



Kogarah Golf Club Redevelopment

Noise and Vibration Impact Assessment

Stockland Development Pty Limited
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Sydney NSW 2000

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1 INTRODUCTION

This noise and vibration impact assessment has been prepared for Stockland Development Pty Limited ('Stockland' or 'the Applicant') to accompany a State Significant Development Application (SSDA) (SSD-84467726) for a Concept Masterplan and Early Works associated with the Kogarah Golf Club Redevelopment located on land identified as 13-19A Marsh Street, Arncliffe (the site).

The vision for the Kogarah Golf Club Redevelopment is to create a world-class precinct that leverages the site's strategic location adjacent to Sydney Airport and strong transport connections by delivering multi-level logistics development, trade-related enterprise and supporting uses with publicly accessible open space. It seeks to deliver state-of-the-art facilities that will redefine the logistics landscape in Australia, setting new benchmarks for scale, efficiency, sustainability and innovation.

The Concept & Early Works SSDA seeks consent for an overarching Concept Masterplan that establishes maximum building envelopes, Gross Floor Area (GFA), land uses, and other parameters through Urban Design Guidelines and technical reporting. It also seeks consent for the carrying out of Early Works to facilitate the initial site preparation and infrastructure works required to support future development and publicly accessible open space.

1.1 Planning Secretary's Environmental Assessment Requirements

This report addresses the relevant Planning Secretary's Environmental Assessment Requirements (SEARs) for SSD-84467726, as outlined in Table 1 below.

Table 1 Noise and vibration SEARs

Requirements	Location addressed
consideration of noise in a fully developed site, including all uses proposed	Section 5.5
the identification of impacts associated with construction, site emission and traffic generation at noise affected sensitive receivers, including the provision of operational noise contours and a detailed sleep disturbance assessment	Section 4 (Construction) Section 5 (Operation)
details of noise monitoring survey, background noise levels, noise source inventory and 'worst case' noise emission scenarios	Section 2 Section 5.2
consideration of annoying characteristics of noise and prevailing meteorological conditions in the study area	Section 5.3 Section 2.9
consideration of noise impacts internal to the site, including the impact industrial land uses may have on the proposed hotel component	Section 5.5
consideration of aircraft noise impacts, including those under clause 6.8 of the Bayside Local Environment Plan 2021	Section 3.7
details and analysis of the effectiveness of proposed management and mitigation measures to adequately manage identified impacts, including a clear identification of residual noise and vibration following application of these mitigation measures and details of any proposed compliance monitoring programs.	Section 5.5 Section 6

1.2 Site description

The site is identified as 13-19A Marsh Street, Arncliffe within the Bayside Local Government Area (LGA). It is situated to the immediate west of the Cooks River and Sydney Airport, located approximately 6km west of Port

Botany and 10km south of the Sydney Central Business District (CBD). It includes frontages to Marsh Street, providing direct access to the M5 Motorway, Sydney Airport and St Peters Interchange (via the Sydney Gateway).

The site comprises land associated with nine (9) allotments and a total area of approximately 32 hectares. The existing uses include the previous Kogarah Golf Club (vacated in March 2025) accessed via Levey Street and the temporary M6 Stage 1 construction compound accessed directly from Marsh Street.

The development area represents Lot 31 DP1231486 and Lot 100 DP1231954, excluding land subject to future dedication to Bayside Council. It comprises an area of approximately 16.7 hectares and is zoned SP4 Enterprise and C2 Environmental Conservation under the Bayside LEP 2021.

The site is described in Table 2, with the extent of the site and development area depicted in Figure 1.

Table 2 Site description

Lot / DP	Address	Ownership
Lot 31 DP1231486	19 Marsh Street, Arncliffe	Cook Cove Nominees No 1 Pty Ltd as trustee of Cook Cove Property Trust 1
Lot 100 DP1231954	19A Marsh Street, Arncliffe	Cook Cove Nominees No 2 Pty Ltd as trustee of Cook Cove Property Trust 2
Lot 60 DP1301057	13 Marsh Street, Arncliffe	Bayside Council
Lot 61 DP1301057	19 Marsh Street, Arncliffe	
Lot 62 DP1301057	Marsh Street, Arncliffe	Transport for New South Wales
Lot 63 DP1301057	Marsh Street, Arncliffe	
Lot 12 DP570900	Marsh Street, Arncliffe	
Lot 102 DP1231954	Marsh Street, Arncliffe	
Lot 103 DP1231954	Marsh Street, Arncliffe	

Figure 1 Site aerial map



1.3 Project description

The Concept & Early Works SSDA seeks consent for the following:

- Concept Masterplan to support the staged delivery of the Kogarah Golf Club Redevelopment, including:
 - Maximum building envelopes, including maximum building heights and minimum building setbacks,
 - Maximum Gross Floor Area (GFA) up to 343,250m², comprising:
 - 3,250m² of GFA (FSR of 1.25:1) on Lot 31 DP1231486; and
 - 340,000m² of GFA on Lot 100 DP1231954.
 - Conceptual primary land uses, including:

- Block 1 – Mixed-use and advertising structures;
 - Block 2 – Logistics and mixed-use;
 - Block 3A – Logistics;
 - Block 3B – Logistics; and
 - Block 3C – Logistics and data centre.
- Urban Design Guidelines to guide future development of the built form and public domain; and
- Strategies and mitigation measures to manage potential environmental impacts.
- Early Works to support the future delivery of built form and publicly accessible open space, including:
 - Site preparation works, comprising:
 - Demolition of existing structures,
 - Clearing of existing vegetation,
 - Remediation works; and
 - Bulk earthworks, including ground improvement and flood mitigation works.
 - Site servicing and infrastructure works, including:
- Construction of the Flora Street East extension consistent with Item 3 of the executed Voluntary Planning Agreement with Bayside Council,
- Construction of stormwater infrastructure; and
- Construction and augmentation of service and utility infrastructure as necessary.

For a detailed description, refer to the Environmental Impact Statement prepared by Colliers Urban Planning

1.4 Indicative reference scheme

The Concept Masterplan is supported by Indicative Reference Schemes that present as 'proof of concepts' within the proposed planning framework. The schemes demonstrate suitable primary land use, built form and public domain outcomes that align with the vision for a world-class precinct that leverages the site's strategic location adjacent to Sydney Airport and strong transport connections.

The Indicative Reference Schemes consider different potential development outcomes enabled by the Concept Masterplan to support the delivery of the highest and best use at the time of redevelopment. This includes a Logistics scheme and Alternative Uses scheme, which facilitate the potential for four (4) different primary land use outcomes across the Site. The alternative land use outcomes enabled by the Concept Masterplan include an alternative mixed-use outcome on Block 2 and alternative data centre outcome on Block 3C.

The Indicative Reference Schemes are established in Figure 2, with the Logistics scheme and Alternative Uses scheme prepared by Grimshaw depicted in Figure 3 and Figure 4.

It is noted that the Indicative Reference Schemes are indicative only and the development of future built form and publicly accessible open space will be subject to future Development Applications. The Indicative Reference Schemes demonstrate the ability to support different potential outcomes, consistent with the proposed framework under the Concept Masterplan including Urban Design Guidelines.

Figure 2 Indicative reference schemes



Figure 3 Indicative reference scheme – logistics scheme



Figure 4 Indicative reference scheme – alternative uses scheme



1.5 Land use matrix

The development yield associated with each land use outcome under the indicative reference schemes is presented in Table 3 below.

Table 3 Land use matrix – indicative reference schemes

Primary Land Use	Reference Scheme 1 Logistics	Reference Scheme 2 Logistics + Mixed-use	Reference Scheme 3 Logistics + Data Centre	Reference Scheme 4 Logistics + Mixed-use + Data centre
Lot 31 DP1231486 (Block 1)				
Hotel	1,670m ² (64 keys)			
Commercial	1,260m ²			
F&B / Shops / Artisan F&B	320m ²			
TOTAL	3,250m ²			
Lot 100 DP1231954 (Block 2, 3A, 3B, 3C)				
Warehouse	336,200m ²	293,000m ²	276,200m ²	231,600m ²
F&B / Shops	1,950m ²	10,000m ²	1,850m ²	10,000m ²
Hotel	-	20,000m ² (300 keys)	-	20,000m ² (300 keys)
Commercial	1,850m ²	17,000m ²	1,850m ²	17,000m ²
Data Centre	-	-	25,400m ² (80 MW)	25,400m ² (80 MW)
TOTAL	340,000m ²	340,000m ²	305,300m ²	304,000m ²

2 EXISTING AMBIENT NOISE ENVIRONMENT

2.1 Existing noise environment

The works area is located in Wolli Creek and Arncliffe, south-west of Sydney and less than a kilometre west of the Sydney International Airport. Wedged between the Princes Highway to the north, and Marsh Street and the M5 Motorway to the south, residential receivers in the area are dominated by road traffic noise. Given the proximity to the airport, aircraft noise also contributes to the noise environment although the receivers are generally not under the flight path.

2.2 Identification of potentially most affected receivers

Potentially most affected sensitive receivers were identified in accordance with the NSW Noise Policy for Industry (NPfI), with reference to Section 2.6 (assessment locations), the glossary definition of “reasonably most-affected location(s)”, and Fact Sheet B relating to background noise monitoring site selection. Under the NPfI, assessment locations for residential receivers are required to be at the reasonably most-affected point on or within the residential property boundary, or if that point is more than 30 metres from the residence, at the reasonably most-affected point within 30 metres of the residence. The NPfI further defines reasonably most-affected locations as those which experience, or would experience, the greatest noise impact from the source under consideration, having regard to existing background levels, the exact source location, distance from source to receiver, and any shielding between the source and receiver.

The identification of potentially most affected receivers was therefore undertaken by first reviewing the surrounding land uses to identify all relevant noise-sensitive development in the vicinity of the project, including residential receivers and any other applicable sensitive land uses. This review was then combined with an examination of the physical relationship between the proposal and the surrounding receiver catchment, including relative separation distances, orientation to the proposed operational areas, the presence or absence of direct line-of-sight, local screening from intervening buildings, structures or landform, and the likely exposure of individual façades and outdoor areas to the dominant project noise sources. Consistent with the NPfI, the selection process focused on those receivers that were expected to have the greatest potential exposure to project noise rather than merely the nearest receivers by plan distance.

In applying this approach, receivers were not selected solely on the basis of proximity. Consideration was also given to whether a receiver was acoustically exposed to the proposal, whether any intervening structures or terrain provided shielding, whether the receiver had a direct view of the principal noise-generating elements of the development, and whether the local background sound environment was such that the project would be more readily perceptible. This was consistent with the NPfI definition of reasonably most-affected residences, which requires consideration of background noise levels, source location, distance and shielding. Receivers in comparable acoustic settings were then grouped, and representative receivers were selected where multiple properties were expected to experience a similar level and character of noise exposure. This approach was consistent with Fact Sheet B of the NPfI, which states that where several locations are affected by a development, locations representative of the various affected areas may be monitored and assessed.

The selection of monitoring locations for the determination of background noise levels was undertaken using the same framework. In accordance with Fact Sheet B, background noise monitoring was undertaken at the reasonably most- or potentially most-affected residences, or at alternative locations demonstrated to have a similar acoustical environment where direct monitoring at a residence was impractical. In selecting those locations, care was taken to ensure that the monitoring positions were genuinely representative of the receiver exposure and were not inadvertently screened from dominant background noise sources where the actual residences were not similarly screened. The report therefore relied on monitoring locations that reproduced, as closely as practicable, the prevailing acoustic environment at the relevant receiver group.

For residential receivers, the adopted assessment locations were nominated at the reasonably most-affected point on or within the property boundary, or within 30 metres of the dwelling where required by the NPfI. Assessment positions were referenced to the most exposed part of the receiver property having regard to the dominant project noise source directions. Where outdoor living areas or the principal residential façade were expected to be more exposed than other parts of the allotment, those locations were treated as the controlling assessment positions. This was consistent with Section 2.6 of the NPfI, which requires noise to be assessed at the reasonably most-affected point and makes clear that this requirement is used to identify the controlling exposure location for assessment purposes.

For multi-storey residential buildings, an additional review was undertaken to determine whether a ground-floor assessment location would under-represent noise exposure at elevated levels. A review of international journal papers identified that noise levels from road traffic increase up the building, with the greatest noise exposure typically experienced at Level 6 or Level 7. Where the dominant noise source is road traffic, undertaking noise levels on the ground floor is found to be a conservative approach to applying noise criteria, yielding a more stringent noise criteria. For the assessment, noise impacts to all floors have been calculated, with the noise impacts compared to the more stringent ground floor noise criteria.

Where non-residential sensitive land uses were relevant, these were considered in accordance with the applicable NPfI assessment location provisions. In particular, where recreational areas formed part of the sensitive receiver environment, the relevant assessment point was taken as the most affected location within the area that would reasonably be used by people. Similarly, where internal amenity criteria were relevant, the most exposed habitable room was treated as the controlling internal location in accordance with the NPfI.

2.3 Upper floors

The NPfI requires consideration of the potentially most affected sensitive receiver. Dependent on the existing noise environment, the type of existing noise sources, and the noise generated by the proposal, upper floors may be the most affected sensitive receiver. However undertaking noise measurements that meet the requirements of the NPfI and are standard compliant are particularly difficult for apartment buildings in Australia.

The NPfI requires noise measurements to be undertaken without façade reflections. The international standard ISO 1996-2:2017 *Acoustics — Description, measurement and assessment of environmental noise Part 2: Determination of sound pressure levels* provides guidance on how to undertake these noise measurements and the uncertainty associated with it. Annex B of this standard provides guidance on mounting options and surface requirements behind the microphone. Firstly, a microphone on a balcony is non-conformant. The microphone needs to be on the façade, or in front of the façade.

Provided below is a summary of the locations and standard corrections identified in ISO 1996-2:2017.

2.3.1 Flush mounted microphone

Annex B identifies that a flush mounted microphone is generally the preferred mounting option, which if located appropriately provides the lower uncertainty. However, the position should be avoided if the sound arrives predominantly at a grazing incidence. A grazing incidence occurs for elevated positions, or facades which are perpendicular to dominant source (such as the side of a building).

Provided below is a summary of the requirements for mounting a microphone directly on the surface of the façade:

- façade flatness within ± 0.05 m over 1 m around the microphone,
- microphone must be located more than 1 m from façade edges,
- if a mounting plate is used, it should be acoustically hard/stiff, at least 0.5 m $\times$ 0.7 m, no thicker than 25 mm, with the microphone set away from plate edges/axes,

This configuration requires a correction up to 6 dB, with a default correction of 5.7 dB to derive a free-field level.

In practice this location is difficult to achieve. The microphone needs to be 1m from the edge of the balcony. This means:

- The flat surface must be at least 2m wide and 2m high. With regular balconies, it is unusual to have an flat surface that provides the required width and heights.
- To fix the microphone to the side of the building someone would need to lean out of the balcony or window at least 1 metre. They would likely need two hands to fix the microphone which in practice would result in safety issues. The only safe option would be to mount the microphone by repelling off the side of the building by a certified person.

The standard recommends a measurements height of 4 m for multi-storey buildings, which is very different to the 45 m height for Level 13 of the most affected building. At elevated floors, the noise propagation approaches the grazing incidence, which the standard notes significantly increase the uncertainty of the noise measurements. Coupled with the difficult access requirements, this approach should generally be avoided in practice.

The standard identifies that where the source approaches the grazing incidence, the uncertainty is 2 dB or greater. The uncertainty starts to exceed 3 dB when coupled with reduced flat surfaces sizes, which is not appropriate for the purposes of setting noise criteria.

2.3.2 Microphone near reflecting surface

A microphone can also be located from 0.5 m to 2 m in front of the façade. Similar to the flush mounted microphone, this configuration should be avoided if the sound arrives predominantly at a grazing incidence.

Provided below is a summary of the requirements for mounting a microphone directly on the surface of the facade:

- Important limits and conditions include:
 - façade flatness within ± 0.3 m,
 - avoid positions affected by multiple reflections from protruding building elements,
 - windows are treated as part of the façade and should be closed during measurement, except for a small cable opening,
 - for the nominal 3 dB behaviour, Annex B gives geometric criteria including:
 - $b \geq 4d$ and $c \geq 2d$ to avoid edge effects,
 - source-geometry criteria on d'/a' ,
 - minimum d' values depending on whether the source is extended or point-like, and whether you are using overall A-weighted levels or octave bands

If the microphone is 0.5 m to 2 m in front of the reflecting surface, the correction to free-field is up to 3 dB and applies when the Annex B conditions are met.

For a microphone 1 m from the façade, the distances to edges become 4m wide and 2m high. Measuring off balconies would not be possible, so the only practical approach is to extend a pole, no thicker than a cable, out of a window on a blank façade. This approach needs suitable internal fixing so the microphone doesn't move for a week and the resident needs to leave their window slightly open for the entire time.

In practice these requirements are a large imposition to the resident. It is already difficult to gain access to apartments, and to require a resident to leave their window open for a week with a cable and pole secured on the inside makes it very difficult to achieve.

2.3.3 Summary

In practice, ISO1996.2:2017 compliant measurements are very difficult for elevated receivers. The standard also warns that in complex urban situations such as high building density or street canyons, the façade effect can be greater than 3 dB. With such significant uncertainty, these locations are unsuitable for the purposes of establishing noise criteria.

Importantly, the standard also states this front-of-façade position is not recommended for near grazing incidence. All elevated locations on this project approach the grazing incidence.

The primary issue here is that to undertake standard compliant noise measurements, the flush mounted façade needs to be 1m from any edge. A balcony provides less than 2 m of flat surface so in most instances it's not possible to identify a standard compliant location.

There is significant research into noise measurements from road traffic at elevated positions. Presented below are a few references which all identify that road traffic noise increases as it is measured up a building. Higher noise levels means that measured noise level (hence applicable noise criterion) is more relaxed for elevated positions. Given that the noise logging was completed at the ground floor (in accordance with the NPfI requirements) which will provide a more stringent noise trigger level, the measurement location is considered representative and appropriate for the purposes of this assessment.

Each of these papers identify through measurements that elevated floors have higher noise levels than lower floors:

- i. Huang, B.; Pan, Z.; Liu, Z.; Hou, G.; Yang, H. (2017). Acoustic amenity analysis for high-rise building along urban expressway: Modeling traffic noise vertical propagation using neural networks. *Transportation Research Part D: Transport and Environment*, 53, 63–77. DOI: 10.1016/j.trd.2017.04.001
- ii. Sotiropoulou, A.; Karagiannis, I.; Vougioukas, E.; Ballis, A.; Bouki, A. (2020). Measurements and prediction of road traffic noise along high-rise building façades in Athens. *Noise Mapping*, 7(1), 1–13. DOI: 10.1515/noise-2020-0001
- iii. Chouksey, A. K.; Kumar, B.; Parida, M.; Pandey, A. D.; Verma, G. (2024). Measurement and prediction of road traffic noise at different floor levels of buildings in a mid-sized Indian city. *Journal of Building Engineering*, 92, 109711. DOI: 10.1016/j.jobee.2024.109711
- iv. Yu, H.; Li, A. (2024). Assessing Traffic Noise and Its Impact on High-Rise Apartment Buildings Adjacent to Urban Expressways: A Case Study in Guangzhou, China. *Buildings (MDPI)*, 14(5), 1377
- v. Liang, R.; Liu, W.; Li, W.; Wu, Z. (2022). A traffic noise source identification method for buildings adjacent to multiple transport infrastructures based on deep learning. *Building and Environment*, 211, 108764. DOI: 10.1016/j.buildenv.2022.108764

The project team has made extensive attempts to contact receivers opposite the development at 26 Levey Street, Wolli Creek to undertake noise measurements in these complex locations. This includes multiple letter box drops and offers of gift vouchers for accepting noise logging at their location. Not a single response has been received. Given the difficulty accessing these locations, coupled with the non-conformance with ISO1996.2:2017 and the significant uncertainty that would be introduced with these locations, DPHI has acknowledged that noise measurements can be undertaken on the ground floor.

Noise logger L1 has been located in a position which is considered to be the most affected location, representative for sensitive receivers at 26 Levey Street. This noise logger location:

- Is located greater than 3m from any reflecting surface
- Is a similar distance from the road to the point of the façade which is the furthest from the dominant noise source. The other end of the façade would be exposed to higher noise levels.
- Has slight shielding from the road edge as its marginally and the other side of the road banks in the other direction

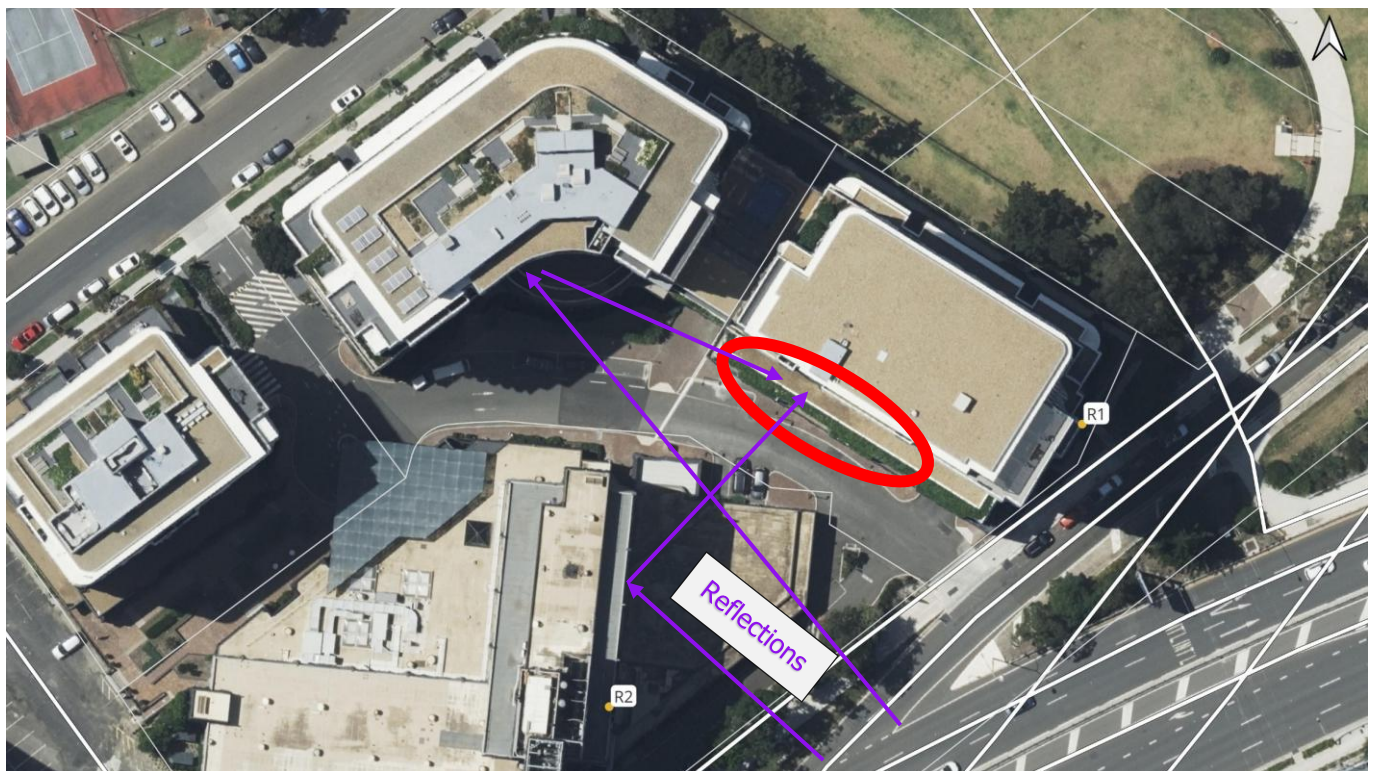
- Has a lower noise level than elevated receivers.
- Most importantly due to the high noise environment which is controlled by road traffic on Marsh Street, the noise criteria at this location is driven by the amenity noise criteria, which makes the measured noise levels somewhat irrelevant for the purposes of setting noise criteria.

On this basis, the noise logger L1 is considered appropriate and conservative for establishing the noise criteria at 26 Levey Street.

2.4 Side of buildings

Receivers adjacent to the site down the side of 26 Levey Street have the potential to be impacted by the site with potentially lower background noise levels and more stringent noise criteria. See image below, with the location circled in red. Given the issues mentioned in the previous section, it is not practical to undertake standard compliant noise measurements for the purpose of establishing noise criteria. However, a review can be made based on a detailed analysis and noise predictions.

Figure 5 26 Levey Street Receiver



At this location, the receiver is partially shielded from the road to the east, however the angle of the Novotel building results in additional reflections and an increased noise level. This location has a 90 degree view of the road (the dominant noise source), compared to R1 which has a 130 degree of view the road. This equates to a reduction in noise of about 1.6 dB, however, the additional reflections adds about 1.5 dB effectively cancelling out the shielded section of road. The distance from the noise logger to the road edge is a comparable distance from the road edge to the receivers circled above, resulting in a very similar noise environment. In practice the noise environment in the circled area is likely to be elevated due to the street canyon and elevated position when compared to the noise logger location.

Additional noise measurements have been completed to understand the noise environment in the area. A noise logger was located at Location L1, while concurrent noise measurements were undertaken through the project area. The attended noise measurements were undertaken on 19 March 2026 between 2 am and 5 am.

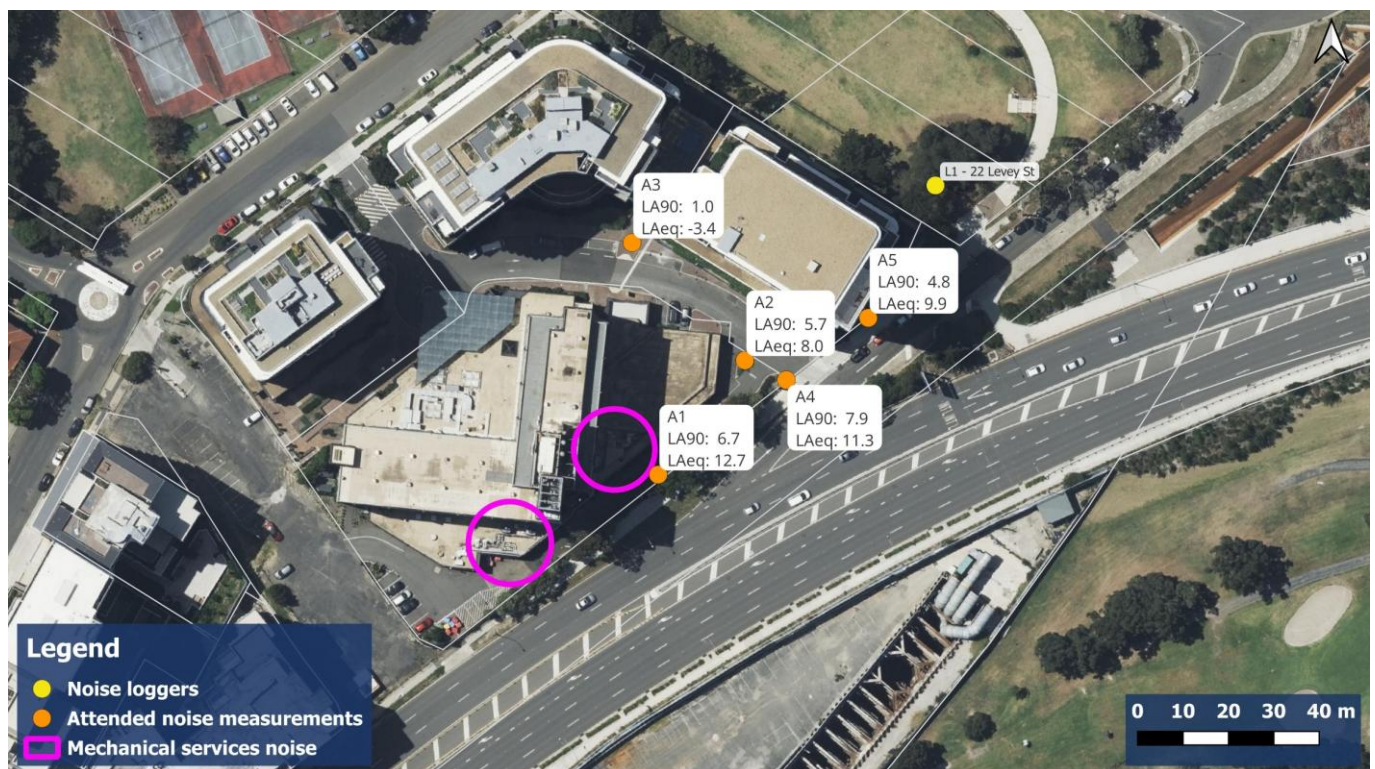
The ambient noise environment at Location L1 is dominated by road traffic on Marsh Street. When there are no cars passing, a hum is audible from the direction of the Sydney Airport. Road traffic noise from Princes Highway to the north is inaudible due to the presence of road traffic noise on Marsh Street. The location is directly in line with the façade, but is located at a point which has no façade reflections. The noise logger is located further from the road than the opposite end of the façade, resulting in slightly conservative noise measurements. This is confirmed from the A5 measurements location discussed later. There is marginal shielding from the road edge, resulting in a slightly conservative position when compared to higher floors (i.e. higher floors would experience higher noise levels and higher associated noise criteria).

The previous long term noise monitoring has provided a detailed understanding of the noise environment at location L1. The dominant noise source in the area is road traffic on Marsh Street, so the comparison should approximately hold true across all time periods.

Unfortunately, the area was dominated by significant noise from mechanical services on the Novotel. This noise was both intrusive and tonal and affected almost all attended noise measurements. Location A5 was slightly shielded from the noise source. The Novotel mechanical services noise was inaudible at logger location L1, confirming the suitability of the noise logger location.

The noise environment and associated noise measurements throughout this area is not suitable for the purposes of setting noise criteria due to the dominance of the mechanical noise sources. However, the results have been presented below in Figure 6 for information.

Figure 6 Attended noise measurement locations and comparison



Presented in Figure 6 are the L_{A90} and L_{Aeq} concurrent noise measurement differences to logger location L1. A positive difference means that the attended noise measurement was higher than the noise logger, and a negative number means the attended noise measurement location was lower.

At all locations except A5, the background noise (represented by the L_{A90} noise level) was controlled by mechanical services noise. This is reflected in the much higher L_{A90} (background) noise levels. Location A3 was still affected by mechanical service noise, however significant shielding was provided from both the mechanical services and the road itself, reducing noise levels.

The ambient noise (L_{Aeq} noise level) was generally controlled by road traffic, rather than mechanical services noise. These noise levels are significantly higher than location L1 identifying that sensitive receivers at 26 Levey Street are likely to be impacted by much higher levels of road traffic noise than presented by the noise logger location. If noise logging could be undertaken reliably, its likely that a traffic noise correction would be applied to set the amenity noise criteria. However, in the absence of this detailed study, the amenity noise criteria is used in Section 3.4.

2.5 Predicted noise level comparison

A comparison has been made of the predicted noise levels between the location indicated in Figure 5 and location at R1 for all floors of the building. At the potentially most affected floor, the difference in predicted noise levels between these two locations is 3 dB mid floor and 4 dB at the top of the building. For clarity R1 is higher than the location indicated in Figure 5. R1 is most affected by the ramps, and the alternate location is primarily affected by the entry road. On the basis that:

- Noise levels about 3 to 4 dB higher on the façade facing the site (receiver R1); and
- The noise criteria for both location is defined by the amenity noise criteria rather than the intrusiveness noise criteria because the existing noise environment is appreciably higher than the amenity noise level.

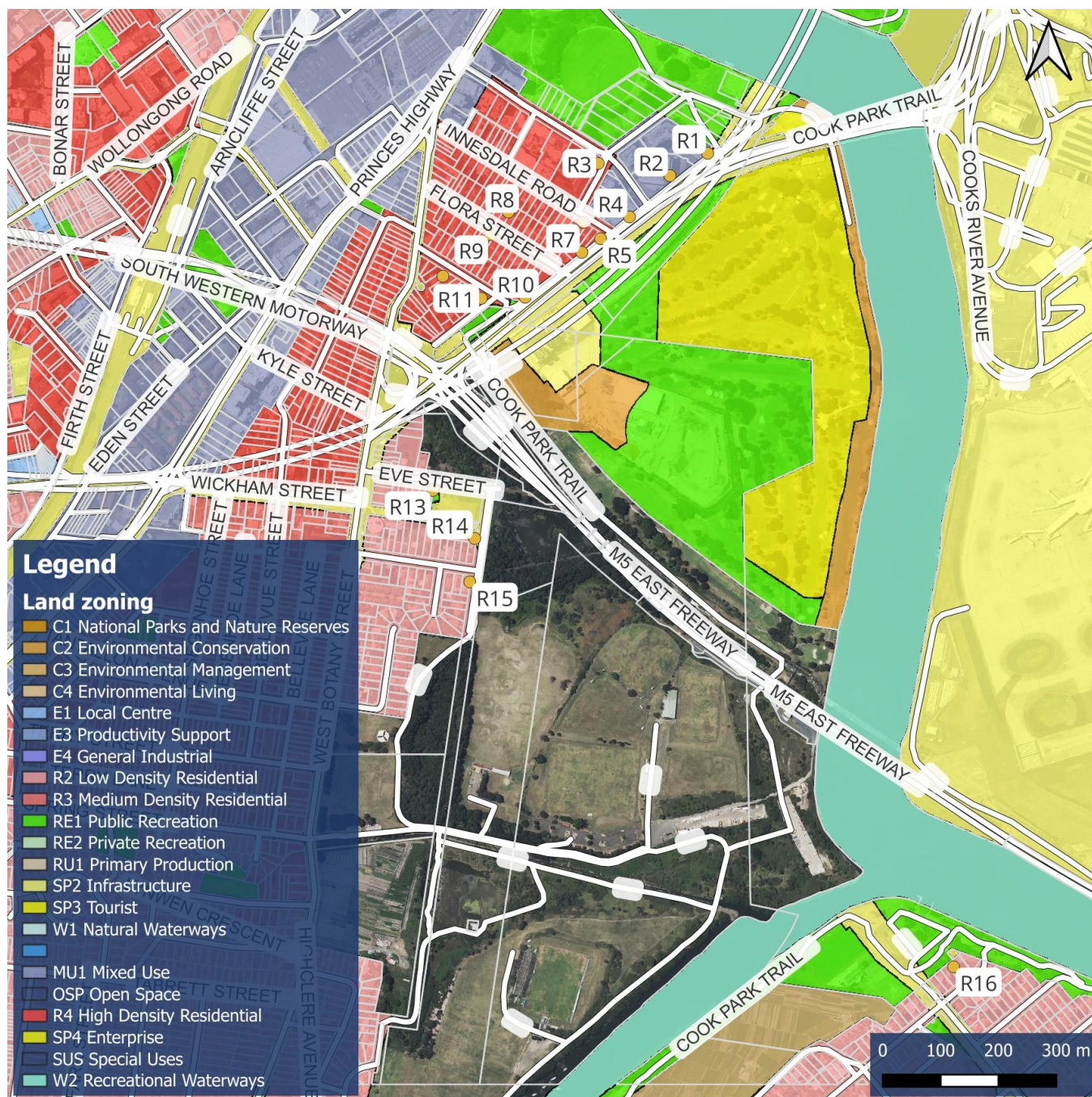
With both receivers having the same criteria, the most affected is therefore the receiver with the greatest noise level. Therefore, receiver R1 is the most affected receiver in this area for the purposes of this noise impact assessment.

2.6 Zoning

Overall, the potentially most affected sensitive receivers used in the assessment have been selected on the basis of acoustic exposure rather than simple proximity. The adopted receiver set was developed having regard to the NPfI requirements for reasonably most-affected locations, the representativeness of monitoring and assessment sites, the surrounding land-use pattern, and the physical pathway between the project noise sources and surrounding sensitive land uses. This ensured that the assessment was undertaken at the locations expected to experience the greatest project-related noise impact, while also providing a representative coverage of the broader receiver environment.

Sensitive receivers are predominantly comprised of residential receivers, with a hotel also potentially impacted by the works. The land zoning types and identified most affected sensitive receivers are presented below in Figure 7.

Figure 7 Land zoning



2.7 Noise descriptors and terminology

Environmental noise constantly varies in level with time. Therefore, it is necessary to measure noise in terms of quantifiable time periods with statistical descriptors. Typically, environmental noise is measured over 15-minute periods and relevant statistical descriptors of the fluctuating noise are determined to quantify the measured level.

Noise (or sound) consists of minute fluctuations in atmospheric pressure capable of detection by human hearing. Noise levels are expressed in terms of decibels, abbreviated as dB or dBA, the "A" indicating that the noise levels have been frequency weighted to approximate the characteristics of normal human hearing. Because noise is

measured using a logarithmic scale, 'normal' linear arithmetic does not apply, e.g., adding two sound sources of equal values result in an increase of 3 dB (i.e., 60 dBA plus 60 dBA results in 63 dBA). A change of 1 dB or 2 dB in the sound level is difficult for most people to detect, whilst a 3 dB to 5 dB change corresponds to a small but noticeable change in loudness. A 10 dB change roughly corresponds to a doubling or halving in loudness.

The most relevant environmental noise descriptors are the L_{Aeq} , L_{A1} , L_{A10} and L_{A90} noise levels. The L_{Aeq} noise level represents the "equivalent energy average noise level". This parameter is derived by integrating the noise level measured over the measurement period. It represents the level that the fluctuating noise with the same acoustic energy would be if it were constant over the measured time period.

The L_{A1} , L_{A10} and L_{A90} levels are the levels exceeded for 1%, 10% and 90% of the sample period. These levels can be considered as the maximum noise level, the average repeatable maximum and average repeatable minimum noise levels, respectively.

Specific acoustic terminology is used in this assessment report. An explanation of common acoustic terms is included in Appendix A.

2.8 Ambient noise monitoring

Background noise logging was undertaken at eight locations between Tuesday 2 September and Sunday 14 September 2025, and Monday 20 October to Friday 31 October 2025. The locations were chosen to represent the noise environment of the nearest, and potentially most affected residential receivers.

The noise logging data has been measured, analysed and reported in accordance with Australian Standard 1055:2018 Acoustics - Description and measurement of environmental noise and the EPAs Noise Policy for Industry (NPI).

The Rating Background Noise Level (RBL) is the background noise level used for assessment purposes at the nearest potentially affected receiver. It is the 90th percentile of the daily background noise levels during each assessment period, being day, evening and night. The L_{Aeq} is the ambient noise level (logarithmically averaged) over the period.

