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CLARENCE RIVER BRIDGE CROSSING

Detailed Noise Modelling & Assessment for At-Property Mitigation

29 March 2018

Roads and Maritime Services

TJ502-01F07 (r7) Noise Modelling & Assessment

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1 Introduction

Renzo Tonin & Associates (RT&A) was engaged to undertake a quantitative assessment of traffic noise from the proposed Clarence River Bridge Crossing project in Grafton. Roads and Maritime Services (RMS) is proposing to construct a new crossing over the Clarence River in Grafton to improve traffic flow for the areas to the south and north of the river with the existing bridge to be retained and to provide a crossing for local traffic. It is expected that the existing bridge crossing will be handed over to Council and will become a local road.

The services undertaken by RT&A involved the following:

- A review of the Environmental Impact Statement (EIS) Appendix F, dated August 2014 and prepared by Arup.
- A review of the 'Operational Noise Report (100% Design)' (ONR), prepared by Resonate Acoustics (Resonate) on behalf of Fulton Hogan and approved by the NSW Department of Planning & Environment on 4th August 2017.
- A review of the ONR noise model and methodology prepared by Resonate.
- Undertaking long-term noise monitoring and concurrent monitoring of traffic volumes, vehicle classification and speeds at various locations along the existing road, to assist with noise model validation and calibration.
- Creating a traffic noise model using the 100% design provided by the project designer.
- Reviewing and assessing rail noise impacts as a result of the redevelopment of the Pound Street rail overbridge to accommodate the road widening of Pound Street as part of the project.
- Reviewing and assessing the potential noise impacts during the periodic maintenance of the emergency backup generator that is to be used by the flood pump station during flood conditions.
- Quantify the number of properties that would exceed the criteria, and compare with the findings presented in the ONR and the EIS.
- Prepare a report outlining the findings of the noise modelling and assessment.

This assessment identifies sensitive locations and assesses potential noise impacts against the project's noise criteria as presented in the noise policy relevant to this project, namely the NSW 'Road Noise Policy' (RNP) and the NSW 'Environmental Noise Management Manual' (ENMM).

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. Appendix A contains a glossary of acoustic terms used in this report.

2 Environmental and Legal obligations

This section presents the operational noise and vibration requirements, legislation, guidelines, standards and past studies relevant and applicable to the project.

2.1 Project Requirements

RT&A has conducted an assessment of this project and prepared this report taking into consideration with the following regulatory requirements:

- Minister's Conditions of Approval (MCoA), dated August 2014;
- The NSW Department of Planning & Environment's 'Secretary's Environmental Assessment Report', dated December 2014;
- RMS's 'Scope of Works and Technical Criteria' (SWTC);
- Road Noise Policy (RNP), NSW DECCW 2011;
- Environmental Noise Management Manual (ENMM), RMS 2001;
- Rail Infrastructure Noise Guideline (RING), NSW EPA 2013;
- NSW Industrial Noise Policy (INP), NSW EPA 2000;
- Environmental Impact Statement (EIS) – Additional Crossing of the Clarence River at Grafton, Appendix F – Technical Paper: Noise and Vibration Assessment (Arup, August 2014); and
- Design and Construction of Additional Crossing of the Clarence River at Grafton – Operational Noise Report (100% Design) (ONR), Resonate Acoustics.

2.2 Traffic Noise Criteria

The Minister for Planning's Infrastructure Approval Condition D11 requires a review of the operational noise mitigation measures proposed to be implemented for the project as identified in the documents listed under Condition A2. In accordance with the Minister's Condition of Approval D11(b) and D11(c), this report reviews the suitability of the operational noise mitigation measures to achieve the criteria outlined in the NSW 'Road Noise Policy' (RNP, DECCW 2011) and where necessary, additional feasible and reasonable noise mitigation measures are investigated to achieve the criteria outlined in the RNP.

Further to this, other environmental documents for the project (outlined in Section 2.1) have been taken into consideration in the development of the operational noise mitigation measures. It is noted that the noise criteria applied in this study are consistent with those nominated in the EIS and ONR documents described in Section 2.1.

The RNP outlines the NSW Government's guidelines for road traffic noise assessment. Specific objectives of the RNP include establishment of criteria to define acceptable noise levels, methods for

assessing and measuring noise impacts and identification of all strategies available to reduce traffic noise.

In accordance with the RNP, a number of factors should be considered in setting road traffic noise levels:

- whether the road project is in a new or existing road corridor
- the existing level of noise exposure
- whether the road project involves the construction of a new road or substantial changes to the alignment or design of an existing road
- whether the volume or composition of traffic flows would substantially change.

There are generally more opportunities to minimise noise impacts from new roads and road corridors, especially those in greenfield locations, through judicious road design and land use planning. The scope to reduce noise impacts from existing roads and corridors is more limited.

All these factors have been considered in the development of the noise level criteria for the Clarence River Bridge Crossing project.

Under the RNP, the project is classed as a freeway or arterial road because it is a road that handles through traffic bound for another locality and has characteristically heavy and continuous traffic flows.

Based on the RNP's definition, the project is a 'new freeway / arterial road' because the southern approach and the new bridge are to be built in a new road corridor and the northern approach is to be located along an existing road classified as a local road which would have its classification changed to an arterial road.

2.2.1 Residential Land Uses

The relevant noise criteria for residential receivers impacted by the project are summarised in Table 2.1 below.

Table 2.1 – Noise Criteria for Residential Receivers

Road Category	Type of Project/Land Use	Assessment Criteria, dB(A)	
		Day (7:00am-10:00pm)	Night (10:00pm-7:00am)
Freeway/ arterial/ sub-arterial roads	1. Existing residences affected by noise from new freeway / arterial / sub-arterial road corridors	$L_{Aeq,(15\ hour)}$ 55 (external)	$L_{Aeq,(9\ hour)}$ 50 (external)

Where existing traffic noise levels are above the noise assessment criteria, the primary objective is to reduce these through feasible and reasonable measures to meet the assessment criteria. A secondary

objective is to protect against excessive decreases in amenity as the result of a project by applying the relative increase criteria.

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

2.2.2 Relative Increase Criteria

The traffic noise impact from the project would need to also comply with the 'Relative Increase Criteria' as discussed in Section 2.4 of the RNP. The relative increase criteria are primarily intended to protect existing quiet areas from excessive changes in amenity due to noise from a road project. The relative increase criteria are to be applied to the external areas of existing residential and sensitive land uses impacted upon by the road project.

The relative increase criteria as set out in the RNP applicable to this project are reproduced below.

Table 2.2 – Relative Increase Criteria

Type of Development	Total Traffic Noise Level Increase, dB(A)
New Road Corridor	Existing Traffic $L_{Aeq(period)}$ + 12 dB (external)

Note: 1. 'Existing traffic' refers to the traffic noise levels for the relevant 'no build' option

In accordance with the RNP, where the existing $L_{Aeq(period)}$ traffic noise level is determined to be less than 30dB(A), then the existing $L_{Aeq(period)}$ traffic noise level is deemed to be 30dB(A). Therefore, the minimum relative increase criterion would be 42dB(A) [ie. 30 + 12].

Given that the project is within a new road corridor, some receivers have been identified to not be impacted or exposed to traffic noise from the existing Clarence River Bridge and associated roads. Therefore, the relative increase criteria may be applicable to these receiver locations.

Results of the noise modelling has considered the requirements for determining the relative increase criterion in accordance with Table 2.2 above.

2.2.3 Sensitive Land Use Developments

The RNP also sets criteria for the assessment of traffic noise on sensitive land uses such as schools, hospitals, places of worship and recreation areas. TAFE NSW Grafton is located along Pound Street and would potentially be impacted by the project; therefore, the teaching spaces within the facility would be assessed as school classrooms under the requirements of the RNP. However, office spaces within the facility are considered to be commercial spaces and are not required to be assessed to.

Furthermore, Gummyaney Aboriginal Pre-School is located at 30 Pound Street and would also be impacted upon by the project. The pre-school has been assessed as a childcare facility in accordance with the requirements of the RNP.

Therefore, the criteria relevant to the sensitive land uses affected by the project are presented in Table 2.3 below.

Table 2.3 – Road Traffic Noise Assessment Criteria for Non-Residential Land Uses

Existing Sensitive Land Use		Assessment Criteria, dB(A)		Additional Considerations
		Day (7am-10pm)	Night (10pm-7am)	
1.	School classrooms	$L_{Aeq,1hour}$ 40 (internal) when in use	–	In the case of buildings used for education or health care, noise level criteria for spaces other than classrooms and wards may be obtained by interpolation from the 'maximum' levels shown in Australian Standard 2107:2000 (Standards Australia 2000).
8.	Childcare facilities	Sleeping rooms $L_{Aeq,1hour}$ 35 (internal) Indoor play areas $L_{Aeq,1hour}$ 40 (internal) Outdoor play areas $L_{Aeq,1hour}$ 55 (external)	–	Active recreation is characterised by sporting activities and activities which generate their own noise or focus for participants, making them less sensitive to external noise intrusion. Passive recreation is characterised by contemplative activities that generate little noise and where benefits are compromised by external noise intrusion, e.g. playing chess, reading. In determining whether areas are used for active or passive recreation, the type of activity that occurs in that area and its sensitivity to noise intrusion should be established. For areas where there may be a mix of passive and active recreation, e.g. school playgrounds, the more stringent criteria apply. Open space may also be used as a buffer zone for more sensitive land uses.

It is generally accepted that most buildings provide a noise reduction of at least 10dB(A) when 20% of the total window area is left open, without providing additional treatment, while closed windows will generally achieve a noise reduction of 20dB(A). Therefore, where the noise goals are internal, a 10dB(A) reduction from external noise levels to internal noise levels has been conservatively adopted to allow an external assessment.

That is, the following equivalent external noise goals are applicable for school classrooms and internal areas of childcare facilities:

- **School classrooms** – $L_{Aeq,1hour}$ 50dB(A) (external) Day
- **Childcare facility sleeping rooms** – $L_{Aeq,1hour}$ 45dB(A) (external) Day
- **Childcare facility indoor play areas** – $L_{Aeq,1hour}$ 50dB(A) (external) Day

2.2.4 Acute Noise Levels

Acute noise levels are defined in the ENMM to be equivalent to or greater than $L_{Aeq(15hr)}$ 65 dB(A) during the day period and $L_{Aeq(9hr)}$ 60 dB(A) during the night period.

2.3 Rail Noise Criteria

The NSW 'Rail Infrastructure Noise Guideline' (RING 2013) provides guidance in relation to the prediction and assessment of railway noise from new and upgraded railway projects.

The purpose of the guideline is to ensure noise and vibration impacts associated with railway developments are evaluated in a consistent and transparent manner. This is achieved by specifying noise and vibration trigger levels to protect the community from the adverse effects of noise and vibration. If the noise assessment identifies that the trigger levels are likely to be exceeded, the assessment is required to outline feasible and reasonable noise mitigation measures that could be implemented to ameliorate the predicted impacts.

The RING guideline provides airborne noise trigger levels that address both an increase in rail noise due to rail infrastructure projects and absolute levels of rail noise. As the Clarence River Bridge Crossing project includes the redevelopment of the existing Pound Street rail overbridge to accommodate the widening of Pound Street, the increase in the existing rail noise levels as well as the absolute levels of rail noise are applicable.

For residential receivers, the noise trigger levels have two components:

- L_{Aeq}, which addresses the average level of train noise over the day or night period; and
- L_{Amax}, which addresses the maximum noise level from train pass-by events. The L_{Amax} noise parameter is based on the 95th percentile passby level (1 in 20 trains can exceed the 95th percentile level).

For other noise-sensitive land uses (eg. childcare centres), only L_{Aeq} is applied, as the focus is on speech interference and providing adequate acoustic protection to conduct the activities associated with those land uses. Therefore, the assessment of L_{Amax} noise levels is not required for sensitive land uses other than residential receivers.

The RING noise trigger levels are summarised in Table 2.4 and Table 2.5 for residential and sensitive land uses other than residential, respectively. It is noted that the Gummyaney Aboriginal Pre-School located at 30 Pound Street would be impacted by the redeveloped rail overbridge and therefore, the noise trigger levels for 'schools, educational institutions and child care centres' in accordance with the RING would be applicable. The noise trigger levels refer to noise from rail transportation only and do not include ambient noise from other sources.

Table 2.4 – Airborne Rail Noise Trigger Levels for Residential Land Uses, dB(A)

Type of Development	Day (7am to 10pm)	Night (10pm to 7am)	Comment
Redevelopment of existing rail line	Increase in existing $L_{Aeq(period)}$ rail noise levels by 2dB or more, or existing L_{Amax} rail noise levels by 3dB or more **AND**		These numbers represent external levels of noise that trigger the need for an assessment of potential noise mitigation measures to

Type of Development	Day (7am to 10pm)	Night (10pm to 7am)	Comment
	Predicted rail noise levels exceed: 65 $L_{Aeq(15hour)}$ OR 85 L_{Amax}	Predicted rail noise levels exceed: 60 $L_{Aeq(9hour)}$ OR 85 L_{Amax}	reduce noise levels from a rail infrastructure project

Table 2.5 – Airborne Rail Noise Trigger Levels for Sensitive Land Uses Other Than Residential, dB(A)

Sensitive Land Use	Noise Trigger Levels (when in use)		
Schools, educational institutions and child care centres	Increase in existing rail noise levels by 2dB(A) or more in L_{Aeq} for that period	**AND**	45 $L_{Aeq(1hour)}$ internal

The noise trigger levels represent external levels except where otherwise stated. Noise levels at residences are assessed 1m in front of the most affected building facade. Where only free-field measurements can be made, the measured noise level is corrected [+2.5 dB(A)] to account for the facade reflection effect.

In the case of multi-level residential buildings, the external point of reference for measurements and predictions is the two floors of the building that are most exposed to rail noise, usually the ground and first floors. On other floors, an internal noise level value 10dB(A) below the relevant external noise level value applies on the basis that windows that can be opened and are sufficiently opened to provide adequate ventilation. Should these windows be closed, then the internal noise level would typically be 20dB(A) below the external noise level.

It is generally accepted that most buildings provide a noise reduction of at least 10dB(A) when 20% of the total window area is left open, without providing additional treatment. Therefore, where the noise trigger levels are internal (ie. the Gummyaney Aboriginal Pre-School), a 10dB(A) reduction from external noise levels to internal noise levels has been adopted to enable an external assessment.

2.4 Industrial Noise Assessment

The new flood pump station in Grafton on the northern end of the new bridge is proposed as part of the project to extract water from the detention basin and convey it to the Clarence River during flood events. The main noise sources associated with the new flood pump station include the submersible pumps and the emergency backup generator. However, it is noted that the submersible pumps are to be located underground and as such, noise from the pumps would be negligible. Therefore, noise impact from the emergency backup generator only would be assessed against the NSW 'Industrial Noise Policy' (INP).

The EIS established noise criteria applicable for the assessment of noise impacts from the proposed generator in accordance with the INP. These criteria were also presented in the SWTC and assessed against in the ONR for the generator. Therefore, the applicable noise criteria as per the EIS and required by the SWTC are as follows.

Table 2.6 – INP Noise Criteria for Assessment of Emergency Backup Generator, dB(A)

Time of Day	Intrusiveness Criteria, $L_{Aeq(15min)}$	Amenity Criteria, $L_{Aeq(period)}$
Day (7am to 6pm)	63	**56**[1]
Evening (6pm to 10pm)	**51**[1]	56
Night (10pm to 7am)	**36**[1]	43

Notes: 1. **Bold** font represents most stringent criterion for the period and to be used for the assessment of noise impacts from the generator

3 Review of the ONR Noise Model

3.1 ONR Noise Model Comparison

Table 3.1 below, presents a comparison between the modelling input parameters adopted in the ONR and this study.

Table 3.1 – Comparison of Noise Modelling Input Parameters Adopted in Resonate's ONR and RT&A's Operational Noise Study

	Resonate ONR	RT&A Study
Increased Receiver Locations	-	Three (3) additional receivers: • ID291 – Dwelling that was identified in ONR as being demolished, but is now to be retained • ID292 – Dwelling that was identified in ONR as being demolished, but is now to be retained • ID230 – Residential receiver located on first floor of mixed use development
Roads Modelled	Main carriageways	Main carriageways and some local roads included in the assessment.
Traffic Volumes and Mix	Traffic number forecasts provided in SWTC for the years 2019 (at opening) and 2029 (10 years after opening)	Traffic number forecasts provided by GTA Consultants for the years 2019 (at opening) and 2029 (10 years after opening)
Traffic Speed	60km/hr for main carriageways	Main carriageways: posted speed + 10 km/h Local roads: Posted speed
Ground Topography	1m increments	1m increments
Buildings	Buildings included as per EIS modelling	Buildings included as provided by Resonate in ONR model. Adjustments of some buildings based on ground truthing conducted by RMS
Source Height Corrections for traffic noise source strings in noise model	Four (4) traffic noise source strings: • 0.5m above ground for car exhausts, car engines, car tyres (single source string) • 05m above ground for truck tyres • 1.5m above ground for truck engines • 3.6m above ground truck exhausts	Three (3) traffic noise source strings: • 0.5m for car exhausts/engines and car/truck tyre noise (single string) • 1.5m for truck engines • 3.6m for truck exhausts
Acoustic properties of the road pavement surfaces	• 0 dB(A) for Densely Graded Asphalt (DGA) applied to the car and truck tyre string • No other road surface corrections have been modelled	• 0 dB(A) for DGA applied equally for each road source string
Noise Barriers	340m long, 3m high noise barrier on the eastern edge of the bridge deck on the northern embankment	340m long, 3m high noise barrier on the eastern edge of the bridge deck on the northern embankment
Facade Correction	+2.5 dB(A)	+2.5 dB(A)

	Resonate ONR	RT&A Study
Australian condition corrections	• -1.7 dB(A) for standard correction at 1m from facade	• Day: -1.7dB(A) at1m from facade for 'at facade' conditions from Australian Road Research Board (ARRB) Transport Research (Saunders et al 1983) • Night: No Australian Conditions correction applied as per RMS directive
Calibration	Calibrated noise model using previous noise monitoring and traffic survey data from EIS	Noise model was calibrated using noise monitoring and concurrent traffic survey data obtained in 2017 through monitoring undertaken by RT&A

4 Existing Ambient Noise Environment

A review of the EIS noise monitoring data indicated that the noise data obtained from the three monitoring locations (ie. Locations 1, 3 and 5 in Table 3 of the EIS) used for the ONR noise model calibration process were insufficient given that some of the noise level results were based on a short term attended 15-minute measurement. Furthermore, concurrent traffic classification surveys were undertaken but results were not presented in the EIS report. Consequently, additional road traffic noise monitoring and concurrent traffic classification surveys were conducted in 2017 and forms part of this study.

The main intent of the road traffic noise monitoring was to establish the existing road traffic noise levels at locations currently affected by road traffic noise associated with the existing Grafton Bridge over the Clarence River and to utilise these results to calibrate the noise model established for the project study area. Where possible, the preference was to select noise monitoring locations that provide road traffic noise levels to represent areas affected by existing traffic which would be moved onto the new bridge and associated approaches.

4.1 Traffic Noise Monitoring Methodology

The long-term monitoring results, in combination with concurrent classified traffic counts and vehicle speed monitoring along the route, were used to verify and calibrate the road traffic noise model to local conditions. In addition, the measurement of maximum noise levels was conducted to provide an understanding of the magnitude and occurrence of existing maximum noise level events that have the potential to cause sleep disturbance.

4.1.1 Procedure and Noise Metrics

Noise monitoring was conducted in accordance with the NSW RNP and RMS's ENMM, with guidance from Australian Standard 2702-1984 "Acoustic Methods of Measurement of Road Traffic Noise". Noise measurements would typically be conducted at 1m from the building facade most exposed to traffic noise, at a height of 1.5m above the most exposed floor level. However, physical constraints on site prevented the noise monitors from being set up near the facades; therefore, monitoring was conducted in the free-field (ie. away from any buildings and reflective walls) and a +2.5dB(A) facade correction was applied to the measured L_{Aeq} noise levels to convert the free-field measurement to an equivalent measurement at 1m from facade.

Noise monitoring was conducted to obtain L_{A90}, $L_{Aeq,15hr}$, $L_{Aeq,9hr}$ and L_{Amax} noise levels as a minimum on a continuous basis at 15-minute intervals within the duration of the overall noise survey period. While measurement results for all these indices are retained, the study primarily focuses on the $L_{Aeq,15hr}$ and $L_{Aeq,\ 9hr}$ results for traffic noise as these are the noise assessment indices embodied in the NSW RNP. Additional monitoring was undertaken near the rail overpass on Pound Street to obtain existing $L_{Aeq,15hr}$, $L_{Aeq,9hr}$ and L_{Amax} rail noise levels for the assessment of future rail noise impacts due to the upgrade of the rail overpass as part of the project.

4.1.2 Instrumentation

Long-term, unattended noise measurements were conducted using Renzo Tonin and Associates (RTA) Technology noise monitors (RTA06 and RTA07 models), which comply with IEC 61672 (parts 1-3) 'Electroacoustics - Sound Level Meters' and are designated as Class 1 instruments having accuracies suitable for field and laboratory use. A noise monitor consists of a sound level meter housed in a weather resistant enclosure. Ambient noise levels were recorded continuously and every 15 minutes, the data is processed statistically and stored in memory.

The equipment was calibrated prior and subsequent to the measurement period using Brüel & Kjær Type 4230 / 4231 calibrators which comply with IEC 60942 'Electroacoustics - Sound calibrators'. No significant drift in calibration was observed in any noise monitor.

4.1.3 Meteorology

The Bureau of Meteorology (BOM) provided meteorological data from Grafton Airport Automatic Weather Station (station no. 058161), which is considered representative of the meteorological conditions affecting the site, for the duration of the noise monitoring period. The data was modified to allow for the height difference between the BOM weather station, where wind speed and direction is recorded at a height of 10m above ground level, and the microphone location, which is at 1.5m above ground level. The correction factor applied to the data was taken from Australian Standard AS1170.2 1989 Section 4.2.5.1.

Measurements affected by extraneous noise, wind (greater than 5m/s) or rain were excluded from the recorded data in accordance with Australian Standard AS2702-1984 Acoustics – 'Methods for the Measurement of Road Traffic Noise' and the NSW EPA's noise monitoring policy.

4.1.4 Monitoring Locations

Noise monitoring was carried out at four (4) locations from Monday 13th to Friday 24th February 2017. Traffic noise monitoring was conducted at three (3) of the locations and the rail noise monitoring was conducted at the remaining one (1) location.

Table 4.1 below presents the details of the noise monitoring locations. Figures 1 shows the noise monitoring locations on an aerial map.

Table 4.1 – Road Traffic Noise Monitoring Locations

Monitoring Location	Address	Noise Monitoring Position1
M1	16 Fitzroy Street, Grafton	Noise monitor located in the rear yard, approximately 25m southwest of Craig Street and in the free field. Location used for traffic noise monitoring.
M2	24 Pound Street, Grafton	Noise monitor located in the front yard, approximately 15m northeast of Pound Street and 60m east of the rail overpass and in the free field. Location used for rail noise monitoring.

Monitoring Location	Address	Noise Monitoring Position1
M3	26 Bent Street, South Grafton	Noise monitor located in the front yard, approximately 8m west of Bent Street and in the free field. Location used for traffic noise monitoring.
M4	68 Spring Street, South Grafton	Noise monitor located in the side yard facing Bent Street, approximately 7m west of Bent Street and in the free field. Location used for traffic noise monitoring.

Figure 1 – Locality Map Showing Monitoring Locations

4.2 Existing Noise Levels

4.2.1 Road Traffic Noise Levels

The existing traffic noise levels measured along the existing Grafton Bridge and associated approaches are summarised in Table 4.2 below. The noise levels presented below are the overall noise levels for each relevant traffic noise descriptor. Detailed noise monitoring data are included in Appendix B of this report.

It is noted that traffic noise was not a significant contributor to the noise environment at Location M2 and therefore, results of traffic noise monitoring are not presented for Location M2.

Table 4.2 – Results of L_{eq} Traffic Noise Monitoring, dB(A)

Monitoring Location	Address	Day $L_{Aeq\ (15hr)}$	Night $L_{Aeq\ (9hr)}$
M1	16 Fitzroy Street, Grafton	61	55
M3	26 Bent Street, South Grafton	70	64
M4	68 Spring Street, South Grafton	69	63

Notes: 1. Free field locations have been corrected to account for facade reflections; ie. +2.5dB(A) to the monitored noise levels
2. Day $L_{Aeq(15hr)}$ represents the period 7am to 10pm and Night $L_{Aeq(9hr)}$ represents the period 10pm to 7am

4.2.2 Rail Noise Levels

The existing noise levels from rail activities along the Pound Street rail overpass as measured at Location M2 are summarised in Table 4.3 below. The noise levels presented below are the overall noise levels for each relevant rail noise descriptor. Detailed noise monitoring data are included in Appendix B of this report.

Table 4.3 – Results of Rail Noise Monitoring, dB(A)

Monitoring Location	Address	Day (7am to 10pm)		Night (10pm to 7am)	
		$L_{Aeq\ (15hr)}$	L_{Amax}	$L_{Aeq\ (9hr)}$	L_{Amax}
M2	24 Pound Street, Grafton	52	100	58	104

5 Road Traffic Noise Assessment

5.1 Methodology and Outputs

Traffic noise modelling and results for the daytime and night time periods were undertaken for the following scenarios:

- **'Opening Year' –** where noise levels are predicted for the year 2019 for both the 'Build' and 'No Build' scenarios, for the day and night periods.
- **'Design Year' –** where noise levels are predicted for the year 2029 (ie. 10 years after opening of the project) for both the 'Build' and 'No Build' scenarios, for the day and night periods.

The noise modelling output results are to be used to provide RMS a detailed assessment of the number and locations of properties that may be considered for at-property noise mitigation treatment.

5.2 Traffic Flow and Composition Summary

5.2.1 Existing Traffic Volumes

Classified traffic volume counting, classification of vehicles and vehicle speeds was undertaken concurrently with the noise monitoring and within the noise monitoring period by a traffic survey sub-contractor from Monday 13th to Thursday 23rd February 2017, when the counters were retrieved. The traffic count locations were selected to provide road traffic volume and classification data to represent each noise monitoring location. The traffic data allows noise levels to be modelled and compared to the monitored noise levels for validation and calibration of the computer noise model.

Two (2) traffic survey locations were selected to capture traffic movements along the existing roads. The traffic survey locations were as follows.

1. Bent Street, South Grafton – approximately 70m south of the Spring Street intersection
2. Bent Street, South Grafton – on the southern abutment of the existing Grafton Bridge

The results of the traffic survey are summarised in Table 5.1.

Table 5.1 – Existing 2017 Traffic Volumes and Compositions

Location	Direction	Day – 7am to 10pm (15hr)			Night – 10pm to 7am (9hr)		
		Total Vehicles	Heavy Vehicles %	Speed[1]	Total Vehicles	Heavy Vehicles %	Speed[1]
Bent Street	Northbound	7,564	10.5	55	679	14.5	59
	Southbound	7,524	11.1	56	603	16.9	58
Craig Street	Northbound	11,870	9.5	49	932	14.3	56
	Southbound	12,026	8.8	52	916	13.5	57

Notes: 1. Speed represents the 85th percentile speed monitored during the traffic survey

5.2.2 Future Traffic Volumes

The traffic volumes and heavy vehicle percentages used for the noise assessment for the opening year (2019) and design year (2029, 10 years after opening) have been based on traffic data provided by GTA Consultants in a traffic report titled 'Grafton Bridge – Update to Future Year Forecast – Summary Report' (ref. N117820, dated 20 February 2017) and further updated additional traffic data also provided GTA Consultants in January 2018.

The 15 hour (day) and 9 hour (night) volumes, compositions and vehicle speeds used for the calculation of $L_{Aeq,\ 15\ hour}$ and $L_{Aeq,\ 9\ hour}$ traffic noise levels are presented in Table 5.2 and Table 5.3 below for the 'no build' and 'build' scenarios, respectively.

Table 5.2 – 'No Build' 2019 and 2029 Traffic Volumes, Compositions and Speeds

Road Direction	7am – 10pm (15 hour)			10pm – 7am (9 hour)		
	Total Vehicles	HV%	Posted Speed (km/h)[1]	Total Vehicles	HV%	Posted Speed (km/h)[1]
2019 Opening Year						
Pacific Highway (between Alipou Street and Lolanther Street)	8,756	22	50	616	22	50
Pacific Highway (before Heber Street)	9,066	22	50	638	22	50
Pacific Highway (connecting to Gwydir Highway)	10,248	22	50	721	22	50
Charles Street (between Spring Street and Gwydir Highway)	11,944	22	50	841	22	50
Gwydir Highway (between Bent Street and Pacific Highway)	3,669	5	50	258	5	50
Spring Street (between Bent Street and Pacific Highway)	3,734	5	50	263	5	50
Gwydir Highway (between Bent Street and Bligh Street)	6,791	5	50	478	5	50
Bent Street (between Gwydir Highway and Spring Street)	17,471	5	50	1,230	5	50
Bent Street (between Spring Street and Through Street)	24,792	5	50	1,745	5	50
Grafton Bridge (Existing)	29,047	5	50	2,017	5	50
Craig Street (between Clarence Street and Kent Street)	29,047	5	50	2,017	5	50
Fitzroy Street (between Clarence Street and Villiers Street)	20,034	5	50	1,381	5	50
Villiers Street (between Fitzroy Street and Pound Street)	12,440	5	50	858	5	50
2029 Design Year[2]						
Pacific Highway (between Alipou Street and Lolanther Street)	10,965	22	50	772	22	50

Road Direction	7am – 10pm (15 hour)			10pm – 7am (9 hour)		
	Total Vehicles	HV%	Posted Speed (km/h)[1]	Total Vehicles	HV%	Posted Speed (km/h)[1]
Pacific Highway (before Heber Street)	10,289	22	50	724	22	50
Pacific Highway (connecting to Gwydir Highway)	11,838	22	50	833	22	50
Charles Street (between Spring Street and Gwydir Highway)	13,582	22	50	956	22	50
Gwydir Highway (between Bent Street and Pacific Highway)	12,857	5	50	905	5	50
Spring Street (between Bent Street and Pacific Highway)	2,340	5	50	165	5	50
Gwydir Highway (between Bent Street and Bligh Street)	12,514	5	50	881	5	50
Bent Street (between Gwydir Highway and Spring Street)	24,523	5	50	1,726	5	50
Bent Street (between Spring Street and Through Street)	30,882	5	50	2,173	5	50
Grafton Bridge (Existing)	34,245	5	50	2,378	5	50
Craig Street (between Clarence Street and Kent Street)	34,245	5	50	2,378	5	50
Fitzroy Street (between Clarence Street and Villiers Street)	27,032	5	50	1,863	5	50
Villiers Street (between Fitzroy Street and Pound Street)	15,413	5	50	1,063	5	50

Notes: 1. Vehicles speeds based on the existing posted speeds
2. 'Design year' is 10 years after 'opening year'

Table 5.3 – 'Build' 2019 and 2029 Traffic Volumes, Compositions and Speeds

Road Direction	7am – 10pm (15 hour)			10pm – 7am (9 hour)		
	Total Vehicles	HV%	Posted Speed (km/h)[1]	Total Vehicles	HV%	Posted Speed (km/h)[1]
2019 Opening Year						
Pacific Highway (between Alipou Street and Lolanther Street)	8,756	22	50	617	22	50
Pacific Highway (before Heber Street)	9,066	22	50	638	22	50
Pacific Highway (connecting to Gwydir Highway)	15,335	22	50	1,079	22	50
Charles Street (between Spring Street and Gwydir Highway)	25,583	22	50	1,800	22	50
Gwydir Highway (between Bent Street and Pacific Highway)	13,762	5	50	969	5	50
Spring Street (between Bent Street and Pacific Highway)	1,231	5	50	87	5	50

Road Direction	7am – 10pm (15 hour)			10pm – 7am (9 hour)		
	Total Vehicles	HV%	Posted Speed (km/h)[1]	Total Vehicles	HV%	Posted Speed (km/h)[1]
Gwydir Highway (between Bent Street and Bligh Street)	10,264	5	50	723	5	50
Bent Street (between Spring Street and Through Street)	6,823	5	50	480	5	50
Existing Grafton Bridge	13,926	0	50	967	0	50
Villiers Street (between Fitzroy Street and Pound Street)	8,254	0	50	569	0	50
New Grafton Bridge	15,121	10	60	1,050	10	70[2]
Pound Street (between Clarence Street and Villiers Street)	17,994	9	50	1,240	9	60[2]
2029 Design Year[2]						
Pacific Highway (between Alipou Street and Lolanther Street)	10,966	22	50	772	22	50
Pacific Highway (before Heber Street)	10,288	22	50	724	22	50
Pacific Highway (connecting to Gwydir Highway)	16,852	22	50	1,186	22	50
Charles Street (between Spring Street and Gwydir Highway)	31,274	22	50	2,200	22	50
Gwydir Highway (between Bent Street and Pacific Highway)	18,090	5	50	1,274	5	50
Spring Street (between Bent Street and Pacific Highway)	1,460	5	50	102	5	50
Gwydir Highway (between Bent Street and Bligh Street)	15,742	5	50	1,108	5	50
Bent Street (between Spring Street and Through Street)	8,610	5	50	606	5	50
Existing Grafton Bridge	14,544	0	50	1,011	0	50
Villiers Street (between Fitzroy Street and Pound Street)	8,442	0	50	582	0	50
New Grafton Bridge	19,700	9	60	1,368	9	70[2]
Pound Street (between Clarence Street and Villiers Street)	17,846	9	50	1,230	9	60[2]

Notes:
1. Vehicles speeds based on the existing posted speeds
2. Vehicle speed based on posted speed plus 10km/h
3. 'Design year' is 10 years after 'opening year'

5.3 Noise Prediction Modelling

For this project, noise modelling was undertaken using the Road Traffic Noise Module in the noise modelling software package SoundPLAN (v7.4), which was used by Resonate as part of the noise modelling for the ONR. This noise modelling software package has been well validated and compared to other software packages over the years and is recognised and accepted by many government

authorities and agencies, including both the RMS and the EPA. The SoundPLAN road traffic noise model incorporates the following:

- the traffic noise prediction model method developed by the United Kingdom Department of Environment entitled "Calculation of Road Traffic Noise (1988)" known as the CoRTN88 method;
- CoRTN88 adaptations for Australian conditions, as tested by the Australian Road Research Board; and
- modified method enabling accurate prediction of noise from high truck exhausts.

The CoRTN88 method predicts the $L_{A10,1hr}$ noise levels. A correction of -3dB(A) is applied to obtain the $L_{Aeq,1hr}$ noise levels. The $L_{Aeq,1hr}$ noise levels representing the day time period (7am to 10pm) is used to determine the daily $L_{Aeq,15hr}$ noise level. Similarly, the $L_{Aeq,1hr}$ noise levels representing the night time period (10pm to 7am) is used to derive the night time $L_{Aeq,9hr}$ noise level.

The noise prediction model takes into account:

- traffic volume and heavy vehicle forecasts
- vehicle speed
- road gradient
- location of the noise sources
- the differing source heights of cars and trucks (3-source heights used)
- ground reference levels of the road and receivers
- separation distances of the road to receivers
- ground type between the road and receivers
- angles of view of the road from the receiver's position
- attenuation from barriers (natural and purpose built) and cuttings
- reflections from barriers, cuttings, roadside structures etc.
- corrections for low-noise road pavements
- corrections for building facade reflections under Australian conditions

Details of assumptions used in the noise model for this assessment are presented in Table 5.4. It is noted that the noise model prepared for this study was based on the ONR noise model that was provided to Renzo Tonin & Associates by Resonate.

Table 5.4 – Summary of Noise Modelling Inputs

Parameters	Inputs
Traffic volumes and mix:	Noise model verification: traffic data obtained from traffic survey conducted concurrently with the noise monitoring. Vehicle speeds based on 85th percentile traffic speeds as surveyed (see Table 5.1) Noise prediction modelling: 2019 and 2029 predicted traffic volumes provided in the traffic report prepared by GTA Consultants and updated traffic data provided by GTA Consultants in January 2018. Vehicle speeds based on future posted speeds plus 10km/h for main carriageway and posted speeds for other roads (see Table 5.2 and Table 5.3)
Vehicle speeds	Noise model verification: Vehicle speeds based on 85th percentile traffic speeds as surveyed (see Table 5.1) Noise prediction modelling: Vehicle speeds based on the following (see Table 5.2 and Table 5.3): • 'No Build' 2019 and 2029 – posted speeds on all roads • 'Build' 2019 and 2029 – posted speed + 10km/h for main carriageway and posted speeds for other roads
Source height	0.5m for car exhausts/engines and car/truck tyre noise, 1.5m for truck engines and 3.6m for truck exhausts
Ground topography at receiver and road	Topographic data from ONR model
Gradient of roadway	Road design from ONR model
Angles of view from receiver	From ONR model
Reflections from existing barriers, structures & cuttings on opposite side of road	From ONR model
Facade correction	+2.5dB(A)
L_{10} to L_{eq} correction	-3dB(A)
Road pavement correction	Dense Graded Asphalt (DGA) used for all road surfaces = 0dB(A)
Corrections for Australian conditions	ARRB corrections: • Day: -1.7dB(A) for 'at facade' conditions • Night: no corrections
Calibration adjustment[1]:	The following global calibration factors / corrections were applied to all receivers for the 'No-Build' and 'Build' scenarios for 2019 and 2029 determined through the validation of the noise model (see Section 5.4.1): • +1.9dB(A) for Daytime • 0dB(A) for Night-time
Safety Factor:	+1.0dB(A) safety factor for 'No-Build' and 'Build' scenarios as per SWTC
Air and ground absorption	Detailed within CoRTN88. Numeric values varied between 0 (hard surface) to 1 (soft ground). For noise predictions, 0.75 used for all soft ground areas and 0 used for water surfaces. The ground absorption factors applied to the model are found to validate well to the noise monitoring results.
Noise sensitive receiver locations	As per ONR noise model plus additional identified by RMS
Receiver heights	1.5m above ground level for ground floor and 4.5m above ground level for 1st floor
Buildings	Building information from ONR model

Parameters	Inputs
Noise barriers	• No existing roadside barriers • Existing boundary fences included for calibration purposes, where applicable • Future noise barriers for the 'Build' scenario as per ONR model – 3m high noise barrier (340m long) located along southbound carriageway on northern approach to the new bridge
SoundPLAN noise model settings used	
Calculation method	Ray-tracing method adopted, as opposed to angle-scan method
Calculation search radius	3,000m
Noise contour maps	• 20m grid spacing • 1.5m height

5.4 Road Traffic Noise Model Validation

5.4.1 Validation Methodology & Results

The noise model was validated and calibrated using the long-term noise monitoring results at the traffic noise monitoring locations (ie. Locations M1, M3 and M4) nominated in Table 4.1 and the concurrent traffic classification counts presented in Table 5.1.

Table 5.5 summarises the results of the traffic noise model validation, providing a comparison between the modelled traffic noise levels for existing conditions and the measured traffic noise levels. It is noted that the model validation has been based on the noise monitoring and traffic survey period from 14th to 20th February 2017 which provides the most complete data set in order to conduct a reliable validation process.

Table 5.5 – Noise Model Validation Results

Location	$L_{Aeq,\ 15\ hour}$ Daytime Noise Level			$L_{Aeq,\ 9\ hour}$ Night Time Noise Level		
	Measured	Modelled	Variation	Measured	Modelled	Variation
16 Fitzroy Street, Grafton	58.2	60.2	2.0	52.5	53.3	0.8
26 Bent Street, South Grafton	67.2	69.0	1.8	61.3	62.3	1.0
68 Spring Street, South Grafton	66.7	68.5	1.8	60.8	61.9	1.1
Mean Variation			**1.9**			**0.9**

Notes: 1. Noise monitoring undertaken in the free-field at all monitoring locations; therefore, all noise levels presented are free-field noise levels (ie. no facade corrections of +2.5dB(A) were applied)

2. Based on noise monitoring and traffic survey period from 14th to 20th February 2017

The noise model validation results presented in Table 5.5 show that the noise model predicts results that are generally in good agreement with the noise monitoring and there is a reasonable level of confidence that can be placed on the noise model for predicting future traffic noise levels.

For the $L_{Aeq,\ 15\ hour}$ day and $L_{Aeq,\ 9\ hour}$ night time noise levels, the mean variation between measured and modelled results is 1.9dB(A) and 0.9dB(A), respectively, which is within the ±2dB(A) allowance for traffic noise validation. However, the daytime mean variation is 1.9dB(A), which is above the ±1dB(A)

allowance for not including a calibration factor in future traffic noise predictions. Therefore, for the prediction of daytime $L_{Aeq, 15hour}$ traffic noise levels, a calibration factor of -1.9dB(A) is to be included when generating the operational noise predictions for future traffic noise scenarios. For the night time $L_{Aeq, 9hour}$ traffic noise level predictions, no calibration is required as the mean variation is within ±1dB(A).

5.4.2 Risk Allowance / Safety Factor

In addition to the calibration factors described above and applied to the noise model, a risk allowance (or safety factor) of +1.0dB(A) was added to all predictions to reduce the risk of non-compliance. This factor was stipulated in Appendix 4 of the Scope of Works and Technical Criteria (SWTC) document issued by RMS and was also applied within the ONR model.

5.5 Road Traffic Noise Modelling

Operational noise modelling has been conducted based on the traffic volumes presented in Table 5.2 and Table 5.3 for the 'No-Build' and 'Build' scenarios, respectively. Traffic noise predictions were undertaken for the daytime (7am-10pm, 15hr) and night-time (10pm–7am, 9hr) periods for the following scenarios:

- **'Opening Year' –** where noise levels are predicted for the year 2019 for both the 'Build' and 'No-Build' scenarios, for the day and night periods.
- **'Design Year' –** where noise levels are predicted for the year 2029 (ie. 10 years after opening of the project) for both the 'Build' and 'No-Build' scenarios, for the day and night periods.

Noise modelling for the above scenarios was completed at residential assessment locations potentially worst affected by the proposed Clarence River Bridge Crossing project and within an assessment area which is at a distance of no greater than 600m from the centre line of the outermost traffic lane either side of the project, in accordance with the requirements of the RNP.

The detailed facade noise level predictions and assessment outcomes at each individual receiver are tabulated in Appendix C of this report.

The detailed noise predictions presented in Appendix C are inclusive of the at-road noise mitigation measures (ie. 3m high noise barrier as described in Table 5.4) and inclusive of the 1dB(A) safety factor.

5.6 Maximum Noise Level Assessment

Maximum noise levels generated by road traffic noise have the potential to cause disturbance to sleep. The conditions stipulated in the MCoA do not specifically require an assessment of maximum noise levels to be considered during the design of noise mitigation measures for sensitive receivers.

Nevertheless, noise emanating from the project has been assessed qualitatively for its potential to disturb sleep. The effect of traffic noise on sleep is discussed in Section 5.4 of the RNP, which states the following:

"The disruption of a person's normal sleep patterns, or sleep disturbance, due to road traffic noise, has been the subject of numerous research studies conducted over the last 30 years. Despite intensive research, the triggers for and effects of sleep disturbance have not yet been conclusively determined. Sleep disturbance occurs through changes in sleep state and awakenings. Awakenings are better correlated to subjective assessments of sleep quality than are changes in sleep state, which generally require objective measurement.

A summary of the current literature concerning sleep disturbance due to noise indicates that the main noise characteristics that influence sleep disturbance are the number of noisy events heard distinctly above the background level, the emergence of these events and the highest noise level.

For continuous traffic flow, L_{Aeq} appears to be acceptably correlated with sleep disturbance, since under these conditions there are few emergent noise events above the main hum of the traffic. However, for intermittent traffic flow, which often occurs at night, some other measure that takes into account the emergence, described by measures such as ($L_{AFmax} - L_{Aeq}$) or ($L_{AFmax} - L_{AF90}$), the highest level of noise and the number of events may be needed to obtain a better correlation with sleep disturbance."

From the research on sleep disturbance to date the RNP concludes that:

- L_{Amax} (the maximum A-weighted noise level) internal noise levels below 50-55 dB(A) are unlikely to awaken people from sleep (corresponding to approximately 60-65 dB(A) externally); and,
- one or two noise events per night, with maximum internal noise levels of 65-70 dB(A) (corresponding to approximately 75-80 dB(A) externally), are not likely to affect health and wellbeing significantly.

According to the RNP, triggers for and effects of sleep disturbance from exposure to intermittent noise such as noise from road traffic are still being studied, and there appears to be insufficient evidence to set new indicators for potential sleep disturbance due to road traffic noise.

The cause of most maximum noise emissions from the project would be from heavy vehicles (eg. during engine compression braking, gear changes etc) travelling along the project during the night time period. The highest maximum noise levels would typically be during compression braking events where heavy vehicles would reduce speeds to negotiate curves in the road, descending down road gradients or changes in posted speed limits.

Existing maximum noise emissions are from within the existing road corridors and bridge. The project involves a new bridge and approaches, resulting in the relocation of the road corridor and for the northern section, the widening of Pound Street.

Based on the relocated road corridor, receivers on Bent Street and Craig Street that currently experience maximum noise events would be exposed to lower maximum noise levels following the completion of the project, as the source of the maximum noise emissions would be relocated further from these

receivers. However, receivers that are not currently experiencing maximum noise events (ie. those on the eastern side of the project and along Pound Street) would potentially be exposed to higher maximum noise levels following the completion of the project.

The implementation of the proposed 340m long and 3m high noise barrier on the southbound carriageway of the northern approach to the new bridge would provide noise benefits in reducing the maximum noise levels to the receivers east of the project on the northern side of the river. Furthermore, receivers that would potentially be exposed to high maximum noise levels from the project would have been identified for at-property treatment as part of this study.

6 Rail Noise Assessment

The existing rail overbridge on Pound Street is to be upgraded to allow vertical and horizontal clearance for road traffic travelling underneath the overbridge once the project is in operation. The existing concrete section of the overbridge will be replaced with a steel-concrete composite bridge with track on sleepers and ballast laid on concrete slabs supported by steel cross beams and trusses.

The upgraded overbridge would not result in a change to the vertical and horizontal alignment of the railway corridor nor will it result in an increase in rail traffic. However, given the design of the new bridge, which incorporates steel cross beams and trusses, structure-borne noise radiating from the new bridge structure may potentially increase when compared to the existing concrete bridge. Therefore, the additional noise radiation from the new bridge has been undertaken in accordance with the RING requirements.

Based on the noise monitoring results presented in Section 4.2.2, rail noise predictions with the proposed upgraded rail overbridge on Pound Street have been undertaken. It is noted that the new northern approach to the new bridge and the proposed 3m high noise barrier as described in Table 3.1 and Section 8.2 have been incorporated in the rail noise predictions.

As noted in Section 2.3, consideration of noise mitigation measures is required at locations where:

- Predicted noise levels are greater than $L_{Aeq(15hour)}$ 65dB(A) or $L_{Aeq(9hour)}$ 60dB(A) and the increase in L_{Aeq} noise levels as a result of the project is greater than 2dB(A);

OR

- Predicted noise levels are greater than L_{Amax} 85dB(A) and the increase in L_{Amax} noise levels as a result of the project is greater than 3dB(A).

Noise modelling has been undertaken to calculate the overall L_{Aeq} and L_{Amax} noise levels with and without the project.

Typically, noise from steel ballasted bridges are +4dB(A) higher than ballasted tracks and concrete ballasted bridges are +0dB(A) [1], [2]. Therefore, an estimated +2dB(A) increase in rail noise has been used in the noise modelling to represent structure-radiated noise from the proposed steel-concrete composite rail bridge. Furthermore, the noise modelling also includes change in noise levels associated with the demolition of dwellings, which have been acquired as part of the project.

Based on the noise modelling results, $L_{Aeq(15hour)}$ and $L_{Aeq(9hour)}$ noise levels are not predicted to be greater than 65dB(A) and 60dB(A), respectively, at the affected receiver locations as a result of the project. However, L_{Amax} noise levels are predicted to be greater than 85dB(A) and increase by more than 3dB(A)

[1] *Considerations in Modelling Freight Rail Noise*, Schulten, C., Weber, C., Croft, B. and Hanson, D. – Acoust Aust (2015) 43:251–263

[2] *Railway Noise and Vibration – Mechanisms, Modelling and Means of Control*, Thompson, D. – Elsevier Press (2009)

due to the project and the noise contour representing a greater than 3dB(A) increase is presented Figure 2. Properties identified as requiring noise mitigation treatment are shown as red in the figures.

Figure 2 – Increase in L_{Amax} Rail Noise Levels as a Result of the Project

From the above figures, the properties identified for noise mitigation treatment are predicted to exceed the rail noise trigger level of L_{Amax} 85dB(A) by up to 14dB(A) and the project-related noise increases by up to L_{Amax} 8dB(A). Therefore, mitigation measures are required to be considered at the locations identified for noise mitigation treatment. Consistent with the road traffic noise assessment, the preferred noise treatment option comprises at-property treatments to reduce internal noise levels and it is expected that the level of at-property treatment required to mitigate road traffic noise would be sufficient to mitigate rail noise impacts at these properties.

7 Pump Station Noise Assessment

As discussed previously, a flood pump station is to be constructed as part of the project to extract water from the detention basin and convey it to the Clarence River during flood events. The main source of noise would be from the emergency backup generator as the submersible pumps associated with the pump station would be underground and therefore, would not be a noise source. The generator is to be located within an enclosed area under the northern abutment viaduct on the northern end of the new bridge. The nearest affected receivers would be the residences located on Greaves Street and Pound Street to the east of the northern abutment and the generator enclosure.

7.1 Noise Source

The ONR presents the make and model number of the emergency backup generator to be installed as follows:

- **Kohler KH700 – 88dB(A) @ 1m**

It is noted that the generator would only operate in emergencies during a flood event. However, periodic maintenance of the generator would occur to ensure it operates accordingly during the emergencies.

Therefore, noise emissions during the maintenance testing for the generator is to be assessed against the applicable INP noise criteria previously established in the EIS and stipulated in the SWTC.

7.2 Predicted Noise Levels

Table 7.1 presents the predicted noise levels from the operation of the generator during maintenance testing. It is noted that the predictions are based on no noise mitigations measures implemented; eg. generator in the open and not within the enclosed area, boundary fences providing no noise shielding benefits, etc.

Table 7.1 – Predicted Emergency Backup Generator Noise Levels at Nearest Affected Receivers, dB(A)

Affected Receiver	Approx. Distance	Criteria[1]	Predicted Noise Level	Complies?
13 Pound Street, Grafton	30m	*Day 56 / Evening 51 / Night 36*	58	No, exceeds
15 Pound Street, Grafton	40m		56	No, exceeds evening and night periods
8 Greaves Street, Grafton	70m		51	No, exceeds night period

From the above table it can be seen that the operation of the emergency backup generator during maintenance testing would exceed the daytime criterion at 13 Pound Street, the evening criterion at 13 and 15 Pound Street and the night criterion at all receiver locations.

Therefore, it is recommended that any maintenance works undertaken for the emergency backup generator be performed during the daytime period only (ie. between 7am and 6pm).

Furthermore, with the generator being located within an enclosed area, additional noise reductions would be experienced and noise impacts to the nearest affected residences would be reduced to allow compliance with the applicable criteria.

7.3 Recommended Noise Mitigation

The enclosure / enclosed area should give regard to the following issues:

- The extent of noise reduction required of the enclosure as a whole as perceived from any potentially affected receiver sites.
- Space about the generator is sufficient for operational and servicing requirements and sufficient for the air flow requirements of the generator.
- Any penetrations through the fabric of the enclosure should be sealed air tight.
- All joints within the enclosure should be sealed air tight.
- All internal surfaces of the acoustic enclosure (generator side) should, where practical, be acoustically lined. The acoustic lining must be non-corrosive, resistant to fungus, vermin proof and non-hygroscopic (eg. 50mm thick mineral wool or polyester fibre insulation of density approx. 30kg/m^3, such as polyester fibre acoustic insulation Tontine AcoustiSorb3 or TBL48/50, Autex AAB 48-50 or equivalent, faced with perforated foil or perforated metal with at least a 25% open area). This would reduce reverberation within the space, which would otherwise further increase the noise emissions from the generator.
- The outlet of the generator's exhaust should be directed away from the nearest affected receivers; eg. outlet pointed to the west.

8 Noise Mitigation Design

To achieve compliance with this project's noise goals, the following noise mitigation measures have been considered:

- Low noise pavement surfaces
- Roadside noise barriers: earth mounds and/or noise walls
- At-property treatment to residential properties

Both the RNP and the ENMM acknowledge and accept the use of these methods to mitigate traffic noise from road projects.

Furthermore, the use of low noise generating expansion joints for the bridge and viaduct structures should also be considered as part of the detailed design process, as poor joint selection, design and installation has the potential to increase traffic noise levels significantly.

8.1 Low Noise Pavements

A 'low noise' pavement surface is generally the preferred form of noise mitigation as it reduces source noise levels and provides protection to both external and internal sensitive areas and also has the least visual impact. Low noise pavements should be considered where there are groups of four or more receivers that exceed the applicable traffic noise criteria.

Low noise road pavement surfaces such as Open Graded Asphaltic Concrete (OGAC) could be laid along the project. However, this treatment is most effective for high speed roads such as freeways. The ENMM states that;

> *"...in areas with posted speeds of 70km/h or more, the reduction of road tyre noise can be a useful noise reduction treatment"*

Therefore, the application of a low noise pavement is not considered to be a feasible and reasonable option for this proposal for the following reasons:

- The posted speed limit for the project will be between 50km/h and 60km/h, and the noise reductions achieved from this mitigation measure would be minimal.
- There are intersections along the project where traffic may slow down and then accelerate, which is not ideal for low noise pavements and can cause increased wear and maintenance.

Based on the above feasible and reasonable assessment, the use of Dense Graded Asphalt (DGA) will be used as the pavement surface, which provides no increase in tyre noise levels [ie. 0dB(A) increase] compared to the reference pavement. This is consistent with the recommendations provided in the EIS and ONR.

8.2 Noise Barriers

Noise barriers can provide noise reduction benefits to both external and internal sensitive areas, typically in the order of 10-15 dB(A). Noise barriers are also most feasible where residences are closely grouped, where the barriers do not cause access difficulties to properties and where they are visually acceptable. In addition, where driveway access is required it is preferred not to use noise barriers as the overall noise reduction provided by the barrier is compromised by the need to install an access gate.

The EIS had investigated the implementation of noise barriers to mitigate traffic noise to affected noise sensitive receivers. A 3m high noise barrier approximately 340m in length was recommended along the eastern side of the southbound carriageway on the northern approach to the new bridge.

Further to the EIS, the ONR reviewed the proposed 3m high noise barrier and concluded that no further noise barriers would be feasible and reasonable due to access requirements (ie. driveways) and the rail overbridge over Pound Street. Furthermore, the ONR determined that extending the noise barrier along the new bridge would not be reasonable due to minimal noise reduction benefits to the affected receivers east of the bridge at North Grafton.

Therefore, all noise modelling predictions have been based on the implementation of the proposed 340m long, 3m high noise barrier proposed in the EIS and reviewed in the ONR.

8.3 At-Property Treatment

At-property treatment would only be considered for residences where other noise mitigation measures are either exhausted or are not feasible or reasonable. The ENMM states that all feasible and reasonable mitigation options should be explored in an endeavour to reduce noise levels to the applicable noise criteria as set out in the RNP. Property treatment is generally limited to the acoustic treatment of building elements and the installation of acoustic screen walls close to the receiver where they also protect outdoor living spaces. At-property treatment in the form of building treatment to a dwelling in many cases is the most feasible and reasonable option available despite it only reducing noise levels inside the dwelling. Therefore, any building treatment should be designed to achieve the internal noise levels that would have been achieved had noise from the project complied with the RNP criteria externally.

According to the ENMM, building treatments (in no particular order) may comprise:

- fresh air ventilation systems that draw air into a building, and meet Building Code of Australia requirements with the windows and doors shut
- Upgraded windows and glazing and solid core doors on the exposed facades of masonry or insulated weather board structures (not for light framed structures with no acoustic insulation in the walls)
- Upgrading window and door seals and appropriate treatment of sub-floor ventilation
- Sealing wall vents

- Sealing of the underfloor below the bearers
- Sealing of eaves

The following provides guidance on the level of treatment required in relation to the exceedance above the RNP external assessment criteria for facades that lead to habitable areas (ie. bedrooms and living rooms) rather than non-habitable areas (ie. laundry, bathrooms, toilets, garages, storerooms, etc).

Table 8.1 – Residential At-Property Treatment Options

Treatment	Predicted Exceedance of RNP External Criteria, dB(A)	At-Property Acoustic Treatment
1	<5	Install fresh air mechanical ventilation to affected rooms (see Notes 1 & 2)
2	6-10	Treatment 1 + replace existing glazing with thicker laminated glazing (6.38mm) + window seals (see Note 3) AND replace external hollow core doors with solid core doors + door seals
3	11-15	Treatment 1 + replace existing glazing with thicker laminated glazing (6.5mm Vlam or 10.38mm) + window seals (see Note 3) AND replace external hollow core doors with solid core doors + door seals
4	16-20	Treatments 1 + install supplementary windows, fitted with acoustic seals, to inner side of existing windows and install roof-ceiling cavity and/or underhouse insulation, if none present (see Note 3)
5	>20	Treatments 1 + specially designed acoustic treatment to windows, doors, ceilings, floors, roof-ceiling insulation etc, as advised by acoustic engineer (see Note 4)

Notes:
1. If internal noise goals can only be achieved with windows closed, then mechanical ventilation should be considered to ensure fresh airflow inside the dwelling so to meet the requirements of the Building Code of Australia.
2. It is important to ensure that mechanical ventilation does not provide a new noise leakage path into the dwelling and does not create a noise nuisance to neighbouring residential premises.
3. These upgrades are only suitable for masonry type buildings. It is unlikely that this degree of upgrade would provide noticeable benefits to light framed structures with no acoustic insulation in the walls.
4. These upgrades are only suitable for masonry type buildings. Specially designed acoustic treatment to windows, doors, ceilings, floors, roof-ceiling insulation, etc, as advised by acoustic engineer.

The level of at-property treatment for affected receivers would be subject to review following detailed site inspections of individual properties to confirm floorplans and the current state of the dwellings prior to implementation of any treatments, such as existing noise treatments, or constraints on the implementation of property treatment.

Based on the proposed 3m high noise barrier described in Section 8.2, traffic noise levels were modelled to all noise sensitive receivers within 600m either side of the project, as per the requirements of the RNP. As a result of the noise modelling, 40 properties were identified as exceeding the project's noise goals and requiring consideration for at-property treatment. It is noted that the EIS identified 47 properties potentially requiring at-property treatment and the ONR identified 46 of these properties. Of the 47 properties identified in the EIS, 32 of these properties have been identified for at-property treatment and the remaining 15 properties were determined to not qualify for treatment as part of this study based on externally predicted noise levels. Nevertheless, based on recent RMS practice on similar major infrastructure projects, the 15 properties not qualifying for treatment could be provided with the basic Type 1 Treatment to the facade facing the Project alignment. Given that the environmental noise documents prepared prior to this study are committed to treating all properties identified for treatment

in those documents, then an overall cumulative total of 55 properties (inclusive of EIS, ONR and this study's identified properties) could qualify for treatment, based on predicted external traffic noise levels.

Table 8.2 presents the individual properties that require consideration for treatment and provides a comparison between the EIS, ONR and this study. Table 8.2 summarises the findings presented in Appendix C of this report and the outcomes of the EIS and ONR processes. Appendix C is a precursor to Table 8.2 and should only be referred to for information purposes.

Appendix D presents a list of addresses corresponding to the Receiver ID's and Appendix E presents aerial maps showing the locations of all receiver locations and receivers that require consideration for at-property treatment.

Table 8.2 – Comparison of Properties Identified for Treatment between RT&A Noise Study, EIS & ONR

No.	Receiver ID	Floor Level[1]	RT&A Noise Study	EIS	ONR
1	R078	-		x	x
2	R079	-		x	
3	R081	-		x	x
4	R086	Ground	X	x	x
5	R087	Ground	X	x	x
		First	X		
6	R088	Ground	X	x	x
7	R091	-		x	x
8	R092	Ground	X	x	x
9	R095	-		x	x
10	R097	-		x	x
11	R103	Ground	X	x	x
		First	X		
12	R107	Ground	X		
		First	X		
13	R108	-		x	x
14	R109	Ground	X	x	x
		First	X		
15	R115	-		x	x
16	R119	Ground	X		
		First	X		
17	R122	First	X	x	x
18	R126	-		x	x
19	R131	-		x	x
20	R141	Ground	X	x	x

No.	Receiver ID	Floor Level[1]	RT&A Noise Study	EIS	ONR
21	R148	Ground	X	x	x
		First	X		
22	R153	Ground	X	x	x
		First	X		
23	R170	Ground	X	x	x
		First	X		
24	R175	Ground	X	x	x
		First	X		
25	R178	Ground	X		
26	R181	Ground	X	x	x
		First	X		
27	R182	First	X	x	x
28	R185	Ground	X	x	x
		First	X		
29	R186	-		x	x
30	R187	Ground	X	x	x
		First	X		
31	R199	First	X	x	x
32	R201	-		x	x
33	R203	First	X	x	x
34	R204	Ground	X	x	x
		First	X		
35	R223	First	X	x	x
36	R227	First	X	x	x
37	R230	First	X		
38	R233	-		x	x
39	R242	-		x	x
40	R261	Ground	X	x	x
		First	X		
41	R269	Ground	X	x	x
		First	X		
42	R291	Ground	X		
		First	X		
43	R292	Ground	X		
		First	X		

No.	Receiver ID	Floor Level[1]	RT&A Noise Study	EIS	ONR
TAFE NSW Grafton					
44	R205	Ground	X		
45	R221	Ground	X	x	x
		First	X		
46	R226	Ground	X	x	x
		First	X		
47	R229	Ground	X	x	x
48	R234	Ground	X	x	x
49	R243	Ground	X	x	x
50	R247	Ground	X	x	x
51	R252	Ground	X	x	x
52	R253	-		x	x
53	R255	Ground	X	x	x
54	R293	Ground	X		
Gummyaney Aboriginal Pre-School					
55	R214	Ground	X	x	x
Property Totals per Study			**40**	**47**	**46**
Property Cumulative Total				**55**	

Notes: 1. Individual floor levels qualifying for treatment are identified in this study, whereas the EIS and ONR only identify properties and not floor levels.

It is noted that the properties presented in the table above have been identified based on the traffic noise impacts to affected facades. However, it should be noted that the affected facades impacted upon may not lead to sensitive areas of the building; for example, affected facades may lead to a kitchen, laundry, storeroom or maintenance workshop. Detailed inspections of the affected properties would be undertaken to determine the use of the impacted internal areas of the properties.

8.4 TAFE NSW Grafton Mitigation Review

Various sensitive buildings within the TAFE NSW Grafton campus have been identified for at-property treatment. As mentioned previously, at-property treatment can be in the form of acoustic screen walls along the property boundary, acoustic treatment of building elements, or a combination of both.

An investigation into the implementation of acoustic screen walls along specific boundaries of the TAFE NSW Grafton campus has been undertaken, to determine the ideal combination of wall and building treatment achievable for the affected sensitive buildings of the campus.

Figure 3 presents the locations of the proposed acoustic screen walls and the sensitive building locations investigated within the TAFE NSW Grafton campus.

Results of the modelling outcomes for the various wall heights are presented in Table 8.3 below for the most affected facades of each sensitive building.

