	52.6	42.8

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	69.1	to	73.1
Lmax - Leq (Range)	15.6	to	22.6

Data File: 2013-11-01_SLM_000_123_Rpt_Report.txt

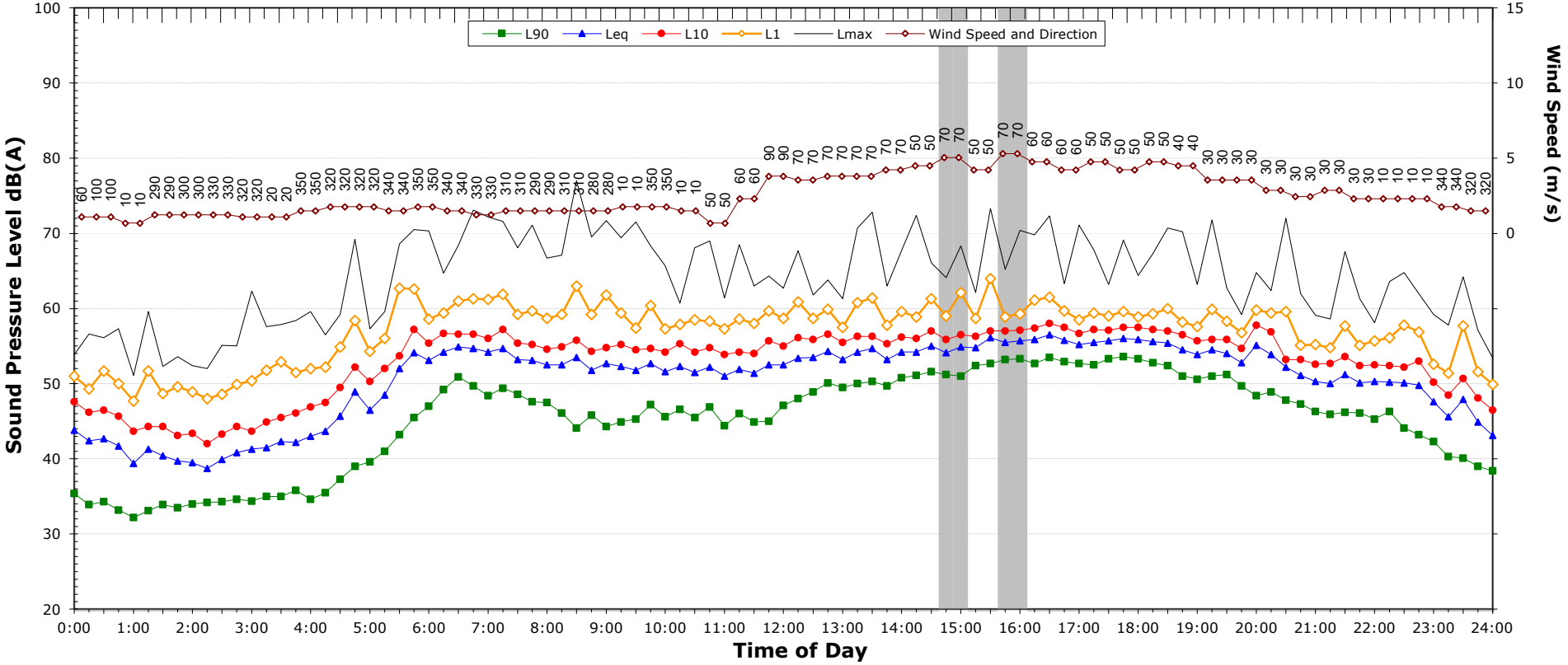
TG502-01 (rev 0) Location L2 - Rear Logger

Template QTE-05B (rev 104) Sydney Logger Graphs

EXISTING AMBIENT NOISE LEVELS

L2 - 262 The Grand Parade Ramsgate, NSW (Rear)

Wednesday, 6 November 2013



NSW Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night[2]
	7am-6pm	6pm-10pm	10pm-7am
L_{90}	44.9	45.9	37.1
Leq	53.9	53.2	48.9

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 ≥ 15dB(A)

NSW Road Noise Policy (1m from facade)	(see note 3)	
Descriptor	Day	Night[2]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	56.2	51.4
$L_{eq\ 1hr}$ upper 10 percentile	58.3	56.9
$L_{eq\ 1hr}$ lower 10 percentile	53.7	44.1

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	68.5	to	78.4
Lmax - Leq (Range)	15.3	to	24.3