The standard measurement periods used in NSW for site noise impacts are:

- Daytime – 7 am to 6 pm
- Evening – 6 pm to 10 pm
- Night-time – 10 pm to 7 am

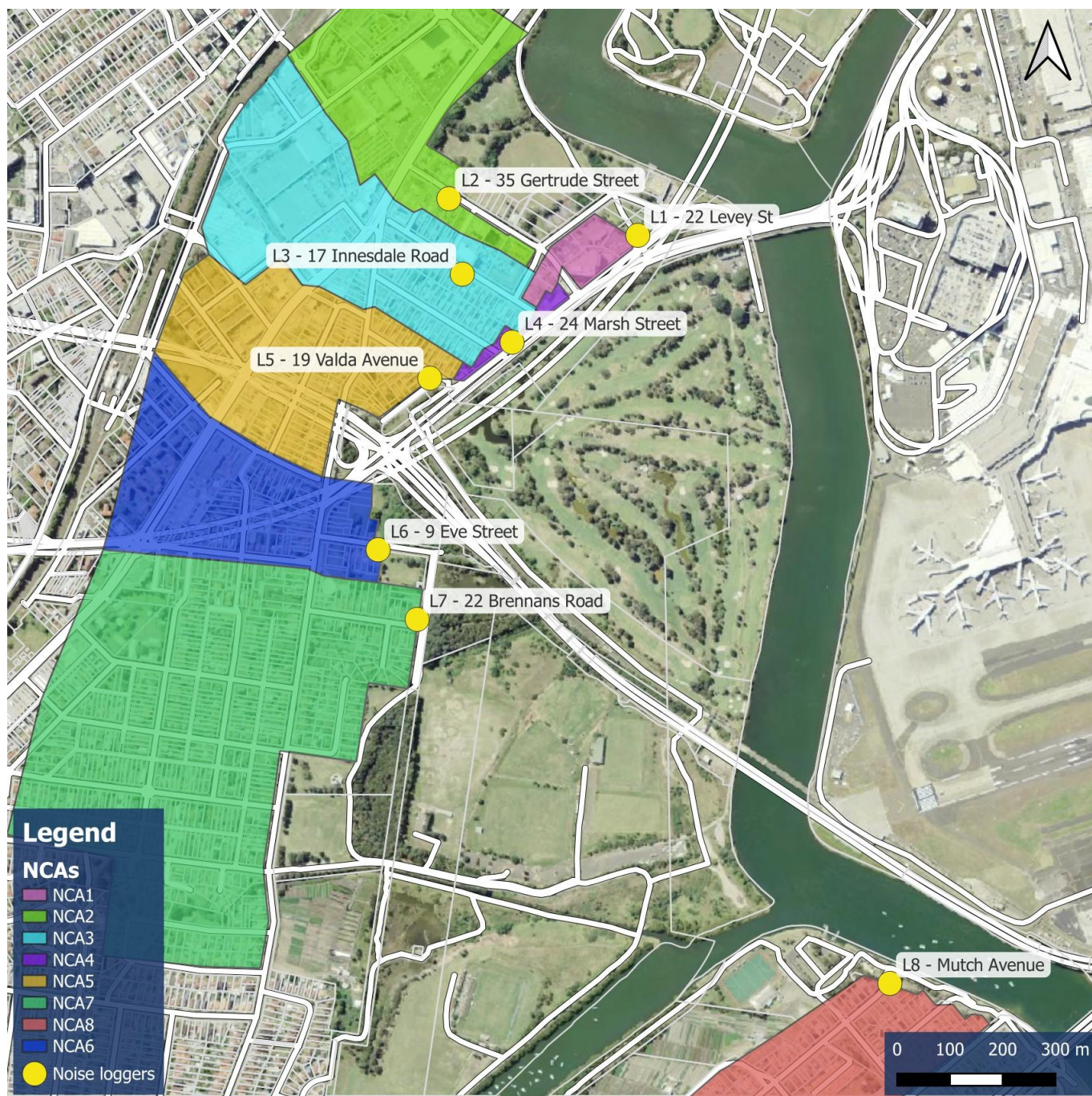
Presented in Table 4 is a summary of the ambient and RBL noise levels measured over the entire measurement period. Noise logging charts and locations are presented in Appendix B. These noise levels are used throughout the assessment to determine the existing noise environment and establish appropriate site-specific noise criteria.

Table 4 Measured ambient noise levels

ID	Address	Rating background level				Ambient noise level, $L_{Aeq,period}$			
		Morning shoulder	Daytime	Evening	Night	Morning shoulder	Daytime	Evening	Night
L1	26 Levey Street	57	57	57	53	61	63	61	59
L2	35 Gertrude Street	48	53	52	43	63	62	61	59
L3	17 Innesdale Road	44	47	46	40	54	59	55	52
L4	24A Marsh Street	59	59	59	46	74	72	71	70
L5	19 Valda Avenue	50	51	51	41	58	58	57	55
L6	9 Eve Street	46	48	48	41	54	55	54	50
L7	22 Brennans Road	43	43	44	38	53	58	51	48
L8	Mutch Ave	45	49	51	37	54	57	62	51

Presented below in Figure 8 is an illustration of the locations of the noise loggers and noise catchment areas (NCAs), for the purposes of setting project specific noise trigger levels.

Figure 8 NCA and noise loggers



2.9 Site meteorological conditions

Meteorological data has been obtained from the Sydney Airport from 2023 to 2025 to determine if noise enhancing weather conditions are a feature of the area. The weather data has been processed in accordance with the requirements of the EPAs NPfI, to determine if adverse weather conditions are a feature of the area.

Temperature inversions were determined based on the Pasquill-Gifford stability classification scheme (Section D1.3.1 of the NPfI). This approach was chosen based on the weather data that was available at the weather station. Hourly cloud cover and wind speed measurements were reviewed between 6 pm to 7 am. The data was assessed over the three winter months (June, July, and August). Where a stability category of F or G is identified for greater than 30% of the assessed period, temperature inversions are considered to be a feature of the area.

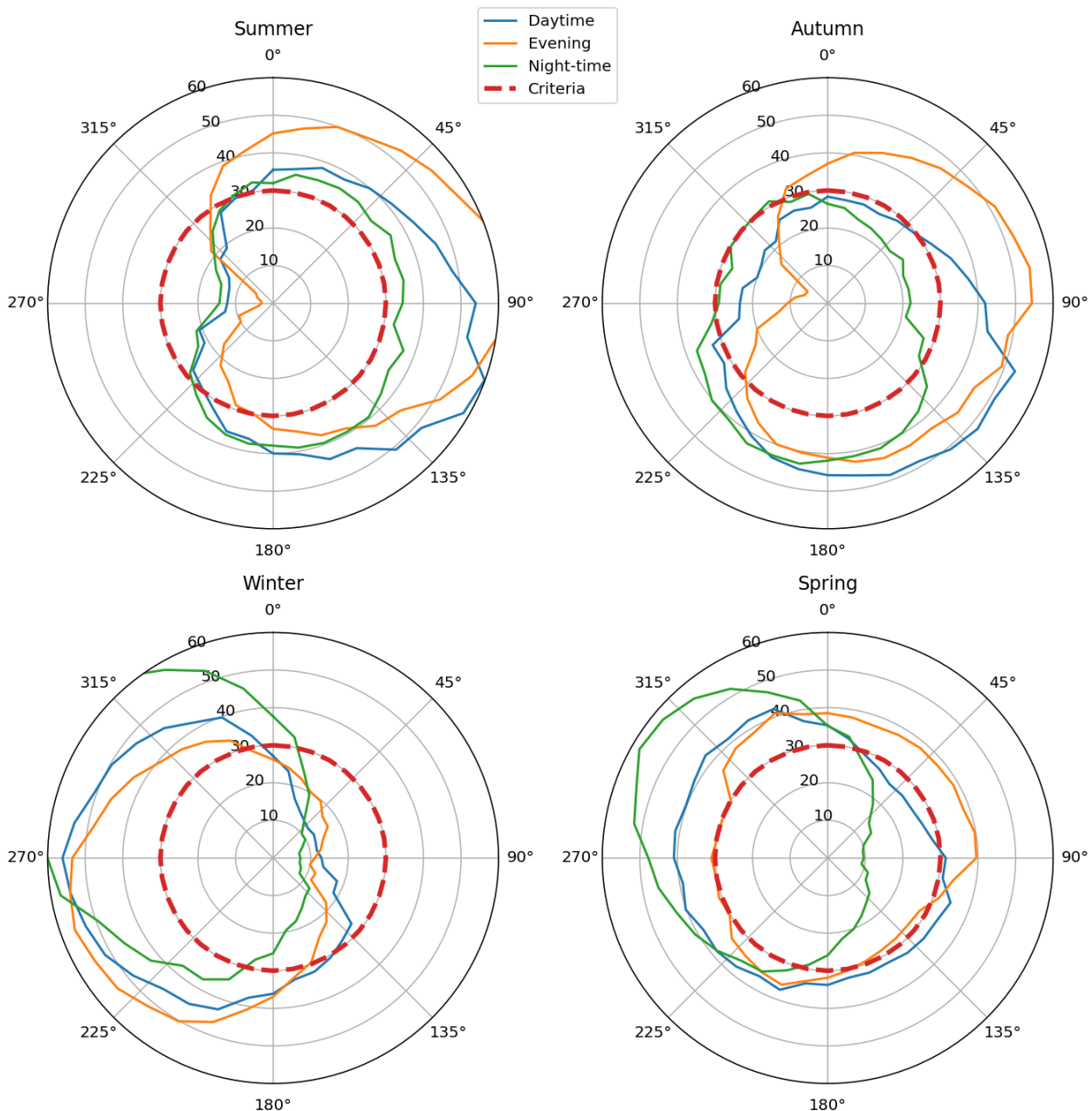
Winds have been assessed in accordance with Section D2 of the EPAs NPfI. While the NPfI suggests an eight or 16 direction wind compass, it was considered appropriate to present a 36-point analysis to provide a higher level of detail for this project. The assessment has also used the component wind speed, where the source to receiver wind direction has been calculated. For example, given a wind speed direction of 30 degrees and 3 m/s, a direction of 50 degrees would have component wind speed of 2.8 m/s and a direction of 100 degrees would have a component wind speed of 1 m/s. All of these directions would fall into the adverse weather category.

This approach has been chosen in preference to the more simplistic suggestions in the NPfI to provide a greater understanding of the potential for noise enhancing weather conditions to all receivers surrounding the site.

The wind data has also considered all four seasons and three time periods (daytime, evening, and night-time) separately, in accordance with the requirements of the NPfI.

Presented below in Figure 9 is a summary of the analysed weather data.

Figure 9 Sydney airport wind distribution 2023 - 2025

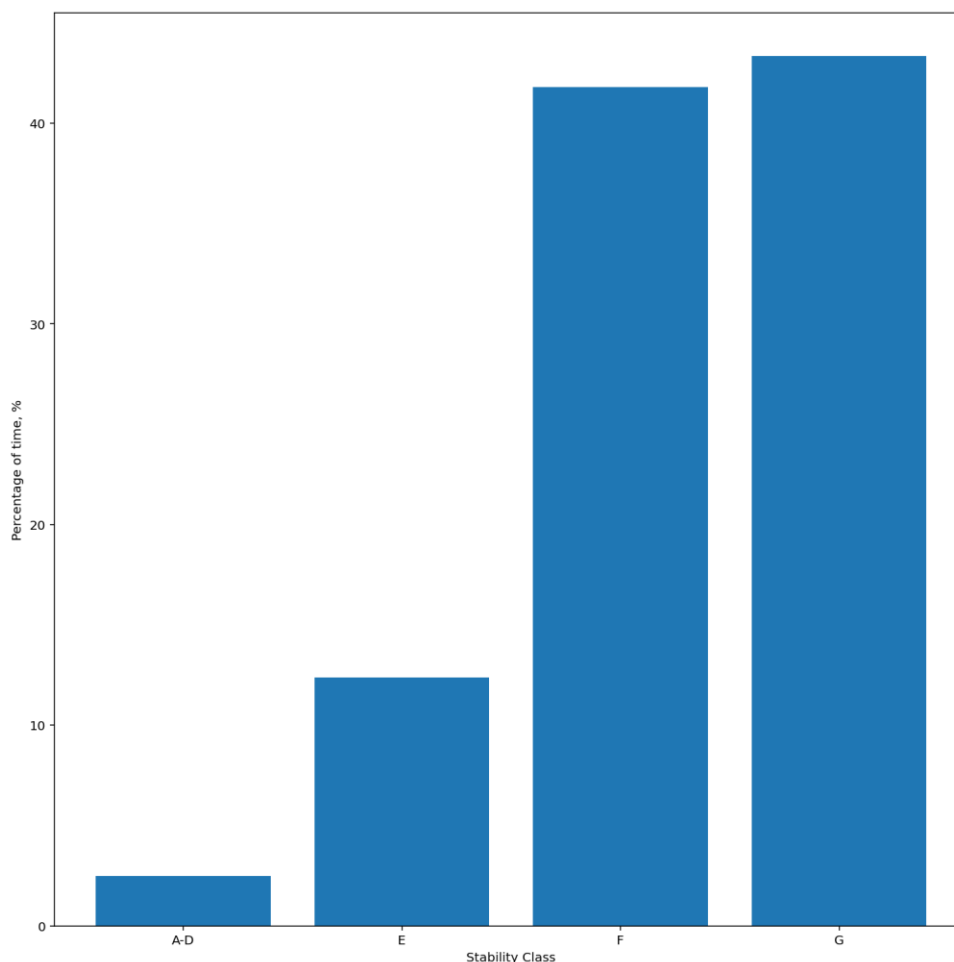


The wind distribution data in Figure 9 is broken down by season, and daytime, evening and night-time periods. The charts identify the percentage of time the wind is in a certain direction. As discussed previously, the wind is the component wind for each direction, so the percentages are significantly higher than if just the wind speed and native direction were used.

The NPFI identifies that wind is considered to be a feature of the area when it occurs for greater than 30% of the season and time-period. In Figure 9 this 30% threshold is illustrated as a dashed red line. The meteorological analysis identifies that wind is a feature of the area, with dominant directions including westerlies, easterlies, and south-easterlies. However, most directions exceed the 30% threshold at one or another time period and season combination.

Presented below in Figure 10 is also a summary of the stability class distribution at night-time during winter.

Figure 10 Night-time winter stability class distribution



The stability class analysis identifies that temperature inversions (stability class F and G) are a feature of the area, occurring for over 80% of the period between 6 pm and 7 am during winter. During night-time winter, the dominant wind is easterlies, or nor-easterlies which represents receiver to source distribution. Under these conditions, the noise blows from sensitive receivers to the source suggesting that these receivers are not impacted by noise increased from temperature inversions from the proposal.

The assessment of noise enhancing weather conditions is generally required for the sensitive receivers identified in this report due to the exceedance of wind only.

3 NOISE AND VIBRATION CRITERIA

3.1 Construction noise

The EPA's Interim Construction Noise Guideline (ICNG) provides guidance on appropriate construction noise management levels that should be adhered to on construction projects throughout NSW. This guideline identifies that potential impacts from construction noise are determined based on time of day of the noise, the increase in site noise above background noise, the duration of the event, and any adverse characteristics of the noise.

The ICNG provides assessment procedures for the assessment of noise impacts, and management and mitigation measures procedures to address potential impacts on sensitive receivers. The main objectives of the ICNG are:

- Promote a clear understanding of ways to identify and minimise noise from construction works,
- Focus on applying all feasible and reasonable work practices to minimise construction noise impacts,
- Encourage construction to be undertaken only during the recommended standard hours unless approval is given for works that cannot be undertaken during these hours,
- Streamline the assessment and approval stages and reduce time spent dealing with complaints at the project implementation stage; and
- Provide flexibility in selecting site-specific feasible and reasonable work practices to minimise noise impacts.

The ICNG identifies a quantitative assessment approach which is applicable to this project. The quantitative assessment method involves predicting noise levels at sensitive receivers and comparing them with site specific Noise Management Levels (NMLs). The NML affectation categories for receivers have been reproduced from the guideline and are listed in Table 5.

Table 5 Construction noise management levels – residential receivers

Receiver type	Time of day	Noise management level $L_{Aeq(15minute)}^{1,2}$	How to apply
Residential	Approved working hours of the project, including: Monday-Friday 7am-6pm and Saturday 8am-1pm	Noise affected RBL + 10 dB	The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured $L_{Aeq(15minute)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.

Receiver type	Time of day	Noise management level $L_{Aeq(15\text{minute})}^{1,2}$	How to apply
		Highly noise affected 75 dBA	The highly noise affected level represents the point above which there may be strong community reaction to noise. Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: 1. Times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences. 2. If the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
	Outside recommended standard hours	Noise affected RBL + 5 dB	A strong justification would typically be required for works outside the recommended standard hours. The proponent should apply all feasible and reasonable work practices to meet the noise affected level. Where all feasible and reasonable practices have been applied and noise is more than 5 dB above the noise affected level, the proponent should negotiate with the community.
Note 1 Noise levels apply at the property boundary that is most exposed to construction noise, and at a height of 1.5 m above ground level. If the property boundary is more than 30 m from the residence, the location for measuring or predicting noise levels is at the most noise-affected point within 30 m of the residence. Noise levels may be higher at upper floors of the noise affected residence. Note 2 The RBL is the overall single-figure background noise level measured in each relevant assessment period (during or outside the recommended standard hours). The term RBL is described in detail in the NSW Industrial Noise Policy (EPA 2000).			

The ICNG also provides NMLs for non-residential land uses. Unlike residential receivers, these criteria are fixed levels, independent of local background noise levels. Presented below in Table 6 are NMLs for non-residential land uses.

Table 6 Construction noise management levels – other receivers

Land use	Location applied	Noise management level, $L_{Aeq,15min}$
Classrooms and other educational institutions	Internal noise level	45 dB(A)
Hospital wards and operating theatres	Internal noise level	45 dB(A)
Places of worship	Internal noise level	45 dB(A)
Active recreation areas (characterised by sporting activities and activities which generate their own noise or focus for participants, making them less sensitive to external noise intrusion)	External noise level	65 dB(A)
Passive recreation areas (characterised by contemplative activities that generate little noise and where benefits are compromised by external noise intrusion, for example, reading, meditation)	External noise level	60 dB(A)
Community centres	Refer to the recommended "maximum" internal levels in AS2107 for specific uses	
Industrial premises	External noise level	75 dB(A)
Offices, retail outlets	External noise level	70 dB(A)

3.1.1 Site specific noise management levels

Presented below in Table 7 is the receiver specific noise criteria. For sensitive receivers such as educational, an external noise criterion is assumed based on a typical indoor to outdoor attenuation from an open window of 10 dB(A). NCA locations are illustrated in Figure 8.

Table 7 Site specific external construction noise management levels, dB(A)

Area	Type	Daytime 7am to 6pm	Evening 6pm to 10pm	Night-time 10pm to 7am	Highly noise affected
NCA1	Residential	67	63	58	75
NCA2	Residential	63	57	48	75
NCA3	Residential	57	51	45	75
NCA4	Residential	69	64	51	75
NCA5	Residential	61	56	46	75
NCA6	Residential	58	53	46	75
NCA7	Residential	53	49	43	75
NCA8	Residential	59	56	43	75
All	Offices, retail	70	NA	NA	NA
All	Industrial	75	NA	NA	NA

3.2 Construction road traffic noise

Industrial developments have the potential to generate additional road traffic and associated noise impacts from the vehicles accessing the site. The EPA's Road Noise Policy provides guidance on appropriate noise criteria which should be considered.

Presented below are the applicable noise criteria for road traffic on arterial roads.

Table 8 Road noise criteria

Road category	Type of project / land use	Assessment criteria, dB(A)	
		Daytime 7am-10pm	Night-time 10pm-7am
Freeway /arterial / sub-arterial roads	Existing residences affected by additional traffic on existing freeways/arterial/sub-arterial roads generated by land use developments	L _{Aeq,15hour} 60 (external)	L _{Aeq,9hour} 55 (external)

Where the predicted noise levels with the project indicate likelihood to exceed the noise criteria presented in Table 8, it is considered not reasonable and feasible to provide noise mitigation measures if the project does not increase noise by greater than 2.0 dB. A change of 2 dB to 3 dB in road traffic noise is often considered to be indiscernible.

3.3 Construction vibration criteria

Effects of ground borne vibration on buildings may be segregated into two major categories:

- Human comfort – vibration in which the occupants or users of the building are inconvenienced or possibly disturbed.
- Effects on building structures – where vibration can compromise the integrity of the building or structure itself

Vibration criteria – human comfort

Vibration effects relating specifically to the human comfort aspects of the project are taken from the guideline titled *"Assessing Vibration – A Technical Guideline"* (AVATG). Vibration impacts can be defined based on the nature of the construction works and vibration generated, specifically:

- Continuous vibration – from uninterrupted sources (refer to Table 9).
- Impulsive vibration – up to three instances of sudden impact e.g. dropping heavy items, per monitoring period (refer to Table 10).
- Intermittent vibration – such as from drilling, compacting or activities that would result in continuous vibration if operated continuously (refer to Table 11).

Presented below in Table 9, Table 10, and Table 11 is a summary of the applicable human comfort vibration criteria, for continuous, impulsive, and intermittent vibration respectively.

Table 9 Continuous vibration acceleration criteria (m/s²) 1 Hz-80 Hz

Location	Assessment period	Preferred Values		Maximum Values	
		z-axis	x- and y-axis	z-axis	x- and y-axis
Residences	Daytime	0.010	0.0071	0.020	0.014
	Night-time	0.007	0.005	0.014	0.010
Offices, schools, educational institutions and places of worship	Day or night-time	0.020	0.014	0.040	0.028
		0.04	0.029	0.080	0.058
Workshops	Day or night-time	0.04	0.029	0.080	0.058

Table 10 Impulsive vibration acceleration criteria (m/s²) 1 Hz-80 Hz

Location	Assessment period	Preferred values		Maximum values	
		z-axis	x- and y-axis	z-axis	x- and y-axis
Residences	Daytime	0.30	0.21	0.60	0.42
	Night-time	0.10	0.071	0.20	0.14
Offices, schools, educational institutions and places of worship	Day or night-time	0.64	0.46	1.28	0.92
Workshops	Day or night-time	0.64	0.46	1.28	0.92

Table 11 Intermittent vibration impacts criteria (m/s^{1.75}) 1 Hz-80 Hz

Location	Daytime		Night-time	
	Preferred	Maximum	Preferred	Maximum
Residences	0.20	0.40	0.13	0.26
Offices, schools, educational institutions and places of worship	0.40	0.80	0.40	0.80
Workshops	0.80	1.60	0.80	1.60

Vibration criteria – building contents and structures

The vibration effects on the building are provided by British Standard BS 7385: Part 2-1993 "Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration" (BSI 1993)

The criteria are based on peak particle velocity (mm/s) which is to be measured at the base of the building. These are summarised in Table 12 and illustrated in Figure 11.

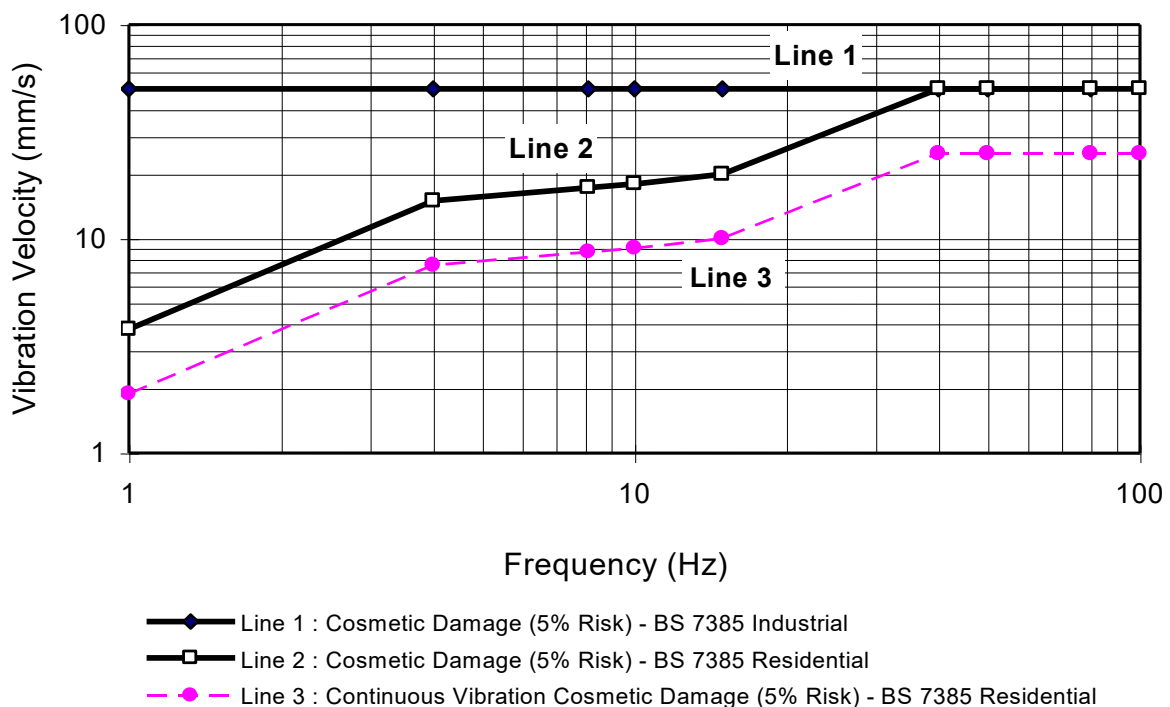
Table 12 Transient vibration criteria as per standard BS 7385 Part 2 - 1993

Line in standard	Type of Building	Peak component particle velocity in frequency range of predominant pulse	
		4 Hz to 15 Hz	15 Hz and Above
1	Reinforced or framed structures Industrial and heavy commercial buildings	50 mm/s at 4 Hz and above	
2	Unreinforced or light framed structures Residential or light commercial type buildings	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

The vibration standard BS 7385 Part 2 – 1993 states that the values in Table 12 relate to transient vibration which does not cause resonant responses in buildings.

Where the dynamic loading caused by continuous vibration events is such as that results in dynamic magnification due to resonance (especially at the lower frequencies where lower guide values apply), then the values in Table 12 may need to be reduced by up to 50% (refer to Line 3 in Figure 11).

Figure 11 BS 7385 Part 2 – 1993, graph of transient vibration values for cosmetic damage



In the lower frequency region where strains associated with a given vibration velocity magnitude are higher, the recommended values corresponding to Line 2 are reduced. Below a frequency of 4 Hz where a high displacement is associated with the relatively low peak component particle velocity value, a maximum displacement of 0.6 mm (zero to peak) is recommended. This displacement is equivalent to a vibration velocity of 3.7 mm/s at 1 Hz.

The standard also states that minor damage is possible at vibration magnitudes which are greater than twice those given in Table 12, and major damage to a building structure may occur at values greater than four times the tabulated values.

Fatigue considerations are also addressed in the standard and it is concluded that unless calculation indicates that the magnitude and number of load reversals is significant (in respect of the fatigue life of building materials) then the values in Table 12 should not be reduced for fatigue considerations.

Project vibration criteria

Based on the details included in the sections above the project specific vibration criteria to protect the surrounding residential receivers from structural or architectural damage includes the following:

- Project construction vibration management level at all surrounding building structures – 7.5 mm/s.

In the event that this vibration criterion is exceeded, further investigation is required, including an assessment of the nature of the vibration and frequency characteristics to determine if the vibration criterion can be relaxed for the specific nature of the works.

3.4 Operational facility noise criteria

3.4.1 Noise Policy for Industry

Responsibility for the control of noise emissions in New South Wales is vested in Local Government and the NSW Environment Protection Authority (EPA).

The EPAs NSW Noise Policy for Industry (NPfI) provides guidance on appropriate noise levels for external noise emissions from fixed facilities on surrounding sensitive receivers. The NPfI criteria for industrial noise sources have two components:

- Controlling the intrusive noise impacts for residents and other sensitive receivers in the short term; and
- Maintaining noise level amenity of defined land uses for residents and sensitive receivers in other land uses.

The intrusiveness noise level protects against significant changes in noise, while the amenity noise level seeks to protect against cumulative noise impacts from industry. Together, these levels are used to assess the potential impact of noise and assess reasonable and feasible noise mitigation measures. Project noise trigger levels are developed through this process. They are not used directly as regulatory limits.

The NPfI requires a project to take consideration of other industrial noise sources in setting amenity noise objectives. In cases of a new development where there are no existing industrial sources, the NPfI accepts a default of the amenity noise level minus 5 dB to take account of future industrial sources.

For this project, the default amenity noise level minus 5 dB adjustment will be used to account for cumulative noise sources.

3.4.2 Intrusive noise impacts – residential receivers

The intrusiveness noise level protects against significant changes in noise levels and is applicable to residential receivers only. The criterion is defined by the formula below:

$$L_{Aeq,15min} = \text{rating background noise level} + 5 \text{ dB}$$

The RBL is the average background noise level over a measurement period of at least one week. Using the RBL results in the intrusiveness criterion being met for 90% of the time. Adjustments are to be applied to the level of noise produced by the source that is received at the assessment point where the noise source contains annoying characteristics such as tonality or impulsiveness.

The NPfI also makes allowance for shoulder periods. Shoulder periods are considered to be short assessment periods where the existing background noise is typically more representative of the next period, than the current period. For example, a morning shoulder period often exists where background noise levels increase above the night-time typical levels and is more closely represented by the daytime period.

For this project noise logger charts show that background noise levels increase from approximately 4 am, with the 5 am to 7 am morning shoulder period showing significantly greater background noise levels. A morning shoulder period is required to appropriately assess noise impacts against the background noise levels.

To determine the intrusiveness period shoulder period, a similar approach has been taken as the other time periods. The shoulder periods RBL is determined from the 90th percentile of the L_{A90} noise levels over the measurement period.

Presented below in Table 13 is a summary of the measured RBL and corresponding intrusiveness level for each time period.

Table 13 Intrusive noise criteria, dB(A)

Location	Rating background level				Intrusive noise level, $L_{Aeq,15min}$			
	Morning shoulder	Daytime	Evening	Night-time	Morning shoulder	Daytime	Evening	Night-time
NCA1	57	57	57	53	62	62	62	58
NCA2	48	53	52	43	53	58	57	48
NCA3	44	47	46	40	49	52	51	45
NCA4	59	59	59	46	64	64	64	51
NCA5	50	51	51	41	55	56	56	46
NCA6	46	48	48	41	51	53	53	46
NCA7	43	43	44	38	48	48	48 ¹	43
NCA8	45	49	51	37	50	54	56	42

Note 1: The NPfI identifies that the project intrusiveness level for the night-time should be no greater than the evening. Likewise the evening should be no greater than the day. The intrusive noise levels presented here have been adjusted to achieve this requirement.

The intrusiveness noise levels presented in Table 13 identifies that noise levels in the area are elevated and dominated by road traffic. While side roads have reduced noise compared to main arterials, the noise levels are still representative of an urban noise environment.

3.4.3 Protecting noise amenity

The amenity noise level seeks to protect against cumulative noise impacts from industry.

The NPfI uses project noise trigger levels measured over a 15-minute time period, assessed as an $L_{Aeq,15min}$. To account for converting $L_{Aeq,period}$ to $L_{Aeq,15min}$, the NPfI accepts a default conversion factor of $L_{Aeq,15min} = L_{Aeq,period} + 3dB$.

To ensure industrial noise levels do not gradually increase with new developments, a minus 5 dB correction is applied to the amenity noise level. Further information on the use of the default correction is presented in Section 5.8. The amenity noise levels have been presented in Table 14.

Table 14 Amenity noise levels, dB(A)

Receiver	Noise amenity area	Time of day	Recommended amenity noise level
Residential	Rural	Day	50
		Evening	45
		Night	40
	Suburban	Day	55
		Evening	45
		Night	40
	Urban	Day	60
		Evening	50
		Night	45
Hotels, motels, caretakers' quarters, holiday accommodation, permanent resident caravan parks	5 dB(A) above the recommended amenity noise level for a residence for the relevant noise amenity area and time of day		
School classroom	All	Noisiest 1-hour period	35 internal
Hospital ward	All	Noisiest 1-hour period	35 internal 50 external
Place of worship	All	When in use	40
Passive recreation	All	When in use	50
Active recreation	All	When in use	55
Commercial	All	When in use	65
Industrial	All	When in use	70
Industrial interface	Add 5 dB(A) to recommended noise amenity area		

Presented in Table 2.3 of the NPfI is a more detailed description of receiver categories.

Land use zoning is illustrated in Figure 7. All sensitive receivers to the north of the project are zoned:

- R4 High Density Residential - a Residential Urban amenity area
- R3 Medium Density Residential - a Residential Suburban amenity area
- R2 Low density Residential - a Residential Suburban amenity area

Where existing road traffic noise is high enough to render stationary industrial noise sources effectively inaudible, the ANL can be modified so that the amenity criteria is not unduly stringent in an environment where road traffic noise is the dominant source of environmental noise. If all conditions below are satisfied, the ANL becomes $L_{Aeq,traffic}$ minus 15 dBA. These conditions include:

- The road traffic noise is the dominant noise source.
- The existing noise is 10 dB(A) or more above the acceptable ANL for the area.
- It is highly unlikely the road traffic noise levels would reduce in the near future.

The only location this may apply is on Marsh Street, which has significant levels of existing road traffic noise.

Table 15 Road traffic amenity noise difference

	Morning shoulder	Daytime	Evening	Night-time
Amenity comparison test				
Ambient $L_{Aeq,period}$	74	72	71	70
Amenity noise level	60	60	50	45
Difference	14	12	21	25
Road traffic amenity noise level				
Amenity, $L_{Aeq,period}$	57 ¹	57	56	55
Amenity $L_{Aeq,15min}^2$	60	60	59	58

Note 1 The morning shoulder amenity level should be no greater than the daytime amenity level.

Note 2 The high traffic project amenity noise level is equal to the existing traffic levels minus 15 dB plus 3 dB to convert from a period level to a 15-minute level.

In summary, for receivers on Marsh Street:

- Road traffic is the dominant noise source
- The existing noise is greater than 10 dB more than the amenity noise level at all sensitive receivers
- It is highly unlikely that road traffic noise levels would reduce in the future. The proposal is likely to increase road traffic, rather than reduce it.

Based on this review, it is considered reasonable to use the road traffic amenity noise level presented in Table 15.

3.4.4 Amenity noise criteria shoulder periods

The NPfI does not clearly define appropriate amenity noise targets for shoulder periods. However, the industry standard approach for the morning shoulder period is to use the daytime amenity noise level, noting that the noise levels have increased to a noise levels representative of the day.

3.4.5 Project amenity noise criteria

The applicable amenity noise criteria for each zone is presented below in Table 16. While not used, the Suburban residential zoning criteria has been included for reference.

The NPfI uses project noise trigger levels measured over a 15-minute time period, assessed as an $L_{Aeq,15min}$. To account for converting the amenity $L_{Aeq,period}$ to an $L_{Aeq,15min}$, the NPfI accepts a default conversion factor of $L_{Aeq,15min} = L_{Aeq,period} + 3dB$. To ensure industrial noise levels do not gradually increase with new developments, a minus 5 dB correction is applied to the amenity noise level.

Both these corrections have been included in the amenity noise levels below.

Table 16 Project amenity noise levels, $L_{Aeq,15min}$ dB(A)

NPfI Zoning	Morning shoulder	Daytime	Evening	Night-time
Marsh street traffic	60	60	59	58
Urban residential	58	58	48	43
Suburban residential	53	53	43	38
Active recreation	53 (when in use)			
Passive recreation	48 (when in use)			
Industrial	68 (when in use)			

The project amenity noise levels for the suburban industrial interface are generally consistent with the existing noise criteria, noting that the existing conditions are more stringent during the daytime.

3.4.6 Corrections for annoying noise characteristics

Table C1 of the NPfI provides corrections for tonality, intermittency, irregularity or dominant low-frequency content. These corrections are to be added to the measured or predicted noise levels at the receiver before comparison with the project noise trigger levels. NPfI also provides adjustments for duration that can increase the project noise criterion for unusual or one-off high-noise level events.

3.4.7 Low frequency noise correction

A difference of 15 dB or more between the C- and A-weighted noise measurements, identifies the potential for an unbalanced spectrum and an increased likelihood of low frequency noise annoyance.

The difference between C- and A-weighted noise levels is typically used as a screening tool to determine if further investigation is required. Where further investigation confirms significant low frequency content, a low frequency noise correction is applied to the predicted or measured noise levels.

The NPfI identifies that the corrections should “reflect external assessment locations”, or sensitive receiver locations so the existing noise environment should be considered.

The NSW EPA commissioned a review on road traffic noise titled NSW Road Noise Policy Review – Initial Scoping Study by A.L. Brown, which included consideration of low frequency noise from vehicles. The study identified that:

differences of at least 30dB between the low frequency and the mid/high frequency content are needed for changes in low frequency content to have as much subjective effect (on annoyance) as equivalent changes in mid and high frequency content.

This study identified that noise generated by vehicle movements does not generate low frequency annoyance. The review went on to note:

changes in low frequency content appeared to make smaller contributions to subjective loudness and annoyance than might be inferred from the implied objective or physical dominance of those changes. The results suggested that commonly expressed criticisms of the A-frequency weighting based on an hypothesized excessive downweighting of the low frequency content may be relatively unfounded in this application area.

A review of the difference in A weighted and C weighted noise level from truck movements has also been undertaken. This review identifies that the difference between C weighted and A weighted noise levels from heavy vehicle movements would not trigger the applicable noise criteria.

3.4.8 Project specific noise trigger levels

Presented below in Table 17 is a summary of the sites project specific noise trigger levels.

Table 17 Project specific noise trigger level, $L_{Aeq,15\text{minute}}$ dB(A)

Receiver	Time period	RBL	Intrusiveness	Amenity ¹	PSNTL
Residential NCA1	Morning shoulder	57	62	58	58
	Daytime	57	62	58	58
	Evening	57	62	48	48
	Night-time	53	58	43	43
Residential NCA2	Morning shoulder	48	53	58	53
	Daytime	53	58	58	58
	Evening	52	57	48	48
	Night-time	43	48	43	43
Residential NCA3	Morning shoulder	44	49	58	49
	Daytime	47	52	58	52
	Evening	46	51	48	48
	Night-time	40	45	43	43
Residential NCA4	Morning shoulder	59	64	60	60
	Daytime	59	64	60	60
	Evening	59	64	59	59
	Night-time	46	51	58	51
Residential NCA5	Morning shoulder	50	55	58	55
	Daytime	51	56	58	56
	Evening	51	56	48	48
	Night-time	41	46	43	43
Residential NCA6	Morning shoulder	46	51	53	51
	Daytime	48	53	53	53
	Evening	48	53	43	43
	Night-time	41	46	38	38
Residential NCA7	Morning shoulder	43	48	53	48
	Daytime	43	48	53	48
	Evening	44	49	43	43
	Night-time	38	43	38	38

Receiver	Time period	RBL	Intrusiveness	Amenity ¹	PSNTL
Residential NCA8	Morning shoulder	45	50	53	50
	Daytime	49	54	53	53
	Evening	51	56	43	43
	Night-time	37	42	38	38
Hotel NCA4	Morning shoulder	NA	69	65	65
	Daytime	NA	69	65	65
	Evening	NA	69	64	64
	Night-time	NA	56	63	56
Commercial	When in use	NA	NA	NA	63

Note 1 As previously discussed, the amenity noise level has been reduced by 5 dB(A) to account for other industrial noise sources and increased by 3 dB(A) to convert from $L_{Aeq,period}$ to $L_{Aeq,15minute}$

Note 2 The overall PNTL is the more stringent of the intrusiveness and amenity criteria

The masterplan is proposing to redevelop the site in stages. The PSNTL presented in Table 17 applies to the cumulative noise from all operations occurring simultaneously.