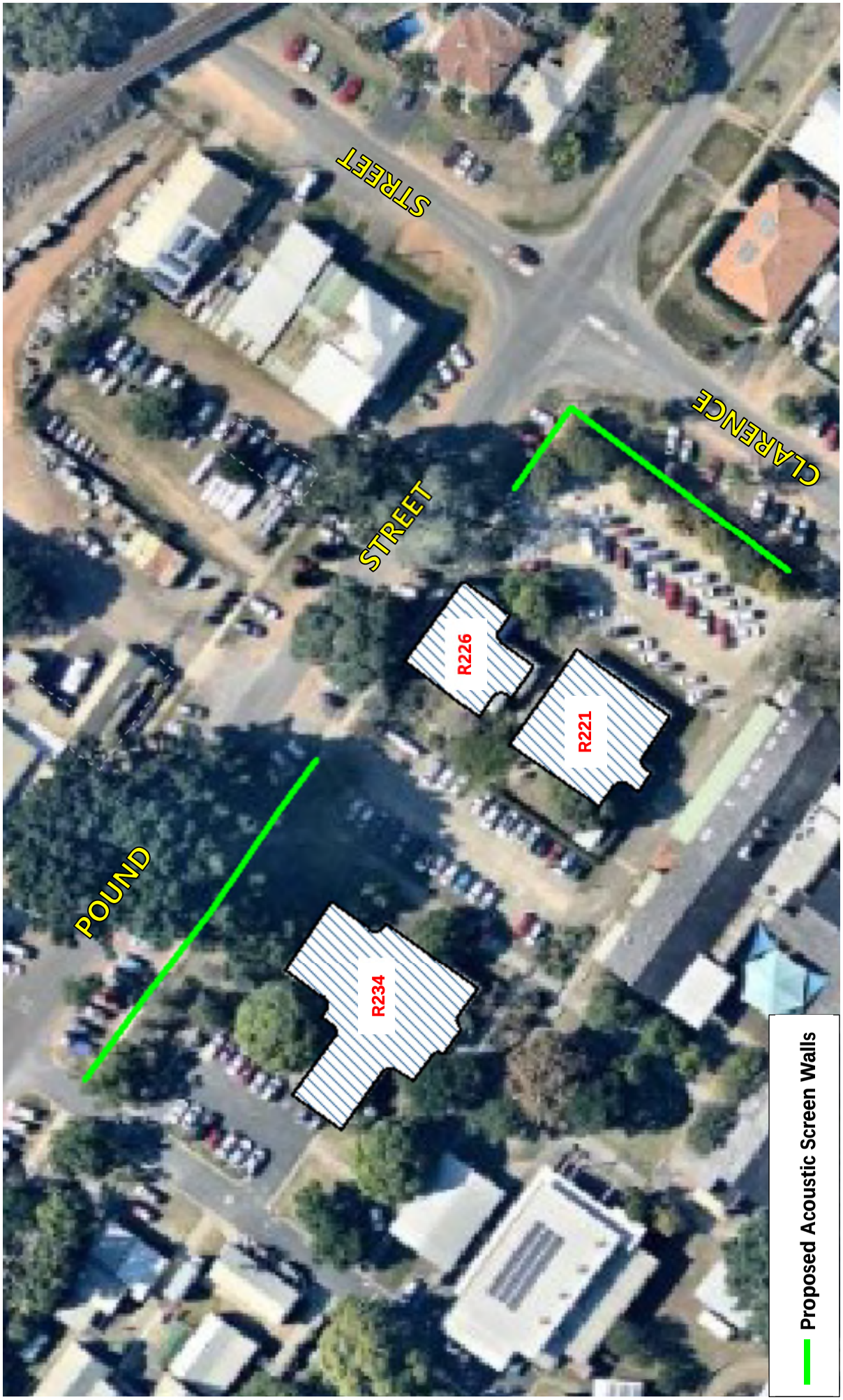


Figure 3 – TAFE NSW Grafton Acoustic Screen Wall Locations and Receiver ID's

Table 8.3 – Predicted $L_{Aeq,1hr}$ Traffic Noise Levels for Increasing Acoustic Screen Wall Heights, dB(A)

Receiver ID	Floor Level	Facade	Predicted 2029 Design Year Day Noise Level for "Build" Scenario						Noise Reduction Provided Compared to No Wall				
			0m	1.8m	2.1m	2.4m	2.7m	3.0m	1.8m	2.1m	2.4m	2.7m	3.0m
221	Ground	SW	**46**	**45**	**45**	**45**	**45**	**45**	1	1	1	1	1
221	First	SW	**49**	**49**	**49**	**49**	**49**	**49**	0	0	0	0	0
221	Ground	SE	58	55	55	55	54	54	2	3	3	3	4
221	First	SE	59	58	58	58	57	57	1	1	2	2	2
221	Ground	NE	58	54	53	53	52	52	4	5	6	6	7
221	First	NE	60	58	57	57	56	55	2	2	3	4	4
221	Ground	NW	57	55	55	55	55	54	2	2	2	2	3
221	First	NW	58	57	56	56	56	56	1	2	2	2	2
226	Ground	SW	58	52	51	**50**	**49**	**49**	6	7	8	8	9
226	First	SW	59	58	57	57	56	55	1	2	2	3	4
226	Ground	SE	64	63	63	63	63	63	1	1	1	1	1
226	First	SE	65	64	64	64	64	64	0	0	1	1	1
226	Ground	NE	69	69	69	69	69	69	0	0	0	0	0
226	First	NE	69	69	69	69	69	69	0	0	0	0	0
226	Ground	NW	63	62	62	62	62	62	1	1	1	1	1
226	First	NW	63	63	63	63	63	63	0	0	1	1	1
234	Ground	SW	**44**	**44**	**44**	**44**	**44**	**44**	0	0	0	0	0
234	Ground	SE	60	57	57	57	56	56	3	3	3	4	4
234	Ground	NE	63	59	59	58	58	58	4	5	5	5	6
234	Ground	NW	60	56	56	55	55	54	4	4	5	5	6

From the results presented in the above table, it can be seen that by installing 1.8m high acoustic screen walls, noise reductions of up to 4dB(A), 6dB(A) and 4dB(A) could be achieved for Receivers 221, 226 and 234, respectively. By increasing the walls to 2.4m in height, noise reductions are increased by up to 2dB(A) at all receiver locations. However, increasing the walls to 3m in height would only reduce noise by a further 1dB(A) compared to 2.4m high walls.

Furthermore, in accordance with Practice Note IV of the ENMM, noise barriers up to 3m in height must provide an insertion loss (noise reduction) of at least 5dB(A) to achieve a reasonable outcome.

Therefore, based on the requirements of the ENMM and the noise reductions for the various acoustic screen wall heights presented in the above table, walls of 2.4m in height would be considered a reasonable option in reducing traffic noise levels at the identified TAFE buildings.

The following table presents the predicted noise levels at the facades of the affected receivers and exceedances of the applicable noise criteria for school classrooms should the 2.4m high acoustic screen walls be implemented.

Table 8.4 – Predicted $L_{Aeq,1hr}$ Traffic Noise Levels with 2.4m High Acoustic Screen Walls, dB(A)

Receiver ID	Floor Level	Facade	Predicted Noise Level	Criteria[1]	Exceedance
221	Ground	SW	**46**	*50*	**-**
221	First	SW	**49**	*50*	**-**
221	Ground	SE	58	*50*	8
221	First	SE	59	*50*	9
221	Ground	NE	58	*50*	8
221	First	NE	60	*50*	10
221	Ground	NW	57	*50*	7
221	First	NW	58	*50*	8
226	Ground	SW	58	*50*	8
226	First	SW	59	*50*	9
226	Ground	SE	64	*50*	14
226	First	SE	65	*50*	15
226	Ground	NE	69	*50*	19
226	First	NE	69	*50*	19
226	Ground	NW	63	*50*	13
226	First	NW	63	*50*	13
234	Ground	SW	**44**	*50*	**-**
234	Ground	SE	60	*50*	10
234	Ground	NE	63	*50*	13
234	Ground	NW	60	*50*	10

Notes: 1. Based on equivalent external noise goals applicable to school classrooms

It can be seen that with the 2.4m high acoustic screen walls, traffic noise levels at the affected receivers would still exceed the applicable noise criteria. Therefore, additional building treatment may be required for affected facades of classrooms within the TAFE buildings. The level of treatment to the facades would be dependent on the predicted exceedances and cross-referenced with the building treatment options presented in Table 8.1. Furthermore, as discussed previously the facades identified for treatment should be inspected to determine if they lead into non-sensitive areas (eg. maintenance workshop) of the affected TAFE buildings.

8.5 Bridge Expansion Joints

Expansion joints on bridge structures should be selected from a range that minimise noise generation. Depending on the engineering requirements of the bridge structures (eg. allowances for movement of the structure), a range of expansion joints are available that can provide acoustic benefits and will meet applicable specifications in accordance with RMS requirements.

Types of expansion joints that are selected to reduce noise impact include:

- finger plate types, which allow for large movements in the structure;
- aluminium strip seal systems, which are heavy duty types suitable for use on heavily trafficked structures and can be installed to provide a flush surface true to the profile of the bridge surface.

Good installation of expansion joints is a key factor in ensuring a good acoustic outcome. It is recommended that the joints be installed by specialists to ensure that the surface is flat and there are no transverse 'open' gaps running across the bridge. This will minimise noise generated by vehicle tyres when passing over the joint and reduce the potential for reverberation of noise underneath the bridge structure.

It is noted that, if the expansion joints are not installed correctly or the appropriate expansion joint types not be used, then the noise generated by vehicle tyres passing over the joint could increase traffic noise levels by up to 10dB(A). An example of poor installation of expansion joints was along the Pacific Highway upgrade in Banora Point, where the expansion joints along the bridge / viaduct were installed incorrectly and traffic noise levels were increased as vehicle tyres passed over the joints.

9 Conclusion

Renzo Tonin & Associates has undertaken an operational noise study of the Clarence River Bridge Crossing project in Grafton. Results of this study will be used to finalise the requirements of at-property treatment for identified properties in accordance with the requirements of the MCoA, SWTC, RNP and ENMM.

Operational traffic noise levels were predicted and assessed against the project's noise goals at each receiver, quantifying the extent of exceedances where they occur, and identifying the properties that require consideration for at-property treatments. These treatments are in addition to the traffic noise mitigation measures proposed within the road corridor, comprising a 340m long, 3m high noise barrier as defined in Section 8.2 of this report.

In addition to operational traffic noise, a rail noise assessment was also undertaken as part of this study to assess any potential impacts from the redevelopment of the rail overbridge above Pound Street. Results of the rail noise assessment indicate that receivers within the vicinity of the overbridge are predicted to experience rail noise levels above the L_{Amax} 85dB(A) noise trigger level and the levels would increase by more than 3dB(A) due to the redeveloped rail overbridge. Therefore, feasible and reasonable noise mitigation measures in the form of at-property treatment was recommended following the rail noise assessment. It is noted that the properties identified for at-property treatment had already been identified due to traffic noise impacts from the project and treatment of these properties to mitigate traffic noise will satisfy the noise requirements of the RING.

Furthermore, noise impacts from the proposed emergency backup generator, which forms part of the flood pump station, was assessed against the relevant noise criteria established in the EIS and stipulated in the SWTC. Given the location of the generator being within an enclosed area under the viaduct of the northern approach of the new bridge, noise emissions from the generator were expected to comply with the relevant noise criteria if the specified generator is installed according to the recommendations of this report.

In summary, 40 properties were identified in this study as requiring consideration for at-property treatment compared to 47 in the EIS and 46 in the ONR. It is noted that some of the properties identified in the EIS and the ONR have also been identified as part of this study resulting in an overall total of 55 properties qualifying for at-property treatment (cumulative total of all properties identified in the EIS, ONR and this study), based on predicted road traffic noise at the receiver.

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.

Absorption Coefficient α	The absorption coefficient of a material, usually measured for each octave or third-octave band and ranging between zero and one. For example, a value of 0.85 for an octave band means that 85% of the sound energy within that octave band is absorbed on coming into contact with the material. Conversely, a low value below about 0.1 means the material is acoustically reflective.
Adverse weather	Weather effects that enhance noise (particularly wind and temperature inversions) occurring at a site for a significant period of time. In the NSW INP this occurs when wind occurs for more than 30% of the time in any assessment period in any season and/or temperature inversions occurring more than 30% of nights in winter.
Air-borne noise	Noise which is fundamentally transmitted by way of the air and can be attenuated by the use of barriers and walls placed physically between the noise source and receiver.
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.
Amenity	A desirable or useful feature or facility of a building or place.
AS	Australian Standard
Assessment period	The time period in which an assessment is made. e.g. Day 7am-10pm & Night 10pm-7am.
Assessment Point	A location at which a noise or vibration measurement is taken or estimated.
Attenuation	The reduction in the level of sound or vibration.
Audible Range	The limits of frequency which are audible or heard as sound. The normal hearing in young adults detects ranges from 20 Hz to 20 kHz, although some people can detect sound with frequencies outside these limits.
A-weighting	A filter applied to the sound recording made by a microphone to approximate the response of the human ear.
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. 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 LA90 noise level if measured as an overall level or an L90 noise level when measured in octave or third-octave bands.
Barrier (Noise)	A natural or constructed physical barrier which impedes the propagation of sound and includes fences, walls, earth mounds or berms and buildings.
Berm	Earth or overburden mound.
Buffer	An area of land between a source and a noise-sensitive receiver and may be an open space or a noise-tolerant land use.
Bund	A bund is an embankment or wall of brick, stone, concrete or other impervious material, which may form part or all of the perimeter of a compound.
BS	British Standard
CoRTN	United Kingdom Department of Environment entitled “Calculation of Road Traffic Noise (1988)”

Decibel [dB]	The units of sound measurement. The following are examples of the decibel readings of every day sounds: 0dB The faintest sound we can hear, defined as 20 micro Pascal 30dB A quiet library or in a quiet location in the country 45dB Typical office space. Ambience in the city at night 60dB CBD mall 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 decibel. 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 is denoted as dB(A). Practically all noise is measured using the A filter.
dB(C)	C-weighted decibels. The C-weighting noise filter simulates the response of the human ear at relatively high levels, where the human ear is nearly equally effective at hearing from mid-low frequency (63Hz) to mid-high frequency (4kHz), but is less effective outside these frequencies. The dB(C) level is not widely used but has some applications.
Diffraction	The distortion of sound waves caused when passing tangentially around solid objects.
DIN	German Standard
ECRTN	Environmental Criteria for Road Traffic Noise, NSW, 1999
EPA	Environment Protection Authority
Field Test	A test of the sound insulation performance in-situ. See also 'Laboratory Test' The sound insulation performance between building spaces can be measured by conducting a field test, for example, early during the construction stage or on completion. A field test is conducted in a non-ideal acoustic environment. It is generally not possible to measure the performance of an individual building element accurately as the results can be affected by numerous field conditions.
Fluctuating Noise	Noise that varies continuously to an appreciable extent over the period of observation.
Free-field	An environment in which there are no acoustic reflective surfaces. Free field noise measurements are carried out outdoors at least 3.5m from any acoustic reflecting structures other than the ground.
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.
Ground-borne noise	Vibration propagated through the ground and then radiated as noise by vibrating building elements such as wall and floor surfaces. This noise is more noticeable in rooms that are well insulated from other airborne noise. An example would be vibration transmitted from an underground rail line radiating as sound in a bedroom of a building located above.
Habitable Area	Includes a bedroom, living room, lounge room, music room, television room, kitchen, dining room, sewing room, study, playroom, family room, home theatre and sunroom. Excludes a bathroom, laundry, water closet, pantry, walk-in wardrobe, corridor, hallway, lobby, photographic darkroom, clothes drying room, and other spaces of a specialised nature occupied neither frequently nor for extended periods.
Heavy Vehicle	A truck, transporter or other vehicle with a gross weight above a specified level (for example: over 8 tonnes).
IGANRIP	Interim Guideline for the Assessment of Noise from Rail Infrastructure Projects, NSW DEC 2007

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.
INP	NSW Industrial Noise Policy, EPA 1999
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.
Intrusive noise	Refers to noise that intrudes above the background level by more than 5 dB(A)
ISEPP	State Environmental Planning Policy (Infrastructure), NSW, 2007
ISEPP Guideline	Development Near Rail Corridors and Busy Roads - Interim Guideline, NSW Department of Planning, December 2008
L1	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
L10	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
L10(1hr)	The L10 level measured over a 1 hour period.
L10(18hr)	The arithmetic average of the L10(1hr) levels for the 18 hour period between 6am and 12 midnight on a normal working day.
L90	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).
LAeq or Leq	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 LAeq.
LAeq(1hr)	The LAeq noise level for a one-hour period. In the context of the NSW EPA’s Road Noise Policy it represents the highest tenth percentile hourly A-weighted Leq during the period 7am to 10pm, or 10pm to 7am (whichever is relevant).
LAeq(8hr)	The LAeq noise level for the period 10pm to 6am.
LAeq(9hr)	The LAeq noise level for the period 10pm to 7am.
LAeq(15hr)	The LAeq noise level for the period 7am to 10pm.
LAeq (24hr)	The LAeq noise level during a 24 hour period, usually from midnight to midnight.
Lmax	The maximum sound pressure level measured over a given period. When A-weighted, this is usually written as the LAmax.
Lmin	The minimum sound pressure level measured over a given period. When A-weighted, this is usually written as the LAmin.
Loudness	A rise of 10 dB in sound level corresponds approximately to a doubling of subjective loudness. That is, a sound of 85 dB is twice as loud as a sound of 75 dB which is twice as loud as a sound of 65 dB and so on. That is, the sound of 85 dB is four times or 400% the loudness of a sound of 65 dB.
Microphone	An electro-acoustic transducer which receives an acoustic signal and delivers a corresponding electric signal.
NCA	Noise Catchment Area. An area of study within which the noise environment is substantially constant.
Noise	Unwanted sound
Pre-construction	Work in respect of the proposed project that includes design, survey, acquisitions, fencing, investigative drilling or excavation, building/road dilapidation surveys, minor clearing (except where threatened species, populations or ecological communities would be affected), establishing ancillary facilities such as site compounds, or other relevant activities determined to have minimal environmental impact (e.g. minor access roads).
Reflection	Sound wave reflected from a solid object obscuring its path.
RING	Rail Infrastructure Noise Guideline, NSW, May 2013

RMS	Root Mean Square value representing the average value of a signal.
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.
R'w	Weighted Apparent Sound Reduction Index. As for Rw but measured in-situ and therefore subject to the inherent accuracies involved in such a measurement. The higher the value the better the acoustic performance of the building element.
RNP	Road Noise Policy, NSW, March 2011
Sabine	A measure of the total acoustic absorption provided by a material. It is the product of the Absorption Coefficient (alpha) and the surface area of the material (m2). For example, a material with alpha = 0.65 and a surface area of 8.2m2 would have 0.65 x 8.2 = 5.33 Sabine. Sabine is usually calculated for each individual octave band (or third-octave).
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 by conversion to thermal energy.
Sound Insulation	Sound insulation refers to the ability of a construction or building element to limit noise transmission through the building element. The sound insulation of a material can be described by the Rw and the sound insulation between two rooms can be described by the DnT,w.
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.
Spoil	Soil or materials arising from excavation activities.
STC	Sound Transmission Class A measure of the sound insulation performance of a building element. It is measured in controlled conditions in a laboratory. The term has been superseded by Rw.
Structure-borne Noise	Audible noise generated by vibration induced in the ground and/or a structure. Vibration can be generated by impact or by solid contact with a vibrating machine. Structure-borne noise cannot be attenuated by barriers or walls but requires the isolation of the vibration source itself. This can be achieved using a resilient element placed between the vibration source and its support such as rubber, neoprene or springs or by physical separation (using an air gap for example). Examples of structure-borne noise include the noise of trains in underground tunnels heard to a listener above the ground, the sound of footsteps on the floor above a listener and the sound of a lift car passing in a shaft. See also 'Impact Noise'.
Tonal Noise	Sound containing a prominent frequency and characterised by a definite pitch.

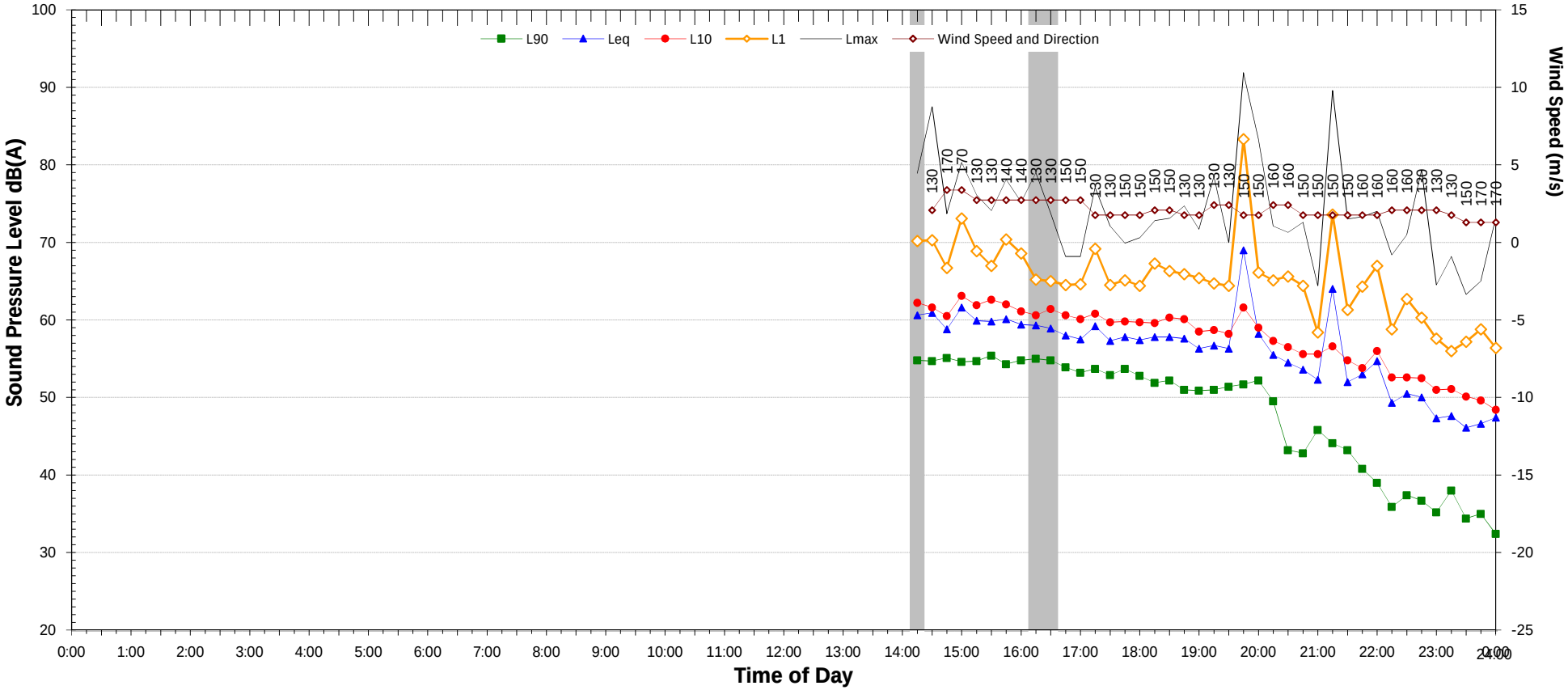
Transmission Loss	The sound level difference between one room or area and another, usually of sound transmitted through an intervening partition or wall. Also the vibration level difference between one point and another. For example, if the sound level on one side of a wall is 100dB and 65dB on the other 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 R'w or DnT,w.

APPENDIX B Noise Monitoring Results

Unattended Noise Monitoring Results

16 Fitzroy Street, Grafton

Monday, 13 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	-	40.8	30.9
LAeq	-	60.0	51.8

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	62.2	54.3
$L_{eq\ 1hr}$ upper 10 percentile	66.3	59.5
$L_{eq\ 1hr}$ lower 10 percentile	56.6	48.6

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	69.7	to	80.4
L_{Max} - L_{eq} (Range)	18.7	to	34.3

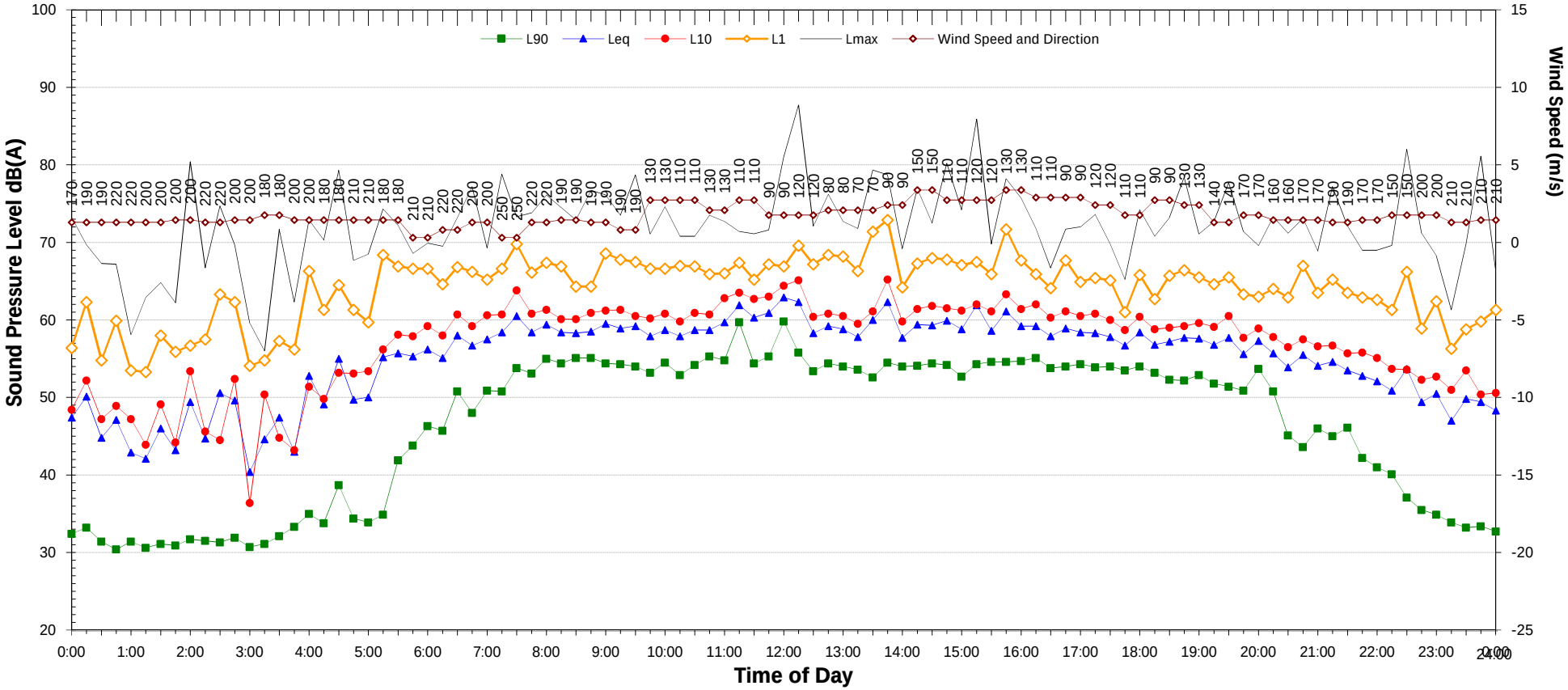
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

16 Fitzroy Street, Grafton

Tuesday, 14 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	53.1	42.2	28.7
LAeq	59.5	55.9	52.0

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	61.3	54.5
$L_{eq\ 1hr}$ upper 10 percentile	63.6	60.5
$L_{eq\ 1hr}$ lower 10 percentile	56.7	47.8

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	67.6	to	82.0
L_{Max} - L_{eq} (Range)	17.3	to	32.3

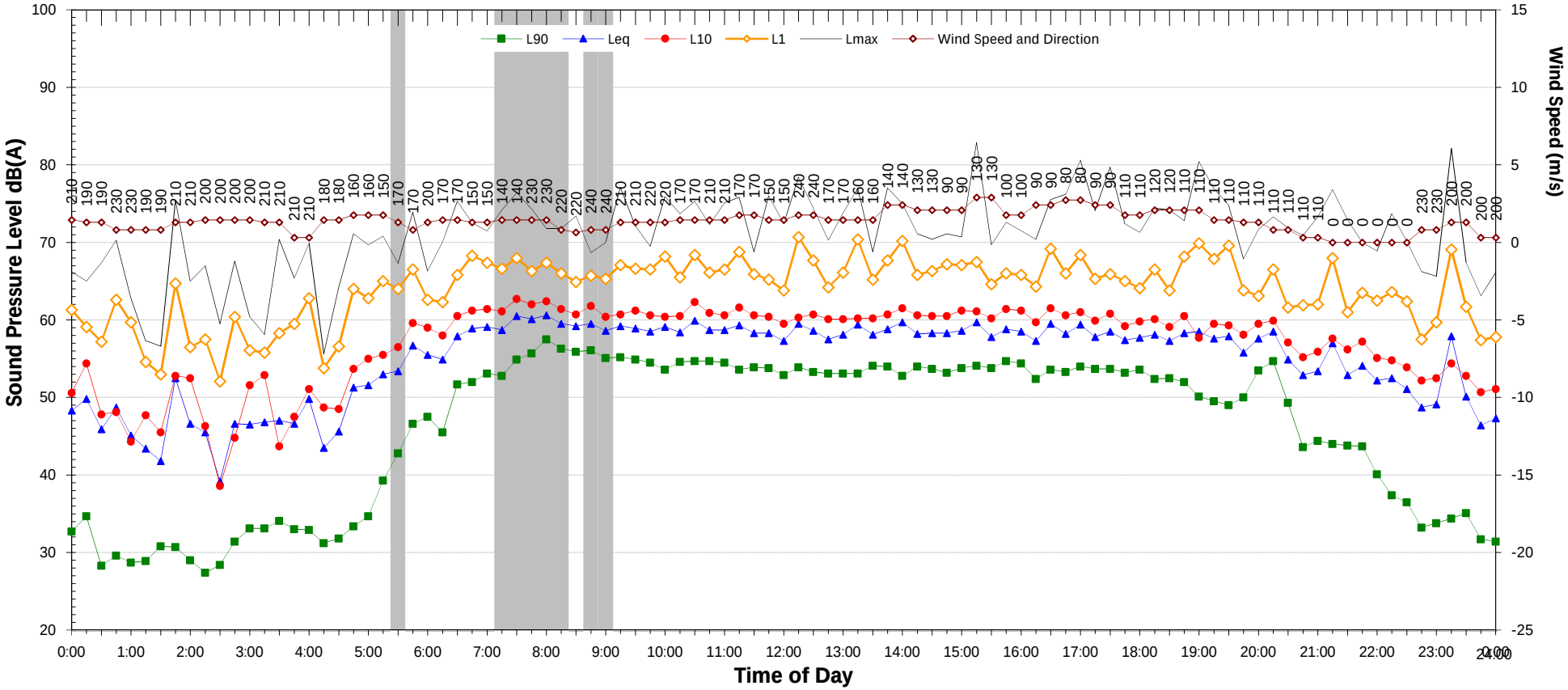
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

16 Fitzroy Street, Grafton

Wednesday, 15 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	53.1	43.6	28.0
LAeq	58.6	56.6	52.5

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	60.6	55.0
$L_{eq\ 1hr}$ upper 10 percentile	61.6	60.4
$L_{eq\ 1hr}$ lower 10 percentile	57.4	48.0

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	67.9	to	82.1
L_{Max} - L_{eq} (Range)	18.4	to	29.0

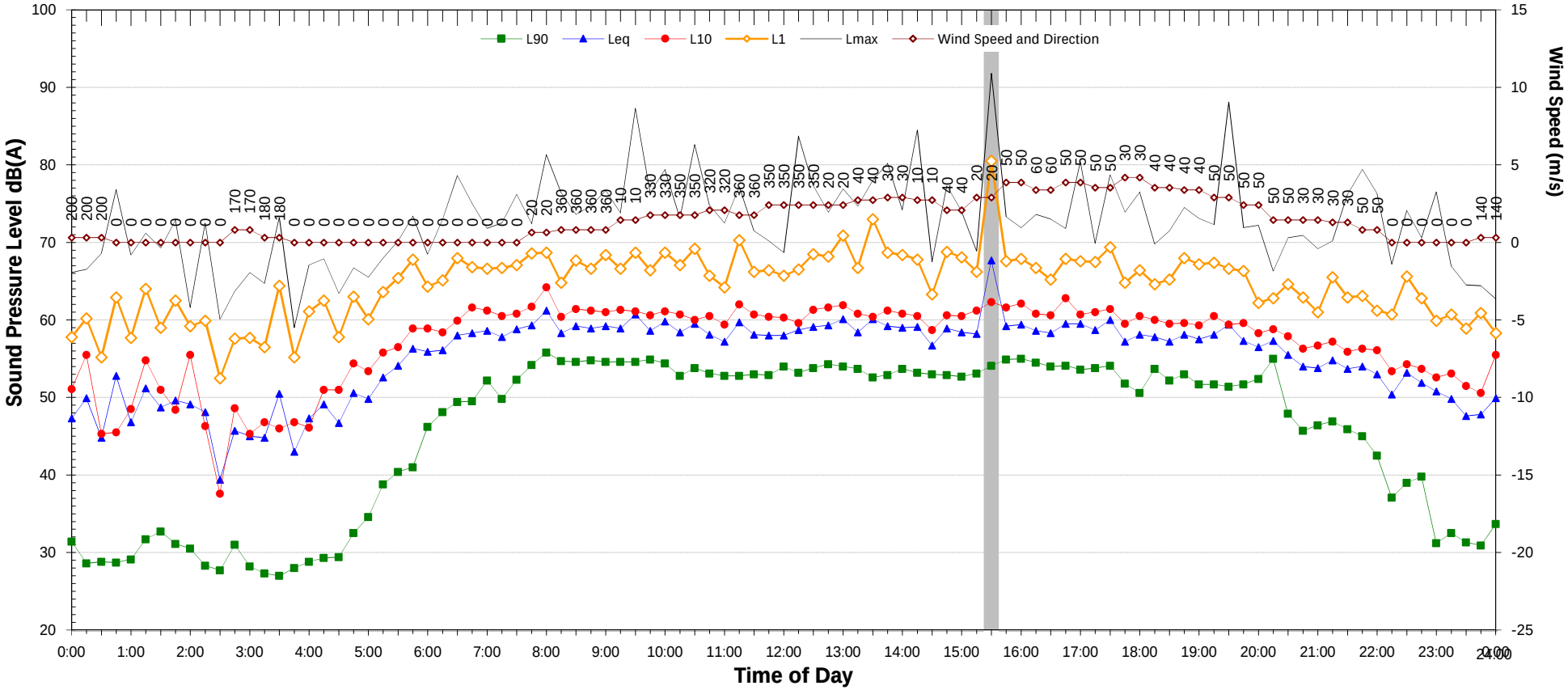
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

16 Fitzroy Street, Grafton

Thursday, 16 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	52.6	45.0	28.0
LAeq	59.0	56.5	52.4

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	60.9	54.9
$L_{eq\ 1hr}$ upper 10 percentile	62.0	61.4
$L_{eq\ 1hr}$ lower 10 percentile	57.2	48.1

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	66.9	to	84.1
L_{Max} - L_{eq} (Range)	18.0	to	25.3

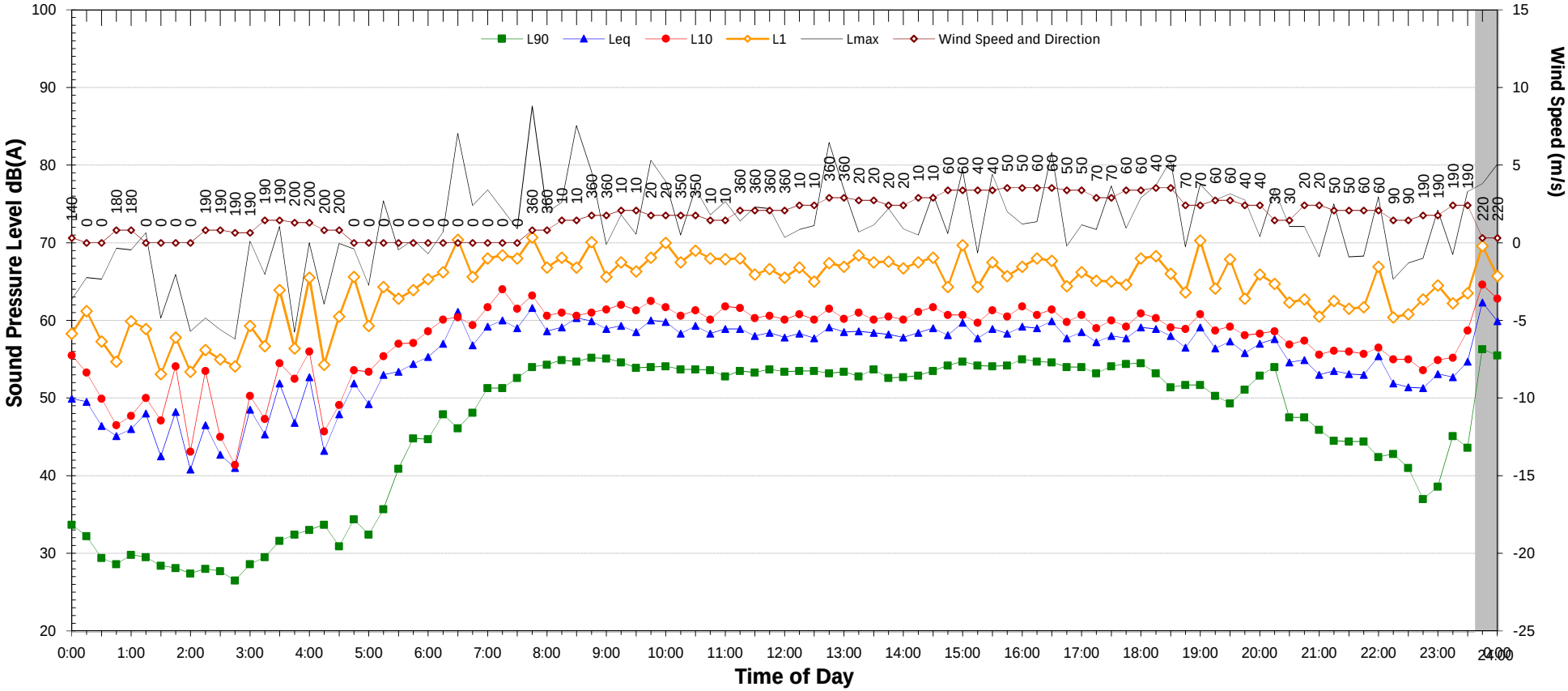
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

16 Fitzroy Street, Grafton

Friday, 17 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	52.8	44.4	-
LAeq	58.9	56.3	-

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	60.8	54.7
$L_{eq\ 1hr}$ upper 10 percentile	62.3	58.2
$L_{eq\ 1hr}$ lower 10 percentile	57.2	50.3

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	67.4	to	78.7
L_{Max} - L_{eq} (Range)	17.7	to	29.9

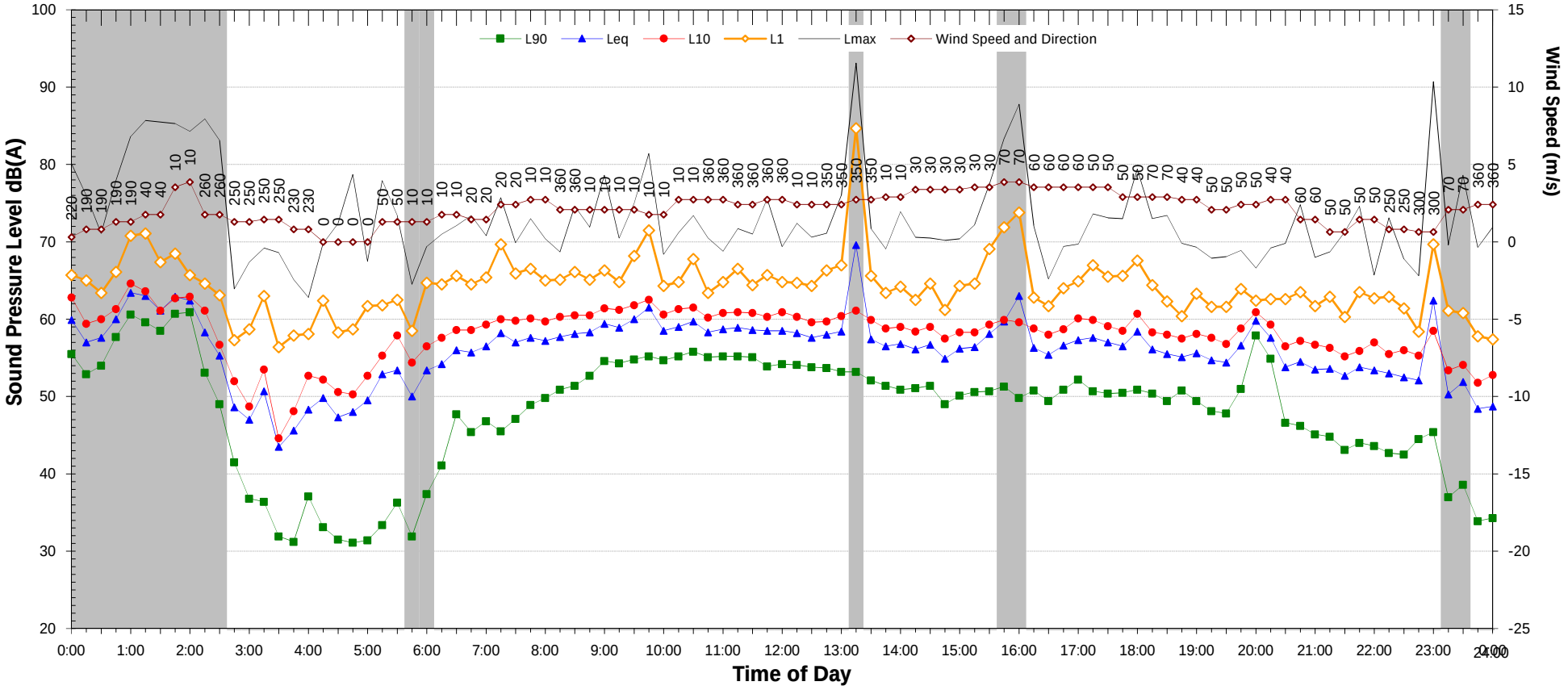
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

16 Fitzroy Street, Grafton

Saturday, 18 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	49.4	43.6	28.6
LAeq	58.0	55.5	51.4

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	59.9	53.7
$L_{eq\ 1hr}$ upper 10 percentile	61.9	60.1
$L_{eq\ 1hr}$ lower 10 percentile	56.9	47.4

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	69.2	to	90.7
L_{Max} - L_{eq} (Range)	20.5	to	33.1

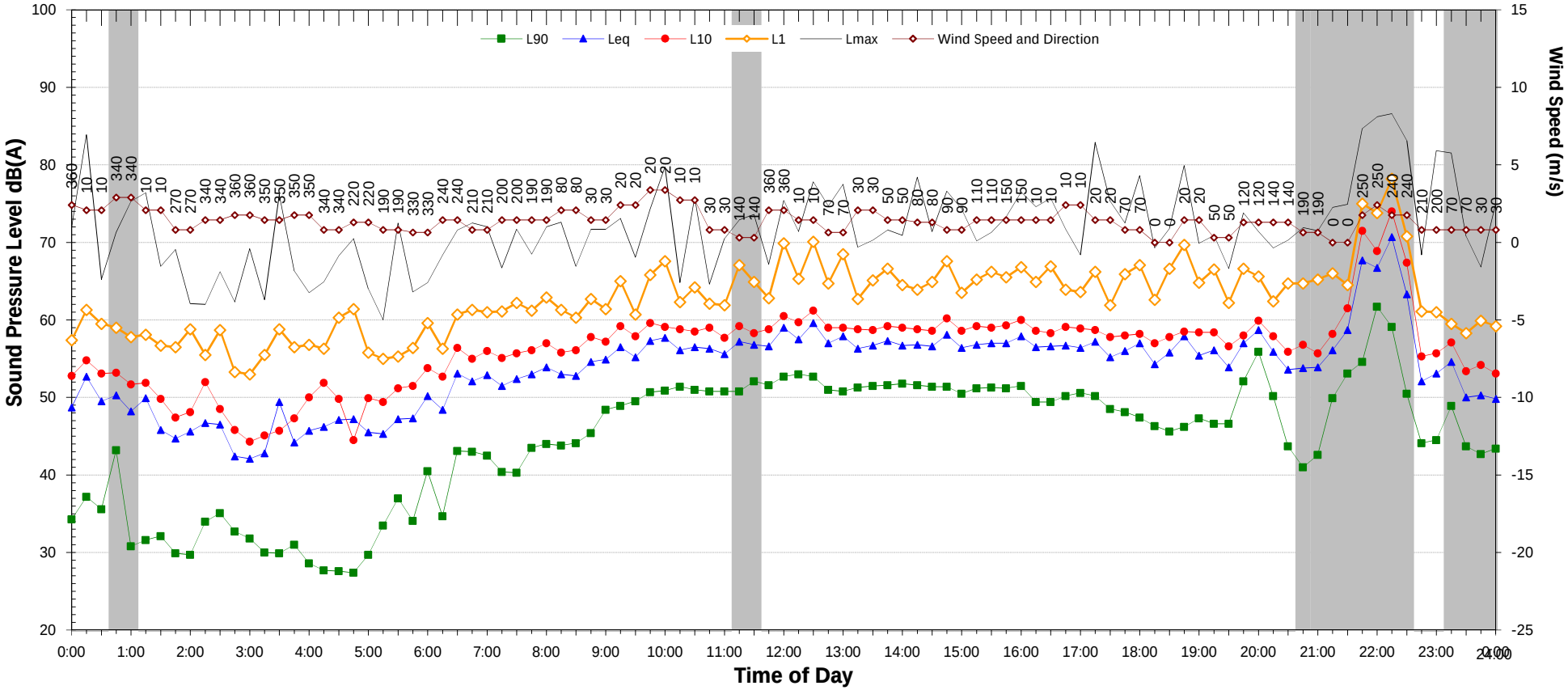
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

16 Fitzroy Street, Grafton

Sunday, 19 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	47.4	-	-
LAeq	56.7	-	-

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	58.9	56.5
$L_{eq\ 1hr}$ upper 10 percentile	60.6	62.0
$L_{eq\ 1hr}$ lower 10 percentile	55.8	48.4

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	71.6	to	85.5
L_{Max} - L_{eq} (Range)	16.2	to	34.7

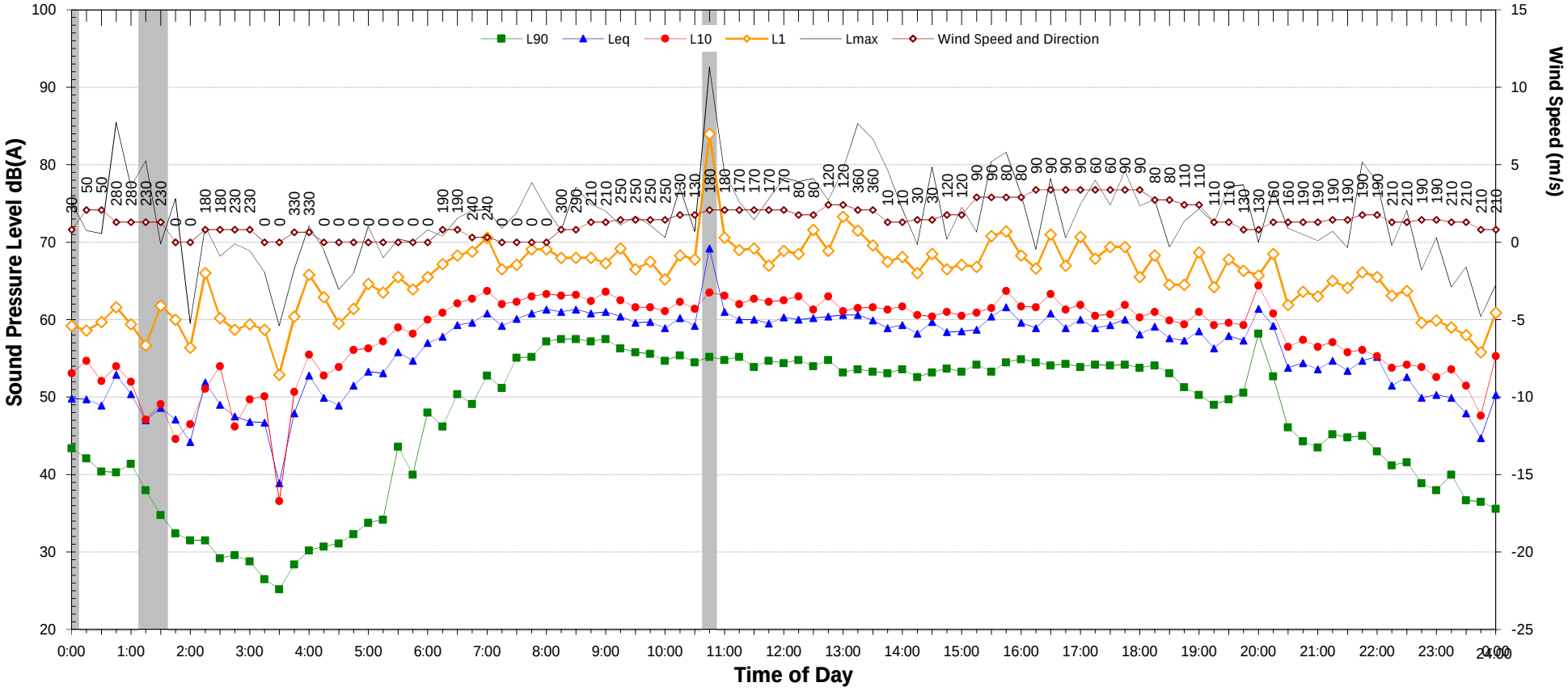
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

16 Fitzroy Street, Grafton

Monday, 20 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	53.2	43.5	31.4
LAeq	60.0	57.2	52.6

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	61.9	55.1
$L_{eq\ 1hr}$ upper 10 percentile	63.2	61.3
$L_{eq\ 1hr}$ lower 10 percentile	57.8	49.7

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	66.8	to	82.8
L_{Max} - L_{eq} (Range)	18.1	to	35.1

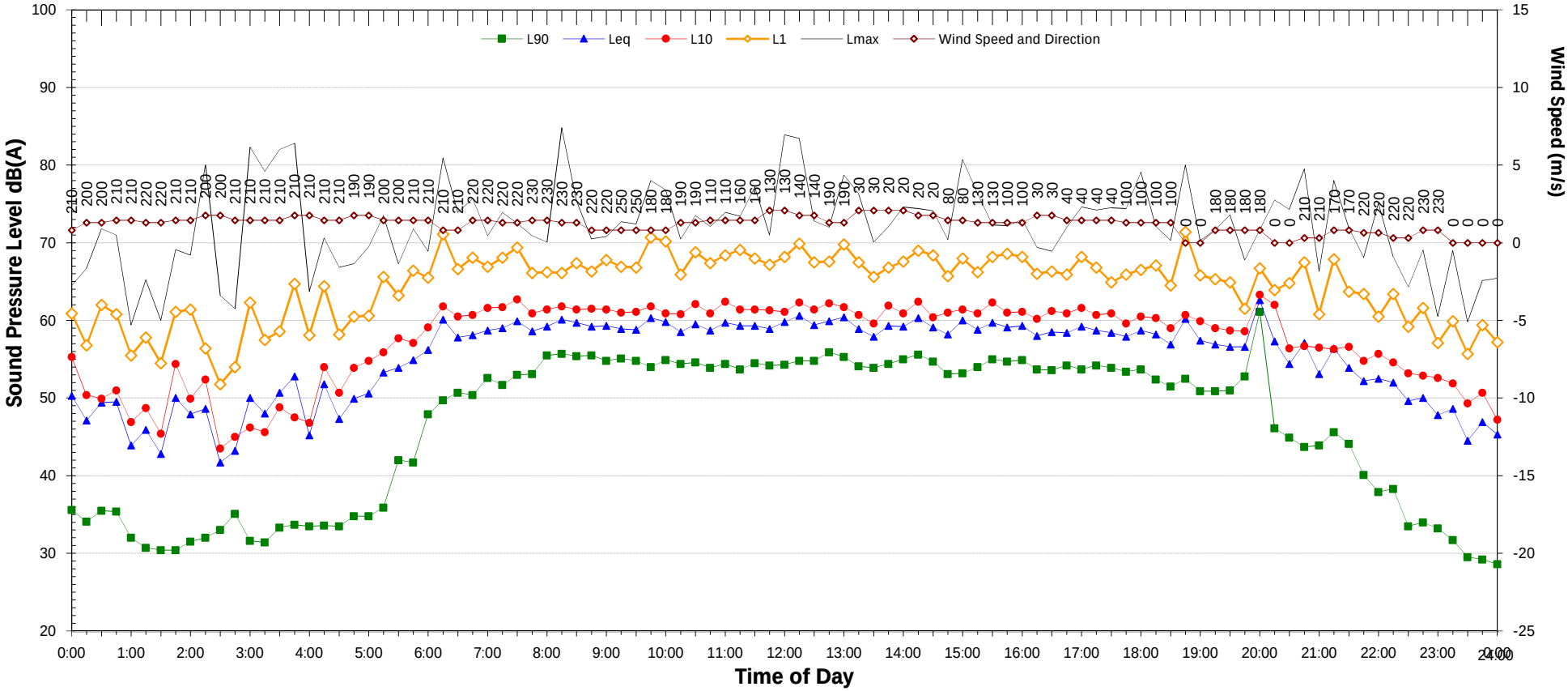
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

16 Fitzroy Street, Grafton

Tuesday, 21 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	53.2	40.1	29.5
LAeq	59.2	57.3	52.0

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	61.3	54.5
$L_{eq\ 1hr}$ upper 10 percentile	62.4	60.5
$L_{eq\ 1hr}$ lower 10 percentile	57.5	49.1

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	65.7	to	82.0
L_{Max} - L_{eq} (Range)	18.7	to	34.2

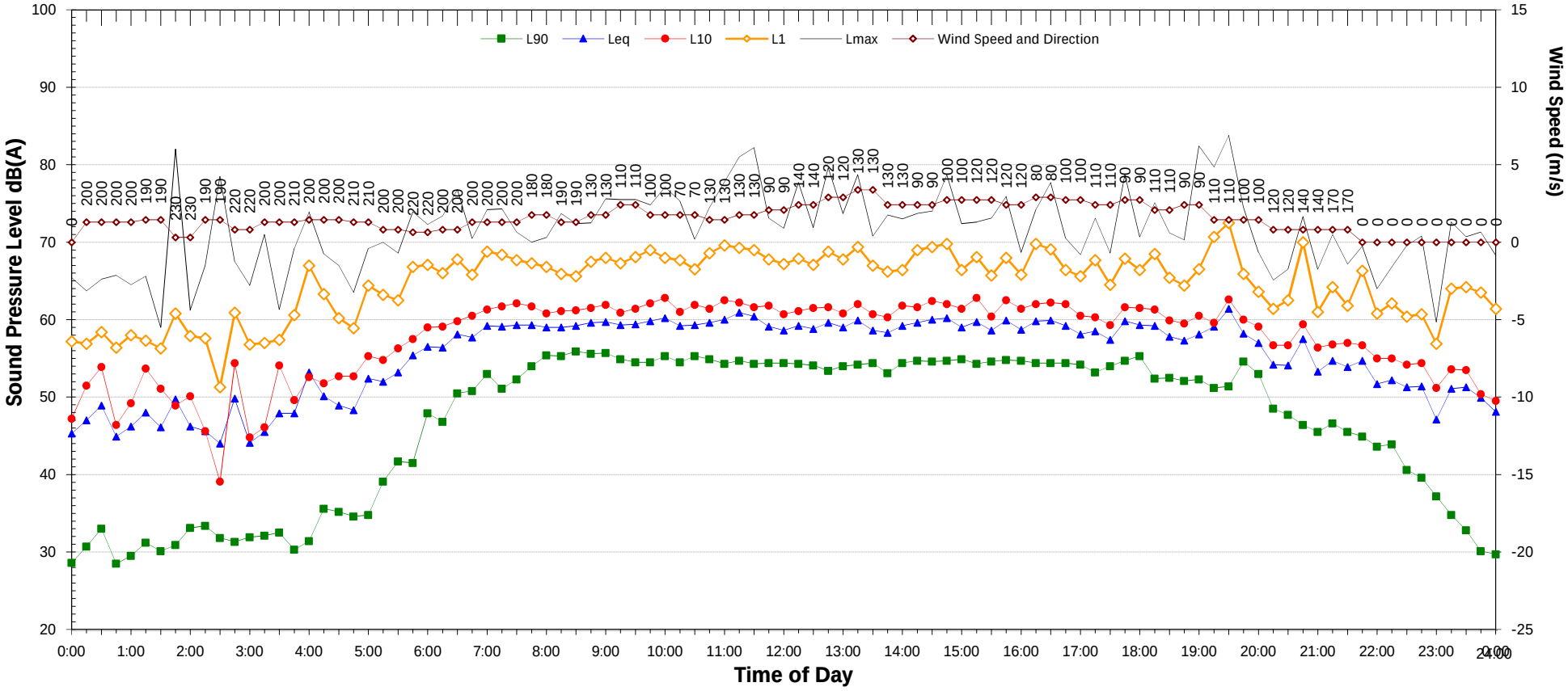
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

16 Fitzroy Street, Grafton

Wednesday, 22 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	53.4	44.9	29.5
LAeq	59.4	57.1	52.6

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	61.4	55.1
$L_{eq\ 1hr}$ upper 10 percentile	62.3	61.1
$L_{eq\ 1hr}$ lower 10 percentile	57.0	46.6

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	67.7	to	79.3
L_{Max} - L_{eq} (Range)	17.5	to	25.4

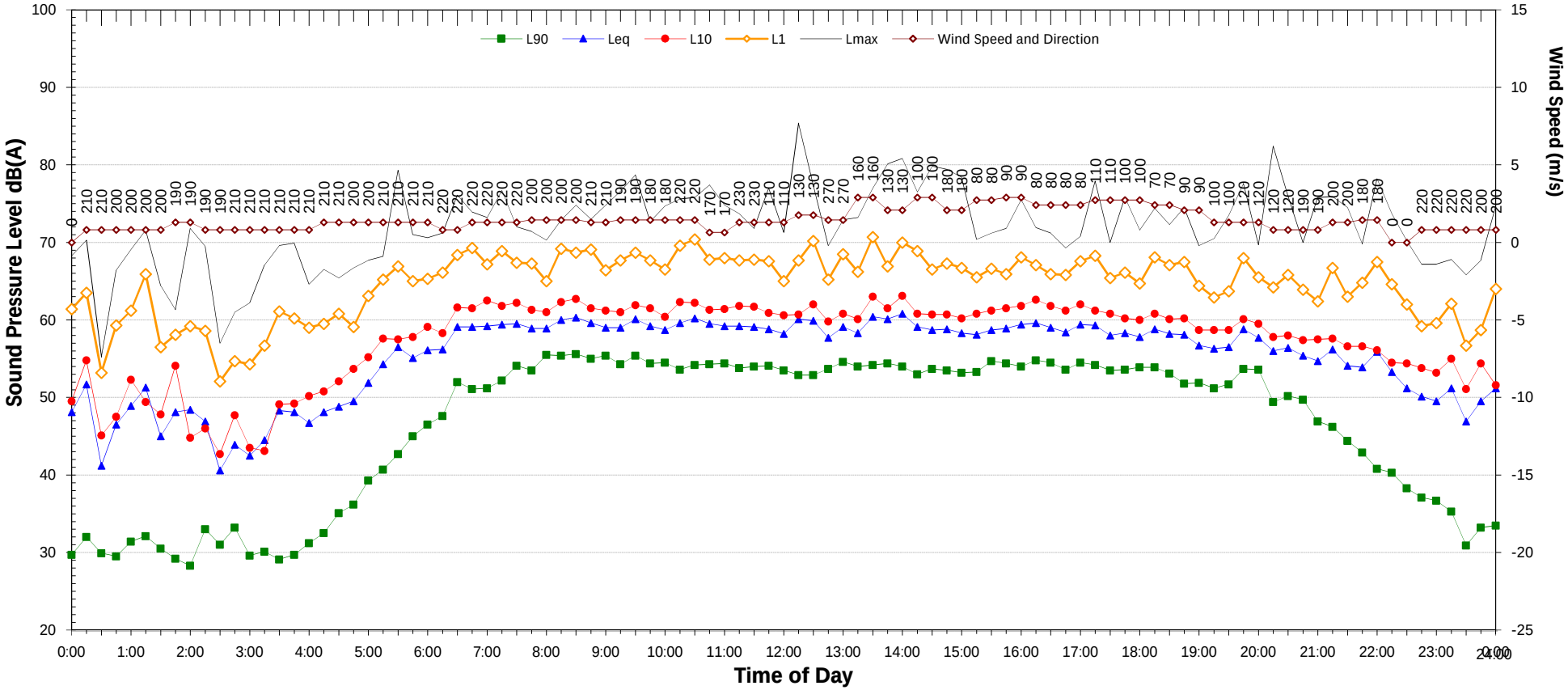
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

16 Fitzroy Street, Grafton

Thursday, 23 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	53.2	42.9	28.8
LAeq	59.2	56.7	53.1

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	61.2	55.6
$L_{eq\ 1hr}$ upper 10 percentile	62.4	61.6
$L_{eq\ 1hr}$ lower 10 percentile	57.9	49.0

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	65.3	to	78.8
L_{Max} - L_{eq} (Range)	18.7	to	24.7

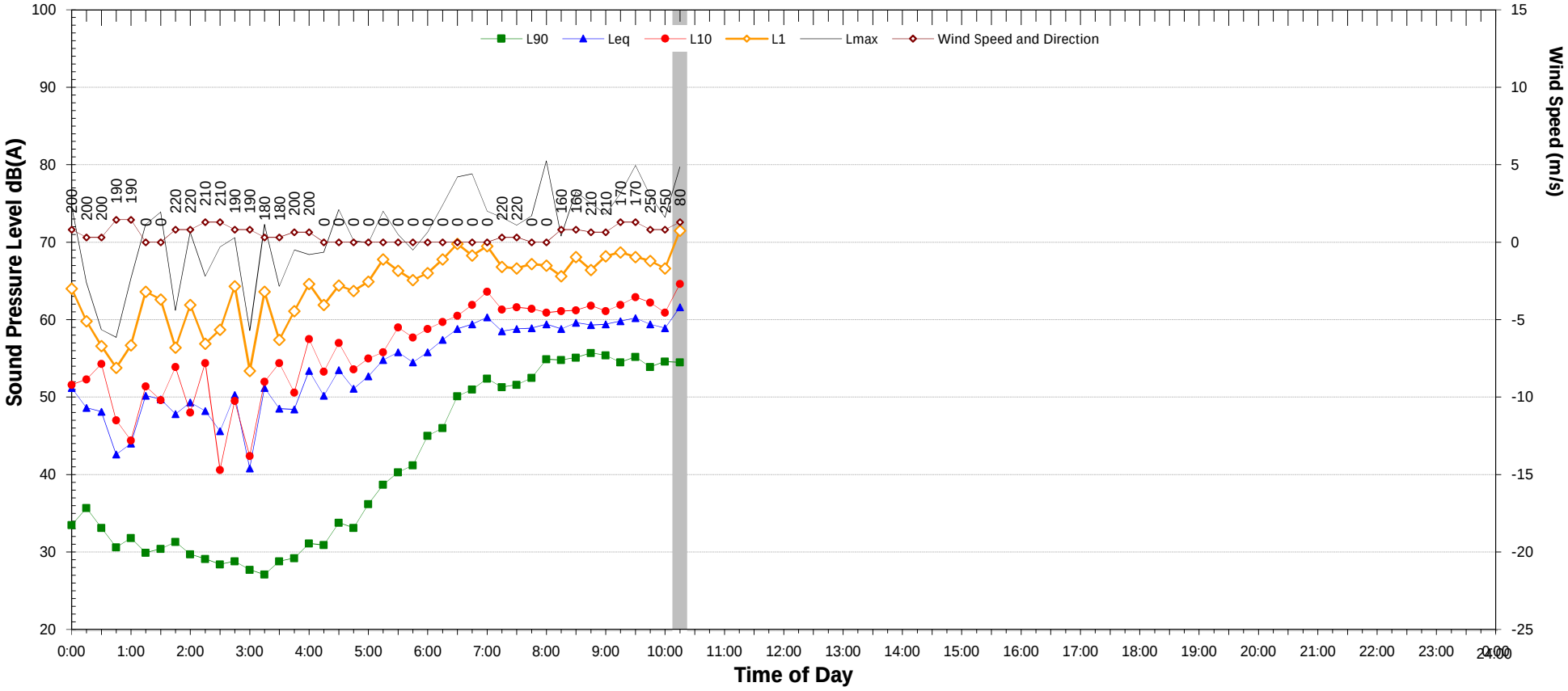
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