Data File: 2013-11-01_SLM_000_123_Rpt_Report.txt

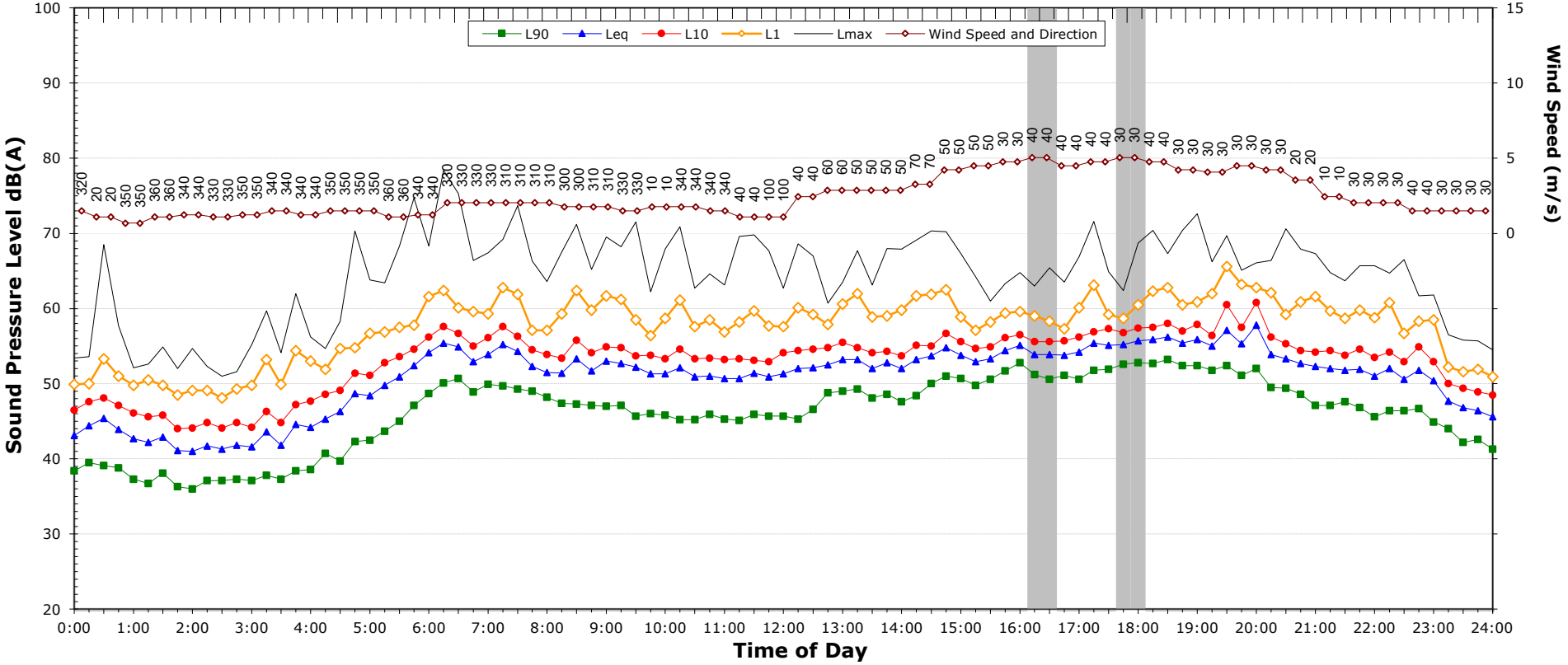
TG502-01 (rev 0) Location L2 - Rear Logger

Template QTE-05B (rev 104) Sydney Logger Graphs

EXISTING AMBIENT NOISE LEVELS

L2 - 262 The Grand Parade Ramsgate, NSW (Rear)

Thursday, 7 November 2013



NSW Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night[2]
	7am-6pm	6pm-10pm	10pm-7am
L_{90}	45.3	46.8	36.5
Leq	52.9	54.7	49.4

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 ≥ 15dB(A)

NSW Road Noise Policy (1m from facade)		(see note 3)
Descriptor	Day	Night[2]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	56.0	51.9
$L_{eq\ 1hr}$ upper 10 percentile	58.7	57.3
$L_{eq\ 1hr}$ lower 10 percentile	53.6	44.0

Night Time Maximum Noise Levels			(see note 4)
Lmax (Range)	65.6	to	74.4
Lmax - Leq (Range)	15.2	to	21.4