3.5 Operational road traffic noise

Industrial developments have the potential to generate additional road traffic and associated noise impacts from the vehicles accessing the site. The EPAs Road Noise Policy provides guidance on appropriate noise criteria which should be considered.

Presented below are the applicable noise criteria for road traffic on arterial roads.

Table 18 Road noise criteria

Road category	Type of project / land use	Assessment criteria, dB(A)	
		Daytime 7am-10pm	Night-time 10pm-7am
Freeway /arterial / sub-arterial roads	Existing residences affected by additional traffic on existing freeways/arterial/sub-arterial roads generated by land use developments	$L_{Aeq,15hour}$ 60 (external)	$L_{Aeq,9hour}$ 55 (external)
Local roads	Existing residences affected by additional traffic on existing local roads generated by land use developments	$L_{Aeq,1hour}$ 55 (external)	$L_{Aeq,1hour}$ 50 (external)

Where the predicted noise levels with the project indicate likelihood to exceed the noise criteria presented in Table 18, it is considered not reasonable and feasible to provide noise mitigation measures if the project does not increase noise by greater than 2.0 dB. A change of 2 dB to 3 dB in road traffic noise is often considered to be indiscernible.

3.6 Maximum noise level assessment

During night-time periods, increased night-time noise levels have the potential to create sleep disturbance noise impacts.

The NPfI identifies the amenity noise level, discussed in Section 3.4.3, 'will protect against noise impacts such as speech interference, community annoyance and some sleep disturbance'. However further guidance is provided in Section 2.5 of the NPfI, which requires consideration of maximum noise level events. This approach provides a screening criterion. The NPfI identifies that where the screening criterion is exceeded, a detailed maximum noise level event assessment should be undertaken. The screening criteria are:

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

These screening criteria were developed based on a review of research provided by the EPAs NSW Road Noise Policy. The detailed assessment should consider all feasible and reasonable noise mitigation measures with a goal of achieving the above trigger levels.

Since the release of the NSW Road Noise Policy, the World Health Organisation has release two additional documents, the WHO Night Noise Guideline for Europe (2009) and the WHO Environmental Noise Guideline for Europe (2018).

The most important note here is the WHO guidelines are based on an $L_{night,outside}$. This is the A-weighted long-term average sound level determined over all the night periods of a year. Environmental Noise Directive (2002/49/EC) specifically states that a year is a relevant year as regards the emission of sound and an average year as regards the meteorological circumstances. In comparison, the NSW EPA requires the assessment of the worst-case 15-minute period with the adverse meteorological conditions.

The difference in noise levels between the WHO assessment requirements and the EPA NSW requirements could easily be 5 dB to 10 dB, dependent on the meteorological conditions, the activities on site, and the location of the receiver. Given the differences in assessment requirements, the noise criteria should not be compared directly.

The $L_{night,outside}$ is also based on an outside to inside conversion of 21 dB, with a window slightly open. The window inside to outside conversion is an area of variation. In Australia, a difference of 10 dB is often used for open windows, but slightly open windows have been shown to be approximately 15 dB.

Environmental Noise Guideline for Europe provides guidance and recommendations for transport infrastructure, but not industry noise. The Night Noise Guideline is more applicable for industry. It develops the following recommendations, which are also referenced on the Environmental Noise Guideline for Europe:

- Night noise guideline (NNG) $L_{night,outside} = 40$ dB
- Interim target (IT) $L_{night,outside} = 55$ dB

The interim target is important, as the report identifies that in Switzerland (the only country that reports night-time noise levels), approximately 25% of the country achieves $L_{night,outside}$ of 40 – 45 dB, with the remainder of the country greater than 45 dB. It is unlikely that the majority of Europe is able to achieve the WHO's NNG.

A significant amount of work is required to establish applicable legislation in Australia. An approach to assess noise impacts and meteorological conditions over an entire year needs to be agreed upon, and the outside to inside correction needs to be reviewed with an extensive study into common window types used in Australia.

A detailed review would also need to consider if the findings of the reference studies are applicable to Australia. A significant amount of work has been undertaken in New Zealand to consider the social health cost of noise which included the consideration of health impacts specific to New Zealand. A similar study is needed to confirm if NSW has different societal and environmental circumstances which may make the criteria more or less stringent.

Finally a study would also need to be undertaken to confirm if the targets are achievable and if an interim target would be appropriate for NSW, similar to what is used in Europe. Given the intention is to reduce this target over time, a plan on an appropriate time scale and specifics on how this could be achieved should also be included.

Regardless of the WHO guideline updates, the project SEARs specifically requires an assessment *in accordance with the relevant Environment Protection Authority guidelines and Australian Standards*. While the NPfI references the WHO guidelines, the NPfI must be followed as it is written.

Uncertainty such as this has occurred previously. In NSW vibration is required to be assessed against the EPAs Assessing vibration: a technical guideline. The standard references BS6472:1992. This document has been superseded by the 2018 version, which includes updated frequency weighting. During the design of the Sydney Metro, Transport for New South Wales formally requested confirmation from the EPA if the 1992 or 2018 version of the standard should be referenced. The EPA confirmed that the assessment must be undertaken in accordance with the standard as it is written, including the 1992 version of the standard.

3.7 Aircraft noise

The Bayside Local Environment Plan 2021 provides guidance on suitable developments that are proposed within aircraft noise affected areas. Clause 6.8 states:

2. The objectives of this clause are as follows—
 - a. to prevent certain noise sensitive developments from being located near the Sydney (Kingsford-Smith) Airport and its flight paths,
 - b. to assist in minimising the impact of aircraft noise from the airport and its flight paths by requiring appropriate noise attenuation measures in noise sensitive buildings,
 - c. to ensure that development in the vicinity of that airport does not hinder or have any other adverse impact on the ongoing, safe and efficient operation of the airport.
3. This clause applies to development—
 - a. on land—
 - i. near the Sydney (Kingsford-Smith) Airport, and
 - ii. in an ANEF contour of 20 or greater, and
 - b. the consent authority considers is likely to be adversely affected by aircraft noise.
4. In deciding whether to grant development consent to development to which this clause applies, the consent authority—
 - a. must consider whether the development will result in an increase in the number of dwellings or people affected by aircraft noise, and
 - b. must consider the location of the development in relation to the criteria set out in Table 2.1 (Building Site Acceptability Based on ANEF Zones) in AS 2021—2015, and
 - c. must be satisfied the development will meet the indoor design sound levels shown in Table 3.3 (Indoor Design Sound Levels for Determination of Aircraft Noise Reduction) in AS 2021:2015 for development for the following purposes—
 - i. for development proposed to be located in an ANEF contour of 20 or greater—child care centres, educational establishments, entertainment facilities, hospitals, places of public worship, public administration buildings or residential accommodation,
 - ii. for development proposed to be located in an ANEF contour of 25 or greater—business premises, hostels, hotel or motel accommodation, office premises or retail premises.

5. In this clause—

- a. ANEF contour means a noise exposure contour shown as an ANEF contour on the Noise Exposure Forecast Contour Map for the Sydney (Kingsford-Smith) Airport prepared by the Department of the Commonwealth responsible for airports.
- b. AS 2021:2015 means AS 2021:2015, Acoustics—Aircraft noise intrusion—Building siting and construction.

3.8 Noise intrusion

In relation to design internal noise levels, standard AS/NZS 2107:2016 recommends a range with lower and upper levels (rather than “satisfactory” and “maximum” internal noise levels) for building interiors based on room designation and location of the development relative to external noise sources. This change has occurred due to the fact that sound levels below ‘satisfactory’ could be interpreted as desirable, but the opposite may in fact be the case. Levels below those which were listed as ‘satisfactory’ can lead to inadequate acoustic masking resulting in loss of acoustic isolation and speech privacy.

The levels for areas relevant to this development are given in Table 19 below. In this report we will confine our recommendations to dBA levels, however, where the background noise appears to be unbalanced, standard AS/NZS 2107:2016 provides direction in terms of suitable diagnostic tools that can be used to assess the spectrum distribution of the background noise.

Section 6.18 of standard AS/NZ 2107:2016 notes that the presence of discrete frequencies or narrow band signals may cause the sound level to vary spatially within a particular area and be a source of distraction for occupants. Where this occurs, the sound level shall be determined as the highest level measured in the occupied location(s).

If tonal components are significant characteristics of the sound within a measurement time interval, an adjustment shall be applied for that time interval to the measured A-weighted sound pressure level to allow for the additional annoyance. If the background sounds include spectral imbalance, then the RC (Mark II) levels indicated in Table 19 should be referenced (see also Appendix D of AS/NZ 2107:2016 for additional guidance).

Table 19 Recommended design sound levels as per standard AS/NZS 2107:2016

Type of Occupancy/Activity	Design sound level range
Office buildings – general office area	40 to 45
Hotels and motels near major roads	35 to 40

4 CONSTRUCTION NOISE IMPACTS

Noise impacts from construction works associated with the project have been predicted in accordance with the requirements in the EPA's ICNG. A three-dimensional noise model was developed using SoundPLAN v9.1 using the ISO9613 noise propagation algorithm and the noise impacts modelled for each major construction scenario.

Presented below is a summary of the likely construction activities, equipment and associated sound power levels, and a summary of the predicted noise impacts from the works. An assessment has been completed of the typical worst-case noise impacts. Noise from the project is often likely to be lower than the noise levels presented in this assessment.

Specific developments and Stages are unknown at this early stage of the project. Detailed staged construction noise impact assessments would be developed for each individual staged SSDA for the project.

In the absence of the appointment of a construction contractor, a schedule identifying the duration and timing of construction works is not available at the time of writing this report. Further detail would be provided in the contractor's Construction Noise and Vibration Management Plan (CNVMP) which will be developed before construction is commenced.

4.1 Construction noise scenarios

Sound power levels have been predicted for the construction tasks identified in the project program. The sound power levels for the equipment likely to be used for each of the listed tasks are provided in Table 20 below.

Table 20 Summary of predicted sound power levels, dB(A)

Tasks	Equipment	Sound power levels (dBA re 1pW)	Aggregate per task (dBA re 1pW)
Demolition	Excavator	112	120
	Hydraulic Hammer	118	
	Handheld jack hammer	111	
	Truck and dog	104	
Excavation and shoring	Excavator	112	117
	Piling rig	110	
	Concrete pump	110	
	Concrete truck	108	
	Truck and dog	104	
Site servicing and infrastructure	Concrete pump truck	110	112
	Concrete agitator truck	108	
	Welder	101	
Parking area construction	Delivery truck	108	116
	Concrete saw ¹	114	
	Asphalt paver	105	

4.2 Assessment methodology

Calculations of the noise impacts have been undertaken in accordance with the ISO9613 noise propagation algorithm at the most affected sensitive receiver locations. ISO9613 includes consideration of downwind noise propagation. Receivers located further from the site would have lower noise levels from the proposed works.

The standard construction hours are generally restricted to:

- Monday to Friday 7am to 6pm
- Saturday 8am to 1pm
- Sunday/Public Holiday No work or ancillary activity

Night-time construction works are not envisaged to be required for this project.

Presented in Table 21 is a summary of the representative sensitive receivers which have been assessed for this project.

Noise contours for all surrounding receivers are also included in this assessment, presented in Appendix D.

Table 21 Sensitive receiver daytime construction noise management levels, dB(A)

ID	Address	NCA	Use	Construction noise management level	Highly noise affected level
R1	26 Levey Street	1	Residential	67	75
R2	Novotel Hotel	1	Hotel	67	75
R3	33 Levey Street	2	Residential	63	75
R4	26-32 Marsh Street	4	Residential	69	75
R5	43 Innesdale Road	4	Residential	69	75
R6	37 Innesdale Road	3	Residential	57	75
R7	24A Marsh Street	4	Residential	69	75
R8	16 Flora Street	3	Residential	57	75
R9	21 Flora Street	3	Residential	57	75
R10	32 Valda Avenue	4	Residential	69	75
R11	19 Valda Avenue	5	Residential	61	75
R12	7 Valda Avenue	5	Residential	61	75
R13	11 Eve Street	6	Residential	58	75
R14	15 Eve Street	7	Residential	53	75
R15	15 Brennans Road	7	Residential	53	75
R16	88 Mutch Avenue	8	Residential	59	75

4.3 Predicted construction noise impacts

An assessment of the likely construction noise impacts has been conducted using the ISO9613 noise propagation algorithm. The assessment has been based on the likely equipment which would be used during the proposed works as identified in Section 4.1.

Presented below in Table 22 is a summary of the worst-case predicted noise impacts. Noise contours are also presented in Appendix D.

Table 22 Construction noise impacts - demolition and site clearing, $L_{Aeq,15min}$ dB(A)

Receiver	Noise management level	Predicted level	Exceedance	Highly noise affected
R1 - Residential	67	75	8	No
R2 – Residential	67	72	5	No
R3 - Residential	63	65	2	No
R4 - Residential	69	71	2	No
R5 - Residential	69	69	-	No
R6 - Residential	57	65	8	No
R7 - Residential	69	70	1	No
R8 - Residential	57	61	4	No
R9 – Residential	57	60	3	No
R10 – Residential	69	65	-	No
R11 - Residential	61	62	1	No
R12 – Residential	61	60	-	No
R13 – Residential	58	55	-	No
R14 – Residential	53	57	4	No
R15 – Residential	53	55	2	No
R16 – Residential	59	53	-	No

Table 23 Construction noise impacts – excavation and shoring, $L_{Aeq,15min}$ dB(A)

Receiver	Noise management level	Predicted level	Exceedance	Highly noise affected
R1 - Residential	67	72	5	No
R2 – Residential	67	69	2	No
R3 - Residential	63	62	-	No
R4 - Residential	69	68	-	No
R5 - Residential	69	66	-	No

Receiver	Noise management level	Predicted level	Exceedance	Highly noise affected
R6 - Residential	57	62	5	No
R7 - Residential	69	67	-	No
R8 - Residential	57	58	1	No
R9 – Residential	57	57	-	No
R10 – Residential	69	62	-	No
R11 - Residential	61	59	-	No
R12 – Residential	61	57	-	No
R13 – Residential	58	52	-	No
R14 – Residential	53	54	1	No
R15 – Residential	53	52	-	No
R16 – Residential	59	50	-	No

Table 24 Construction noise impacts – site servicing and infrastructure, $L_{Aeq,15min}$ dB(A)

Receiver	Noise management level	Predicted level	Exceedance	Highly noise affected
R1 - Residential	67	67	-	No
R2 – Residential	67	64	-	No
R3 - Residential	63	57	-	No
R4 - Residential	69	63	-	No
R5 - Residential	69	61	-	No
R6 - Residential	57	57	-	No
R7 - Residential	69	62	-	No
R8 - Residential	57	53	-	No
R9 – Residential	57	52	-	No
R10 – Residential	69	57	-	No
R11 - Residential	61	54	-	No
R12 – Residential	61	52	-	No
R13 – Residential	58	47	-	No
R14 – Residential	53	49	-	No
R15 – Residential	53	47	-	No
R16 – Residential	59	45	-	No

Table 25 Construction noise impacts – parking area construction, $L_{Aeq,15min}$ dB(A)

Receiver	Noise management level	Predicted level	Exceedance	Highly noise affected
R1 - Residential	67	75	8	No
R2 – Residential	67	72	5	No
R3 - Residential	63	65	2	No
R4 - Residential	69	71	2	No
R5 - Residential	69	69	-	No
R6 - Residential	57	65	8	No
R7 - Residential	69	70	1	No
R8 - Residential	57	61	4	No
R9 – Residential	57	60	3	No
R10 – Residential	69	65	-	No
R11 - Residential	61	62	1	No
R12 – Residential	61	60	-	No
R13 – Residential	58	55	-	No
R14 – Residential	53	57	4	No
R15 – Residential	53	55	2	No
R16 – Residential	59	53	-	No

The predicted construction noise impacts provided above represent the worst-case noise impacts from the proposed construction. The majority of the time, noise from the site would be appreciably lower than these predicted noise levels.

While exceedances of up to 8 dB have been predicted, no sensitive receivers have been identified to be highly noise affected by the works.

Provided in Section 6.1 is a summary of recommended management and mitigation measures which should be followed to reduce the impacts on the local community.

4.4 Out of hours work

Out of hours work are currently not proposed as part of this project. However, out of hours works may be required under the following limited circumstances:

- Works which are determined to comply with the relevant Noise Management Level (NML) at the most affected sensitive receiver,
- The delivery of materials as required by the Police or other authorities for safety reasons,
- Where it is required to avoid the loss of lives, property and/or to prevent environmental harm in an emergency; or
- Where agreement is reached with affected receivers work may also be undertaken where explicitly approved through an Environment Protection Licence.

4.5 Construction traffic noise assessment

The estimated truck arrivals are:

- **Typical day** – 30 to 40 trucks per day and 5 trucks per hour
- **Peak day** – 100 trucks per day and 10 trucks per hour

These movements are significantly lower than the current vehicle movements on Marsh Street. In 2025 the AADT was 53,574, with 5% heavy vehicles. In a peak day, noise levels would increase by 0.1 dB a day. The noise environment would not change because of the additional trucks from this project.

4.6 Construction vibration assessment

To maintain compliance with the human comfort vibration criteria identified in Section 3.3, it is recommended that the indicative safe distances listed in Table 26 should be maintained. These indicative safe distances should be validated prior to the start of construction works by undertaking operator-attended measurements of vibration levels generated by construction equipment to be used on site.

If applicable, the criteria for scientific or medical equipment (should any of these exist close to the site) can be more stringent than those required for human comfort. Vibration validating measurements should be conducted at each site to determine the vibration level and potential impact onto this sensitive equipment.

Recommended safe working distances for various typical items of plant are included in the following table.

Table 26 Recommended indicative safe working distances for vibration intensive plant

Plant	Rating / Description	Safe Working Distances (m)	
		Cosmetic Damage	Human Comfort (AVTG)
Vibratory roller	< 50 kN (Typically 1 – 2 tonnes)	5	15 – 20
	< 100 kN (Typically 2 – 4 tonnes)	6	20
Small hydraulic hammer	300 kg, typically 5 – 12 tonnes excavator	2	7
Medium hydraulic hammer	900 kg, typically 12 – 18 tonnes excavator	7	23
Large hydraulic hammer	1600 kg, typically 18 – 34 tonnes excavator	22	73
Vibratory pile driver	Sheet piles	2 – 20	20
Jackhammer	Hand held	1	Avoid contact with structure and steel reinforcements

An assessment of the potential for vibration generated as part of the required construction activities on the project (including excavation) has been undertaken based on the expected vibration detailed in the table above.

Dependant on the location of the vibration intensive work and size of the equipment, exceedances of the vibration safe working distances are possible at nearby industrial receivers. Residential receivers are very unlikely to exceed the project vibration criteria.

Presented below in Figure 12 are the modelled vibration impacts of the highest generating equipment from the proposed construction works. The works are not expected to have an adverse impact on sensitive uses surrounding the site.

Generally, exceedances of the cosmetic damage vibration criteria for industrial receivers are unusual, however exceedances of the human comfort criteria can occur. Vibration management measures are discussed further in Section 6.1 to manage vibration impacts for nearby industrial receivers.

Figure 12 Vibration impacts



5 OPERATIONAL NOISE IMPACTS

5.1 Modelling methodology

Site operational noise emissions have been calculated using the CONCAWE algorithm. The CONCAWE algorithm has been selected to ensure that noise enhancing weather conditions including temperature inversions and downwind conditions have been appropriately considered in the noise assessment.

The meteorological assessment presented in Section 2.9 has identified that adverse weather conditions are a feature of the area. Accordingly, adverse weather conditions have been considered in this assessment. The following weather conditions have been included in the assessment, in accordance with the requirements of the NPfI.

Standard meteorological conditions:

- 0.5 m/s wind speeds; and
- Stability category D.

This is equivalent to CONCAWE Meteorological Category 4

Daytime and evening noise enhancing properties:

- 3 m/s wind speeds; and
- Stability category D.

This is equivalent to CONCAWE Meteorological Category 5

Night-time noise enhancing properties:

- 2 m/s wind speeds; and
- Stability category F.

This is equivalent to CONCAWE Meteorological Category 6 (the highest category)

5.2 Source noise levels

Presented in Table 27 are the sound power levels (SWL) used for this assessment. The SWL represents a single movement and corrected for the number of vehicles movements in a 15-minute period. All vehicles have been assessed travelling at 15 km/h.

Noise source levels presented in this report are noise on measurements undertaken by PWNA in accordance with AS1055:2018 Acoustics - Description and measurement of environmental noise. Noise measurements were undertaken with a Class 1 sound level meter, as defined by AS IEC 61672.1. The sound level meter has current NATA calibration certification and field checks were completed before and after the noise measurements. The field checks were within 0.5 dB of the calibration levels and meet all requirements of AS1055:2018 and AS IEC 61672.1.

Noise measurements were completed more than 3.5 m from reflecting structures, as defined in part 6.2.2 of AS1055:2018. Meteorological conditions met the requirements of Section 6.3.1 of AS1055:2018. The measured noise levels have been converted to Sound Power Levels in accordance with the Transportation Noise Reference Book p2/8 and Bies, D., Hansen, C., Engineering Noise Control, 3rd Edition, p188-192.

Datacentre noise sources have been based on PWNAs extensive involvement with datacentres throughout New South Wales and Victoria. Source noise levels have been based on slightly conservative chiller and cooling towers sizing based on the proposed data centre. Reduced noise levels have been applied for the night-time period to

account for lower loads during the cooler night-time periods. These sources would be reviewed and confirmed for the datacentre specific SSDA, should it proceed to that level.

5.2.1 Internal heavy vehicle movements

Heavy vehicle movements within the multi-level industrial facility were characterised as low-speed internal manoeuvring movements rather than free-flow public-road traffic. The assessed fleet was taken to comprise the types of vehicles ordinarily associated with modern logistics premises, including rigid trucks and articulated heavy vehicles such as prime mover and semi-trailer combinations, together with any larger articulated combinations permitted by the site access arrangements. This approach was consistent with Austroads design guidance, which treats long vehicles as low-speed design vehicles for turning-path purposes and provides turning templates for single-unit trucks and prime mover / semi-trailer combinations over manoeuvring speed ranges from about 5 km/h up to 30 km/h, depending on turning radius and site geometry.

Within that operating context, the acoustically relevant heavy vehicle states were taken to include: entry and exit movements at controlled site speeds; deceleration and low-speed cornering on approach to ramps and dock areas; ascent and descent of internal ramps between levels; queueing and short-term idling at control points or loading areas; and departure from a stopped or near-stopped condition. The operational profile within a multi-level logistics building is materially different from conventional at-grade industrial traffic because vehicles spend a greater proportion of time in low gear, under positive throttle, and on vertical grade changes, particularly on upward ramp movements. For long vehicles, low-speed swept-path behaviour and the constrained geometry of internal ramps and turning areas reinforce the expectation that speeds remain controlled and that acceleration occurs progressively over short distances rather than as sustained high-speed running.

For acoustic prediction purposes, the worst-case propulsion noise condition was taken to be a heavy vehicle ascending an internal ramp under load, particularly where the vehicle accelerated from a rolling or near-stationary condition at the base of the ramp. That operating state was considered the most appropriate conservative case because ramp ascent combines low vehicle speed with elevated engine torque demand, higher driveline load and, where relevant, gear-shift transients. By comparison, level internal travel at constant speed was assessed as a less onerous case, while descending movements were generally associated with lower propulsion demand, albeit with the potential for intermittent brake application. The assessment therefore treated loaded uphill ramp movements, especially immediately following turns, merges or short queue release points, as the controlling acoustic proxy for heavy vehicle traffic inside the building. Where the precise freight task was not yet fixed, the adopted prediction basis assumed the maximum credible vehicle class and the maximum credible ramp-loading condition likely to occur in normal operation so as not to understate the source strength.

The duration of individual internal heavy vehicle events was also recognised as an important part of the operational character. Individual pass-bys within the structure were short in duration; however, the internal traffic pattern typically involved a sequence of approach, cornering, ramp ascent or descent, and final manoeuvring to dock or staging areas. As a result, the relevant noise exposure was not represented simply by a single instantaneous pass-by, but by a series of short-duration propulsion and manoeuvring events distributed across the internal circulation path. For equivalent continuous noise level assessment, this was appropriately represented by the cumulative number of vehicle movements over the relevant assessment period, with particular regard to the busiest 15-minute period in each assessable time period. For maximum noise level screening, the controlling event was appropriately taken as the closest and most heavily loaded ramp or manoeuvring movement, rather than an average internal travel condition.

This approach was considered appropriate for a multi-level logistics development because it aligned the acoustic assumptions with the way heavy vehicles would realistically operate inside the building: slowly, under geometry and safety constraints, with intermittent acceleration and elevated engine load on ramps. At the same time, the adopted operating envelope remained conservative by assuming that the noisiest normal movement was a heavily loaded vehicle on an ascending ramp, rather than relying on average-speed or lightly loaded travel conditions. On

that basis, the heavy vehicle assessment represented a credible and suitably conservative worst-case prediction of internal logistics traffic noise for the facility.

Measured noise levels undertaken by PWNA are presented in Appendix C, however the best reference is presented in *Assessment Programme for Parameters of the "general" European vehicle fleet* (reference IMA52TR-060111-MP10 - WP5), a deliverable of the IMAGINE project. This study included putting prime movers on a dyno in a semi anechoic chamber and measuring the sound power of the truck under various operating conditions. The study found that the SWL increases with speed, and relatively low SWLs (about 101 dB(A)) are expected for trucks under load below 20km/h (measured with a 95% confidence interval) with no gradient. When gradients are increase to 10%, the measured SWL increases to 107 dB(A). In NSW a SWL of around 107 dB(A) is currently being used for at-grade noise measurements. PWNA have completed detailed measurements that align with the noise levels presented in this paper. However, given the expectation of SSDAs in NSW, significantly higher bounding operational noise levels have been modelled to illustrate that under worst-case conditions, compliance with the sites NMLs can be achieved.

Noise measurement data undertaken by PWNA is presented in Appendix C

5.2.2 Datacentre mechanical plant noise levels

The operational noise assessment adopts a traceable and reproducible source-data framework for the chillers, cooling towers, generators and associated mechanical plant. A detailed plant noise schedule is provided identifying, for each major item of plant, the adopted overall and octave-band sound power levels, the operating duty assumed in the assessment, and the source of the acoustic data. Source references comprise manufacturer data sheets, supplier acoustic schedules, test certificates, acoustic test reports, or other traceable proprietary information, as available. This approach ensures that the acoustic source inputs used in the model are transparent, technically supportable and capable of verification during detailed design, equipment selection and procurement.

For chillers and cooling towers, the adopted source sound power levels are based, where available, on manufacturer or supplier sound ratings developed in accordance with recognised industry sound-rating methods. AHRI publishes dedicated sound-rating standards for chillers and large outdoor air-conditioning equipment, while CTI identifies ATC-128 as the recognised industry method for published cooling tower sound data. Where project-specific equipment selections are not yet finalised, the adopted source terms are based on representative proprietary equipment of equivalent duty and capacity, using traceable manufacturer or certified acoustic data and conservative assumptions where necessary. This provides a reasonable and industry-consistent basis for plant noise modelling at the current stage of design.

For generators and other associated mechanical plant, the adopted sound power levels are similarly based on traceable supplier, manufacturer or published acoustic information, including acoustic test data where available. In general, sound power data for industrial equipment is commonly derived using standardised sound-power measurement methods such as the ISO 3740 series, including ISO 3744 for engineering-grade determination of sound power levels in a free field over a reflecting plane. Where direct certified sound power data is not available for a specific ancillary item, a conservative proxy source is adopted from comparable equipment with equivalent or greater duty, and the basis for that adoption is identified in the assessment.

The night-time assessment does not rely on unsupported reductions in mechanical plant sound power. Reduced night-time source levels are only adopted where there is a demonstrated technical basis to do so, such as variable-speed operation, reduced condenser load, lower fan speed, staged operation, reduced coincident duty, or other operating characteristics supported by the plant control philosophy, supplier performance data or the nominated design operating envelope. In the absence of such evidence, the same full-duty sound power level is adopted for both daytime and night-time operation, or the highest credible operating sound power level is used as the controlling night-time case. This ensures that the night-time assessment reflects a credible worst-case condition rather than an assumed or aspirational reduced-load scenario.

The assessment is therefore based on a defined operational noise envelope representing the maximum credible plant operation for each assessment period. For fixed-speed or non-modulating plant, the full-load sound power level is adopted unless a lower operating state is specifically supported by traceable supplier or control-system information. For variable-duty plant, any reduction in night-time noise emissions is limited to those items for which the reduced operating state is directly supported by acoustic or operational data. Where such evidence is unavailable, no night-time acoustic credit is taken. This approach is intentionally conservative and ensures that compliance with the project noise trigger levels does not depend on unverified assumptions regarding future plant performance or operating practice.

The assessment also establishes the basis for ongoing consistency between the modelled plant performance and the final installed systems. This includes selection of equipment that does not exceed the nominated sound power levels adopted in the assessment, incorporation of any required attenuation or screening measures into the project design, and implementation of operational controls where reduced night-time source levels are relied upon. Where a lower night-time sound power level forms part of the assessment, that lower level is only considered applicable where the corresponding operating mode is inherent to the selected equipment and plant control logic. In this way, the acoustic assessment is tied to a clear plant performance envelope rather than to unsubstantiated notional reductions in output.

On that basis, the operational noise assessment adopts a transparent and traceable source-data methodology for all principal mechanical plant and applies a conservative framework to night-time plant operation. The assessment therefore provides an appropriate basis for prediction of operational noise impacts and does not rely on unsupported assumptions regarding reduced sound power emissions during night-time periods.

5.2.3 Generator noise levels

Standby power for the data centre would be provided by multiple diesel generator sets arranged on a common emergency bus, with the plant capable of automatic start, synchronisation, paralleling and load sharing. Consistent with critical-power design practice, during emergency operation more than one generator may operate concurrently during utility outage conditions.

Standby power generation for the facility was assessed by distinguishing between planned generator testing, which forms part of the routine operational regime of the development, and emergency generator operation, which represents an abnormal contingency condition associated with loss of utility supply or other unplanned electrical events. This distinction is consistent with the NSW Noise Policy for Industry (NPfI) framework, which derives project noise trigger levels for the assessment periods within which a development is proposed to operate, and which requires noise from the proposed premises to be predicted and compared against the relevant trigger levels for those operating periods.

For the purposes of the operational noise assessment, routine and planned generator testing was treated as the relevant assessable operating mode under the NPfI. This included the scheduled exercise and maintenance testing of the standby generators, including any coincident operation of multiple units where required for routine testing, synchronisation checks or maintenance of the electrical system. As these activities are planned components of the facility's normal operational regime, they were assessed against the applicable NPfI project noise trigger levels for the relevant time period and, where relevant, against the night-time maximum noise level event screening levels in Section 2.5 of the NPfI. Testing would only occur during standard daytime hours.

By contrast, emergency generator operation was treated separately from the routine compliance assessment. Emergency operation represents an infrequent, abnormal contingency scenario in which the standby power system operates to maintain life safety, critical services and business continuity during a loss of mains power or equivalent supply failure. That scenario was predicted in the assessment so that the potential external noise consequences of generator operation under outage conditions were transparently understood; however, it was not treated as the normal or planned operational mode against which routine compliance with the NPfI project noise trigger levels

was assessed. This reflects the fact that emergency operation is not part of the standard scheduled operating profile of the development, but rather a contingency response to unplanned external events. The NPfI itself is a framework for deriving project noise trigger levels and operational requirements, and also notes that where there is inconsistency with a consent, approval or licence, the relevant statutory instrument prevails.

Accordingly, the acoustic assessment was framed around a credible routine testing envelope for compliance purposes, and a separate emergency operating scenario for disclosure and impact characterisation. The compliance case under the NPfI therefore related to the maximum credible planned testing regime, including the number of generators that may operate concurrently during scheduled exercise, the representative test duration, the relevant loading condition, and any associated synchronisation or cool-down phases that form part of the planned event. Emergency operation was then considered separately as an outage-response case to identify the likely noise environment during that condition, without presenting it as the routine compliance benchmark under the NPfI.

On that basis, the generator assessment addressed both relevant aspects of standby plant operation. First, it demonstrated that the planned testing regime was assessed against the applicable NPfI operational noise framework, including project noise trigger levels and, where relevant, night-time maximum noise level event screening. Secondly, it described and predicted emergency operation as a separate contingency condition so that its potential acoustic consequences were understood, while recognising that this mode is distinct from the planned operating regime used for routine operational compliance assessment. Any different requirement imposed by a future condition of consent, approval or licence would prevail over this general assessment framework.

5.2.4 Data hall breakout noise

The potential for data hall breakout noise was considered with reference to the internal source environment, the reverberant characteristics of the enclosed space, the construction of the data hall envelope and the presence of any façade penetrations. Consistent with standard building-acoustics principles, noise breakout from an internal source is governed by the indoor sound field and the transmission characteristics of the enclosing roof, walls and openings, rather than by the indoor sound level in isolation. In this case, the data halls were enclosed by the building envelope and any internally generated noise was therefore subject to transmission loss through the concrete structure and air filtration systems before reaching the external environment. The noise propagation path through the air filtration systems was found to provide significant attenuation with indiscernible noise breakout outside the building.

By contrast, the principal rooftop mechanical plant radiated directly externally and was not attenuated by the building envelope. The assessment therefore identified rooftop plant as the acoustically controlling source. Any breakout from the data halls was assessed as a secondary source path and was identified not to materially influence the external operational noise environment at surrounding sensitive receivers.

5.2.5 Modelled source levels

Bounding operational noise source levels which have been included in this assessment are presented below in Table 27. Reference noise levels have been presented in Appendix C. Note that this project is in Masterplan and capacity requirements have not been calculated. The equipment will change throughout the project.

The noise levels presented below are greater than those presented in Appendix C as they are bounding operational assumptions. Given the early stage of the project it is not possible to confirm specific equipment, so a reasonable worst case noise level has been assumed. These assumptions would be refined at the development specific SSDA.

Table 27 Single event source noise levels, dB L_{eq} SWL

Source	L _{Aeq}	L _{AFmax}
Logistic sources		
Light vehicle	75	90
Heavy vehicle	106	112
Heavy vehicle on ramps	111	118
Gas forklift operations	94	97
Reversing beeper ¹	95	106
AC condenser units	80	82
Inside operations	80	85
Datacentre sources		
Chiller	95	98
Chiller night-time	85	88
Cooling tower	91	94
Cooling tower night-time	81	84
Generator	109	111

Note 1 A +5dB correction has been added to the level presented here to account for the tonal nature of reversing beepers.

The site is likely to have additional noise sources such as mechanical plant associated with air-conditioning. Given the project is still in the planning stages, actual equipment selections are not available. However, locations for mechanical plant have been outlined in the site plans and are located on the southern and eastern sides of the building, away from sensitive receivers.

Once the proposed locations of major plant and the controls become available, all mechanical plant and equipment will be designed to comply with the relevant noise emissions requirements. Experience with similar projects indicates that it is both possible and practical to achieve compliance by using typical building services attenuation such as internally lined ductwork, acoustic screening, and/or silencers. Final details of the nature of these attenuation measures would be confirmed in detailed design process when plant requirements and selections are available.

5.3 Annoying characteristics of noise

The NPfI requires annoying characteristics of noise to be taken into consideration in the assessment of noise. Annoying characteristics include:

- Tonal noise – noise containing a prominent frequency and characterised by a defined pitch.
- Low frequency noise – where a source has a significant component of noise in the 10 Hz – 160 Hz range
- Intermittent noise – where the noise source at the receiver varies by more than 5 dB(A)

For the characteristics to be relevant, they must be assessed at the receiver location, so the propagation characteristics of noise and existing ambient noise level should be taken into consideration.

Of the noise sources identified in Table 27, the only source with the potential for annoying characteristics is the tonal reversing beeper. It is likely that once air absorption and barrier attenuation from the surrounding structures

are taken into consideration the high frequency content would attenuate sufficiently that it would be at or below existing ambient noise levels. However, to provide a conservative assessment a tonal correction has been applied to reversing beepers to illustrate that compliance is still achievable with corrections for annoying characteristics applied.

5.4 Sensitive receivers

Presented below is a summary of the sensitive receivers considered in this assessment. The receivers have been chosen by identifying the most affected receiver surrounding the site. The most affected receiver is not just the nearest with the highest noise levels, but the receiver impacts when compared to the PSNTLs. So areas with lower PSNTLs have the potential to have a greater noise impact than receivers which are directly adjacent to the site.

Many of the receivers listed here have more than one floor. For each of these receivers all floors were assessed and for the sake of brevity the most affected floor has been reported.

The highest amount of noise generated is from the lowest floors. This occurs because all trucks accessing Floors 1 to 5 need to access the lower ramp, however only a single floor of vehicles access Floor 5. The modelling identifies for nearby sensitive receivers the greatest impacts is driven by the lower ramps, however for most sensitive receivers on the north side of Marsh Street the most affected floor is the highest (i.e. top floor). This occurs because the top floor of the warehouses are open and provide the least shielding.

Presented below in Table 28 is a summary of the assessed sensitive receivers, and the applicable Project Specific Noise Trigger Levels (PSNTLs, see Section 3.4.8 for further details). The DPHI has requested that the results for all floors be included, rather than the most affected floor.