16 Fitzroy Street, Grafton

Friday, 24 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	-	-	-
LAeq	-	-	-

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	-	to	-
L_{Max} - L_{eq} (Range)	-	to	-

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	61.8	-
$L_{eq\ 1hr}$ upper 10 percentile	62.1	-
$L_{eq\ 1hr}$ lower 10 percentile	61.4	-

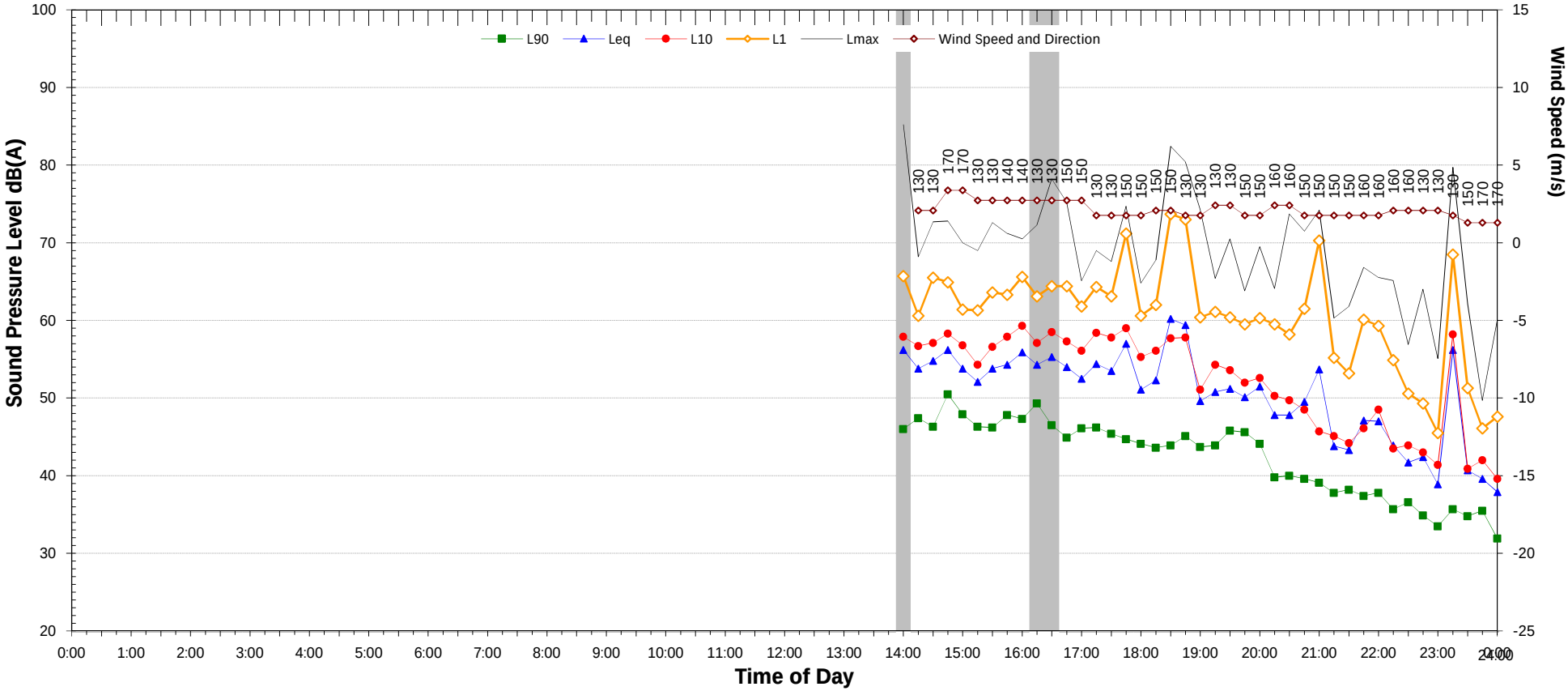
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

24 Pound Street, Grafton

Monday, 13 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	-	37.8	31.8
LAeq	-	53.1	52.9

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	56.2	55.4
$L_{eq\ 1hr}$ upper 10 percentile	59.9	59.7
$L_{eq\ 1hr}$ lower 10 percentile	48.1	42.5

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	65.1	to	87.1
L_{Max} - L_{eq} (Range)	22.9	to	29.9

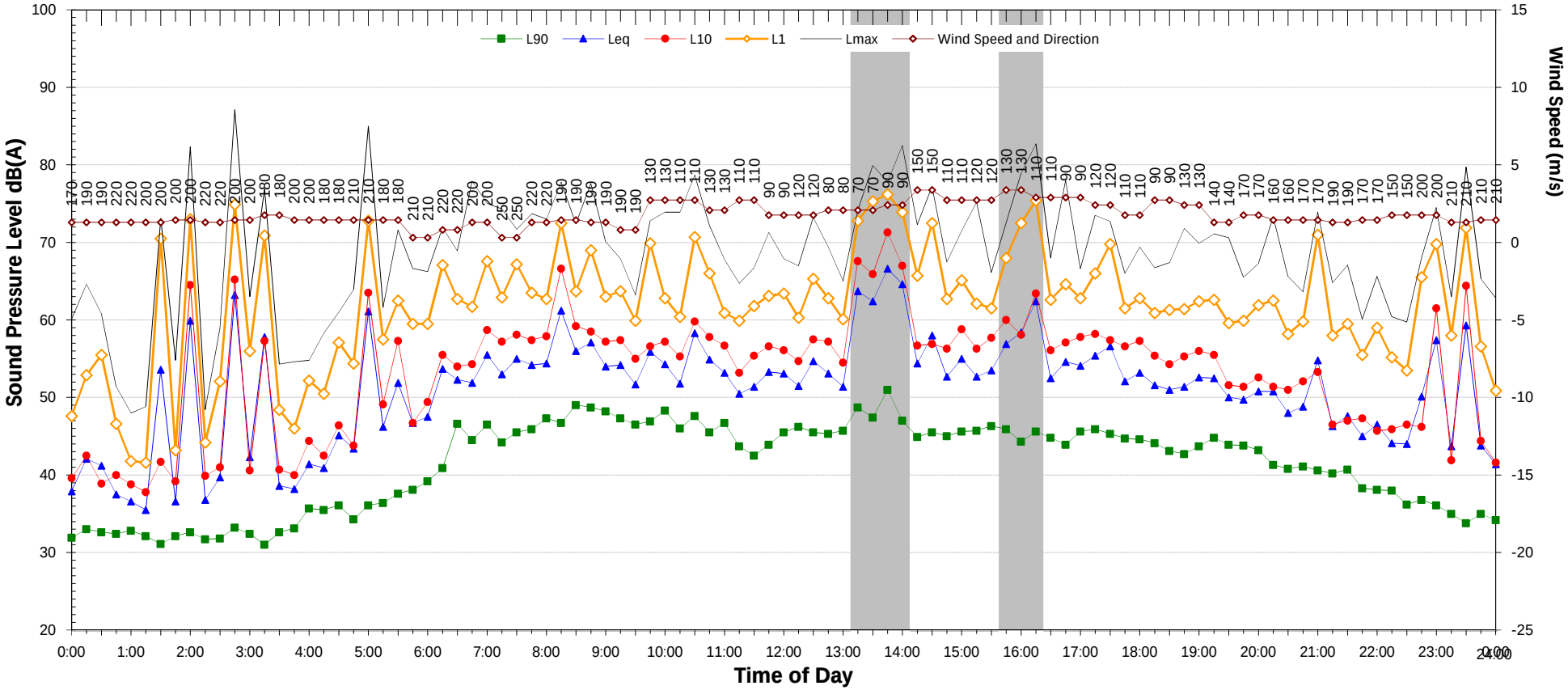
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

24 Pound Street, Grafton

Tuesday, 14 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	43.9	38.3	31.2
LAeq	54.8	50.6	54.6

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	56.4	57.1
$L_{eq\ 1hr}$ upper 10 percentile	59.6	61.6
$L_{eq\ 1hr}$ lower 10 percentile	51.3	54.9

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	69.7	to	85.8
L_{Max} - L_{eq} (Range)	17.1	to	26.7

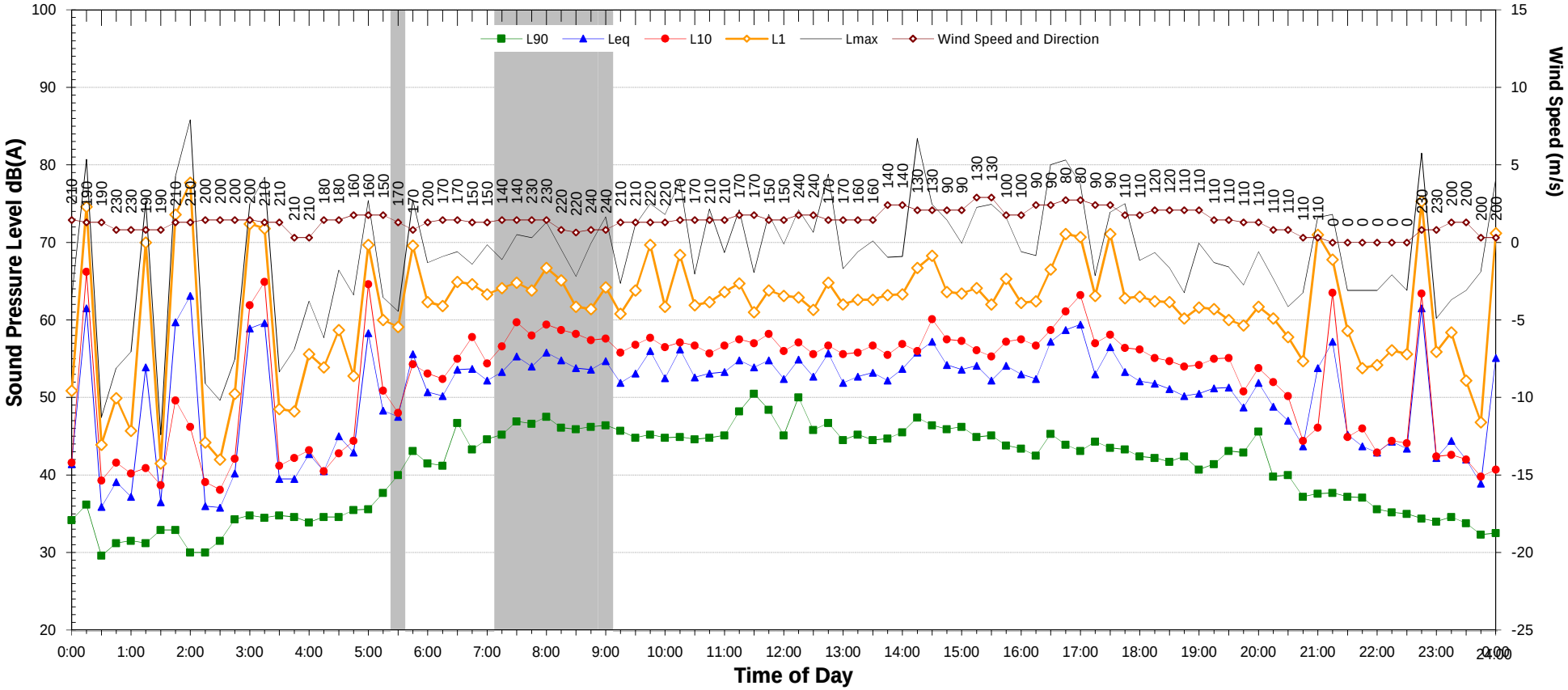
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

24 Pound Street, Grafton

Wednesday, 15 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	43.3	37.1	31.3
LAeq	54.6	50.9	54.9

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	56.3	57.4
$L_{eq\ 1hr}$ upper 10 percentile	59.6	62.9
$L_{eq\ 1hr}$ lower 10 percentile	52.7	43.4

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	70.1	to	83.5
L_{Max} - L_{eq} (Range)	20.7	to	28.5

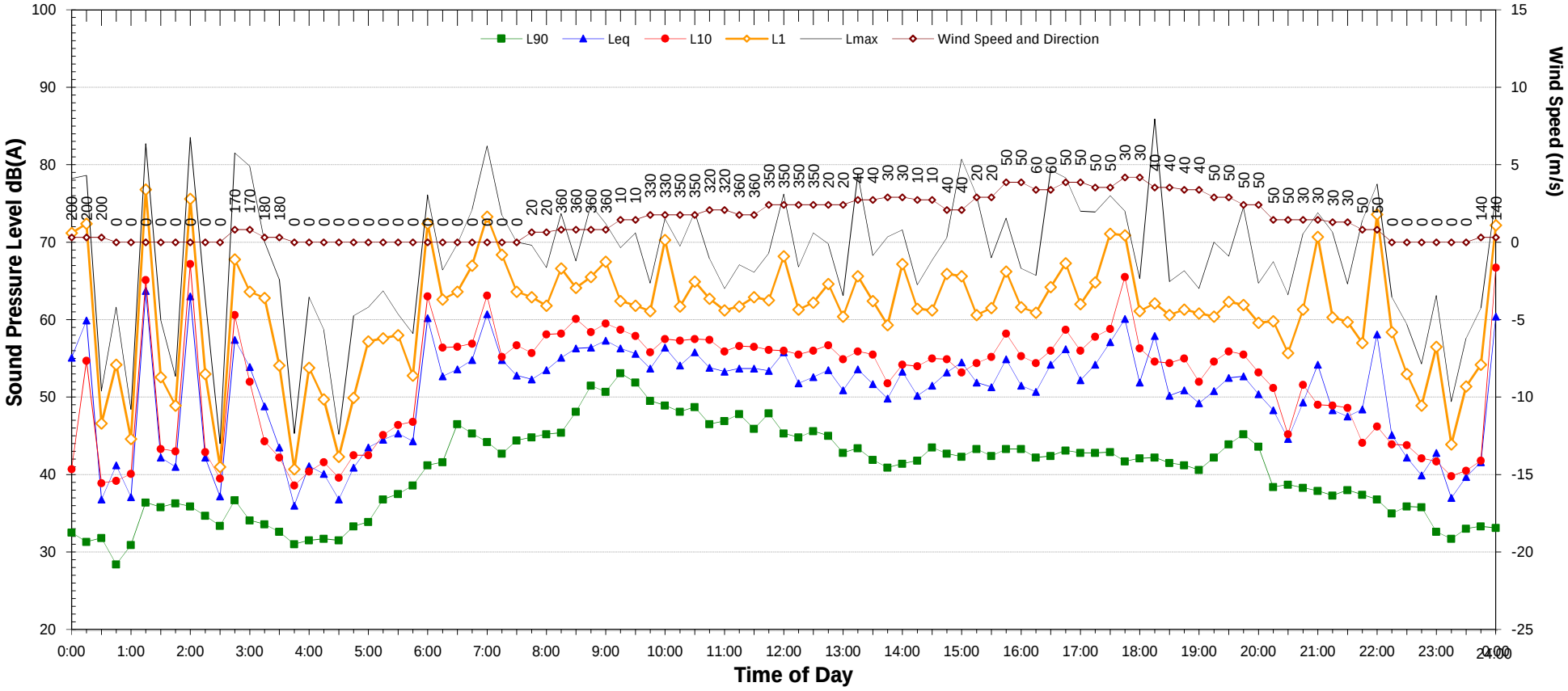
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

24 Pound Street, Grafton

Thursday, 16 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	41.9	37.3	31.9
LAeq	54.4	52.4	53.9

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	69.7	to	87.8
L_{Max} - L_{eq} (Range)	20.2	to	32.7

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	56.4	56.4
$L_{eq\ 1hr}$ upper 10 percentile	59.1	59.3
$L_{eq\ 1hr}$ lower 10 percentile	53.6	44.8

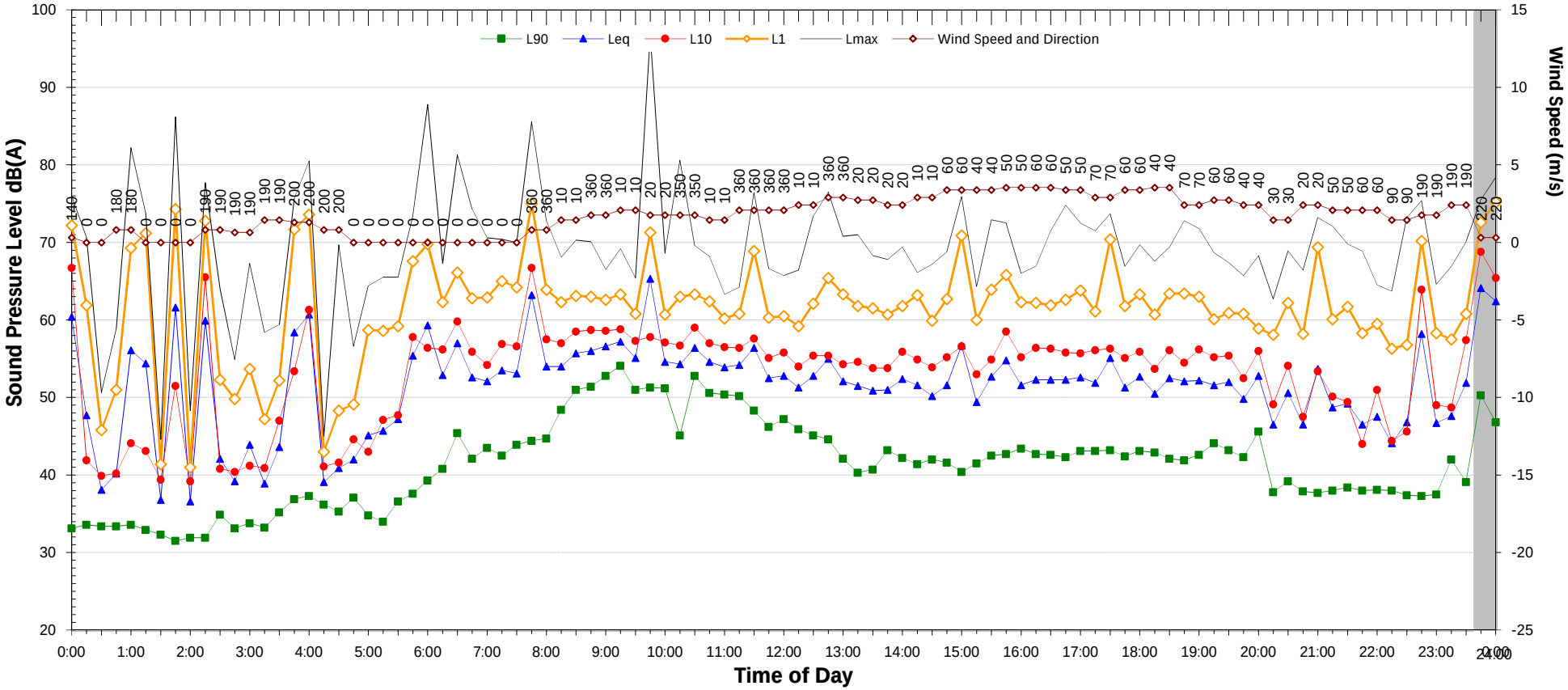
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

24 Pound Street, Grafton

Friday, 17 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	41.5	37.8	-
LAeq	55.5	50.8	-

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	57.1	55.3
$L_{eq\ 1hr}$ upper 10 percentile	62.1	59.1
$L_{eq\ 1hr}$ lower 10 percentile	51.9	45.3

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	70.1	to	79.5
L_{Max} - L_{eq} (Range)	19.8	to	23.8

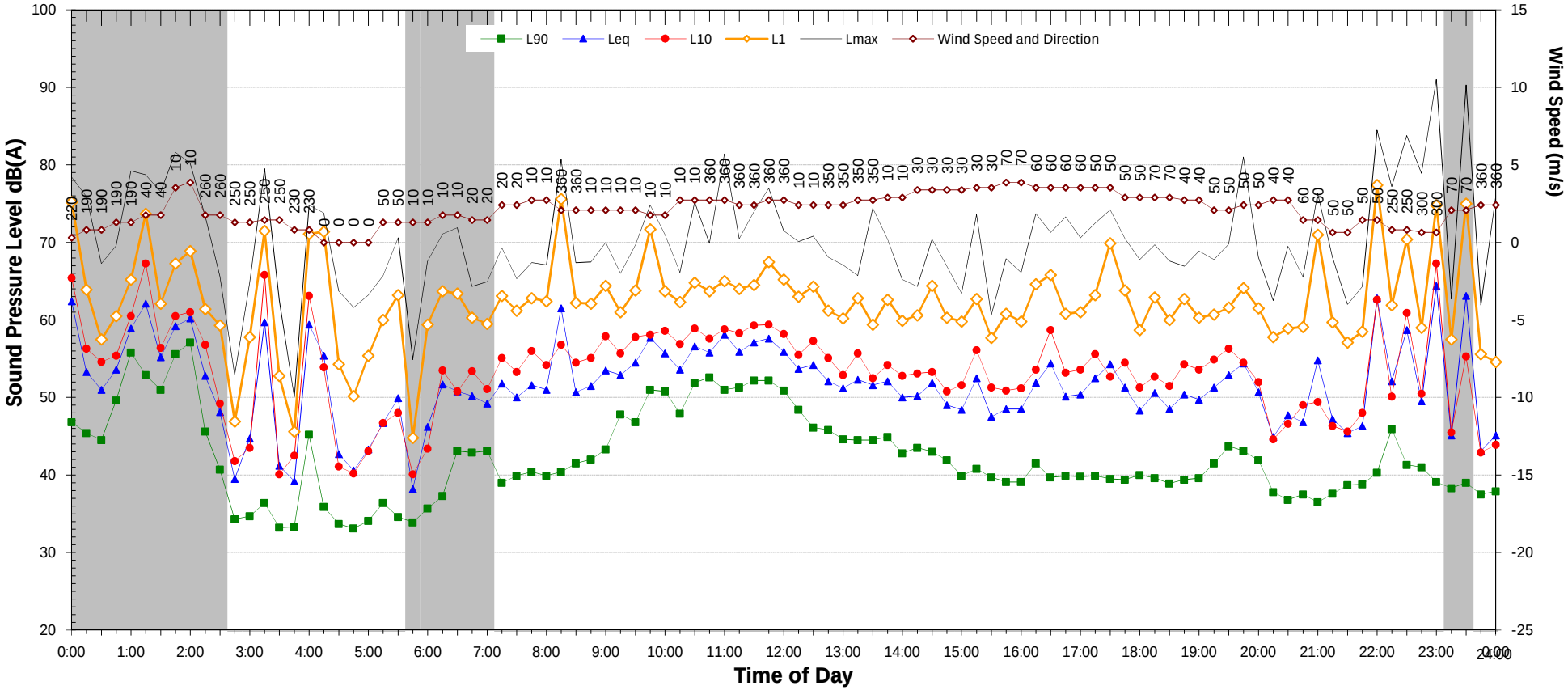
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

24 Pound Street, Grafton

Saturday, 18 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	39.5	36.8	34.5
LAeq	53.9	53.5	54.8

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	56.3	57.7
$L_{eq\ 1hr}$ upper 10 percentile	59.4	62.2
$L_{eq\ 1hr}$ lower 10 percentile	52.3	45.1

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	73.4	to	93.6
L_{Max} - L_{eq} (Range)	20.0	to	36.4

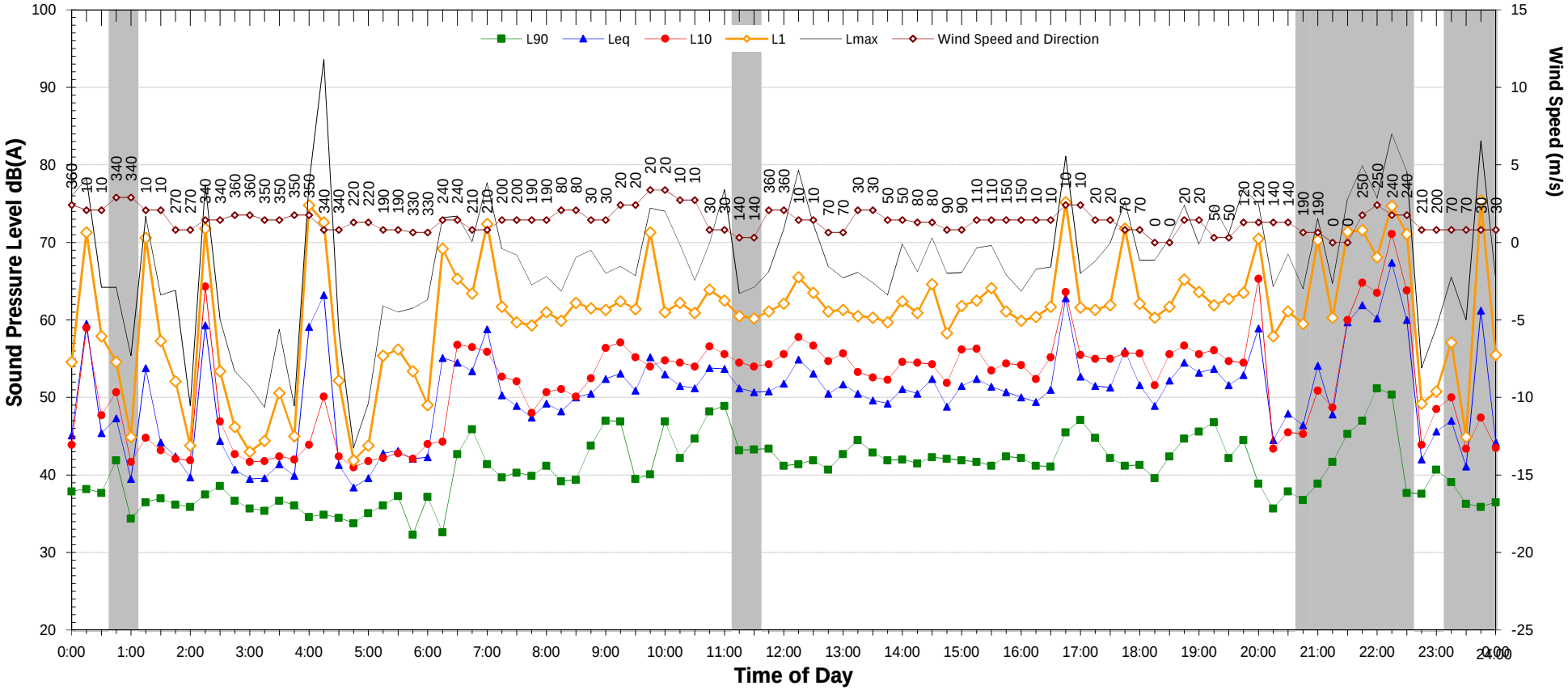
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

24 Pound Street, Grafton

Sunday, 19 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	40.1	-	-
LAeq	53.1	-	-

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	55.4	53.9
$L_{eq\ 1hr}$ upper 10 percentile	59.3	57.9
$L_{eq\ 1hr}$ lower 10 percentile	50.2	42.8

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	65.0	to	79.1
L_{Max} - L_{eq} (Range)	21.2	to	24.0

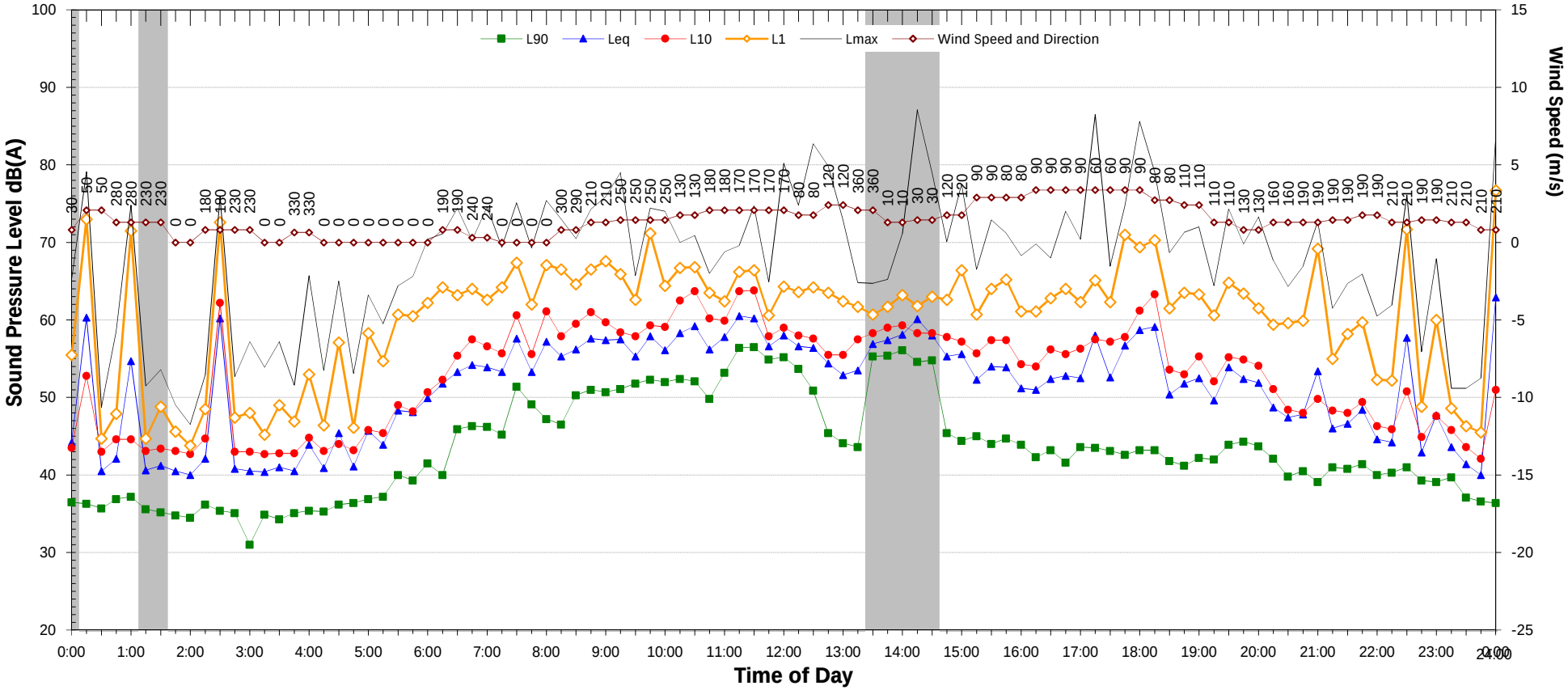
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

24 Pound Street, Grafton

Monday, 20 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	43.1	39.8	33.2
LAeq	56.4	52.0	54.1

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	58.0	56.6
$L_{eq\ 1hr}$ upper 10 percentile	61.1	61.5
$L_{eq\ 1hr}$ lower 10 percentile	51.2	43.5

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	73.5	to	90.8
L_{Max} - L_{eq} (Range)	18.5	to	31.8

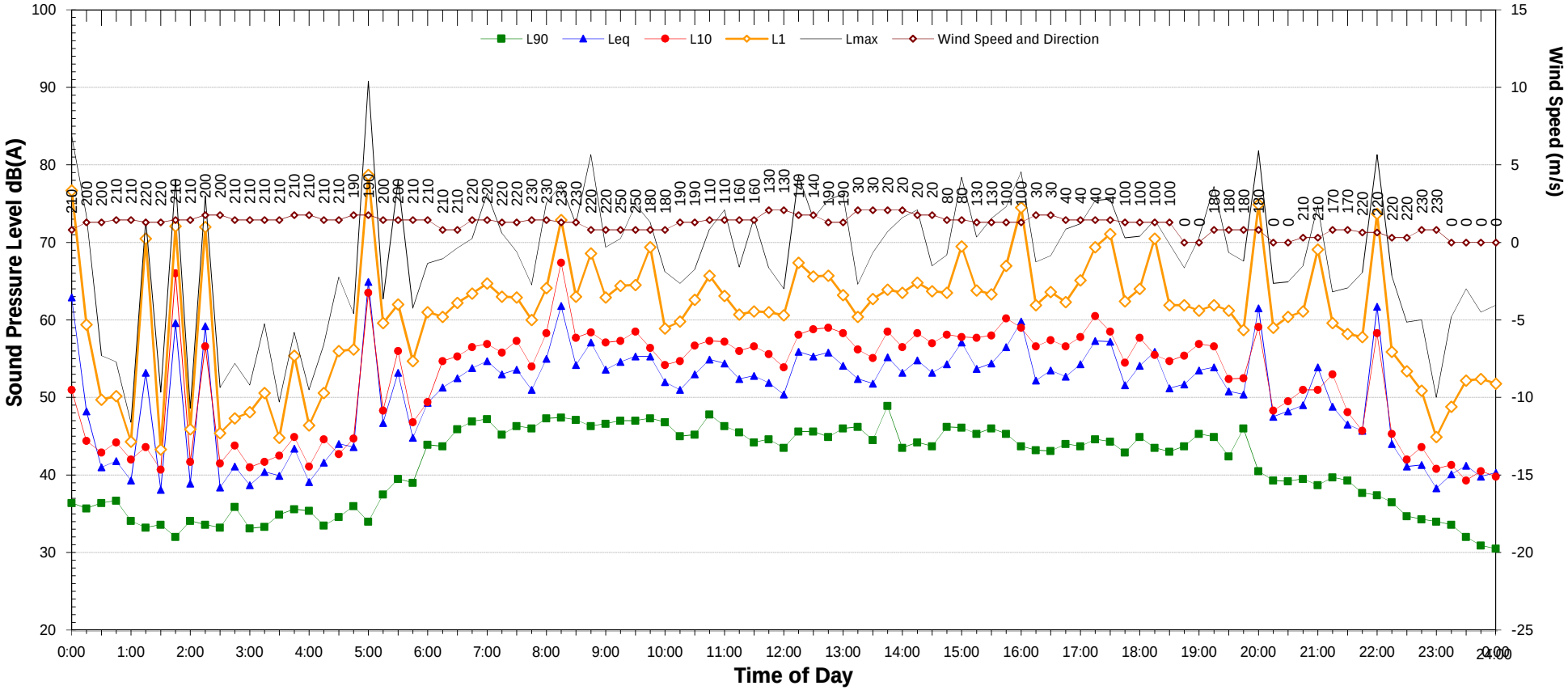
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

24 Pound Street, Grafton

Tuesday, 21 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	43.5	37.7	32.0
LAeq	55.0	54.8	53.2

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	57.4	55.7
$L_{eq\ 1hr}$ upper 10 percentile	59.9	61.0
$L_{eq\ 1hr}$ lower 10 percentile	53.8	42.9

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	65.7	to	86.5
L_{Max} - L_{eq} (Range)	18.0	to	28.0

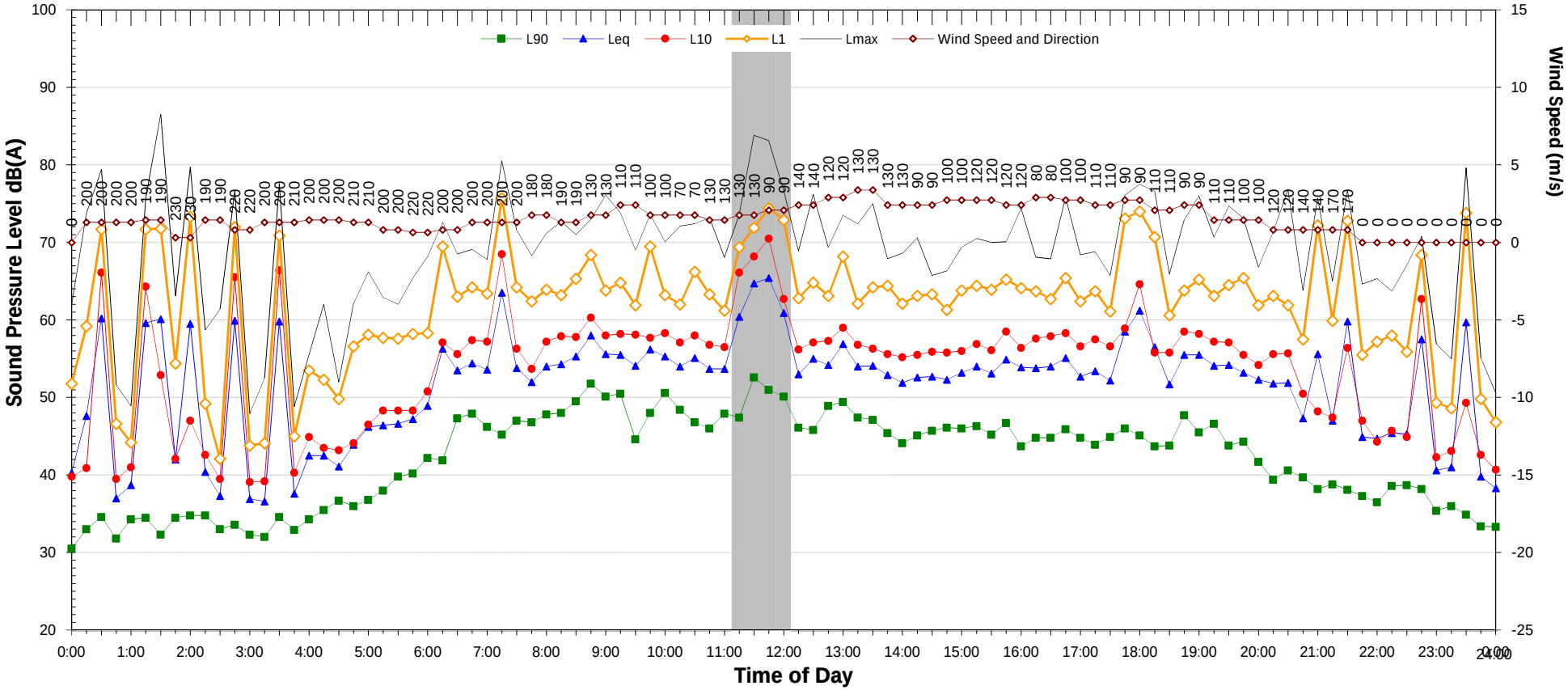
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

24 Pound Street, Grafton

Wednesday, 22 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	44.7	37.3	31.0
LAeq	55.5	54.0	53.6

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	57.6	56.1
$L_{eq\ 1hr}$ upper 10 percentile	60.8	60.4
$L_{eq\ 1hr}$ lower 10 percentile	55.1	42.9

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	70.8	to	87.7
L_{Max} - L_{eq} (Range)	18.7	to	29.8

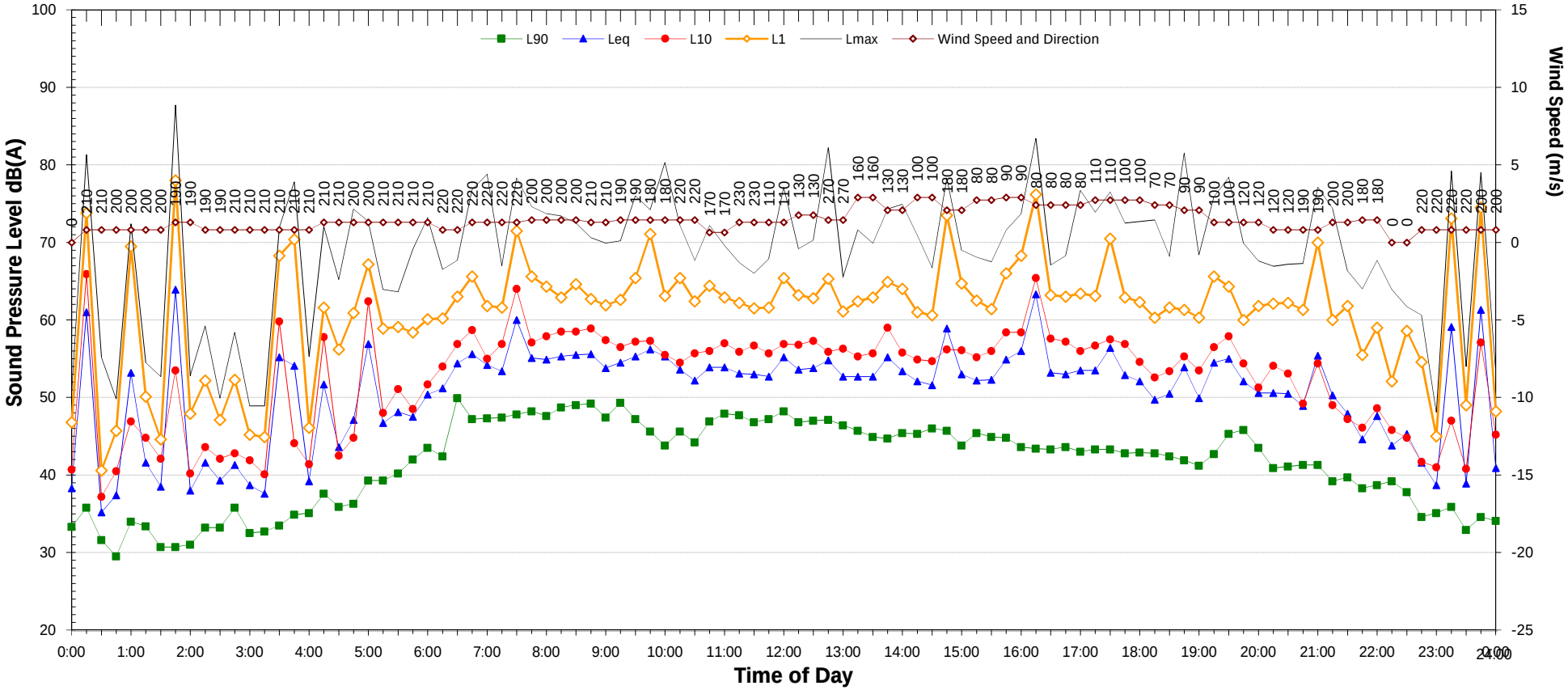
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

24 Pound Street, Grafton

Thursday, 23 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	43.3	38.7	29.0
LAeq	55.1	51.6	56.0

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	56.9	58.5
$L_{eq\ 1hr}$ upper 10 percentile	60.1	65.0
$L_{eq\ 1hr}$ lower 10 percentile	52.5	45.0

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	66.9	to	96.5
L_{Max} - L_{eq} (Range)	20.9	to	34.0

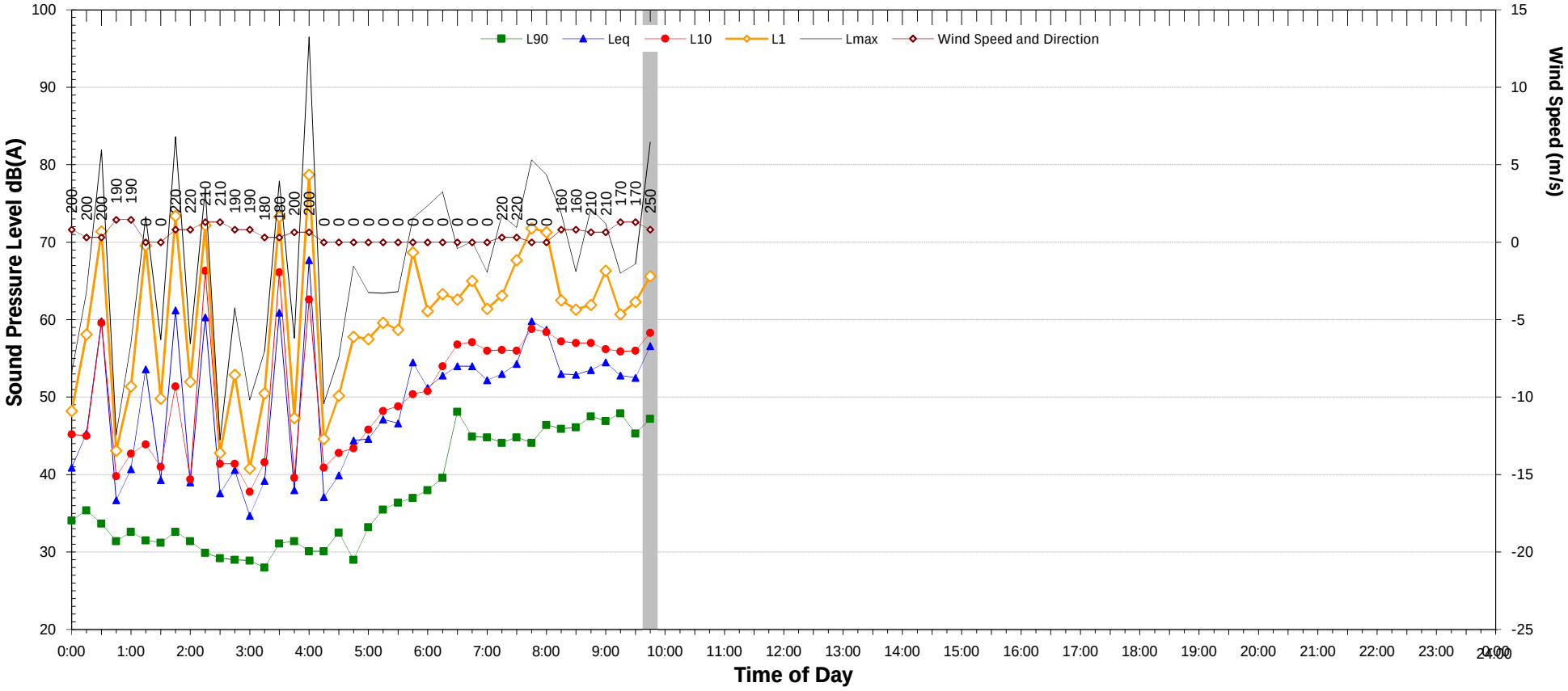
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

24 Pound Street, Grafton

Friday, 24 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	-	-	-
LAeq	-	-	-

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	-	to	-
L_{Max} - L_{eq} (Range)	-	to	-

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	57.9	-
$L_{eq\ 1hr}$ upper 10 percentile	59.8	-
$L_{eq\ 1hr}$ lower 10 percentile	55.2	-

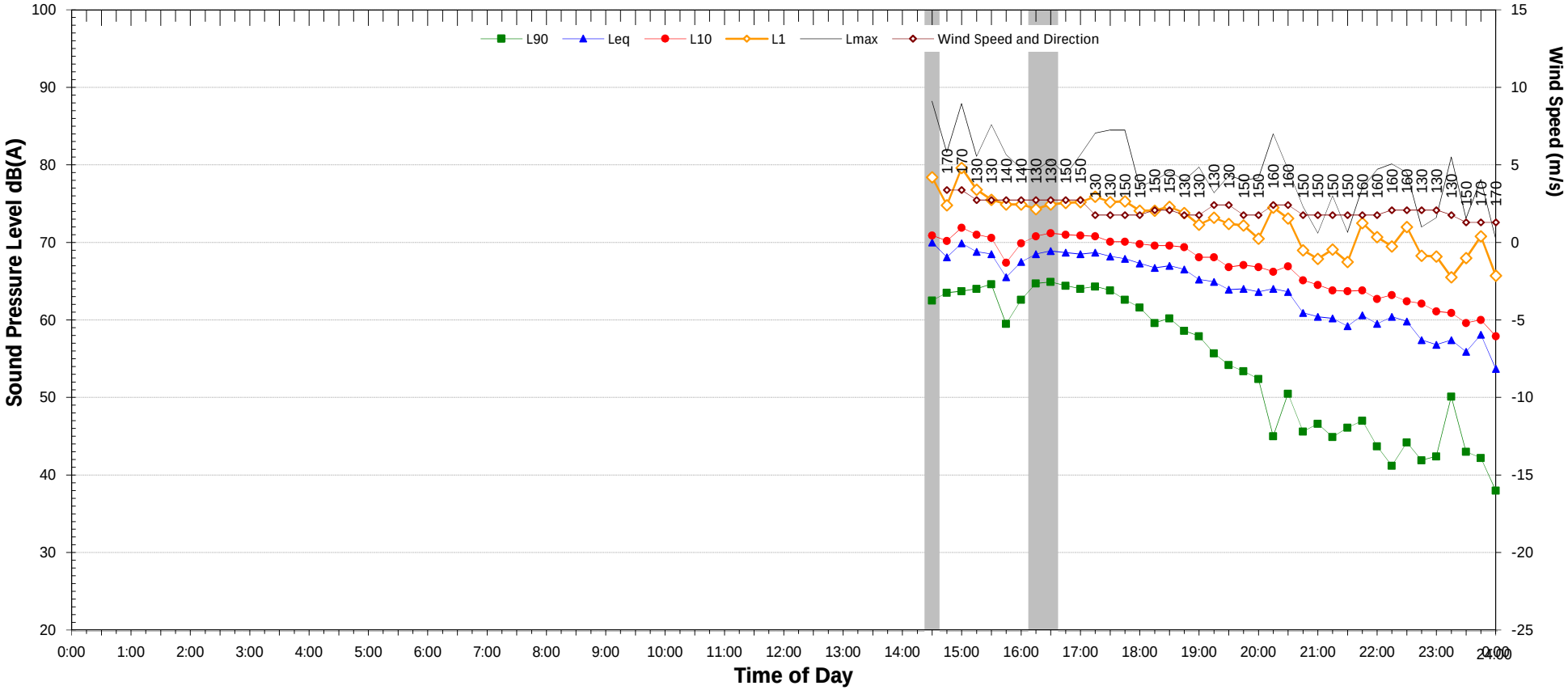
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

26 Bent Street, Grafton

Monday, 13 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	-	44.9	37.0
LAeq	-	63.9	60.9

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	68.8	63.4
$L_{eq\ 1hr}$ upper 10 percentile	71.6	68.9
$L_{eq\ 1hr}$ lower 10 percentile	62.4	55.6

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	73.2	to	87.5
L_{Max} - L_{eq} (Range)	17.3	to	26.6

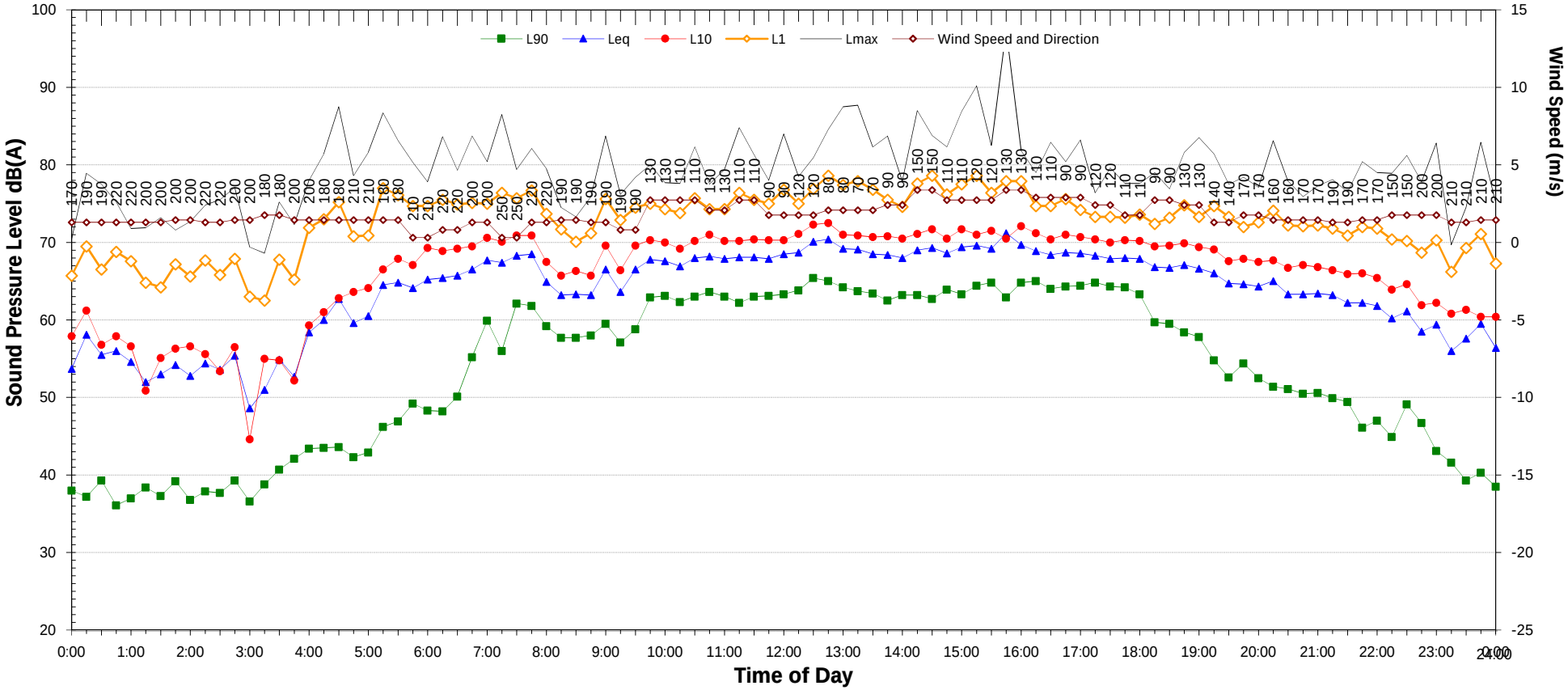
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

26 Bent Street, Grafton

Tuesday, 14 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	58.0	47.0	35.6
LAeq	68.3	64.8	61.2

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	70.1	63.7
$L_{eq\ 1hr}$ upper 10 percentile	72.3	70.0
$L_{eq\ 1hr}$ lower 10 percentile	65.7	56.0

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	76.9	to	83.3
L_{Max} - L_{eq} (Range)	15.8	to	25.3

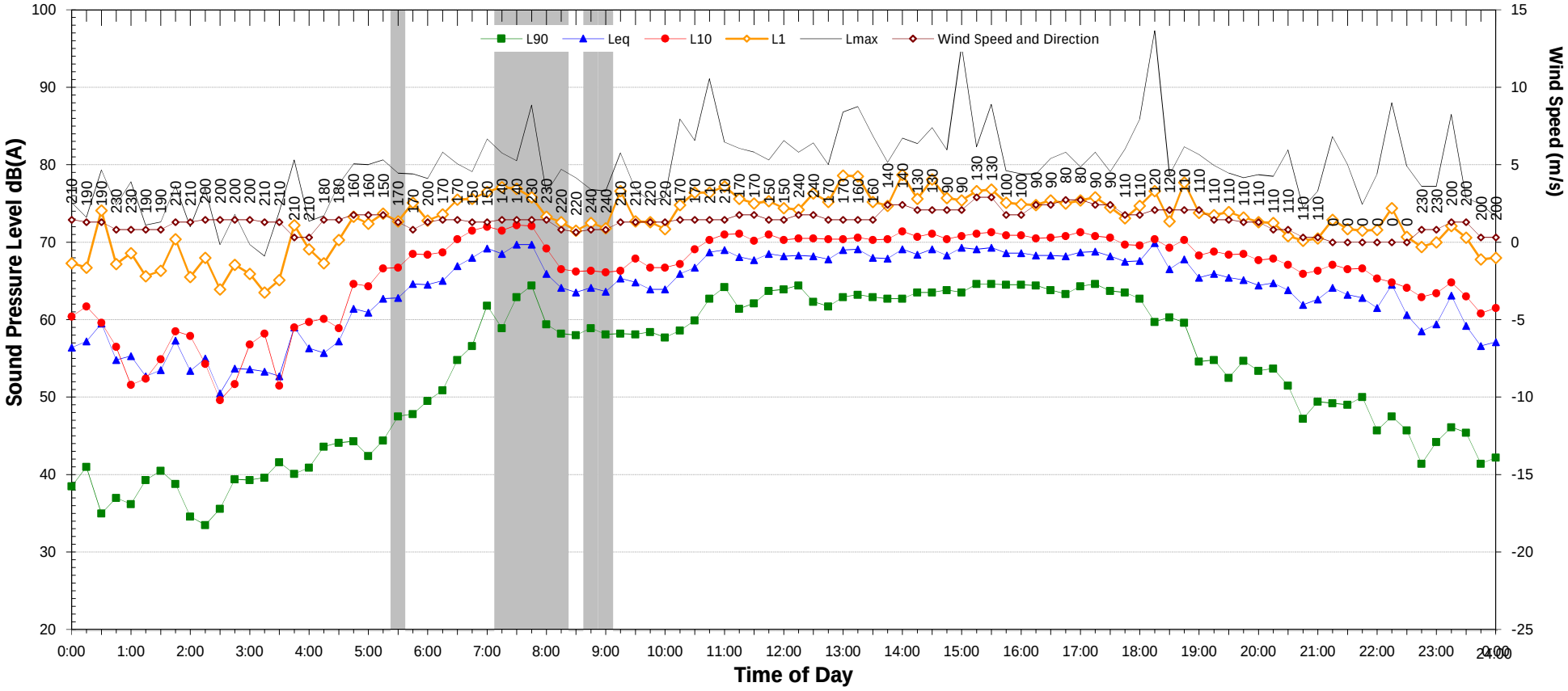
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

26 Bent Street, Grafton

Wednesday, 15 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	58.2	47.2	38.7
LAeq	68.0	65.3	61.8

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	76.4	to	89.5
L_{Max} - L_{eq} (Range)	19.9	to	26.7

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	69.8	64.3
$L_{eq\ 1hr}$ upper 10 percentile	71.4	70.1
$L_{eq\ 1hr}$ lower 10 percentile	65.7	57.0

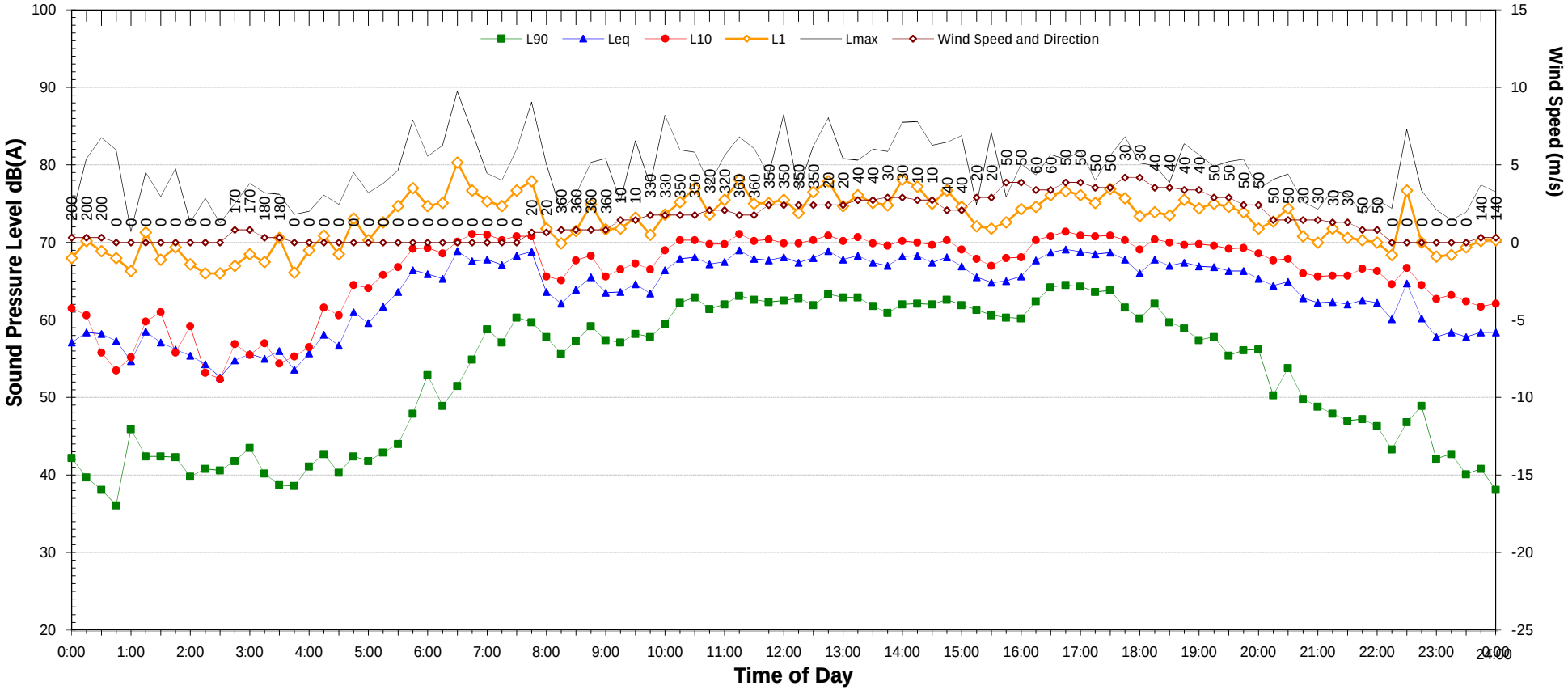
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

26 Bent Street, Grafton

Thursday, 16 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	57.4	47.0	38.2
LAeq	67.2	65.3	61.3

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	69.3	63.8
$L_{eq\ 1hr}$ upper 10 percentile	70.9	69.6
$L_{eq\ 1hr}$ lower 10 percentile	65.5	56.7

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	74.3	to	84.6
L_{Max} - L_{eq} (Range)	16.4	to	24.5

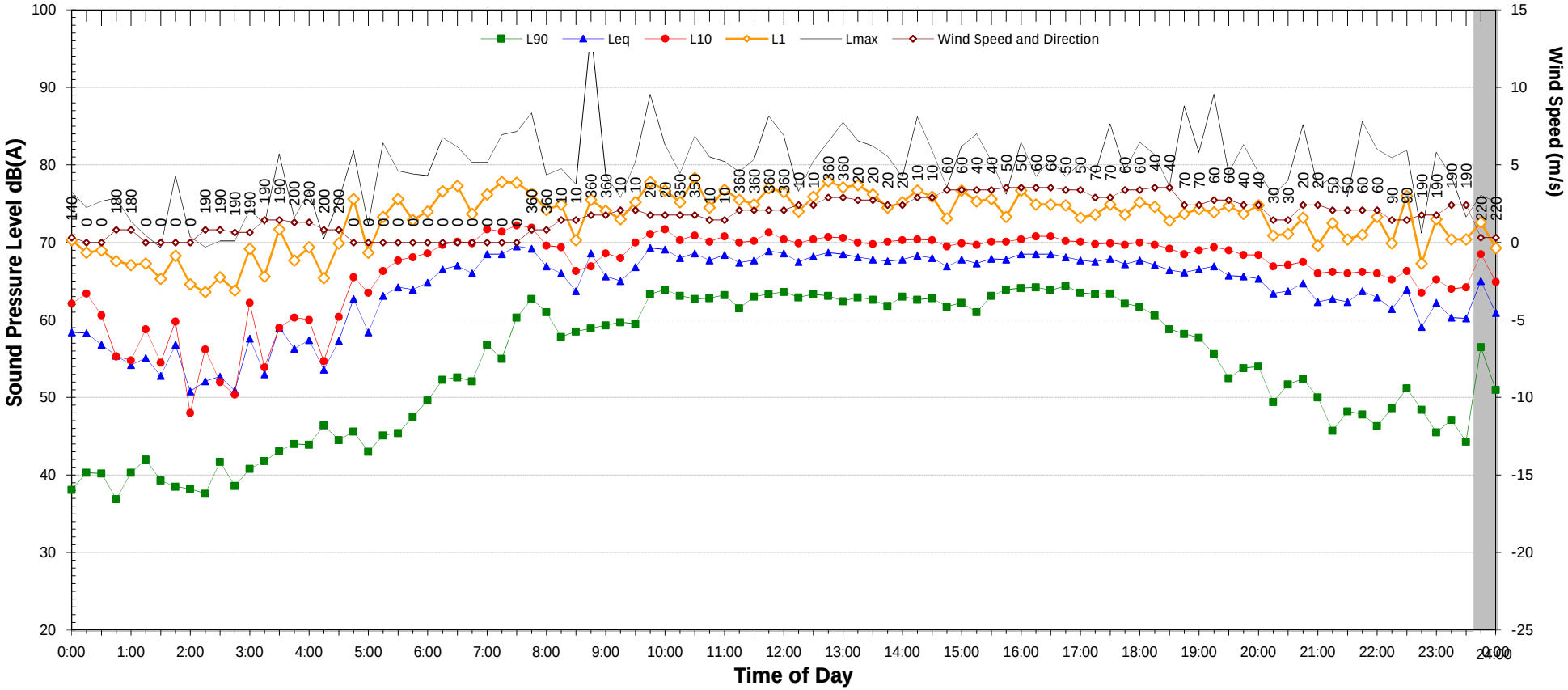
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