Data File: 2013-11-01_SLM_000_123_Rpt_Report.txt

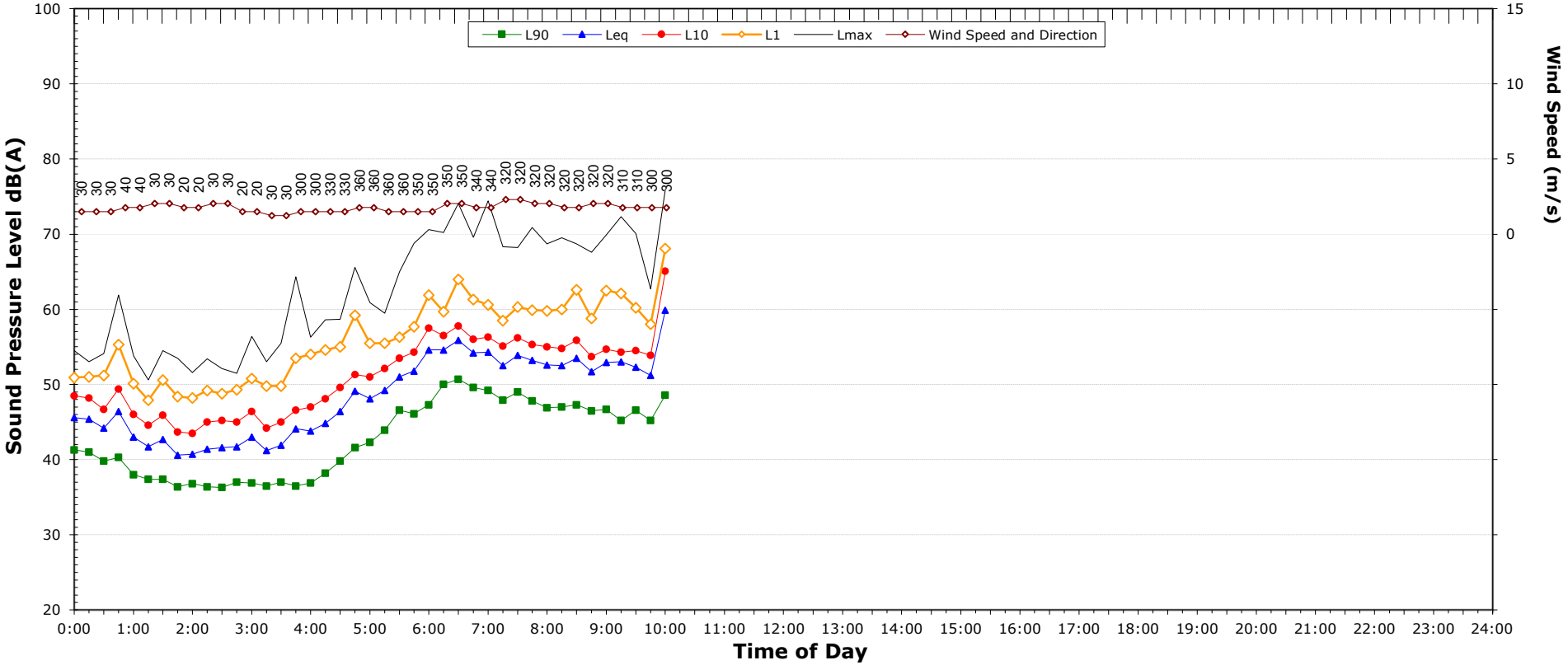
TG502-01 (rev 0) Location L2 - Rear Logger

Template QTE-05B (rev 104) Sydney Logger Graphs

EXISTING AMBIENT NOISE LEVELS

L2 - 262 The Grand Parade Ramsgate, NSW (Rear)

Friday, 8 November 2013



NSW Industrial Noise Policy (Free Field)			
Descriptor	Day	Evening	Night[2]
	7am-6pm	6pm-10pm	10pm-7am
L_{90}	-	-	-
Leq	-	-	-

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 ≥ 15dB(A)

NSW Road Noise Policy (1m from facade)		(see note 3)
Descriptor	Day	Night[2]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	56.5	-
$L_{eq\ 1hr}$ upper 10 percentile	58.2	-
$L_{eq\ 1hr}$ lower 10 percentile	55.2	-

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

Data File: 2013-11-01_SLM_000_123_Rpt_Report.txt

TG502-01 (rev 0) Location L2 - Rear Logger

Template QTE-05B (rev 104) Sydney Logger Graphs