Table 28 Sensitive receivers PSNTLs

ID	Address	Floors	NCA	Use	L _{Aeq,15min}				L _{AFmax}
					Shoulder	Daytime	Evening	Night-time	Sleep
1	26 Levey Street	13	NCA1	Residential	58	58	48	43	68
2	Novotel Hotel	9	NCA1	Hotel	63	63	53	48	68
3	33 Levey Street	15	NCA2	Residential	53	58	48	43	58
4	26-32 Marsh Street	9	NCA4	Residential	60	60	59	51	61
5	43 Innesdale Road	1	NCA4	Residential	58	58	54	51	61
6	37 Innesdale Road	1	NCA3	Residential	49	52	48	43	55
7	24A Marsh Street	1	NCA4	Residential	58	58	54	51	61
8	16 Flora Street	1	NCA3	Residential	49	52	48	43	55
9	32 Valda Avenue	1	NCA3	Residential	49	52	48	43	55

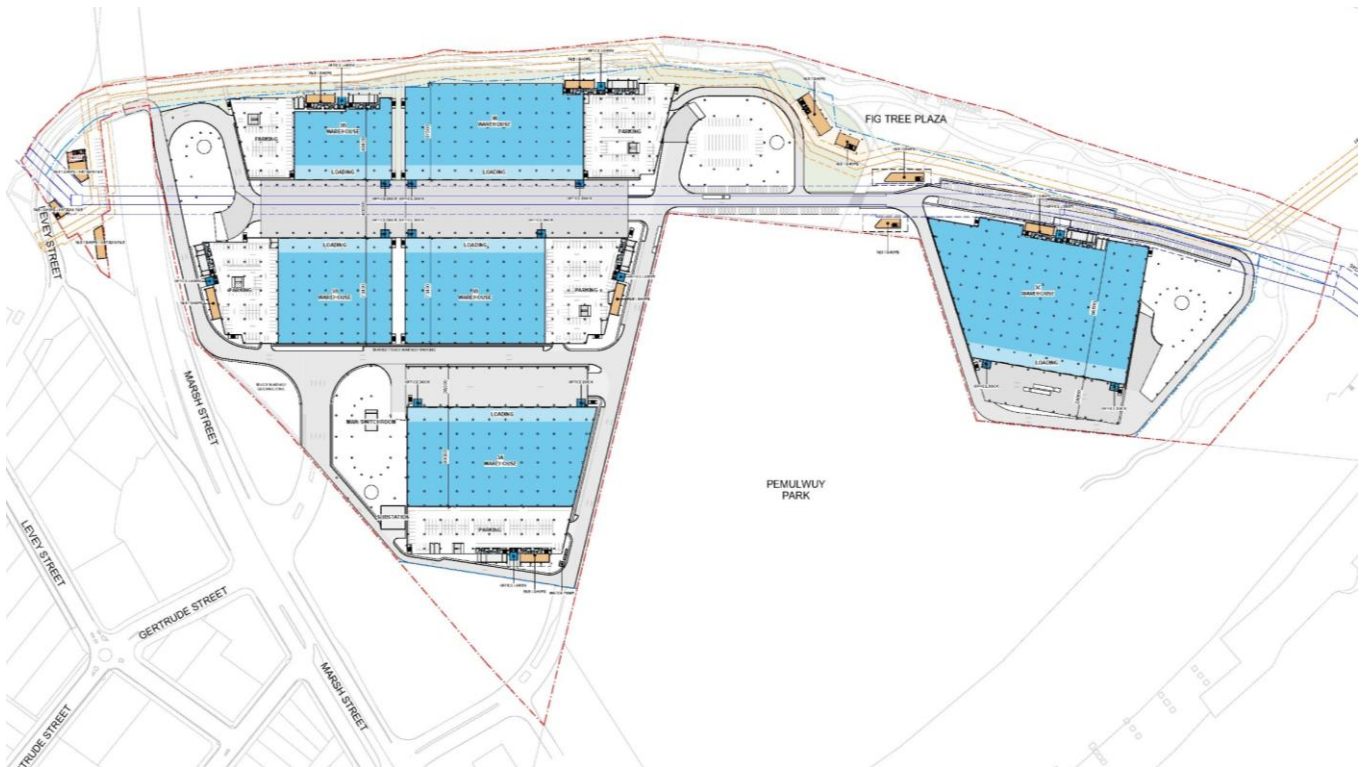
ID	Address	Floors	NCA	Use	L _{Aeq,15min}				L _{AFmax}
					Shoulder	Daytime	Evening	Night-time	Sleep
10	19 Valda Avenue	1	NCA4	Residential	58	58	54	51	61
11	7 Valda Avenue	1	NCA5	Residential	55	56	48	43	56
12	11 Eve Street	1	NCA5	Residential	55	56	48	43	56
13	15 Eve Street	1	NCA6	Residential	51	53	43	38	56
14	15 Brennans Road	1	NCA7	Residential	48	48	43	38	53
15	21 Flora Street	1	NCA7	Residential	48	48	43	38	53
16	88 Mutch Avenue	1	NCA8	Residential	50	53	43	38	52

5.5 Operational site noise emissions

5.5.1 Scenario one - Logistics only

The logistics only layout provides six floors of four separate warehouses. Warehouses on the ground floor are smaller than the higher floors to provide additional parking. Circular ramps provide vehicular access to the upper floors. The ground floor layout is presented below in Figure 13.

Figure 13 Logistics only layout



Presented below in Table 29 are the sites expected hourly traffic volumes which have been provided by the traffic engineer, JMT Consulting, to be assessed for this development.

Table 29 Logistics scenario hourly traffic volumes

Hour commencing	Light vehicles	Heavy vehicles	Total
12:00 AM	49	2	51
1:00 AM	26	2	28
2:00 AM	21	2	23
3:00 AM	24	2	26
4:00 AM	78	7	85
5:00 AM	260	50	310
6:00 AM	491	94	585
7:00 AM	521	85	606

Hour commencing	Light vehicles	Heavy vehicles	Total
8:00 AM	549	86	635
9:00 AM	622	111	733
10:00 AM	496	113	609
11:00 AM	498	116	614
12:00 PM	545	118	663
1:00 PM	539	106	645
2:00 PM	636	126	762
3:00 PM	658	92	750
4:00 PM	602	75	677
5:00 PM	634	52	686
6:00 PM	541	38	579
7:00 PM	354	22	376
8:00 PM	288	16	304
9:00 PM	174	11	185
10:00 PM	59	5	64
11:00 PM	35	5	40

JMT have advised that for each assessed time period (morning shoulder, daytime, evening, and night-time), the volumes from the greatest hour in each period should be used and divided by four to provide a worst-case assessment.

Period traffic volumes have been distributed to each warehouse based on the warehouse GFA, as a percentage of the total warehouse space across the precinct.

Presented below in Table 30 is a summary of the predicted noise impacts with and without noise mitigation. For each receiver all floors have been assessed, with the floor with the highest noise (and potentially greatest exceedance) level being reported in the table here.

Initial noise modelling identified exceedances of the NPfI PSNTLs. Potential noise mitigation has been included in the design to mitigate noise impacts and achieve compliance. This mitigation has been included to illustrate that reasonable and feasible noise mitigation can be included in the design to achieve the PSNTLs. The specific details of the noise mitigation would be confirmed in the development specific SSDA. Further information on the indicative noise mitigation requirements, including drawings and specifications, are presented in Section 6.2.

The indicative noise mitigation for this scenario includes:

- Northern ramps from ground floor to the top floor are to be enclosed. The top floor includes a 4.5 m noise barrier on the ramp. This is required to achieve the sleep disturbance noise criteria.
- Southern ramps from ground floor to the top floor are to be enclosed. The top floor includes a 1.0 m noise barrier on the ramp.
- A 6 m noise barrier is required on the northern internal access road, adjacent to Marsh Street.

A maximum noise impact assessment has been undertaken in accordance with the requirement of the NPfI to determine the potential noise impact on sleep disturbance. Maximum noise levels are typically controlled by short term noise events such as reversing alarms, brake release noise, and truck engine noise.

A screening assessment has been undertaken to determine the potential likelihood of sleep disturbance events from the operations of the site during the night-time period. Presented below in Table 30 is a summary of the predicted L_{AFmax} noise levels. An exceedance of the screening criterion triggers the requirement to undertake a more detailed analysis of the likelihood of sleep disturbance noise impacts. Note that there is also an L_{Aeq} screening criterion. Compliance with the night-time L_{Aeq} noise impacts identifies that the L_{Aeq} screening criterion is also complied with.

Presented below is a summary of the predicted noise impacts. Floor by floor results, a requirement of DPHI, are presented in Appendix F.1.

Table 30 Scenario one noise impact summary

Period	No mitigation			Mitigation		
	Highest noise level	Greatest exceedance	Number of exceedances	Highest noise level	Greatest exceedance	Number of exceedances
Shoulder	61 dBA	3 dB	14	47 dBA	0 dB	0
Daytime	62 dBA	3 dB	15	48 dBA	0 dB	0
Evening	61 dBA	12 dB	39	47 dBA	0 dB	0
Night-time	52 dBA	9 dB	23	38 dBA	0 dB	0
Sleep disturbance	74 dBA	13 dB	56	63 dBA	0 dB	0

The results presented above indicate that without noise mitigation, the operations of the site would exceed the sites PSNTLs. Predicted noise levels with appropriate noise mitigation (discussed further in 6.2) would comply with the applicable PSNTLs.

The predicted noise levels also identify that with the inclusion of appropriate noise mitigation, the predicted maximum noise levels comply with the sites sleep disturbance screening noise criteria. The dominant source for all scenarios is related to heavy vehicle movements.

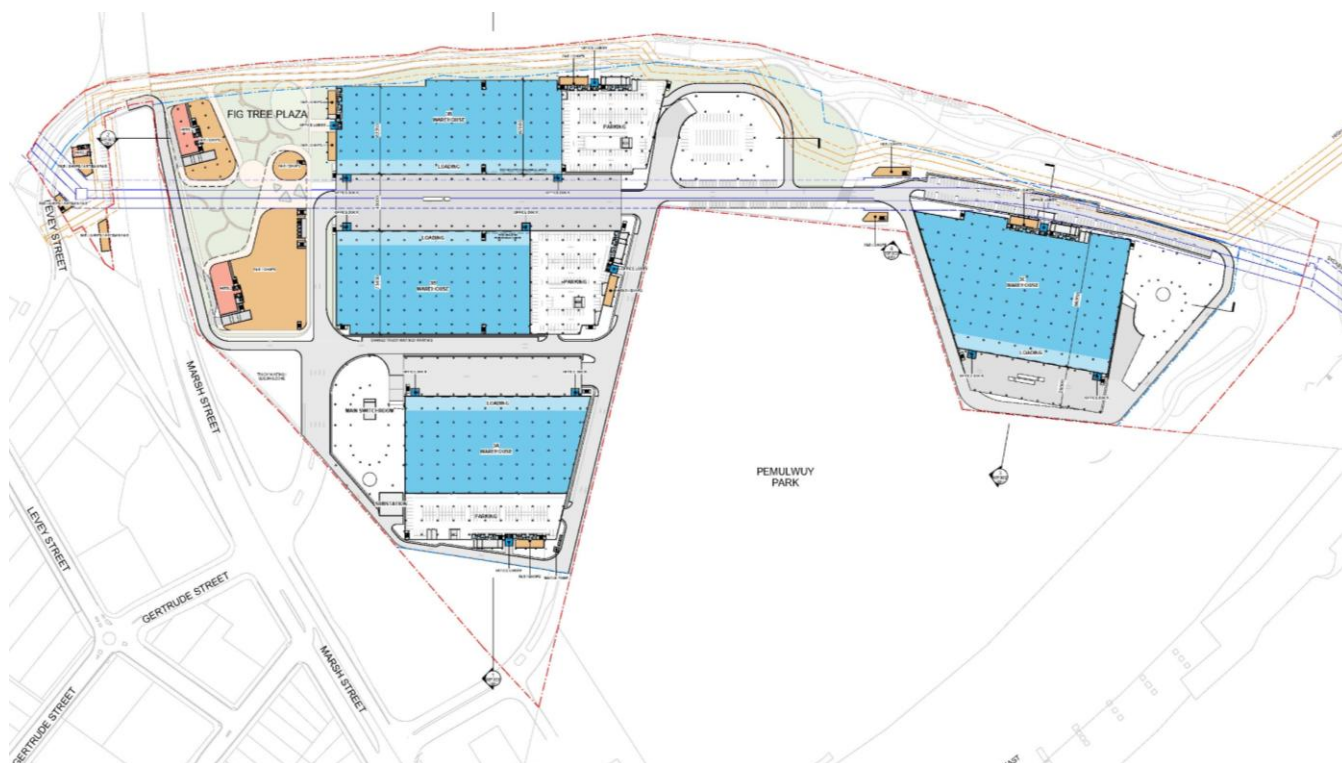
While further consideration of noise management and mitigation measures are not required to achieve compliance, recommendations are presented in Section 6.2 to reduce the potential impacts on the surrounding community.

5.5.2 Scenario two – Logistics and mixed-use

Scenario two is similar to scenario one, with the site predominantly comprised of six storey logistics warehousing. However, warehousing to the north of the site adjacent Marsh Street has been shrunk to accommodate retail and office space.

Removing the northern ramps of the warehousing also reduces noise emissions, while also providing some shielding to northern sensitive receivers. The layout of the site is presented below in Figure 14.

Figure 14 Scenario two layout



Presented below in Table 29 are the sites expected hourly traffic volumes which have been provided by the traffic engineer, JMT Consulting, to be assessed for this development.

Table 31 Scenario two hourly traffic volumes

Hour commencing	Light vehicles	Heavy vehicles	Total
12:00 AM	77	3	80
1:00 AM	51	3	54
2:00 AM	40	3	43
3:00 AM	25	2	27
4:00 AM	83	6	89
5:00 AM	244	43	287
6:00 AM	486	81	567
7:00 AM	735	80	815

Hour commencing	Light vehicles	Heavy vehicles	Total
8:00 AM	1100	83	1183
9:00 AM	852	102	954
10:00 AM	622	100	722
11:00 AM	520	102	622
12:00 PM	560	106	666
1:00 PM	632	96	728
2:00 PM	672	113	785
3:00 PM	874	87	961
4:00 PM	869	74	943
5:00 PM	1184	55	1239
6:00 PM	849	41	890
7:00 PM	568	25	593
8:00 PM	459	18	477
9:00 PM	294	12	306
10:00 PM	101	6	107
11:00 PM	56	5	61

JMT have advised that for each assessed time-period (morning shoulder, daytime, evening, and night-time), the volumes from the greatest hour in each period should be used and divided by four to provide a worst-case assessment.

Period traffic volumes have been distributed to each warehouse based on the warehouse GFA, as a percentage of the total warehouse space across the precinct.

Presented below in Table 32 is a summary of the predicted noise impacts with and without noise mitigation. For each receiver all floors have been assessed, with the floor with the highest noise (and potentially greatest exceedance) level being reported in the table here.

Initial noise modelling identified exceedances of the NPfI PSNTLs. Potential noise mitigation has been included in the design to mitigate noise impacts and achieve compliance. This mitigation has been included to illustrate that reasonable and feasible noise mitigation can be included in the design to achieve the PSNTLs. The specific details of the noise mitigation would be confirmed in the development specific SSDA. Further information on the indicative noise mitigation requirements, including drawings and specifications, are presented in Section 6.2.

The indicative noise mitigation for this scenario includes:

- Northern ramps from ground floor to the top floor are to be enclosed. The top floor includes a 4.5 m noise barrier on the ramp. This is required to achieve the sleep disturbance noise criteria.
- Southern ramps from ground floor to the top floor are to be enclosed. The top floor includes a 1.0 m noise barrier on the ramp.
- A 6 m noise barrier is required on the northern internal access road.

A maximum noise impact assessment has been undertaken in accordance with the requirement of the NPfI to determine the potential noise impact on sleep disturbance. Maximum noise levels are typically controlled by short term noise events such as reversing alarms, brake release noise, and truck engine noise.

A screening assessment has been undertaken to determine the potential likelihood of sleep disturbance events from the operations of the site during the night-time period. Presented below in Table 32 is a summary of the predicted L_{AFmax} noise levels. An exceedance of the screening criterion triggers the requirement to undertake a more detailed analysis of the likelihood of sleep disturbance noise impacts. Note that there is also an L_{Aeq} screening criterion. Compliance with the night-time L_{Aeq} noise impacts identifies that the L_{Aeq} screening criterion is also complied with.

Presented below is a summary of the predicted noise impacts. Floor by floor results, a requirement of DPHI, are presented in Appendix F.2.

Table 32 Scenario two noise impact summary

Period	No mitigation			Mitigation		
	Highest noise level	Greatest exceedance	Number of exceedances	Highest noise level	Greatest exceedance	Number of exceedances
Shoulder	61 dBA	4 dB	9	51 dBA	0 dB	0
Daytime	62 dBA	2 dB	16	52 dBA	0 dB	0
Evening	58 dBA	8 dB	27	48 dBA	0 dB	0
Night-time	50 dBA	5 dB	18	40 dBA	0 dB	0
Sleep disturbance	74 dBA	14 dB	56	61 dBA	0 dB	0

The results presented above indicate that without noise mitigation, the operations of the site would exceed the sites PSNTLs. Predicted noise levels with appropriate noise mitigation (discussed further in 6.2) would comply with the applicable PSNTLs.

The predicted noise levels also identify that with the inclusion of appropriate noise mitigation the predicted maximum noise levels comply with the sites sleep disturbance screening noise criteria. The dominant source for all scenarios is related to heavy vehicle movements.

While further consideration of noise management and mitigation measures are not required to achieve compliance, recommendations are presented in Section 6.2 to reduce the potential impacts on the surrounding community.

5.5.2.1 Impacts on other uses

Presented below is a summary of the likely noise impacts generated by the adjacent warehousing, and internal road network on the hotel and office use spaces. The predicted façade noise level assumes that the proposed mitigation measures considered above would be included in the design.

Table 33 Impacts on other uses

Address	Internal design requirement	Facade noise level	Glazing requirement Rw + Ctr	Indicative glazing
Eastern hotel north facade ¹	35	69	34	12.38 mm laminate
Eastern hotel south facade	35	51	16	6 mm float
Western hotel north facade ¹	35	68	33	10.38 mm laminate
Western hotel south facade	35	60	25	6 mm float
Office	40	66	26	6 mm float

Note 2 Northern facades are impacted by road traffic noise.

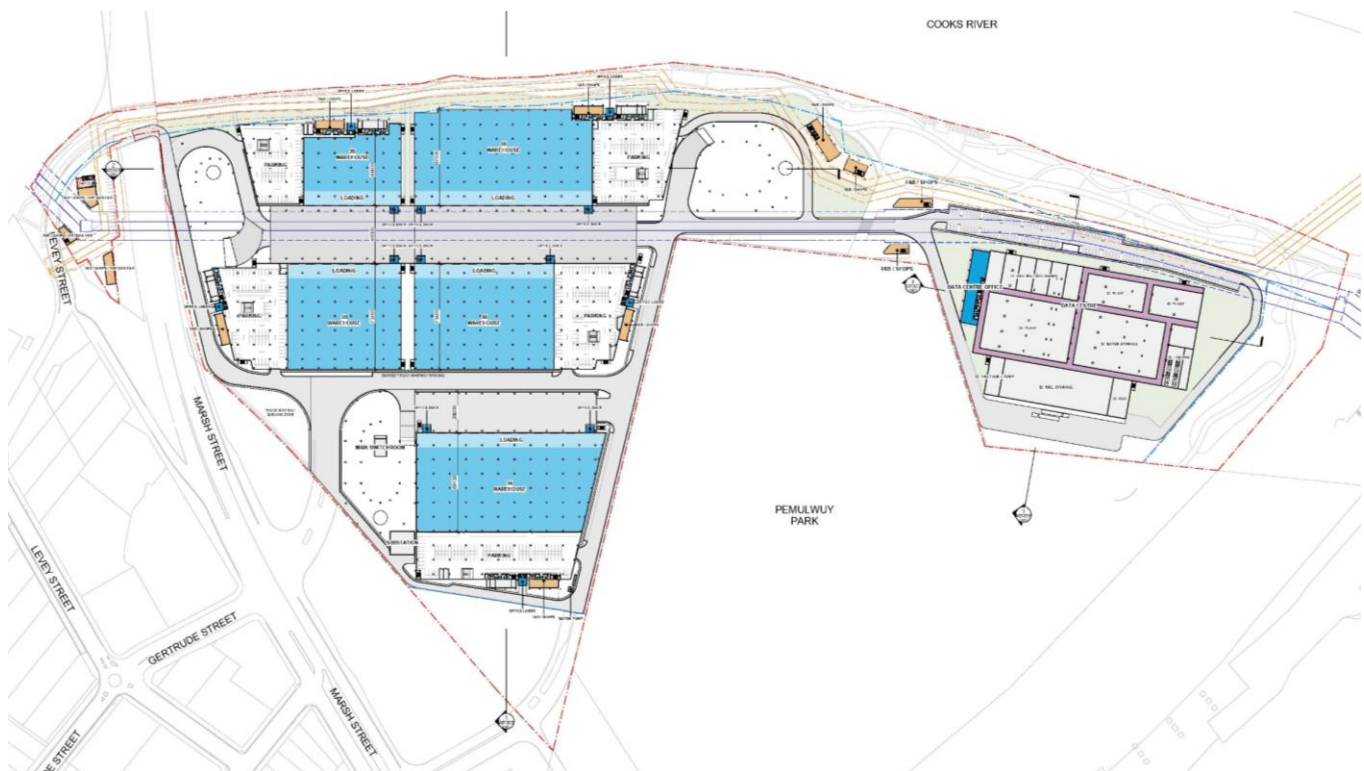
The facade noise levels and glazing requirements identify that appropriate internal noise levels can be achieved with standard glazing. These recommendations are indicative only and would be reviewed during the site specific SSDA and through the detailed design of the project.

5.5.3 Scenario three – Logistics and data centre

Scenario three is similar to Scenario one, with five storey logistics warehousing to the north of the site. However a 81 MW datacentre occupies the southern end of the site. The datacentre is comprised of nine data halls of around 9 MW each, over three typical levels. Generators are approximately 2.2 MW, with a total of 72 across four levels of Gantry. The roof contains cooling towers and chillers, with 2 cooling towers per chiller, with a total of 30 chillers and 60 cooling towers.

The layout of the site is presented below in Figure 15.

Figure 15 Scenario three layout



Presented below in Table 29 are the sites expected hourly traffic volumes which have been provided by the traffic engineer, JMT Consulting, to be assessed for this development.

Table 34 Scenario three hourly traffic volumes

Hour commencing	Light vehicles	Heavy vehicles	Total
12:00 AM	28	2	30
1:00 AM	17	2	19
2:00 AM	13	2	15
3:00 AM	19	2	21
4:00 AM	62	6	68
5:00 AM	211	41	252
6:00 AM	398	77	475

Hour commencing	Light vehicles	Heavy vehicles	Total
7:00 AM	457	70	527
8:00 AM	763	71	834
9:00 AM	471	91	562
10:00 AM	381	92	473
11:00 AM	303	94	397
12:00 PM	296	95	391
1:00 PM	345	87	432
2:00 PM	363	101	464
3:00 PM	516	73	589
4:00 PM	466	61	527
5:00 PM	702	43	745
6:00 PM	390	30	420
7:00 PM	241	18	259
8:00 PM	191	12	203
9:00 PM	111	9	120
10:00 PM	34	4	38
11:00 PM	23	4	27

JMT have advised that for each assessed time-period (morning shoulder, daytime, evening, and night-time), the volumes from the greatest hour in each period should be used and divided by four to provide a worst-case assessment.

Period traffic volumes have been distributed to each warehouse based on the warehouse GFA, as a percentage of the total warehouse space across the precinct.

Initial noise modelling identified exceedances of the NPfI PSNTLs. Potential noise mitigation has been included in the design to mitigate noise impacts and achieve compliance. This mitigation has been included to illustrate that reasonable and feasible noise mitigation can be included in the design to achieve the PSNTLs. The specific details of the noise mitigation would be confirmed in the development specific SSDA. Further information on the indicative noise mitigation requirements, including drawings and specifications, are presented in Section 6.2.

The indicative noise mitigation for this scenario includes:

- Northern ramps from ground floor to the top floor are to be enclosed. The top floor includes a 4.5 m noise barrier on the ramp. This is required to achieve the sleep disturbance noise criteria.
- Southern ramps from ground floor to the top floor are to be enclosed. The top floor includes a 1.0 m noise barrier on the ramp.
- A 6 m noise barrier is required on the northern internal access road, adjacent to Marsh Street.
- A 3 m barrier is required above the top of chillers and cooling towers.

A maximum noise impact assessment has been undertaken in accordance with the requirement of the NPfI to determine the potential noise impact on sleep disturbance. Maximum noise levels are typically controlled by short term noise events such as reversing alarms, brake release noise, and truck engine noise.

A screening assessment has been undertaken to determine the potential likelihood of sleep disturbance events from the operations of the site during the night-time period. Presented below in Table 35 is a summary of the predicted L_{AFmax} noise levels. An exceedance of the screening criterion triggers the requirement to undertake a more detailed analysis of the likelihood of sleep disturbance noise impacts. Note that there is also an L_{Aeq} screening criterion. Compliance with the night-time L_{Aeq} noise impacts identifies that the L_{Aeq} screening criterion is also complied with.

Presented below is a summary of the predicted noise impacts. Complete results are presented in Appendix F.3.

Table 35 Scenario three noise impact summary

Period	No mitigation			Mitigation		
	Highest noise level	Greatest exceedance	Number of exceedances	Highest noise level	Greatest exceedance	Number of exceedances
Shoulder	61 dBA	4 dB	15	48 dBA	0 dB	0
Daytime	62 dBA	4 dB	20	50 dBA	0 dB	0
Evening	58 dBA	10 dB	27	45 dBA	0 dB	0
Night-time	50 dBA	7 dB	25	37 dBA	0 dB	0
Generator testing	76 dBA	14 dB	55	66 dBA	0 dB	0
Sleep disturbance	61 dBA	4 dB	15	48 dBA	0 dB	0

The results presented above indicate that without noise mitigation, the operations of the site would exceed the sites PSNTLs. Predicted noise levels with appropriate noise mitigation (discussed further in 6.2) would comply with the applicable PSNTLs.

The predicted noise levels also identify that with the inclusion of appropriate noise mitigation the predicted maximum noise levels comply with the sites sleep disturbance screening noise criteria. The dominant source for all scenarios is related to heavy vehicle movements.

While further consideration of noise management and mitigation measures are not required to achieve compliance, recommendations are presented in Section 6.2 to reduce the potential impacts on the surrounding community.

5.5.3.1 Generator testing

Noise impacts of generators testing have been assessed to determine the likely noise impacts during normal operations.

A review of recently approved Datacentre SSDAs was undertaken, with generator testing commonly incorporating two generators operating simultaneously. Larger datacentres with more generators were identified to operate three generators simultaneously, however these were all significantly larger than this proposal

This assessment has assumed that two generators would be tested simultaneously at any one time. The modelling has considered a worst-case assessment of the most affected generators to each calculated location. The noise levels are presented cumulatively with all other sources occurring simultaneously.

Presented below in Table 36 is a summary of the noise impacts of the generator testing.

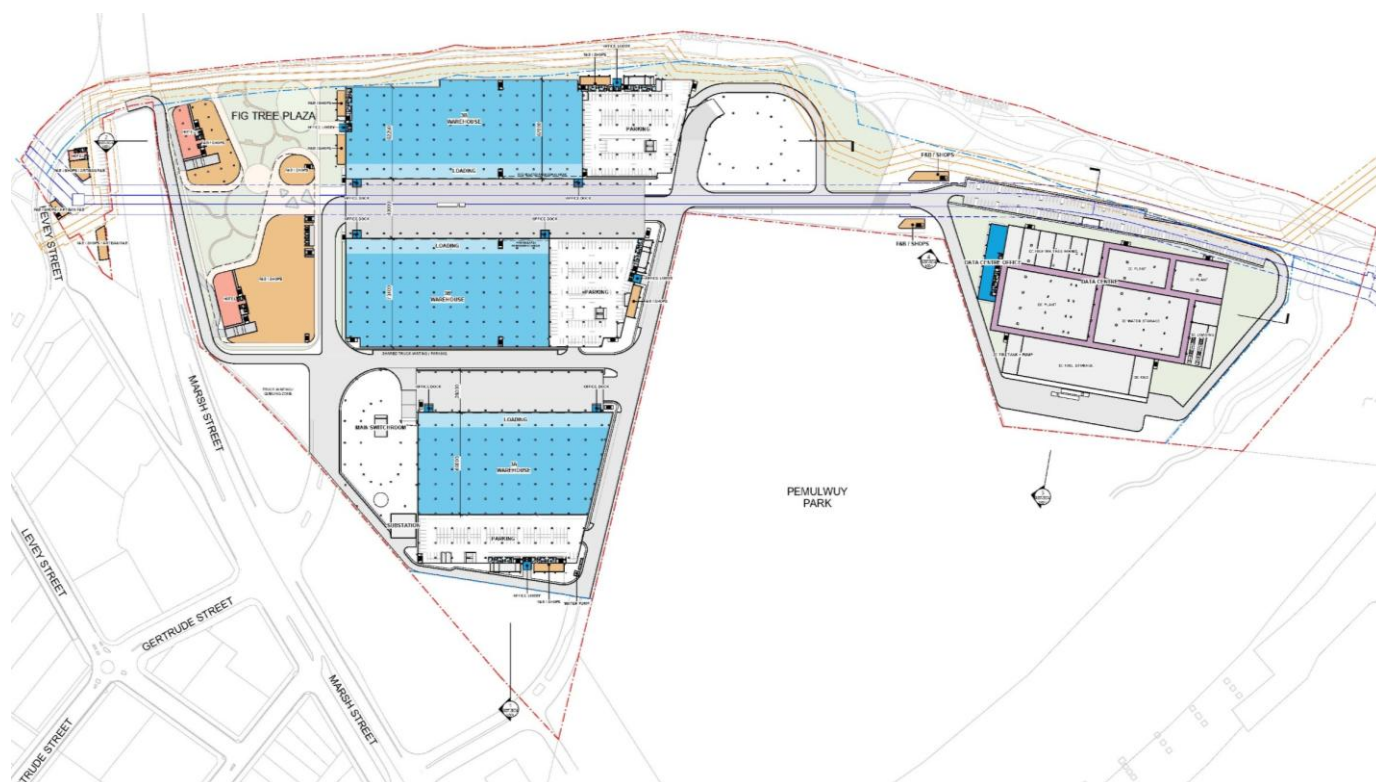
Table 36 Generator testing noise impact summary

Period	No mitigation			Mitigation		
	Highest noise level	Greatest exceedance	Number of exceedances	Highest noise level	Greatest exceedance	Number of exceedances
Daytime	62 dBA	4 dB	22	50 dBA	0 dB	0

5.5.4 Scenario four – Logistics, hotel, office, and data centre

This mixed-use scenario involves hotels and offices to the north adjacent to Marsh Street, with five levels of warehousing around the centre of the site, and a datacentre to the south. The layout is presented below in Figure 16.

Figure 16 Scenario four ground floor layout



Presented below in Table 37 are the sites expected hourly traffic volumes which have been provided by the traffic engineer, JMT Consulting, to be assessed for this development.

Table 37 Scenario four hourly traffic volumes

Hour commencing	Light vehicles	Heavy vehicles	Total
12:00 AM	67	3	70
1:00 AM	46	3	49
2:00 AM	36	2	38

Hour commencing	Light vehicles	Heavy vehicles	Total
3:00 AM	22	2	24
4:00 AM	75	5	80
5:00 AM	209	36	245
6:00 AM	428	66	494
7:00 AM	687	68	755
8:00 AM	843	73	916
9:00 AM	880	87	967
10:00 AM	609	83	692
11:00 AM	592	86	678
12:00 PM	679	89	768
1:00 PM	698	81	779
2:00 PM	786	95	881
3:00 PM	870	74	944
4:00 PM	885	65	950
5:00 PM	996	49	1045
6:00 PM	891	38	929
7:00 PM	597	25	622
8:00 PM	476	18	494
9:00 PM	302	11	313
10:00 PM	92	5	97
11:00 PM	50	4	54

A detailed study of expected hotel traffic was not undertaken by the traffic engineers. For the purposes of this assessment, it has been assumed that the retail would not operate during the evening and night-time periods, reducing traffic to zero. Traffic to the datacentre was also considered to be minimal, so the logistics movements was considered to dominate the noise environment, in addition to operations of the data centre.

Initial noise modelling identified exceedances of the NPfI PSNTLs. Potential noise mitigation has been included in the design to mitigate noise impacts and achieve compliance. This mitigation has been included to illustrate that reasonable and feasible noise mitigation can be included in the design to achieve the PSNTLs. The specific details of the noise mitigation would be confirmed in the development specific SSDA. Further information on the indicative noise mitigation requirements, including drawings and specifications, are presented in Section 6.2.

The indicative noise mitigation for this scenario includes:

- Northern ramps from ground floor to the top floor are to be enclosed. The top floor includes a 4.5 m noise barrier on the ramp. This is required to achieve the sleep disturbance noise criteria.
- Southern ramps from ground floor to the top floor are to be enclosed. The top floor includes a 1.0 m noise barrier on the ramp.
- A 6 m noise barrier is required on the northern internal access road.

- A 3 m barrier is required above the top of chillers and cooling towers.

Presented below is a summary of the predicted noise impacts. Complete results are presented in Appendix F.4.

Table 38 Scenario four noise impact summary

Period	No mitigation			Mitigation		
	Highest noise level	Greatest exceedance	Number of exceedances	Highest noise level	Greatest exceedance	Number of exceedances
Shoulder	58 dBA	0 dB	0	50 dBA	0 dB	0
Daytime	62 dBA	5 dB	18	52 dBA	0 dB	0
Evening	61 dBA	11 dB	41	53 dBA	0 dB	0
Night-time	51 dBA	7 dB	27	43 dBA	0 dB	0
Generator testing	74 dBA	14 dB	55	61 dBA	0 dB	0
Sleep disturbance	58 dBA	0 dB	0	50 dBA	0 dB	0

The results presented above indicate that without noise mitigation, the operations of the site would exceed the sites PSNTLs. Predicted noise levels with appropriate noise mitigation (discussed further in 6.2) would comply with the applicable PSNTLs.

The predicted noise levels also identify that with the inclusion of appropriate noise mitigation the predicted maximum noise levels comply with the sites sleep disturbance screening noise criteria. The dominant source for all scenarios is related to heavy vehicle movements.

While further consideration of noise management and mitigation measures are not required to achieve compliance, recommendations are presented in Section 6.2 to reduce the potential impacts on the surrounding community.

5.5.4.1 Generator testing

Noise impacts of generators testing have been assessed to determine the likely noise impacts during normal operations.

A review of recently approved Datacentre SSDAs was undertaken, with generator testing commonly incorporating two generators operating simultaneously. Larger datacentres with more generators were identified to operate three generators simultaneously, however these were all significantly larger than this proposal

This assessment has assumed that two generators would be tested simultaneously at any one time. The modelling has considered a worst-case assessment of the most affected generators to each calculated location. The noise levels are presented cumulatively with all other sources occurring simultaneously.

Presented below in Table 39 is a summary of the noise impacts of the generator testing.

Table 39 Generator testing noise impact summary

Period	No mitigation			Mitigation		
	Highest noise level	Greatest exceedance	Number of exceedances	Highest noise level	Greatest exceedance	Number of exceedances
Daytime	62 dBA	6 dB	10	52 dBA	0 dB	0

The predicted noise levels above noise impacts of generators testing have been assessed to determine the likely noise impacts during normal operations.

A review of recently approved Datacentre SSDAs was undertaken, with generator testing commonly incorporating two generators operating simultaneously. Larger datacentres with more generators were identified to operate three generators simultaneously, however these were all significantly larger than this proposal.

This assessment has assumed that two generators would be tested simultaneously at any one time. The modelling has considered a worst-case assessment of the most affected generators to each calculated location. The noise levels are presented cumulatively with all other sources occurring simultaneously.

Presented below in Table 39 is a summary of the noise impacts of the generator testing.

Table 39 Generator testing noise impact summary

Period	No mitigation			Mitigation		
	Highest noise level	Greatest exceedance	Number of exceedances	Highest noise level	Greatest exceedance	Number of exceedances
Daytime	62 dBA	6 dB	10	52 dBA	0 dB	0

indicate that without noise mitigation, exceedances of the applicable noise criteria are expected. However, with appropriate noise mitigation, compliance with the PSNTLs is predicted at all sensitive receiver locations.

5.5.4.2 Sleep disturbance noise impacts

A maximum noise impact assessment has been undertaken in accordance with the requirement of the NPfI to determine the potential noise impact on sleep disturbance. Maximum noise levels are typically controlled by short term noise events such as reversing alarms, brake release noise, and truck engine noise.

A screening assessment has been undertaken to determine the potential likelihood of sleep disturbance events from the operations of the site during the night-time period. Presented below in Table 40 is a summary of the predicted L_{AFmax} noise levels. An exceedance of the screening criterion triggers the requirement to undertake a more detailed analysis of the likelihood of sleep disturbance noise impacts. Note that there is also an L_{Aeq} screening criterion. Compliance in the previous section identifies that the L_{Aeq} screening criterion is also complied with.

Table 40 Scenario four sleep disturbance noise impacts, L_{AFmax} dB(A)

ID	Address	Screening criterion	Without mitigation		With mitigation	
			Prediction	Exceedance	Prediction	Exceedance
1	26 Levey Street	68	72	4	59	-
2	Novotel Hotel	68	74	6	57	-
3	33 Levey Street	58	67	9	57	-
4	26 - 32 Marsh Street	61	73	12	61	-
5	43 Innesdale Road	61	69	8	61	-
6	37 Innesdale Road	55	69	14	55	-
7	24A Marsh Street	61	68	7	61	-
8	16 Flora Street	55	64	9	50	-
9	32 Valda Avenue	55	60	5	53	-
10	19 Valda Avenue	61	63	2	55	-
11	7 Valda Avenue	56	61	5	53	-
12	11 Eve Street	56	61	5	52	-
13	15 Eve Street	56	56	-	53	-
14	15 Brennans Road	53	57	4	52	-
15	21 Flora Street	53	57	4	52	-
16	88 Mutch Avenue	52	56	4	51	-

The predicted noise levels in Table 40 identify that with the inclusion of appropriate noise mitigation, the predicted maximum noise levels comply with the sites sleep disturbance screening noise criteria. The dominant source for all scenarios is related to heavy vehicle movements.

While further consideration of noise management and mitigation measures are not required to achieve compliance, recommendations are presented in Section 6.2 to reduce the potential impacts on the surrounding community.

5.5.4.3 Impacts on other uses

Presented below is a summary of the likely noise impacts generated by the adjacent warehousing, and internal road network on the hotel and office use spaces. The predicted façade noise level assumes that the proposed mitigation measures considered above would be included in the design.