26 Bent Street, Grafton

Friday, 17 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	59.3	46.3	-
LAeq	67.9	65.0	-

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	69.8	63.4
$L_{eq\ 1hr}$ upper 10 percentile	70.9	67.1
$L_{eq\ 1hr}$ lower 10 percentile	65.8	57.9

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	76.4	to	81.9
L_{Max} - L_{eq} (Range)	16.3	to	23.5

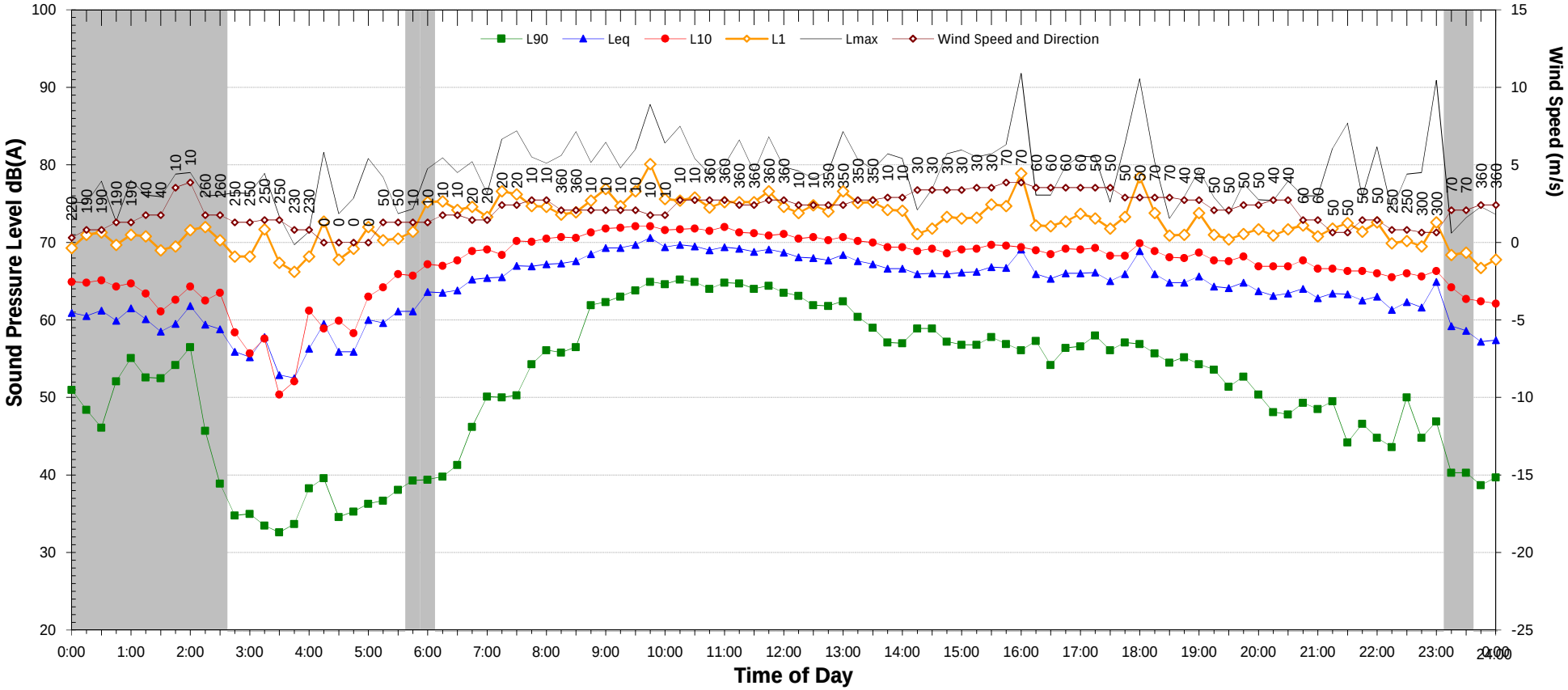
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

26 Bent Street, Grafton

Saturday, 18 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	55.8	44.8	32.5
LAeq	67.8	64.1	58.8

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	69.6	60.5
$L_{eq\ 1hr}$ upper 10 percentile	72.1	65.3
$L_{eq\ 1hr}$ lower 10 percentile	65.7	55.3

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	72.2	to	90.9
L_{Max} - L_{eq} (Range)	15.1	to	28.1

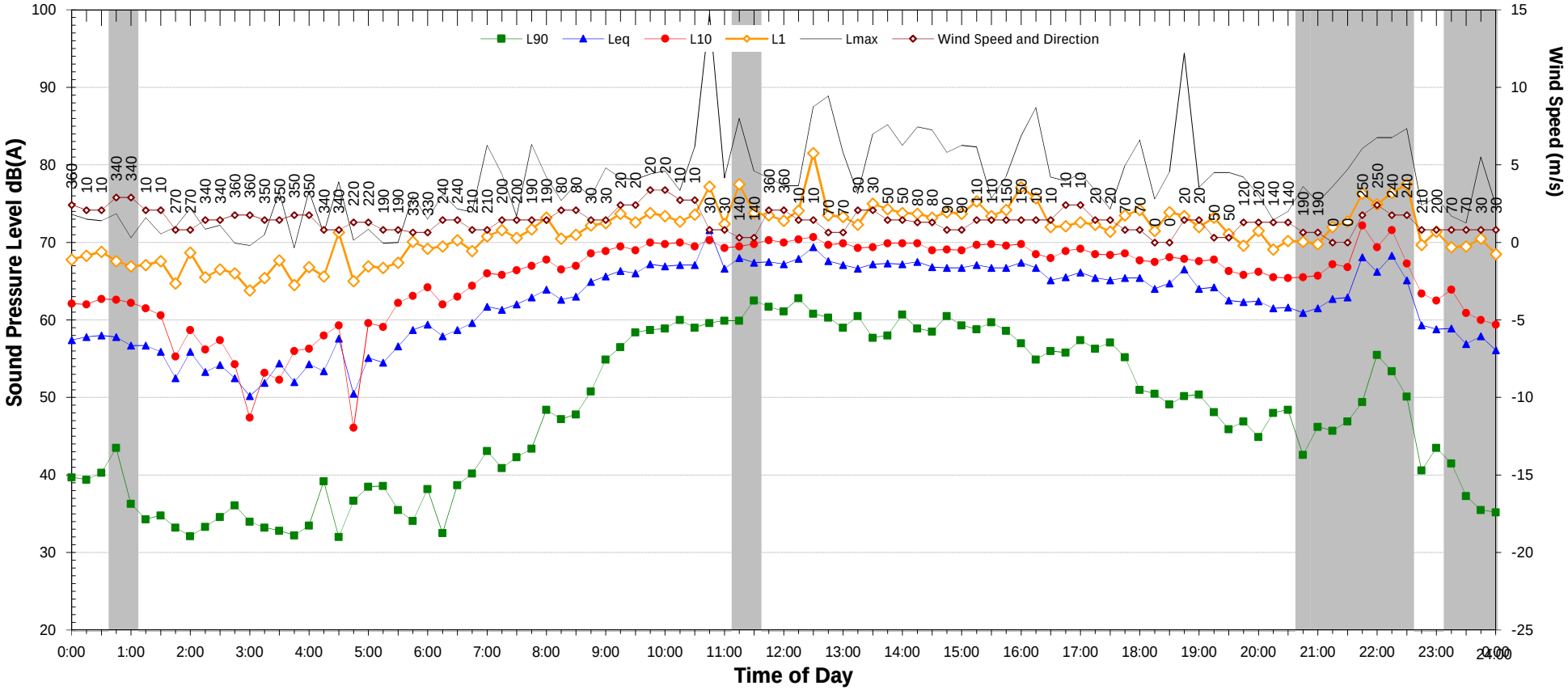
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

26 Bent Street, Grafton

Sunday, 19 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	51.0	-	-
LAeq	66.9	-	-

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	68.7	65.7
$L_{eq\ 1hr}$ upper 10 percentile	70.9	71.3
$L_{eq\ 1hr}$ lower 10 percentile	64.5	58.6

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	75.8	to	90.3
L_{Max} - L_{eq} (Range)	16.7	to	30.5

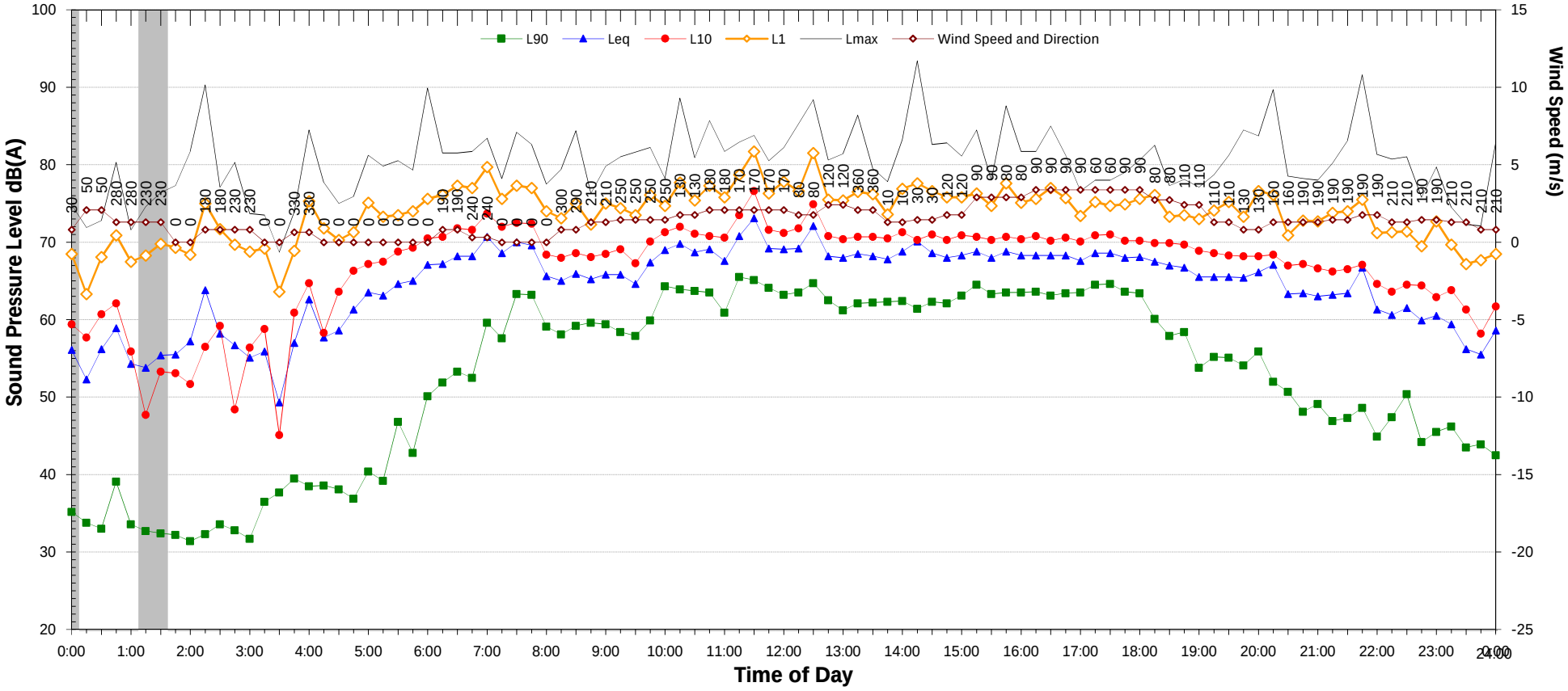
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

26 Bent Street, Grafton

Monday, 20 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	59.1	46.9	39.2
LAeq	68.6	65.4	61.3

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	70.5	63.8
$L_{eq\ 1hr}$ upper 10 percentile	72.8	69.6
$L_{eq\ 1hr}$ lower 10 percentile	66.8	54.7

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	75.4	to	85.3
L_{Max} - L_{eq} (Range)	16.2	to	25.2

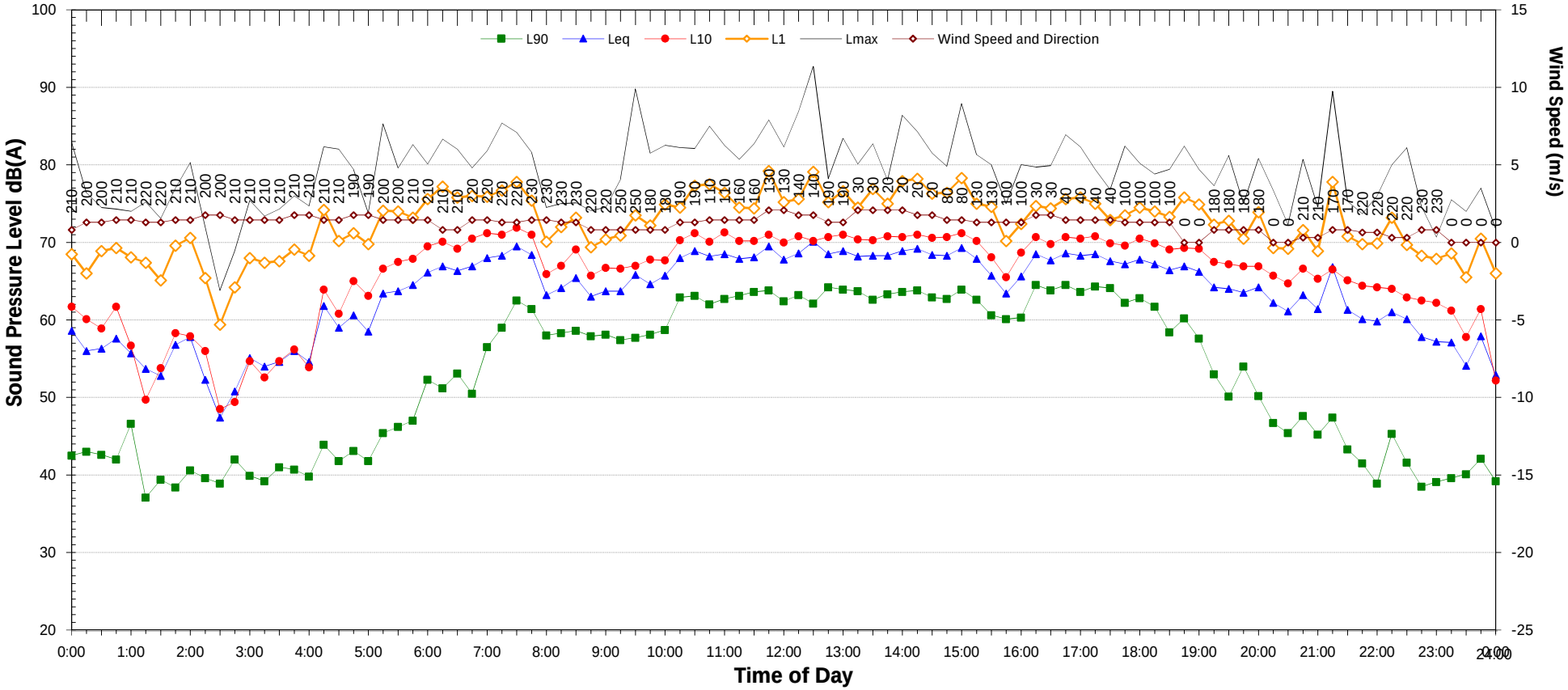
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

26 Bent Street, Grafton

Tuesday, 21 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	58.1	41.5	38.8
LAeq	67.7	64.3	60.5

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	69.5	63.0
$L_{eq\ 1hr}$ upper 10 percentile	71.5	68.9
$L_{eq\ 1hr}$ lower 10 percentile	65.1	56.1

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	72.4	to	83.0
L_{Max} - L_{eq} (Range)	16.6	to	23.5

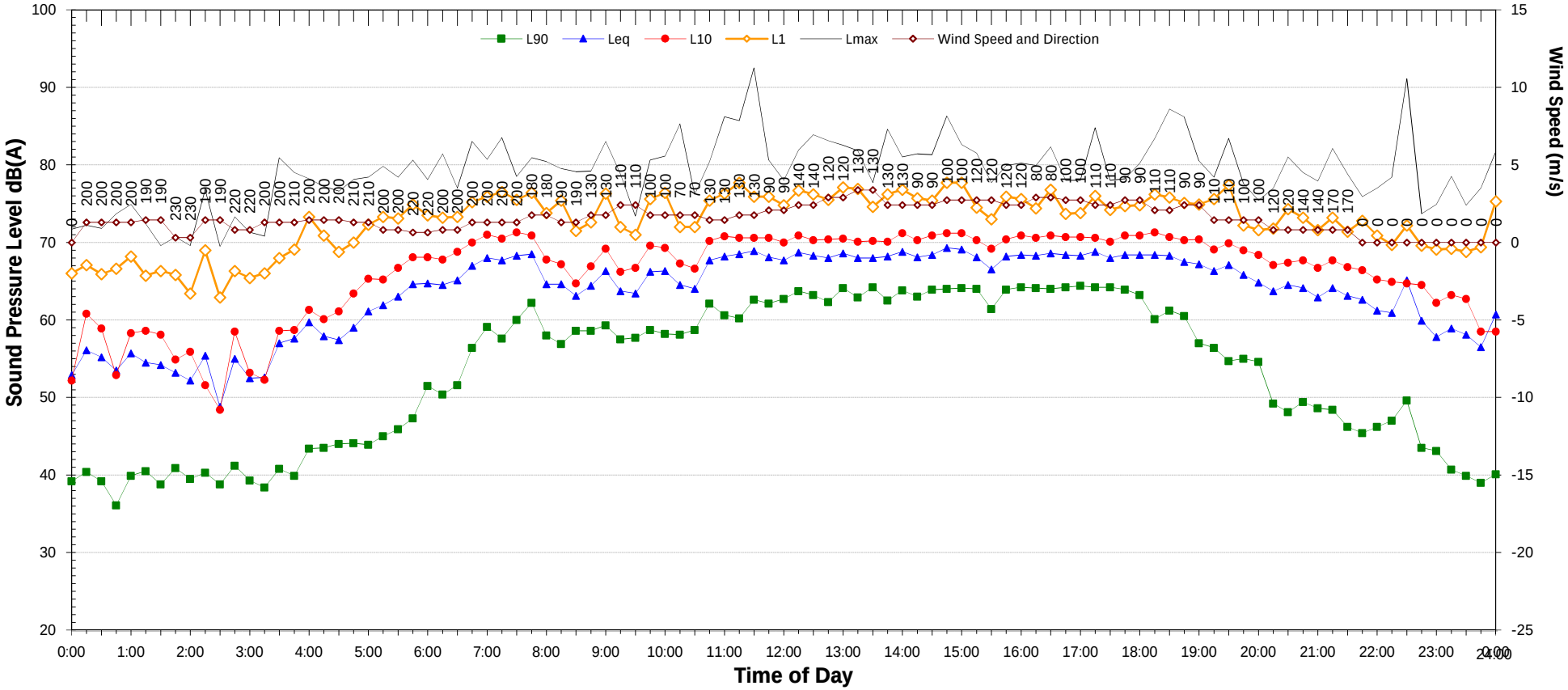
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

26 Bent Street, Grafton

Wednesday, 22 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	58.0	46.2	37.9
LAeq	67.7	65.6	61.9

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	69.7	64.4
$L_{eq\ 1hr}$ upper 10 percentile	71.1	70.1
$L_{eq\ 1hr}$ lower 10 percentile	65.9	55.3

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	74.5	to	91.1
L_{Max} - L_{eq} (Range)	19.1	to	29.3

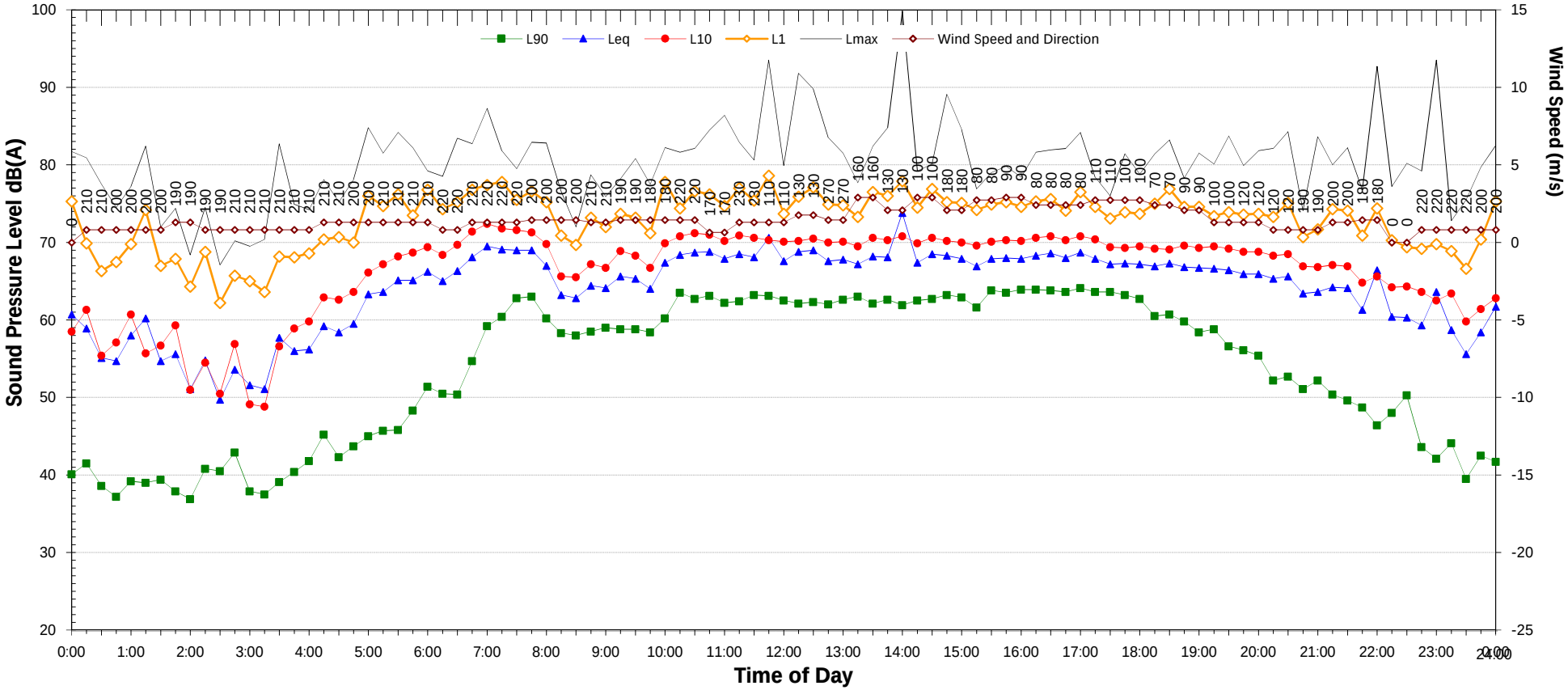
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

26 Bent Street, Grafton

Thursday, 23 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	58.8	48.7	38.6
LAeq	68.0	65.7	61.7

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	70.0	64.2
$L_{eq\ 1hr}$ upper 10 percentile	72.1	69.5
$L_{eq\ 1hr}$ lower 10 percentile	66.5	56.7

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	76.6	to	94.6
L_{Max} - L_{eq} (Range)	16.5	to	32.4

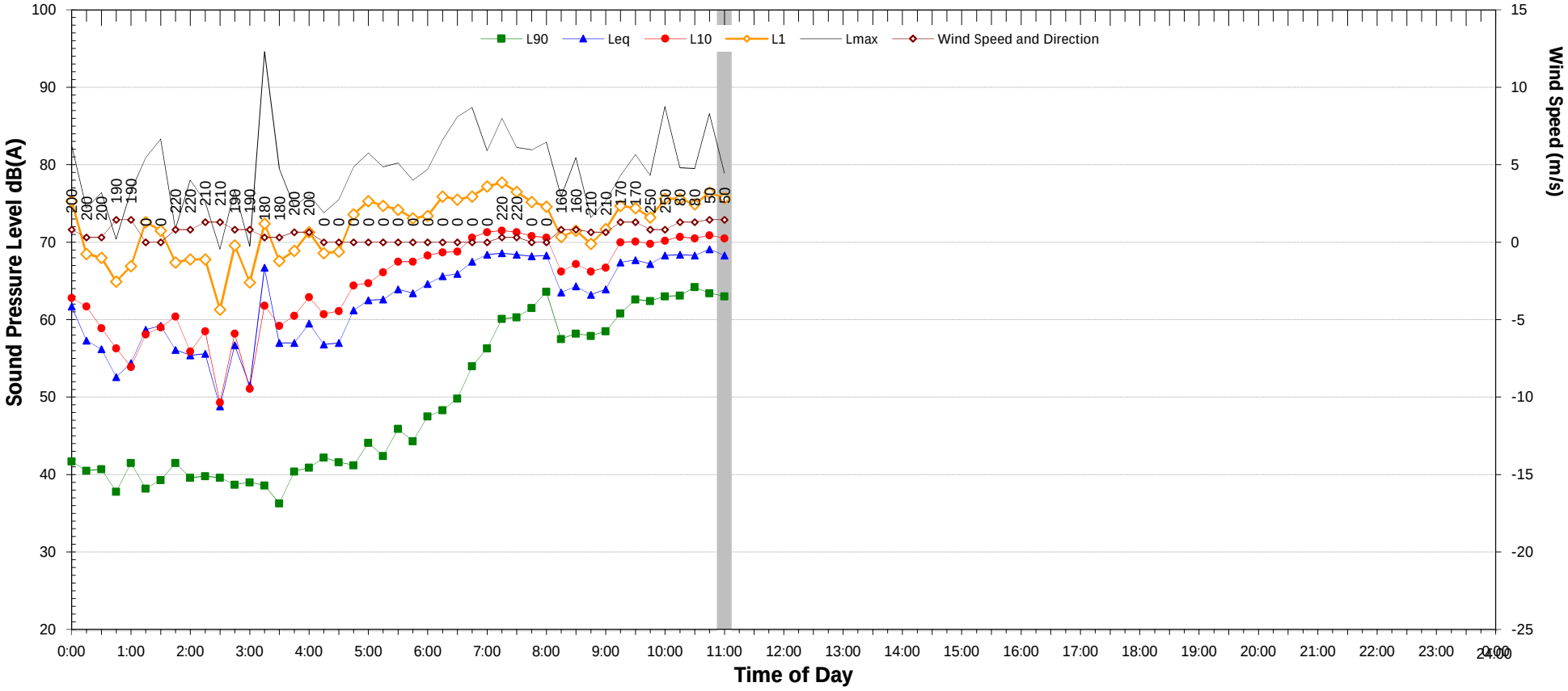
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

26 Bent Street, Grafton

Friday, 24 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	-	-	-
LAeq	-	-	-

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	-	to	-
L_{Max} - L_{eq} (Range)	-	to	-

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	69.9	-
$L_{eq\ 1hr}$ upper 10 percentile	71.1	-
$L_{eq\ 1hr}$ lower 10 percentile	66.2	-

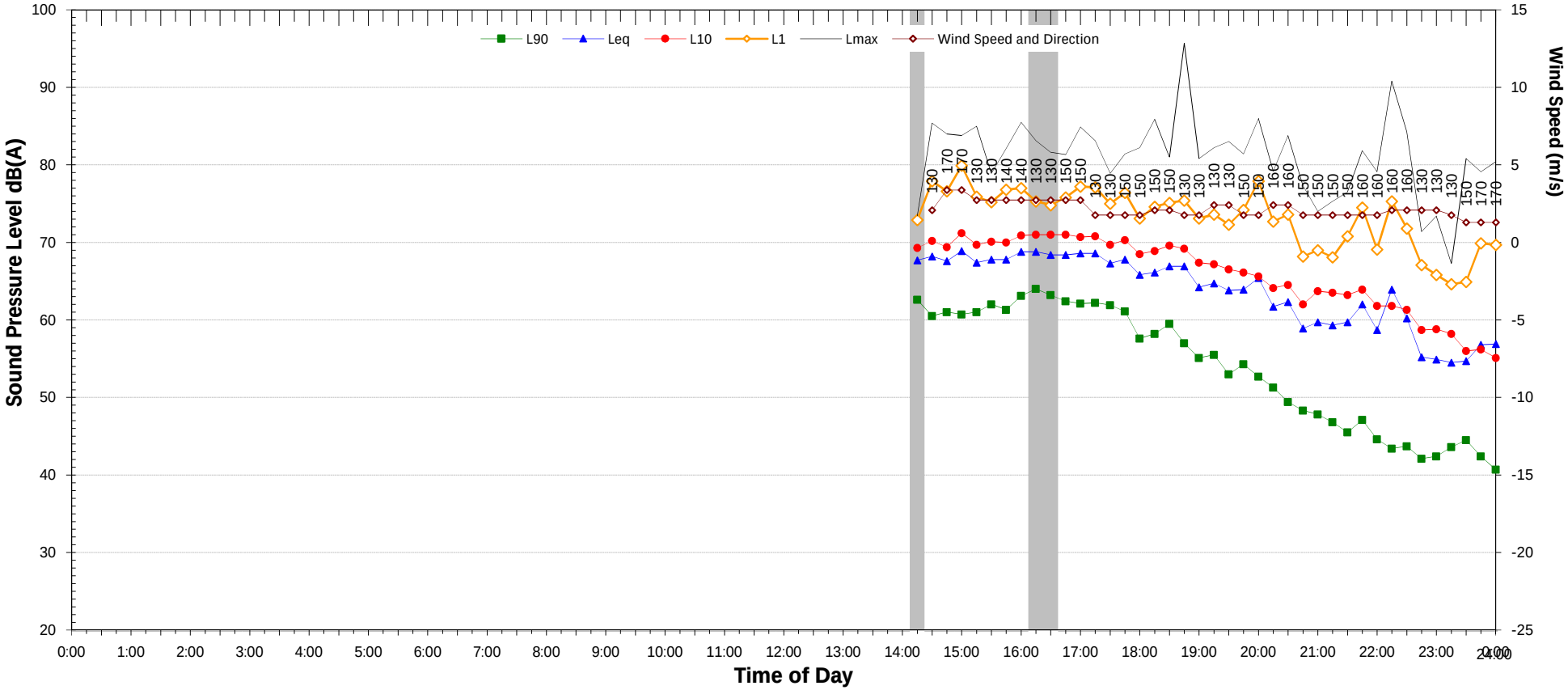
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

68 Spring Street, Grafton

Monday, 13 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	-	45.5	40.0
LAeq	-	63.6	60.9

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	68.6	63.4
$L_{eq\ 1hr}$ upper 10 percentile	71.0	69.2
$L_{eq\ 1hr}$ lower 10 percentile	62.6	55.6

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	77.0	to	93.6
L_{Max} - L_{eq} (Range)	19.4	to	30.6

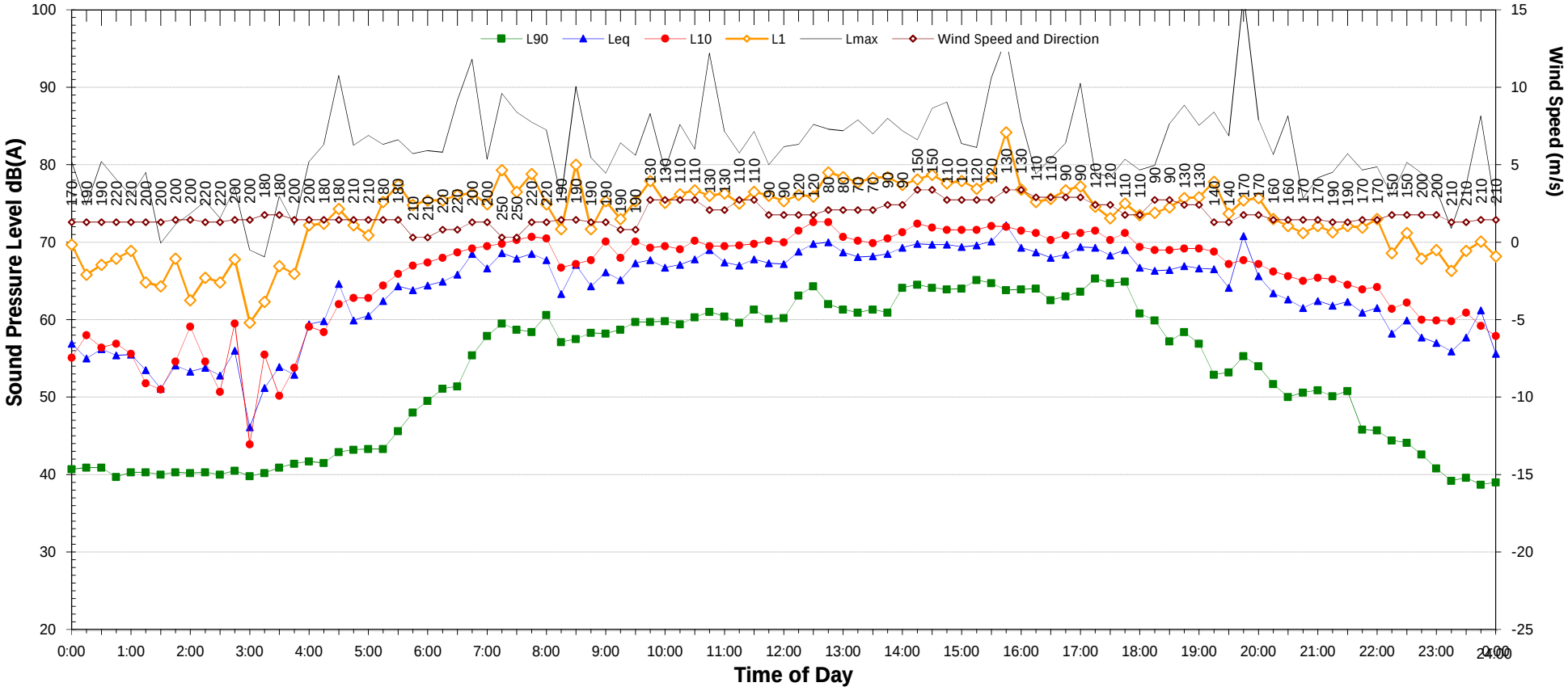
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

68 Spring Street, Grafton

Tuesday, 14 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	58.4	45.8	33.3
LAeq	68.4	65.3	60.7

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	71.5	to	86.3
L_{Max} - L_{eq} (Range)	17.4	to	30.3

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	70.3	63.2
$L_{eq\ 1hr}$ upper 10 percentile	72.6	69.6
$L_{eq\ 1hr}$ lower 10 percentile	64.6	53.1

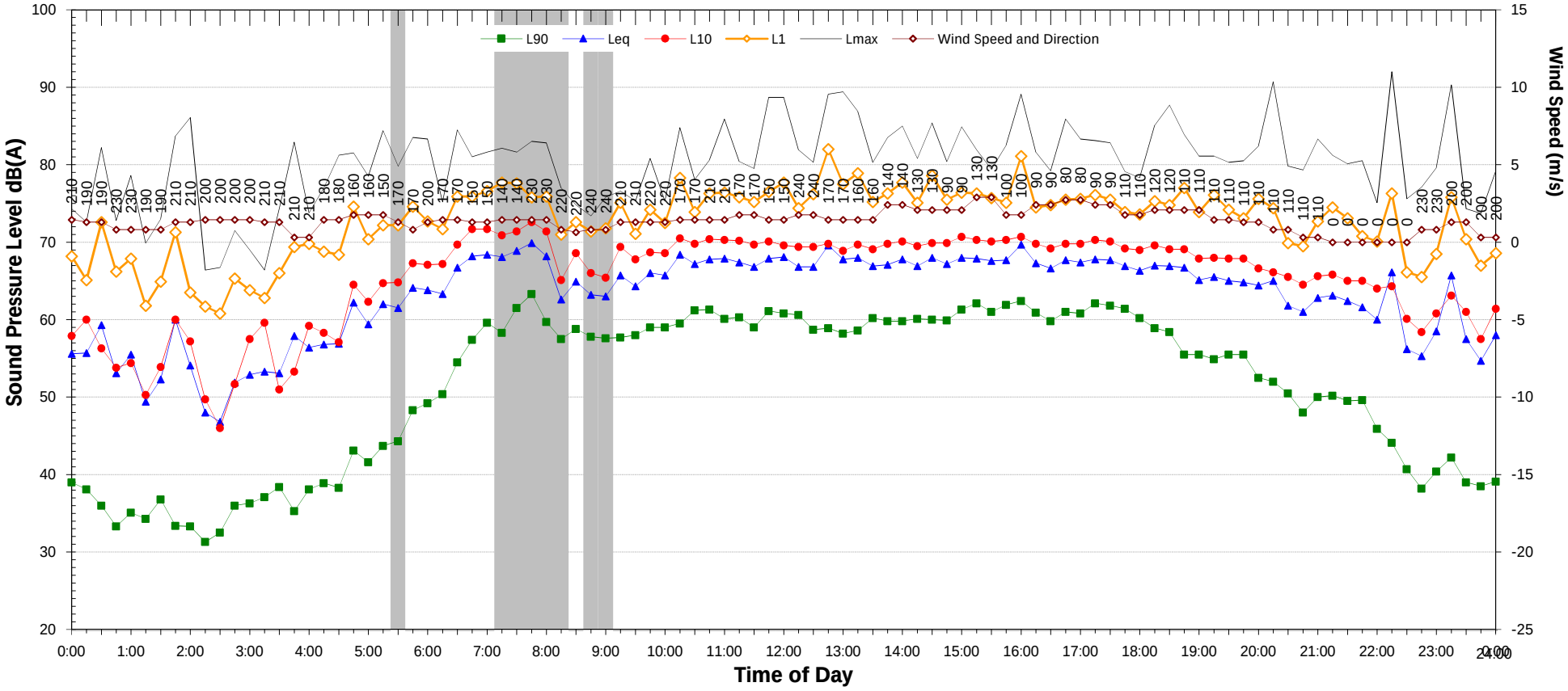
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

68 Spring Street, Grafton

Wednesday, 15 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	58.6	48.0	35.4
LAeq	67.4	64.4	61.5

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	69.2	64.0
$L_{eq\ 1hr}$ upper 10 percentile	70.7	70.1
$L_{eq\ 1hr}$ lower 10 percentile	64.8	55.3

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	78.0	to	92.0
L_{Max} - L_{eq} (Range)	18.3	to	30.6

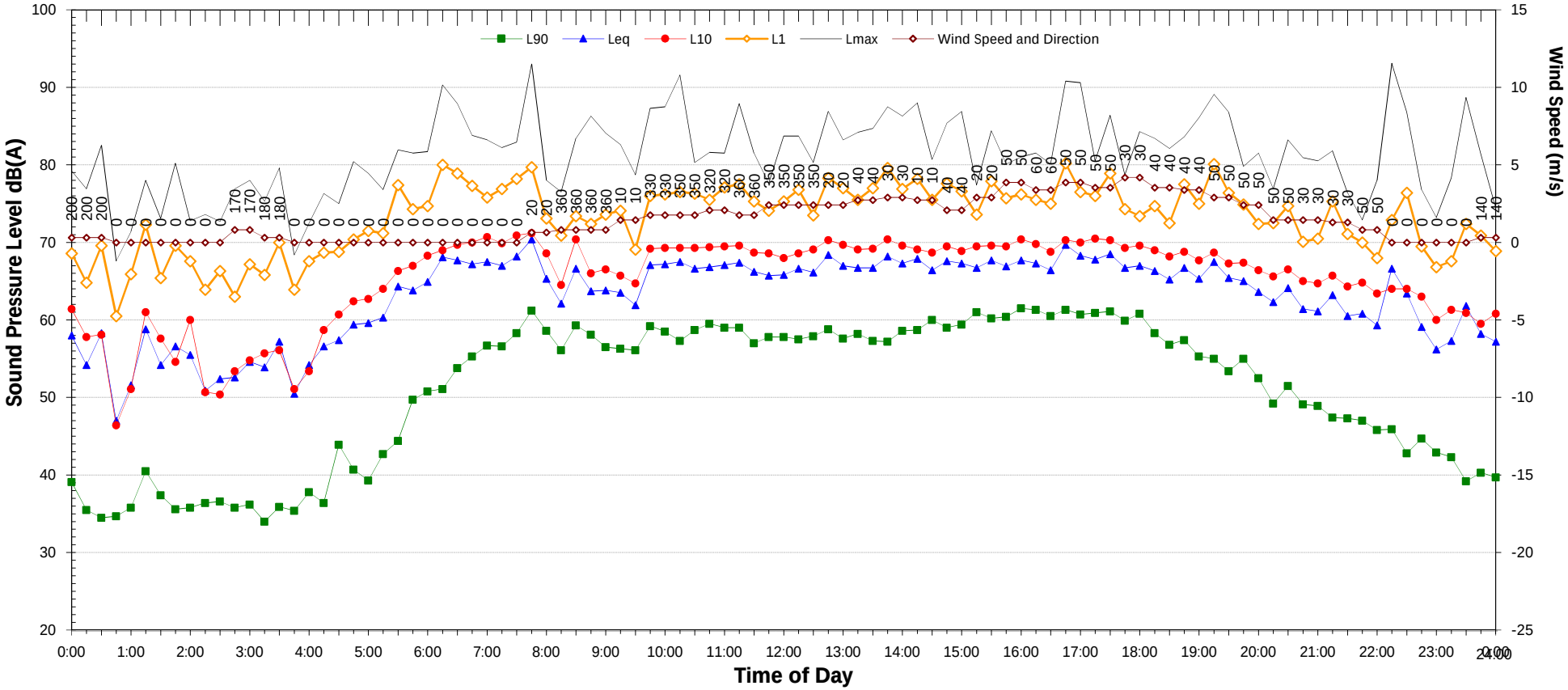
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

68 Spring Street, Grafton

Thursday, 16 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	56.6	47.0	36.3
LAeq	67.0	64.2	61.1

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	68.9	63.6
$L_{eq\ 1hr}$ upper 10 percentile	70.6	69.5
$L_{eq\ 1hr}$ lower 10 percentile	64.3	55.0

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	72.7	to	93.1
L_{Max} - L_{eq} (Range)	20.2	to	30.1

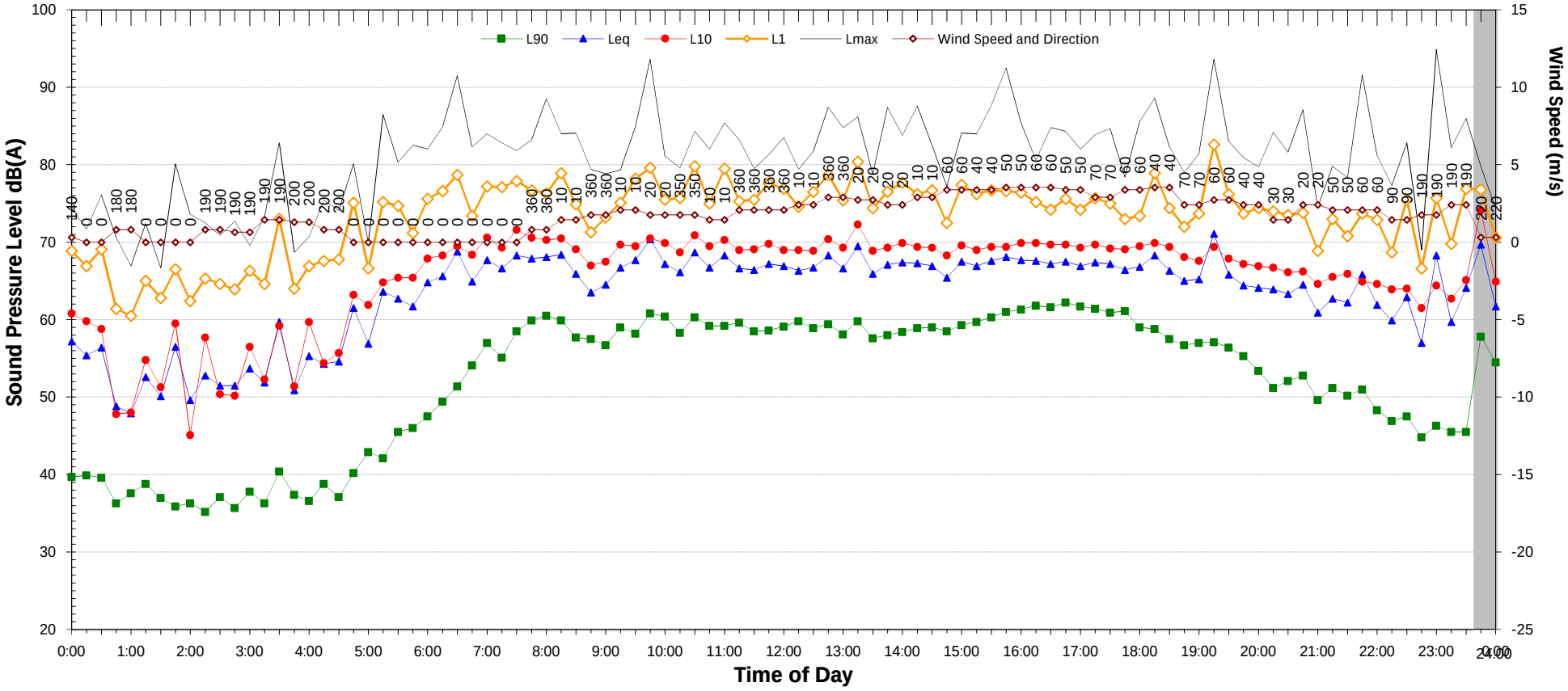
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

68 Spring Street, Grafton

Friday, 17 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	57.7	49.6	-
LAeq	67.3	65.5	-

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	69.4	64.0
$L_{eq\ 1hr}$ upper 10 percentile	70.5	66.6
$L_{eq\ 1hr}$ lower 10 percentile	65.9	56.0

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	74.8	to	94.9
L_{Max} - L_{eq} (Range)	16.3	to	30.8

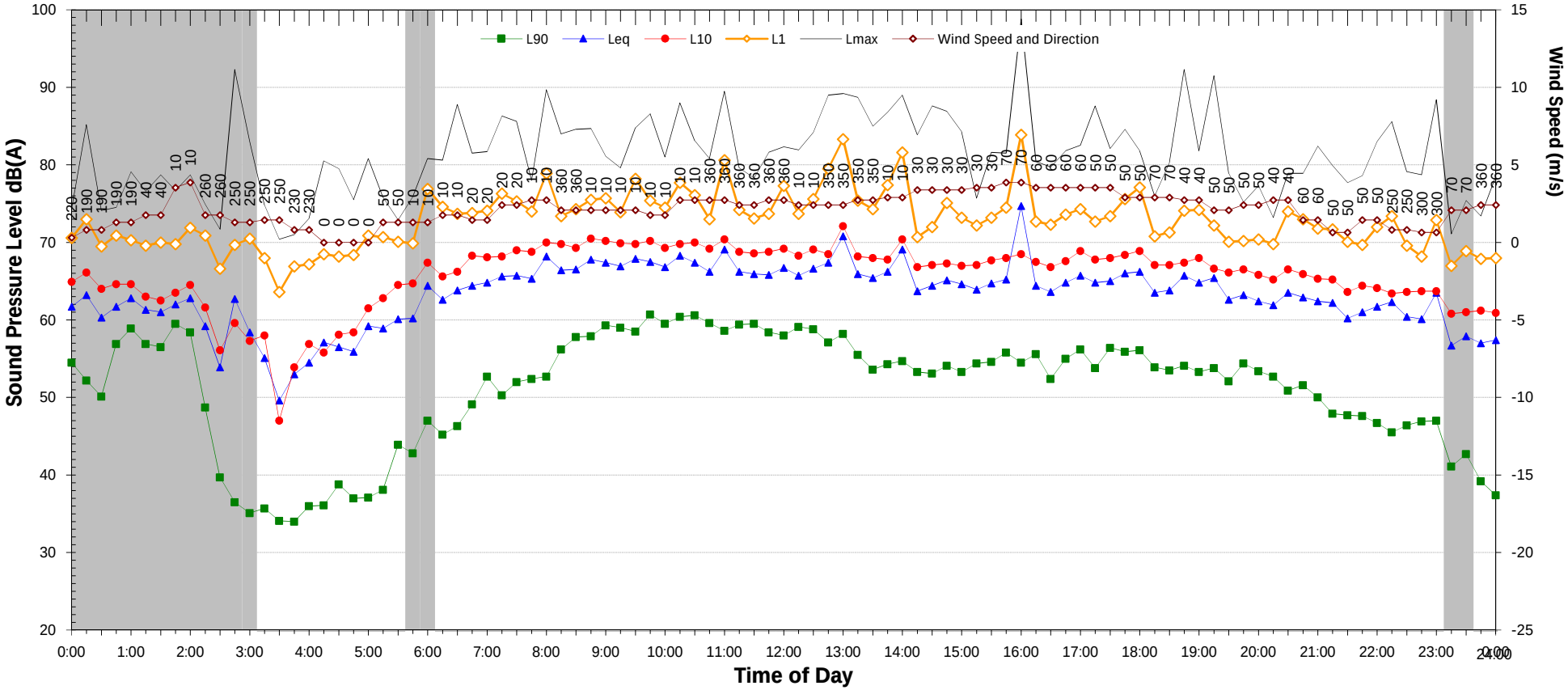
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

68 Spring Street, Grafton

Saturday, 18 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	52.7	47.6	32.9
LAeq	67.0	63.2	58.1

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	68.8	59.5
$L_{eq\ 1hr}$ upper 10 percentile	71.5	64.3
$L_{eq\ 1hr}$ lower 10 percentile	64.6	54.0

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	72.3	to	88.4
L_{Max} - L_{eq} (Range)	18.5	to	26.6

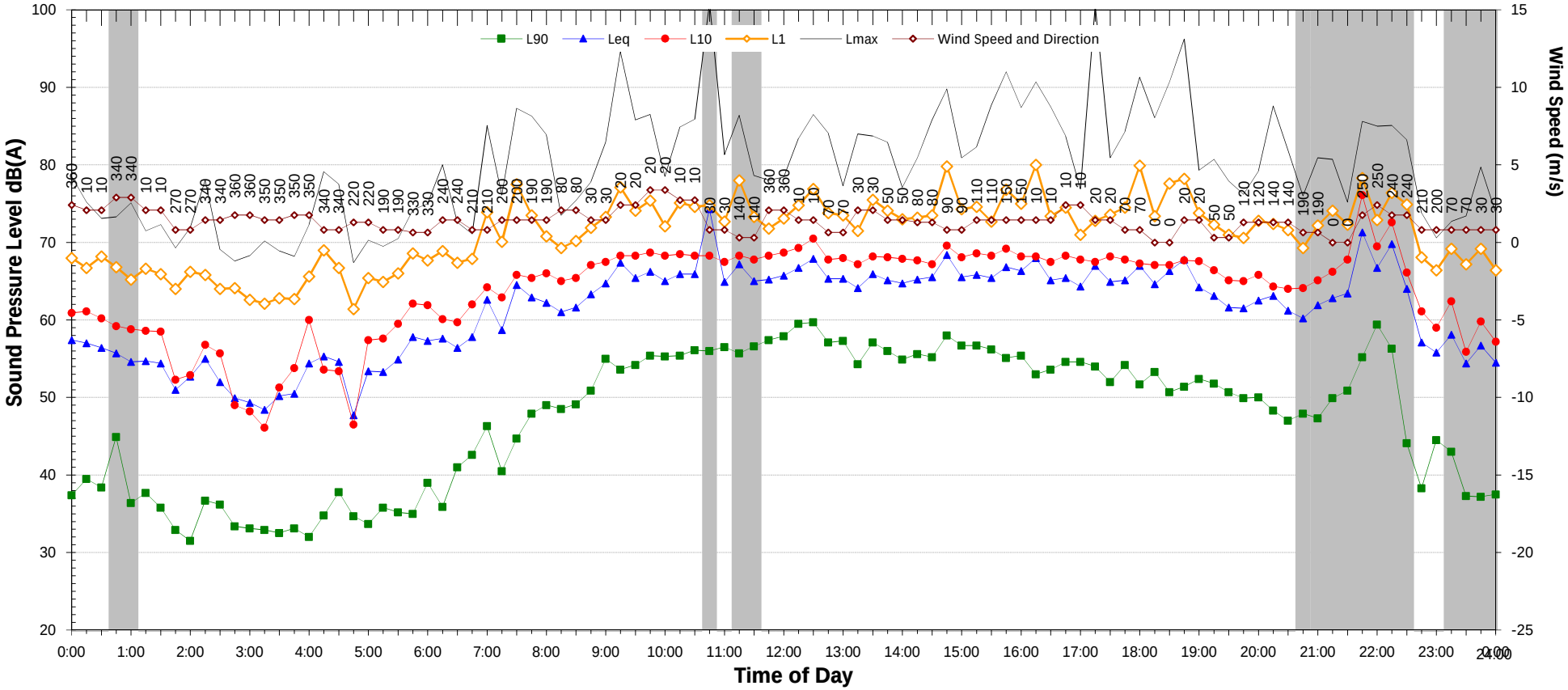
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

68 Spring Street, Grafton

Sunday, 19 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	51.7	-	-
LAeq	65.7	-	-

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	67.8	64.5
$L_{eq\ 1hr}$ upper 10 percentile	68.9	70.2
$L_{eq\ 1hr}$ lower 10 percentile	64.7	57.4

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	73.8	to	91.0
L_{Max} - L_{eq} (Range)	17.3	to	26.3

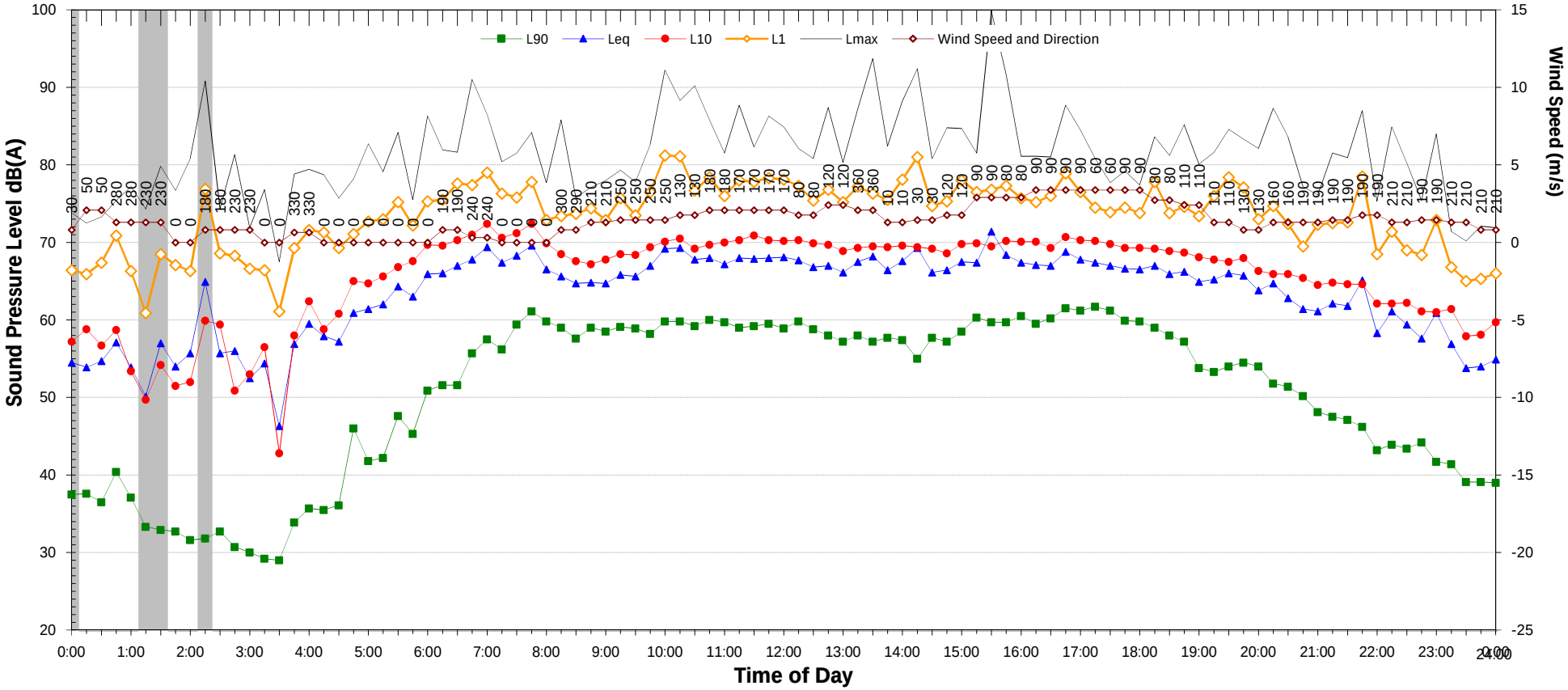
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

68 Spring Street, Grafton

Monday, 20 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	57.2	46.2	35.9
LAeq	67.5	64.4	60.4

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	69.4	62.9
$L_{eq\ 1hr}$ upper 10 percentile	71.1	68.9
$L_{eq\ 1hr}$ lower 10 percentile	65.1	53.6

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	72.1	to	90.8
L_{Max} - L_{eq} (Range)	17.0	to	27.2

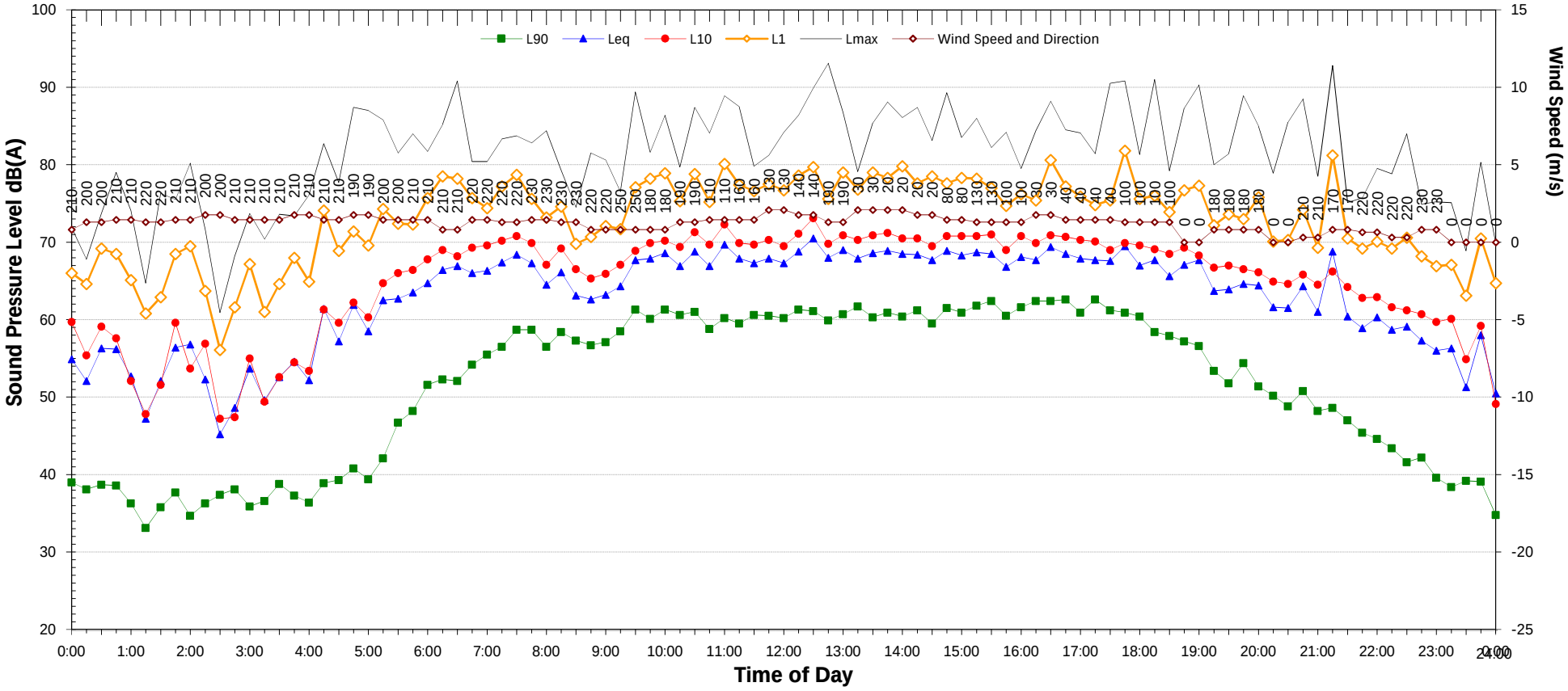
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

68 Spring Street, Grafton

Tuesday, 21 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	57.3	45.4	34.7
LAeq	67.9	64.8	60.0

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	69.7	62.5
$L_{eq\ 1hr}$ upper 10 percentile	71.3	68.6
$L_{eq\ 1hr}$ lower 10 percentile	65.7	56.4

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	75.4	to	87.0
L_{Max} - L_{eq} (Range)	18.4	to	30.2

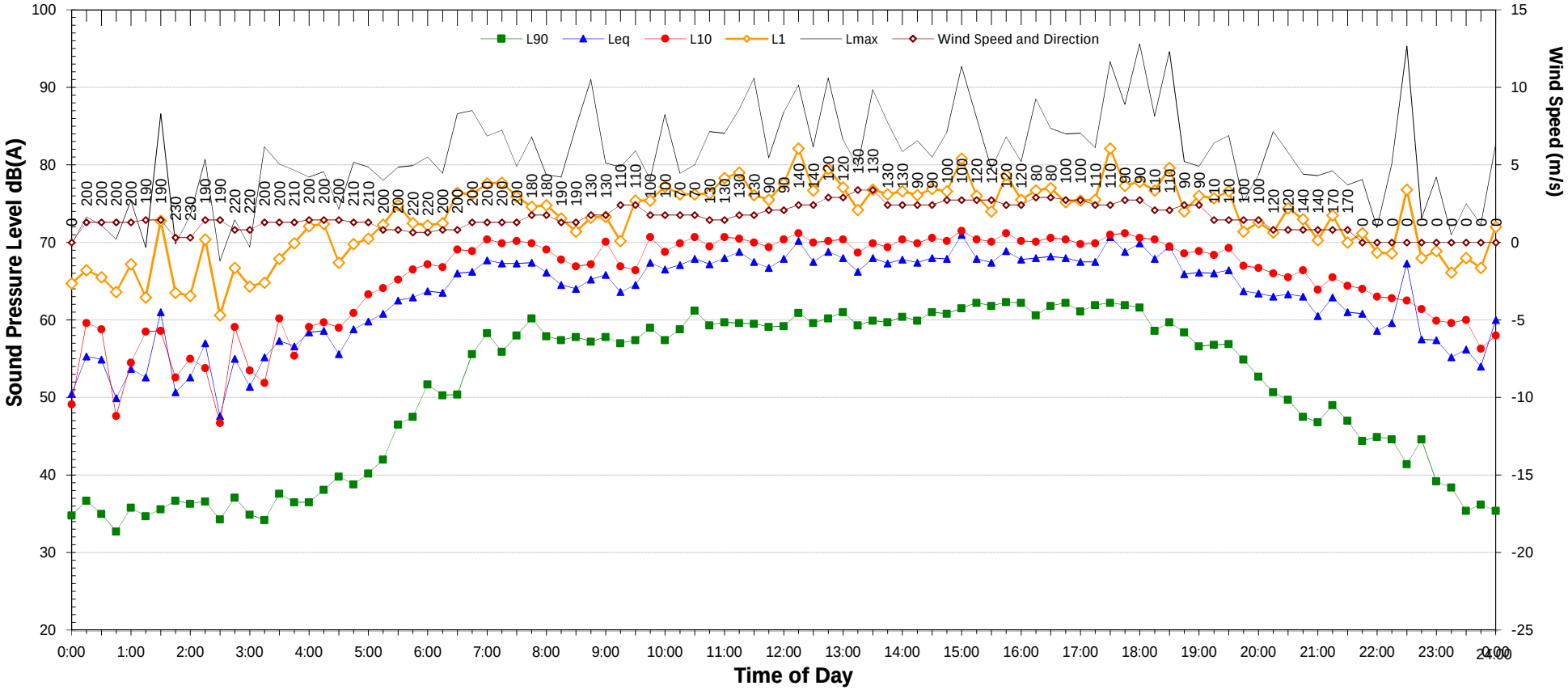
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