Table 41 Impacts on other uses

Address	Internal design requirement	Facade noise level	Glazing requirement $R_w + C_{tr}$	Indicative glazing
Eastern hotel north facade ¹	35	69	34	12.38 mm laminate
Eastern hotel south façade	35	60	25	6 mm float

Address	Internal design requirement	Facade noise level	Glazing requirement Rw + Ctr	Indicative glazing
Western hotel north facade ¹	35	68	33	10.38 laminate
Western hotel south facade	35	50	25	6 mm float
Office	40	66	26	6 mm float

Note 1 Northern facades are impacted by road traffic noise.

The façade noise levels and glazing requirements identify that appropriate internal noise levels can be achieved with standard glazing. These recommendations are indicative only and would be reviewed during the site specific SSDA and through the detailed design of the project.

5.6 Operational road traffic

Road traffic noise impacts have been predicted for each of the four different layout options. While each layout has slightly different road traffic volumes, the predicted noise levels are broadly similar. Marsh Street already has significant road traffic volumes, with 2025 Annual Average Daily Traffic (AADT) volumes over 50,000 vehicles. Given the significant existing traffic volumes, the change in noise environment from the additional road traffic becomes more important the compliance with the noise criteria.

5.6.1 Scenario one road traffic noise impacts

Presented below is a summary of the Scenario one road traffic volumes with and without the projects, with the associated predicted noise levels presented in the following table.

Table 42 Scenario one traffic volumes on Marsh Street

Time period	Existing		With project (greatest scenario)	
	Light vehicle	Heavy vehicle	Light vehicle	Heavy vehicle
Daytime (7am – 10pm)	39,923	2,138	47,580	3,305
Night-time (10pm – 7am)	10,610	671	11,653	840

Table 43 Scenario one road traffic noise on Marsh Street

Time period	Criteria	Existing noise	Future noise	Change
Daytime (7am – 10pm)	L _{Aeq,15hour} 60	74	75	1.2
Night-time (10pm – 7am)	L _{Aeq,9hour} 55	71	71	0.6

The noise impacts presented above indicate that noise levels currently exceed the noise criteria at the most affected receivers, and will continue to do so in the future. Noise levels are predicted to increase by a little over 1 dB during the daytime, and less than 1 dB during the night-time. A change of less than in 2 dB in road traffic noise is typically considered indiscernible.

The EPAs RNP identifies that where a road traffic generating development increases noise levels by 2.0 dB or less, it is not considered reasonable and feasible to provide addition noise mitigation measures. On this basis the change in noise environment is considered to be acceptable.

5.6.2 Scenario two road traffic noise impacts

Presented below is a summary of the Scenario two road traffic volumes with and without the projects, with the associated predicted noise levels presented in the following table.

Table 44 Scenario two traffic volumes on Marsh Street

Time period	Existing		With project (greatest scenario)	
	Light vehicle	Heavy vehicle	Light vehicle	Heavy vehicle
Daytime (7am – 10pm)	39,923	2,138	50,713	3,232
Night-time (10pm – 7am)	10,610	671	11,773	823

Table 45 Scenario two road traffic noise on Marsh Street

Time period	Criteria	Existing noise	Future noise	Change
Daytime (7am – 10pm)	L _{Aeq,15hour} 60	74	75	1.3
Night-time (10pm – 7am)	L _{Aeq,9hour} 55	71	71	0.6

The noise impacts presented above indicate that noise levels currently exceed the noise criteria at the most affected receivers, and will continue to do so in the future. Noise levels are predicted to increase by a little over 1 dB during the daytime, and less than 1 dB during the night-time. A change of less than 2 dB in road traffic noise is typically considered indiscernible.

The EPAs RNP identifies that where a road traffic generating development increases noise levels by 2.0 dB or less, it is not considered reasonable and feasible to provide additional noise mitigation measures. On this basis the change in noise environment is considered to be acceptable.

5.6.3 Scenario three road traffic noise impacts

Presented below is a summary of the Scenario three road traffic volumes with and without the projects, with the associated predicted noise levels presented in the following table.

Table 46 Scenario three traffic volumes on Marsh Street

Time period	Existing		With project	
	Light vehicle	Heavy vehicle	Light vehicle	Heavy vehicle
Daytime (7am – 10pm)	39,923	2,138	45,919	3,085
Night-time (10pm – 7am)	10,610	671	11,415	811

Table 47 Scenario three road traffic noise on Marsh Street

Time period	Criteria	Existing noise	Future noise	Change
Daytime (7am – 10pm)	L _{Aeq,15hour} 60	74	75	1.0
Night-time (10pm – 7am)	L _{Aeq,9hour} 55	71	71	0.5

The noise impacts presented above indicate that noise levels currently exceed the noise criteria at the most affected receivers, and will continue to do so in the future. Noise levels are predicted to increase by a little over 1 dB during the daytime, and less than 1 dB during the night-time. A change of less than 2 dB in road traffic noise is typically considered indiscernible.

The EPAs RNP identifies that where a road traffic generating development increases noise levels by 2.0 dB or less, it is not considered reasonable and feasible to provide additional noise mitigation measures. On this basis the change in noise environment is considered to be acceptable.

5.6.4 Scenario four road traffic noise impacts

Presented below is a summary of the Scenario four road traffic volumes with and without the projects, with the associated predicted noise levels presented in the following table.

Table 48 Scenario four traffic volumes on Marsh Street

Time period	Existing		With project	
	Light vehicle	Heavy vehicle	Light vehicle	Heavy vehicle
Daytime (7am – 10pm)	39,923	2,138	50,714	3,080
Night-time (10pm – 7am)	10,610	671	11,635	797

Table 49 Scenario four road traffic noise on Marsh Street

Time period	Criteria	Existing noise	Future noise	Change
Daytime (7am – 10pm)	L _{Aeq,15hour} 60	74	75	1.2
Night-time (10pm – 7am)	L _{Aeq,9hour} 55	71	71	0.5

The noise impacts presented above indicate that noise levels currently exceed the noise criteria at the most affected receivers, and will continue to do so in the future. Noise levels are predicted to increase by a little over 1 dB during the daytime, and less than 1 dB during the night-time. A change of less than 2 dB in road traffic noise is typically considered indiscernible.

The EPAs RNP identifies that where a road traffic generating development increases noise levels by 2.0 dB or less, it is not considered reasonable and feasible to provide additional noise mitigation measures. On this basis the change in noise environment is considered to be acceptable.

5.7 Aircraft noise intrusion

Noise intrusion is noise generated by outside sources, such as road, rail, aircraft and industrial noise sources that has the potential to break into the building through the closed façade. Developments are required to consider the noise impacts on the occupants of the building. Major noise sources for this site include:

- Aircraft noise from the Sydney Airport
- Road noise from Marsh Street
- Industrial noise from the proposed development.

The Bayside Local Environment Plan 2021 provides guidance on suitable developments which is reproduced in Section 3.7. The suitability of the development for a development is dependant on the proposed use.

The proposed uses of the site include:

- Scenario one - All Logistics
- Scenario two - Hotel, Office and Logistics
- Scenario three - Data Centre and Logistics
- Scenario four - Hotel, Office, Data Centre and Logistics

The Bayside LEP identifies that for the proposed uses, if the development falls within an ANEF of 25 or greater, the consent authority must be satisfied

5.7.1 2039 ANEF

Presented below in Figure 17 are the 2039 ANEFs for Sydney Airport.

Figure 17 Sydney Airport 2039 ANEF



The ANEF identifies that the majority of the site is between the ANEF 20 and ANEF 25 contours. The southern area of the site, which has either logistics, or a datacentre, just dips within the ANEF25 contour. Any offices located within this area must achieve the internal noise levels in AS 2021:2015, Acoustics—Aircraft noise intrusion—Building siting and construction.

Standard AS 2021:2015 recommends that the architectural acoustic treatment should be designed to achieve the indoor design noise levels listed in Table 3.3 of the Standard.

5.7.2 Aircraft noise intrusion assessment

Using the procedures given in Standard AS 2021:2015, the project site is located at the distances listed in Table 50 from the airport's runways.

Table 50 Indoor design noise levels in order to determine acoustic treatment for aircraft noise intrusion

Building type and activity	Indoor design noise level, $L_{A\text{Max}}$ dB(A)
Hotels rooms	55
Commercial buildings, open offices	65
Industrial	80

Table 51 Distances from project site relative to airport's runways

Runway	Distance (m)		
	DS	DL	DT
Hotels			
Main North / South runway	1300	250	4050
Parallel North / South runway	2600	2550	4650
East / West runway	1100	250	2900
Scenario two and four office block			
Main North / South runway	1200	300	4100
Parallel North / South runway	2500	2500	4650
East / West runway	1000	200	2850
Southern development offices			
Main North / South runway	1300	850	4650
Parallel North / South runway	2600	1950	4100
East / West runway	500	300	2900

Note 1 The sideline projection is a line which is perpendicular to the extended runway centre-line and which passes over the project site

Note 2 DS: Distance from project site to the extended runway centre-line measured along the sideline projection

Note 3 DL: Distance from closer end of runway to the intersection of the extended runway centre-line and the sideline projection

Note 4 DT: Distance from further end of runway to the intersection of the extended runway centre-line and the sideline projection.

Based on these distances and the procedures in Standard AS 2021:2015 (including typical maximum noise levels for jet and non-jet aircrafts), the project site will be exposed to the maximum noise levels presented in Table 52.

Table 52 Predicted aircraft noise impacts

Location	Departure $L_{A\text{Max}}$ dB(A)	Arrival $L_{A\text{Max}}$ dB(A)
Hotels	74	60
Scenario two and four office block	74	61
Southern development offices	84	72

Noise levels indicated above are from a Boeing 777-300ER aircraft. Table 3 below summarises the ANRs required in order to achieve the internal design noise levels listed in Table 50. These ANRs will be used to determine the sound insulation performance of architectural components which form part of the building envelope.

Table 53 Recommended aircraft noise reductions (ANRs)

Building and activity	Recommended ANRs, dB
Hotel rooms	19
Scenario two and four office block	9
Southern development offices	19

The recommended sound transmission loss requirements required to satisfy the specified internal noise levels outlined above are summarised in Table 54 below.

Table 54 Recommended glazing requirements

Location	Minimum glazing requirement	Indicative construction
Hotel rooms	Rw + Ctr 20	6 mm float
Scenario two and four office block	Rw + Ctr 10	6 mm float
Southern development offices	Rw + Ctr 20	6 mm float

Note that Section 5.5 also presents glazing requirements to achieved road traffic and industrial development intrusion levels. The more stringent of the requirements should be adopted.

5.8 Cumulative operational noise impacts

5.8.1 Existing noise contribution

The noise measurements undertaken throughout the project and presented in Section 2 of this report identify that the existing noise environment is dominated by road traffic noise. The existing road traffic noise is greater than 10 dB above any industrial noise contribution. AS1055 identifies that in this situation it is not possible to determine the existing industrial noise contribution. The NPfI suggests that the only way to determine the noise contribution in this case would be to develop noise models of any other industrial noise source, which is outside the scope of this Masterplan report.

5.8.2 Future development

A review of the current public planning material indicates that the dominant foreseeable development outcome in the immediate Kogarah Golf Club / Cooks Cove area is the redevelopment of the subject land itself (this project), together with broader airport, transport, open-space and residential renewal projects in the surrounding precinct.

The broader strategic planning picture west of the site points much more strongly toward housing, mixed-use renewal, town-centre improvement and open-space delivery than toward additional new industrial land immediately beside established receivers. The NSW Government's Bayside West Precincts page states that the rezoning of the Arncliffe and Banksia precincts is intended to deliver a greater mix of housing options, transport and open spaces over the next 20 years, together with revitalisation of the Princes Highway corridor and further investigation around Arncliffe Station. The underlying Bayside West Precincts 2036 Plan describes the precincts as an urban-renewal opportunity for more homes, jobs and infrastructure, and specifically supports mixed-use and

residential intensification along the Princes Highway around Arncliffe and Banksia. The plan also identifies a new park at Arncliffe Station and notes that planning for Cooks Cove was, at the strategic-plan stage, primarily concerned with connectivity, public access and future planning principles rather than blanket industrial expansion across surrounding lands. The precinct map in that plan shows the principal growth areas west of Cooks Cove as high-density housing, mixed-use housing opportunity areas, medium/low-density housing and employment corridor uses along the Princes Highway, not a second industrial belt beside the western residential streets. The point about land-use pattern west of the site is again a map-based inference from the official precinct plan.

That strategic direction is already being translated into actual nearby residential redevelopment. A concrete example is the Arncliffe Estate redevelopment on Princes Highway / Wolli Creek, which Homes NSW describes as replacing 142 ageing dwellings with 806 new residential units, together with a 4,000 m² public park, shops, community facilities and a childcare centre. The project is under construction and is due to complete toward the end of 2027. This is relevant because it reinforces the character of foreseeable change west of the site: increasing residential density and mixed community uses in the Arncliffe corridor, rather than the introduction of new industrial premises in close proximity to the same residential receivers.

To the east and north-east, the most substantial foreseeable change is associated with Sydney Airport growth, but that growth is occurring on airport land and in terminal precincts rather than as new off-airport industrial premises near the western residential edge of Cooks Cove. Sydney Airport's preliminary draft Master Plan 2045 forecasts 72.6 million passengers and 1.4 million tonnes of freight by 2045, and includes a major terminal expansion linking the T2 and T3 domestic terminals, with up to 12 new international gates plus two additional gates at T1. Consultation on that draft has closed and the airport states the plan will be revised and submitted to the Minister. For cumulative-noise purposes, this is an important part of the future context, but it is principally relevant to broader transport, freight and airport activity in the district rather than to the likely emergence of another separate industrial estate directly adjacent to the same sensitive receivers on the western side of Marsh Street.

There is also clear evidence of transport and public-domain change in the surrounding area. Sydney Gateway opened on 1 September 2024 as a new connection between the motorway network and Sydney Airport. The M6 Stage 1 project, as described by Bayside Council, includes a tunnel connection between Kogarah and the M8 at Arncliffe, upgrades to parks and facilities, new facilities and open space at Marsh Street in Arncliffe and Rockdale Bicentennial Park, road-network improvements and new pedestrian/cycle links. Those projects are relevant because they point to the surrounding precinct continuing to evolve as a transport-served urban area with upgraded access and public space. They do not, however, suggest that a second cluster of new industrial premises is planned to emerge immediately between the subject site and the nearest established receivers.

Viewed together, the currently identifiable development pipeline suggests four realistic future trends around the site:

- build-out of the approved Cooks Cove / Kogarah Golf Club logistics precinct (this Masterplan);
- continued airport expansion and associated freight/passenger growth on airport land;
- transport-infrastructure and open-space upgrades around Marsh Street, the M5/M8/M6 interface and airport access routes; and
- ongoing residential and mixed-use renewal in Arncliffe and Banksia. What the reviewed material does not point to is a clear, separate pipeline of additional off-site industrial land immediately adjoining the same receiver group west of Marsh Street. The planning evidence instead indicates that land-use change around those receivers is more likely to occur through housing, mixed use, public open space and transport works.

On that basis, the most defensible conclusion for cumulative industrial-noise assessment is that the subject site itself is the principal foreseeable industrial/logistics source in this locality, while surrounding future change is more likely to influence the broader acoustic setting through road traffic, airport activity, urban renewal and open-space/public-domain works than through multiple additional industrial premises directly affecting the same sensitive receivers. That does not mean future change is absent; rather, it means the currently foreseeable

planning pathway supports treating the nearby off-site context as predominantly residential, mixed-use, transport and airport-related, with limited evidence of further proximate industrial redevelopment competing for the same receiver amenity allowance.

5.8.3 Consideration of cumulative noise impacts

A site-specific cumulative industrial noise assessment has been undertaken to determine whether the standard project amenity noise level methodology in the NSW Noise Policy for Industry (NPfI) is appropriate for the Masterplan SSDA. The NPfI makes clear that the recommended amenity noise level is the objective for the total industrial noise level at a receiver, while the project amenity noise level for a single development is ordinarily derived as the recommended amenity noise level minus 5 dB. The policy explains that this approach is based on a receiver not being affected by more than about three to four industrial noise sources. Importantly, the NPfI also distinguishes this standard approach from the separate method that applies where a greenfield development or redevelopment of an existing industrial cluster involves multiple new noise-generating premises proposed as part of the same broader development scenario.

In the present case, the available planning context supports application of the standard Section 2.4 project amenity approach. The broader Cooks Cove / Marsh Street precinct is identified in strategic planning material as a logistics and warehousing precinct associated with the Sydney Airport interface, with supporting employment uses such as office, retail and visitor accommodation. Planning material for the precinct describes the land as strategically important and intended to support airport- and freight-related activity, including substantial logistics and warehousing floor space within a business park framework. That context confirms the site sits within an urban employment precinct rather than a conventional suburban setting; however, it does not of itself demonstrate that the nearest sensitive receivers will be exposed to multiple additional new industrial premises contributing at similar levels in the foreseeable future, outside of this Masterplan.

The distinction is important because the NPfI does not require the alternative multi-premises allocation method merely because a site is located within, or near, an industrial or logistics precinct. The policy states that the standard project amenity procedure may be applied where an industrial cluster constitutes a single project, with no other redevelopment planned in the foreseeable future.

Based on the site context, there is no available land in close proximity to the relevant sensitive receivers that would reasonably allow future industrial premises to directly and materially add to industrial noise at those receivers in the same way contemplated by the NPfI's multi-premises cluster provisions. On that basis, there is no identified evidence that the nearest receivers will in practice be subjected to a cumulative industrial environment comprising numerous new or existing proximate premises of comparable significance. The assessment of cumulative industrial noise should therefore be based on the actual and reasonably foreseeable source environment, rather than on hypothetical future contributors for which there is no defined proposal, location or acoustic pathway.

Accordingly, use of the standard amenity minus 5 dB derivation is considered appropriate and conservative. It retains a 5 dB margin below the recommended amenity noise level for total industrial noise, thereby providing capacity for existing industrial contributions and modest future change while still ensuring that the project is assessed as a single development against a trigger that is materially lower than the ultimate cumulative amenity objective. This is consistent with the underlying logic of the NPfI, which uses the minus 5 dB adjustment as the default allocation for individual developments unless there is a demonstrated need to apportion amenity across multiple identified new premises.

The surrounding Marsh Street / Airport environment does not alter that conclusion. The precinct is clearly influenced by major transport infrastructure and airport-related activity, and planning documents confirm its intended role as a strategic logistics and warehousing location adjacent to Sydney Airport. However, road traffic and aircraft noise form part of the broader acoustic context rather than the industrial cumulative source total assessed under the NPfI industrial amenity framework. Their presence assists in characterising the receiving

environment as urban and infrastructure-influenced, but it does not justify assuming that unidentified future industrial premises should be treated as if they already exist for the purpose of cumulative source apportionment.

On that basis, the amenity trigger levels for the Masterplan SSDA have appropriately been derived using the standard NPfI recommended amenity noise level minus 5 dB approach to take into consideration the potential for any future cumulative noise impacts from unknown industrial sources. This method properly reflects the project as a single Masterplan development within an urban logistics precinct, while remaining consistent with the policy's express distinction between ordinary single-project assessments and cases involving multiple identified new industrial premises within an existing or proposed cluster.

6 MANAGEMENT AND MITIGATION MEASURES

6.1 Construction noise and vibration

The construction predicted noise levels identified in Section 4.3 indicate that the noise impacts have the potential occur from the proposed works. These impacts are typical for a construction such as this and highlight the importance for appropriate noise management and mitigation measures.

Presented in Table 55 is a summary of site-specific management procedures recommended to manage the predicted airborne noise and vibration impacts.

Table 55 Summary of mitigation procedures

Procedure	Abbreviation	Description	Further reference
General Management Measures	GMM	Introduce best-practice general mitigation measures in the workplace which are aimed at reducing the acoustic impact onto the nearest affected receivers.	Refer to Section 6.1.3 For vibration impact, also refer to section 4.6
Project Notification	PN	Issue project updates to stakeholders, discussing overviews of current and upcoming works. Advanced warning of potential disruptions can be included. Content and length to be determined on a project-by-project basis.	Refer to Section 6.1.6
Verification Monitoring	V	Monitoring to comprise attended or unattended acoustic surveys. The purpose of the monitoring is to confirm measured levels are consistent with the predictions in the acoustic assessment, and to verify that the mitigation procedures are appropriate for the affected receivers. If the measured levels are higher than those predicted, then the measures will need to be reviewed and the management plan will need to be amended.	For noise impact, refer to Section 6.1.4. For vibration impact, refer to Section 4.6
Complaints Management System	CMS	Implement a management system which includes procedures for receiving and addressing complaints from affected stakeholders	Refer to Section 6.1.6
Specific Notification	SN	Individual letters or phone calls to notify stakeholders that noise levels are likely to exceed noise objectives. Alternatively, contractor could visit stakeholders individually in order to brief them on the noise impact and the mitigation measures that will be implemented.	Refer to Section 6.1.6
Alternative Construction Methodology	AC	Contractor to consider alternative construction options that achieve compliance with relevant criteria. Alternative option to be determined on a case-by-case basis. It is recommended that the selection of the alternative option should also be determined by considering the assessment of on-site measurements (refer to Verification Monitoring above).	-

The application of these procedures is in relation to the exceedances over the relevant criteria. For airborne noise, the criteria are based on NMLs. The allocation of these procedures is discussed in Section 6.1.1

For vibration, the criteria either correspond to human comfort, building damage or scientific and medical equipment. The application of these procedures is discussed in Section 3.3.

6.1.1 Allocation of noise management procedures

For residences, the management procedures have been allocated based on noise level exceedances at the affected properties, which occur over the designated NMLs (refer to section 4.3). The allocation of these procedures is summarised in Table 56 below.

Table 56 Allocation of noise management procedures

Construction Hours	Exceedance over NML (dB)	Management procedures (see definition above)
Standard Hours Mon – Fri: 7:00 am to 6:00 pm Saturday: 8:00 am to 1:00 pm	0 - 3	GMM
	4 - 10	GMM, PN, V ¹ , CMS, AC
	> 10	GMM, PN, V, CMS, SN, AC
1. Verification monitoring to be undertaken upon complaints received from affected receivers		

Please note the following regarding the allocation of these procedures:

- The exceedances have been predicted as part of the acoustic assessment, and these are summarised in Section 4.3.
- The allocation of procedures is based on the assumptions used for noise level predictions (refer to Section 4.3).

6.1.2 Allocation of vibration management procedures

Table 57 summarises the vibration management procedures to be adopted based on exceedance scenarios (i.e., whether the exceedance occurs over human comfort criteria, building damage criteria, or criteria for scientific and medical equipment). Please note these management procedures apply for any type of affected receiver.

Table 57 Allocation of vibration management procedures

Construction Hours	Exceedance Scenario	Management procedures
Standard Hours Mon – Fri: 7:00 am to 6:00 pm Sat: 8:00 am – 1:00 pm	Over human comfort criteria (refer to Section 4.6)	GMM, PN, V, RO
	Over building damage criteria (refer to Section 4.6)	GMM, V, AC

6.1.3 General comments

The contractor will, where reasonable and feasible, apply best practice noise mitigation measures. These measures shall include the following:

- Maximising the offset distance between plant items and nearby noise sensitive receivers.
- Preventing noisy plant working simultaneously and adjacent to sensitive receivers.
- Minimising consecutive works in the same site area.
- Orienting equipment away from noise sensitive areas.
- Carrying out loading and unloading away from noise sensitive areas.

To minimise noise impacts during the works, the contractor will take all reasonable and feasible measures to mitigate noise effects.

The contractor will also take reasonable steps to control noise from all plant and equipment. Examples of appropriate noise control include efficient silencers and low noise mufflers.

The contractor should apply all feasible and reasonable work practices to meet the NMLs and inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels, duration of noise generating construction works, and the contact details for the proposal.

Presented below in Table 58 is a summary of the noise management measures and approximate noise reductions. Further information is provided in the proceeding section.

Table 58 Standard noise and vibration mitigation measures

Item	Description	Noise reduction
Management measures		
Implement community consultation measures	Providing the community ongoing updates about potential noise impacts can reduce the impacts and annoyance from the project	Reduced annoyance
Site inductions	All employees, contractors and subcontractors are to receive an environmental induction which would include consideration of noise and vibration impacts.	
Behavioural practices	No swearing or unnecessary shouting or loud stereos/radios on site. No dropping of materials from height, throwing of metal items and slamming of doors.	
Monitoring	See Section 6.1.5a	
Work scheduling	Includes scheduling noise intensive works and respite periods	Annoyance reduction
Source controls		
Alternative equipment or process	Use quieter and less vibration emitting construction methods where feasible and reasonable.	5 to 15 dB
Plan worksites and activities to minimise noise and vibration	Plan traffic flow, parking and loading/unloading areas to minimise reversing movements within the site	1 to 3 dB
Minimise the movement of materials	Reduces noise generated through reduced plant operations	1 dB to 3 dB
Broadband reversing alarm	Site based vehicles should be fitted with broadband reversing alarms to reduce tonal noise impacts.	5 dB
Siting of equipment	Simultaneous operation of noisy plant within discernible range of a sensitive receiver is to be avoided. The offset distance between noisy plant and adjacent sensitive receivers is to be maximised. Plant used intermittently to be throttled down or shut down.	3 to 15 dB

Item	Description	Noise reduction
	Noise-emitting plant to be directed away from sensitive receivers	
Silencers on mobile plant	Where possible reduce noise from mobile plant through additional fittings	5 dB to 8 dB
Maximise hammer penetration	Reduces the time required and associated noise impacts	Reduced duration
Path controls		
Acoustic enclosure or screening	Stationary noise sources should be enclosed or shielded whilst ensuring that the occupational health and safety of workers is maintained.	5 dB to 10 dB

Alternate equipment or process

Exceedance of the site's NMLs should result in an investigation as to whether alternate equipment could be used, or a difference process could be undertaken.

In some cases, the investigation may conclude that no possible other equipment can be used, however, a different process could be undertaken.

Acoustic enclosures/screening

Typically, on a construction site there are three different types of plant that will be used: mobile plant (i.e., excavators, skid steers, etc.), semi mobile plant (i.e., hand tools generally) or static plant i.e. (diesel generators).

For plant items which are static it is recommended that, in the event exceedances are being measured due to operation of the plant item, an acoustic enclosure/screen is constructed to reduce impacts. These systems can be constructed from Fibre Cement (FC) sheeting or, if airflow is required, acoustic attenuators or louvres.

For semi mobile plant, relocation of plant should be investigated to either be operated in an enclosed space or at locations away from a receiver.

With mobile plant it is generally not possible to treat these sources. However, investigations into the machine itself may result in a reduction of noise (i.e., mufflers/attenuators etc).

General mitigation measures (Australia Standard 2436-2010)

As well as the above project specific noise mitigation controls, AS 2436-2010 "Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites" sets out numerous practical recommendations to assist in mitigating construction noise emissions. Examples of strategies that could be implemented on the subject project are listed below, including the typical noise reduction achieved, where applicable.

Adoption of universal work practices

- Regular reinforcement (such as at toolbox talks) of the need to minimise noise and vibration.
- Regular identification of noisy activities and adoption of improvement techniques.
- Avoiding the use of portable radios, public address systems or other methods of site communication that may unnecessarily impact upon nearby sensitive receivers.
- Where possible, avoiding the use of equipment that generates impulsive noise.
- Minimising the need for vehicle reversing for example (particularly at night), by arranging for one-way site traffic routes.
- Use of broadband audible alarms on vehicles and elevating work platforms used on site.
- Minimising the movement of materials and plant and unnecessary metal-on-metal contact.

Plant and equipment

The operation of plant and equipment on the site should be undertaken, including the following:

- Choosing quieter plant and equipment based on the optimal power and size to most efficiently perform the required tasks.
- Selecting plant and equipment with low vibration generation characteristics.
- Operating plant and equipment in the quietest and most efficient manner.

Work scheduling

- Providing respite periods which could include restricting very noisy activities to time periods that least affect the nearby noise sensitive locations, restricting the number of nights that after-hours work is conducted near residences or by determining any specific requirements.
- Planning deliveries and access to the site to occur quietly and efficiently and organising parking only within designated areas located away from the sensitive receivers.
- Optimising the number of deliveries to the site by amalgamating loads where possible and scheduling arrivals within designated hours.

Source noise control strategies

Some ways of controlling noise at the source are:

- Where reasonably practical, noisy plant or processes should be replaced by less noisy alternatives.
- Modify existing equipment: Engines and exhausts are typically the dominant noise sources on mobile plant such as cranes, graders, excavators, trucks, etc. To minimise noise emissions, residential grade mufflers should be fitted on all mobile plant utilised on site.
- Siting of equipment: locating noisy equipment behind structures that act as barriers, or at the greatest distance from the noise-sensitive area; or orienting the equipment so that noise emissions are directed away from any sensitive areas, to achieve the maximum attenuation of noise.
- Regular and effective maintenance.

Miscellaneous comments

Deliveries should be undertaken, where possible, during standard construction hours.

Maximise hammer penetration (and reduce blows) by using sharp hammer tips. Keep stocks of sharp profiles at site and monitor the profiles in use.

It is advised that mobile plant and trucks operating on site for a significant portion of the project are to have reversing alarm noise emissions minimised. This is to be implemented subject to recognising the need to maintain occupational safety standards.

6.1.4 Construction vibration mitigation measures

The following vibration mitigation measures should be implemented:

- Any vibration generating plant and equipment is to be in areas within the site to lower the vibration impacts.
- Investigate the feasibility of rescheduling the hours of operation of major vibration generating plant and equipment.
- Use lower vibration generating items of construction plant and equipment; that is, smaller capacity plant.
- Minimise conducting vibration generating works consecutively in the same area (if applicable).
- Undertake the removal of concrete within the building using saw cutting or pulverising where possible.

To ensure the vibration impact criteria detailed in this report are complied with the following safe working mitigations and/or working distances should be implemented as detailed in the table below.

Table 59 Vibration mitigation requirements

Construction Phase	Activity	Vibration Mitigation
Demolition	Hydraulic hammering	Prior to the use of hydraulic hammers to removed concrete or structural elements separation of the neighbouring building is required to the maintained including removal of debris and saw cutting were required.
Excavation	Removal of Rock	Prior to the use of hydraulic hammering within 20 m of neighbouring building a saw cut to the perimeter of the ground floor to be excavated is required to the undertaken. Saw cutting of the perimeter of the excavation is required to be undertaken on each level of the excavation.
Construction	General Construction activities	General construction activities are not expected to exceed project vibration limits detailed in this report.

6.1.5 Noise and vibration monitoring

Noise monitoring, if required, will be performed by an acoustical consultant directly engaged by the contractor in accordance with the projects Conditions of Consent.

Noise monitoring is recommended to be undertaken by attended noise measurements at the start of any new phase of works (i.e. demolition, ground works or remediation works etc.). The statistical parameters to be measured should include the following noise descriptors: L_{Amin} , LA_{90} , LA_{10} , LA_1 , L_{Amax} and L_{Aeq} . Unattended noise measurements should be conducted over consecutive 15-minute periods.

The survey methodology and any equipment should comply with the requirements discussed in Standard AS 1055.1-2018.

As part of the management of noise and vibration from the proposed demolition and ground works activities to be undertaken on the site the following noise and vibration measurements are recommended to be undertaken:

1. Noise Monitoring –
 - a. Attended noise level measurements of typical demolition and ground works activities should be undertaken at site. Attended construction noise surveys of the site and surrounding impacts on neighbours should be undertaken during the following as a minimum:
 - i. Start of Demolition
 - ii. Commencement of any rock breaking or sawing on the site.
 - iii. In response to any ongoing complaints received from neighbours.
2. Vibration Monitoring– To confirm vibration magnitudes are within the expected levels the following attended vibration measurements are required:
 - a. Short term attended vibration measurements – Attended short term vibration measurement of activities with the potential to generate maximum vibration to be undertaken on commencement at the site, including the following:
 - i. Measurements to be undertaken at a representative location from the activity being conducted with a similar distance to the potentially affected receiver.
 - ii. Activities with the potential to generate the greatest magnitudes of vibration include:
 - iii. Hydraulic hammering of concrete slabs.
 - iv. Hydraulic hammering during ground works within rock.

6.1.6 Community consultation

Active community consultation and the maintenance of positive relations with nearby local residents, hotels, and businesses would assist in alleviating concerns and thereby minimising complaint.

This form of notification should provide specific notification of the duration and timing of the required ground works activities so that residents are informed about the works ahead of time. The letter should also provide the community with a hotline number for a community liaison officer available to adequately respond to all project related enquiries.

Ideally the hotline number should provide concerned locals an opportunity to raise any concerns with the project proponent and provide an opportunity to determine the best method to satisfy all requirements.

Prior to the works onsite being undertaken, community consultation with the neighbouring affected parties be undertaken. Community engagement and consultation should not be limited to the beginning of the onsite works but throughout, providing the community with constant updates on the progress and upcoming works. In our experience these could include:

- Site noticeboard,
- Email notifications; and
- Letterbox drops.

Complaints management system

Should complaints arise they must be dealt with in a responsible and uniform manner, therefore, a management system to deal with complaints is detailed below:

Local residents and landowners should be informed by direct mail of a direct 24-hour telephone line where any noise complaints related to the required ground works will be recorded. The 24-hour telephone line number will be made available on the construction site signage.

All complaints should be investigated by the Contractor in accordance with the procedures outlined in Australia Standard 2436-2010. Consequently, a complaint response procedure should be implemented. Information to be gathered as part of this process should include:

- location of complainant
- time/s of occurrence of alleged noise or vibration impacts
- nature of impact particularly with respect to vibration
- Perceived source
- Prevailing weather conditions and similar details that could be utilised to assist in the investigation of the complaint.

All resident complaints will be responded to in the required timeframe and action taken recorded.

Post receiving a noise and or vibration complaint, the process outlined in the Contingency Plans below should be undertaken.

Contingency plans

Contingency plans are required to address noise or vibration problems if excessive levels are measured at surrounding sensitive receivers and/or if justified complaints occur. Such plans include:

- Stop the onsite works.
- Identify the source of the main equipment within specific areas of the site which is producing the most required ground works noise and vibration at the sensitive receivers; and

- Review the identified equipment and determine if an alternate piece of equipment can be used or the process can be altered.
- In the event an alternate piece of equipment or process can be used, works can re-commence.
- In the event an alternate piece of equipment or process cannot be determined implement a construction assessment to be performed by a suitably qualified acoustic consultant.
- Respite periods to be scheduled during potentially noise sensitive periods of the surrounding receivers.

The Superintendent shall have access to view the Contractor's noise measurement records on request. The Superintendent may undertake noise monitoring if and when required.

6.2 Operational noise

6.2.1 Operational management measures

Noise management measures can be effective to control noise impacts associated with behaviours. The corner stone to noise management measures is making employees and people accessing the site aware of their site requirements and obligations.

Yearly compliance noise measurements and staff training are likely to be included in the recommendations. These will be confirmed in the development specific SSDA noise and vibration impact assessments.

Clear signage should be provided for drivers to limit noise, and all conversations should be encouraged to be completed inside where the building fabric can reduce the transmission of noise.

Outside the daytime period, where practicable, it is recommended that:

- trucks should be loaded and unloaded within the warehouses; and
- warehouse doors should be closed to prevent noise breakout.

6.2.2 Operational mitigation measures

Presented below is a summary of the indicative noise mitigation for each development scenario. With this noise mitigation included, compliance with the PSNTLs can be achieved at all sensitive receiver locations. At this early stage, the noise mitigation is indicative only and has been included to highlight that the site can be designed effectively to achieve all project requirements. All mitigation would be confirmed in each development SSDA noise and vibration impact assessment and refined throughout the detailed design stages of the project.

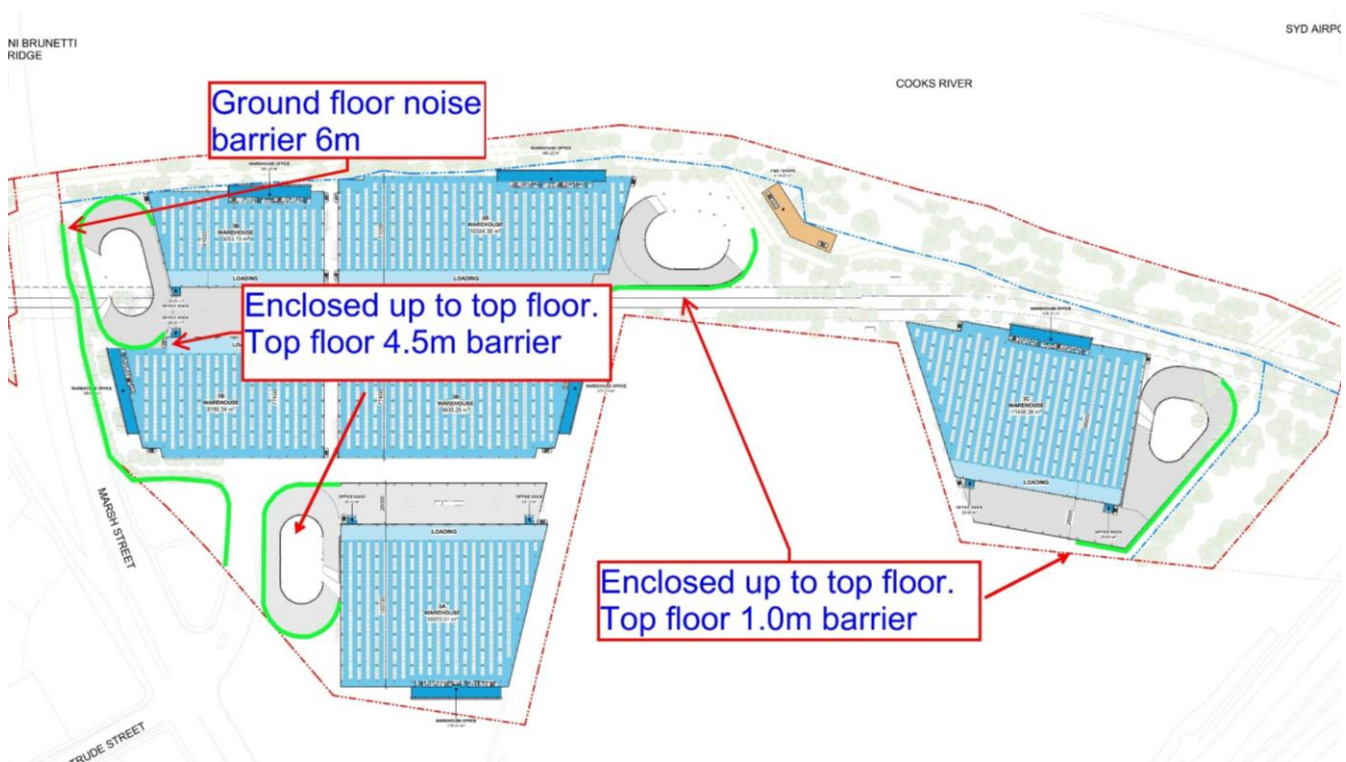
6.2.2.1 Scenario one – logistics only

The required noise mitigation includes:

- Northern ramps from ground floor to the top floor are to be enclosed. The top floor includes a 4.5 m noise barrier on the ramp. This is required to achieve the sleep disturbance noise criteria.
- Southern ramps from ground floor to the top floor are to be enclosed. The top floor includes a 1.0 m noise barrier on the ramp.
- A 6 m noise barrier is required on the northern internal access road, adjacent to Marsh Street.