68 Spring Street, Grafton

Wednesday, 22 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	57.4	44.9	34.5
LAeq	67.8	64.8	61.2

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	69.6	63.7
$L_{eq\ 1hr}$ upper 10 percentile	71.6	69.7
$L_{eq\ 1hr}$ lower 10 percentile	64.4	52.6

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	70.2	to	95.3
L_{Max} - L_{eq} (Range)	20.1	to	32.6

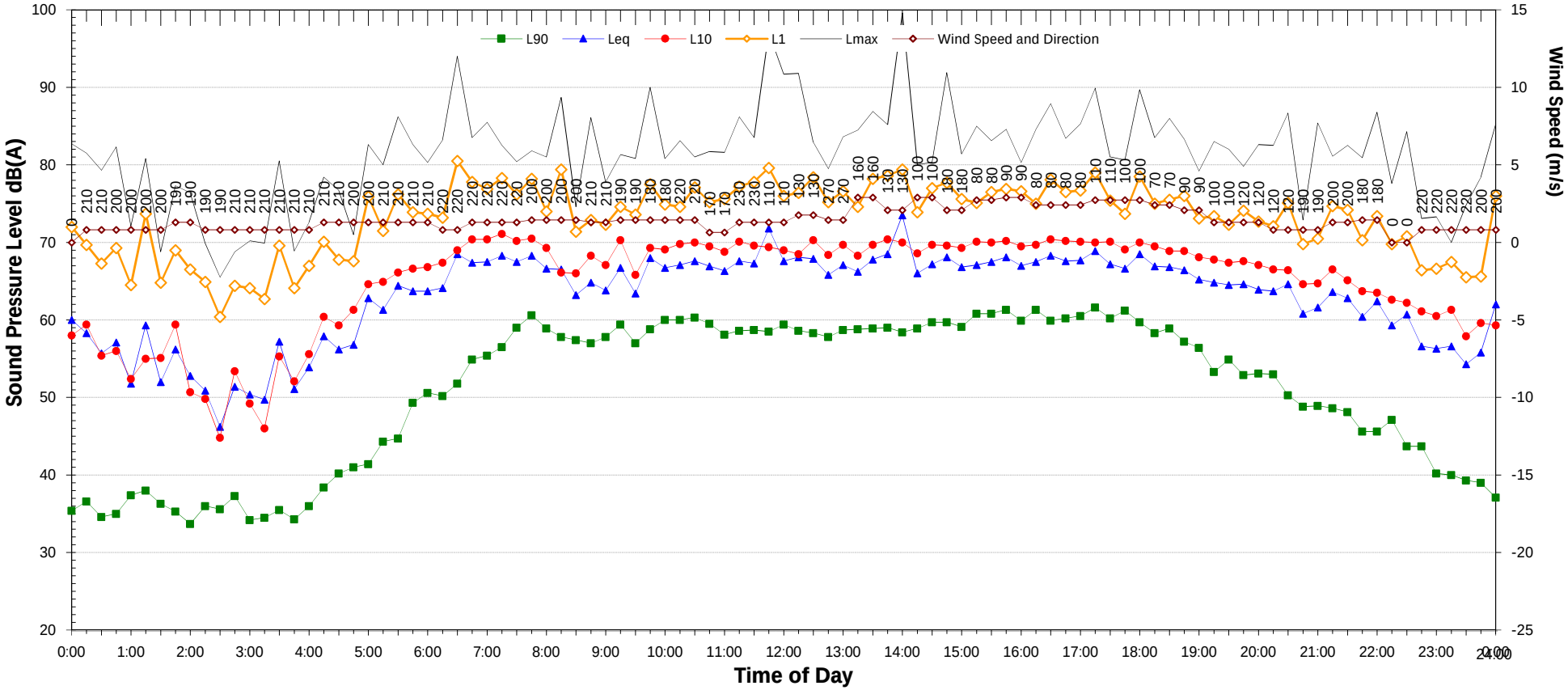
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

68 Spring Street, Grafton

Thursday, 23 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	57.8	45.6	35.8
LAeq	67.7	64.3	60.7

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	69.5	63.2
$L_{eq\ 1hr}$ upper 10 percentile	72.0	69.3
$L_{eq\ 1hr}$ lower 10 percentile	65.2	55.5

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	74.4	to	89.1
L_{Max} - L_{eq} (Range)	17.9	to	27.0

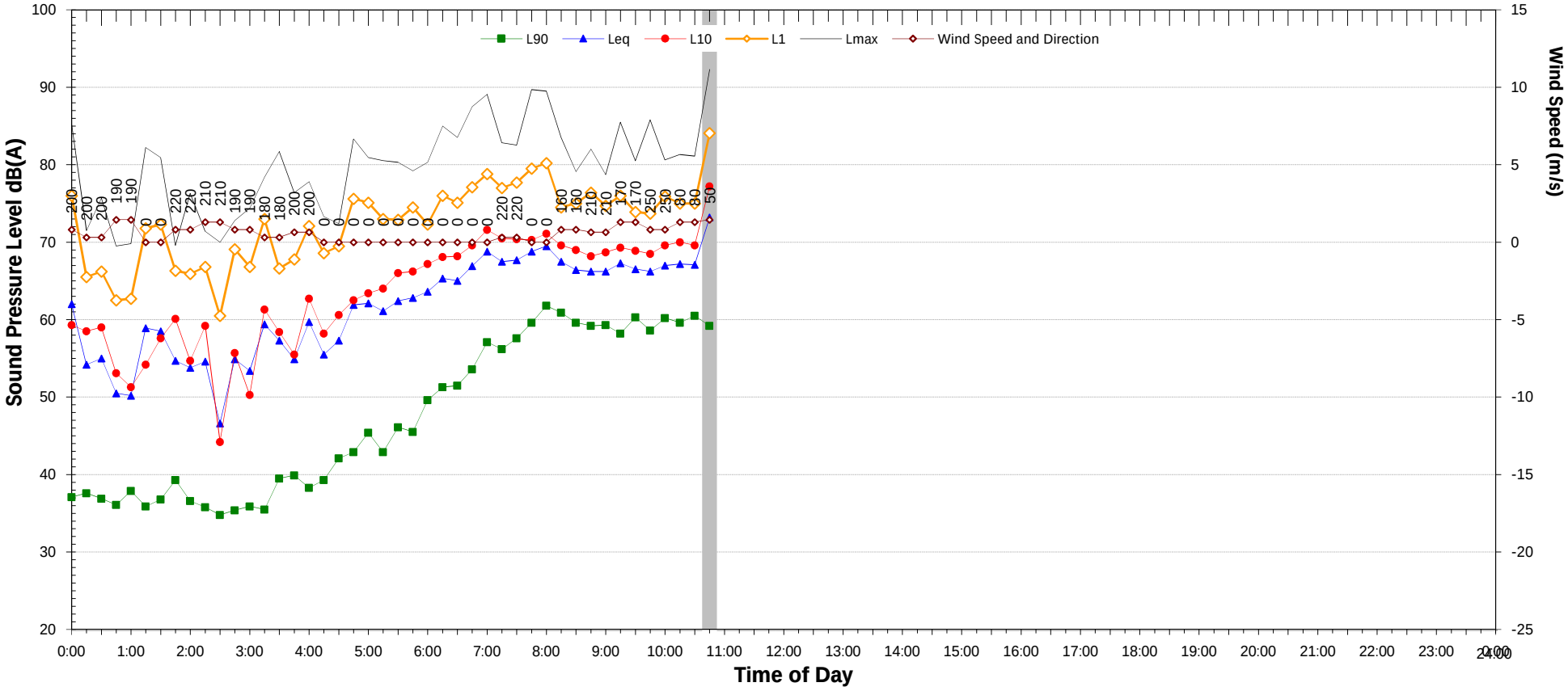
Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

Unattended Noise Monitoring Results

68 Spring Street, Grafton

Friday, 24 February 2017



NSW Industrial Noise Policy (Free Field)

Descriptor	Day[2]	Evening[3]	Night[4 5]
L_{90}	-	-	-
LAeq	-	-	-

Night Time Maximum Noise Levels			(see note 7)
L_{Max} (Range)	-	to	-
L_{Max} - L_{eq} (Range)	-	to	-

NSW Road Noise Policy (1m from facade)		(see note 6)
Descriptor	Day	Night[5]
	7am-10pm	10pm-7am
$L_{eq\ 15\ hr}$ and $L_{eq\ 9\ hr}$	69.8	-
$L_{eq\ 1hr}$ upper 10 percentile	71.0	-
$L_{eq\ 1hr}$ lower 10 percentile	69.1	-

Notes:

1. Shaded periods denote measurements adversely affected by rain, wind or extraneous noise - data in these periods are excluded from calculations.
2. "Day" is the period from 8am till 6pm on Sundays and 7am til 6pm on other days
3. "Evening" is the period from 6pm till 10pm
4. "Night" relates to the remaining periods
5. "Night" relates to period from 10pm on this graph to morning on the following graph.
6. Graphed data measured in free-field; tabulated results facade corrected
7. Night time L_{Max} values are shown only where L_{Max} >65dB(A) and where L_{Max}- Leq ≥15dB(A)

APPENDIX C Detailed Predicted Noise Levels

Table C.1 – Predicted L_{Aeq} Traffic Noise Levels, dB(A)

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R001	Ground	SW	44	39	47	41	46	40	48	42	2	1.8	55	50	NO	NO	NO	NO	NO
R001	Ground	SE	45	39	45	40	46	40	46	40	0.1	0.1	55	50	NO	NO	NO	NO	NO
R001	Ground	NE	47	41	47	42	48	42	48	42	0.6	0.6	55	50	NO	NO	NO	NO	NO
R001	Ground	NE	49	43	50	44	50	44	51	45	1.2	1.1	55	50	NO	NO	NO	NO	NO
R001	Ground	NW	51	45	52	46	52	46	53	47	1.1	1.2	55	50	NO	NO	NO	NO	NO
R001	First	SW	46	41	49	43	48	42	49	44	1.7	1.6	55	50	NO	NO	NO	NO	NO
R001	First	SE	48	42	48	43	49	43	49	43	0.3	0.2	55	50	NO	NO	NO	NO	NO
R001	First	NE	51	45	52	46	52	46	53	47	0.8	0.8	55	50	NO	NO	NO	NO	NO
R001	First	NE	52	47	53	48	53	48	54	49	0.9	1	55	50	NO	NO	NO	NO	NO
R001	First	NW	53	47	54	48	54	48	55	49	1.3	1.2	55	50	NO	NO	NO	NO	NO
R002	Ground	NW	51	46	52	47	52	46	53	47	0.9	0.9	55	50	NO	NO	NO	NO	NO
R002	Ground	SW	49	43	50	45	50	44	51	45	1.1	1.1	55	50	NO	NO	NO	NO	NO
R002	Ground	SE	49	43	50	45	50	44	51	45	1.3	1.3	55	50	NO	NO	NO	NO	NO
R002	Ground	SE	49	44	51	45	50	45	52	46	1.6	1.5	55	50	NO	NO	NO	NO	NO
R002	Ground	NE	52	47	54	48	53	47	55	49	1.6	1.5	55	50	NO	NO	NO	NO	NO
R002	Ground	NW	52	47	53	48	53	47	54	49	1.4	1.4	55	50	NO	NO	NO	NO	NO
R003	Ground	SW	42	37	44	38	44	38	45	39	1.2	1.1	55	50	NO	NO	NO	NO	NO
R003	Ground	SE	47	41	47	42	48	42	48	42	0.3	0.2	55	50	NO	NO	NO	NO	NO
R003	Ground	NE	49	44	51	45	50	45	52	46	1.1	1.1	55	50	NO	NO	NO	NO	NO
R003	Ground	NW	49	43	51	45	50	44	51	46	1.6	1.6	55	50	NO	NO	NO	NO	NO
R003	Ground	NE	49	43	50	45	49	44	51	45	1.8	1.7	55	50	NO	NO	NO	NO	NO
R003	Ground	NW	46	40	46	40	47	41	47	41	0.4	0.4	55	50	NO	NO	NO	NO	NO
R005	Ground	SW	47	41	48	42	48	42	49	43	0.8	0.7	55	50	NO	NO	NO	NO	NO
R005	Ground	SE	49	43	49	44	50	44	50	44	0.4	0.4	55	50	NO	NO	NO	NO	NO
R005	Ground	NE	54	48	55	50	55	49	56	50	1.3	1.3	55	50	YES	NO	NO	NO	NO
R005	Ground	NW	53	48	55	49	54	48	56	50	1.5	1.4	55	50	YES	NO	NO	NO	NO
R007	Ground	SW	44	38	45	40	45	39	46	40	1.3	1.1	55	50	NO	NO	NO	NO	NO
R007	Ground	SE	41	35	42	36	42	36	43	37	0.9	1	54	48	NO	NO	NO	NO	NO
R007	Ground	SW	41	35	42	36	42	36	43	37	1.1	1	54	48	NO	NO	NO	NO	NO
R007	Ground	SE	41	36	42	37	42	37	43	37	0.9	0.8	54	49	NO	NO	NO	NO	NO
R007	Ground	NE	52	46	52	47	53	47	53	47	0.6	0.6	55	50	NO	NO	NO	NO	NO
R007	Ground	NW	52	46	52	47	53	47	53	47	0.6	0.6	55	50	NO	NO	NO	NO	NO
R009	Ground	SW	41	36	43	37	42	37	44	38	1.4	1.3	54	49	NO	NO	NO	NO	NO
R009	Ground	SE	47	41	47	41	48	42	48	42	0.1	0	55	50	NO	NO	NO	NO	NO
R009	Ground	NE	53	47	53	48	54	48	54	48	0.5	0.5	55	50	NO	NO	NO	NO	NO
R009	Ground	NW	52	47	53	47	53	48	54	48	0.5	0.4	55	50	NO	NO	NO	NO	NO
R009	First	SW	45	39	47	41	46	40	47	42	1.4	1.3	55	50	NO	NO	NO	NO	NO
R009	First	SE	48	43	48	43	49	43	49	43	0.3	0.3	55	50	NO	NO	NO	NO	NO

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R009	First	NE	53	48	54	49	54	48	55	49	0.6	0.7	55	50	NO	NO	NO	NO	NO
R009	First	NW	53	48	54	48	54	48	55	49	0.7	0.7	55	50	NO	NO	NO	NO	NO
R047	Ground	S	64	58	44	39	65	59	45	40	-19.2	-19.4	55	50	NO	NO	NO	NO	NO
R047	Ground	W	62	57	43	37	63	57	44	38	-19	-19.1	55	50	NO	NO	NO	NO	NO
R047	Ground	S	60	55	46	41	61	56	47	42	-13.9	-14	55	50	NO	NO	NO	NO	NO
R047	Ground	E	50	45	47	42	51	46	48	43	-2.8	-2.8	55	50	NO	NO	NO	NO	NO
R047	Ground	S	51	45	47	42	52	46	48	42	-3.5	-3.6	55	50	NO	NO	NO	NO	NO
R047	Ground	E	51	45	48	42	51	46	49	43	-2.7	-2.8	55	50	NO	NO	NO	NO	NO
R047	Ground	N	55	50	45	40	56	51	46	40	-10.3	-10.3	55	50	NO	NO	NO	NO	NO
R047	Ground	W	52	46	43	38	53	47	44	38	-8.7	-8.8	55	50	NO	NO	NO	NO	NO
R047	Ground	N	51	46	43	38	52	47	44	39	-7.8	-7.9	55	50	NO	NO	NO	NO	NO
R047	Ground	E	51	45	46	40	52	46	47	41	-5	-5.1	55	50	NO	NO	NO	NO	NO
R047	Ground	N	62	57	45	39	63	57	46	40	-17.1	-17.1	55	50	NO	NO	NO	NO	NO
R047	Ground	W	68	62	43	37	69	63	44	38	-25	-25.1	55	50	NO	NO	NO	NO	NO
R049	Ground	S	62	56	48	42	63	57	49	43	-14.2	-14.2	55	50	NO	NO	NO	NO	NO
R049	Ground	E	51	46	49	43	52	47	50	44	-2.6	-2.8	55	50	NO	NO	NO	NO	NO
R049	Ground	N	63	57	45	39	64	58	46	40	-18	-18	55	50	NO	NO	NO	NO	NO
R049	Ground	W	68	62	43	37	69	63	44	38	-25.2	-25.2	55	50	NO	NO	NO	NO	NO
R051	Ground	SW	63	57	48	42	64	58	49	43	-14.6	-14.7	55	50	NO	NO	NO	NO	NO
R051	Ground	SE	51	45	49	43	52	46	49	44	-2.4	-2.5	55	50	NO	NO	NO	NO	NO
R051	Ground	NE	61	55	46	40	62	56	47	41	-14.7	-14.7	55	50	NO	NO	NO	NO	NO
R051	Ground	NW	67	62	42	37	68	63	43	37	-25.3	-25.3	55	50	NO	NO	NO	NO	NO
R056	Ground	SW	64	59	47	42	65	59	48	43	-16.8	-16.8	55	50	NO	NO	NO	NO	NO
R056	Ground	SE	70	64	48	42	70	65	49	43	-21.6	-21.6	55	50	NO	NO	NO	NO	NO
R056	Ground	NE	63	58	44	38	64	58	45	39	-19.3	-19.3	55	50	NO	NO	NO	NO	NO
R056	Ground	NW	48	43	38	32	49	43	39	33	-10.5	-10.5	55	50	NO	NO	NO	NO	NO
R056	Ground	NE	53	47	40	34	53	48	41	35	-12.8	-12.8	55	50	NO	NO	NO	NO	NO
R056	Ground	SE	56	50	42	36	56	51	43	37	-13.4	-13.4	55	50	NO	NO	NO	NO	NO
R056	Ground	NE	55	49	42	36	56	50	43	37	-13.2	-13.2	55	50	NO	NO	NO	NO	NO
R056	Ground	NW	46	40	40	35	47	41	41	35	-5.7	-5.7	55	50	NO	NO	NO	NO	NO
R056	First	SW	65	59	50	44	66	60	51	45	-15.1	-15.2	55	50	NO	NO	NO	NO	NO
R056	First	SE	71	65	50	45	71	66	51	46	-20.1	-20.2	55	50	NO	NO	NO	NO	NO
R056	First	NE	66	60	47	41	66	61	48	42	-18.4	-18.5	55	50	NO	NO	NO	NO	NO
R056	First	NW	54	48	43	38	54	49	44	38	-10.3	-10.3	55	50	NO	NO	NO	NO	NO
R056	First	NE	57	51	45	39	58	52	46	40	-12.1	-12.1	55	50	NO	NO	NO	NO	NO
R056	First	SE	59	53	46	41	60	54	47	42	-12.5	-12.5	55	50	NO	NO	NO	NO	NO
R056	First	NE	58	52	46	40	59	53	47	41	-12.2	-12.3	55	50	NO	NO	NO	NO	NO
R056	First	NW	51	45	44	38	51	46	45	39	-6.8	-6.7	55	50	NO	NO	NO	NO	NO
R057	Ground	SW	56	51	43	37	57	51	43	38	-13.6	-13.6	55	50	NO	NO	NO	NO	NO
R057	Ground	NE	52	46	42	36	53	47	43	37	-10.1	-10.2	55	50	NO	NO	NO	NO	NO

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R057	Ground	NW	47	41	41	35	48	42	42	36	-5.7	-5.7	55	50	NO	NO	NO	NO	NO
R057	First	SW	60	54	46	41	60	55	47	41	-13.2	-13.3	55	50	NO	NO	NO	NO	NO
R057	First	SE	69	63	50	44	70	64	51	45	-18.9	-19	55	50	NO	NO	NO	NO	NO
R057	First	NE	58	52	46	40	58	53	47	41	-11.2	-11.3	55	50	NO	NO	NO	NO	NO
R057	First	NW	51	45	44	38	51	46	45	39	-6.3	-6.4	55	50	NO	NO	NO	NO	NO
R058	Ground	SW	49	44	41	35	50	45	42	36	-8.3	-8.4	55	50	NO	NO	NO	NO	NO
R058	Ground	SW	49	43	40	35	50	44	41	36	-8.2	-8.2	55	50	NO	NO	NO	NO	NO
R058	Ground	S	49	43	41	35	50	44	42	36	-8.3	-8.3	55	50	NO	NO	NO	NO	NO
R058	Ground	SE	47	41	40	35	48	42	41	36	-6.6	-6.7	55	50	NO	NO	NO	NO	NO
R058	Ground	NE	47	41	41	35	48	42	42	36	-5.5	-5.5	55	50	NO	NO	NO	NO	NO
R058	Ground	NW	46	41	40	35	47	41	41	36	-5.7	-5.8	55	50	NO	NO	NO	NO	NO
R058	Ground	NE	47	41	40	35	47	42	41	36	-6	-6	55	50	NO	NO	NO	NO	NO
R058	Ground	NW	46	40	40	34	47	41	41	35	-5.7	-5.7	55	50	NO	NO	NO	NO	NO
R058	Ground	W	46	40	40	34	47	41	41	35	-5.6	-5.6	55	50	NO	NO	NO	NO	NO
R058	Ground	NW	46	40	40	34	47	41	41	35	-5.7	-5.7	55	50	NO	NO	NO	NO	NO
R059	Ground	SW	61	55	47	41	61	56	48	42	-13.5	-13.5	55	50	NO	NO	NO	NO	NO
R059	Ground	SW	64	58	48	42	64	59	49	43	-15.6	-15.7	55	50	NO	NO	NO	NO	NO
R059	Ground	S	67	61	49	43	68	62	50	44	-17.9	-18	55	50	NO	NO	NO	NO	NO
R059	Ground	SE	69	64	49	44	70	64	50	45	-19.6	-19.7	55	50	NO	NO	NO	NO	NO
R059	Ground	SE	70	64	50	44	71	65	50	45	-20.3	-20.3	55	50	NO	NO	NO	NO	NO
R059	Ground	NE	58	52	46	41	58	53	47	42	-11.1	-11.2	55	50	NO	NO	NO	NO	NO
R059	Ground	NW	51	45	43	38	52	46	44	38	-7.8	-7.9	55	50	NO	NO	NO	NO	NO
R059	Ground	W	53	48	45	39	54	48	46	40	-8.4	-8.4	55	50	NO	NO	NO	NO	NO
R060	Ground	SW	59	53	47	42	59	54	48	42	-11.2	-11.3	55	50	NO	NO	NO	NO	NO
R060	Ground	SE	68	62	49	44	69	63	50	45	-18.1	-18.2	55	50	NO	NO	NO	NO	NO
R060	Ground	NE	61	55	47	41	61	56	48	42	-13.4	-13.6	55	50	NO	NO	NO	NO	NO
R060	Ground	NW	51	45	42	36	52	46	43	37	-8.6	-8.6	55	50	NO	NO	NO	NO	NO
R061	Ground	SW	57	51	46	41	58	52	47	41	-10.5	-10.5	55	50	NO	NO	NO	NO	NO
R061	Ground	SE	67	62	48	43	68	62	49	44	-18.7	-18.7	55	50	NO	NO	NO	NO	NO
R061	Ground	NE	54	49	42	36	55	49	43	37	-12.4	-12.4	55	50	NO	NO	NO	NO	NO
R061	Ground	NW	50	45	42	36	51	45	43	37	-7.8	-7.9	55	50	NO	NO	NO	NO	NO
R062	Ground	SW	56	51	43	37	57	51	44	38	-13.1	-13.1	55	50	NO	NO	NO	NO	NO
R062	Ground	SE	70	65	49	43	71	65	50	44	-21.1	-21.2	55	50	NO	NO	NO	NO	NO
R062	Ground	SE	69	63	49	43	70	64	50	44	-20	-20.1	55	50	NO	NO	NO	NO	NO
R062	Ground	NE	59	54	46	41	60	55	47	42	-12.8	-12.9	55	50	NO	NO	NO	NO	NO
R062	Ground	NW	50	44	42	36	51	45	43	37	-7.8	-7.9	55	50	NO	NO	NO	NO	NO
R063	Ground	SW	53	47	45	39	54	48	46	40	-8.2	-8.3	55	50	NO	NO	NO	NO	NO
R063	Ground	SE	54	49	45	40	55	49	46	41	-8.7	-8.7	55	50	NO	NO	NO	NO	NO
R063	Ground	SW	55	49	45	40	55	50	46	41	-9.2	-9.2	55	50	NO	NO	NO	NO	NO
R063	Ground	SW	58	53	46	40	59	53	47	41	-11.9	-12	55	50	NO	NO	NO	NO	NO

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R063	Ground	SE	68	62	49	44	69	63	50	45	-18.3	-18.4	55	50	NO	NO	NO	NO	NO
R063	Ground	E	67	61	49	43	67	62	50	44	-17.3	-17.4	55	50	NO	NO	NO	NO	NO
R063	Ground	NE	58	52	45	40	59	53	46	40	-12.4	-12.4	55	50	NO	NO	NO	NO	NO
R063	Ground	NW	50	45	43	38	51	45	44	39	-6.8	-6.9	55	50	NO	NO	NO	NO	NO
R063	Ground	NE	51	45	44	39	52	46	45	39	-6.6	-6.6	55	50	NO	NO	NO	NO	NO
R063	Ground	N	51	45	45	39	52	46	46	40	-6.2	-6.1	55	50	NO	NO	NO	NO	NO
R063	Ground	NW	50	45	44	38	51	45	45	39	-6	-6	55	50	NO	NO	NO	NO	NO
R063	Ground	NW	51	45	44	38	51	46	45	39	-6.5	-6.5	55	50	NO	NO	NO	NO	NO
R064	Ground	SW	56	51	47	41	57	51	48	42	-9.3	-9.3	55	50	NO	NO	NO	NO	NO
R064	Ground	SW	59	54	47	41	60	54	48	42	-12.2	-12.2	55	50	NO	NO	NO	NO	NO
R064	Ground	S	65	59	48	43	66	60	49	44	-16.4	-16.4	55	50	NO	NO	NO	NO	NO
R064	Ground	SE	66	61	48	43	67	61	49	44	-17.6	-17.6	55	50	NO	NO	NO	NO	NO
R064	Ground	SW	67	61	49	43	68	62	50	44	-18.2	-18.2	55	50	NO	NO	NO	NO	NO
R064	Ground	SE	69	63	49	44	70	64	50	45	-19.3	-19.3	55	50	NO	NO	NO	NO	NO
R064	Ground	SE	68	63	49	44	69	64	50	45	-18.8	-18.8	55	50	NO	NO	NO	NO	NO
R064	Ground	NE	57	52	45	40	58	53	46	41	-11.8	-11.9	55	50	NO	NO	NO	NO	NO
R064	Ground	N	53	47	44	38	54	48	45	39	-9	-9	55	50	NO	NO	NO	NO	NO
R064	Ground	NW	50	44	42	37	50	45	43	38	-7	-7.1	55	50	NO	NO	NO	NO	NO
R065	Ground	SW	55	49	44	38	55	50	45	39	-10.2	-10.3	55	50	NO	NO	NO	NO	NO
R065	Ground	S	68	62	49	44	68	63	50	44	-18.3	-18.4	55	50	NO	NO	NO	NO	NO
R065	Ground	SE	68	63	49	44	69	64	50	45	-18.8	-18.8	55	50	NO	NO	NO	NO	NO
R065	Ground	E	68	63	50	44	69	63	51	45	-18.4	-18.4	55	50	NO	NO	NO	NO	NO
R065	Ground	NE	65	60	49	43	66	60	50	44	-16.4	-16.4	55	50	NO	NO	NO	NO	NO
R065	Ground	E	63	57	47	41	63	58	48	42	-15.3	-15.3	55	50	NO	NO	NO	NO	NO
R065	Ground	NE	57	51	44	39	57	52	45	39	-12.2	-12.2	55	50	NO	NO	NO	NO	NO
R065	Ground	N	49	44	43	37	50	44	44	38	-6.3	-6.4	55	50	NO	NO	NO	NO	NO
R065	Ground	N	50	44	44	38	50	45	44	39	-6	-6	55	50	NO	NO	NO	NO	NO
R065	Ground	NW	50	45	44	38	51	45	44	39	-6.5	-6.5	55	50	NO	NO	NO	NO	NO
R066	Ground	SW	61	55	49	43	62	56	50	44	-11.9	-11.9	55	50	NO	NO	NO	NO	NO
R066	Ground	SE	69	63	52	46	69	64	53	47	-16.5	-16.6	55	50	NO	NO	NO	NO	NO
R066	Ground	NE	62	56	50	44	62	57	51	45	-11.6	-11.7	55	50	NO	NO	NO	NO	NO
R066	Ground	NW	49	43	43	37	50	44	44	38	-5.9	-6	55	50	NO	NO	NO	NO	NO
R066	First	SW	64	58	51	45	64	59	52	46	-12.5	-12.5	55	50	NO	NO	NO	NO	NO
R066	First	SE	69	63	54	48	69	64	55	49	-14.5	-14.5	55	50	NO	NO	NO	NO	NO
R066	First	NE	64	58	52	46	65	59	53	47	-11.7	-11.6	55	50	NO	NO	NO	NO	NO
R066	First	NW	53	47	46	40	54	48	47	41	-6.9	-7	55	50	NO	NO	NO	NO	NO
R067	Ground	SW	56	50	44	38	57	51	45	39	-11.9	-11.9	55	50	NO	NO	NO	NO	NO
R067	Ground	SE	68	62	50	45	69	63	51	46	-17.2	-17.3	55	50	NO	NO	NO	NO	NO
R067	Ground	NE	63	57	49	44	64	58	50	45	-13.4	-13.3	55	50	NO	NO	NO	NO	NO
R067	Ground	NE	54	48	45	39	55	49	45	40	-9.4	-9.3	55	50	NO	NO	NO	NO	NO

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			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R067	Ground	NW	49	43	43	37	50	44	44	38	-6.1	-6.2	55	50	NO	NO	NO	NO	NO
R067	Ground	SW	49	43	42	36	49	44	43	37	-6.6	-6.6	55	50	NO	NO	NO	NO	NO
R067	Ground	NW	49	43	43	37	50	44	44	38	-5.7	-5.8	55	50	NO	NO	NO	NO	NO
R068	Ground	SW	46	41	40	35	47	42	41	36	-5.8	-5.8	55	50	NO	NO	NO	NO	NO
R068	Ground	NE	47	42	42	36	48	42	43	37	-5.4	-5.4	55	50	NO	NO	NO	NO	NO
R068	Ground	N	48	42	42	37	49	43	43	38	-5.1	-5.2	55	50	NO	NO	NO	NO	NO
R068	Ground	NW	48	42	43	37	49	43	43	38	-5.2	-5.3	55	50	NO	NO	NO	NO	NO
R068	Ground	N	48	43	43	37	49	43	44	38	-5.3	-5.3	55	50	NO	NO	NO	NO	NO
R068	Ground	NW	48	42	43	37	49	43	44	38	-5.4	-5.4	55	50	NO	NO	NO	NO	NO
R069	Ground	SW	49	43	42	37	49	44	43	37	-6.3	-6.4	55	50	NO	NO	NO	NO	NO
R069	Ground	SW	55	49	44	39	56	50	45	40	-10.5	-10.5	55	50	NO	NO	NO	NO	NO
R069	Ground	SE	65	59	50	44	65	60	51	45	-14.5	-14.5	55	50	NO	NO	NO	NO	NO
R069	Ground	NE	56	51	44	39	57	51	45	40	-11.7	-11.8	55	50	NO	NO	NO	NO	NO
R069	Ground	NE	50	45	43	37	51	46	44	38	-7.7	-7.6	55	50	NO	NO	NO	NO	NO
R069	Ground	NW	48	42	42	36	49	43	43	37	-6.2	-6.3	55	50	NO	NO	NO	NO	NO
R070	Ground	SW	47	42	41	35	48	42	42	36	-6.4	-6.4	55	50	NO	NO	NO	NO	NO
R070	Ground	NE	48	43	42	37	49	43	43	37	-5.9	-5.9	55	50	NO	NO	NO	NO	NO
R070	Ground	NE	48	43	43	37	49	43	44	38	-5.3	-5.3	55	50	NO	NO	NO	NO	NO
R070	Ground	NW	48	43	43	38	49	43	44	38	-4.8	-4.9	55	50	NO	NO	NO	NO	NO
R070	Ground	SW	47	41	41	35	48	42	42	36	-5.6	-5.6	55	50	NO	NO	NO	NO	NO
R070	Ground	NW	47	41	41	36	48	42	42	37	-5.6	-5.6	55	50	NO	NO	NO	NO	NO
R071	Ground	NW	51	45	45	39	52	46	46	40	-5.8	-5.9	55	50	NO	NO	NO	NO	NO
R071	Ground	NE	59	53	52	47	60	54	53	48	-6.2	-6.2	55	50	NO	NO	NO	NO	NO
R071	Ground	NW	53	48	46	41	54	48	47	41	-6.9	-6.8	55	50	NO	NO	NO	NO	NO
R071	Ground	SW	48	42	42	37	48	43	43	38	-5.1	-5.2	55	50	NO	NO	NO	NO	NO
R071	Ground	NW	51	46	45	40	52	46	46	41	-5.8	-5.7	55	50	NO	NO	NO	NO	NO
R071	Ground	S	49	43	45	39	50	44	46	40	-4	-4	55	50	NO	NO	NO	NO	NO
R071	Ground	SE	50	44	46	40	51	45	47	41	-4.1	-4	55	50	NO	NO	NO	NO	NO
R071	Ground	SW	49	44	44	38	50	44	45	39	-4.9	-4.9	55	50	NO	NO	NO	NO	NO
R071	Ground	NW	49	43	42	37	49	44	43	38	-5.8	-5.8	55	50	NO	NO	NO	NO	NO
R071	Ground	SW	49	44	43	38	50	45	44	39	-5.8	-5.9	55	50	NO	NO	NO	NO	NO
R071	Ground	NW	49	43	42	36	49	44	43	37	-6.5	-6.6	55	50	NO	NO	NO	NO	NO
R071	Ground	NE	50	44	44	38	50	45	45	39	-5.6	-5.5	55	50	NO	NO	NO	NO	NO
R071	Ground	NW	49	43	43	37	49	44	44	38	-5.5	-5.6	55	50	NO	NO	NO	NO	NO
R071	Ground	SW	49	44	43	38	50	44	44	38	-6	-6	55	50	NO	NO	NO	NO	NO
R071	Ground	NW	49	43	42	36	49	44	43	37	-6.6	-6.6	55	50	NO	NO	NO	NO	NO
R071	Ground	NE	49	44	43	38	50	44	44	39	-5.7	-5.7	55	50	NO	NO	NO	NO	NO
R071	Ground	N	49	44	44	39	50	45	45	40	-5	-5	55	50	NO	NO	NO	NO	NO
R071	Ground	NW	49	43	44	38	50	44	45	39	-5	-4.9	55	50	NO	NO	NO	NO	NO
R071	Ground	W	49	43	43	38	50	44	44	39	-5.5	-5.5	55	50	NO	NO	NO	NO	NO

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			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R071	Ground	W	49	43	43	38	50	44	44	38	-5.7	-5.7	55	50	NO	NO	NO	NO	NO
R071	Ground	W	49	44	43	38	50	44	44	39	-5.7	-5.7	55	50	NO	NO	NO	NO	NO
R071	Ground	SW	50	44	44	38	50	45	45	39	-5.5	-5.6	55	50	NO	NO	NO	NO	NO
R071	Ground	SW	50	44	43	38	50	45	44	39	-6.1	-6.1	55	50	NO	NO	NO	NO	NO
R071	Ground	NW	49	43	42	36	49	44	43	37	-6.7	-6.8	55	50	NO	NO	NO	NO	NO
R071	Ground	NE	50	44	44	39	51	45	45	40	-5.3	-5.4	55	50	NO	NO	NO	NO	NO
R071	Ground	N	51	45	46	41	51	46	47	42	-4.3	-4.2	55	50	NO	NO	NO	NO	NO
R071	Ground	NW	51	45	46	40	52	46	47	41	-4.8	-4.8	55	50	NO	NO	NO	NO	NO
R071	Ground	W	51	46	45	40	52	46	46	41	-5.5	-5.5	55	50	NO	NO	NO	NO	NO
R071	Ground	N	51	45	46	40	52	46	47	41	-5.1	-5.2	55	50	NO	NO	NO	NO	NO
R071	Ground	W	51	45	46	40	52	46	47	41	-4.9	-5	55	50	NO	NO	NO	NO	NO
R071	Ground	SW	52	46	45	40	52	47	46	41	-6.1	-6.1	55	50	NO	NO	NO	NO	NO
R071	Ground	SW	52	46	45	40	53	47	46	41	-6.1	-6.2	55	50	NO	NO	NO	NO	NO
R071	Ground	SW	56	50	47	42	57	51	48	43	-8.5	-8.6	55	50	NO	NO	NO	NO	NO
R071	Ground	SE	68	63	52	47	69	63	53	48	-15.7	-15.7	55	50	NO	NO	NO	NO	NO
R071	Ground	NE	64	58	52	46	65	59	53	47	-12	-12	55	50	NO	NO	NO	NO	NO
R071	Ground	SE	62	56	50	44	62	57	51	45	-11.2	-11.2	55	50	NO	NO	NO	NO	NO
R071	Ground	S	62	56	50	44	63	57	51	45	-11.7	-11.8	55	50	NO	NO	NO	NO	NO
R071	Ground	S	64	58	52	46	64	59	53	47	-11.9	-11.9	55	50	NO	NO	NO	NO	NO
R071	Ground	S	66	60	53	47	67	61	54	48	-13	-12.9	55	50	NO	NO	NO	NO	NO
R071	Ground	E	67	61	53	47	67	62	54	48	-13.3	-13.4	55	50	NO	NO	NO	NO	NO
R071	Ground	E	66	60	52	47	66	61	53	48	-12.9	-13	55	50	NO	NO	NO	NO	NO
R071	Ground	E	64	58	50	45	64	59	51	46	-13	-13.1	55	50	NO	NO	NO	NO	NO
R071	Ground	SW	65	59	49	44	65	60	50	45	-15	-15.1	55	50	NO	NO	NO	NO	NO
R071	Ground	SE	68	63	54	49	69	63	55	50	-13.7	-13.7	55	50	NO	NO	NO	NO	NO
R071	Ground	NE	62	56	52	47	63	57	53	48	-9.3	-9.3	55	50	NO	NO	NO	NO	NO
R071	Ground	SW	60	54	50	44	61	55	51	45	-9.9	-10	55	50	NO	NO	NO	NO	NO
R071	Ground	SE	67	62	55	49	68	62	56	50	-12.2	-12.2	55	50	YES	NO	NO	NO	NO
R071	Ground	NE	65	59	55	49	65	60	56	50	-9.6	-9.7	55	50	YES	NO	NO	NO	NO
R071	Ground	SE	65	59	55	49	66	60	56	50	-9.9	-9.9	55	50	YES	NO	NO	NO	NO
R071	Ground	SW	65	60	53	48	66	60	54	48	-11.8	-11.9	55	50	NO	NO	NO	NO	NO
R071	Ground	SE	68	62	56	50	69	63	57	51	-11.9	-11.9	55	50	YES	YES	NO	NO	NO
R071	Ground	NE	61	56	54	49	62	56	55	49	-6.8	-6.8	55	50	NO	NO	NO	NO	NO
R071	Ground	SE	59	53	52	47	59	54	53	48	-5.9	-6	55	50	NO	NO	NO	NO	NO
R072	Ground	W	46	41	41	36	47	42	42	37	-4.9	-5	55	50	NO	NO	NO	NO	NO
R072	Ground	S	46	40	41	35	46	41	42	36	-4.8	-4.8	55	50	NO	NO	NO	NO	NO
R072	Ground	E	46	40	41	35	47	41	42	36	-4.9	-4.9	55	50	NO	NO	NO	NO	NO
R072	Ground	S	45	40	40	34	46	40	41	35	-5.1	-5.2	55	50	NO	NO	NO	NO	NO
R072	Ground	E	50	44	44	38	50	45	45	39	-5.8	-5.8	55	50	NO	NO	NO	NO	NO
R072	Ground	N	51	45	45	39	51	46	46	40	-5.8	-5.9	55	50	NO	NO	NO	NO	NO

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			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R074	Ground	W	45	39	39	33	46	40	40	34	-5.9	-5.9	55	50	NO	NO	NO	NO	NO
R074	Ground	S	44	38	39	33	45	39	40	34	-4.9	-4.9	55	50	NO	NO	NO	NO	NO
R074	Ground	W	42	37	37	32	43	37	38	32	-4.8	-4.9	55	49	NO	NO	NO	NO	NO
R074	Ground	S	47	41	41	35	48	42	42	36	-5.6	-5.7	55	50	NO	NO	NO	NO	NO
R074	Ground	E	46	41	41	35	47	42	42	36	-5.4	-5.4	55	50	NO	NO	NO	NO	NO
R074	Ground	S	45	40	40	34	46	40	41	35	-5.4	-5.4	55	50	NO	NO	NO	NO	NO
R074	Ground	E	50	44	43	38	50	45	44	39	-6.1	-6.2	55	50	NO	NO	NO	NO	NO
R074	Ground	N	53	48	45	39	54	48	46	40	-8.2	-8.2	55	50	NO	NO	NO	NO	NO
R074	First	W	48	42	43	37	48	43	43	38	-5	-5	55	50	NO	NO	NO	NO	NO
R074	First	S	48	42	43	37	49	43	44	38	-4.8	-4.7	55	50	NO	NO	NO	NO	NO
R074	First	W	47	41	42	36	47	42	43	37	-4.6	-4.6	55	50	NO	NO	NO	NO	NO
R074	First	S	50	44	44	38	50	45	44	39	-5.8	-5.8	55	50	NO	NO	NO	NO	NO
R074	First	E	50	44	44	39	51	45	45	39	-5.5	-5.5	55	50	NO	NO	NO	NO	NO
R074	First	S	49	43	43	38	50	44	44	39	-5.3	-5.3	55	50	NO	NO	NO	NO	NO
R074	First	E	51	46	46	40	52	47	46	41	-5.7	-5.8	55	50	NO	NO	NO	NO	NO
R074	First	N	54	48	47	41	55	49	47	42	-7.4	-7.4	55	50	NO	NO	NO	NO	NO
R075	Ground	W	48	42	42	36	48	43	43	37	-5.7	-5.7	55	50	NO	NO	NO	NO	NO
R075	Ground	E	52	47	44	38	53	47	45	39	-8	-8	55	50	NO	NO	NO	NO	NO
R075	Ground	N	57	51	47	42	58	52	48	43	-9.6	-9.5	55	50	NO	NO	NO	NO	NO
R075	First	W	50	44	44	39	51	45	45	40	-5.2	-5.2	55	50	NO	NO	NO	NO	NO
R075	First	S	49	43	44	38	50	44	44	39	-5.4	-5.4	55	50	NO	NO	NO	NO	NO
R075	First	E	53	47	45	40	54	48	46	41	-7.4	-7.5	55	50	NO	NO	NO	NO	NO
R075	First	N	57	52	48	43	58	52	49	44	-8.7	-8.8	55	50	NO	NO	NO	NO	NO
R076	Ground	W	47	41	41	35	47	42	42	36	-5.6	-5.7	55	50	NO	NO	NO	NO	NO
R076	Ground	S	47	41	41	36	48	42	42	36	-5.7	-5.7	55	50	NO	NO	NO	NO	NO
R076	Ground	W	44	39	39	33	45	40	40	34	-5.5	-5.6	55	50	NO	NO	NO	NO	NO
R076	Ground	E	59	54	49	43	60	54	50	44	-10.2	-10.3	55	50	NO	NO	NO	NO	NO
R076	Ground	N	58	52	48	42	59	53	49	43	-10.1	-10.1	55	50	NO	NO	NO	NO	NO
R076	First	W	50	44	45	39	51	45	45	40	-5.1	-5.1	55	50	NO	NO	NO	NO	NO
R076	First	S	51	46	46	40	52	46	47	41	-5.3	-5.3	55	50	NO	NO	NO	NO	NO
R076	First	W	49	44	44	38	50	44	45	39	-5.3	-5.3	55	50	NO	NO	NO	NO	NO
R076	First	S	56	50	48	42	56	51	49	43	-7.9	-7.9	55	50	NO	NO	NO	NO	NO
R076	First	E	60	55	50	45	61	55	51	46	-9.7	-9.7	55	50	NO	NO	NO	NO	NO
R076	First	N	58	53	49	43	59	54	50	44	-9.4	-9.4	55	50	NO	NO	NO	NO	NO
R078	Ground	W	50	45	54	48	51	45	55	49	3.6	3.6	55	50	NO	NO	NO	NO	NO
R078	Ground	S	48	42	53	47	49	43	54	48	4.9	5	55	50	NO	NO	NO	NO	NO
R078	Ground	S	43	38	50	44	44	39	51	45	6.5	6.6	55	50	NO	NO	NO	NO	NO
R078	Ground	E	41	35	41	36	41	36	42	37	1	1	53	48	NO	NO	NO	NO	NO
R078	Ground	N	49	43	50	44	50	44	51	45	1.4	1.4	55	50	NO	NO	NO	NO	NO
R079	Ground	W	48	42	51	46	49	43	52	47	3.8	3.8	55	50	NO	NO	NO	NO	NO

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R079	Ground	SE	45	40	51	45	46	40	52	46	5.8	5.9	55	50	NO	NO	NO	NO	NO
R079	Ground	NE	39	33	40	34	39	34	41	35	1.5	1.5	51	46	NO	NO	NO	NO	NO
R079	Ground	N	48	43	50	44	49	43	51	45	1.5	1.5	55	50	NO	NO	NO	NO	NO
R079	First	W	50	45	54	48	51	45	54	49	3.3	3.4	55	50	NO	NO	NO	NO	NO
R079	First	SE	49	44	53	47	50	45	54	48	3.7	3.8	55	50	NO	NO	NO	NO	NO
R079	First	NE	49	43	51	46	50	44	52	47	2.7	2.7	55	50	NO	NO	NO	NO	NO
R079	First	N	51	45	53	47	51	46	54	48	2.5	2.5	55	50	NO	NO	NO	NO	NO
R080	Ground	SW	48	43	50	45	49	43	51	46	2.3	2.3	55	50	NO	NO	NO	NO	NO
R080	Ground	SE	42	37	46	40	43	37	47	41	3.9	4	55	49	NO	NO	NO	NO	NO
R080	Ground	SW	42	37	46	41	43	38	47	42	4.1	4.2	55	50	NO	NO	NO	NO	NO
R080	Ground	SE	42	37	46	40	43	37	46	41	3.4	3.5	55	49	NO	NO	NO	NO	NO
R080	Ground	NE	40	35	41	36	41	36	42	37	1	1	53	48	NO	NO	NO	NO	NO
R080	Ground	NW	48	42	50	44	48	43	51	45	2.4	2.4	55	50	NO	NO	NO	NO	NO
R081	Ground	SW	49	43	52	46	50	44	53	47	3.1	3	55	50	NO	NO	NO	NO	NO
R081	Ground	SE	44	39	50	44	45	39	51	45	6	6	55	50	NO	NO	NO	NO	NO
R081	Ground	NE	37	32	39	33	38	33	40	34	1.3	1.3	50	45	NO	NO	NO	NO	NO
R081	Ground	NW	48	43	49	44	49	43	50	45	1.1	1.1	55	50	NO	NO	NO	NO	NO
R081	First	SW	50	45	53	47	51	45	54	48	2.9	3	55	50	NO	NO	NO	NO	NO
R081	First	SE	49	43	52	46	50	44	53	47	3.5	3.5	55	50	NO	NO	NO	NO	NO
R081	First	NE	48	42	50	45	49	43	51	46	2.6	2.6	55	50	NO	NO	NO	NO	NO
R081	First	NW	50	44	52	46	51	45	53	47	2.2	2.2	55	50	NO	NO	NO	NO	NO
R082	Ground	W	49	43	51	45	49	44	52	46	2.5	2.4	55	50	NO	NO	NO	NO	NO
R082	Ground	SE	44	38	48	43	44	39	49	44	5	5.1	55	50	NO	NO	NO	NO	NO
R082	Ground	NE	33	30	34	28	34	30	35	29	1.2	-0.7	46	42	NO	NO	NO	NO	NO
R082	Ground	NW	48	42	48	43	49	43	49	44	0.9	0.9	55	50	NO	NO	NO	NO	NO
R082	Ground	NW	48	42	49	43	49	43	50	44	1	0.9	55	50	NO	NO	NO	NO	NO
R082	First	W	50	44	52	46	50	45	53	47	2.3	2.3	55	50	NO	NO	NO	NO	NO
R082	First	SE	45	40	50	44	46	41	51	45	4.3	4.3	55	50	NO	NO	NO	NO	NO
R082	First	NE	39	33	40	35	40	34	41	35	1.5	1.5	52	46	NO	NO	NO	NO	NO
R082	First	NW	49	43	49	44	49	44	50	45	1	1	55	50	NO	NO	NO	NO	NO
R082	First	NW	49	43	49	44	49	44	50	45	1.1	1	55	50	NO	NO	NO	NO	NO
R083	Ground	W	47	38	42	33	47	39	42	34	-4.9	-4.9	59	-	NO	-	-	-	NO
R083	Ground	S	57	48	47	38	57	49	48	39	-9.6	-9.6	60	-	NO	-	-	-	NO
R083	Ground	E	59	50	48	39	59	51	49	40	-10.7	-10.7	60	-	NO	-	-	-	NO
R083	Ground	N	47	38	40	31	48	39	41	32	-7	-7	60	-	NO	-	-	-	NO
R084	Ground	SW	48	43	40	34	49	44	41	35	-8.7	-8.7	55	50	NO	NO	NO	NO	NO
R084	Ground	NW	49	44	41	36	50	44	42	36	-8.1	-8.2	55	50	NO	NO	NO	NO	NO
R084	Ground	SW	52	47	46	40	53	47	47	41	-6.1	-6.1	55	50	NO	NO	NO	NO	NO
R084	Ground	SE	55	49	49	43	55	50	50	44	-5.4	-5.5	55	50	NO	NO	NO	NO	NO
R084	Ground	NE	58	52	49	44	58	53	50	44	-8.2	-8.2	55	50	NO	NO	NO	NO	NO

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R084	Ground	NW	57	51	48	43	57	52	49	44	-8.1	-8.1	55	50	NO	NO	NO	NO	NO
R084	Ground	NE	57	51	49	43	58	52	49	44	-8.1	-8.1	55	50	NO	NO	NO	NO	NO
R084	Ground	NW	55	49	47	41	56	50	48	42	-8.3	-8.3	55	50	NO	NO	NO	NO	NO
R085	Ground	SW	51	45	46	40	52	46	47	41	-5	-5.1	55	50	NO	NO	NO	NO	NO
R085	Ground	SW	51	45	46	40	52	46	47	41	-4.9	-4.9	55	50	NO	NO	NO	NO	NO
R085	Ground	SW	53	47	47	41	53	48	47	42	-6	-6.1	55	50	NO	NO	NO	NO	NO
R085	Ground	SE	54	49	48	42	55	49	49	43	-6.5	-6.6	55	50	NO	NO	NO	NO	NO
R085	Ground	NE	56	51	49	43	57	51	50	44	-7.4	-7.4	55	50	NO	NO	NO	NO	NO
R085	Ground	NW	56	50	48	42	57	51	49	43	-7.9	-7.9	55	50	NO	NO	NO	NO	NO
R085	Ground	NE	56	51	48	42	57	51	49	43	-8.1	-8.1	55	50	NO	NO	NO	NO	NO
R085	Ground	NW	53	48	45	40	54	49	46	41	-8	-8	55	50	NO	NO	NO	NO	NO
R086	Ground	SW	54	48	62	56	54	49	63	57	8.3	8.3	55	50	YES	YES	NO	NO	YES
R086	Ground	S	55	49	61	55	55	50	62	56	6.2	6.2	55	50	YES	YES	NO	NO	YES
R086	Ground	SW	55	50	60	54	56	50	61	55	5.1	5	55	50	YES	YES	NO	NO	YES
R086	Ground	SE	53	47	57	51	53	48	58	52	4.2	4.1	55	50	YES	YES	NO	NO	YES
R086	Ground	NE	42	36	44	39	42	37	45	40	2.8	2.8	54	49	NO	NO	NO	NO	NO
R086	Ground	SE	42	36	44	38	43	37	45	39	2.4	2.5	55	49	NO	NO	NO	NO	NO
R086	Ground	NE	42	36	52	47	42	37	53	48	10.8	10.9	54	49	NO	NO	NO	NO	NO
R086	Ground	NW	50	44	57	51	50	45	58	52	7.7	7.7	55	50	YES	YES	NO	NO	YES
R086	Ground	NE	50	44	58	52	51	45	59	53	7.9	7.9	55	50	YES	YES	NO	NO	YES
R086	Ground	NW	51	45	60	55	51	46	61	56	10.1	10.2	55	50	YES	YES	NO	NO	YES
R087	Ground	SW	43	37	52	47	44	38	53	48	9.8	9.8	55	50	NO	NO	NO	NO	NO
R087	Ground	SW	43	37	50	45	43	38	51	46	7.8	7.7	55	50	NO	NO	NO	NO	NO
R087	Ground	SW	53	48	56	51	54	48	57	52	3.4	3.4	55	50	YES	YES	NO	NO	YES
R087	Ground	SE	52	46	56	50	53	47	57	51	3.7	3.7	55	50	YES	YES	NO	NO	YES
R087	Ground	NE	39	33	41	36	40	34	42	36	2.4	2.4	52	46	NO	NO	NO	NO	NO
R087	Ground	SE	39	33	41	35	40	34	42	36	2.1	2.2	52	46	NO	NO	NO	NO	NO
R087	Ground	NE	39	33	49	44	40	34	50	45	10.6	10.6	52	46	NO	NO	NO	NO	NO
R087	Ground	N	40	34	49	44	40	35	50	44	9.8	9.8	52	47	NO	NO	NO	NO	NO
R087	Ground	NE	39	33	50	44	40	34	51	45	11.1	11.1	52	46	NO	NO	NO	NO	NO
R087	Ground	NW	51	45	58	52	52	46	59	53	7	7	55	50	YES	YES	NO	NO	YES
R087	Ground	SW	51	45	57	52	52	46	58	53	6.6	6.6	55	50	YES	YES	NO	NO	YES
R087	Ground	NW	50	45	57	51	51	46	58	52	6.5	6.4	55	50	YES	YES	NO	NO	YES
R087	First	SW	56	50	60	54	56	51	61	55	4.6	4.5	55	50	YES	YES	NO	NO	YES
R087	First	SW	56	50	59	54	56	51	60	55	4	4	55	50	YES	YES	NO	NO	YES
R087	First	SW	56	50	59	53	57	51	60	54	2.9	2.9	55	50	YES	YES	NO	NO	YES
R087	First	SE	53	47	56	50	53	48	57	51	3.5	3.5	55	50	YES	YES	NO	NO	YES
R087	First	NE	44	39	47	41	45	40	48	42	2.3	2.3	55	50	NO	NO	NO	NO	NO
R087	First	SE	45	39	47	41	45	40	47	42	2	2.1	55	50	NO	NO	NO	NO	NO
R087	First	NE	45	39	51	46	46	40	52	47	6.5	6.6	55	50	NO	NO	NO	NO	NO

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R087	First	N	46	40	51	46	46	41	52	47	5.9	5.9	55	50	NO	NO	NO	NO	NO
R087	First	NE	45	39	52	46	45	40	53	47	7.1	7.1	55	50	NO	NO	NO	NO	NO
R087	First	NW	55	49	59	53	55	50	60	54	4.7	4.8	55	50	YES	YES	NO	NO	YES
R087	First	SW	55	50	60	54	56	51	61	55	4.3	4.4	55	50	YES	YES	NO	NO	YES
R087	First	NW	56	50	60	54	56	51	61	55	4.3	4.4	55	50	YES	YES	NO	NO	YES
R088	Ground	SW	53	47	56	51	54	48	57	52	3.5	3.5	55	50	YES	YES	NO	NO	YES
R088	Ground	SE	51	46	54	49	52	46	55	50	3.2	3.3	55	50	NO	NO	NO	NO	NO
R088	Ground	NE	42	37	45	39	43	37	46	40	2.9	2.8	55	49	NO	NO	NO	NO	NO
R088	Ground	NW	48	42	53	47	49	43	54	48	5.2	5.1	55	50	NO	NO	NO	NO	NO
R089	Ground	SW	51	45	45	39	52	46	46	40	-5.5	-5.5	55	50	NO	NO	NO	NO	NO
R089	Ground	SW	51	45	45	40	52	46	46	41	-5.7	-5.6	55	50	NO	NO	NO	NO	NO
R089	Ground	SE	51	45	47	41	52	46	48	42	-4.2	-4.2	55	50	NO	NO	NO	NO	NO
R089	Ground	NE	55	49	47	41	56	50	48	42	-8.1	-8.2	55	50	NO	NO	NO	NO	NO
R089	Ground	NE	56	50	48	42	57	51	48	43	-8.3	-8.3	55	50	NO	NO	NO	NO	NO
R089	Ground	NE	56	51	47	42	57	51	48	43	-8.8	-8.9	55	50	NO	NO	NO	NO	NO
R089	Ground	NW	54	48	44	39	55	49	45	39	-9.6	-9.7	55	50	NO	NO	NO	NO	NO
R089	Ground	SW	49	43	40	34	50	44	40	34	-10	-10.1	55	50	NO	NO	NO	NO	NO
R089	Ground	NW	52	46	42	36	53	47	42	36	-10.4	-10.5	55	50	NO	NO	NO	NO	NO
R089	First	SW	52	46	46	41	53	47	47	42	-5.3	-5.4	55	50	NO	NO	NO	NO	NO
R089	First	SW	52	46	47	41	53	47	47	42	-5.4	-5.4	55	50	NO	NO	NO	NO	NO
R089	First	SE	56	50	50	44	56	51	50	45	-5.9	-5.9	55	50	NO	NO	NO	NO	NO
R089	First	NE	58	52	50	45	58	53	51	46	-7.2	-7.3	55	50	NO	NO	NO	NO	NO
R089	First	NE	58	52	50	45	59	53	51	46	-7.5	-7.5	55	50	NO	NO	NO	NO	NO
R089	First	NE	58	52	49	44	59	53	50	45	-8.4	-8.4	55	50	NO	NO	NO	NO	NO
R089	First	NW	56	50	47	41	56	51	48	42	-8.8	-8.9	55	50	NO	NO	NO	NO	NO
R089	First	SW	52	46	44	38	53	47	44	39	-8.3	-8.3	55	50	NO	NO	NO	NO	NO
R089	First	NW	54	48	45	39	54	49	46	40	-8.9	-9	55	50	NO	NO	NO	NO	NO
R090	Ground	SW	50	44	45	39	51	45	46	40	-5	-5	55	50	NO	NO	NO	NO	NO
R090	Ground	SW	50	44	45	39	51	45	46	40	-5.2	-5.2	55	50	NO	NO	NO	NO	NO
R090	Ground	SE	52	46	46	41	53	47	47	42	-5.4	-5.4	55	50	NO	NO	NO	NO	NO
R090	Ground	NE	52	47	44	39	53	47	45	40	-7.8	-7.8	55	50	NO	NO	NO	NO	NO
R090	Ground	SE	53	47	45	40	54	48	46	40	-7.6	-7.5	55	50	NO	NO	NO	NO	NO
R090	Ground	NE	55	50	46	41	56	50	47	41	-9	-9	55	50	NO	NO	NO	NO	NO
R090	Ground	NW	54	48	44	38	55	49	44	39	-10.1	-10.1	55	50	NO	NO	NO	NO	NO
R090	Ground	N	54	48	44	38	54	49	45	39	-9.7	-9.8	55	50	NO	NO	NO	NO	NO
R090	Ground	NW	52	47	43	37	53	47	43	37	-10	-10	55	50	NO	NO	NO	NO	NO
R090	First	SW	51	46	46	41	52	46	47	41	-5	-5	55	50	NO	NO	NO	NO	NO
R090	First	SW	51	45	46	40	52	46	47	41	-5	-5.1	55	50	NO	NO	NO	NO	NO
R090	First	SE	53	48	48	42	54	48	49	43	-5.2	-5.2	55	50	NO	NO	NO	NO	NO
R090	First	NE	54	48	47	41	55	49	48	42	-6.8	-6.8	55	50	NO	NO	NO	NO	NO