The noise mitigation requirements are illustrated below in Figure 18.

Figure 18 Scenario one noise mitigation requirements



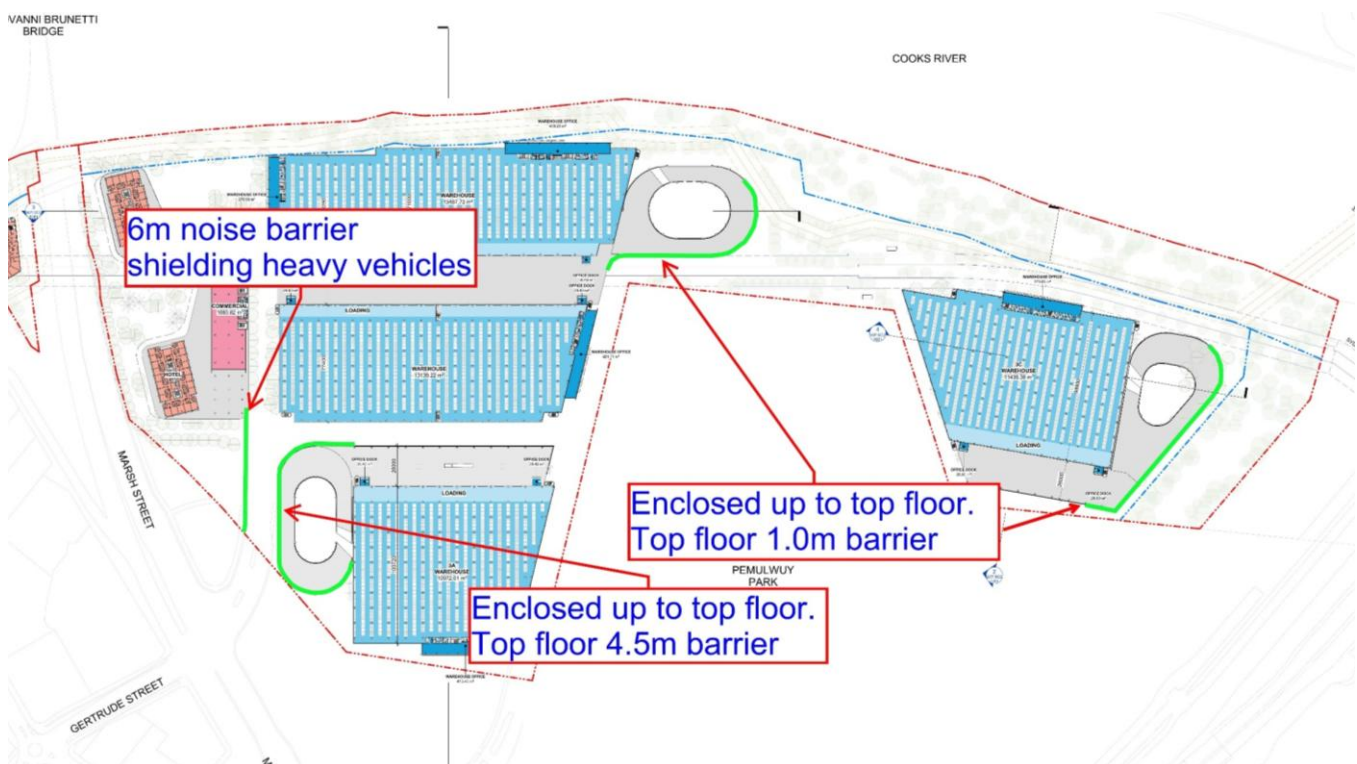
6.2.2.2 Scenario two – logistics and mixed use

The required noise mitigation includes:

- Northern ramps from ground floor to the top floor are to be enclosed. The top floor includes a 4.5 m noise barrier on the ramp. This is required to achieve the sleep disturbance noise criteria.
- Southern ramps from ground floor to the top floor are to be enclosed. The top floor includes a 1.0 m noise barrier on the ramp.
- A 6 m noise barrier is required on the northern internal access road.

The noise mitigation locates are illustrated below in Figure 19.

Figure 19 Scenario two noise mitigation requirements



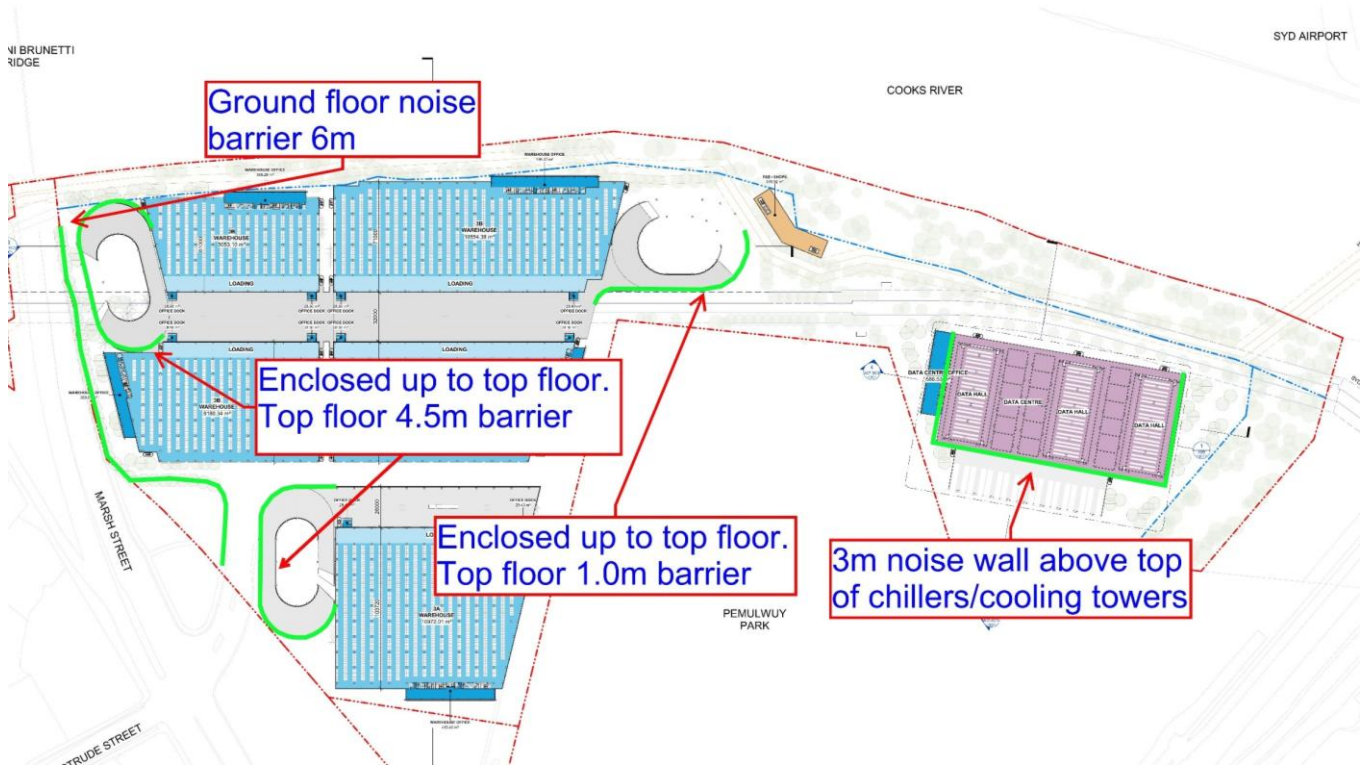
6.2.2.3 Scenario three – logistics and data centre

The indicative noise mitigation for this scenario includes:

- Northern ramps from ground floor to the top floor are to be enclosed. The top floor includes a 4.5 m noise barrier on the ramp. This is required to achieve the sleep disturbance noise criteria.
- Southern ramps from ground floor to the top floor are to be enclosed. The top floor includes a 1.0 m noise barrier on the ramp.
- A 6 m noise barrier is required on the northern internal access road, adjacent to Marsh Street.
- A 3 m barrier is required above the top of chillers and cooling towers.

The noise mitigation locates are illustrated below.

Figure 20 Scenario three noise mitigation requirements



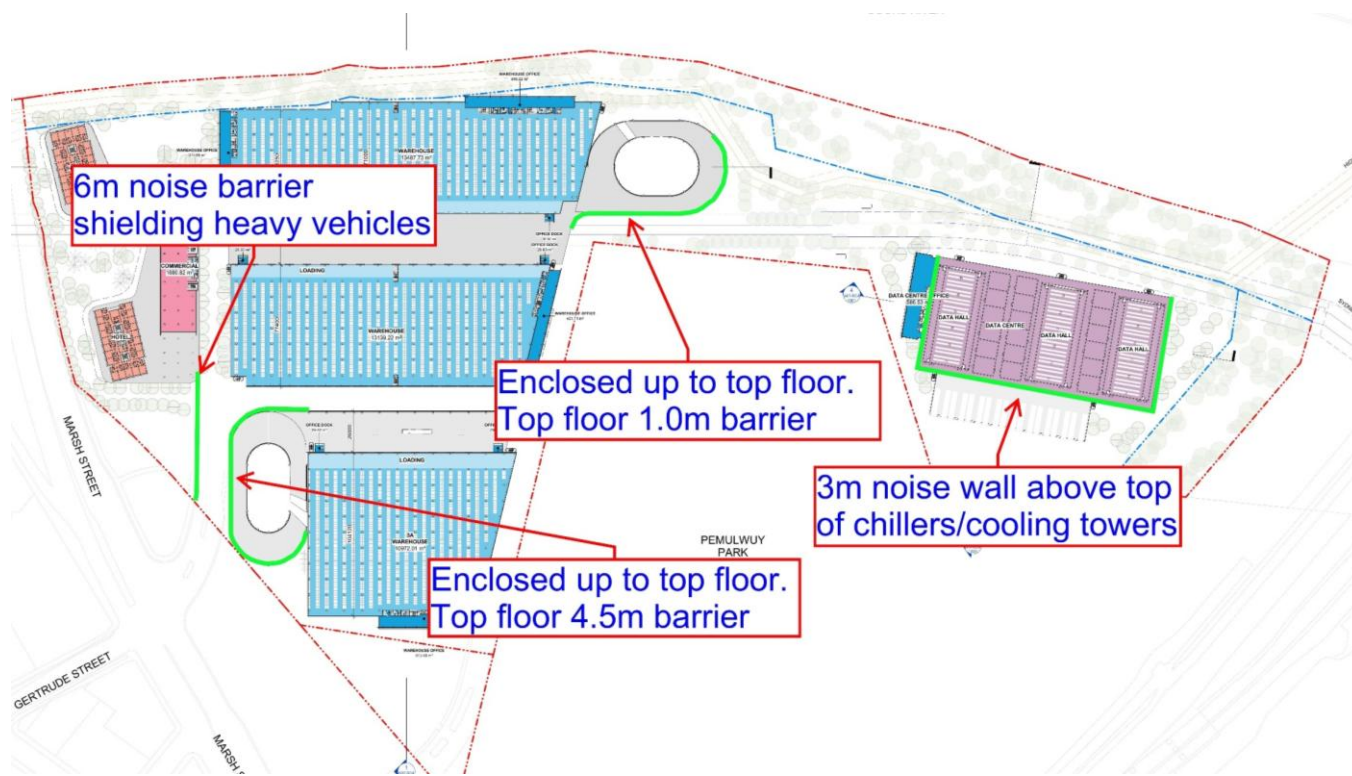
6.2.2.4 Scenario four – logistics, hotel, office, and data centre

The indicative noise mitigation for this scenario includes:

- Northern ramps from ground floor to the top floor are to be enclosed. The top floor includes a 4.5 m noise barrier on the ramp. This is required to achieve the sleep disturbance noise criteria.
- Southern ramps from ground floor to the top floor are to be enclosed. The top floor includes a 1.0 m noise barrier on the ramp.
- A 6 m noise barrier is required on the northern internal access road.
- A 3 m barrier is required above the top of chillers and cooling towers.

The noise mitigation locates are illustrated below.

Figure 21 Scenario four noise mitigation requirements



7 CONCLUSION

The vision for the Kogarah Golf Club Redevelopment is to create a world-class precinct that leverages the site's strategic location adjacent to Sydney Airport and strong transport connections by delivering multi-level logistics development, trade-related enterprise and supporting uses with publicly accessible open space. It seeks to deliver state-of-the-art facilities that will redefine the logistics landscape in Australia, setting new benchmarks for scale, efficiency, sustainability and innovation.

The Concept & Early Works SSDA seeks consent for an overarching Concept Masterplan that establishes maximum building envelopes, Gross Floor Area (GFA), land uses, and other parameters through Urban Design Guidelines and technical reporting. It also seeks consent for the carrying out of Early Works to facilitate the initial site preparation and infrastructure works required to support future development and publicly accessible open space.

Background noise logging was undertaken at eight locations between 2 September and 14 September 2025, and 20 October to 31 October 2025 to establish the existing noise environment at residential properties near the site. The measurements identified noise is primarily controlled by local road traffic.

A review of meteorological conditions identified that the assessment of noise enhancing weather conditions is generally required for the sensitive receivers identified in this report due to the exceedance of wind only.

Appropriate construction noise management noise levels have been established in accordance with the EPA's Interim Construction Noise Guideline and the background noise logging. Appropriate vibration criteria were derived from the EPA's Assessing Vibration: a technical guideline. The EPA's Road Noise Policy provided appropriate noise criteria for the assessment of construction traffic noise associated with the site.

A range of construction noise scenarios were modelled using SoundPLAN v9.1 and assessed against the derived project specific NMLs. The assessment identified that while there were no receivers which would be Highly Noise Affected, some receivers would exceed the project NMLs. Appropriate construction noise management and mitigation measures have been recommended to reduce the potential for impacts on the surrounding community.

Construction vibration has been assessed based on a range of equipment that could be used on the project. The most significant vibration impacts would be experienced during demolition and site clearing activities. While structural damage is unlikely, vibration monitoring is recommended where sensitive receivers would fall within the project safe working distances outlined in this report.

Noise impacts from construction traffic are predicted to increase road traffic noise levels by about 0.1 dB. The noise environment would not change because of the additional trucks from this project.

Operational noise emission criteria have been based on background noise logging, derived in accordance with the requirements of the EPA's NPfI. The conditions provide noise criteria both for L_{Aeq} noise levels, and sleep disturbance and intermittent noise impacts.

An operational noise model has been developed using SoundPLAN v9.1. The noise model assessed the dominant noise sources generated from the future operation of the site. The predicted noise levels identified that with appropriate noise mitigation measures, the appropriate project specific noise management levels can be complied with. Indicative noise mitigation has been included in this assessment, however, due to the early nature of the assessment this mitigation will be refined through later assessments.

Scenario one – logistics only

For the logistics-only scenario, operational noise modelling indicates that, without mitigation, site activities would exceed the applicable project-specific noise trigger levels during all assessed periods and for sleep disturbance. With the inclusion of the recommended mitigation measures, compliance with the applicable PSNTLs and sleep disturbance screening criteria is predicted at all sensitive receivers. Road traffic associated with this scenario would

increase Marsh Street noise levels by only about 1.2 dB in the daytime and 0.6 dB at night, which is below the 2 dB threshold typically regarded as discernible and is therefore considered acceptable.

Scenario two – logistics and mixed-use

For the logistics and mixed-use scenario, the assessment identifies that unmitigated warehouse and internal traffic operations would exceed the applicable PSNTLs and sleep disturbance screening criteria at nearby receivers. With the recommended mitigation incorporated, compliance is predicted for all operational periods and sleep disturbance criteria. The assessment also indicates that suitable internal noise levels for the proposed hotel and office uses can be achieved with standard glazing treatments. Road traffic noise increases on Marsh Street are predicted to remain minor, at about 1.3 dB in the daytime and 0.6 dB at night, and are considered acceptable under the EPA Road Noise Policy.

Scenario three – logistics and data centre

For the logistics and data centre scenario, operational noise modelling shows that unmitigated site activities, including routine generator testing, would exceed the applicable PSNTLs. With the recommended mitigation measures in place, compliance is predicted for all operational periods, generator testing and sleep disturbance screening criteria. This scenario requires additional mitigation for the data centre plant, including treatment associated with chillers and cooling towers, but the assessment demonstrates that compliance remains achievable. Predicted road traffic noise increases are also minor, at about 1.0 dB in the daytime and 0.5 dB at night, and are considered acceptable.

Scenario four – logistics, hotel, office and data centre

For the logistics, hotel, office and data centre scenario, the assessment indicates that unmitigated daytime, evening, night-time and generator testing activities would exceed the applicable PSNTLs, although shoulder-period and sleep disturbance impacts are already within criteria in the base case. With the recommended mitigation measures incorporated, compliance is predicted for all operational periods, routine generator testing and sleep disturbance screening criteria. The assessment also confirms that suitable internal noise levels for the proposed hotel and office components can be achieved with standard glazing treatments. Road traffic noise increases for this scenario are similarly modest and remain within the range considered acceptable under the EPA Road Noise Policy.

Operational road noise criteria have been derived from the EPA's Road Noise Policy. Road traffic volumes to Building 2 are likely to reduce slightly as a result of this project. While this may suggest a minor reduction in noise, in practice the noise levels would likely remain unchanged from the existing noise. Further considerations of road traffic noise impacts are not required.

This report has identified that with the inclusion of appropriate noise management and mitigation measures, compliance with appropriate noise criteria would be achieved. The mitigation recommendations will be incorporated in the design of the project to ensure noise and vibration emitted from the developed is appropriately controlled.

Overall, the assessment demonstrates that the Concept Masterplan and Early Works can be delivered with manageable acoustic impacts, provided the recommended noise and vibration management measures are implemented. While some construction activities are predicted to exceed the project noise management levels at surrounding receivers, no receivers are expected to be highly noise affected, construction traffic impacts are negligible, and vibration risks can be appropriately managed through monitoring and mitigation. For operation, the assessment indicates that all assessed development scenarios can achieve compliance with the applicable project-specific noise trigger levels and sleep disturbance screening criteria through incorporation of the identified mitigation measures, with any detailed treatments to be refined through future development-specific SSDA assessments and detailed design. On this basis, the proposal is considered capable of satisfying the relevant acoustic requirements for the site.



APPENDIX A. ACOUSTIC TERMINOLOGY

The following is a brief description of the acoustic terminology used in this report:

Ambient Sound	The totally encompassing sound in a given situation at a given time, usually composed of sound from all sources near and far.
Audible Range	The limits of frequency which are audible or heard as sound. The normal ear in young adults detects sound having frequencies in the region 20 Hz to 20 kHz, although it is possible for some people to detect frequencies outside these limits.
Character, acoustic	The total of the qualities making up the individuality of the noise. The pitch or shape of a sound's frequency content (spectrum) dictate a sound's character.
Decibel [dB]	The level of noise is measured objectively using a Sound Level Meter. The following are examples of the decibel readings of every day sounds; 0dB the faintest sound we can hear 30dB a quiet library or in a quiet location in the country 45dB typical office space. Ambience in the city at night 60dB Martin Place at lunch time 70dB the sound of a car passing on the street 80dB loud music played at home 90dB the sound of a truck passing on the street 100dB the sound of a rock band 115dB limit of sound permitted in industry 120dB deafening
dBA	<i>A-weighted decibels</i> The ear is not as effective in hearing low frequency sounds as it is hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched on is denoted as dBA. Practically all noise is measured using the A filter. The sound pressure level in dBA gives a close indication of the subjective loudness of the noise.
Frequency	Frequency is synonymous to <i>pitch</i> . 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.
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
L_{max}	The maximum sound pressure level measured over a given period.
L_{min}	The minimum sound pressure level measured over a given period.
L_1	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
L_{10}	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
L_{90}	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L_{90} noise level expressed in units of dBA.
L_{eq}	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time.
Sound Pressure Level, LP dB	A measurement obtained directly using a microphone and sound level meter. Sound pressure level varies with distance from a source and with changes to the measuring environment. Sound pressure level equals 20 times the logarithm to the base 10 of the ratio of the rms sound pressure to the reference sound pressure of 20 micro Pascals.
Sound Power Level, Lw dB	Sound power level is a measure of the sound energy emitted by a source, does not change with distance, and cannot be directly measured. Sound power level of a machine may vary depending on the actual operating load and is calculated from sound pressure level measurements with appropriate corrections for distance and/or environmental conditions. Sound power levels is equal to 10 times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power of 1 picoWatt.



APPENDIX B. AMBIENT NOISE MONITORING

22 Levey Street, Wolli Creek

Ambient noise monitoring report



Item	Information
Logger Type	NL-42
Serial number	510467
Address	22 Levey Street, Wolli Creek
Location	Park adjacent to residential building
Facade / free field	Free field
Environment	Ambient noise controlled by road traffic

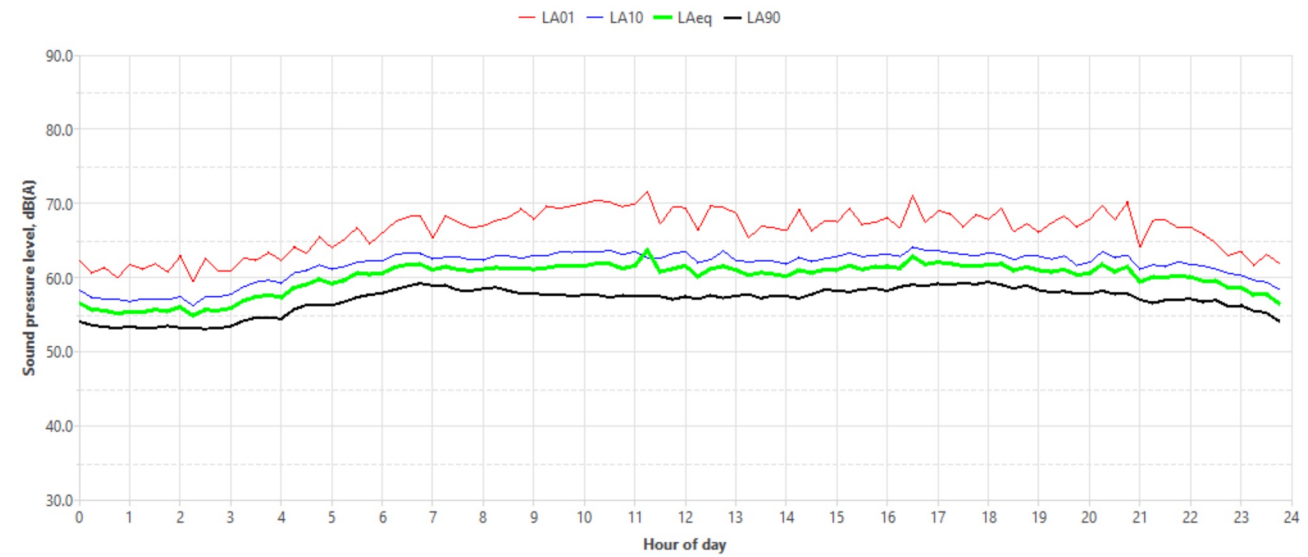
Measured noise levels

Logging date	Rating Background Level				L _{Aeq,period}			
	Morning Shoulder 5am-7am	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am	Morning Shoulder 5am-7am	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am
Tue 02 Sep 2025	58	57	57	53	62	64	61	59
Wed 03 Sep 2025	58	56	56	53	61	61	61	59
Thu 04 Sep 2025	58	57	58	53	61	61	61	59
Fri 05 Sep 2025	56	59	58	54	61	69	62	59
Sat 06 Sep 2025	56	57	56	53	60	62	61	58
Sun 07 Sep 2025	56	57	57	53	59	62	61	58
Mon 08 Sep 2025	57	57	56	52	61	61	61	58
Tue 09 Sep 2025	58	56	56	53	61	61	61	59
Wed 10 Sep 2025	59	-	-	-	64	-	-	-
Thu 11 Sep 2025	65	-	57	-	68	-	61	-
Fri 12 Sep 2025	57	58	58	53	62	62	62	59
Sat 13 Sep 2025	56	57	58	53	61	61	61	58
Sun 14 Sep 2025	56	56	56	53	60	61	60	58
Summary	57	57	57	53	61	63	61	59

Note: Results with a '-' identify that there were not enough measurements available to correctly calculate the level, in accordance with the Noise Policy for Industry. The data has been excluded either from weather or manual exclusions. See the charts for more information