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R090	First	SE	54	49	48	42	55	50	49	43	-6.5	-6.5	55	50	NO	NO	NO	NO	NO
R090	First	NE	57	51	49	43	58	52	49	44	-8.1	-8.1	55	50	NO	NO	NO	NO	NO
R090	First	NW	55	49	46	41	56	50	47	41	-8.8	-8.8	55	50	NO	NO	NO	NO	NO
R090	First	N	55	49	47	41	56	50	48	42	-8.4	-8.4	55	50	NO	NO	NO	NO	NO
R090	First	NW	54	48	45	39	55	49	46	40	-9	-9	55	50	NO	NO	NO	NO	NO
R091	Ground	SW	59	53	49	43	59	54	49	44	-10	-10	55	50	NO	NO	NO	NO	NO
R091	Ground	SW	57	51	48	42	58	52	49	43	-9.4	-9.4	55	50	NO	NO	NO	NO	NO
R091	Ground	SW	58	53	48	42	59	53	49	43	-10.1	-10.2	55	50	NO	NO	NO	NO	NO
R091	Ground	SE	61	55	49	43	61	56	50	44	-11.5	-11.4	55	50	NO	NO	NO	NO	NO
R091	Ground	SW	61	55	49	43	62	56	50	44	-11.8	-11.8	55	50	NO	NO	NO	NO	NO
R091	Ground	SE	64	58	54	48	64	59	55	49	-9.9	-9.9	55	50	NO	NO	NO	NO	NO
R091	Ground	NE	65	59	55	49	66	60	56	50	-10.2	-10.2	55	50	YES	NO	NO	NO	NO
R091	Ground	SE	65	60	55	49	66	60	56	50	-10.3	-10.4	55	50	YES	NO	NO	NO	NO
R091	Ground	SE	67	61	56	50	67	62	57	51	-10.4	-10.4	55	50	YES	YES	NO	NO	NO
R091	Ground	NE	67	61	56	50	68	62	57	51	-10.8	-10.9	55	50	YES	YES	NO	NO	NO
R091	Ground	NW	65	59	55	49	65	60	56	50	-9.3	-9.3	55	50	YES	NO	NO	NO	NO
R091	Ground	NW	64	58	55	49	65	59	55	50	-9.1	-9.1	55	50	NO	NO	NO	NO	NO
R091	Ground	NE	64	58	55	49	65	59	56	50	-9	-8.9	55	50	YES	NO	NO	NO	NO
R091	Ground	NW	61	56	52	47	62	56	53	48	-8.8	-8.8	55	50	NO	NO	NO	NO	NO
R092	Ground	SW	52	47	55	49	53	47	56	50	2.7	2.7	55	50	YES	NO	NO	NO	YES
R092	Ground	SE	50	45	53	47	51	46	54	48	2.8	2.8	55	50	NO	NO	NO	NO	NO
R092	Ground	NE	42	36	43	38	42	37	44	39	2	2	54	49	NO	NO	NO	NO	NO
R092	Ground	NW	45	39	48	42	46	40	49	43	3.3	3.3	55	50	NO	NO	NO	NO	NO
R092	Ground	NE	42	36	44	38	43	37	45	39	2.4	2.4	55	49	NO	NO	NO	NO	NO
R092	Ground	NW	47	41	50	45	48	42	51	46	3.6	3.6	55	50	NO	NO	NO	NO	NO
R093	Ground	S	49	43	44	38	50	44	44	39	-5.1	-5.2	50	50	NO	NO	NO	NO	NO
R093	Ground	E	52	46	46	41	53	47	47	41	-5.7	-5.7	50	50	NO	NO	NO	NO	NO
R093	Ground	S	52	46	46	40	52	47	46	41	-5.8	-5.8	50	50	NO	NO	NO	NO	NO
R093	Ground	E	53	47	47	41	54	48	48	42	-5.7	-5.7	50	50	NO	NO	NO	NO	NO
R093	Ground	N	52	46	45	40	53	47	46	40	-6.5	-6.5	50	50	NO	NO	NO	NO	NO
R093	Ground	W	42	36	38	32	43	37	38	32	-5	-5	50	49	NO	NO	NO	NO	NO
R093	First	S	50	44	45	39	50	45	46	40	-4.9	-4.9	50	50	NO	NO	NO	NO	NO
R093	First	E	53	48	48	42	54	48	48	43	-5.5	-5.5	50	50	NO	NO	NO	NO	NO
R093	First	S	52	47	47	41	53	48	48	42	-5.7	-5.7	50	50	NO	NO	NO	NO	NO
R093	First	E	54	48	48	43	55	49	49	43	-5.8	-6	50	50	NO	NO	NO	NO	NO
R093	First	N	53	48	47	41	54	49	48	42	-6.4	-6.4	50	50	NO	NO	NO	NO	NO
R093	First	W	45	40	41	36	46	41	42	36	-4.4	-4.5	50	50	NO	NO	NO	NO	NO
R094	Ground	SW	46	40	42	37	47	41	43	37	-3.8	-3.9	50	50	NO	NO	NO	NO	NO
R094	Ground	SE	48	42	44	38	49	43	45	39	-4.2	-4.2	50	50	NO	NO	NO	NO	NO
R094	Ground	SW	47	41	43	37	47	42	43	38	-4	-3.9	50	50	NO	NO	NO	NO	NO

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R094	Ground	SE	51	45	45	40	52	46	46	40	-5.4	-5.4	50	50	NO	NO	NO	NO	NO
R094	Ground	NE	49	44	44	38	50	44	45	39	-5.5	-5.5	50	50	NO	NO	NO	NO	NO
R094	Ground	NW	44	38	40	35	45	39	41	35	-3.8	-3.8	50	50	NO	NO	NO	NO	NO
R095	Ground	SW	52	46	54	49	52	47	55	50	3.1	3.1	55	50	NO	NO	NO	NO	NO
R095	Ground	SE	48	42	50	45	48	43	51	45	2.8	2.8	55	50	NO	NO	NO	NO	NO
R095	Ground	NE	38	32	40	34	39	33	41	35	2.4	2.4	51	45	NO	NO	NO	NO	NO
R095	Ground	NW	49	44	51	45	50	45	52	46	1.9	1.8	55	50	NO	NO	NO	NO	NO
R096	Ground	SW	54	49	46	41	55	49	47	42	-7.7	-7.8	55	50	NO	NO	NO	NO	NO
R096	Ground	SE	60	54	52	46	61	55	53	47	-7.9	-7.9	55	50	NO	NO	NO	NO	NO
R096	Ground	SE	62	57	53	48	63	57	54	49	-8.9	-8.9	55	50	NO	NO	NO	NO	NO
R096	Ground	NE	65	60	54	48	66	60	55	49	-11.1	-11.1	55	50	NO	NO	NO	NO	NO
R096	Ground	NW	63	57	52	46	63	58	52	47	-10.9	-10.9	55	50	NO	NO	NO	NO	NO
R096	Ground	NE	63	57	53	47	63	58	53	48	-10	-10.1	55	50	NO	NO	NO	NO	NO
R096	Ground	NW	59	53	48	43	59	54	49	43	-10.3	-10.3	55	50	NO	NO	NO	NO	NO
R097	Ground	SW	49	43	51	45	49	44	52	46	2.4	2.4	55	50	NO	NO	NO	NO	NO
R097	Ground	SE	49	43	51	46	50	44	52	47	2.4	2.4	55	50	NO	NO	NO	NO	NO
R097	Ground	NE	37	31	38	33	38	32	39	34	1.4	1.4	50	44	NO	NO	NO	NO	NO
R097	Ground	NW	46	40	46	41	47	41	47	42	0.9	0.9	55	50	NO	NO	NO	NO	NO
R097	Ground	SW	45	39	46	40	46	40	47	41	1.2	1.1	55	50	NO	NO	NO	NO	NO
R097	Ground	NW	42	36	43	37	43	37	44	38	1.2	1.1	55	49	NO	NO	NO	NO	NO
R098	Ground	SW	37	31	34	28	38	32	35	29	-3.2	-3.3	50	44	NO	NO	NO	NO	NO
R098	Ground	NW	38	32	34	29	39	33	35	29	-3.8	-3.9	50	45	NO	NO	NO	NO	NO
R098	Ground	SW	45	39	41	36	46	40	42	37	-3.8	-3.8	50	50	NO	NO	NO	NO	NO
R098	Ground	SE	46	41	43	37	47	41	43	38	-3.7	-3.7	50	50	NO	NO	NO	NO	NO
R098	Ground	SW	40	35	38	32	41	36	38	33	-2.8	-2.8	50	48	NO	NO	NO	NO	NO
R098	Ground	SE	44	39	41	36	45	39	42	36	-3	-3	50	50	NO	NO	NO	NO	NO
R098	Ground	NE	46	41	43	37	47	41	43	38	-3.9	-3.8	50	50	NO	NO	NO	NO	NO
R098	Ground	SE	47	42	43	38	48	42	44	38	-4.2	-4.2	50	50	NO	NO	NO	NO	NO
R098	Ground	NE	48	42	43	37	48	43	44	38	-4.6	-4.6	50	50	NO	NO	NO	NO	NO
R098	Ground	NW	41	35	38	32	42	37	38	32	-4.1	-4.1	50	49	NO	NO	NO	NO	NO
R098	First	SW	43	37	40	34	44	38	40	35	-3.3	-3.4	50	50	NO	NO	NO	NO	NO
R098	First	NW	43	37	40	34	44	38	41	35	-3.5	-3.6	50	50	NO	NO	NO	NO	NO
R098	First	SW	46	41	43	37	47	41	43	38	-3.8	-3.7	50	50	NO	NO	NO	NO	NO
R098	First	SE	49	44	45	39	50	45	46	40	-4.5	-4.5	50	50	NO	NO	NO	NO	NO
R098	First	SW	47	41	43	37	48	42	44	38	-3.9	-3.9	50	50	NO	NO	NO	NO	NO
R098	First	SE	51	45	46	41	51	46	47	41	-4.6	-4.6	50	50	NO	NO	NO	NO	NO
R098	First	NE	51	45	46	40	52	46	47	41	-4.8	-4.8	50	50	NO	NO	NO	NO	NO
R098	First	SE	51	45	46	40	52	46	47	41	-4.9	-4.9	50	50	NO	NO	NO	NO	NO
R098	First	NE	50	45	46	40	51	46	46	41	-4.8	-4.8	50	50	NO	NO	NO	NO	NO
R098	First	NW	45	39	41	35	46	40	42	36	-4.1	-4.1	50	50	NO	NO	NO	NO	NO

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R099	Ground	SW	37	31	38	33	38	32	39	34	1.4	1.4	50	44	NO	NO	NO	NO	NO
R099	Ground	SE	49	44	51	46	50	45	52	47	2.1	2	55	50	NO	NO	NO	NO	NO
R099	Ground	NE	37	31	38	32	37	32	39	33	1.3	1.2	49	44	NO	NO	NO	NO	NO
R099	Ground	N	41	35	42	36	41	36	43	37	1.4	1.3	53	48	NO	NO	NO	NO	NO
R099	Ground	N	41	36	42	37	42	37	43	38	1.1	1.1	54	49	NO	NO	NO	NO	NO
R099	Ground	NW	41	35	42	37	42	36	43	38	1.7	1.7	54	48	NO	NO	NO	NO	NO
R100	Ground	SW	54	49	47	42	55	50	48	42	-7.2	-7.2	55	50	NO	NO	NO	NO	NO
R100	Ground	SW	55	49	48	42	56	50	48	43	-7.3	-7.4	55	50	NO	NO	NO	NO	NO
R100	Ground	SE	55	50	46	40	56	51	47	41	-9.2	-9.3	55	50	NO	NO	NO	NO	NO
R100	Ground	NE	50	44	41	35	51	45	42	36	-8.9	-8.9	55	50	NO	NO	NO	NO	NO
R100	Ground	NW	59	53	45	40	60	54	46	40	-13.6	-13.6	55	50	NO	NO	NO	NO	NO
R100	Ground	NE	62	56	51	45	62	57	52	46	-10.4	-10.5	55	50	NO	NO	NO	NO	NO
R100	Ground	NW	61	55	51	45	61	56	52	46	-9.6	-9.6	55	50	NO	NO	NO	NO	NO
R101	Ground	SW	51	45	43	38	52	46	44	38	-7.4	-7.4	55	50	NO	NO	NO	NO	NO
R101	Ground	SW	50	44	42	37	51	45	43	37	-7.4	-7.5	55	50	NO	NO	NO	NO	NO
R101	Ground	SE	61	55	52	46	61	56	52	47	-9	-8.9	55	50	NO	NO	NO	NO	NO
R101	Ground	NE	63	57	51	45	64	58	52	46	-11.7	-11.8	55	50	NO	NO	NO	NO	NO
R101	Ground	NW	58	52	46	41	58	53	47	42	-11.1	-11.1	55	50	NO	NO	NO	NO	NO
R101	Ground	NW	55	49	46	40	56	50	46	41	-9.2	-9.3	55	50	NO	NO	NO	NO	NO
R101	Ground	NW	54	49	43	38	55	49	44	38	-10.9	-11	55	50	NO	NO	NO	NO	NO
R101	Ground	NW	51	46	43	38	52	46	44	38	-7.8	-7.9	55	50	NO	NO	NO	NO	NO
R102	Ground	SW	45	39	46	40	46	40	47	41	0.9	0.8	55	50	NO	NO	NO	NO	NO
R102	Ground	NW	44	38	45	39	45	39	46	40	0.8	0.8	55	50	NO	NO	NO	NO	NO
R102	Ground	SW	38	32	40	35	39	33	41	36	2.6	2.5	51	45	NO	NO	NO	NO	NO
R102	Ground	SE	49	43	51	45	50	44	52	46	2.1	2.1	55	50	NO	NO	NO	NO	NO
R102	Ground	NE	36	31	37	32	37	31	38	33	1.2	1.2	49	43	NO	NO	NO	NO	NO
R102	Ground	NW	38	32	39	34	39	33	40	34	1.3	1.3	51	45	NO	NO	NO	NO	NO
R102	Ground	NE	36	31	38	32	37	32	39	33	1.3	1.3	49	44	NO	NO	NO	NO	NO
R102	Ground	NW	45	39	45	40	46	40	46	40	0.4	0.5	55	50	NO	NO	NO	NO	NO
R103	Ground	SW	51	45	59	53	51	46	60	54	8.5	8.5	55	50	YES	YES	NO	NO	YES
R103	Ground	SE	46	40	53	47	47	41	54	48	7.1	7.2	55	50	NO	NO	NO	NO	NO
R103	Ground	NE	38	33	42	36	39	33	43	37	3.9	4	51	45	NO	NO	NO	NO	NO
R103	Ground	NW	48	42	55	49	48	43	56	50	7.3	7.4	55	50	YES	NO	NO	NO	YES
R103	First	SW	53	48	60	54	54	49	61	55	6.3	6.4	55	50	YES	YES	NO	NO	YES
R103	First	SE	50	44	54	49	51	45	55	50	4.6	4.7	55	50	NO	NO	NO	NO	NO
R103	First	NE	44	38	47	42	45	39	48	43	3.4	3.4	55	50	NO	NO	NO	NO	NO
R103	First	NW	50	45	55	50	51	45	56	51	5.4	5.5	55	50	YES	YES	NO	NO	YES
R104	Ground	SW	42	36	47	41	43	37	48	42	5.3	5.3	55	49	NO	NO	NO	NO	NO
R104	Ground	NW	46	40	46	41	47	41	47	41	0.6	0.5	55	50	NO	NO	NO	NO	NO
R104	Ground	SW	49	44	51	45	50	44	52	46	1.8	1.8	55	50	NO	NO	NO	NO	NO

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R104	Ground	SE	46	41	49	43	47	41	50	44	2.9	3	55	50	NO	NO	NO	NO	NO
R104	Ground	NE	36	30	37	32	37	31	38	33	1.5	1.5	49	43	NO	NO	NO	NO	NO
R104	Ground	NW	43	37	43	38	43	38	44	38	0.8	0.8	55	50	NO	NO	NO	NO	NO
R105	Ground	SW	52	46	45	39	52	47	45	40	-7	-6.9	55	50	NO	NO	NO	NO	NO
R105	Ground	SE	59	53	50	44	60	54	51	45	-8.7	-8.7	55	50	NO	NO	NO	NO	NO
R105	Ground	NE	63	57	52	46	64	58	53	47	-11	-11	55	50	NO	NO	NO	NO	NO
R105	Ground	NW	57	52	48	43	58	52	49	44	-8.8	-8.7	55	50	NO	NO	NO	NO	NO
R105	First	SW	55	49	47	41	55	50	48	42	-7.8	-7.7	55	50	NO	NO	NO	NO	NO
R105	First	SE	61	55	52	46	61	56	53	47	-8.7	-8.7	55	50	NO	NO	NO	NO	NO
R105	First	NE	64	58	53	48	65	59	54	48	-10.6	-10.6	55	50	NO	NO	NO	NO	NO
R105	First	NW	61	55	50	44	62	56	51	45	-10.9	-10.9	55	50	NO	NO	NO	NO	NO
R106	Ground	SW	37	32	35	29	38	33	36	30	-2.8	-2.8	50	45	NO	NO	NO	NO	NO
R106	Ground	NW	36	31	33	28	37	32	34	28	-3.3	-3.4	49	44	NO	NO	NO	NO	NO
R106	Ground	SW	44	38	40	34	44	39	41	35	-3.4	-3.4	50	50	NO	NO	NO	NO	NO
R106	Ground	SE	44	38	40	35	45	39	41	36	-3.5	-3.5	50	50	NO	NO	NO	NO	NO
R106	Ground	SW	44	38	41	35	44	39	42	36	-2.5	-2.4	50	50	NO	NO	NO	NO	NO
R106	Ground	SE	44	39	42	36	45	40	42	37	-3	-3	50	50	NO	NO	NO	NO	NO
R106	Ground	NE	45	39	41	36	45	40	42	36	-3.5	-3.5	50	50	NO	NO	NO	NO	NO
R106	Ground	SE	46	41	42	37	47	41	43	37	-4.1	-4.1	50	50	NO	NO	NO	NO	NO
R106	Ground	NE	47	41	42	36	48	42	43	37	-4.8	-4.8	50	50	NO	NO	NO	NO	NO
R106	Ground	NW	40	34	37	31	41	35	37	31	-3.8	-3.8	50	47	NO	NO	NO	NO	NO
R106	Ground	NE	41	35	38	32	42	36	38	33	-3.5	-3.5	50	48	NO	NO	NO	NO	NO
R106	Ground	NW	40	34	37	31	41	36	37	32	-4	-4	50	48	NO	NO	NO	NO	NO
R106	First	SW	42	37	39	34	43	37	40	34	-3.1	-3.1	50	49	NO	NO	NO	NO	NO
R106	First	NW	42	36	39	33	43	37	40	34	-3.3	-3.3	50	49	NO	NO	NO	NO	NO
R106	First	SW	45	40	42	36	46	40	42	37	-3.6	-3.6	50	50	NO	NO	NO	NO	NO
R106	First	SE	46	40	42	37	47	41	43	38	-3.5	-3.5	50	50	NO	NO	NO	NO	NO
R106	First	SW	46	40	43	37	46	41	43	38	-3	-3.1	50	50	NO	NO	NO	NO	NO
R106	First	SE	47	41	44	38	48	42	45	39	-3.3	-3.3	50	50	NO	NO	NO	NO	NO
R106	First	NE	47	42	44	38	48	43	45	39	-3.8	-3.8	50	50	NO	NO	NO	NO	NO
R106	First	SE	49	43	44	39	50	44	45	39	-4.4	-4.4	50	50	NO	NO	NO	NO	NO
R106	First	NE	50	44	44	39	50	45	45	39	-5.4	-5.4	50	50	NO	NO	NO	NO	NO
R106	First	NW	43	38	40	35	44	39	41	35	-3.5	-3.5	50	50	NO	NO	NO	NO	NO
R106	First	NE	45	39	42	36	46	40	42	36	-3.4	-3.4	50	50	NO	NO	NO	NO	NO
R106	First	NW	43	38	40	35	44	39	41	35	-3.6	-3.6	50	50	NO	NO	NO	NO	NO
R107	Ground	SW	49	43	53	47	50	44	54	48	4.2	4.2	55	50	NO	NO	NO	NO	NO
R107	Ground	SE	47	41	51	45	48	42	52	46	4	4	55	50	NO	NO	NO	NO	NO
R107	Ground	NE	38	32	53	47	38	33	54	48	15.3	15.3	50	45	YES	YES	NO	NO	YES
R107	Ground	NW	45	40	53	47	46	40	53	48	7.5	7.4	55	50	NO	NO	NO	NO	NO
R107	First	SW	54	49	56	51	55	50	57	52	2.2	2.2	55	50	YES	YES	NO	NO	YES

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			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R107	First	SE	51	45	53	48	51	46	54	49	3.1	3.1	55	50	NO	NO	NO	NO	NO
R107	First	NE	43	38	54	48	44	39	55	49	10.4	10.3	55	50	NO	NO	NO	NO	NO
R107	First	NW	53	47	56	50	53	48	57	51	3.3	3.4	55	50	YES	YES	NO	NO	YES
R108	Ground	SW	48	43	53	48	49	43	54	49	5.4	5.4	55	50	NO	NO	NO	NO	NO
R108	Ground	SE	47	42	50	44	48	42	51	45	2.8	2.7	55	50	NO	NO	NO	NO	NO
R108	Ground	NE	40	34	42	36	41	35	43	37	1.9	1.9	53	47	NO	NO	NO	NO	NO
R108	Ground	NW	46	40	47	41	46	41	48	42	1.2	1.2	55	50	NO	NO	NO	NO	NO
R109	Ground	SW	49	44	60	55	50	45	61	56	10.9	11	55	50	YES	YES	NO	NO	YES
R109	Ground	SE	47	41	54	49	48	42	55	50	7.6	7.6	55	50	NO	NO	NO	NO	NO
R109	Ground	NE	38	33	50	45	39	34	51	46	12	12	51	46	NO	NO	NO	NO	NO
R109	Ground	NW	45	39	53	48	45	40	54	49	9.1	9	55	50	NO	NO	NO	NO	NO
R109	First	SW	54	48	61	55	55	49	62	56	7.1	7.1	55	50	YES	YES	NO	NO	YES
R109	First	SE	50	45	55	50	51	45	56	51	5.2	5.1	55	50	YES	YES	NO	NO	YES
R109	First	NE	44	38	53	47	45	39	54	48	8.6	8.6	55	50	NO	NO	NO	NO	NO
R109	First	NW	52	46	56	50	53	47	57	51	4.2	4.3	55	50	YES	YES	NO	NO	YES
R110	Ground	SW	37	32	35	29	38	33	36	30	-2.5	-2.5	50	-	NO	-	NO	-	NO
R110	Ground	NW	36	30	33	27	37	31	34	28	-3.3	-3.2	49	-	NO	-	NO	-	NO
R110	Ground	SW	44	38	40	34	44	39	41	35	-3.5	-3.6	50	-	NO	-	NO	-	NO
R110	Ground	SE	42	36	39	33	43	37	40	34	-2.9	-2.9	50	-	NO	-	NO	-	NO
R110	Ground	NE	44	39	41	35	45	40	42	36	-3.7	-3.7	50	-	NO	-	NO	-	NO
R110	Ground	NW	38	32	36	30	39	33	36	30	-2.9	-3	50	-	NO	-	NO	-	NO
R110	First	SW	42	36	39	34	43	37	40	34	-2.9	-2.9	50	-	NO	-	NO	-	NO
R110	First	NW	41	36	39	33	42	37	39	34	-3.1	-3.1	50	-	NO	-	NO	-	NO
R110	First	SW	45	39	41	36	46	40	42	37	-3.6	-3.6	50	-	NO	-	NO	-	NO
R110	First	SE	45	39	42	36	46	40	43	37	-3.3	-3.3	50	-	NO	-	NO	-	NO
R110	First	NE	47	41	43	38	48	42	44	38	-4.1	-4	50	-	NO	-	NO	-	NO
R110	First	NW	42	36	40	34	43	37	40	34	-3	-3	50	-	NO	-	NO	-	NO
R111	Ground	SW	47	42	44	38	48	42	45	39	-3.1	-3.1	45	45	NO	NO	NO	NO	NO
R111	Ground	SE	50	44	45	39	51	45	46	40	-5	-5	45	45	YES	NO	NO	NO	NO
R111	Ground	SW	46	41	41	36	47	41	42	36	-5	-5	45	45	NO	NO	NO	NO	NO
R111	Ground	SE	54	49	46	40	55	49	47	41	-8.1	-8.2	45	45	YES	NO	NO	NO	NO
R111	Ground	NE	58	52	48	42	59	53	48	42	-10.8	-10.8	45	45	YES	NO	NO	NO	NO
R111	Ground	NW	53	47	45	39	54	48	45	40	-8.6	-8.7	45	45	NO	NO	NO	NO	NO
R112	Ground	SW	58	53	49	43	59	54	50	44	-9.6	-9.6	55	50	NO	NO	NO	NO	NO
R112	Ground	SE	59	54	49	44	60	54	50	45	-9.7	-9.7	55	50	NO	NO	NO	NO	NO
R112	Ground	NE	63	58	51	46	64	58	52	47	-11.6	-11.6	55	50	NO	NO	NO	NO	NO
R112	Ground	NW	61	56	50	44	62	56	51	45	-11.4	-11.4	55	50	NO	NO	NO	NO	NO
R113	Ground	SW	47	41	49	44	48	42	50	45	2.5	2.6	55	50	NO	NO	NO	NO	NO
R113	Ground	SE	45	39	48	42	46	40	49	43	3.2	3.2	55	50	NO	NO	NO	NO	NO
R113	Ground	NE	36	30	37	31	36	31	38	32	1.5	1.5	48	43	NO	NO	NO	NO	NO

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R113	Ground	NW	40	35	41	36	41	35	42	36	1	1	53	47	NO	NO	NO	NO	NO
R113	Ground	NE	36	30	38	33	37	31	39	33	2.3	2.3	49	43	NO	NO	NO	NO	NO
R113	Ground	NW	43	37	43	37	43	38	44	38	0.4	0.4	55	50	NO	NO	NO	NO	NO
R114	Ground	SE	54	48	47	42	54	49	48	42	-6.4	-6.4	55	50	NO	NO	NO	NO	NO
R114	Ground	NE	49	43	43	37	50	44	44	38	-6.4	-6.4	55	50	NO	NO	NO	NO	NO
R114	Ground	NW	47	41	41	35	48	42	41	36	-6.4	-6.4	55	50	NO	NO	NO	NO	NO
R114	Ground	NE	48	42	42	36	49	43	42	37	-7.1	-6.9	55	50	NO	NO	NO	NO	NO
R114	Ground	NW	48	42	42	36	49	43	42	36	-6.6	-6.6	55	50	NO	NO	NO	NO	NO
R114	Ground	SW	45	40	40	34	46	40	41	35	-5.3	-5.3	55	50	NO	NO	NO	NO	NO
R115	Ground	SW	48	42	50	44	48	43	51	45	2.3	2.2	55	50	NO	NO	NO	NO	NO
R115	Ground	SW	48	42	51	45	49	43	52	46	2.8	2.8	55	50	NO	NO	NO	NO	NO
R115	Ground	NW	48	42	52	46	49	43	53	47	3.8	3.7	55	50	NO	NO	NO	NO	NO
R115	Ground	SW	48	43	53	48	49	43	54	48	5.2	5.1	55	50	NO	NO	NO	NO	NO
R115	Ground	SE	45	39	47	41	46	40	48	42	2.5	2.4	55	50	NO	NO	NO	NO	NO
R115	Ground	NE	40	35	42	36	41	35	43	37	1.9	1.8	53	47	NO	NO	NO	NO	NO
R115	Ground	SE	41	35	42	37	42	36	43	38	1.6	1.5	54	48	NO	NO	NO	NO	NO
R115	Ground	NE	40	34	42	37	41	35	43	37	2.2	2.2	53	47	NO	NO	NO	NO	NO
R115	Ground	NW	44	39	46	40	45	39	47	41	1.6	1.7	55	50	NO	NO	NO	NO	NO
R116	Ground	SW	41	36	39	33	42	36	40	34	-2.6	-2.6	50	-	NO	-	NO	-	NO
R116	Ground	SE	42	36	39	34	43	37	40	34	-2.7	-2.8	50	-	NO	-	NO	-	NO
R116	Ground	NE	47	41	43	37	48	42	44	38	-4.1	-4.2	50	-	NO	-	NO	-	NO
R116	Ground	NW	41	36	39	33	42	37	39	34	-3	-3	50	-	NO	-	NO	-	NO
R116	First	SW	49	43	45	39	50	44	46	40	-4	-4	50	-	NO	-	NO	-	NO
R116	First	SE	49	44	45	39	50	44	46	40	-4.4	-4.5	50	-	NO	-	NO	-	NO
R116	First	NE	49	44	45	40	50	45	46	40	-4.3	-4.4	50	-	NO	-	NO	-	NO
R116	First	NW	49	43	45	39	50	44	46	40	-4.3	-4.3	50	-	NO	-	NO	-	NO
R117	Ground	SW	46	40	41	35	47	41	41	36	-5.1	-5.1	50	-	NO	-	NO	-	NO
R117	Ground	SE	52	46	45	39	53	47	46	40	-6.9	-7	50	-	NO	-	NO	-	NO
R117	Ground	SW	49	43	44	38	50	44	45	39	-4.9	-5	50	-	NO	-	NO	-	NO
R117	Ground	SE	53	48	47	41	54	49	48	42	-6.4	-6.5	50	-	NO	-	NO	-	NO
R117	Ground	NE	46	40	40	34	47	41	41	35	-5.9	-5.9	50	-	NO	-	NO	-	NO
R117	Ground	NW	45	39	41	35	46	40	41	35	-5	-4.9	50	-	NO	-	NO	-	NO
R117	Ground	NE	46	40	41	36	47	41	42	36	-4.8	-4.8	50	-	NO	-	NO	-	NO
R117	Ground	NW	45	40	41	35	46	41	42	36	-4.8	-4.8	50	-	NO	-	NO	-	NO
R118	Ground	SW	55	49	47	41	56	50	48	42	-8.2	-8.2	55	50	NO	NO	NO	NO	NO
R118	Ground	SE	58	52	48	42	59	53	49	43	-10.1	-10.2	55	50	NO	NO	NO	NO	NO
R118	Ground	NE	62	57	49	44	63	57	50	44	-12.9	-13	55	50	NO	NO	NO	NO	NO
R118	Ground	NW	57	51	47	41	58	52	47	42	-10.3	-10.4	55	50	NO	NO	NO	NO	NO
R119	Ground	SW	69	63	45	39	69	64	46	40	-23.7	-23.7	55	50	NO	NO	NO	NO	NO
R119	Ground	SE	67	61	53	47	67	62	54	48	-13.4	-13.4	55	50	NO	NO	NO	NO	NO

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			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R119	Ground	SE	64	59	55	50	65	59	56	51	-8.6	-8.5	55	50	YES	YES	NO	NO	NO
R119	Ground	NE	50	44	57	51	51	45	58	52	7.5	7.4	55	50	YES	YES	NO	NO	YES
R119	Ground	NW	63	58	54	48	64	58	55	49	-9.3	-9.2	55	50	NO	NO	NO	NO	NO
R119	First	SW	69	64	48	42	70	65	49	43	-21.3	-21.4	55	50	NO	NO	NO	NO	NO
R119	First	SE	67	62	54	48	68	62	55	49	-13.2	-13.2	55	50	NO	NO	NO	NO	NO
R119	First	SE	65	59	56	50	65	60	57	51	-8.4	-8.3	55	50	YES	YES	NO	NO	NO
R119	First	NE	54	49	58	52	55	49	59	53	3.4	3.5	55	50	YES	YES	NO	NO	YES
R119	First	NW	65	60	55	49	66	60	56	50	-10.2	-10.2	55	50	YES	NO	NO	NO	NO
R120	Ground	SW	42	37	40	34	43	38	40	35	-2.7	-2.7	50	-	NO	-	NO	-	NO
R120	Ground	SE	44	38	40	35	45	39	41	35	-3.5	-3.6	50	-	NO	-	NO	-	NO
R120	Ground	SW	44	38	40	34	44	39	41	35	-3.5	-3.5	50	-	NO	-	NO	-	NO
R120	Ground	SE	44	38	40	34	44	39	41	35	-3.6	-3.6	50	-	NO	-	NO	-	NO
R120	Ground	SW	42	36	39	33	43	37	40	34	-2.7	-2.8	50	-	NO	-	NO	-	NO
R120	Ground	SE	42	36	40	34	43	37	40	34	-2.5	-2.5	50	-	NO	-	NO	-	NO
R120	Ground	NE	43	37	40	34	43	38	40	35	-3	-3.1	50	-	NO	-	NO	-	NO
R120	Ground	NE	43	38	39	34	44	38	40	34	-4.3	-4.2	50	-	NO	-	NO	-	NO
R120	Ground	NW	46	40	43	37	47	41	43	37	-4.3	-4.4	50	-	NO	-	NO	-	NO
R120	Ground	W	42	36	39	33	43	37	39	33	-4.3	-4.3	50	-	NO	-	NO	-	NO
R120	Ground	NW	31	30	28	23	32	30	29	23	-2.9	-7	44	-	NO	-	NO	-	NO
R120	Ground	NW	45	39	42	36	46	41	42	36	-4.3	-4.3	50	-	NO	-	NO	-	NO
R120	First	SW	43	37	40	34	43	38	41	35	-2.6	-2.7	50	-	NO	-	NO	-	NO
R120	First	SE	44	39	41	35	45	39	42	36	-3.6	-3.6	50	-	NO	-	NO	-	NO
R120	First	SW	44	38	40	35	45	39	41	36	-3.4	-3.5	50	-	NO	-	NO	-	NO
R120	First	SE	45	39	41	35	45	40	42	36	-3.7	-3.7	50	-	NO	-	NO	-	NO
R120	First	SW	42	37	40	34	43	38	40	35	-2.7	-2.8	50	-	NO	-	NO	-	NO
R120	First	SE	44	39	42	36	45	40	43	37	-2.9	-2.9	50	-	NO	-	NO	-	NO
R120	First	NE	45	39	42	36	46	40	42	37	-3.6	-3.6	50	-	NO	-	NO	-	NO
R120	First	NE	46	40	42	36	47	41	42	37	-4.3	-4.3	50	-	NO	-	NO	-	NO
R120	First	NW	47	41	44	38	48	42	44	38	-4.2	-4.3	50	-	NO	-	NO	-	NO
R120	First	W	43	37	40	34	44	38	40	34	-4.2	-4.2	50	-	NO	-	NO	-	NO
R120	First	NW	34	30	31	26	35	30	32	26	-2.9	-3.9	47	-	NO	-	NO	-	NO
R120	First	NW	46	40	43	37	47	41	43	37	-4.2	-4.3	50	-	NO	-	NO	-	NO
R120	Second	SW	43	38	41	35	44	39	42	36	-2.7	-2.7	50	-	NO	-	NO	-	NO
R120	Second	SE	45	40	42	36	46	40	42	37	-3.6	-3.6	50	-	NO	-	NO	-	NO
R120	Second	SW	45	39	41	35	45	40	42	36	-3.4	-3.4	50	-	NO	-	NO	-	NO
R120	Second	SE	46	40	42	37	47	41	43	37	-3.8	-3.9	50	-	NO	-	NO	-	NO
R120	Second	SW	43	38	40	35	44	38	41	36	-2.8	-2.8	50	-	NO	-	NO	-	NO
R120	Second	SE	49	43	45	39	50	44	45	40	-4.3	-4.3	50	-	NO	-	NO	-	NO
R120	Second	NE	49	43	44	39	50	44	45	39	-4.6	-4.7	50	-	NO	-	NO	-	NO
R120	Second	NE	50	44	46	40	51	45	46	40	-4.6	-4.6	50	-	NO	-	NO	-	NO

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			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R120	Second	NW	48	42	44	39	48	43	44	39	-4	-4.1	50	-	NO	-	NO	-	NO
R120	Second	W	44	38	41	35	45	39	41	35	-4	-4	50	-	NO	-	NO	-	NO
R120	Second	NW	38	32	36	30	39	33	36	31	-2.5	-2.6	50	-	NO	-	NO	-	NO
R120	Second	NW	47	41	43	38	48	42	44	38	-4	-4.1	50	-	NO	-	NO	-	NO
R121	Ground	SW	46	40	48	43	47	41	49	44	2.5	2.5	55	50	NO	NO	NO	NO	NO
R121	Ground	SE	46	40	48	42	46	41	49	43	2.4	2.3	55	50	NO	NO	NO	NO	NO
R121	Ground	NE	35	30	36	31	36	30	37	32	1.3	1.3	48	42	NO	NO	NO	NO	NO
R121	Ground	NW	42	37	43	37	43	37	43	38	0.4	0.4	55	49	NO	NO	NO	NO	NO
R122	Ground	SW	48	42	53	48	48	43	54	49	5.8	5.8	55	50	NO	NO	NO	NO	NO
R122	Ground	SE	44	38	46	40	45	39	47	41	1.8	1.7	55	50	NO	NO	NO	NO	NO
R122	Ground	NE	36	30	39	33	37	31	40	34	2.7	2.8	49	43	NO	NO	NO	NO	NO
R122	Ground	NW	45	40	48	42	46	41	49	43	2.4	2.4	55	50	NO	NO	NO	NO	NO
R122	First	SW	51	45	55	49	51	46	56	50	4.3	4.3	55	50	YES	NO	NO	NO	YES
R122	First	SE	48	42	50	44	49	43	51	45	1.9	1.8	55	50	NO	NO	NO	NO	NO
R122	First	NE	42	36	44	39	43	37	45	40	2.7	2.7	55	49	NO	NO	NO	NO	NO
R122	First	NW	49	43	50	45	50	44	51	46	1.4	1.5	55	50	NO	NO	NO	NO	NO
R123	Ground	SW	59	53	49	43	60	54	50	44	-9.9	-10	55	50	NO	NO	NO	NO	NO
R123	Ground	SE	62	56	50	44	62	57	51	45	-11.6	-11.6	55	50	NO	NO	NO	NO	NO
R123	Ground	NE	64	58	50	44	65	59	51	45	-13.9	-14	55	50	NO	NO	NO	NO	NO
R123	Ground	NW	61	56	49	44	62	56	50	44	-11.9	-12	55	50	NO	NO	NO	NO	NO
R125	Ground	SW	42	36	46	40	42	37	47	41	4.2	4.4	54	49	NO	NO	NO	NO	NO
R125	Ground	SE	47	41	49	43	48	42	50	44	1.7	1.7	55	50	NO	NO	NO	NO	NO
R125	Ground	SW	47	42	49	43	48	42	50	44	1.6	1.7	55	50	NO	NO	NO	NO	NO
R125	Ground	SE	45	40	47	42	46	40	48	43	2.3	2.3	55	50	NO	NO	NO	NO	NO
R125	Ground	NE	32	30	34	28	33	30	34	29	1.4	-1.3	45	42	NO	NO	NO	NO	NO
R125	Ground	NW	35	30	37	32	35	30	38	33	2.9	2.5	47	42	NO	NO	NO	NO	NO
R125	Ground	NE	32	30	34	28	33	30	35	29	1.3	-1.1	45	42	NO	NO	NO	NO	NO
R125	Ground	NW	41	36	42	36	42	36	43	37	1	0.9	54	48	NO	NO	NO	NO	NO
R125	First	SW	47	42	49	43	48	42	50	44	1.5	1.5	55	50	NO	NO	NO	NO	NO
R125	First	SE	48	43	49	44	49	43	50	45	1.5	1.5	55	50	NO	NO	NO	NO	NO
R125	First	SW	48	43	50	44	49	43	51	45	1.5	1.6	55	50	NO	NO	NO	NO	NO
R125	First	SE	46	40	48	42	47	41	49	43	2.4	2.4	55	50	NO	NO	NO	NO	NO
R125	First	NE	38	33	39	34	39	33	40	35	1.4	1.4	51	45	NO	NO	NO	NO	NO
R125	First	NW	41	35	42	36	41	36	43	37	1.5	1.5	53	48	NO	NO	NO	NO	NO
R125	First	NE	38	33	40	34	39	34	41	35	1.4	1.3	51	46	NO	NO	NO	NO	NO
R125	First	NW	47	41	47	42	48	42	48	43	0.5	0.5	55	50	NO	NO	NO	NO	NO
R126	Ground	SW	47	41	53	48	48	42	54	48	6.3	6.2	55	50	NO	NO	NO	NO	NO
R126	Ground	SE	45	39	47	41	46	40	48	42	2	2	55	50	NO	NO	NO	NO	NO
R126	Ground	NE	40	35	43	38	41	35	44	38	3.1	3.1	53	47	NO	NO	NO	NO	NO
R126	Ground	NW	42	37	44	39	43	37	45	40	2.3	2.3	55	49	NO	NO	NO	NO	NO

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R127	Ground	SW	34	30	37	32	35	30	38	32	3.3	2.3	47	42	NO	NO	NO	NO	NO
R127	Ground	SE	45	39	47	41	45	40	48	42	2.5	2.5	55	50	NO	NO	NO	NO	NO
R127	Ground	NE	32	30	33	28	33	30	34	29	1.3	-1.5	45	42	NO	NO	NO	NO	NO
R127	Ground	NW	35	30	38	32	36	30	39	33	2.6	2.6	48	42	NO	NO	NO	NO	NO
R127	Ground	NE	32	30	33	28	33	30	34	29	1.3	-1.4	45	42	NO	NO	NO	NO	NO
R127	Ground	NW	42	37	42	37	43	37	43	38	0.2	0.2	55	49	NO	NO	NO	NO	NO
R127	First	SW	40	34	42	36	41	35	42	37	1.6	1.6	53	47	NO	NO	NO	NO	NO
R127	First	SE	45	40	48	42	46	40	49	43	2.4	2.5	55	50	NO	NO	NO	NO	NO
R127	First	NE	38	32	39	34	39	33	40	34	1.3	1.3	51	45	NO	NO	NO	NO	NO
R127	First	NW	41	35	42	36	42	36	43	37	1.1	1	54	48	NO	NO	NO	NO	NO
R127	First	NE	38	33	39	34	39	33	40	35	1.3	1.3	51	45	NO	NO	NO	NO	NO
R127	First	NW	46	40	45	40	46	41	46	41	-0.1	0	55	50	NO	NO	NO	NO	NO
R128	Ground	SW	60	54	50	44	60	55	50	45	-9.9	-9.9	55	50	NO	NO	NO	NO	NO
R128	Ground	SE	62	56	50	45	63	57	51	45	-11.7	-11.7	55	50	NO	NO	NO	NO	NO
R128	Ground	NE	65	59	51	45	66	60	51	46	-14.2	-14.2	55	50	NO	NO	NO	NO	NO
R128	Ground	NW	63	57	50	44	64	58	51	45	-12.8	-12.9	55	50	NO	NO	NO	NO	NO
R129	Ground	SW	44	38	40	34	45	39	41	35	-4.2	-4.2	50	-	NO	-	NO	-	NO
R129	Ground	SE	47	41	43	37	48	42	44	38	-4.1	-4.1	50	-	NO	-	NO	-	NO
R129	Ground	NE	46	40	42	36	47	41	43	37	-4.3	-4.2	50	-	NO	-	NO	-	NO
R129	Ground	SE	46	39	41	35	46	40	42	36	-4.1	-4	50	-	NO	-	NO	-	NO
R129	Ground	SW	44	38	40	35	45	39	41	35	-4	-4	50	-	NO	-	NO	-	NO
R129	Ground	SE	47	42	43	37	48	43	43	38	-5.2	-5.2	50	-	NO	-	NO	-	NO
R129	Ground	NE	48	43	43	38	49	44	44	38	-5.3	-5.4	50	-	NO	-	NO	-	NO
R129	Ground	SE	46	40	42	36	47	41	42	37	-4.7	-4.7	50	-	NO	-	NO	-	NO
R129	Ground	SW	46	40	41	36	47	41	42	36	-4.6	-4.5	50	-	NO	-	NO	-	NO
R129	Ground	SE	49	43	44	38	50	44	45	39	-5	-5	50	-	NO	-	NO	-	NO
R129	Ground	NE	50	44	44	38	51	45	45	39	-6.2	-6.1	50	-	NO	-	NO	-	NO
R129	Ground	NW	47	41	41	35	48	42	41	35	-6.5	-6.5	50	-	NO	-	NO	-	NO
R130	Ground	SW	44	38	45	40	45	39	46	41	1.8	1.8	55	50	NO	NO	NO	NO	NO
R130	Ground	SE	42	37	46	40	43	37	47	41	4	3.9	55	49	NO	NO	NO	NO	NO
R130	Ground	NE	38	32	40	34	38	33	41	35	2.3	2.2	50	45	NO	NO	NO	NO	NO
R130	Ground	NW	43	38	45	39	44	38	46	40	1.7	1.6	55	50	NO	NO	NO	NO	NO
R131	Ground	SW	47	41	53	48	47	42	54	48	6.9	6.9	55	50	NO	NO	NO	NO	NO
R131	Ground	SE	43	37	45	39	43	38	46	40	2.2	2.3	55	50	NO	NO	NO	NO	NO
R131	Ground	NE	36	31	41	35	37	31	42	36	4.5	4.5	49	43	NO	NO	NO	NO	NO
R131	Ground	NW	46	41	49	44	47	41	50	45	3.4	3.5	55	50	NO	NO	NO	NO	NO
R131	Ground	NW	47	41	51	45	47	42	52	46	4.5	4.5	55	50	NO	NO	NO	NO	NO
R131	Ground	NW	47	41	52	47	47	42	53	47	5.7	5.6	55	50	NO	NO	NO	NO	NO
R131	First	SW	49	44	55	49	50	45	55	50	5.2	5.2	55	50	NO	NO	NO	NO	NO
R131	First	SE	47	42	50	44	48	42	51	45	2.6	2.6	55	50	NO	NO	NO	NO	NO

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R131	First	NE	42	36	46	41	43	37	47	41	4.2	4.2	55	49	NO	NO	NO	NO	NO
R131	First	NW	49	43	52	46	50	44	53	47	2.7	2.7	55	50	NO	NO	NO	NO	NO
R131	First	NW	50	44	53	47	50	45	53	48	3.2	3.1	55	50	NO	NO	NO	NO	NO
R131	First	NW	50	44	54	48	50	45	55	49	4.5	4.4	55	50	NO	NO	NO	NO	NO
R133	Ground	SW	46	40	46	40	47	41	47	41	0.3	0.3	55	50	NO	NO	NO	NO	NO
R133	Ground	SE	40	35	41	36	41	35	42	37	1.3	1.3	53	47	NO	NO	NO	NO	NO
R133	Ground	NE	36	30	38	32	37	31	39	33	1.8	1.8	49	43	NO	NO	NO	NO	NO
R133	Ground	NW	46	40	46	40	47	41	47	41	0.2	0.1	55	50	NO	NO	NO	NO	NO
R134	Ground	W	40	34	37	31	41	35	38	32	-3	-3	50	-	NO	-	NO	-	NO
R134	Ground	S	46	40	41	36	47	41	42	37	-4.3	-4.3	50	-	NO	-	NO	-	NO
R134	Ground	E	46	41	43	37	47	41	44	38	-3.5	-3.5	50	-	NO	-	NO	-	NO
R134	Ground	N	49	43	46	40	50	44	46	40	-3.9	-3.9	50	-	NO	-	NO	-	NO
R134	First	W	50	44	47	41	51	45	47	41	-4.3	-4.3	50	-	NO	-	NO	-	NO
R134	First	S	49	43	45	39	50	44	46	40	-4.3	-4.2	50	-	NO	-	NO	-	NO
R134	First	E	49	43	45	39	50	44	46	40	-4	-4	50	-	NO	-	NO	-	NO
R134	First	N	51	45	47	42	52	46	48	42	-4.2	-4.2	50	-	NO	-	NO	-	NO
R135	Ground	SW	46	41	41	35	47	42	41	36	-6	-6	55	50	NO	NO	NO	NO	NO
R135	Ground	SE	56	51	48	42	57	51	49	43	-8.5	-8.5	55	50	NO	NO	NO	NO	NO
R135	Ground	NE	59	53	48	42	60	54	48	43	-12	-11.9	55	50	NO	NO	NO	NO	NO
R135	Ground	NW	54	48	43	37	55	50	43	37	-12.3	-12.2	55	50	NO	NO	NO	NO	NO
R136	Ground	SW	43	37	40	34	44	38	41	35	-3	-3	50	-	NO	-	NO	-	NO
R136	Ground	SE	46	41	42	37	47	42	43	37	-4.5	-4.4	50	-	NO	-	NO	-	NO
R136	Ground	NE	47	41	42	36	48	42	43	37	-5.4	-5.3	50	-	NO	-	NO	-	NO
R136	Ground	SE	47	41	43	37	48	42	43	38	-4.7	-4.7	50	-	NO	-	NO	-	NO
R136	Ground	NE	48	43	43	38	50	44	44	38	-5.7	-5.7	50	-	NO	-	NO	-	NO
R136	First	SW	46	40	42	37	47	41	43	37	-3.8	-3.8	50	-	NO	-	NO	-	NO
R136	First	SE	51	45	45	40	52	46	46	40	-5.9	-5.9	50	-	NO	-	NO	-	NO
R136	First	NE	52	46	45	40	52	47	46	40	-6.3	-6.4	50	-	NO	-	NO	-	NO
R136	First	SE	51	46	46	40	52	47	46	41	-6.1	-6.1	50	-	NO	-	NO	-	NO
R136	First	NE	52	46	46	40	53	47	46	41	-6.6	-6.5	50	-	NO	-	NO	-	NO
R138	Ground	SW	41	35	43	38	42	36	44	38	2.6	2.6	54	48	NO	NO	NO	NO	NO
R138	Ground	SE	45	39	47	42	46	40	48	42	2.5	2.4	55	50	NO	NO	NO	NO	NO
R138	Ground	NE	37	32	39	34	38	32	40	34	2.1	2	50	44	NO	NO	NO	NO	NO
R138	Ground	NW	45	39	45	40	45	40	46	41	1.1	1	55	50	NO	NO	NO	NO	NO
R139	Ground	SW	44	38	44	38	44	39	45	39	0.6	0.6	55	50	NO	NO	NO	NO	NO
R139	Ground	SE	40	34	41	36	41	35	42	36	1.4	1.4	53	47	NO	NO	NO	NO	NO
R139	Ground	NE	35	30	37	31	36	31	38	32	1.3	1.3	48	43	NO	NO	NO	NO	NO
R139	Ground	NW	44	39	44	39	45	40	45	39	-0.1	-0.1	55	50	NO	NO	NO	NO	NO
R140	Ground	SW	32	30	33	27	33	30	34	28	1.3	-1.8	45	42	NO	NO	NO	NO	NO
R140	Ground	SE	45	39	47	41	46	40	48	42	2.1	2	55	50	NO	NO	NO	NO	NO

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			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R140	Ground	NE	32	30	33	28	33	30	34	28	1.3	-1.7	45	42	NO	NO	NO	NO	NO
R140	Ground	NW	42	36	42	36	43	37	43	37	-0.2	-0.2	55	49	NO	NO	NO	NO	NO
R140	First	SW	38	32	39	33	38	33	40	34	1.3	1.3	50	45	NO	NO	NO	NO	NO
R140	First	SE	46	40	48	42	46	41	49	43	2.1	2	55	50	NO	NO	NO	NO	NO
R140	First	NE	38	32	39	33	39	33	40	34	1.2	1.2	51	45	NO	NO	NO	NO	NO
R140	First	NW	45	39	44	39	46	40	45	40	-0.3	-0.3	55	50	NO	NO	NO	NO	NO
R141	Ground	SW	48	42	55	50	48	43	56	50	7.7	7.7	55	50	YES	NO	NO	NO	YES
R141	Ground	SW	47	42	56	50	48	42	57	51	8.6	8.6	55	50	YES	YES	NO	NO	YES
R141	Ground	SW	47	42	55	49	48	42	56	50	7.6	7.6	55	50	YES	NO	NO	NO	YES
R141	Ground	SE	43	38	46	41	44	38	47	41	3.2	3.2	55	50	NO	NO	NO	NO	NO
R141	Ground	NE	39	33	42	36	39	34	43	37	3.2	3.1	51	46	NO	NO	NO	NO	NO
R141	Ground	NW	43	37	47	41	43	38	47	42	4	4.1	55	50	NO	NO	NO	NO	NO
R141	Ground	NE	39	33	45	40	40	34	46	41	6.5	6.4	52	46	NO	NO	NO	NO	NO
R141	Ground	NW	46	40	49	44	47	41	50	44	3.6	3.6	55	50	NO	NO	NO	NO	NO
R143	Ground	SW	51	45	45	39	52	46	46	40	-6.2	-6.1	55	50	NO	NO	NO	NO	NO
R143	Ground	SE	56	51	47	41	57	52	48	42	-9.8	-9.7	55	50	NO	NO	NO	NO	NO
R143	Ground	NE	61	55	48	42	62	56	48	42	-13.9	-13.8	55	50	NO	NO	NO	NO	NO
R143	Ground	NW	56	50	45	39	57	51	46	40	-11.3	-11.2	55	50	NO	NO	NO	NO	NO
R144	Ground	SW	36	31	38	32	37	31	38	33	1.4	1.4	49	43	NO	NO	NO	NO	NO
R144	Ground	SE	40	35	41	36	41	35	42	37	1.2	1.2	53	47	NO	NO	NO	NO	NO
R144	Ground	NE	35	30	36	31	36	30	37	32	1.2	1.2	48	42	NO	NO	NO	NO	NO
R144	Ground	NW	44	39	44	38	45	39	45	39	-0.1	-0.2	55	50	NO	NO	NO	NO	NO
R145	Ground	SW	42	37	44	38	43	37	45	39	1.8	1.7	55	49	NO	NO	NO	NO	NO
R145	Ground	SE	45	40	47	41	46	40	48	42	1.5	1.5	55	50	NO	NO	NO	NO	NO
R145	Ground	NE	37	32	39	33	38	33	40	34	1.5	1.4	50	45	NO	NO	NO	NO	NO
R145	Ground	SE	39	34	43	38	40	34	44	39	4.2	4.2	52	46	NO	NO	NO	NO	NO
R145	Ground	NE	37	31	39	33	38	32	40	34	2.2	2.2	50	44	NO	NO	NO	NO	NO
R145	Ground	NW	44	39	45	39	45	39	46	40	0.5	0.5	55	50	NO	NO	NO	NO	NO
R146	Ground	SW	45	40	47	41	46	40	48	42	1.5	1.6	55	50	NO	NO	NO	NO	NO
R146	Ground	SE	41	36	43	37	42	37	44	38	1.3	1.3	54	49	NO	NO	NO	NO	NO
R146	Ground	NE	38	32	40	35	39	33	41	36	2.5	2.5	51	45	NO	NO	NO	NO	NO
R146	Ground	NW	45	40	47	41	46	40	48	42	1.5	1.5	55	50	NO	NO	NO	NO	NO
R147	Ground	SW	45	40	46	40	46	40	46	41	0.3	0.3	55	50	NO	NO	NO	NO	NO
R147	Ground	SE	42	36	43	37	43	37	44	38	1	1	55	49	NO	NO	NO	NO	NO
R147	Ground	NE	35	30	37	31	36	31	38	32	1.5	1.5	48	43	NO	NO	NO	NO	NO
R147	Ground	NW	45	40	45	40	46	40	46	40	0.2	0.2	55	50	NO	NO	NO	NO	NO
R148	Ground	SW	48	42	56	50	49	43	57	51	8.3	8.3	55	50	YES	YES	NO	NO	YES
R148	Ground	SE	45	39	49	43	45	40	50	44	4.3	4.3	55	50	NO	NO	NO	NO	NO
R148	Ground	NE	37	31	41	35	38	32	41	36	3.8	3.9	50	44	NO	NO	NO	NO	NO
R148	Ground	SE	37	32	41	35	38	32	42	36	3.6	3.6	50	44	NO	NO	NO	NO	NO

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			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R148	Ground	NE	37	31	48	42	38	32	49	43	10.9	10.9	50	44	NO	NO	NO	NO	NO
R148	Ground	NW	45	39	51	45	46	40	52	46	6	6	55	50	NO	NO	NO	NO	NO
R148	First	SW	51	45	57	51	52	46	58	52	6.3	6.2	55	50	YES	YES	NO	NO	YES
R148	First	SE	48	42	51	45	49	43	52	46	3.2	3.1	55	50	NO	NO	NO	NO	NO
R148	First	NE	43	37	46	41	43	38	47	42	3.7	3.8	55	50	NO	NO	NO	NO	NO
R148	First	SE	43	38	46	41	44	39	47	42	3.3	3.2	55	50	NO	NO	NO	NO	NO
R148	First	NE	43	37	50	45	44	38	51	45	7.6	7.5	55	50	NO	NO	NO	NO	NO
R148	First	NW	49	43	53	47	50	44	54	48	4.1	4	55	50	NO	NO	NO	NO	NO
R149	Ground	SW	37	31	38	32	38	32	39	33	1.4	1.4	50	44	NO	NO	NO	NO	NO
R149	Ground	SE	39	33	41	35	40	34	42	36	1.6	1.6	52	46	NO	NO	NO	NO	NO
R149	Ground	NE	33	30	34	28	33	30	35	29	1.3	-1	45	42	NO	NO	NO	NO	NO
R149	Ground	NW	41	35	41	35	41	36	42	36	0.8	0.7	53	48	NO	NO	NO	NO	NO
R149	First	SW	47	42	47	42	48	42	48	42	0.2	0.2	55	50	NO	NO	NO	NO	NO
R149	First	SE	43	38	45	39	44	39	46	40	1.6	1.7	55	50	NO	NO	NO	NO	NO
R149	First	NE	39	33	40	34	39	34	41	35	1.2	1.2	51	46	NO	NO	NO	NO	NO
R149	First	NW	47	41	46	40	48	42	47	41	-0.8	-0.8	55	50	NO	NO	NO	NO	NO
R150	Ground	SW	44	38	44	38	44	39	45	39	0.5	0.5	55	50	NO	NO	NO	NO	NO
R150	Ground	SE	45	39	46	40	46	40	47	41	1.2	1.2	55	50	NO	NO	NO	NO	NO
R150	Ground	NE	36	31	38	32	37	32	39	33	1.8	1.8	49	44	NO	NO	NO	NO	NO
R150	Ground	NW	45	39	45	39	46	40	46	40	0.3	0.2	55	50	NO	NO	NO	NO	NO
R151	Ground	SW	47	41	43	37	48	42	43	38	-4.8	-4.7	55	50	NO	NO	NO	NO	NO
R151	Ground	SE	52	46	45	40	53	47	46	40	-6.6	-6.6	55	50	NO	NO	NO	NO	NO
R151	Ground	SW	48	42	42	36	49	43	43	37	-6	-6	55	50	NO	NO	NO	NO	NO
R151	Ground	SE	57	51	48	42	58	52	49	43	-9.5	-9.5	55	50	NO	NO	NO	NO	NO
R151	Ground	NE	63	57	48	42	64	58	48	42	-15.6	-15.5	55	50	NO	NO	NO	NO	NO
R151	Ground	NW	54	48	43	37	55	50	43	37	-12.2	-12.1	55	50	NO	NO	NO	NO	NO
R151	First	SW	55	50	48	43	56	51	49	43	-7.2	-7.2	55	50	NO	NO	NO	NO	NO
R151	First	SE	56	50	49	43	57	51	49	43	-7.7	-7.8	55	50	NO	NO	NO	NO	NO
R151	First	SW	58	52	49	44	59	53	50	44	-8.7	-8.6	55	50	NO	NO	NO	NO	NO
R151	First	SE	60	54	50	44	61	55	51	45	-10.3	-10.3	55	50	NO	NO	NO	NO	NO
R151	First	NE	63	57	50	44	64	59	50	45	-14.2	-14.1	55	50	NO	NO	NO	NO	NO
R151	First	NW	59	53	49	43	60	54	49	44	-10.6	-10.5	55	50	NO	NO	NO	NO	NO
R152	Ground	SW	43	37	44	39	43	38	45	40	2.1	2.1	55	50	NO	NO	NO	NO	NO
R152	Ground	SE	41	36	43	37	42	36	44	38	1.9	1.9	54	48	NO	NO	NO	NO	NO
R152	Ground	NE	37	32	39	34	38	32	40	35	2.2	2.3	50	44	NO	NO	NO	NO	NO
R152	Ground	NW	45	39	46	40	46	40	47	41	0.8	0.8	55	50	NO	NO	NO	NO	NO
R153	Ground	SW	49	43	59	53	50	44	59	54	9.6	9.7	55	50	YES	YES	NO	NO	YES
R153	Ground	SE	45	39	49	44	46	40	50	45	4.7	4.6	55	50	NO	NO	NO	NO	NO
R153	Ground	NE	37	31	49	43	38	32	50	44	11.6	11.6	50	44	NO	NO	NO	NO	NO
R153	Ground	NW	48	43	58	53	49	44	59	54	10.2	10.1	55	50	YES	YES	NO	NO	YES

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R153	First	SW	51	46	60	54	52	47	60	55	8.2	8.2	55	50	YES	YES	NO	NO	YES
R153	First	SE	48	43	52	46	49	43	53	47	3.6	3.6	55	50	NO	NO	NO	NO	NO
R153	First	NE	43	37	51	45	44	38	52	46	8	7.9	55	50	NO	NO	NO	NO	NO
R153	First	NW	51	45	59	54	51	46	60	54	8.8	8.8	55	50	YES	YES	NO	NO	YES
R154	Ground	SW	38	32	40	35	39	33	41	35	2.5	2.4	51	45	NO	NO	NO	NO	NO
R154	Ground	E	41	36	42	36	42	36	43	37	0.7	0.7	54	48	NO	NO	NO	NO	NO
R154	Ground	SW	41	36	42	36	42	36	43	37	0.8	0.7	54	48	NO	NO	NO	NO	NO
R154	Ground	SE	40	35	41	36	41	35	42	37	1.2	1.2	53	47	NO	NO	NO	NO	NO
R154	Ground	NE	32	30	33	28	33	30	34	29	1.2	-1.4	45	42	NO	NO	NO	NO	NO
R154	Ground	NW	41	35	41	35	42	36	42	36	0.1	0.1	54	48	NO	NO	NO	NO	NO
R154	First	SW	43	38	45	39	44	38	46	40	1.7	1.7	55	50	NO	NO	NO	NO	NO
R154	First	E	45	39	46	40	46	40	47	41	1	1	55	50	NO	NO	NO	NO	NO
R154	First	SW	45	39	46	40	46	40	47	41	1.1	1	55	50	NO	NO	NO	NO	NO
R154	First	SE	44	38	45	40	45	39	46	41	1.4	1.4	55	50	NO	NO	NO	NO	NO
R154	First	NE	38	33	39	34	39	33	40	35	1.2	1.2	51	45	NO	NO	NO	NO	NO
R154	First	NW	45	39	44	39	46	40	45	40	-0.3	-0.3	55	50	NO	NO	NO	NO	NO
R156	Ground	SW	44	38	48	42	45	39	49	43	4.2	4.2	55	50	NO	NO	NO	NO	NO
R156	Ground	SE	41	35	43	37	41	36	44	38	2.2	2.2	53	48	NO	NO	NO	NO	NO
R156	Ground	SE	41	35	44	38	42	36	45	39	3.1	3	54	48	NO	NO	NO	NO	NO
R156	Ground	NE	38	33	41	35	39	34	42	36	2.7	2.6	51	46	NO	NO	NO	NO	NO
R156	Ground	SE	39	34	42	37	40	35	43	38	3	3	52	47	NO	NO	NO	NO	NO
R156	Ground	NE	38	33	42	36	39	33	42	37	3.4	3.4	51	45	NO	NO	NO	NO	NO
R156	Ground	NW	43	37	47	41	44	38	48	42	4.5	4.5	55	50	NO	NO	NO	NO	NO
R156	Ground	NE	41	35	47	41	42	36	48	42	6	6	54	48	NO	NO	NO	NO	NO
R156	Ground	NW	45	40	49	44	46	41	50	45	4.2	4.3	55	50	NO	NO	NO	NO	NO
R158	Ground	SW	47	41	41	35	48	42	41	36	-6.8	-6.8	55	50	NO	NO	NO	NO	NO
R158	Ground	SE	55	49	42	36	56	50	42	37	-13.8	-13.7	55	50	NO	NO	NO	NO	NO
R158	Ground	NE	63	58	46	41	65	59	47	41	-17.9	-17.9	55	50	NO	NO	NO	NO	NO
R158	Ground	NW	56	50	43	37	57	51	43	37	-13.8	-13.7	55	50	NO	NO	NO	NO	NO
R159	Ground	SW	42	36	43	38	42	37	44	39	1.8	1.8	54	49	NO	NO	NO	NO	NO
R159	Ground	SE	40	35	42	36	41	35	43	37	1.9	1.9	53	47	NO	NO	NO	NO	NO
R159	Ground	SW	42	36	44	38	43	37	45	39	2.2	2.1	55	49	NO	NO	NO	NO	NO
R159	Ground	SE	42	36	43	38	43	37	44	39	1.6	1.6	55	49	NO	NO	NO	NO	NO
R159	Ground	NE	37	31	39	33	38	32	40	34	2.1	2.1	50	44	NO	NO	NO	NO	NO
R159	Ground	SE	38	32	39	34	39	33	40	35	1.8	1.8	51	45	NO	NO	NO	NO	NO
R159	Ground	NE	37	31	39	34	38	32	40	35	2.5	2.5	50	44	NO	NO	NO	NO	NO
R159	Ground	NW	45	40	46	40	46	40	47	41	0.8	0.8	55	50	NO	NO	NO	NO	NO
R160	Ground	SW	42	36	42	37	42	37	43	38	0.9	1	54	49	NO	NO	NO	NO	NO
R160	Ground	SE	38	33	39	33	39	33	40	34	1	1	51	45	NO	NO	NO	NO	NO
R160	Ground	NE	33	30	34	28	34	30	35	29	1.3	-0.9	46	42	NO	NO	NO	NO	NO

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R160	Ground	NW	43	37	42	37	43	38	43	38	0	-0.1	55	50	NO	NO	NO	NO	NO
R160	First	SW	47	41	46	41	47	42	47	42	0.1	0.1	55	50	NO	NO	NO	NO	NO
R160	First	SE	43	37	44	38	44	38	45	39	1.3	1.2	55	50	NO	NO	NO	NO	NO
R160	First	NE	39	33	40	34	39	34	41	35	1.3	1.3	51	46	NO	NO	NO	NO	NO
R160	First	NW	46	40	46	40	47	41	47	41	-0.4	-0.4	55	50	NO	NO	NO	NO	NO
R161	Ground	SW	72	66	47	41	73	67	48	42	-24.8	-25	55	50	NO	NO	NO	NO	NO
R161	Ground	SE	67	62	51	45	68	62	52	46	-16.1	-16.1	55	50	NO	NO	NO	NO	NO
R161	Ground	NE	54	49	53	47	55	49	53	47	-2	-2.1	55	50	NO	NO	NO	NO	NO
R161	Ground	NW	66	60	52	46	67	61	52	46	-14.9	-15	55	50	NO	NO	NO	NO	NO
R162	Ground	SW	47	41	40	35	48	42	41	35	-6.9	-6.8	55	50	NO	NO	NO	NO	NO
R162	Ground	SE	54	49	42	36	56	50	42	36	-13.4	-13.3	55	50	NO	NO	NO	NO	NO
R162	Ground	NE	62	57	45	39	64	58	45	40	-18.2	-18.2	55	50	NO	NO	NO	NO	NO
R162	Ground	NW	53	47	41	35	54	48	41	35	-12.9	-12.9	55	50	NO	NO	NO	NO	NO
R163	Ground	SW	40	34	42	36	40	35	43	37	2.3	2.3	52	47	NO	NO	NO	NO	NO
R163	Ground	SW	40	34	42	36	41	35	43	37	1.7	1.7	53	47	NO	NO	NO	NO	NO
R163	Ground	SE	45	39	46	40	45	40	47	41	1.2	1.2	55	50	NO	NO	NO	NO	NO
R163	Ground	SE	45	39	46	40	46	40	47	41	0.9	0.9	55	50	NO	NO	NO	NO	NO
R163	Ground	NE	36	31	38	32	37	31	39	33	1.7	1.6	49	43	NO	NO	NO	NO	NO
R163	Ground	NW	45	39	45	39	46	40	46	40	0.1	0.1	55	50	NO	NO	NO	NO	NO
R164	Ground	SW	64	58	48	42	65	59	48	43	-16.4	-16.5	55	50	NO	NO	NO	NO	NO
R164	Ground	SW	65	60	49	43	66	60	50	44	-16.1	-16.2	55	50	NO	NO	NO	NO	NO
R164	Ground	SE	64	58	52	47	64	59	53	48	-11.2	-11.1	55	50	NO	NO	NO	NO	NO
R164	Ground	SE	62	56	50	44	62	57	51	45	-11.9	-11.9	55	50	NO	NO	NO	NO	NO
R164	Ground	NE	51	45	49	43	51	46	49	44	-2	-2.1	55	50	NO	NO	NO	NO	NO
R164	Ground	NW	60	54	52	46	61	55	52	47	-8.2	-8.2	55	50	NO	NO	NO	NO	NO
R165	Ground	SW	35	30	37	31	36	30	38	32	1.8	1.8	48	42	NO	NO	NO	NO	NO
R165	Ground	SE	40	34	41	35	41	35	42	36	0.7	0.8	53	47	NO	NO	NO	NO	NO
R165	Ground	NE	33	30	34	28	33	30	35	29	1.2	-1.1	45	42	NO	NO	NO	NO	NO
R165	Ground	NE	33	30	34	28	33	30	35	29	1.4	-1	45	42	NO	NO	NO	NO	NO
R165	Ground	NW	44	38	43	38	45	39	44	39	-0.2	-0.2	55	50	NO	NO	NO	NO	NO
R165	First	SW	41	36	43	37	42	36	44	38	1.8	1.8	54	48	NO	NO	NO	NO	NO
R165	First	SE	44	38	45	39	45	39	46	40	0.9	0.9	55	50	NO	NO	NO	NO	NO
R165	First	NE	38	33	40	34	39	34	41	35	1.3	1.3	51	46	NO	NO	NO	NO	NO
R165	First	NE	38	33	40	34	39	34	41	35	1.4	1.4	51	46	NO	NO	NO	NO	NO
R165	First	NW	47	41	46	40	47	42	47	41	-0.5	-0.6	55	50	NO	NO	NO	NO	NO
R166	Ground	SW	42	37	46	41	43	37	47	42	4.3	4.4	55	49	NO	NO	NO	NO	NO
R166	Ground	SE	42	36	44	38	43	37	45	39	2.4	2.4	55	49	NO	NO	NO	NO	NO
R166	Ground	SW	43	37	45	39	44	38	46	40	2	2	55	50	NO	NO	NO	NO	NO
R166	Ground	SE	43	37	44	38	44	38	45	39	1.3	1.4	55	50	NO	NO	NO	NO	NO
R166	Ground	NE	38	32	40	35	39	33	41	36	2.7	2.7	51	45	NO	NO	NO	NO	NO

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			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R166	Ground	NW	45	40	48	42	46	41	49	43	2.6	2.6	55	50	NO	NO	NO	NO	NO
R167	Ground	SW	41	35	42	37	42	36	43	37	1.5	1.4	54	48	NO	NO	NO	NO	NO
R167	Ground	SE	45	39	45	40	46	40	46	41	0.6	0.7	55	50	NO	NO	NO	NO	NO
R167	Ground	NE	36	30	37	32	37	31	38	33	1.6	1.6	49	43	NO	NO	NO	NO	NO
R167	Ground	NW	37	31	39	33	38	32	40	34	2	1.9	50	44	NO	NO	NO	NO	NO
R167	Ground	NE	36	31	38	33	37	31	39	33	2.1	2.1	49	43	NO	NO	NO	NO	NO
R167	Ground	NW	44	38	44	38	44	39	44	39	0	0	55	50	NO	NO	NO	NO	NO
R168	Ground	SW	43	37	44	39	43	38	45	40	1.9	1.9	55	50	NO	NO	NO	NO	NO
R168	Ground	E	45	39	46	40	45	40	46	41	1.1	1.1	55	50	NO	NO	NO	NO	NO
R168	Ground	SW	45	39	46	40	46	40	47	41	1.1	1.1	55	50	NO	NO	NO	NO	NO
R168	Ground	SE	44	38	45	40	45	39	46	40	1.2	1.1	55	50	NO	NO	NO	NO	NO
R168	Ground	NE	39	33	41	35	40	34	42	36	2	2	52	46	NO	NO	NO	NO	NO
R168	Ground	NW	46	40	46	40	47	41	47	41	0.2	0.2	55	50	NO	NO	NO	NO	NO
R169	Ground	SW	42	36	38	32	43	37	39	33	-4.5	-4.5	55	49	NO	NO	NO	NO	NO
R169	Ground	SE	45	40	42	36	46	41	42	36	-4.3	-4.3	55	50	NO	NO	NO	NO	NO
R169	Ground	NE	44	38	40	34	45	39	40	35	-4.5	-4.5	55	50	NO	NO	NO	NO	NO
R169	Ground	NW	51	45	47	42	52	46	47	42	-4.3	-4.4	55	50	NO	NO	NO	NO	NO
R170	Ground	SW	51	45	57	52	51	46	58	53	7.1	7.2	55	50	YES	YES	NO	NO	YES
R170	Ground	SW	50	44	57	52	51	45	58	52	7.6	7.5	55	50	YES	YES	NO	NO	YES
R170	Ground	SE	48	43	55	49	49	43	56	50	6.5	6.4	55	50	YES	NO	NO	NO	YES
R170	Ground	SW	48	42	53	48	49	43	54	49	5.8	5.9	55	50	NO	NO	NO	NO	NO
R170	Ground	SE	43	37	46	40	44	38	47	41	3.2	3.2	55	50	NO	NO	NO	NO	NO
R170	Ground	NE	37	31	40	35	37	32	41	36	4.1	4.1	49	44	NO	NO	NO	NO	NO
R170	Ground	NW	49	44	56	50	50	44	57	51	6.4	6.5	55	50	YES	YES	NO	NO	YES
R170	First	SW	52	47	58	53	53	48	59	54	6.1	6.1	55	50	YES	YES	NO	NO	YES
R170	First	SW	52	47	58	52	53	47	59	53	6	6	55	50	YES	YES	NO	NO	YES
R170	First	SE	52	46	56	50	52	47	57	51	4.5	4.5	55	50	YES	YES	NO	NO	YES
R170	First	SW	51	46	55	50	52	46	56	50	4	4	55	50	YES	NO	NO	NO	YES
R170	First	SE	49	43	51	45	50	44	52	46	2.4	2.3	55	50	NO	NO	NO	NO	NO
R170	First	NE	42	37	46	40	43	37	47	41	3.9	3.9	55	49	NO	NO	NO	NO	NO
R170	First	NW	51	45	56	51	52	46	57	52	5.6	5.5	55	50	YES	YES	NO	NO	YES
R171	Ground	SW	46	41	42	36	47	42	43	37	-4.9	-4.8	55	50	NO	NO	NO	NO	NO
R171	Ground	SE	57	51	45	39	58	52	45	40	-12.5	-12.4	55	50	NO	NO	NO	NO	NO
R171	Ground	NE	68	62	48	43	69	63	49	43	-20.7	-20.6	55	50	NO	NO	NO	NO	NO
R171	Ground	NW	53	47	42	36	54	48	42	36	-12.1	-12.1	55	50	NO	NO	NO	NO	NO
R171	First	SW	54	48	48	42	55	49	48	42	-6.7	-6.7	55	50	NO	NO	NO	NO	NO
R171	First	SE	61	55	48	42	62	56	49	43	-13	-13	55	50	NO	NO	NO	NO	NO
R171	First	NE	68	62	50	44	69	63	50	45	-18.7	-18.6	55	50	NO	NO	NO	NO	NO
R171	First	NW	57	51	49	43	58	52	49	43	-8.7	-8.7	55	50	NO	NO	NO	NO	NO
R172	Ground	SW	59	54	50	45	60	54	51	45	-9.1	-9.1	55	50	NO	NO	NO	NO	NO

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			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R172	Ground	SE	61	56	55	50	62	56	56	50	-5.9	-6	55	50	YES	NO	NO	NO	NO
R172	Ground	NE	53	48	51	45	54	49	52	46	-2.3	-2.4	55	50	NO	NO	NO	NO	NO
R172	Ground	NW	59	53	54	48	60	54	54	48	-5.9	-6	55	50	NO	NO	NO	NO	NO
R173	Ground	SW	46	41	47	41	47	41	48	42	0.8	0.8	55	50	NO	NO	NO	NO	NO
R173	Ground	NW	46	41	46	40	47	41	47	41	0	0	55	50	NO	NO	NO	NO	NO
R173	Ground	SW	47	41	48	42	48	42	49	43	0.8	0.7	55	50	NO	NO	NO	NO	NO
R173	Ground	SE	44	38	45	39	45	39	46	40	1.1	1.1	55	50	NO	NO	NO	NO	NO
R173	Ground	NE	36	30	38	32	37	31	39	33	1.8	1.8	49	43	NO	NO	NO	NO	NO
R173	First	SW	50	44	50	44	50	45	51	45	0.7	0.6	55	50	NO	NO	NO	NO	NO
R173	First	NW	49	44	49	44	50	44	50	45	0.4	0.4	55	50	NO	NO	NO	NO	NO
R173	First	SW	50	44	50	45	50	45	51	46	1	0.9	55	50	NO	NO	NO	NO	NO
R173	First	SE	49	43	50	44	50	44	51	45	0.9	0.9	55	50	NO	NO	NO	NO	NO
R173	First	NE	48	42	48	43	49	43	49	44	0.5	0.4	55	50	NO	NO	NO	NO	NO
R173	First	NW	49	43	49	44	50	44	50	45	0.5	0.5	55	50	NO	NO	NO	NO	NO
R174	Ground	SW	44	38	40	34	45	39	40	35	-4.4	-4.3	50	-	NO	-	NO	-	NO
R174	Ground	NW	43	38	39	33	44	39	39	34	-5	-4.9	50	-	NO	-	NO	-	NO
R174	Ground	SW	44	39	40	34	45	40	41	35	-4.7	-4.7	50	-	NO	-	NO	-	NO
R174	Ground	SE	48	42	41	36	49	43	42	36	-7.2	-7.2	50	-	NO	-	NO	-	NO
R174	Ground	NE	45	40	40	35	46	41	41	35	-5.5	-5.5	50	-	NO	-	NO	-	NO
R174	Ground	NW	47	41	43	37	48	42	43	37	-4.6	-4.6	50	-	NO	-	NO	-	NO
R175	Ground	SW	52	46	62	57	53	47	63	58	10.6	10.6	55	50	YES	YES	NO	NO	YES
R175	Ground	SE	49	44	58	52	50	44	59	53	9.1	9.2	55	50	YES	YES	NO	NO	YES
R175	Ground	NE	37	31	43	37	38	32	43	38	5.5	5.5	50	44	NO	NO	NO	NO	NO
R175	Ground	NW	49	44	57	51	50	44	58	52	7.5	7.6	55	50	YES	YES	NO	NO	YES
R175	First	SW	54	48	63	57	55	49	64	58	9.1	9.1	55	50	YES	YES	NO	NO	YES
R175	First	SE	52	46	59	53	52	47	60	54	7.4	7.5	55	50	YES	YES	NO	NO	YES
R175	First	NE	43	37	48	43	44	38	49	43	5.4	5.4	55	50	NO	NO	NO	NO	NO
R175	First	NW	51	45	57	52	52	46	58	53	6.6	6.6	55	50	YES	YES	NO	NO	YES
R176	Ground	SW	40	35	43	37	41	35	44	38	2.9	2.9	53	47	NO	NO	NO	NO	NO
R176	Ground	SE	43	37	45	39	44	38	46	40	1.9	1.9	55	50	NO	NO	NO	NO	NO
R176	Ground	NE	37	32	40	34	38	33	41	35	2.6	2.5	50	45	NO	NO	NO	NO	NO
R176	Ground	NW	45	40	47	41	46	40	48	42	1.7	1.7	55	50	NO	NO	NO	NO	NO
R177	Ground	SW	43	37	44	38	44	38	45	39	1.1	1.1	55	50	NO	NO	NO	NO	NO
R177	Ground	SW	42	37	44	38	43	38	45	39	1.6	1.6	55	50	NO	NO	NO	NO	NO
R177	Ground	SE	45	39	46	40	46	40	47	41	1.2	1.2	55	50	NO	NO	NO	NO	NO
R177	Ground	NE	38	32	39	33	38	33	40	34	1.6	1.6	50	45	NO	NO	NO	NO	NO
R177	Ground	NW	43	38	44	38	44	38	45	39	0.7	0.7	55	50	NO	NO	NO	NO	NO
R178	Ground	SW	56	50	49	43	56	51	50	44	-6.6	-6.7	55	50	NO	NO	NO	NO	NO
R178	Ground	SE	58	53	56	50	59	53	57	51	-2	-2	55	50	YES	YES	NO	NO	NO
R178	Ground	NE	46	41	56	50	47	42	56	50	8.8	8.7	55	50	YES	NO	NO	NO	YES

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R178	Ground	NW	56	51	54	48	57	52	54	49	-3	-3.1	55	50	NO	NO	NO	NO	NO
R179	Ground	SW	43	37	45	39	44	38	46	40	2.2	2.1	55	50	NO	NO	NO	NO	NO
R179	Ground	SE	45	39	46	41	46	40	47	41	1.5	1.6	55	50	NO	NO	NO	NO	NO
R179	Ground	NE	40	35	43	37	41	36	44	38	2.3	2.3	53	48	NO	NO	NO	NO	NO
R179	Ground	NW	46	40	47	41	47	41	48	42	0.9	0.9	55	50	NO	NO	NO	NO	NO
R180	Ground	SW	45	39	45	40	46	40	46	41	0.5	0.4	55	50	NO	NO	NO	NO	NO
R180	Ground	SW	41	36	43	38	42	36	44	38	2	2	54	48	NO	NO	NO	NO	NO
R180	Ground	SE	41	36	43	37	42	36	44	38	1.6	1.6	54	48	NO	NO	NO	NO	NO
R180	Ground	NE	36	31	38	32	37	31	39	33	1.9	1.9	49	43	NO	NO	NO	NO	NO
R180	Ground	NW	45	39	45	39	46	40	46	40	0.3	0.3	55	50	NO	NO	NO	NO	NO
R181	Ground	SW	52	46	63	57	53	47	64	58	11.2	11.2	55	50	YES	YES	NO	NO	YES
R181	Ground	SW	52	46	63	58	53	47	64	58	11.5	11.5	55	50	YES	YES	NO	NO	YES
R181	Ground	SE	48	43	59	53	49	43	60	54	10.7	10.8	55	50	YES	YES	NO	NO	YES
R181	Ground	NE	37	32	45	39	38	32	46	40	7.4	7.4	50	44	NO	NO	NO	NO	NO
R181	Ground	NW	46	40	55	49	47	41	56	50	8.9	8.9	55	50	YES	NO	NO	NO	YES
R181	First	SW	54	48	64	58	55	49	65	59	10.2	10.1	55	50	YES	YES	YES	NO	YES
R181	First	SW	54	48	64	58	55	49	65	59	10.2	10.2	55	50	YES	YES	YES	NO	YES
R181	First	SE	51	46	59	54	52	46	61	55	8.4	8.4	55	50	YES	YES	NO	NO	YES
R181	First	NE	43	37	50	44	44	38	51	45	6.8	6.8	55	50	NO	NO	NO	NO	NO
R181	First	NW	49	43	56	50	49	44	57	51	7.6	7.5	55	50	YES	YES	NO	NO	YES
R182	Ground	SW	38	32	44	38	38	33	45	39	6.4	6.4	50	45	NO	NO	NO	NO	NO
R182	Ground	SE	40	34	43	37	41	35	44	38	3.2	3.2	53	47	NO	NO	NO	NO	NO
R182	Ground	NE	36	31	40	34	37	31	41	35	3.9	3.9	49	43	NO	NO	NO	NO	NO
R182	Ground	NW	49	43	54	49	50	44	55	49	5.6	5.6	55	50	NO	NO	NO	NO	NO
R182	First	SW	44	38	48	43	45	39	49	44	4.7	4.7	55	50	NO	NO	NO	NO	NO
R182	First	SE	45	40	48	42	46	40	49	43	2.7	2.8	55	50	NO	NO	NO	NO	NO
R182	First	NE	42	36	46	40	43	37	46	41	3.6	3.6	55	49	NO	NO	NO	NO	NO
R182	First	NW	50	45	55	49	51	45	56	50	5	4.9	55	50	YES	NO	NO	NO	YES
R183	Ground	SW	42	36	43	37	43	37	44	38	1.3	1.3	55	49	NO	NO	NO	NO	NO
R183	Ground	SW	41	35	42	37	42	36	43	37	1.4	1.3	54	48	NO	NO	NO	NO	NO
R183	Ground	SE	44	39	45	40	45	39	46	41	1.4	1.4	55	50	NO	NO	NO	NO	NO
R183	Ground	NE	35	30	37	31	36	30	37	32	1.5	1.5	48	42	NO	NO	NO	NO	NO
R183	Ground	NW	44	39	44	38	45	39	45	39	-0.4	-0.4	55	50	NO	NO	NO	NO	NO
R183	Ground	SW	45	39	45	39	45	40	46	40	0.4	0.3	55	50	NO	NO	NO	NO	NO
R183	Ground	SW	44	38	44	38	44	39	45	39	0.1	0.2	55	50	NO	NO	NO	NO	NO
R183	Ground	NW	43	37	43	38	44	38	44	39	0.3	0.3	55	50	NO	NO	NO	NO	NO
R183	First	SW	49	43	49	43	50	44	50	44	0.4	0.4	55	50	NO	NO	NO	NO	NO
R183	First	SW	49	43	49	43	50	44	50	44	0.4	0.3	55	50	NO	NO	NO	NO	NO
R183	First	SE	48	43	49	43	49	43	50	44	0.5	0.4	55	50	NO	NO	NO	NO	NO
R183	First	NE	47	42	48	42	48	42	49	43	0.5	0.5	55	50	NO	NO	NO	NO	NO

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R183	First	NW	48	42	48	43	49	43	49	43	0.3	0.2	55	50	NO	NO	NO	NO	NO
R183	First	SW	49	43	49	43	49	44	50	44	0.4	0.4	55	50	NO	NO	NO	NO	NO
R183	First	SW	48	42	48	43	49	43	49	44	0.5	0.5	55	50	NO	NO	NO	NO	NO
R183	First	NW	48	43	48	43	49	43	49	44	0.4	0.4	55	50	NO	NO	NO	NO	NO
R184	Ground	SW	63	58	42	37	65	59	43	37	-21.5	-21.4	50	-	NO	-	NO	-	NO
R184	Ground	SE	64	58	45	39	65	59	46	40	-19.5	-19.4	50	-	NO	-	NO	-	NO
R184	Ground	SW	64	58	43	37	65	59	44	38	-21.3	-21.3	50	-	NO	-	NO	-	NO
R184	Ground	SE	63	57	50	45	64	58	51	45	-12.9	-12.9	50	-	YES	-	NO	-	NO
R184	Ground	NW	54	48	43	38	55	50	43	38	-11.9	-11.9	50	-	NO	-	NO	-	NO
R185	Ground	SW	52	47	63	58	53	47	64	59	11.2	11.3	55	50	YES	YES	NO	NO	YES
R185	Ground	SE	46	40	55	50	47	41	56	50	9.6	9.6	55	50	YES	NO	NO	NO	YES
R185	Ground	NE	37	32	45	39	38	32	45	40	7.3	7.2	50	44	NO	NO	NO	NO	NO
R185	Ground	NW	51	45	59	53	52	46	60	54	8.4	8.4	55	50	YES	YES	NO	NO	YES
R185	First	SW	54	48	64	58	55	49	65	59	10.3	10.2	55	50	YES	YES	YES	NO	YES
R185	First	SE	49	43	56	51	49	44	57	52	7.8	7.9	55	50	YES	YES	NO	NO	YES
R185	First	NE	43	37	50	44	44	38	51	45	7	7	55	50	NO	NO	NO	NO	NO
R185	First	NW	52	46	60	55	52	47	61	55	8.9	8.9	55	50	YES	YES	NO	NO	YES
R186	Ground	SW	37	32	42	37	38	33	43	37	4.9	4.9	50	45	NO	NO	NO	NO	NO
R186	Ground	SE	43	38	45	40	44	39	46	40	2	1.9	55	50	NO	NO	NO	NO	NO
R186	Ground	NE	36	30	39	34	37	31	40	34	3.5	3.5	49	43	NO	NO	NO	NO	NO
R186	Ground	NW	48	42	53	47	48	43	54	48	5.6	5.5	55	50	NO	NO	NO	NO	NO
R186	First	SW	44	38	47	42	44	39	48	43	3.8	3.8	55	50	NO	NO	NO	NO	NO
R186	First	SE	48	42	49	44	49	43	50	45	1.8	1.7	55	50	NO	NO	NO	NO	NO
R186	First	NE	42	36	45	39	42	37	46	40	3.3	3.3	54	49	NO	NO	NO	NO	NO
R186	First	NW	49	44	54	48	50	44	55	49	4.8	4.8	55	50	NO	NO	NO	NO	NO
R187	Ground	SW	56	50	48	43	57	51	49	44	-7.4	-7.4	55	50	NO	NO	NO	NO	NO
R187	Ground	SE	57	51	57	51	58	52	58	52	0.1	0.1	55	50	YES	YES	NO	NO	NO
R187	Ground	SE	57	51	59	54	57	52	60	55	3.1	3	55	50	YES	YES	NO	NO	YES
R187	Ground	NE	41	35	61	55	42	36	62	56	20.1	20.1	54	48	YES	YES	NO	NO	YES
R187	Ground	NW	53	48	53	47	55	49	53	47	-1.4	-1.5	55	50	NO	NO	NO	NO	NO
R187	First	SW	58	52	51	45	58	53	52	46	-6.7	-6.7	55	50	NO	NO	NO	NO	NO
R187	First	SE	58	53	58	52	59	53	59	53	-0.2	-0.2	55	50	YES	YES	NO	NO	NO
R187	First	SE	58	52	61	55	58	53	62	56	3.2	3.2	55	50	YES	YES	NO	NO	YES
R187	First	NE	46	41	62	56	47	41	63	57	15.7	15.7	55	50	YES	YES	NO	NO	YES
R187	First	NW	55	49	55	49	56	50	55	49	-0.9	-0.9	55	50	NO	NO	NO	NO	NO
R188	Ground	SW	45	39	46	40	46	40	47	41	1.1	1	55	50	NO	NO	NO	NO	NO
R188	Ground	SE	40	34	41	36	40	35	42	37	1.9	1.9	52	47	NO	NO	NO	NO	NO
R188	Ground	SW	40	35	42	36	41	35	43	37	1.9	1.9	53	47	NO	NO	NO	NO	NO
R188	Ground	SE	40	35	42	36	41	35	43	37	1.6	1.5	53	47	NO	NO	NO	NO	NO
R188	Ground	NE	37	31	39	33	38	32	40	34	2.4	2.4	50	44	NO	NO	NO	NO	NO

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R188	Ground	NW	45	40	46	40	46	40	47	41	0.9	0.9	55	50	NO	NO	NO	NO	NO
R190	Ground	SW	40	34	42	37	41	35	43	38	2.4	2.3	53	47	NO	NO	NO	NO	NO
R190	Ground	E	39	33	40	34	40	34	41	35	0.7	0.7	52	46	NO	NO	NO	NO	NO
R190	Ground	SE	38	32	39	33	39	33	40	34	1	1	51	45	NO	NO	NO	NO	NO
R190	Ground	NE	36	30	38	32	37	31	38	33	1.8	1.8	49	43	NO	NO	NO	NO	NO
R190	Ground	NW	38	33	41	35	39	33	42	36	2.6	2.6	51	45	NO	NO	NO	NO	NO
R190	Ground	NE	37	32	40	35	38	33	41	35	2.9	2.9	50	45	NO	NO	NO	NO	NO
R190	Ground	NW	45	39	45	39	46	40	46	40	0.1	0.1	55	50	NO	NO	NO	NO	NO
R192	Ground	SW	62	56	43	37	63	57	43	38	-19.7	-19.7	50	-	NO	-	NO	-	NO
R192	Ground	SW	64	58	43	37	65	59	43	38	-21.8	-21.7	50	-	NO	-	NO	-	NO
R192	Ground	SE	58	52	45	39	59	53	45	40	-13.5	-13.4	50	-	NO	-	NO	-	NO
R192	Ground	NE	45	39	49	43	46	40	49	43	3.2	3.1	50	-	NO	-	NO	-	NO
R192	Ground	NW	47	41	45	39	48	42	45	39	-3.2	-3.3	50	-	NO	-	NO	-	NO
R192	Ground	NE	46	40	47	42	47	41	48	42	0.4	0.3	50	-	NO	-	NO	-	NO
R192	Ground	NW	48	42	45	39	49	43	45	39	-3.6	-3.7	50	-	NO	-	NO	-	NO
R192	Ground	NE	47	41	47	41	48	42	47	41	-1.1	-1.2	50	-	NO	-	NO	-	NO
R192	Ground	NW	52	46	47	41	53	48	47	41	-6.4	-6.4	50	-	NO	-	NO	-	NO
R193	Ground	SW	43	37	44	38	43	38	45	39	1.4	1.4	55	50	NO	NO	NO	NO	NO
R193	Ground	S	43	38	44	38	44	38	45	39	0.8	0.8	55	50	NO	NO	NO	NO	NO
R193	Ground	SE	42	36	42	37	42	37	43	38	1.1	1.1	54	49	NO	NO	NO	NO	NO
R193	Ground	NE	33	30	35	29	34	30	36	30	1.7	-0.2	46	42	NO	NO	NO	NO	NO
R193	Ground	NW	36	30	38	32	37	31	39	33	2	2	49	43	NO	NO	NO	NO	NO
R193	Ground	NE	33	30	35	29	34	30	36	30	1.8	0.1	46	42	NO	NO	NO	NO	NO
R193	Ground	NW	41	35	41	36	42	36	42	36	0.3	0.2	54	48	NO	NO	NO	NO	NO
R193	First	SW	47	41	47	42	48	42	48	42	0.3	0.3	55	50	NO	NO	NO	NO	NO
R193	First	S	48	42	47	42	48	43	48	43	0.1	0	55	50	NO	NO	NO	NO	NO
R193	First	SE	46	40	46	41	46	41	47	42	1.1	1	55	50	NO	NO	NO	NO	NO
R193	First	NE	39	33	40	35	40	34	41	36	1.6	1.6	52	46	NO	NO	NO	NO	NO
R193	First	NW	42	36	43	37	43	37	44	38	1.2	1.2	55	49	NO	NO	NO	NO	NO
R193	First	NE	39	33	41	35	40	34	42	36	1.8	1.8	52	46	NO	NO	NO	NO	NO
R193	First	NW	46	41	46	40	47	41	47	41	-0.4	-0.4	55	50	NO	NO	NO	NO	NO
R194	Ground	SW	37	31	46	40	37	32	47	41	9.4	9.4	49	44	NO	NO	NO	NO	NO
R194	Ground	SE	43	37	45	39	43	38	46	40	2.6	2.6	55	50	NO	NO	NO	NO	NO
R194	Ground	NE	38	32	41	35	39	33	42	36	3.2	3.2	51	45	NO	NO	NO	NO	NO
R194	Ground	NW	46	41	50	45	47	41	51	46	4.3	4.3	55	50	NO	NO	NO	NO	NO
R195	Ground	SW	38	32	41	35	39	33	42	36	3.2	3.2	51	45	NO	NO	NO	NO	NO
R195	Ground	SE	43	38	45	39	44	38	46	40	1.6	1.6	55	50	NO	NO	NO	NO	NO
R195	Ground	NE	37	32	40	35	38	33	41	36	3.1	3	50	45	NO	NO	NO	NO	NO
R195	Ground	NW	43	37	46	40	44	38	47	41	3.2	3.2	55	50	NO	NO	NO	NO	NO
R196	Ground	SW	45	40	45	39	46	40	46	40	-0.1	-0.1	55	50	NO	NO	NO	NO	NO

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			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R196	Ground	SE	40	35	42	36	41	35	43	37	1.4	1.4	53	47	NO	NO	NO	NO	NO
R196	Ground	NE	35	30	36	31	35	30	37	31	1.7	1.4	47	42	NO	NO	NO	NO	NO
R196	Ground	NW	45	39	45	39	46	40	46	40	-0.3	-0.3	55	50	NO	NO	NO	NO	NO
R196	First	SW	49	43	49	43	49	44	50	44	0.3	0.3	55	50	NO	NO	NO	NO	NO
R196	First	SE	46	41	47	42	47	41	48	42	1	1	55	50	NO	NO	NO	NO	NO
R196	First	NE	43	38	44	39	44	38	45	39	1.2	1.1	55	50	NO	NO	NO	NO	NO
R196	First	NW	47	42	47	41	48	42	48	42	-0.1	-0.1	55	50	NO	NO	NO	NO	NO
R197	Ground	SW	44	38	45	40	45	39	46	40	1.5	1.5	55	50	NO	NO	NO	NO	NO
R197	Ground	SE	45	39	46	40	46	40	47	41	1.2	1.3	55	50	NO	NO	NO	NO	NO
R197	Ground	NE	40	34	42	36	41	35	43	37	2	2.1	53	47	NO	NO	NO	NO	NO
R197	Ground	NW	42	36	44	38	42	37	45	39	2.2	2.2	54	49	NO	NO	NO	NO	NO
R197	Ground	NE	40	35	43	37	41	35	44	38	2.9	2.9	53	47	NO	NO	NO	NO	NO
R197	Ground	NW	46	41	47	41	47	41	48	42	0.4	0.4	55	50	NO	NO	NO	NO	NO
R199	Ground	SW	47	42	53	48	48	43	54	49	6.2	6.1	55	50	NO	NO	NO	NO	NO
R199	Ground	SE	47	42	53	48	48	43	54	49	6	6	55	50	NO	NO	NO	NO	NO
R199	Ground	NE	36	30	40	34	37	31	41	35	4.2	4.2	49	43	NO	NO	NO	NO	NO
R199	Ground	NW	42	37	47	42	43	37	48	43	5.2	5.2	55	49	NO	NO	NO	NO	NO
R199	First	SW	51	45	55	49	51	46	56	50	4.3	4.3	55	50	YES	NO	NO	NO	YES
R199	First	SE	50	44	54	49	51	45	55	50	4.7	4.7	55	50	NO	NO	NO	NO	NO
R199	First	NE	42	36	46	40	43	37	47	41	4	4	55	49	NO	NO	NO	NO	NO
R199	First	NW	47	41	50	45	47	42	51	45	3.6	3.6	55	50	NO	NO	NO	NO	NO
R200	Ground	SW	38	33	41	35	39	33	42	36	2.7	2.7	51	45	NO	NO	NO	NO	NO
R200	Ground	SE	44	38	44	39	44	39	45	40	1.1	1	55	50	NO	NO	NO	NO	NO
R200	Ground	NE	37	32	39	34	38	32	40	34	2	2	50	44	NO	NO	NO	NO	NO
R200	Ground	SE	39	33	40	35	39	34	41	36	1.7	1.8	51	46	NO	NO	NO	NO	NO
R200	Ground	NE	37	31	39	34	38	32	40	34	2.1	2.1	50	44	NO	NO	NO	NO	NO
R200	Ground	NW	44	39	45	39	45	39	46	40	0.6	0.5	55	50	NO	NO	NO	NO	NO
R201	Ground	SW	39	33	48	42	40	34	48	43	8.7	8.7	52	46	NO	NO	NO	NO	NO
R201	Ground	SE	47	41	52	46	48	42	53	47	4.9	5	55	50	NO	NO	NO	NO	NO
R201	Ground	NE	36	30	39	34	36	31	40	35	3.9	3.9	48	43	NO	NO	NO	NO	NO
R201	Ground	NW	43	37	49	43	44	38	50	44	6	6	55	50	NO	NO	NO	NO	NO
R201	First	SW	44	39	50	45	45	39	51	45	6	6	55	50	NO	NO	NO	NO	NO
R201	First	SE	49	44	53	48	50	44	54	48	4.1	4	55	50	NO	NO	NO	NO	NO
R201	First	NE	41	36	45	39	42	36	46	40	3.6	3.6	54	48	NO	NO	NO	NO	NO
R201	First	NW	47	41	51	45	47	42	52	46	4.2	4.2	55	50	NO	NO	NO	NO	NO
R202	Ground	SW	40	34	43	37	41	35	43	38	2.8	2.8	53	47	NO	NO	NO	NO	NO
R202	Ground	SE	44	38	45	39	45	39	46	40	1.3	1.4	55	50	NO	NO	NO	NO	NO
R202	Ground	NE	37	32	40	34	38	32	41	35	2.7	2.7	50	44	NO	NO	NO	NO	NO
R202	Ground	NE	37	32	40	34	38	32	41	35	2.9	2.9	50	44	NO	NO	NO	NO	NO
R202	Ground	NW	45	40	48	42	46	40	49	43	2.8	2.8	55	50	NO	NO	NO	NO	NO

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R202	Ground	NW	44	39	47	42	45	40	48	42	2.9	2.9	55	50	NO	NO	NO	NO	NO
R203	Ground	SW	46	40	53	48	46	41	54	49	7.8	7.8	55	50	NO	NO	NO	NO	NO
R203	Ground	SE	45	39	48	43	46	40	49	44	3.6	3.6	55	50	NO	NO	NO	NO	NO
R203	Ground	SE	44	38	50	44	45	39	51	45	6.1	6.1	55	50	NO	NO	NO	NO	NO
R203	Ground	NE	36	31	41	35	37	31	42	36	4.9	4.9	49	43	NO	NO	NO	NO	NO
R203	Ground	NW	48	42	52	47	49	43	53	48	4.5	4.5	55	50	NO	NO	NO	NO	NO
R203	Ground	SW	48	42	53	47	49	43	54	48	4.9	4.9	55	50	NO	NO	NO	NO	NO
R203	Ground	NW	48	42	53	47	48	43	54	48	5.3	5.4	55	50	NO	NO	NO	NO	NO
R203	Ground	NW	47	42	53	47	48	42	54	48	5.9	5.8	55	50	NO	NO	NO	NO	NO
R203	First	SW	49	44	55	49	50	45	56	50	5.7	5.7	55	50	YES	NO	NO	NO	YES
R203	First	SE	49	43	51	45	50	44	52	46	1.9	1.9	55	50	NO	NO	NO	NO	NO
R203	First	SE	48	43	52	47	49	43	53	48	4.3	4.3	55	50	NO	NO	NO	NO	NO
R203	First	NE	42	36	47	41	43	37	47	42	4.6	4.6	55	49	NO	NO	NO	NO	NO
R203	First	NW	50	44	54	48	50	45	55	49	4.5	4.5	55	50	NO	NO	NO	NO	NO
R203	First	SW	50	44	54	49	51	45	55	50	4.4	4.4	55	50	NO	NO	NO	NO	NO
R203	First	NW	50	44	54	49	51	45	55	50	4.7	4.8	55	50	NO	NO	NO	NO	NO
R203	First	NW	50	45	55	49	51	45	56	50	4.7	4.7	55	50	YES	NO	NO	NO	YES
R204	Ground	SW	53	47	55	49	54	48	55	49	1.2	1	55	50	NO	NO	NO	NO	NO
R204	Ground	SW	53	47	49	43	54	48	50	44	-4	-4	55	50	NO	NO	NO	NO	NO
R204	Ground	SE	49	43	61	55	50	44	62	56	12.5	12.4	55	50	YES	YES	NO	NO	YES
R204	Ground	NE	40	34	64	59	41	35	65	60	24.4	24.4	53	47	YES	YES	YES	YES	YES
R204	Ground	NW	52	46	61	55	53	47	61	56	8.4	8.4	55	50	YES	YES	NO	NO	YES
R204	First	SW	55	49	57	51	56	50	57	51	1.1	1	55	50	YES	YES	NO	NO	NO
R204	First	SW	54	49	52	46	55	50	52	47	-2.8	-2.8	55	50	NO	NO	NO	NO	NO
R204	First	SE	51	46	62	57	52	47	63	58	11.2	11.2	55	50	YES	YES	NO	NO	YES
R204	First	NE	45	40	65	60	46	41	66	61	19.9	19.9	55	50	YES	YES	YES	YES	YES
R204	First	NW	53	47	62	56	54	48	62	57	8.2	8.2	55	50	YES	YES	NO	NO	YES
R205	Ground	SW	51	45	41	35	52	46	41	36	-10.5	-10.5	50	-	NO	-	NO	-	NO
R205	Ground	NW	44	38	42	36	45	40	42	36	-3.2	-3.2	50	-	NO	-	NO	-	NO
R205	Ground	SE	56	50	49	43	57	51	50	44	-7.2	-7.2	50	-	NO	-	NO	-	NO
R205	Ground	NW	43	38	46	40	45	39	46	40	1.6	1.5	50	-	NO	-	NO	-	NO
R205	Ground	NE	42	36	51	45	43	37	51	45	8.1	7.9	50	-	YES	-	NO	-	YES
R205	Ground	NW	49	43	46	40	50	44	46	40	-4.2	-4.3	50	-	NO	-	NO	-	NO
R206	Ground	SW	43	38	45	39	44	39	45	40	1.1	1.1	55	50	NO	NO	NO	NO	NO
R206	Ground	NW	42	36	43	38	43	37	44	38	1.5	1.5	55	49	NO	NO	NO	NO	NO
R206	Ground	SW	43	37	45	39	44	38	46	40	2	2	55	50	NO	NO	NO	NO	NO
R206	Ground	SE	44	38	44	39	44	39	45	40	0.9	0.9	55	50	NO	NO	NO	NO	NO
R206	Ground	SW	44	38	44	39	45	39	45	40	0.8	0.9	55	50	NO	NO	NO	NO	NO
R206	Ground	SE	43	37	44	38	44	38	45	39	0.9	0.9	55	50	NO	NO	NO	NO	NO
R206	Ground	NE	34	30	36	30	35	30	37	31	1.6	1	47	42	NO	NO	NO	NO	NO

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R206	Ground	E	34	30	36	30	35	30	36	31	1.9	0.7	47	42	NO	NO	NO	NO	NO
R206	Ground	NE	33	30	35	30	34	30	36	30	2	0.4	46	42	NO	NO	NO	NO	NO
R206	Ground	SE	35	30	37	31	36	30	38	32	1.6	1.6	48	42	NO	NO	NO	NO	NO
R206	Ground	NE	33	30	35	30	34	30	36	30	2	0.3	46	42	NO	NO	NO	NO	NO
R206	Ground	NE	33	30	36	30	34	30	36	31	2.2	0.7	46	42	NO	NO	NO	NO	NO
R206	Ground	NW	38	32	39	33	38	33	40	34	1.4	1.5	50	45	NO	NO	NO	NO	NO
R206	Ground	NW	37	31	38	32	38	32	39	33	0.8	0.8	50	44	NO	NO	NO	NO	NO
R206	First	SW	48	42	48	42	48	43	49	43	0.5	0.5	55	50	NO	NO	NO	NO	NO
R206	First	NW	47	41	47	41	48	42	48	42	-0.2	-0.2	55	50	NO	NO	NO	NO	NO
R206	First	SW	48	42	48	42	48	43	49	43	0.6	0.6	55	50	NO	NO	NO	NO	NO
R206	First	SE	47	41	48	42	48	42	49	43	1	1	55	50	NO	NO	NO	NO	NO
R206	First	SW	47	41	48	42	48	42	49	43	0.9	0.9	55	50	NO	NO	NO	NO	NO
R206	First	SE	45	40	47	41	46	40	48	42	1.6	1.6	55	50	NO	NO	NO	NO	NO
R206	First	NE	40	34	41	35	40	35	42	36	1.7	1.6	52	47	NO	NO	NO	NO	NO
R206	First	E	40	34	41	36	40	35	42	36	1.6	1.7	52	47	NO	NO	NO	NO	NO
R206	First	NE	39	33	41	35	40	34	42	36	1.8	1.8	52	46	NO	NO	NO	NO	NO
R206	First	SE	41	35	42	37	42	36	43	38	1.5	1.5	54	48	NO	NO	NO	NO	NO
R206	First	NE	39	33	41	35	40	34	42	36	1.8	1.9	52	46	NO	NO	NO	NO	NO
R206	First	NE	39	34	41	36	40	34	42	36	2.2	2.1	52	46	NO	NO	NO	NO	NO
R206	First	NW	43	37	44	38	44	38	45	39	1.1	1.1	55	50	NO	NO	NO	NO	NO
R206	First	NW	43	37	43	38	44	38	44	38	0.4	0.4	55	50	NO	NO	NO	NO	NO
R207	Ground	SW	60	55	55	49	62	56	55	49	-6.9	-6.9	55	50	NO	NO	NO	NO	NO
R207	Ground	SE	54	48	47	41	55	49	47	42	-7.8	-7.7	55	50	NO	NO	NO	NO	NO
R207	Ground	NE	56	50	53	47	57	52	53	47	-4.5	-4.5	55	50	NO	NO	NO	NO	NO
R207	Ground	NW	65	59	61	56	66	60	61	56	-4.7	-4.7	55	50	YES	YES	NO	NO	NO
R208	Ground	SW	39	34	43	37	40	35	43	38	3.2	3.2	52	47	NO	NO	NO	NO	NO
R208	Ground	SE	42	37	44	38	43	37	45	39	1.9	1.9	55	49	NO	NO	NO	NO	NO
R208	Ground	NE	37	31	39	34	38	32	40	35	2.7	2.7	50	44	NO	NO	NO	NO	NO
R208	Ground	NW	45	39	47	42	46	40	48	43	2.6	2.6	55	50	NO	NO	NO	NO	NO
R209	Ground	SW	34	30	38	32	35	30	39	33	3.9	3.2	47	42	NO	NO	NO	NO	NO
R209	Ground	SE	47	41	51	45	47	42	52	46	4.4	4.4	55	50	NO	NO	NO	NO	NO
R209	Ground	NE	41	35	44	38	41	36	45	39	3.6	3.5	53	48	NO	NO	NO	NO	NO
R209	Ground	NW	46	40	48	43	47	41	49	44	2.6	2.7	55	50	NO	NO	NO	NO	NO
R209	Ground	SW	44	39	48	42	45	40	49	43	3.7	3.8	55	50	NO	NO	NO	NO	NO
R209	Ground	NW	43	38	48	42	44	39	49	43	4.5	4.5	55	50	NO	NO	NO	NO	NO
R210	Ground	SW	41	36	45	39	42	37	46	40	3.5	3.5	54	49	NO	NO	NO	NO	NO
R210	Ground	SE	47	41	50	45	47	42	51	46	3.8	3.8	55	50	NO	NO	NO	NO	NO
R210	Ground	NE	41	35	44	38	41	36	45	39	3.3	3.3	53	48	NO	NO	NO	NO	NO
R210	Ground	NW	46	41	48	43	47	41	49	44	2.2	2.2	55	50	NO	NO	NO	NO	NO
R211	Ground	SW	45	40	45	40	46	41	46	41	0.1	0.1	55	50	NO	NO	NO	NO	NO

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			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R211	Ground	SW	45	39	45	39	46	40	46	40	0.2	0.3	55	50	NO	NO	NO	NO	NO
R211	Ground	SE	39	33	39	33	39	34	40	34	0.4	0.4	51	46	NO	NO	NO	NO	NO
R211	Ground	NE	33	30	35	30	34	30	36	31	2.1	0.5	46	42	NO	NO	NO	NO	NO
R211	Ground	NE	33	30	35	30	34	30	36	31	2	0.6	46	42	NO	NO	NO	NO	NO
R211	Ground	NW	45	39	44	39	45	40	45	40	-0.1	-0.1	55	50	NO	NO	NO	NO	NO
R211	Ground	NW	45	40	45	40	46	41	46	41	0	0	55	50	NO	NO	NO	NO	NO
R211	First	SW	48	42	48	42	48	43	49	43	0.4	0.4	55	50	NO	NO	NO	NO	NO
R211	First	SW	48	42	48	42	48	43	49	43	0.5	0.5	55	50	NO	NO	NO	NO	NO
R211	First	SE	43	38	44	38	44	38	45	39	0.5	0.5	55	50	NO	NO	NO	NO	NO
R211	First	NE	39	33	41	35	40	34	42	36	1.9	1.9	52	46	NO	NO	NO	NO	NO
R211	First	NE	39	34	41	35	40	34	42	36	2	2	52	46	NO	NO	NO	NO	NO
R211	First	NW	46	41	46	41	47	42	47	42	0.1	0.1	55	50	NO	NO	NO	NO	NO
R211	First	NW	47	42	47	42	48	43	48	43	0.2	0.2	55	50	NO	NO	NO	NO	NO
R212	Ground	SW	57	51	52	47	58	52	53	47	-5.2	-5.3	55	50	NO	NO	NO	NO	NO
R212	Ground	SE	53	48	47	41	55	49	47	42	-7.4	-7.3	55	50	NO	NO	NO	NO	NO
R212	Ground	NE	57	51	54	48	58	52	54	48	-4.3	-4.4	55	50	NO	NO	NO	NO	NO
R212	Ground	NW	65	59	62	56	66	60	62	56	-4.5	-4.5	55	50	YES	YES	NO	NO	NO
R213	Ground	SW	40	34	43	37	41	35	43	38	2.7	2.7	53	47	NO	NO	NO	NO	NO
R213	Ground	SE	43	38	45	39	44	39	46	40	1.3	1.3	55	50	NO	NO	NO	NO	NO
R213	Ground	NE	37	31	39	33	38	32	40	34	2.3	2.3	50	44	NO	NO	NO	NO	NO
R213	Ground	SE	37	32	39	34	38	32	40	34	2.1	2.1	50	44	NO	NO	NO	NO	NO
R213	Ground	NE	36	31	39	33	37	31	40	34	2.6	2.6	49	43	NO	NO	NO	NO	NO
R213	Ground	NW	38	33	43	37	39	34	43	38	4.1	4.1	51	46	NO	NO	NO	NO	NO
R213	Ground	NE	38	33	43	37	39	33	43	38	4.1	4.1	51	45	NO	NO	NO	NO	NO
R213	Ground	NW	45	39	47	41	45	40	48	42	2.4	2.3	55	50	NO	NO	NO	NO	NO
R213	Ground	SW	43	37	45	39	44	38	46	40	2.4	2.4	55	50	NO	NO	NO	NO	NO
R213	Ground	NW	41	36	44	38	42	36	45	39	2.5	2.5	54	48	NO	NO	NO	NO	NO
R214	Ground	SW	50	44	53	48	50	45	54	49	3.8	3.9	50	-	YES	-	NO	-	YES
R214	Ground	SW	50	44	53	48	50	45	54	49	3.9	4	50	-	YES	-	NO	-	YES
R214	Ground	NW	49	44	53	47	50	45	54	48	3.8	3.7	50	-	YES	-	NO	-	YES
R214	Ground	SW	50	44	54	48	50	45	55	49	4.3	4.2	50	-	YES	-	NO	-	YES
R214	Ground	SE	49	44	53	47	50	44	54	48	3.7	3.7	50	-	YES	-	NO	-	YES
R214	Ground	SW	49	44	53	47	50	44	54	48	3.5	3.6	50	-	YES	-	NO	-	YES
R214	Ground	S	49	44	53	47	50	44	54	48	3.5	3.6	50	-	YES	-	NO	-	YES
R214	Ground	SE	49	43	50	45	49	44	51	46	2.1	2	50	-	YES	-	NO	-	YES
R214	Ground	E	36	31	41	35	37	32	42	36	4.4	4.4	49	-	NO	-	NO	-	NO
R214	Ground	N	37	31	42	37	38	32	43	38	5.5	5.5	50	-	NO	-	NO	-	NO
R214	Ground	NW	48	42	49	44	48	43	50	45	2	2	50	-	NO	-	NO	-	NO
R215	Ground	SW	49	43	45	39	50	44	45	39	-4.9	-5	50	-	NO	-	NO	-	NO
R215	Ground	NW	49	43	45	39	50	44	45	39	-4.8	-4.8	50	-	NO	-	NO	-	NO

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			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R215	Ground	SW	48	42	44	38	49	44	44	38	-5.2	-5.2	50	-	NO	-	NO	-	NO
R215	Ground	SE	45	39	44	39	46	40	45	39	-0.8	-0.8	50	-	NO	-	NO	-	NO
R215	Ground	SW	45	39	44	38	46	40	45	39	-1.2	-1.2	50	-	NO	-	NO	-	NO
R215	Ground	SE	47	42	49	44	49	43	50	44	1	1	50	-	NO	-	NO	-	NO
R215	Ground	NE	44	38	45	39	45	39	46	40	0.5	0.5	50	-	NO	-	NO	-	NO
R215	Ground	NW	49	43	51	45	50	44	51	45	0.7	0.6	50	-	YES	-	NO	-	NO
R215	Ground	SW	49	43	46	40	50	45	46	40	-4.7	-4.8	50	-	NO	-	NO	-	NO
R215	Ground	NW	49	43	46	40	50	44	46	40	-4.4	-4.4	50	-	NO	-	NO	-	NO
R216	Ground	SW	42	36	45	39	42	37	46	40	3.1	3.1	54	49	NO	NO	NO	NO	NO
R216	Ground	SE	47	41	50	44	47	42	51	45	3.2	3.2	55	50	NO	NO	NO	NO	NO
R216	Ground	NE	40	35	43	38	41	35	44	38	3	3	53	47	NO	NO	NO	NO	NO
R216	Ground	NW	46	41	47	42	47	41	48	43	1.3	1.3	55	50	NO	NO	NO	NO	NO
R217	Ground	SW	45	39	45	40	46	40	46	41	0.3	0.4	55	50	NO	NO	NO	NO	NO
R217	Ground	SE	42	36	42	36	43	37	43	37	-0.3	-0.3	55	49	NO	NO	NO	NO	NO
R217	Ground	NE	33	30	35	30	34	30	36	31	2.1	0.5	46	42	NO	NO	NO	NO	NO
R217	Ground	NW	40	34	41	35	40	35	41	36	1.1	1.1	52	47	NO	NO	NO	NO	NO
R217	Ground	NW	44	38	44	39	45	39	45	40	0.5	0.5	55	50	NO	NO	NO	NO	NO
R217	First	SW	47	42	48	42	48	42	49	43	0.7	0.6	55	50	NO	NO	NO	NO	NO
R217	First	SE	44	39	45	39	45	40	45	40	0.2	0.2	55	50	NO	NO	NO	NO	NO
R217	First	NE	39	33	41	35	40	34	42	36	2.1	2.1	52	46	NO	NO	NO	NO	NO
R217	First	NW	44	38	45	39	44	39	46	40	1.3	1.3	55	50	NO	NO	NO	NO	NO
R217	First	NW	47	41	47	41	47	42	48	42	0.3	0.3	55	50	NO	NO	NO	NO	NO
R218	Ground	SW	57	51	53	47	58	52	53	47	-4.7	-4.8	55	50	NO	NO	NO	NO	NO
R218	Ground	SE	53	47	47	41	54	48	47	41	-6.8	-6.8	55	50	NO	NO	NO	NO	NO
R218	Ground	NE	59	53	56	50	60	54	56	50	-4.2	-4.4	55	50	YES	NO	NO	NO	NO
R218	Ground	NW	65	59	62	56	66	61	62	56	-4.5	-4.5	55	50	YES	YES	NO	NO	NO
R219	Ground	SW	41	35	44	38	42	36	44	39	2.8	2.8	54	48	NO	NO	NO	NO	NO
R219	Ground	SE	43	37	44	38	44	38	45	39	1.4	1.3	55	50	NO	NO	NO	NO	NO
R219	Ground	SE	44	38	45	39	45	39	46	40	0.8	0.7	55	50	NO	NO	NO	NO	NO
R219	Ground	NE	36	30	38	33	37	31	39	33	2.1	2.1	49	43	NO	NO	NO	NO	NO
R219	Ground	NE	36	30	38	33	37	31	39	33	2.3	2.3	49	43	NO	NO	NO	NO	NO
R219	Ground	NW	44	39	46	41	45	39	47	42	2.2	2.2	55	50	NO	NO	NO	NO	NO
R220	Ground	SW	41	35	44	38	41	36	44	39	3.1	3.1	53	48	NO	NO	NO	NO	NO
R220	Ground	SE	45	40	48	43	46	40	49	44	3.1	3.1	55	50	NO	NO	NO	NO	NO
R220	Ground	NE	36	30	39	33	37	31	40	34	2.9	2.9	49	43	NO	NO	NO	NO	NO
R220	Ground	NW	45	40	46	40	46	40	47	41	0.8	0.8	55	50	NO	NO	NO	NO	NO
R220	First	SW	49	43	50	45	49	44	51	46	1.8	1.8	55	50	NO	NO	NO	NO	NO
R220	First	SE	48	42	50	44	49	43	51	45	2.4	2.4	55	50	NO	NO	NO	NO	NO
R220	First	NE	44	39	46	41	45	39	47	41	2.2	2.2	55	50	NO	NO	NO	NO	NO
R220	First	NW	48	42	49	43	48	43	49	44	1.1	1	55	50	NO	NO	NO	NO	NO

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			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R221	Ground	SW	46	40	44	38	47	41	44	38	-3.1	-3.2	50	-	NO	-	NO	-	NO
R221	Ground	NW	45	39	44	39	46	40	45	39	-1.4	-1.5	50	-	NO	-	NO	-	NO
R221	Ground	SW	48	42	47	42	49	43	48	42	-0.7	-0.6	50	-	NO	-	NO	-	NO
R221	Ground	SE	47	42	46	40	48	43	46	41	-1.9	-2	50	-	NO	-	NO	-	NO
R221	Ground	SW	48	42	46	40	49	43	46	40	-2.8	-2.9	50	-	NO	-	NO	-	NO
R221	Ground	SE	49	43	60	54	50	44	60	54	10.6	10.5	50	-	YES	-	NO	-	YES
R221	Ground	NE	39	33	60	55	40	34	61	55	20.4	20.4	50	-	YES	-	NO	-	YES
R221	Ground	NW	44	38	59	53	45	39	59	53	14.7	14.6	50	-	YES	-	NO	-	YES
R221	First	SW	50	44	49	43	51	45	49	43	-2	-2.1	50	-	NO	-	NO	-	NO
R221	First	NW	49	44	50	44	50	45	50	44	-0.6	-0.7	50	-	NO	-	NO	-	NO
R221	First	SW	53	48	51	45	54	48	52	46	-2.6	-2.7	50	-	YES	-	NO	-	NO
R221	First	SE	53	47	50	44	54	48	51	45	-3.4	-3.5	50	-	YES	-	NO	-	NO
R221	First	SW	53	47	50	44	54	48	50	44	-3.8	-3.9	50	-	NO	-	NO	-	NO
R221	First	SE	52	47	61	55	53	48	62	56	8.3	8.2	50	-	YES	-	NO	-	YES
R221	First	NE	44	39	62	56	45	40	62	56	16.6	16.6	50	-	YES	-	NO	-	YES
R221	First	NW	46	41	60	55	47	42	60	55	13	12.9	50	-	YES	-	NO	-	YES
R222	Ground	SW	57	51	53	47	58	52	53	47	-4.8	-4.8	55	50	NO	NO	NO	NO	NO
R222	Ground	SE	51	45	47	41	52	46	47	41	-5.2	-5.2	55	50	NO	NO	NO	NO	NO
R222	Ground	NE	56	50	53	47	57	51	53	47	-4.1	-4.2	55	50	NO	NO	NO	NO	NO
R222	Ground	NW	64	58	61	55	65	60	61	55	-4.4	-4.4	55	50	YES	YES	NO	NO	NO
R223	Ground	SW	51	45	51	45	52	46	52	46	0.1	0	55	50	NO	NO	NO	NO	NO
R223	Ground	NW	51	45	52	46	52	46	52	47	0.8	0.8	55	50	NO	NO	NO	NO	NO
R223	Ground	SW	51	45	54	49	52	46	55	50	3.5	3.5	55	50	NO	NO	NO	NO	NO
R223	Ground	SE	51	46	54	49	52	46	55	50	3.4	3.5	55	50	NO	NO	NO	NO	NO
R223	Ground	SE	50	44	54	48	50	45	55	49	4.1	4.1	55	50	NO	NO	NO	NO	NO
R223	Ground	NE	36	30	41	35	37	31	42	36	4.9	4.9	49	43	NO	NO	NO	NO	NO
R223	Ground	NW	43	37	48	42	44	38	49	43	4.8	4.8	55	50	NO	NO	NO	NO	NO
R223	Ground	SW	44	39	49	43	45	39	49	44	4.4	4.4	55	50	NO	NO	NO	NO	NO
R223	Ground	NW	44	38	48	43	44	39	49	44	4.8	4.8	55	50	NO	NO	NO	NO	NO
R223	Ground	NW	51	45	50	45	51	46	51	45	-0.4	-0.4	55	50	NO	NO	NO	NO	NO
R223	First	SW	52	46	54	48	53	47	55	49	2.2	2.2	55	50	NO	NO	NO	NO	NO
R223	First	NW	52	46	55	49	53	47	55	50	2.6	2.5	55	50	NO	NO	NO	NO	NO
R223	First	SW	52	47	56	51	53	47	57	52	4.2	4.2	55	50	YES	YES	NO	NO	YES
R223	First	SE	52	47	56	50	53	47	57	51	3.9	3.9	55	50	YES	YES	NO	NO	YES
R223	First	SE	52	46	55	49	52	47	56	50	3.3	3.3	55	50	YES	NO	NO	NO	YES
R223	First	NE	42	36	47	41	43	37	48	42	4.9	4.9	55	49	NO	NO	NO	NO	NO
R223	First	NW	46	41	52	46	47	42	53	47	5.3	5.3	55	50	NO	NO	NO	NO	NO
R223	First	SW	48	42	52	47	49	43	53	47	4.5	4.4	55	50	NO	NO	NO	NO	NO
R223	First	NW	47	42	52	47	48	42	53	47	5	5	55	50	NO	NO	NO	NO	NO
R223	First	NW	52	46	54	48	53	47	55	49	1.9	1.9	55	50	NO	NO	NO	NO	NO

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R224	Ground	SW	41	35	43	38	42	36	44	39	2.5	2.5	54	48	NO	NO	NO	NO	NO
R224	Ground	SE	43	37	43	38	44	38	44	39	0.9	0.8	55	50	NO	NO	NO	NO	NO
R224	Ground	NE	33	30	36	30	34	30	36	31	2.3	0.7	46	42	NO	NO	NO	NO	NO
R224	Ground	NW	41	35	43	37	42	36	43	38	1.9	1.9	54	48	NO	NO	NO	NO	NO
R224	Ground	NW	44	38	45	40	44	39	46	41	1.8	1.8	55	50	NO	NO	NO	NO	NO
R224	First	SW	47	41	48	42	48	42	49	43	1	1	55	50	NO	NO	NO	NO	NO
R224	First	SE	46	40	47	41	47	41	48	42	0.9	0.8	55	50	NO	NO	NO	NO	NO
R224	First	NE	39	33	41	36	40	34	42	36	2.2	2.2	52	46	NO	NO	NO	NO	NO
R224	First	NW	43	37	45	39	44	38	45	40	1.6	1.6	55	50	NO	NO	NO	NO	NO
R224	First	NW	46	41	47	42	47	41	48	43	1.1	1.1	55	50	NO	NO	NO	NO	NO
R225	Ground	SW	37	31	40	34	38	32	40	35	2.9	2.9	50	44	NO	NO	NO	NO	NO
R225	Ground	SE	46	40	48	43	47	41	49	44	2.7	2.6	55	50	NO	NO	NO	NO	NO
R225	Ground	NE	40	34	42	37	41	35	43	37	2.6	2.6	53	47	NO	NO	NO	NO	NO
R225	Ground	NW	46	40	46	41	47	41	47	41	0.5	0.5	55	50	NO	NO	NO	NO	NO
R226	Ground	SW	43	37	56	50	44	38	56	50	12.2	12.1	50	-	YES	-	NO	-	YES
R226	Ground	SW	41	36	55	50	42	37	56	50	13.7	13.7	50	-	YES	-	NO	-	YES
R226	Ground	SE	48	42	61	55	48	43	61	56	13	12.9	50	-	YES	-	NO	-	YES
R226	Ground	SW	49	43	59	54	50	44	60	54	10.5	10.4	50	-	YES	-	NO	-	YES
R226	Ground	SE	49	43	66	60	50	44	66	60	16.7	16.4	50	-	YES	-	YES	-	YES
R226	Ground	NE	41	35	71	65	41	36	71	65	29.9	29.7	50	-	YES	-	YES	-	YES
R226	Ground	NW	44	38	65	59	45	39	65	59	20.4	20.3	50	-	YES	-	YES	-	YES
R226	First	SW	47	42	58	52	48	43	58	52	9.4	9.2	50	-	YES	-	NO	-	YES
R226	First	SW	47	41	58	52	48	42	58	52	10.7	10.7	50	-	YES	-	NO	-	YES
R226	First	SE	50	45	62	56	51	45	63	57	11.5	11.4	50	-	YES	-	NO	-	YES
R226	First	SW	51	46	61	55	52	46	62	56	9.4	9.4	50	-	YES	-	NO	-	YES
R226	First	SE	51	46	67	61	52	46	67	61	15.1	14.9	50	-	YES	-	YES	-	YES
R226	First	NE	45	39	71	65	46	40	71	65	25.8	25.6	50	-	YES	-	YES	-	YES
R226	First	NW	46	40	66	60	47	42	66	60	18.6	18.4	50	-	YES	-	YES	-	YES
R227	Ground	SW	37	31	42	36	38	32	43	37	4.9	4.9	50	44	NO	NO	NO	NO	NO
R227	Ground	SE	49	44	53	48	50	44	54	48	4	4.1	55	50	NO	NO	NO	NO	NO
R227	Ground	NE	36	30	41	35	37	31	42	36	4.9	4.8	49	43	NO	NO	NO	NO	NO
R227	Ground	NW	39	34	45	39	40	34	46	40	5.6	5.5	52	46	NO	NO	NO	NO	NO
R227	First	SW	42	37	47	42	43	37	48	42	4.8	4.8	55	49	NO	NO	NO	NO	NO
R227	First	SE	51	45	55	49	52	46	56	50	3.8	3.9	55	50	YES	NO	NO	NO	YES
R227	First	NE	41	36	46	41	42	37	47	41	4.8	4.8	54	49	NO	NO	NO	NO	NO
R227	First	NW	44	38	49	43	45	39	50	44	5.2	5.1	55	50	NO	NO	NO	NO	NO
R228	Ground	SW	54	48	50	44	55	49	50	44	-5.1	-5.2	55	50	NO	NO	NO	NO	NO
R228	Ground	SE	50	44	50	44	51	45	50	44	-1	-0.9	55	50	NO	NO	NO	NO	NO
R228	Ground	NE	50	44	51	45	51	45	51	45	-0.3	-0.4	55	50	NO	NO	NO	NO	NO
R228	Ground	SE	48	42	49	44	49	43	49	44	0.7	0.7	55	50	NO	NO	NO	NO	NO