Logger location	Logger deployment photo

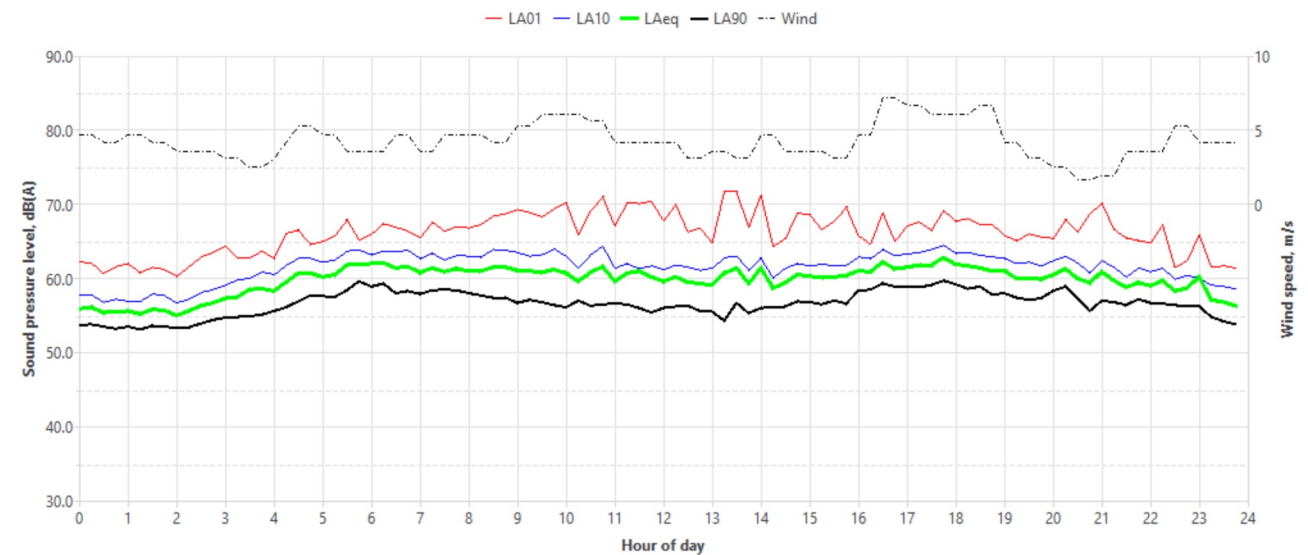
Typical Day



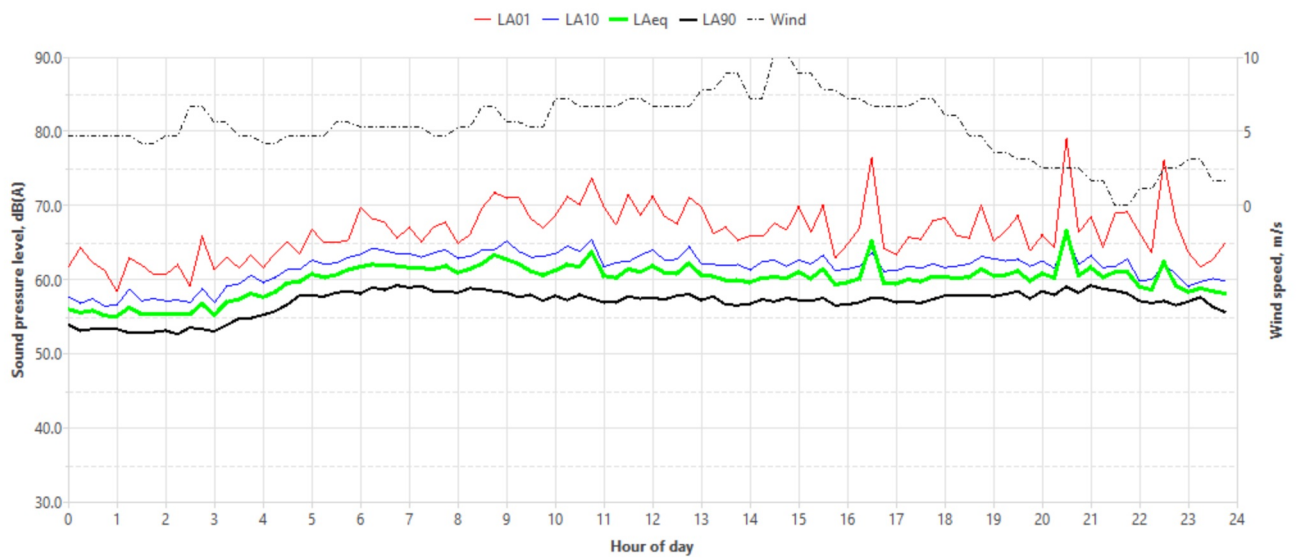
Tuesday, 2 September 2025



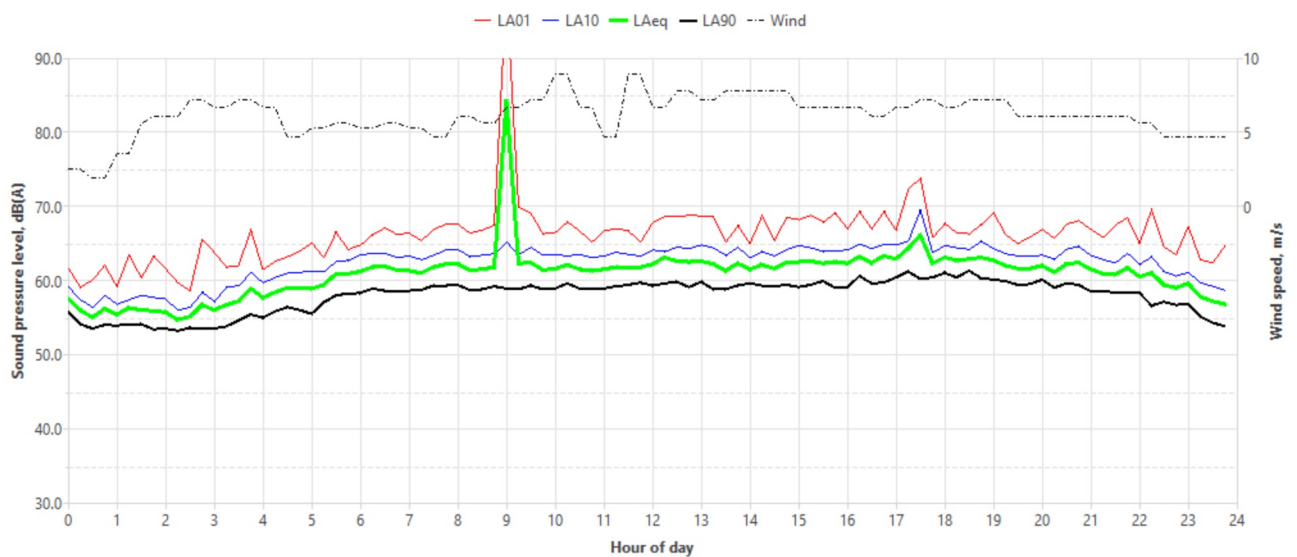
Wednesday, 3 September 2025



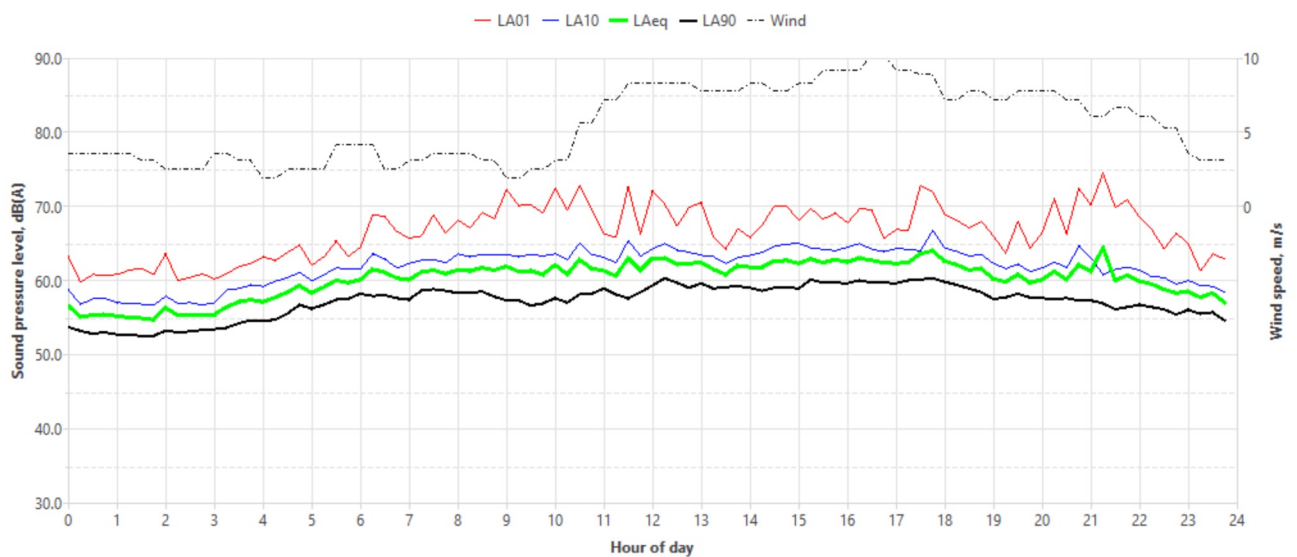
Thursday, 4 September 2025



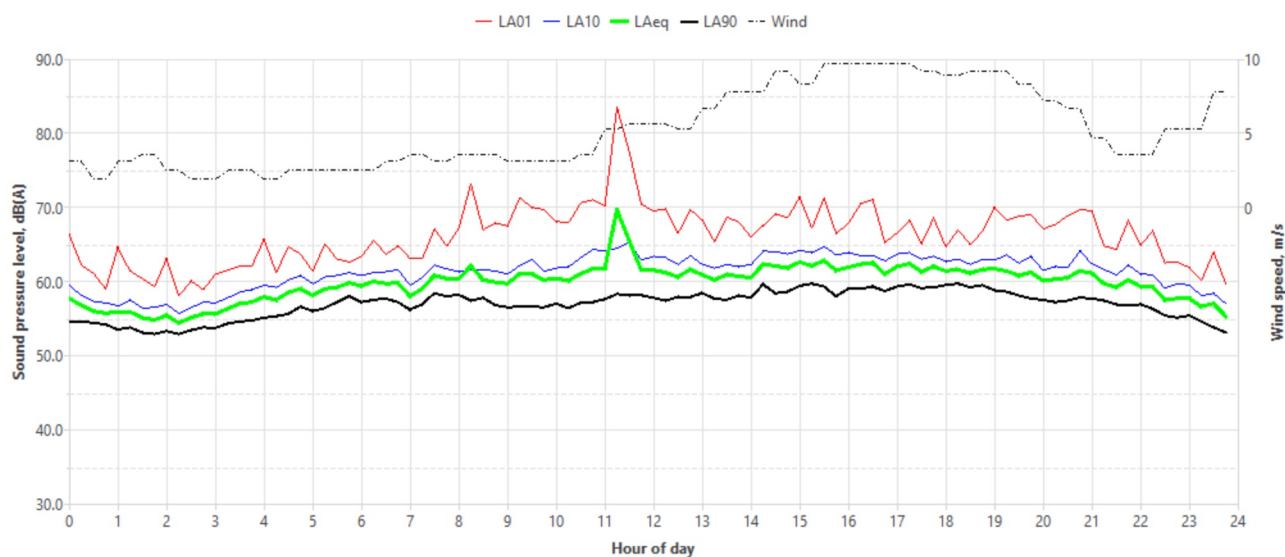
Friday, 5 September 2025



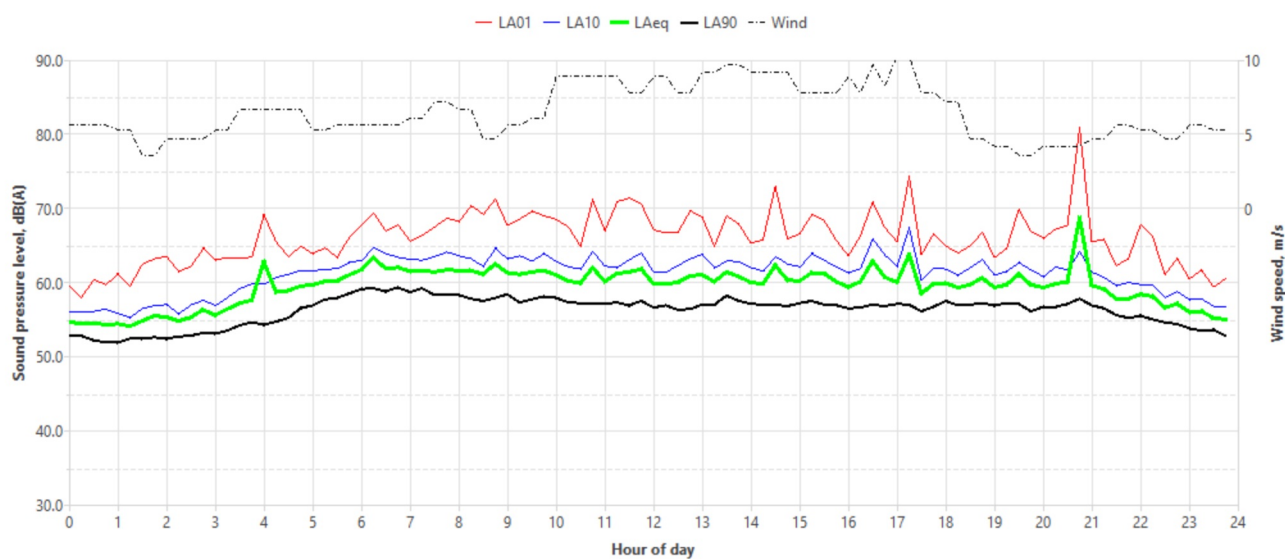
Saturday, 6 September 2025



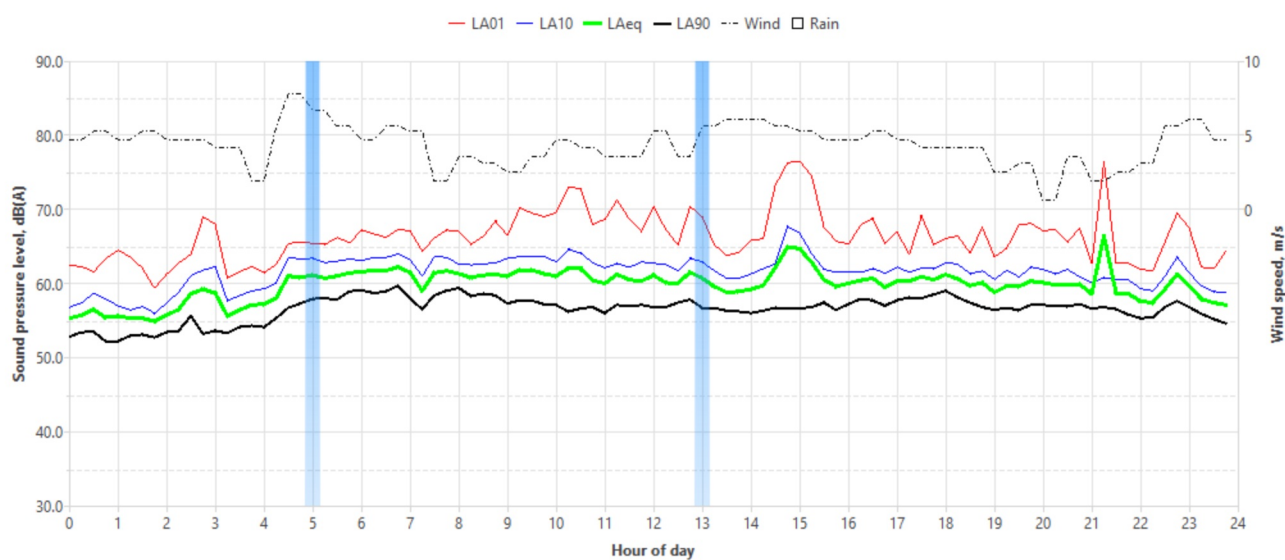
Sunday, 7 September 2025



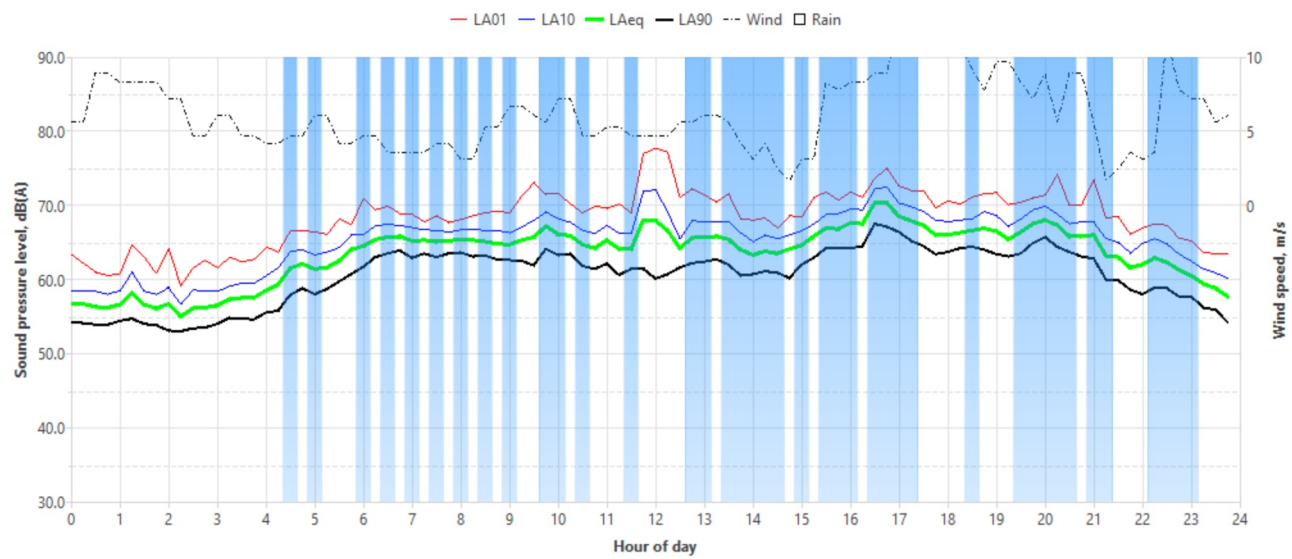
Monday, 8 September 2025



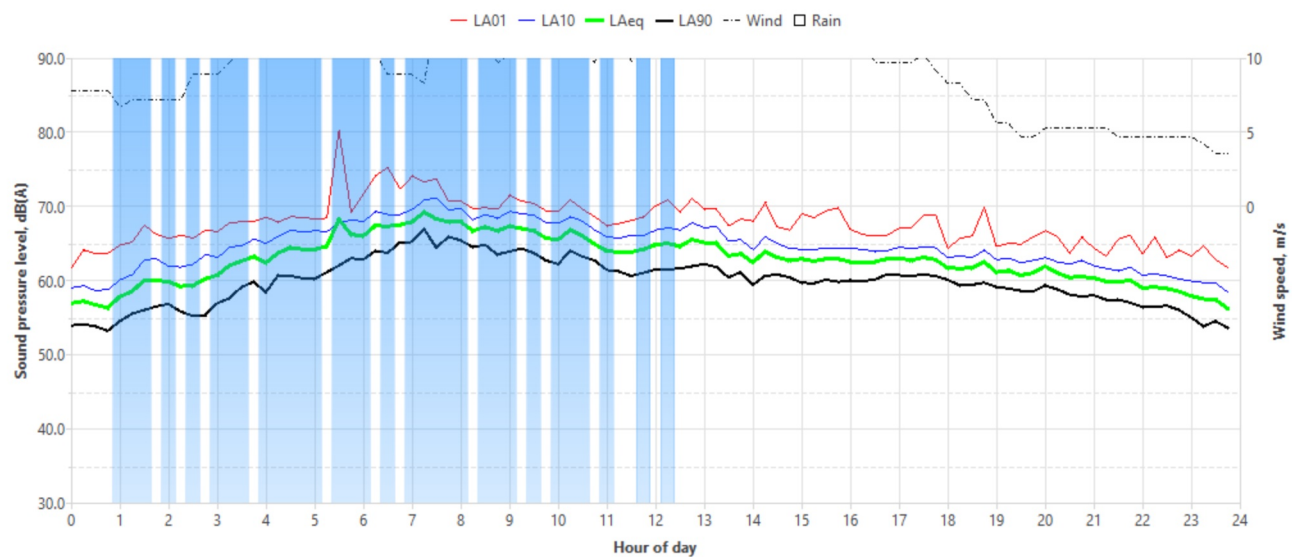
Tuesday, 9 September 2025



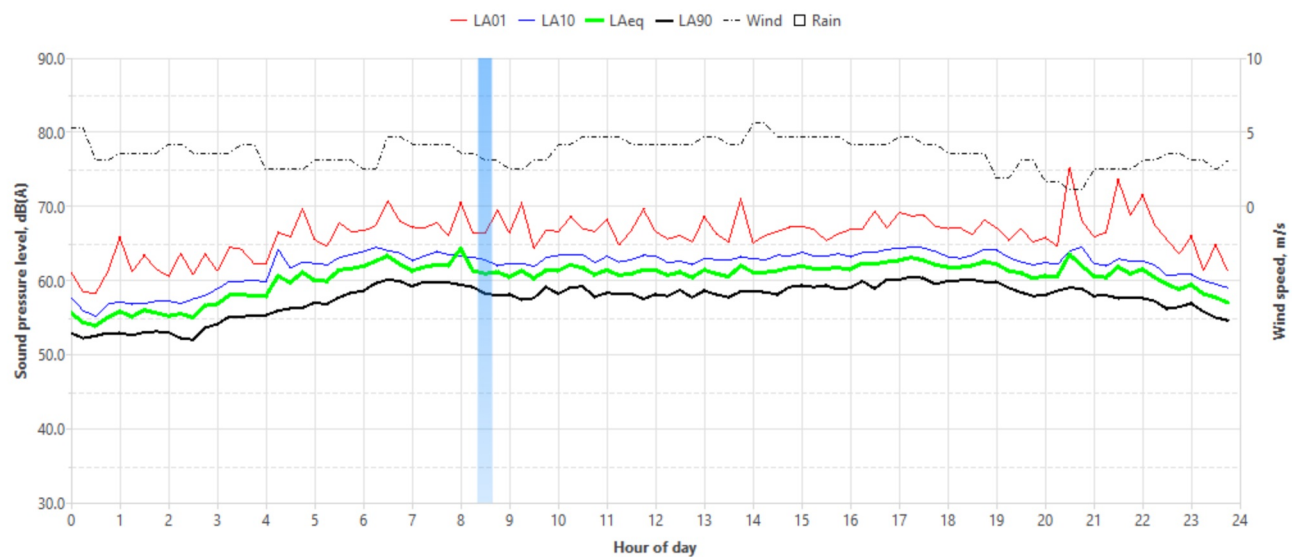
Wednesday, 10 September 2025



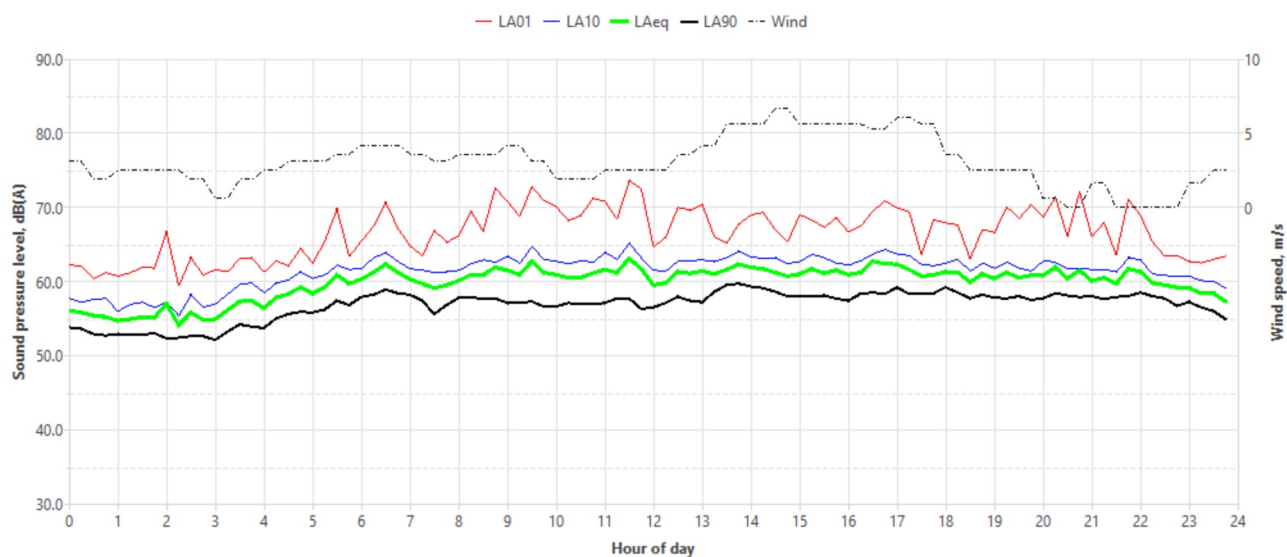
Thursday, 11 September 2025



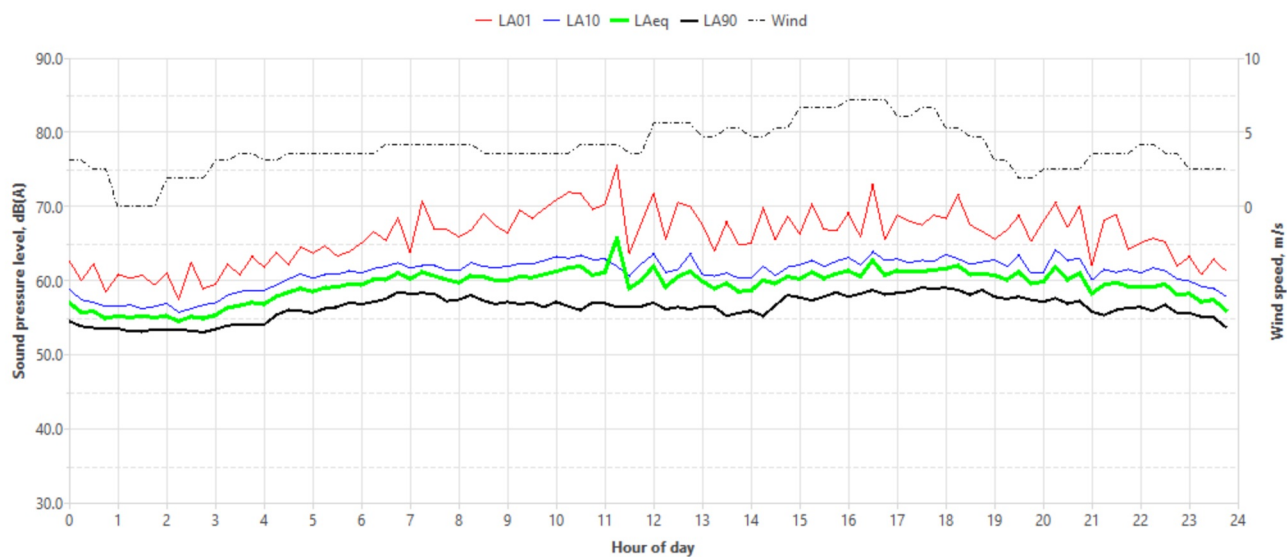
Friday, 12 September 2025



Saturday, 13 September 2025



Sunday, 14 September 2025



35 Gertrude Street, Wolli Creek

Ambient noise monitoring report



Item	Information
Logger Type	NL-42
Serial number	873126
Address	35 Gertrude Street, Wolli Creek
Location	35 Gertrude Street
Facade / free field	Free field
Environment	Ambient noise controlled by road traffic

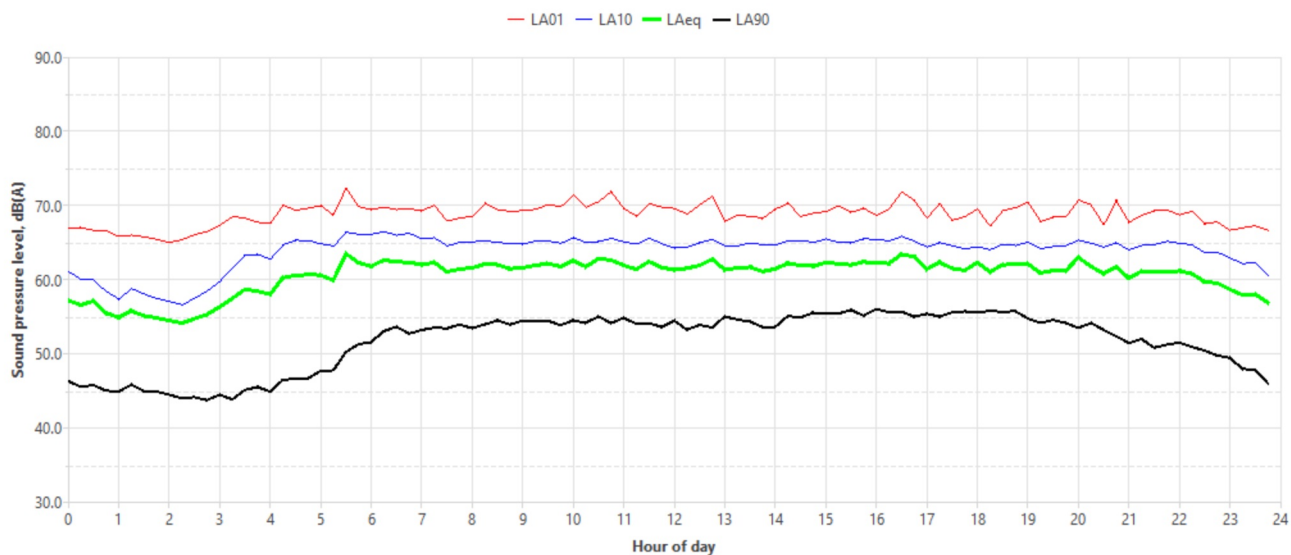
Measured noise levels

Logging date	Rating Background Level				L _{Aeq,period}			
	Morning Shoulder 5am-7am	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am	Morning Shoulder 5am-7am	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am
Tue 02 Sep 2025	51	55	50	44	64	63	62	61
Wed 03 Sep 2025	48	52	50	40	63	62	61	60
Thu 04 Sep 2025	50	53	52	41	65	62	61	60
Fri 05 Sep 2025	47	55	53	43	62	63	61	59
Sat 06 Sep 2025	47	54	52	42	61	62	62	59
Sun 07 Sep 2025	46	52	52	44	60	62	61	58
Mon 08 Sep 2025	49	53	49	41	63	62	59	59
Tue 09 Sep 2025	51	53	51	40	62	62	60	59
Wed 10 Sep 2025	52	-	-	-	65	-	-	-
Thu 11 Sep 2025	61	-	52	-	68	-	61	-
Fri 12 Sep 2025	51	54	53	43	63	63	62	61
Sat 13 Sep 2025	48	53	52	43	62	62	62	59
Sun 14 Sep 2025	46	52	50	44	61	61	61	59
Summary	48	53	52	43	63	62	61	59

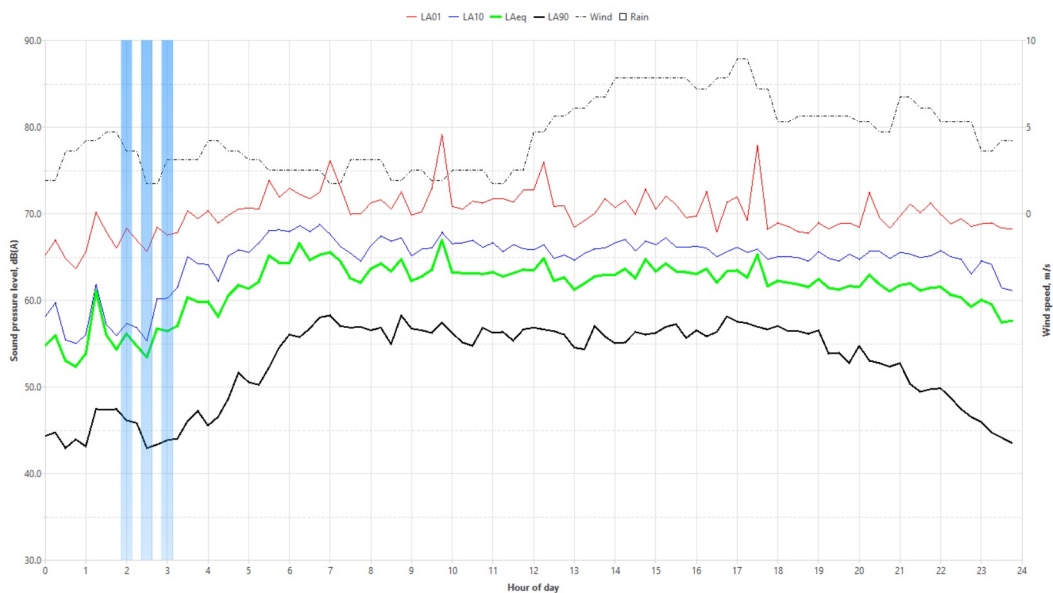
Note: Results with a '-' identify that there were not enough measurements available to correctly calculate the level, in accordance with the Noise Policy for Industry. The data has been excluded either from weather or manual exclusions. See the charts for more information