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			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R228	Ground	NE	59	53	55	50	60	54	55	50	-4.2	-4.2	55	50	NO	NO	NO	NO	NO
R228	Ground	NW	65	58	61	55	66	60	61	55	-4.4	-4.5	55	50	YES	YES	NO	NO	NO
R229	Ground	SW	45	39	44	38	46	40	44	38	-1.8	-1.8	50	-	NO	-	NO	-	NO
R229	Ground	SE	45	39	47	41	46	40	47	42	1.4	1.3	50	-	NO	-	NO	-	NO
R229	Ground	NE	44	38	55	50	44	39	55	50	11	10.8	50	-	YES	-	NO	-	YES
R229	Ground	NW	47	41	54	48	48	42	54	48	5.8	5.7	50	-	YES	-	NO	-	YES
R230	First	SW	51	45	69	64	52	46	70	63	17.9	17	55	50	YES	YES	YES	YES	YES
R230	First	SE	50	44	65	59	51	45	66	59	14.7	13.8	55	50	YES	YES	YES	NO	YES
R230	First	NE	43	37	51	45	44	38	51	44	7.4	6.6	55	50	NO	NO	NO	NO	NO
R230	First	NW	48	42	63	58	49	43	63	57	14.6	13.6	55	50	YES	YES	NO	NO	YES
R231	Ground	SW	45	39	47	42	46	40	48	42	2.5	2.5	55	50	NO	NO	NO	NO	NO
R231	Ground	S	46	40	48	42	46	41	49	43	2.4	2.3	55	50	NO	NO	NO	NO	NO
R231	Ground	SE	45	40	47	42	46	41	48	43	2	2	55	50	NO	NO	NO	NO	NO
R231	Ground	SE	45	39	47	41	46	40	48	42	2	2	55	50	NO	NO	NO	NO	NO
R231	Ground	NE	38	32	40	35	39	33	41	35	2.5	2.5	51	45	NO	NO	NO	NO	NO
R231	Ground	NW	39	33	41	35	40	34	42	36	2.3	2.3	52	46	NO	NO	NO	NO	NO
R231	Ground	NE	38	32	40	35	39	33	41	35	2.4	2.4	51	45	NO	NO	NO	NO	NO
R231	Ground	NW	43	37	42	36	44	38	43	37	-0.9	-0.9	55	50	NO	NO	NO	NO	NO
R232	Ground	SW	59	53	55	50	60	54	55	50	-4.4	-4.6	55	50	NO	NO	NO	NO	NO
R232	Ground	SE	52	46	48	43	53	47	49	43	-4.5	-4.5	55	50	NO	NO	NO	NO	NO
R232	Ground	SW	52	46	48	42	53	47	48	42	-4.6	-4.7	55	50	NO	NO	NO	NO	NO
R232	Ground	SE	47	42	50	44	49	43	50	44	1.5	1.4	55	50	NO	NO	NO	NO	NO
R232	Ground	NE	46	40	49	44	47	41	50	44	2.8	2.7	55	50	NO	NO	NO	NO	NO
R232	Ground	NE	55	49	53	47	56	50	53	47	-3.3	-3.3	55	50	NO	NO	NO	NO	NO
R232	Ground	NW	63	57	60	54	64	59	60	54	-4.4	-4.4	55	50	YES	YES	NO	NO	NO
R232	First	SW	61	54	57	51	61	56	57	51	-4.5	-4.5	55	50	YES	YES	NO	NO	NO
R232	First	SE	55	49	52	46	56	51	52	46	-4.3	-4.3	55	50	NO	NO	NO	NO	NO
R232	First	SW	55	49	51	46	56	50	52	46	-4.4	-4.4	55	50	NO	NO	NO	NO	NO
R232	First	SE	51	45	52	46	52	46	52	46	-0.2	-0.2	55	50	NO	NO	NO	NO	NO
R232	First	NE	51	45	52	46	52	46	52	46	-0.3	-0.3	55	50	NO	NO	NO	NO	NO
R232	First	NE	57	51	55	49	58	52	55	49	-3.4	-3.5	55	50	NO	NO	NO	NO	NO
R232	First	NW	64	58	61	55	65	60	61	55	-4.3	-4.4	55	50	YES	YES	NO	NO	NO
R233	Ground	SW	42	36	47	42	43	37	48	42	5	4.9	55	49	NO	NO	NO	NO	NO
R233	Ground	SE	46	40	50	44	47	41	51	45	4.2	4.3	55	50	NO	NO	NO	NO	NO
R233	Ground	SW	48	43	51	45	49	43	52	46	2.7	2.7	55	50	NO	NO	NO	NO	NO
R233	Ground	SW	49	43	51	45	50	44	52	46	1.9	1.9	55	50	NO	NO	NO	NO	NO
R233	Ground	SE	49	43	49	44	49	44	50	45	1.1	1	55	50	NO	NO	NO	NO	NO
R233	Ground	NE	35	30	39	34	36	30	40	35	4.2	4.2	48	42	NO	NO	NO	NO	NO
R233	Ground	NE	36	30	40	34	36	31	41	35	4.2	4.2	48	43	NO	NO	NO	NO	NO
R233	Ground	NW	37	31	43	37	38	32	44	38	5.8	5.7	50	44	NO	NO	NO	NO	NO

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			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R233	Ground	NE	37	31	43	37	38	32	44	38	6	5.9	50	44	NO	NO	NO	NO	NO
R233	Ground	NW	42	37	47	42	43	38	48	42	4.7	4.7	55	50	NO	NO	NO	NO	NO
R233	First	SW	46	40	50	45	47	41	51	45	4.2	4.2	55	50	NO	NO	NO	NO	NO
R233	First	SE	49	43	52	46	50	44	53	47	2.9	2.9	55	50	NO	NO	NO	NO	NO
R233	First	SW	50	44	52	47	51	45	53	48	2.6	2.5	55	50	NO	NO	NO	NO	NO
R233	First	SW	51	45	52	47	51	46	53	47	1.7	1.7	55	50	NO	NO	NO	NO	NO
R233	First	SE	50	45	51	45	51	45	52	46	0.8	0.8	55	50	NO	NO	NO	NO	NO
R233	First	NE	41	35	45	39	42	36	46	40	4.1	4.1	54	48	NO	NO	NO	NO	NO
R233	First	NE	41	35	45	40	42	36	46	40	4.2	4.3	54	48	NO	NO	NO	NO	NO
R233	First	NW	42	37	47	42	43	37	48	42	4.9	4.8	55	49	NO	NO	NO	NO	NO
R233	First	NE	41	36	47	41	42	37	47	42	5.2	5.2	54	49	NO	NO	NO	NO	NO
R233	First	NW	45	39	50	44	46	40	51	45	4.6	4.5	55	50	NO	NO	NO	NO	NO
R234	Ground	SW	47	41	44	38	48	42	44	39	-3.2	-3.3	50	-	NO	-	NO	-	NO
R234	Ground	NW	46	40	45	39	47	41	45	39	-2.4	-2.4	50	-	NO	-	NO	-	NO
R234	Ground	SW	48	42	45	39	49	43	45	39	-4.2	-4.2	50	-	NO	-	NO	-	NO
R234	Ground	SW	48	42	45	40	49	43	46	40	-3.4	-3.3	50	-	NO	-	NO	-	NO
R234	Ground	SW	47	42	45	40	48	43	46	40	-2.4	-2.5	50	-	NO	-	NO	-	NO
R234	Ground	SE	47	41	58	52	48	42	58	52	10.4	10.2	50	-	YES	-	NO	-	YES
R234	Ground	SE	45	39	62	56	46	40	62	56	16.3	16.1	50	-	YES	-	NO	-	YES
R234	Ground	NE	42	36	66	60	43	37	66	60	23.4	23.2	50	-	YES	-	YES	-	YES
R234	Ground	NW	43	37	63	57	44	38	63	57	18.5	18.4	50	-	YES	-	NO	-	YES
R234	Ground	NE	40	35	61	55	41	36	61	55	19.7	19.6	50	-	YES	-	NO	-	YES
R234	Ground	NW	40	35	61	55	41	36	61	55	19.4	19.3	50	-	YES	-	NO	-	YES
R234	Ground	NE	40	34	61	55	41	35	61	55	20.3	20.2	50	-	YES	-	NO	-	YES
R234	Ground	NW	44	38	59	53	45	39	59	53	13.8	13.7	50	-	YES	-	NO	-	YES
R237	Ground	NW	41	35	45	40	42	36	46	40	4	3.9	54	48	NO	NO	NO	NO	NO
R237	Ground	SW	41	35	45	39	41	36	46	40	4.1	4	53	48	NO	NO	NO	NO	NO
R237	Ground	NW	40	34	45	39	41	35	45	39	4.2	4.2	53	47	NO	NO	NO	NO	NO
R237	Ground	SW	39	34	44	39	40	35	45	39	4.7	4.6	52	47	NO	NO	NO	NO	NO
R237	Ground	SE	47	41	47	41	48	42	48	42	0.1	0.1	55	50	NO	NO	NO	NO	NO
R237	Ground	NE	35	30	39	33	36	30	39	34	3.7	3.6	48	42	NO	NO	NO	NO	NO
R237	Ground	NW	41	35	45	40	42	36	46	40	4.2	4.1	54	48	NO	NO	NO	NO	NO
R237	First	NW	45	40	49	43	46	40	49	44	3.3	3.2	55	50	NO	NO	NO	NO	NO
R237	First	SW	45	40	49	43	46	40	49	44	3.2	3.2	55	50	NO	NO	NO	NO	NO
R237	First	NW	45	39	48	43	46	40	49	43	3.3	3.3	55	50	NO	NO	NO	NO	NO
R237	First	SW	45	39	49	43	46	40	49	44	3.8	3.8	55	50	NO	NO	NO	NO	NO
R237	First	SE	49	43	49	44	50	44	50	45	0.6	0.5	55	50	NO	NO	NO	NO	NO
R237	First	NE	40	35	44	38	41	36	45	39	3.6	3.6	53	48	NO	NO	NO	NO	NO
R237	First	NW	44	39	48	43	45	39	49	43	3.8	3.7	55	50	NO	NO	NO	NO	NO
R238	Ground	SW	47	41	47	41	48	42	48	42	0.3	0.3	55	50	NO	NO	NO	NO	NO

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			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R238	Ground	SE	46	40	46	40	46	41	47	41	0.2	0.2	55	50	NO	NO	NO	NO	NO
R238	Ground	NE	34	30	38	32	35	30	39	33	3.4	2.9	47	42	NO	NO	NO	NO	NO
R238	Ground	NW	43	37	44	38	44	38	45	39	0.8	1.1	55	50	NO	NO	NO	NO	NO
R238	First	SW	49	44	49	43	50	44	50	44	0	0	55	50	NO	NO	NO	NO	NO
R238	First	SE	48	43	48	43	49	43	49	43	0	0	55	50	NO	NO	NO	NO	NO
R238	First	NE	40	34	43	38	41	35	44	38	3.2	3.2	53	47	NO	NO	NO	NO	NO
R238	First	NW	45	40	47	41	46	40	47	42	1.3	1.5	55	50	NO	NO	NO	NO	NO
R239	Ground	SW	61	55	58	52	62	56	58	52	-4.3	-4.3	55	50	YES	YES	NO	NO	NO
R239	Ground	SE	48	42	47	42	49	43	48	42	-1.1	-1.1	55	50	NO	NO	NO	NO	NO
R239	Ground	NE	58	52	55	50	59	54	55	50	-4	-4.1	55	50	NO	NO	NO	NO	NO
R239	Ground	NW	66	60	63	57	67	61	63	57	-4.4	-4.4	55	50	YES	YES	NO	NO	NO
R240	Ground	SW	45	39	45	40	46	40	46	41	0.5	0.5	55	50	NO	NO	NO	NO	NO
R240	Ground	SE	39	33	40	34	40	34	41	35	1.2	1.2	52	46	NO	NO	NO	NO	NO
R240	Ground	NE	33	30	36	30	34	30	37	31	2.5	1	46	42	NO	NO	NO	NO	NO
R240	Ground	NW	44	38	44	38	45	39	45	39	-0.2	-0.3	55	50	NO	NO	NO	NO	NO
R240	First	SW	47	41	47	42	48	42	48	43	0.4	0.4	55	50	NO	NO	NO	NO	NO
R240	First	SE	45	40	46	41	46	41	47	42	1.1	1	55	50	NO	NO	NO	NO	NO
R240	First	NE	39	33	41	36	40	34	42	37	2.5	2.5	52	46	NO	NO	NO	NO	NO
R240	First	NW	45	40	45	40	46	40	46	41	0.1	0.1	55	50	NO	NO	NO	NO	NO
R242	Ground	SW	47	41	51	45	48	42	52	46	3.6	3.5	55	50	NO	NO	NO	NO	NO
R242	Ground	SE	49	43	47	42	49	44	48	43	-1.2	-1.2	55	50	NO	NO	NO	NO	NO
R242	Ground	NE	36	30	40	34	36	31	41	35	4.2	4.1	48	43	NO	NO	NO	NO	NO
R242	Ground	NW	45	39	52	46	46	40	52	46	6.2	6.2	55	50	NO	NO	NO	NO	NO
R242	Ground	NW	45	40	52	46	46	41	52	47	5.9	5.8	55	50	NO	NO	NO	NO	NO
R242	First	SW	50	44	54	49	51	45	55	49	4.2	4.1	55	50	NO	NO	NO	NO	NO
R242	First	SE	50	44	51	45	51	45	52	46	0.9	0.9	55	50	NO	NO	NO	NO	NO
R242	First	NE	41	35	46	40	42	36	46	41	4.4	4.4	54	48	NO	NO	NO	NO	NO
R242	First	NW	47	41	54	48	48	42	54	49	6.8	6.8	55	50	NO	NO	NO	NO	NO
R242	First	NW	48	42	54	49	49	43	55	49	6.2	6.1	55	50	NO	NO	NO	NO	NO
R243	Ground	SW	49	44	47	41	50	45	47	41	-3.5	-3.5	50	-	NO	-	NO	-	NO
R243	Ground	SE	46	40	58	52	47	41	58	52	11.2	11.1	50	-	YES	-	NO	-	YES
R243	Ground	NE	42	36	60	54	43	37	60	54	16.6	16.5	50	-	YES	-	NO	-	YES
R243	Ground	NW	45	39	51	45	46	40	51	45	5.3	5.2	50	-	YES	-	NO	-	YES
R244	Ground	SW	46	40	46	41	46	41	47	41	0.7	0.7	55	50	NO	NO	NO	NO	NO
R244	Ground	SE	43	37	43	38	44	38	44	39	0.6	0.6	55	50	NO	NO	NO	NO	NO
R244	Ground	NE	33	30	36	30	34	30	37	31	2.7	1.2	46	42	NO	NO	NO	NO	NO
R244	Ground	NW	44	38	44	39	44	39	45	39	0.8	0.7	55	50	NO	NO	NO	NO	NO
R244	First	SW	47	42	48	42	48	43	49	43	0.7	0.7	55	50	NO	NO	NO	NO	NO
R244	First	SE	46	40	46	40	46	41	47	41	0.8	0.7	55	50	NO	NO	NO	NO	NO
R244	First	NE	39	33	42	36	40	34	42	37	2.5	2.5	52	46	NO	NO	NO	NO	NO

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R244	First	NW	45	39	46	40	46	40	47	41	0.6	0.6	55	50	NO	NO	NO	NO	NO
R245	Ground	SW	59	53	56	50	60	54	56	50	-4.2	-4.3	55	50	YES	NO	NO	NO	NO
R245	Ground	SE	47	41	46	40	48	42	46	41	-1.7	-1.7	55	50	NO	NO	NO	NO	NO
R245	Ground	NE	58	51	54	48	59	53	54	48	-4.3	-4.3	55	50	NO	NO	NO	NO	NO
R245	Ground	NW	67	61	63	58	68	62	63	58	-4.3	-4.4	55	50	YES	YES	NO	NO	NO
R246	Ground	SW	42	37	46	41	43	37	47	41	3.8	3.8	55	49	NO	NO	NO	NO	NO
R246	Ground	NW	45	39	47	41	46	40	47	42	1.8	1.7	55	50	NO	NO	NO	NO	NO
R246	Ground	SW	45	39	47	42	46	40	48	42	2.4	2.4	55	50	NO	NO	NO	NO	NO
R246	Ground	SE	44	39	47	41	45	39	47	42	2.4	2.4	55	50	NO	NO	NO	NO	NO
R246	Ground	NE	39	33	43	38	40	34	44	38	4	3.9	52	46	NO	NO	NO	NO	NO
R246	Ground	SE	41	35	45	39	42	36	45	40	3.3	3.3	54	48	NO	NO	NO	NO	NO
R246	Ground	NE	39	33	43	37	40	34	44	38	3.6	3.6	52	46	NO	NO	NO	NO	NO
R246	Ground	NE	39	33	43	37	40	34	44	38	3.6	3.5	52	46	NO	NO	NO	NO	NO
R246	Ground	NW	43	37	48	42	44	38	48	43	4.8	4.8	55	50	NO	NO	NO	NO	NO
R247	Ground	SW	51	45	48	42	52	46	48	42	-4.1	-4.1	50	-	NO	-	NO	-	NO
R247	Ground	SE	44	39	54	48	46	40	54	48	8.2	8.1	50	-	YES	-	NO	-	YES
R247	Ground	NE	42	36	55	49	43	37	55	49	12.1	12	50	-	YES	-	NO	-	YES
R248	Ground	SW	35	30	39	33	36	30	40	34	3.8	3.7	48	42	NO	NO	NO	NO	NO
R248	Ground	SE	47	41	46	40	47	42	47	41	-0.5	-0.5	55	50	NO	NO	NO	NO	NO
R248	Ground	NE	35	30	38	33	35	30	39	33	3.6	3.2	47	42	NO	NO	NO	NO	NO
R248	Ground	SE	41	36	43	37	42	36	44	38	1.9	1.9	54	48	NO	NO	NO	NO	NO
R248	Ground	NE	34	30	38	32	35	30	38	33	3.3	2.6	47	42	NO	NO	NO	NO	NO
R248	Ground	NW	41	35	45	39	41	36	46	40	4.2	4.1	53	48	NO	NO	NO	NO	NO
R248	First	SW	41	36	45	39	42	36	46	40	3.5	3.5	54	48	NO	NO	NO	NO	NO
R248	First	SE	49	43	49	43	50	44	49	44	-0.2	-0.1	55	50	NO	NO	NO	NO	NO
R248	First	NE	40	34	44	38	41	35	44	39	3.5	3.5	53	47	NO	NO	NO	NO	NO
R248	First	SE	46	40	47	41	47	41	48	42	1.2	1.2	55	50	NO	NO	NO	NO	NO
R248	First	NE	40	34	43	37	41	35	44	38	3.2	3.2	53	47	NO	NO	NO	NO	NO
R248	First	NW	43	38	48	42	44	39	48	43	3.9	3.9	55	50	NO	NO	NO	NO	NO
R250	Ground	SW	46	40	46	40	46	41	47	41	0.4	0.3	55	50	NO	NO	NO	NO	NO
R250	Ground	SE	45	39	45	40	45	40	46	41	0.9	0.9	55	50	NO	NO	NO	NO	NO
R250	Ground	NE	38	32	40	35	39	33	41	36	2.7	2.7	51	45	NO	NO	NO	NO	NO
R250	Ground	NW	42	37	44	38	43	37	45	39	1.5	1.4	55	49	NO	NO	NO	NO	NO
R251	Ground	SW	35	30	40	34	36	31	41	35	4.2	4.1	48	43	NO	NO	NO	NO	NO
R251	Ground	SE	45	40	47	41	46	40	48	42	1.9	1.9	55	50	NO	NO	NO	NO	NO
R251	Ground	SE	44	38	46	40	45	39	47	41	2	1.9	55	50	NO	NO	NO	NO	NO
R251	Ground	NE	40	34	44	38	40	35	44	38	3.8	3.8	52	47	NO	NO	NO	NO	NO
R251	Ground	NW	44	39	51	45	45	40	51	45	5.9	5.8	55	50	NO	NO	NO	NO	NO
R252	Ground	SW	44	38	44	38	45	40	44	38	-1.2	-1.2	50	-	NO	-	NO	-	NO
R252	Ground	SW	44	38	44	38	45	39	44	38	-1	-1.1	50	-	NO	-	NO	-	NO

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			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R252	Ground	SW	46	40	45	39	47	41	45	39	-1.9	-2	50	-	NO	-	NO	-	NO
R252	Ground	SE	45	40	62	56	46	41	62	56	15.4	15.2	50	-	YES	-	NO	-	YES
R252	Ground	NE	50	44	64	58	51	45	64	58	12.6	12.5	50	-	YES	-	NO	-	YES
R252	Ground	NW	54	48	51	46	55	49	52	46	-3.4	-3.4	50	-	YES	-	NO	-	NO
R253	Ground	SE	47	41	47	41	48	42	47	42	-0.2	-0.4	50	-	NO	-	NO	-	NO
R253	Ground	NE	59	53	60	55	60	54	60	55	0.2	0.2	50	-	YES	-	NO	-	NO
R253	Ground	NW	67	61	64	58	68	63	64	58	-4.1	-4.1	50	-	YES	-	NO	-	NO
R254	Ground	SW	45	39	46	40	45	40	47	41	1.5	1.5	55	50	NO	NO	NO	NO	NO
R254	Ground	SE	45	39	45	39	45	40	45	40	0.1	0	55	50	NO	NO	NO	NO	NO
R254	Ground	NE	38	32	41	35	39	33	41	36	2.8	2.7	51	45	NO	NO	NO	NO	NO
R254	Ground	NW	42	37	44	38	43	37	44	39	1.3	1.3	55	49	NO	NO	NO	NO	NO
R255	Ground	SW	57	51	54	48	58	52	54	48	-4.3	-4.4	50	-	YES	-	NO	-	NO
R255	Ground	NE	42	36	52	46	43	37	52	46	8.8	8.7	50	-	YES	-	NO	-	YES
R255	Ground	SE	43	38	48	42	44	39	48	42	3.8	3.7	50	-	NO	-	NO	-	NO
R255	Ground	NW	68	62	64	59	69	63	65	59	-4.4	-4.4	50	-	YES	-	YES	-	YES
R256	Ground	SW	44	39	45	40	45	40	46	40	0.9	0.9	55	50	NO	NO	NO	NO	NO
R256	Ground	SE	45	39	46	40	45	40	47	41	1.3	1.3	55	50	NO	NO	NO	NO	NO
R256	Ground	NE	38	32	41	35	39	33	41	36	2.7	2.7	51	45	NO	NO	NO	NO	NO
R256	Ground	NW	41	35	45	39	42	36	45	39	3.3	3.3	54	48	NO	NO	NO	NO	NO
R260	Ground	SW	43	38	47	41	44	39	48	42	3.2	3.2	55	50	NO	NO	NO	NO	NO
R260	Ground	SE	44	39	46	41	45	39	47	42	2.1	2.1	55	50	NO	NO	NO	NO	NO
R260	Ground	NE	40	34	44	38	41	35	44	38	3.3	3.4	53	47	NO	NO	NO	NO	NO
R260	Ground	NW	44	39	49	43	45	40	50	44	4.2	4.2	55	50	NO	NO	NO	NO	NO
R261	Ground	SW	58	52	57	51	59	53	57	51	-2.2	-2.2	55	50	YES	YES	NO	NO	NO
R261	Ground	SE	44	38	59	53	45	39	59	53	14.3	14.1	55	50	YES	YES	NO	NO	YES
R261	Ground	SW	45	39	58	52	46	40	58	52	11.8	11.7	55	50	YES	YES	NO	NO	YES
R261	Ground	SE	45	39	68	62	45	40	68	62	22.1	21.9	55	50	YES	YES	YES	YES	YES
R261	Ground	NE	51	45	70	64	52	47	70	64	17.9	17.8	55	50	YES	YES	YES	YES	YES
R261	Ground	NW	64	58	63	57	65	59	63	57	-2	-2.1	55	50	YES	YES	NO	NO	NO
R261	First	SW	59	53	58	52	60	54	58	52	-1.9	-1.9	55	50	YES	YES	NO	NO	NO
R261	First	SE	48	42	60	54	49	43	60	54	11	10.9	55	50	YES	YES	NO	NO	YES
R261	First	SW	49	43	59	53	50	44	59	53	9.3	9.2	55	50	YES	YES	NO	NO	YES
R261	First	SE	48	42	68	62	49	43	68	62	18.7	18.5	55	50	YES	YES	YES	YES	YES
R261	First	NE	53	47	70	64	54	48	70	64	16.4	16.3	55	50	YES	YES	YES	YES	YES
R261	First	NW	64	58	63	57	65	59	63	57	-1.9	-2	55	50	YES	YES	NO	NO	NO
R262	Ground	SW	44	38	45	40	45	39	46	40	1.6	1.6	55	50	NO	NO	NO	NO	NO
R262	Ground	SE	41	35	42	37	42	36	43	37	1.4	1.4	54	48	NO	NO	NO	NO	NO
R262	Ground	NE	33	30	36	31	34	30	37	31	2.9	1.3	46	42	NO	NO	NO	NO	NO
R262	Ground	NW	39	33	42	36	40	34	42	37	2.5	2.5	52	46	NO	NO	NO	NO	NO
R262	First	SW	47	41	48	42	48	42	49	43	1	1	55	50	NO	NO	NO	NO	NO

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			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R262	First	SE	46	41	47	41	47	42	48	42	0.7	0.7	55	50	NO	NO	NO	NO	NO
R262	First	NE	39	33	42	36	40	34	42	37	2.7	2.7	52	46	NO	NO	NO	NO	NO
R262	First	NW	42	37	45	39	43	38	46	40	2.6	2.5	55	50	NO	NO	NO	NO	NO
R264	Ground	SW	43	37	45	39	44	38	46	40	1.7	1.8	55	50	NO	NO	NO	NO	NO
R264	Ground	SE	40	35	41	36	41	35	42	37	1.2	1.2	53	47	NO	NO	NO	NO	NO
R264	Ground	NE	33	30	36	31	34	30	37	31	2.8	1.2	46	42	NO	NO	NO	NO	NO
R264	Ground	NW	38	32	42	36	39	33	43	37	3.6	3.6	51	45	NO	NO	NO	NO	NO
R264	Ground	NW	43	37	44	38	43	38	45	39	1.4	1.4	55	50	NO	NO	NO	NO	NO
R264	First	SW	46	40	47	42	47	41	48	42	1.3	1.2	55	50	NO	NO	NO	NO	NO
R264	First	SE	44	38	45	39	45	39	46	40	1	1	55	50	NO	NO	NO	NO	NO
R264	First	NE	39	33	42	36	40	34	43	37	2.7	2.6	52	46	NO	NO	NO	NO	NO
R264	First	NW	42	36	45	40	43	37	46	40	3.4	3.4	55	49	NO	NO	NO	NO	NO
R264	First	NW	45	39	47	41	46	40	47	41	1.3	1.2	55	50	NO	NO	NO	NO	NO
R266	Ground	SW	42	36	46	40	43	37	46	41	3.4	3.3	55	49	NO	NO	NO	NO	NO
R266	Ground	SE	43	37	44	38	43	38	45	39	1.5	1.5	55	50	NO	NO	NO	NO	NO
R266	Ground	NE	34	30	37	32	35	30	38	32	3.2	2.2	47	42	NO	NO	NO	NO	NO
R266	Ground	NW	42	37	47	41	43	38	47	42	3.9	3.8	55	50	NO	NO	NO	NO	NO
R266	First	SW	48	42	50	44	48	43	50	44	1.8	1.8	55	50	NO	NO	NO	NO	NO
R266	First	SE	47	41	47	41	48	42	48	42	0.3	0.2	55	50	NO	NO	NO	NO	NO
R266	First	NE	39	34	43	37	40	35	43	38	3	3	52	47	NO	NO	NO	NO	NO
R266	First	NW	44	39	49	43	45	40	49	44	4	4	55	50	NO	NO	NO	NO	NO
R267	Ground	SW	47	41	50	44	48	42	50	45	2.6	2.5	55	50	NO	NO	NO	NO	NO
R267	Ground	SE	45	40	49	43	46	41	50	44	3.5	3.4	55	50	NO	NO	NO	NO	NO
R267	Ground	NE	40	34	43	38	41	35	44	38	3.4	3.4	53	47	NO	NO	NO	NO	NO
R267	Ground	NW	41	35	45	39	42	36	45	40	3.7	3.7	54	48	NO	NO	NO	NO	NO
R267	Ground	NE	40	34	44	38	41	35	44	38	3.6	3.6	53	47	NO	NO	NO	NO	NO
R267	Ground	NW	42	37	47	41	43	38	47	41	3.8	3.8	55	50	NO	NO	NO	NO	NO
R268	Ground	SW	45	39	49	44	45	40	50	44	4.7	4.7	55	50	NO	NO	NO	NO	NO
R268	Ground	SE	44	39	49	43	45	39	50	44	4.4	4.3	55	50	NO	NO	NO	NO	NO
R268	Ground	NE	35	30	45	39	36	31	46	40	9.4	9.5	48	43	NO	NO	NO	NO	NO
R268	Ground	NW	42	36	46	40	43	37	46	40	3.4	3.2	55	49	NO	NO	NO	NO	NO
R268	First	SW	49	43	52	46	49	44	53	47	3.1	3	55	50	NO	NO	NO	NO	NO
R268	First	SE	49	43	51	46	49	44	52	46	2.8	2.7	55	50	NO	NO	NO	NO	NO
R268	First	NE	41	35	48	42	41	36	48	43	6.8	6.8	53	48	NO	NO	NO	NO	NO
R268	First	NW	44	39	49	43	45	40	49	44	4.1	4	55	50	NO	NO	NO	NO	NO
R269	Ground	SW	57	50	68	62	57	52	68	62	10.9	10.8	55	50	YES	YES	YES	YES	YES
R269	Ground	SE	43	38	63	57	44	38	63	57	18.7	18.5	55	50	YES	YES	NO	NO	YES
R269	Ground	NW	57	51	58	52	58	52	58	52	-0.1	-0.1	55	50	YES	YES	NO	NO	NO
R269	First	SW	57	51	68	63	58	53	68	63	10.2	10	55	50	YES	YES	YES	YES	YES
R269	First	SE	48	42	64	58	49	43	64	58	15.3	15.1	55	50	YES	YES	NO	NO	YES

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			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R269	First	NE	42	37	49	44	43	38	50	44	6.3	6.1	55	50	NO	NO	NO	NO	NO
R269	First	NW	58	52	59	53	59	53	59	53	-0.1	-0.1	55	50	YES	YES	NO	NO	NO
R271	Ground	SW	43	37	47	41	44	38	47	42	3.5	3.4	55	50	NO	NO	NO	NO	NO
R271	Ground	NW	43	37	47	41	44	38	47	42	3.5	3.5	55	50	NO	NO	NO	NO	NO
R271	Ground	SW	39	34	43	38	40	35	44	38	3.6	3.5	52	47	NO	NO	NO	NO	NO
R271	Ground	SE	45	39	48	43	46	40	49	43	3	3	55	50	NO	NO	NO	NO	NO
R271	Ground	NE	39	34	43	37	40	35	43	38	3.1	3	52	47	NO	NO	NO	NO	NO
R271	Ground	NW	42	37	46	41	43	37	47	41	3.6	3.5	55	49	NO	NO	NO	NO	NO
R272	Ground	SW	42	36	45	39	43	37	45	40	2.8	2.7	55	49	NO	NO	NO	NO	NO
R272	Ground	SE	42	37	45	39	43	38	45	39	1.8	1.8	55	50	NO	NO	NO	NO	NO
R272	Ground	SW	43	37	45	39	44	38	45	39	1.4	1.3	55	50	NO	NO	NO	NO	NO
R272	Ground	SE	43	37	44	38	44	38	45	39	0.7	0.7	55	50	NO	NO	NO	NO	NO
R272	Ground	NE	38	32	40	35	38	33	41	35	2.5	2.5	50	45	NO	NO	NO	NO	NO
R272	Ground	NW	42	36	46	40	43	37	46	41	3.3	3.3	55	49	NO	NO	NO	NO	NO
R274	Ground	SW	46	40	49	43	46	41	49	44	2.9	2.8	55	50	NO	NO	NO	NO	NO
R274	Ground	SE	47	41	48	43	47	42	49	43	1.7	1.7	55	50	NO	NO	NO	NO	NO
R274	Ground	NE	39	33	43	37	40	34	43	37	3.1	3	52	46	NO	NO	NO	NO	NO
R274	Ground	NW	42	37	47	41	43	38	47	41	3.5	3.5	55	50	NO	NO	NO	NO	NO
R275	Ground	SW	39	33	43	37	40	34	43	37	3.1	3	52	46	NO	NO	NO	NO	NO
R275	Ground	SE	46	40	47	41	47	41	47	42	0.8	0.8	55	50	NO	NO	NO	NO	NO
R275	Ground	NE	39	33	42	37	40	34	43	37	2.9	2.8	52	46	NO	NO	NO	NO	NO
R275	Ground	NW	42	37	46	41	43	38	47	41	3.3	3.2	55	50	NO	NO	NO	NO	NO
R278	Ground	SW	43	37	45	39	44	38	46	40	2	1.9	55	50	NO	NO	NO	NO	NO
R278	Ground	SE	43	37	45	39	43	38	46	40	2.1	2	55	50	NO	NO	NO	NO	NO
R278	Ground	NE	37	32	40	34	38	32	41	35	2.5	2.5	50	44	NO	NO	NO	NO	NO
R278	Ground	NE	38	32	41	35	38	33	41	35	2.7	2.7	50	45	NO	NO	NO	NO	NO
R278	Ground	NW	38	32	41	36	39	33	42	36	2.7	2.8	51	45	NO	NO	NO	NO	NO
R279	Ground	SW	39	33	44	38	40	34	44	38	3.9	3.9	52	46	NO	NO	NO	NO	NO
R279	Ground	SE	44	39	45	40	45	39	46	40	1.1	1	55	50	NO	NO	NO	NO	NO
R279	Ground	NE	39	33	42	36	40	34	42	36	2.5	2.5	52	46	NO	NO	NO	NO	NO
R279	Ground	NW	40	35	44	38	41	36	44	39	3	3	53	48	NO	NO	NO	NO	NO
R279	Ground	NE	39	33	42	37	40	34	43	37	3.3	3.2	52	46	NO	NO	NO	NO	NO
R279	Ground	NW	40	34	44	39	41	35	45	39	3.7	3.6	53	47	NO	NO	NO	NO	NO
R280	Ground	SW	43	37	46	40	44	38	46	40	2.1	2	55	50	NO	NO	NO	NO	NO
R280	Ground	S	43	37	45	40	44	38	46	40	2.2	2.1	55	50	NO	NO	NO	NO	NO
R280	Ground	SE	42	37	45	39	43	37	45	40	2.2	2.1	55	49	NO	NO	NO	NO	NO
R280	Ground	SE	42	36	44	39	43	37	45	39	2.1	2.1	55	49	NO	NO	NO	NO	NO
R280	Ground	NE	38	32	41	35	39	33	42	36	2.6	2.6	51	45	NO	NO	NO	NO	NO
R280	Ground	NW	40	34	44	38	41	35	44	38	2.9	2.9	53	47	NO	NO	NO	NO	NO
R281	Ground	SW	44	38	46	40	45	39	47	41	1.8	1.7	55	50	NO	NO	NO	NO	NO

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R281	Ground	SE	43	37	45	39	44	38	46	40	1.9	1.8	55	50	NO	NO	NO	NO	NO
R281	Ground	NE	38	32	41	35	39	33	42	36	2.7	2.6	51	45	NO	NO	NO	NO	NO
R281	Ground	NW	39	34	43	37	40	35	43	37	2.7	2.7	52	47	NO	NO	NO	NO	NO
R281	Ground	NE	38	33	41	36	39	33	42	36	2.8	2.7	51	45	NO	NO	NO	NO	NO
R281	Ground	W	43	37	46	40	44	38	46	40	2.1	2	55	50	NO	NO	NO	NO	NO
R282	Ground	SW	43	38	45	40	44	38	46	40	1.7	1.6	55	50	NO	NO	NO	NO	NO
R282	Ground	S	44	38	45	39	44	39	46	40	1.1	1	55	50	NO	NO	NO	NO	NO
R282	Ground	SE	41	36	43	38	42	36	44	38	1.5	1.5	54	48	NO	NO	NO	NO	NO
R282	Ground	NE	33	30	35	30	34	30	36	30	2.3	0	46	42	NO	NO	NO	NO	NO
R282	Ground	NW	37	31	41	35	38	32	41	35	3	2.9	50	44	NO	NO	NO	NO	NO
R282	First	SW	47	41	47	41	48	42	47	41	-0.3	-0.3	55	50	NO	NO	NO	NO	NO
R282	First	S	47	41	47	41	48	42	47	41	-0.6	-0.8	55	50	NO	NO	NO	NO	NO
R282	First	SE	44	38	46	40	45	39	46	41	1.5	1.4	55	50	NO	NO	NO	NO	NO
R282	First	NE	38	32	41	35	39	33	41	36	2.4	2.4	51	45	NO	NO	NO	NO	NO
R282	First	NW	40	34	44	38	41	35	44	38	2.7	2.6	53	47	NO	NO	NO	NO	NO
R283	Ground	SW	45	39	47	41	46	40	47	42	1.7	1.6	55	50	NO	NO	NO	NO	NO
R283	Ground	SE	45	39	47	41	46	40	47	42	1.6	1.6	55	50	NO	NO	NO	NO	NO
R283	Ground	S	45	39	47	41	46	40	47	42	1.7	1.7	55	50	NO	NO	NO	NO	NO
R283	Ground	SE	45	39	47	41	46	40	47	42	1.7	1.6	55	50	NO	NO	NO	NO	NO
R283	Ground	NE	37	32	40	35	38	32	41	35	2.6	2.6	50	44	NO	NO	NO	NO	NO
R283	Ground	NE	37	32	40	35	38	33	41	35	2.4	2.3	50	45	NO	NO	NO	NO	NO
R283	Ground	NW	44	38	43	38	45	39	43	38	-1.3	-1.3	55	50	NO	NO	NO	NO	NO
R284	Ground	SW	44	38	46	40	45	39	47	41	2.1	2.1	55	50	NO	NO	NO	NO	NO
R284	Ground	SE	40	34	42	36	41	35	42	37	1.4	1.3	53	47	NO	NO	NO	NO	NO
R284	Ground	NE	33	30	35	30	34	30	36	30	2.2	0	46	42	NO	NO	NO	NO	NO
R284	Ground	NE	33	30	36	30	34	30	36	30	2.2	0.2	46	42	NO	NO	NO	NO	NO
R284	Ground	NW	36	30	40	34	37	31	40	34	3	2.9	49	43	NO	NO	NO	NO	NO
R284	First	SW	47	41	47	42	47	42	48	42	0.4	0.2	55	50	NO	NO	NO	NO	NO
R284	First	SE	43	37	45	39	43	38	45	40	1.9	1.8	55	50	NO	NO	NO	NO	NO
R284	First	NE	38	32	41	35	39	33	41	35	2.4	2.3	51	45	NO	NO	NO	NO	NO
R284	First	NE	38	33	41	35	39	33	41	36	2.3	2.2	51	45	NO	NO	NO	NO	NO
R284	First	NW	40	34	43	37	41	35	43	38	2.6	2.5	53	47	NO	NO	NO	NO	NO
R285	Ground	SW	43	37	45	40	44	38	46	40	2	2	55	50	NO	NO	NO	NO	NO
R285	Ground	SE	37	31	40	35	38	32	41	35	2.8	2.8	50	44	NO	NO	NO	NO	NO
R285	Ground	NE	33	30	35	29	34	30	36	30	2.1	-0.2	46	42	NO	NO	NO	NO	NO
R285	Ground	NW	37	31	40	35	38	32	41	35	2.8	2.7	50	44	NO	NO	NO	NO	NO
R285	First	SW	46	40	47	41	47	41	48	42	0.9	0.8	55	50	NO	NO	NO	NO	NO
R285	First	SE	41	35	44	38	42	36	44	38	2.5	2.4	54	48	NO	NO	NO	NO	NO
R285	First	NE	38	32	41	35	39	33	41	35	2.3	2.2	51	45	NO	NO	NO	NO	NO
R285	First	NW	40	34	43	37	41	35	43	37	2.4	2.3	53	47	NO	NO	NO	NO	NO

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R286	Ground	SW	43	37	45	39	44	38	45	39	1.4	1.3	55	50	NO	NO	NO	NO	NO
R286	Ground	NW	41	35	44	38	42	36	44	38	2.4	2.4	54	48	NO	NO	NO	NO	NO
R286	Ground	SW	44	39	47	41	45	39	48	42	2.6	2.5	55	50	NO	NO	NO	NO	NO
R286	Ground	SE	44	39	46	40	45	40	46	40	0.8	0.7	55	50	NO	NO	NO	NO	NO
R286	Ground	NE	38	32	40	35	39	33	41	35	2.1	2.2	51	45	NO	NO	NO	NO	NO
R286	Ground	NW	39	34	42	36	40	35	42	37	2.2	2.1	52	47	NO	NO	NO	NO	NO
R287	Ground	SW	40	34	43	37	40	35	43	37	2.7	2.6	52	47	NO	NO	NO	NO	NO
R287	Ground	SE	46	40	47	41	47	41	48	42	1	0.9	55	50	NO	NO	NO	NO	NO
R287	Ground	NE	37	32	41	35	38	33	41	35	2.7	2.5	50	45	NO	NO	NO	NO	NO
R287	Ground	SE	39	33	42	36	39	34	43	37	3.2	3.1	51	46	NO	NO	NO	NO	NO
R287	Ground	NE	37	31	40	34	38	32	41	35	2.5	2.4	50	44	NO	NO	NO	NO	NO
R287	Ground	NE	37	31	40	34	38	32	40	34	2.2	2.1	50	44	NO	NO	NO	NO	NO
R287	Ground	NW	45	39	44	38	46	41	44	38	-2.1	-2.2	55	50	NO	NO	NO	NO	NO
R288	Ground	SW	36	31	39	34	37	32	40	34	2.5	2.4	49	44	NO	NO	NO	NO	NO
R288	Ground	SE	44	38	46	40	45	39	46	40	1.2	1.3	55	50	NO	NO	NO	NO	NO
R288	Ground	NE	37	31	40	34	38	32	40	34	2.2	2.2	50	44	NO	NO	NO	NO	NO
R288	Ground	NW	46	40	44	38	47	41	44	38	-2.4	-2.5	55	50	NO	NO	NO	NO	NO
R289	Ground	SW	44	38	46	40	45	39	47	41	1.9	1.8	55	50	NO	NO	NO	NO	NO
R289	Ground	SW	44	38	46	41	45	39	47	41	2	1.9	55	50	NO	NO	NO	NO	NO
R289	Ground	SE	41	35	43	38	42	36	44	38	2.2	2.1	54	48	NO	NO	NO	NO	NO
R289	Ground	NE	38	32	40	34	39	33	41	35	2	1.9	51	45	NO	NO	NO	NO	NO
R289	Ground	NW	39	33	41	36	40	34	42	36	2.2	2.1	52	46	NO	NO	NO	NO	NO
R290	Ground	SW	48	42	48	42	48	43	48	43	0	-0.1	55	50	NO	NO	NO	NO	NO
R290	Ground	SE	47	41	48	42	47	42	48	43	1	1	55	50	NO	NO	NO	NO	NO
R290	Ground	SE	46	41	47	41	47	41	48	42	0.7	0.6	55	50	NO	NO	NO	NO	NO
R290	Ground	NE	35	30	38	32	36	30	38	32	1.9	1.8	48	42	NO	NO	NO	NO	NO
R290	Ground	NW	47	41	44	39	48	42	45	39	-3.6	-3.7	55	50	NO	NO	NO	NO	NO
R291	Ground	NE	39	33	45	39	40	34	46	40	6.3	6.3	52	46	NO	NO	NO	NO	NO
R291	Ground	SE	45	39	54	49	46	40	55	50	9.5	9.5	55	50	NO	NO	NO	NO	NO
R291	Ground	SW	43	37	57	52	44	38	58	53	14.6	14.7	55	50	YES	YES	NO	NO	YES
R291	Ground	SE	42	37	58	52	43	37	59	53	16	16	55	49	YES	YES	NO	NO	YES
R291	Ground	SW	49	43	61	56	50	44	62	57	12.6	12.6	55	50	YES	YES	NO	NO	YES
R291	Ground	SE	42	36	60	55	43	37	62	56	18.9	18.9	55	49	YES	YES	NO	NO	YES
R291	Ground	SW	50	45	65	59	51	45	66	60	14.6	14.5	55	50	YES	YES	YES	YES	YES
R291	Ground	NW	48	43	63	57	49	43	64	58	14.6	14.6	55	50	YES	YES	NO	NO	YES
R291	Ground	SW	48	42	62	56	49	43	63	57	14.4	14.3	55	50	YES	YES	NO	NO	YES
R291	Ground	NW	48	43	61	56	49	44	62	57	13	13.1	55	50	YES	YES	NO	NO	YES
R291	First	NE	45	39	50	45	45	40	51	45	5.8	5.8	55	50	NO	NO	NO	NO	NO
R291	First	SE	49	43	55	50	49	44	56	51	7	6.9	55	50	YES	YES	NO	NO	YES
R291	First	SW	48	42	58	53	49	43	59	53	10.3	10.2	55	50	YES	YES	NO	NO	YES

Receiver ID	Facade		Opening Year 2019				Design Year 2029				Increase (Build - No Build)		RNP Noise Criteria		Do noise levels exceed the RNP Noise Criteria?		Is the contribution from the road project Acute?		Consider further treatment?
			No Build		Build		No Build		Build		2029						Day $L_{Aeq,15hr}$ ≥65dB(A)	Night $L_{Aeq,9hr}$ ≥60dB(A)	
	Floor Level	Orientation	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night			
R291	First	SE	48	42	59	53	48	43	60	54	11.4	11.3	55	50	YES	YES	NO	NO	YES
R291	First	SW	51	45	62	56	52	46	63	57	11.2	11.2	55	50	YES	YES	NO	NO	YES
R291	First	SE	47	42	61	55	48	42	62	56	13.9	14	55	50	YES	YES	NO	NO	YES
R291	First	SW	53	47	65	59	54	48	66	60	12.2	12.3	55	50	YES	YES	YES	YES	YES
R291	First	NW	53	47	63	58	53	48	64	59	10.8	10.8	55	50	YES	YES	NO	NO	YES
R291	First	SW	53	47	63	57	53	48	64	58	10.2	10.1	55	50	YES	YES	NO	NO	YES
R291	First	NW	53	47	62	56	54	48	63	57	9.3	9.3	55	50	YES	YES	NO	NO	YES
R292	Ground	NE	39	33	55	50	40	34	56	51	16.7	16.7	52	46	YES	YES	NO	NO	YES
R292	Ground	NW	49	44	63	57	50	45	64	58	13.5	13.6	55	50	YES	YES	NO	NO	YES
R292	Ground	SW	51	45	63	57	51	46	64	58	12.8	12.7	55	50	YES	YES	NO	NO	YES
R292	Ground	SE	44	38	56	50	45	39	57	51	12	12.1	55	50	YES	YES	NO	NO	YES
R292	First	NE	45	39	56	51	45	40	57	52	12.1	12.2	55	50	YES	YES	NO	NO	YES
R292	First	NW	52	46	64	58	53	47	65	59	12.1	12	55	50	YES	YES	YES	NO	YES
R292	First	SW	53	47	64	58	54	48	65	59	11.2	11.3	55	50	YES	YES	YES	NO	YES
R292	First	SE	48	43	57	51	49	43	58	52	8.8	8.8	55	50	YES	YES	NO	NO	YES
R293	Ground	SW	45	39	45	39	46	40	45	39	-1.2	-1.3	50	-	NO	-	NO	-	NO
R293	Ground	SW	55	49	46	40	56	50	47	41	-9.2	-9.3	50	-	NO	-	NO	-	NO
R293	Ground	SE	54	48	56	51	55	49	57	51	2.1	2	50	-	YES	-	NO	-	YES
R293	Ground	NE	44	38	55	49	45	39	56	50	10.7	10.7	50	-	YES	-	NO	-	YES
R293	Ground	NW	45	39	53	47	46	40	53	47	7.1	7	50	-	YES	-	NO	-	YES

Notes: * RNP Noise Criteria based on Relative Increase Criteria (RIC) as per Section 2.4 of the RNP, where RIC = Design Year 2029 "No Build" noise level + 12dB

APPENDIX D Receiver Addresses

Receiver ID	Receiver Address
R001	7 Federation Street SOUTH GRAFTON NSW
R002	5 Hunter Lane SOUTH GRAFTON NSW 2460
R003	10 Federation Street SOUTH GRAFTON NSW
R005	5 Hunter Lane SOUTH GRAFTON NSW 2460
R007	5 Federation Street SOUTH GRAFTON NSW
R009	3 Federation Street SOUTH GRAFTON NSW
R047	61 Bent Street SOUTH GRAFTON NSW 2460
R049	59 Bent Street SOUTH GRAFTON NSW 2460
R051	53 Bent Street SOUTH GRAFTON NSW 2460
R053	51 Bent Street SOUTH GRAFTON NSW 2460
R056	46 Bent Street SOUTH GRAFTON NSW 2460
R057	44 Bent Street SOUTH GRAFTON NSW 2460
R058	35 Through Street SOUTH GRAFTON NSW 24
R059	42 Bent Street SOUTH GRAFTON NSW 2460
R060	40 Bent Street SOUTH GRAFTON NSW 2460
R061	38 Bent Street SOUTH GRAFTON NSW 2460
R062	34 Bent Street SOUTH GRAFTON NSW 2460
R063	32 Bent Street SOUTH GRAFTON NSW 2460
R064	30 Bent Street SOUTH GRAFTON NSW 2460
R065	26 Bent Street SOUTH GRAFTON NSW 2460
R066	24 Bent Street SOUTH GRAFTON NSW 2460
R067	22 Bent Street SOUTH GRAFTON NSW 2460
R068	22 Riverside Drive, SOUTH GRAFTON NSW
R069	20 Bent Street SOUTH GRAFTON NSW 2460
R070	20 Riverside Drive SOUTH GRAFTON NSW 2
R071	12 Bent Street SOUTH GRAFTON NSW 2460
R072	12 Riverside Drive SOUTH GRAFTON NSW 2
R074	7 Riverside Drive SOUTH GRAFTON NSW 2460
R075	5 Riverside Drive SOUTH GRAFTON NSW 24
R076	3 Riverside Drive SOUTH GRAFTON NSW 24
R078	Iolanthe Street SOUTH GRAFTON NSW 2460
R079	Butters Lane SOUTH GRAFTON NSW 2460
R080	Alipou Street SOUTH GRAFTON NSW 2460
R081	Butters Lane SOUTH GRAFTON NSW 2460
R082	Butters Lane SOUTH GRAFTON NSW 2460
R083	Fitzroy Street GRAFTON NSW 2460
R084	1 Fitzroy Street GRAFTON NSW 2460

Receiver ID	Receiver Address
R085	3 Fitzroy Street GRAFTON NSW 2460
R086	8 Greaves Street GRAFTON NSW 2460
R087	10 Greaves Street GRAFTON NSW 2460
R088	12 Greaves Street GRAFTON NSW 2460
R089	5 Fitzroy Street GRAFTON NSW 2460
R090	7 Fitzroy Street GRAFTON NSW 2460
R091	2 Kent Street GRAFTON NSW 2460
R092	1 Pound Street GRAFTON NSW 2460
R093	2 Clarence Street GRAFTON NSW 2460
R094	7 Victoria Street GRAFTON NSW 2460
R095	2 Breimba Street GRAFTON NSW 2460
R096	2 Fitzroy Street GRAFTON NSW 2460
R097	4 Breimba Street GRAFTON NSW 2460
R098	7 Victoria Street GRAFTON NSW 2460
R099	6 Breimba Street GRAFTON NSW 2460
R100	6 Fitzroy Street GRAFTON NSW 2460
R101	4 Fitzroy Street GRAFTON NSW 2460
R102	8 Breimba Street GRAFTON NSW 2460
R103	7 Greaves Street GRAFTON NSW 2460
R104	10 Breimba Street GRAFTON NSW 2460
R105	8 Fitzroy Street GRAFTON NSW 2460
R106	7 Victoria Street GRAFTON NSW 2460
R107	9 Greaves Street GRAFTON NSW 2460
R108	4 Pound Street GRAFTON NSW 2460
R109	11 Pound Street GRAFTON NSW 2460
R110	9-11 Victoria Street GRAFTON NSW 2460
R111	Clarence Street GRAFTON NSW 2460
R112	10 Fitzroy Street GRAFTON NSW 2460
R113	4 Dovedale Street GRAFTON NSW 2460
R114	2 Victoria Street GRAFTON NSW 2460
R115	6 Pound Street GRAFTON NSW 2460
R116	9-11 Victoria Street GRAFTON NSW 2460
R117	4-10 Victoria Street GRAFTON NSW 2460
R118	12 Fitzroy Street GRAFTON NSW 2460
R119	5 Kent Street GRAFTON NSW 2460
R120	9-11 Victoria Street GRAFTON NSW 2460
R121	6 Dovedale Street GRAFTON NSW 2460
R122	8 Pound Street GRAFTON NSW 2460
R123	14 Fitzroy Street GRAFTON NSW 2460

Receiver ID	Receiver Address
R125	8 Dovedale Street GRAFTON NSW 2460
R126	10 Pound Street GRAFTON NSW 2460
R127	10 Dovedale Street GRAFTON NSW 2460
R128	16 Fitzroy Street GRAFTON NSW 2460
R129	4-10 Victoria Street GRAFTON NSW 2460
R130	1 Breimba Street GRAFTON NSW 2460
R131	12 Pound Street GRAFTON NSW 2460
R133	12 Breimba Street GRAFTON NSW 2460
R134	9-11 Victoria Street GRAFTON NSW 2460
R135	5 Clarence Street GRAFTON NSW 2460
R136	4-10 Victoria Street GRAFTON NSW 2460
R138	3 Breimba Street GRAFTON NSW 2460
R139	5 Dovedale Street GRAFTON NSW 2460
R140	12 Dovedale Street GRAFTON NSW 2460
R141	14 Pound Street GRAFTON NSW 2460
R143	25 Fitzroy Street GRAFTON NSW 2460
R144	7 Dovedale Street GRAFTON NSW 2460
R145	5 Breimba Street GRAFTON NSW 2460
R146	2 Bromley Street GRAFTON NSW 2460
R147	1 Dovedale Street GRAFTON NSW 2460
R148	16 Pound Street GRAFTON NSW 2460
R149	9 Dovedale Street GRAFTON NSW 2460
R150	7 Breimba Street GRAFTON NSW 2460
R151	29 Fitzroy Street GRAFTON NSW 2460
R152	4 Bromley Street GRAFTON NSW 2460
R153	18 Pound Street GRAFTON NSW 2460
R154	11 Dovedale Street GRAFTON NSW 2460
R156	1 Bromley Street GRAFTON NSW 2460
R158	31 Fitzroy Street GRAFTON NSW 2460
R159	6 Bromley Street GRAFTON NSW 2460
R160	14 Breimba Street GRAFTON NSW 2460
R161	8 Clarence Street GRAFTON NSW 2460
R162	33 Fitzroy Street GRAFTON NSW 2460
R163	9 Breimba Street GRAFTON NSW 2460
R164	10 Clarence Street GRAFTON NSW 2460
R165	16 Breimba Street GRAFTON NSW 2460
R166	3 Bromley Street GRAFTON NSW 2460
R167	11 Breimba Street GRAFTON NSW 2460
R168	8 Bromley Street GRAFTON NSW 2460

Receiver ID	Receiver Address
R169	6-8 Villiers Street GRAFTON NSW 2460
R170	22 Kent Street GRAFTON NSW 2460
R171	Fitzroy Street GRAFTON NSW 2460
R172	12 Clarence Street GRAFTON NSW 2460
R173	10 Bromley Street GRAFTON NSW 2460
R174	6-8 Villiers Street GRAFTON NSW 2460
R175	20 Pound Street GRAFTON NSW 2460
R176	5 Bromley Street GRAFTON NSW 2460
R177	13 Breimba Street GRAFTON NSW 2460
R178	14 Clarence Street GRAFTON NSW 2460
R179	7 Bromley Street GRAFTON NSW 2460
R180	10 Bromley Street GRAFTON NSW 2460
R181	22 Pound Street GRAFTON NSW 2460
R182	24 Kent Street GRAFTON NSW 2460
R183	15 Breimba Street GRAFTON NSW 2460
R184	Craig Street GRAFTON NSW 2460
R185	24 Pound Street GRAFTON NSW 2460
R186	26 Kent Street GRAFTON NSW 2460
R187	16 Clarence Street GRAFTON NSW 2460
R188	9 Bromley Street GRAFTON NSW 2460
R190	12 Bromley Street GRAFTON NSW 2460
R192	Craig Street GRAFTON NSW 2460
R193	13 Bacon Street GRAFTON NSW 2460
R194	28 Kent Street GRAFTON NSW 2460
R195	30 Kent Street GRAFTON NSW 2460
R196	15 Bacon Street GRAFTON NSW 2460
R197	11 Bromley Street GRAFTON NSW 2460
R199	27 Kent Street GRAFTON NSW 2460
R200	13 Bromley Street GRAFTON NSW 2460
R201	29 Kent Street GRAFTON NSW 2460
R202	32 Kent Street GRAFTON NSW 2460
R203	25 Kent Street GRAFTON NSW 2460
R204	18 Clarence Street GRAFTON NSW 2460
R205	Craig Street GRAFTON NSW 2460
R206	17 Bacon Street GRAFTON NSW 2460
R207	16 Villiers Street GRAFTON NSW 2460
R208	34 Kent Street GRAFTON NSW 2460
R209	31 Kent Street GRAFTON NSW 2460
R210	33 Kent Street GRAFTON NSW 2460

Receiver ID	Receiver Address
R211	19 Bacon Street GRAFTON NSW 2460
R212	18 Villiers Street GRAFTON NSW 2460
R213	36 Kent Street GRAFTON NSW 2460
R214	30 Pound Street GRAFTON NSW 2460
R215	Craig Street GRAFTON NSW 2460
R216	35 Kent Street GRAFTON NSW 2460
R217	21 Bacon Street GRAFTON NSW 2460
R218	20 Villiers Street GRAFTON NSW 2460
R219	38 Kent Street GRAFTON NSW 2460
R220	37 Kent Street GRAFTON NSW 2460
R221	Craig Street GRAFTON NSW 2460
R222	22 Villiers Street GRAFTON NSW 2460
R223	Bridge Street GRAFTON NSW 2460
R224	23 Bacon Street GRAFTON NSW 2460
R225	39 Kent Street GRAFTON NSW 2460
R226	Craig Street GRAFTON NSW 2460
R227	3 Bridge Street GRAFTON NSW 2460
R228	24 Villiers Street GRAFTON NSW 2460
R229	Craig Street GRAFTON NSW 2460
R231	27 Bacon Street GRAFTON NSW 2460
R232	26 Villiers Street GRAFTON NSW 2460
R233	5 Bridge Street GRAFTON NSW 2460
R234	Craig Street GRAFTON NSW 2460
R237	9 Bridge Street GRAFTON NSW 2460
R238	12 Bridge Street GRAFTON NSW 2460
R239	28 Villiers Street GRAFTON NSW 2460
R240	29-31 Bacon Street, GRAFTON NSW 2460
R242	24 Clarence Street GRAFTON NSW 2460
R243	Craig Street GRAFTON NSW 2460
R244	29-31 Bacon Street, GRAFTON NSW 2460
R245	30 Villiers Street GRAFTON NSW 2460
R246	28 Clarence Street GRAFTON NSW 2460
R247	Craig Street GRAFTON NSW 2460
R248	41 Bacon Street GRAFTON NSW 2460
R250	37 Bacon Street GRAFTON NSW 2460
R251	26 Clarence Street GRAFTON NSW 2460
R252	Craig Street GRAFTON NSW 2460
R253	Craig Street GRAFTON NSW 2460
R254	39 Bacon Street GRAFTON NSW 2460

Receiver ID	Receiver Address
R255	Craig Street GRAFTON NSW 2460
R256	41 Bacon Street GRAFTON NSW 2460
R260	30 Clarence Street GRAFTON NSW 2460
R261	36 Villiers Street GRAFTON NSW 2460
R262	43 Bacon Street GRAFTON NSW 2460
R264	45 Bacon Street GRAFTON NSW 2460
R266	32 Clarence Street GRAFTON NSW 2460
R267	27 Clarence Street GRAFTON NSW 2460
R268	25 Clarence Street GRAFTON NSW 2460
R269	38 Villiers Street GRAFTON NSW 2460
R271	29 Clarence Street GRAFTON NSW 2460
R272	47 Bacon Street GRAFTON NSW 2460
R274	31 Clarence Street GRAFTON NSW 2460
R275	33 Clarence Street GRAFTON NSW 2460
R278	37 Clarence Street GRAFTON NSW 2460
R279	35 Clarence Street GRAFTON NSW 2460
R280	55 Bacon Street GRAFTON NSW 2460
R281	57 Bacon Street GRAFTON NSW 2460
R282	59 Bacon Street GRAFTON NSW 2460
R283	48 Villiers Street GRAFTON NSW 2460
R284	61 Bacon Street GRAFTON NSW 2460
R285	63 Bacon Street GRAFTON NSW 2460
R286	65 Bacon Street GRAFTON NSW 2460
R287	50 Villiers Street GRAFTON NSW 2460
R288	52 Villiers Street GRAFTON NSW 2460
R289	69 Bacon Street GRAFTON NSW 2460
R290	54 Villiers Street GRAFTON NSW 2460
R291	13 Pound Street GRAFTON NSW 2460
R292	15 Pound Street GRAFTON NSW 2460
R293	Craig Street GRAFTON NSW 2460

APPENDIX E Receiver Locations

Legend

Road design

Location identified for treatment

Receiver location

50 0 50 m

Client: Roads & Maritime

Project:
Clearance River Crossing Grafton

Noise Levels are approximate due to interpolation of contours and should be used for reference only.
For information only and not for construction.

RENZO TONIN & ASSOCIATES
inspired to achieve
1/418A Elizabeth Street, SURRY HILLS NSW 2010
P: 02 8218 0500 F: 02 8218 0501

Description:
Receiver location

Created by: THW
Figure No: TJ502-01 6 001 (r1)
Date: 28.03.2018
Scale: 1:3,000 @ A3

Legend

Road design

Location identified for treatment

Receiver location

50 0 50 m

Client:

Roads & Maritime

Project:

Clearance River Crossing Grafton

Noise Levels are approximate due to interpolation of contours and should be used for reference only.
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Receiver location

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