Logger location	Logger deployment photo

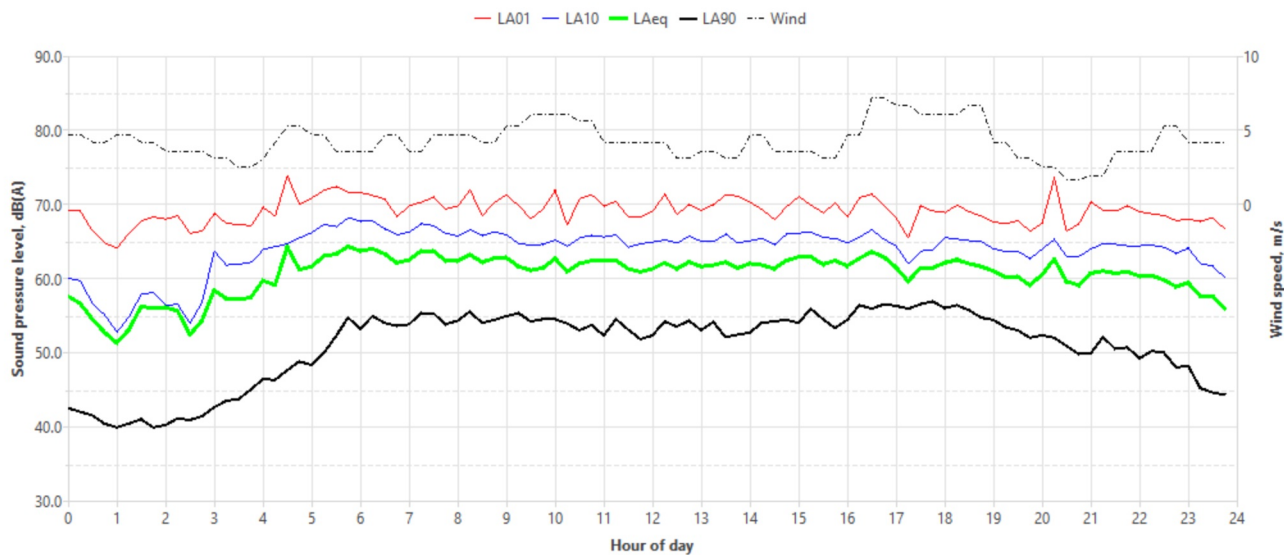
Typical Day



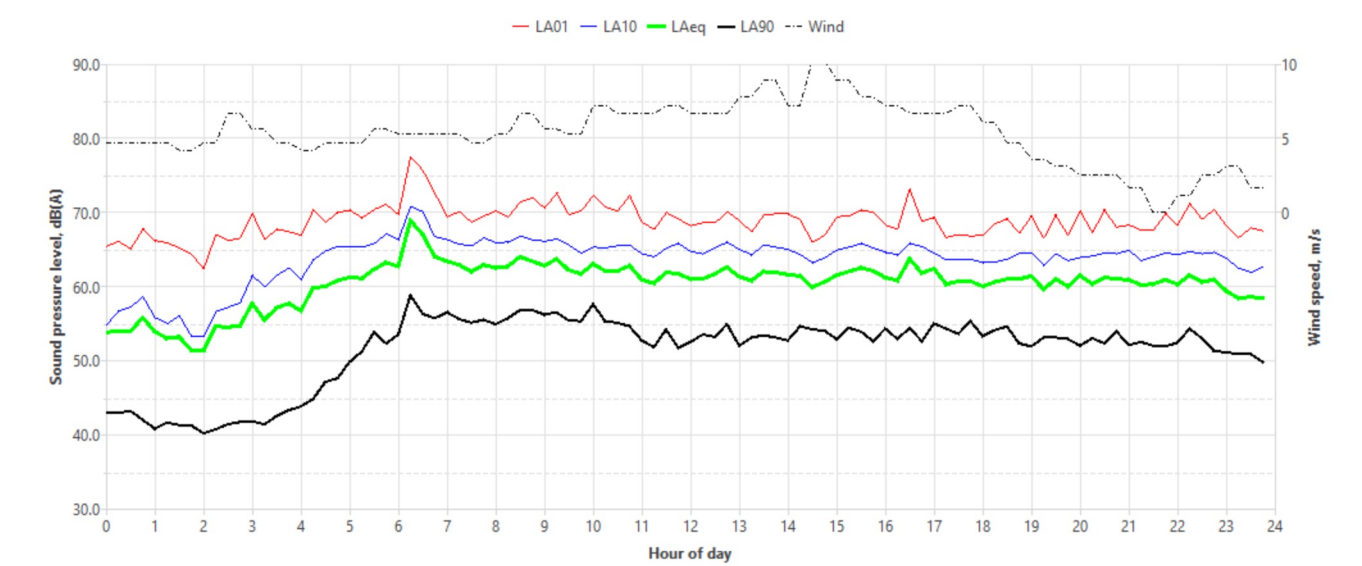
Tuesday, 2 September 2025



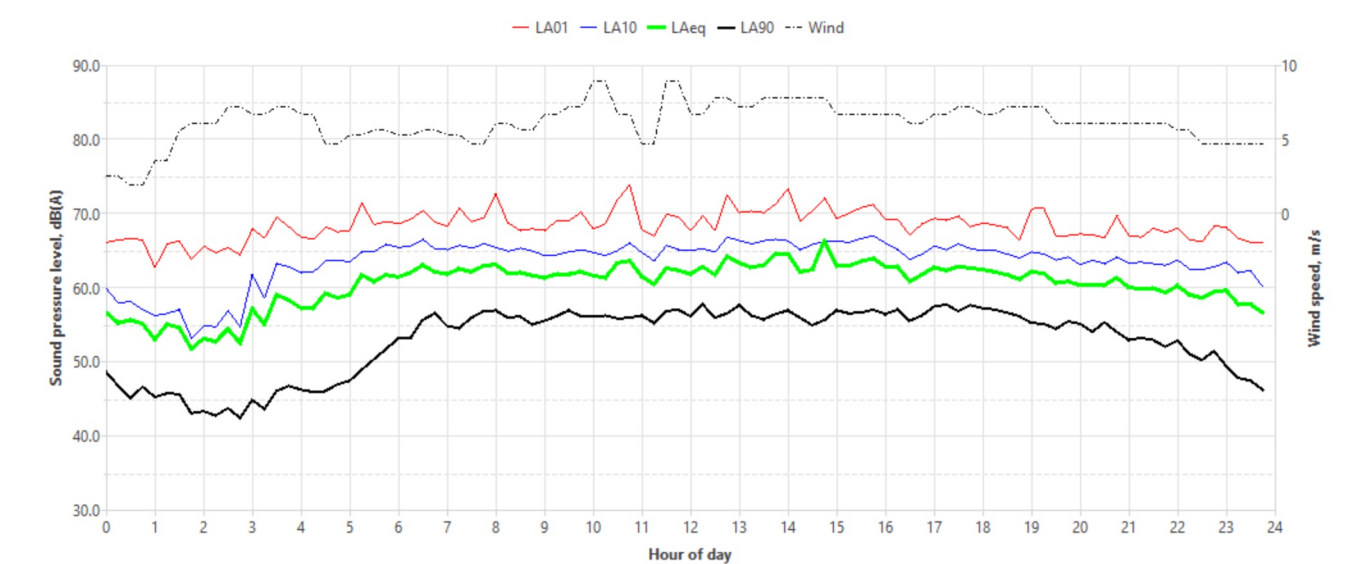
Wednesday, 3 September 2025



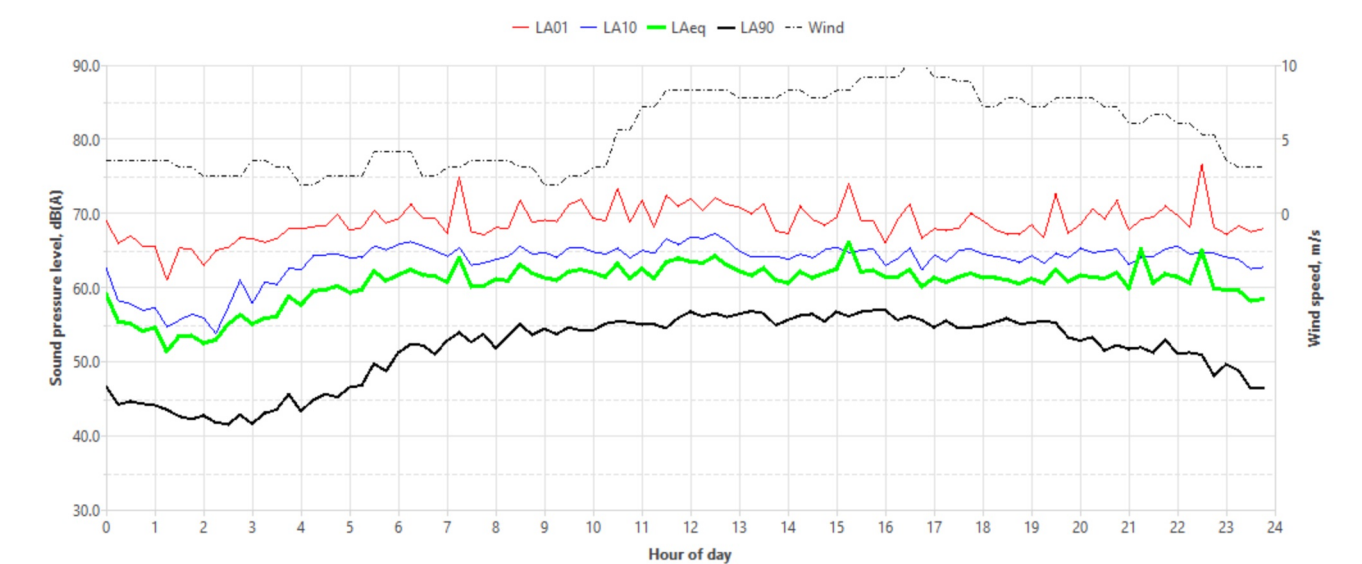
Thursday, 4 September 2025



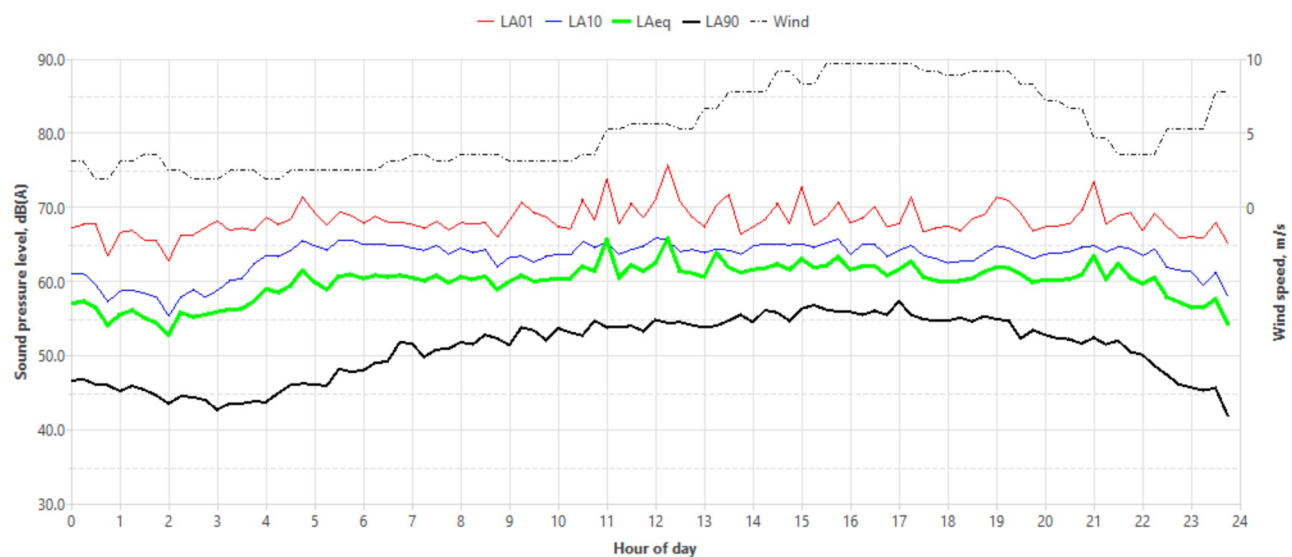
Friday, 5 September 2025



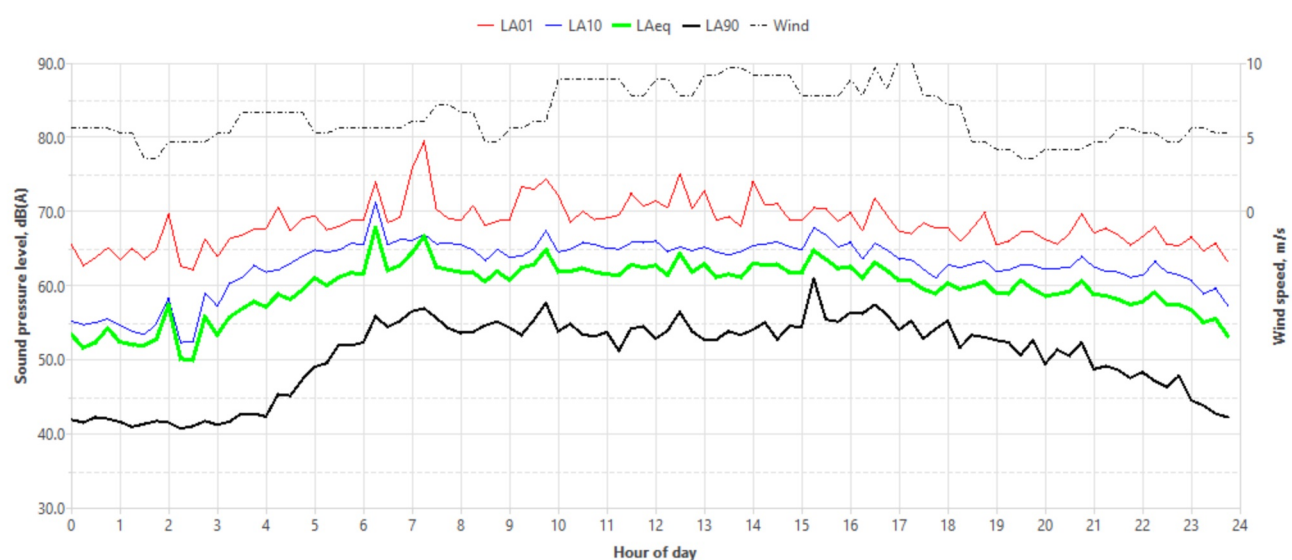
Saturday, 6 September 2025



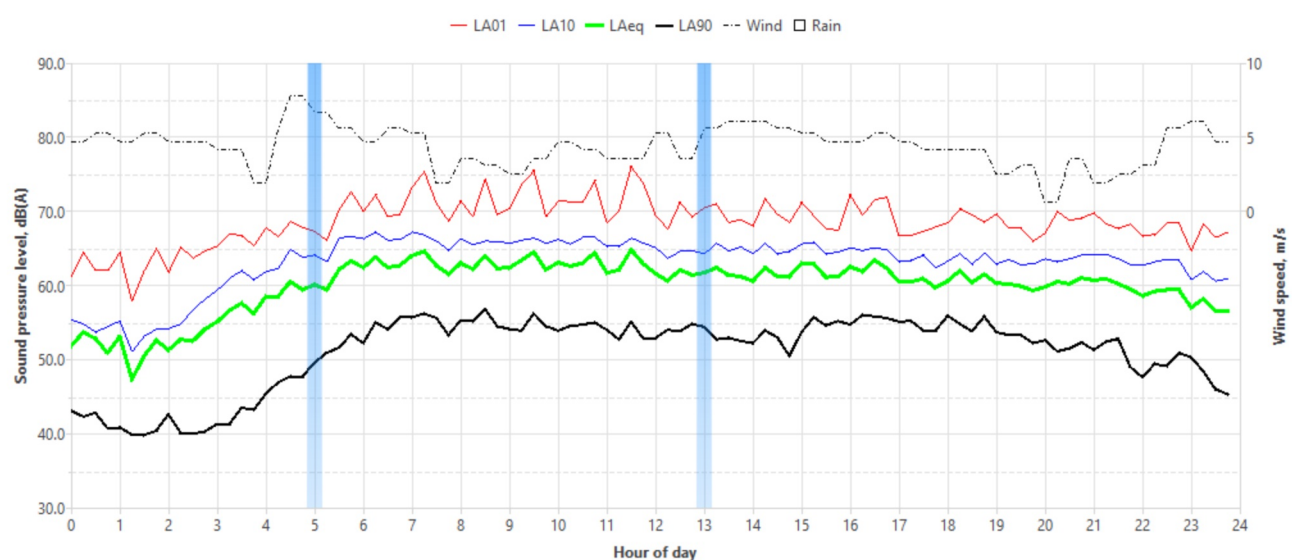
Sunday, 7 September 2025



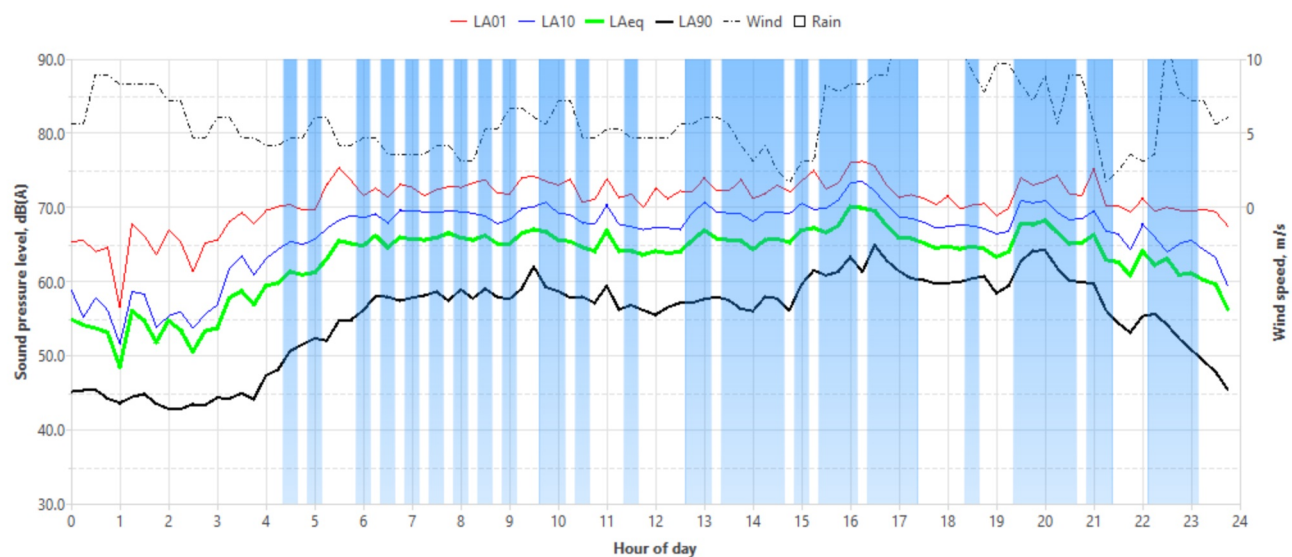
Monday, 8 September 2025



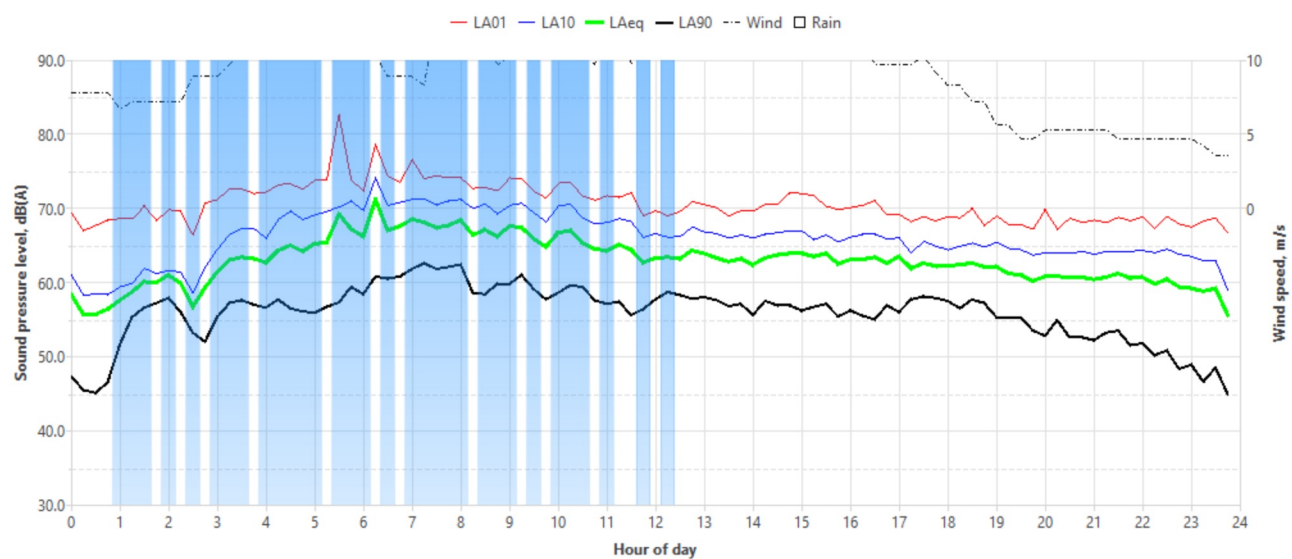
Tuesday, 9 September 2025



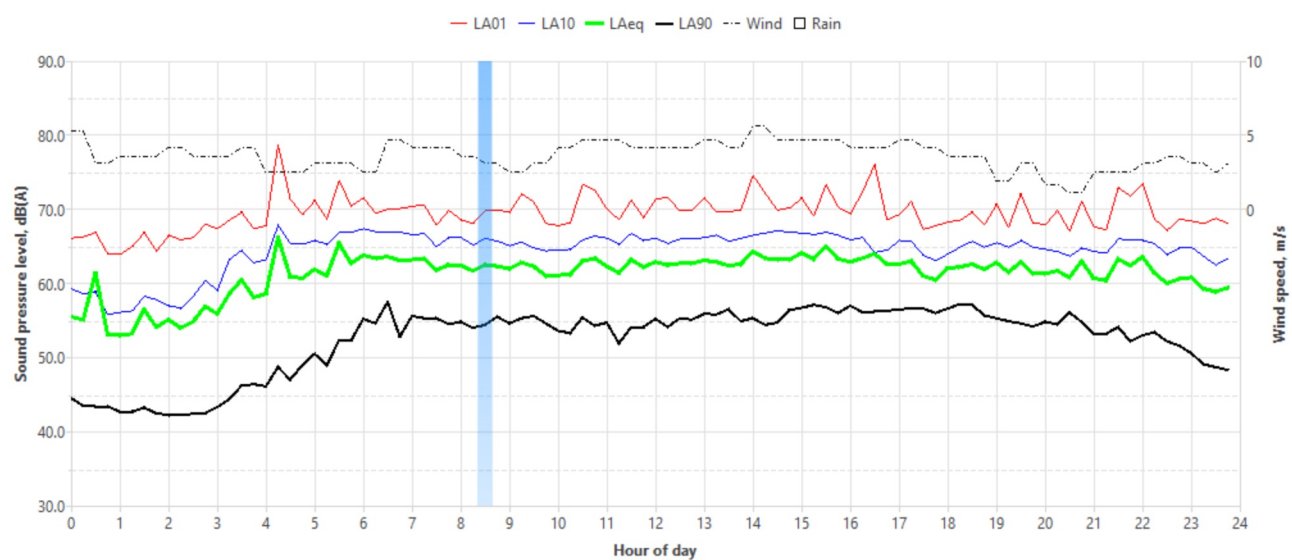
Wednesday, 10 September 2025



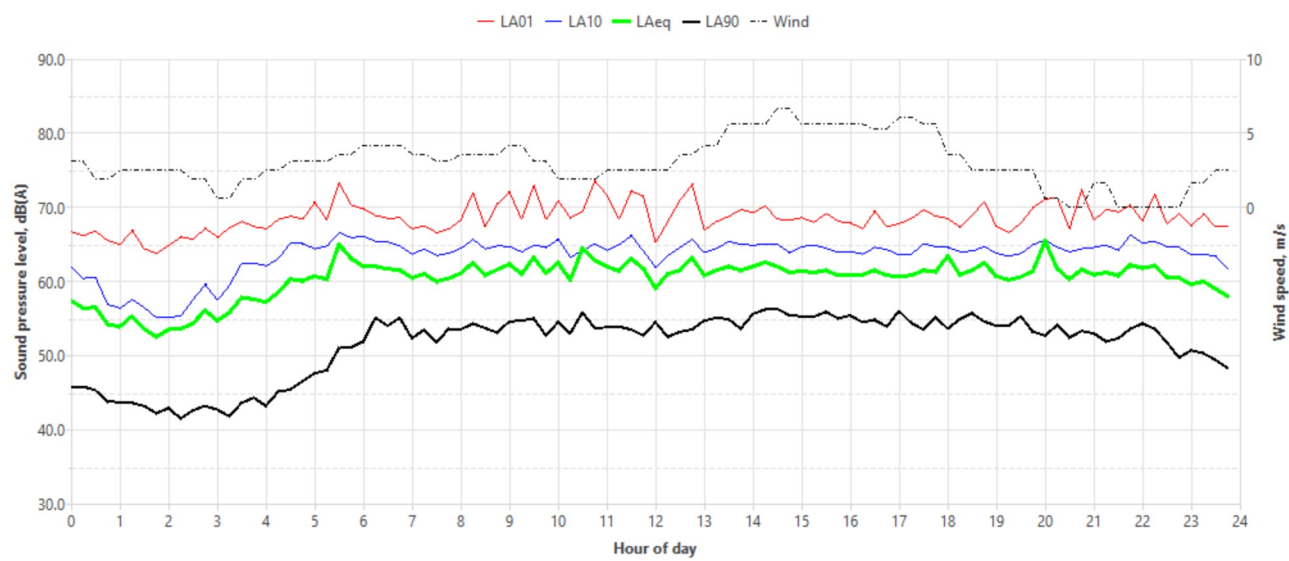
Thursday, 11 September 2025



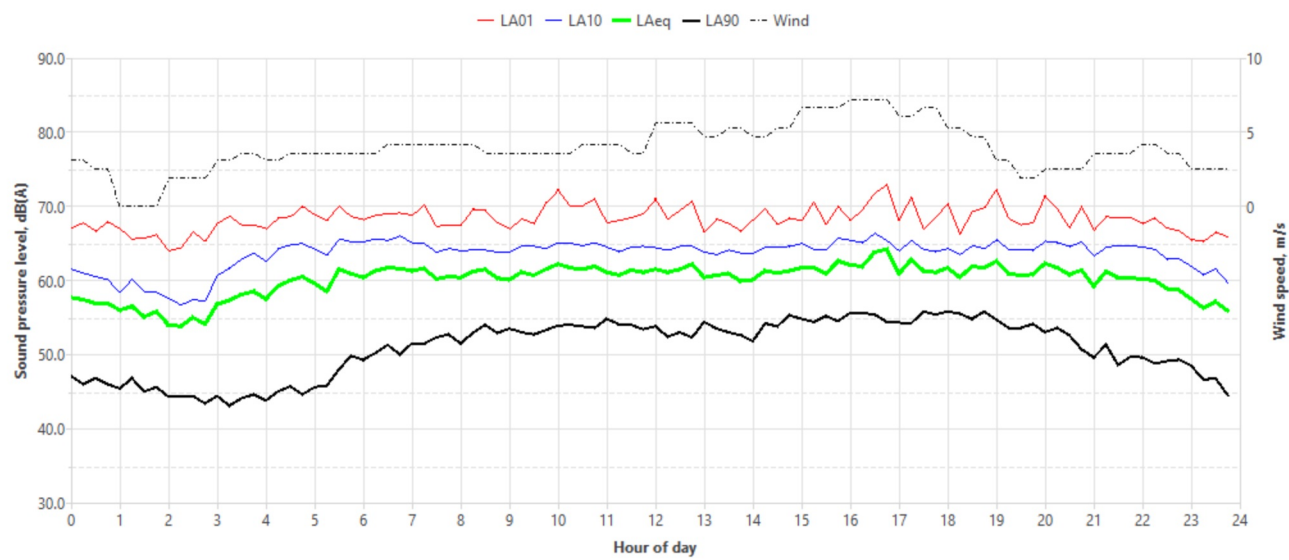
Friday, 12 September 2025



Saturday, 13 September 2025



Sunday, 14 September 2025



17 Innesdale Road, Wolli Creek

Ambient noise monitoring report



Item	Information
Logger Type	NL-42
Serial number	184111
Address	17 Innesdale Road, Wolli Creek
Location	Front yard of property
Facade / free field	Free field
Environment	Ambient noise controlled by road traffic

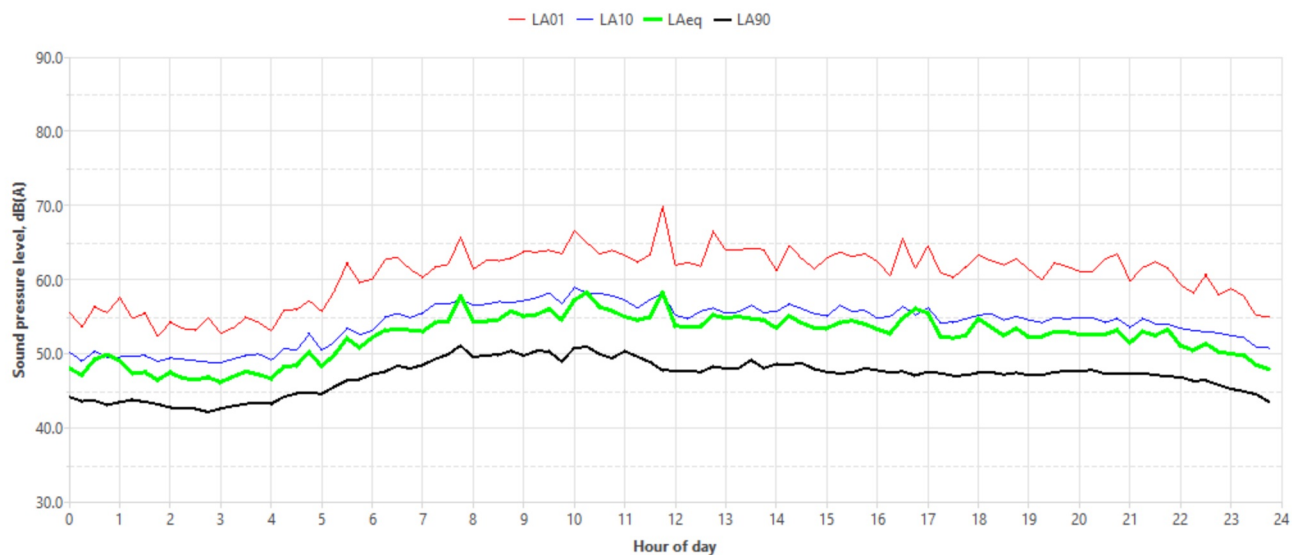
Measured noise levels

Logging date	Rating Background Level				L _{Aeq,period}			
	Morning Shoulder 5am-7am	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am	Morning Shoulder 5am-7am	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am
Wed 03 Sep 2025	46	48	46	39	52	56	53	49
Thu 04 Sep 2025	44	47	46	39	53	57	53	50
Fri 05 Sep 2025	47	-	-	-	54	-	-	-
Sat 06 Sep 2025	-	46	44	-	-	55	52	-
Sun 07 Sep 2025	41	44	43	39	48	53	54	47
Mon 08 Sep 2025	43	49	44	38	51	58	53	48
Tue 09 Sep 2025	45	46	44	37	51	65	56	49
Wed 10 Sep 2025	47	50	48	42	55	60	59	51
Thu 11 Sep 2025	53	-	50	44	60	-	58	57
Fri 12 Sep 2025	48	48	48	42	54	59	54	54
Sat 13 Sep 2025	45	46	46	42	51	56	53	49
Sun 14 Sep 2025	42	45	46	42	51	54	52	49
Summary	44	47	46	40	54	59	55	52

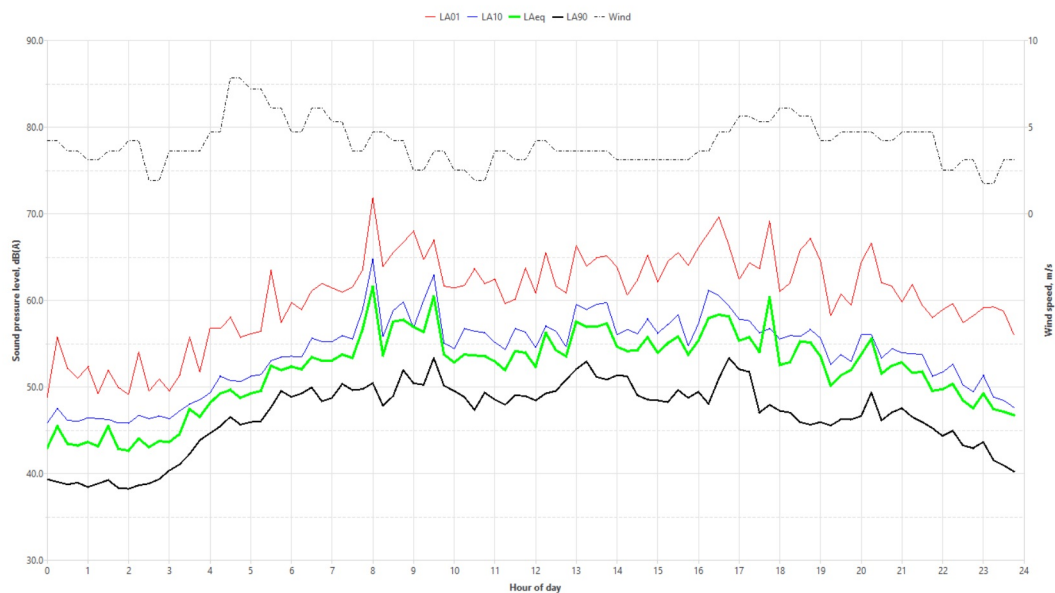
Note: Results with a '-' identify that there were not enough measurements available to correctly calculate the level, in accordance with the Noise Policy for Industry. The data has been excluded either from weather or manual exclusions. See the charts for more information

Logger location	Logger deployment photo

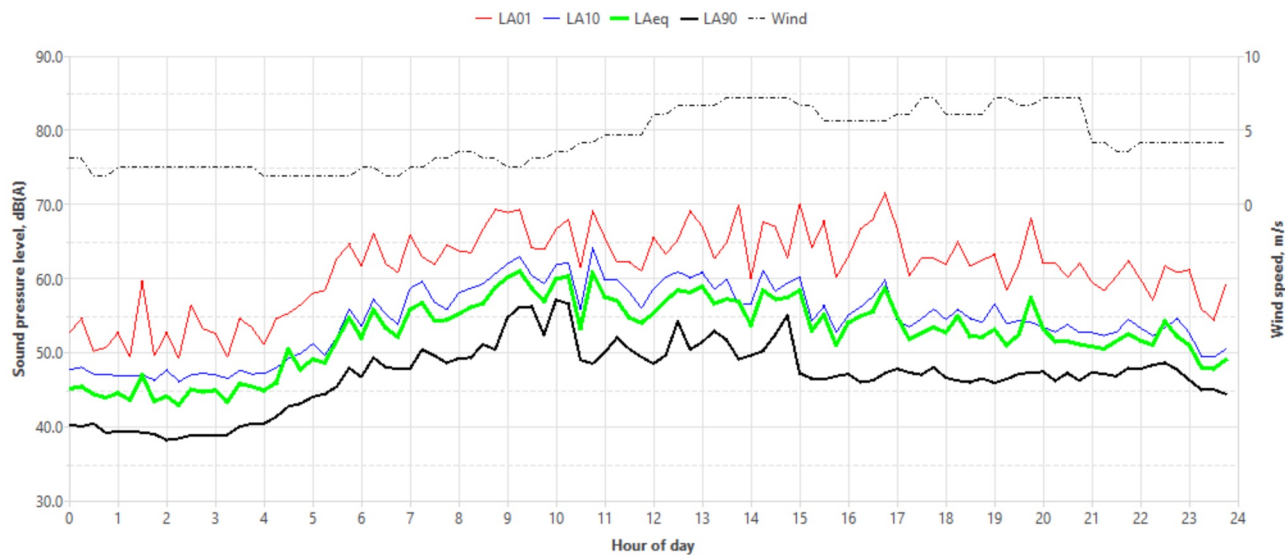
Typical Day



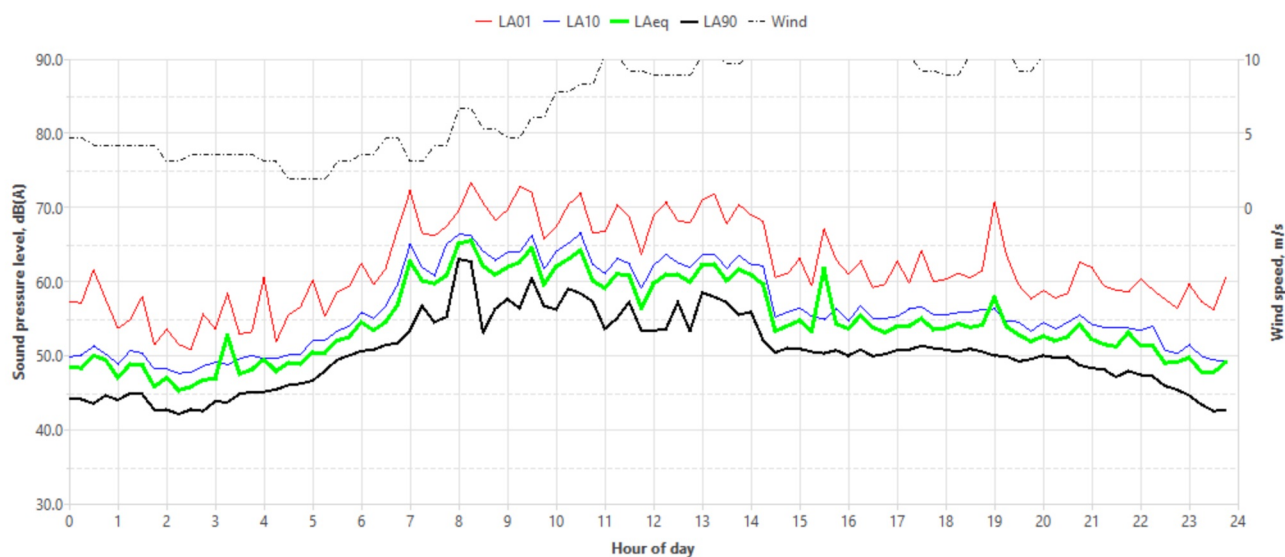
Wednesday, 3 September 2025



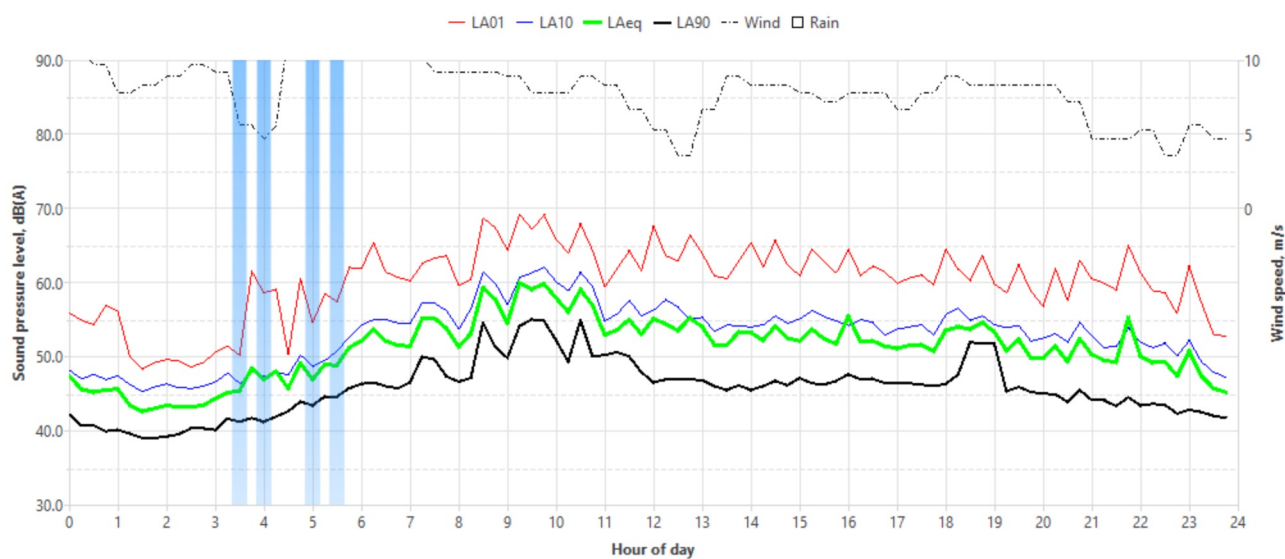
Thursday, 4 September 2025



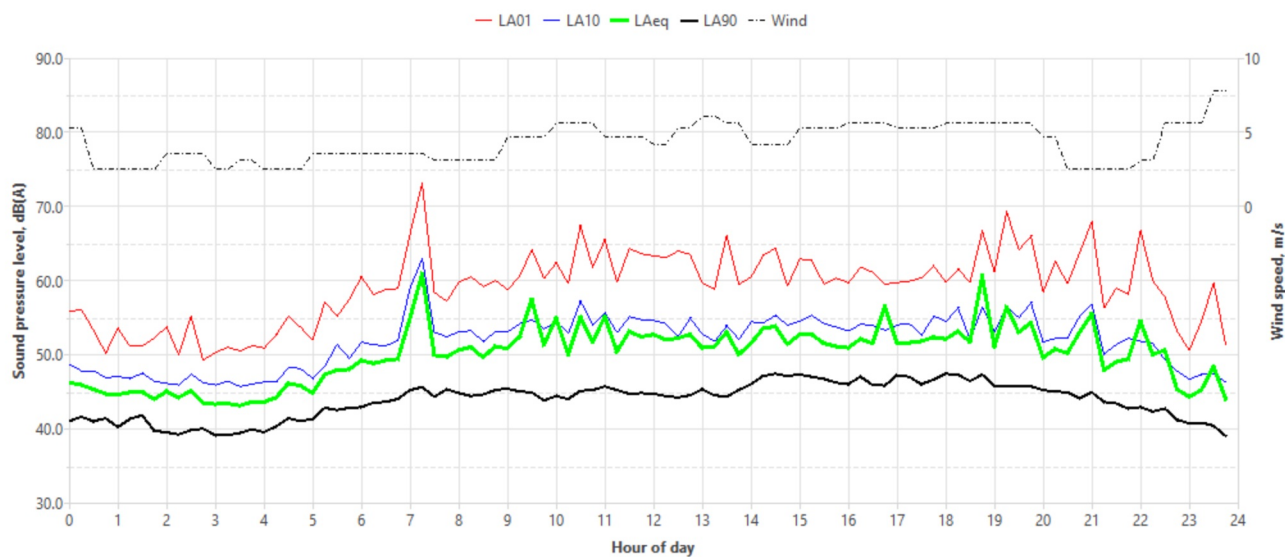
Friday, 5 September 2025



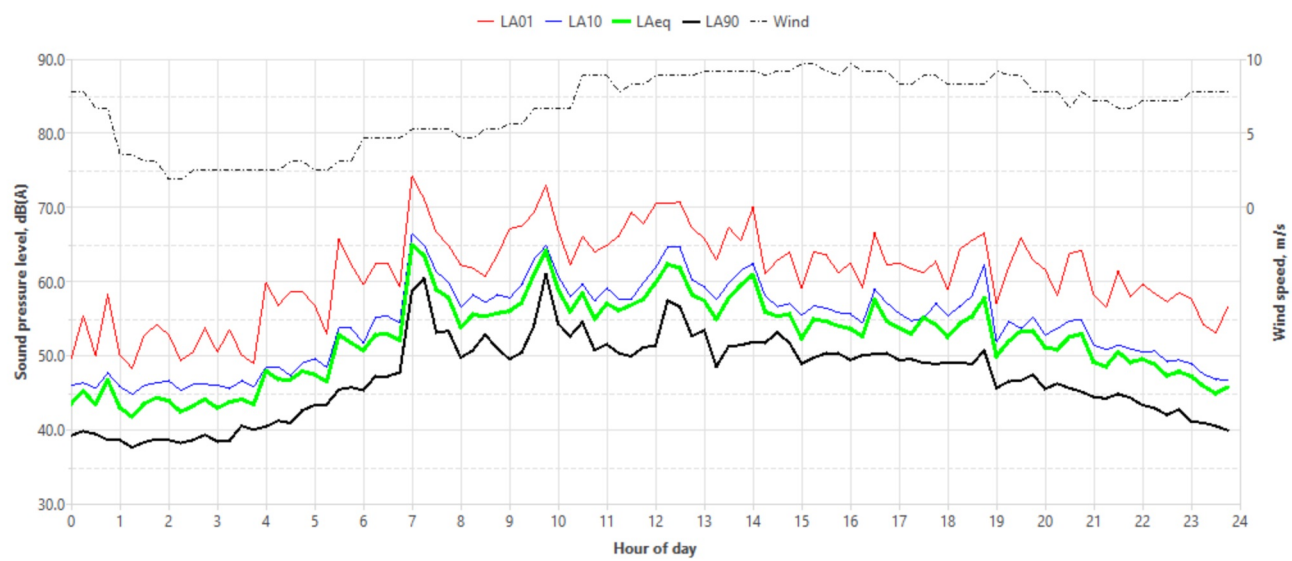
Saturday, 6 September 2025



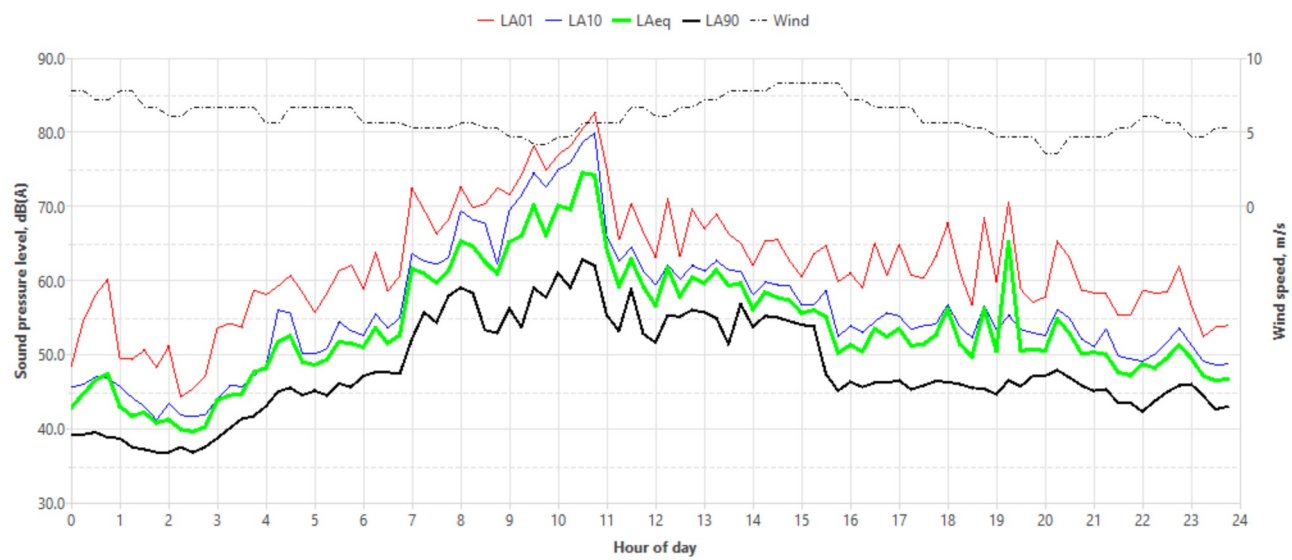
Sunday, 7 September 2025



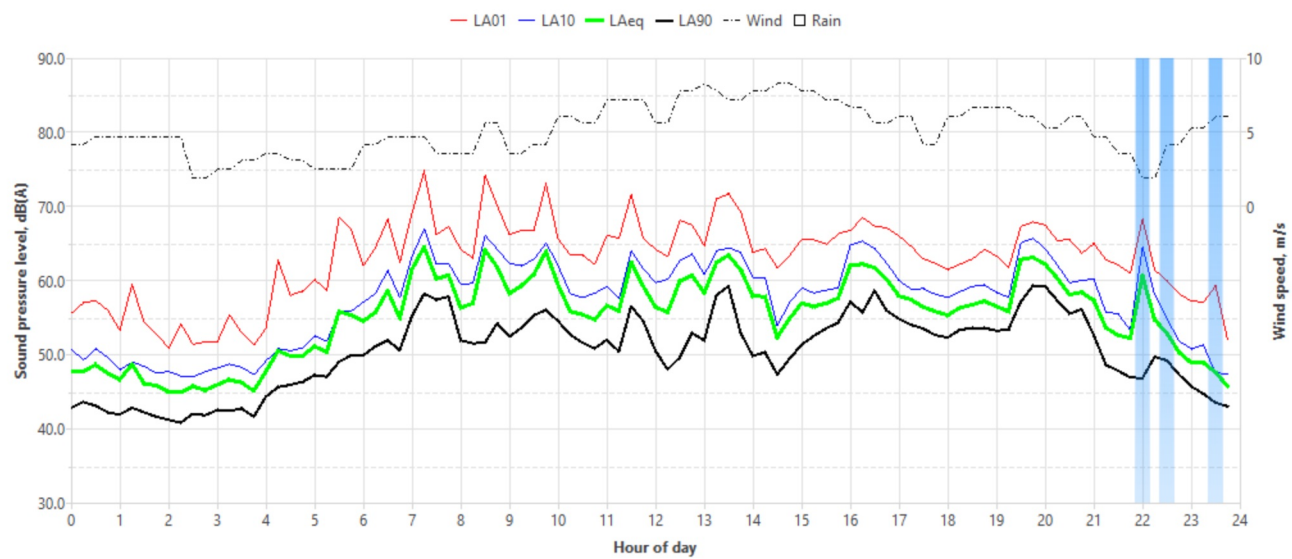
Monday, 8 September 2025



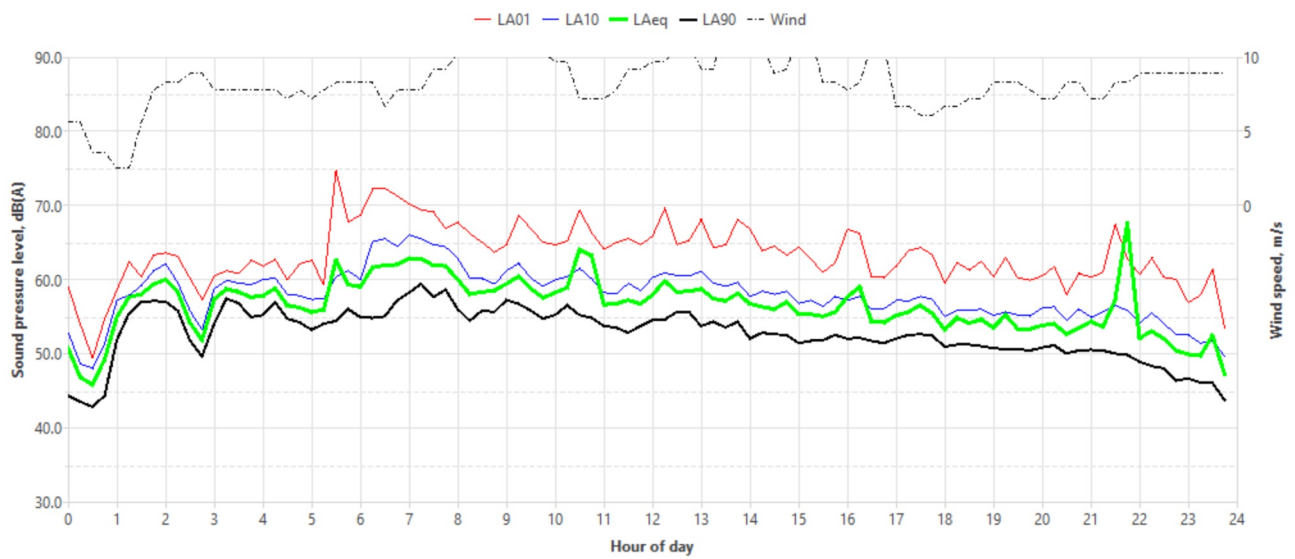
Tuesday, 9 September 2025



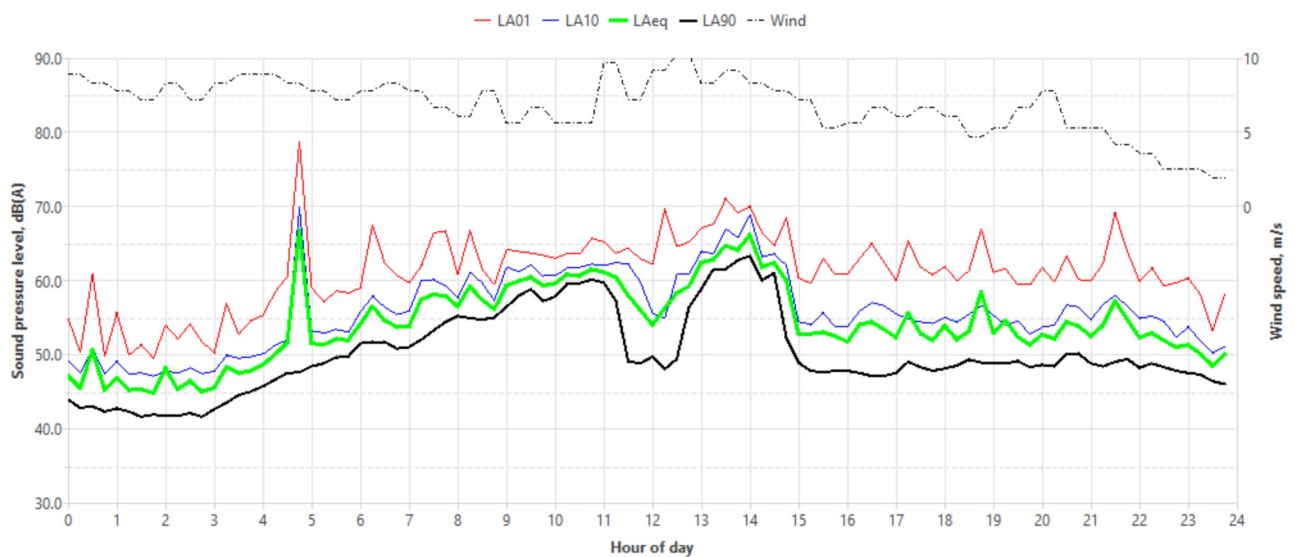
Wednesday, 10 September 2025



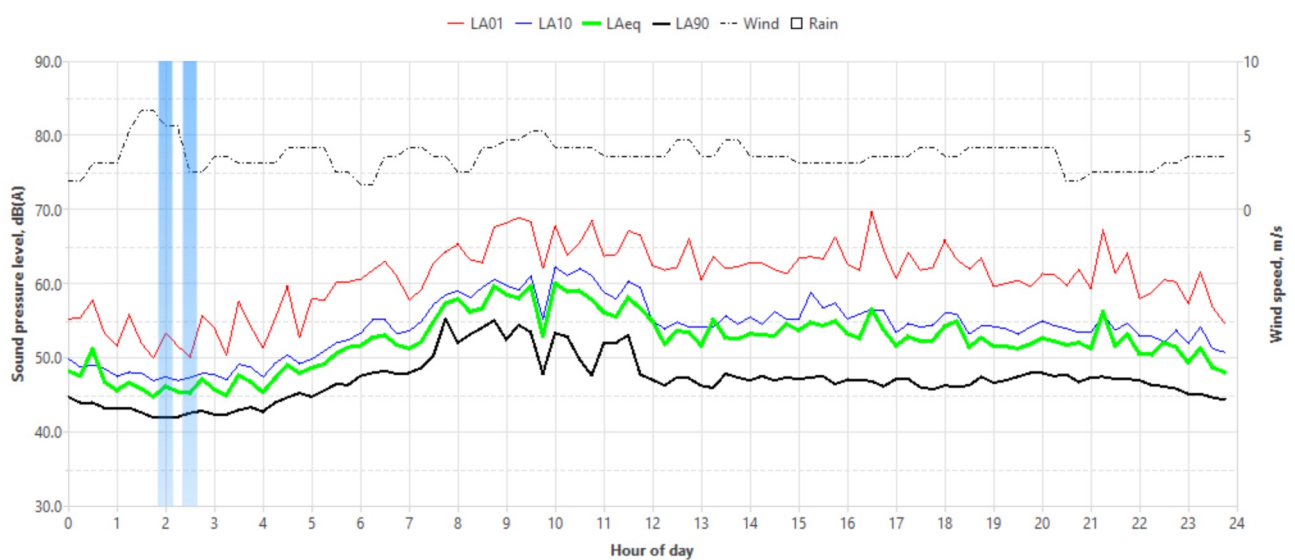
Thursday, 11 September 2025

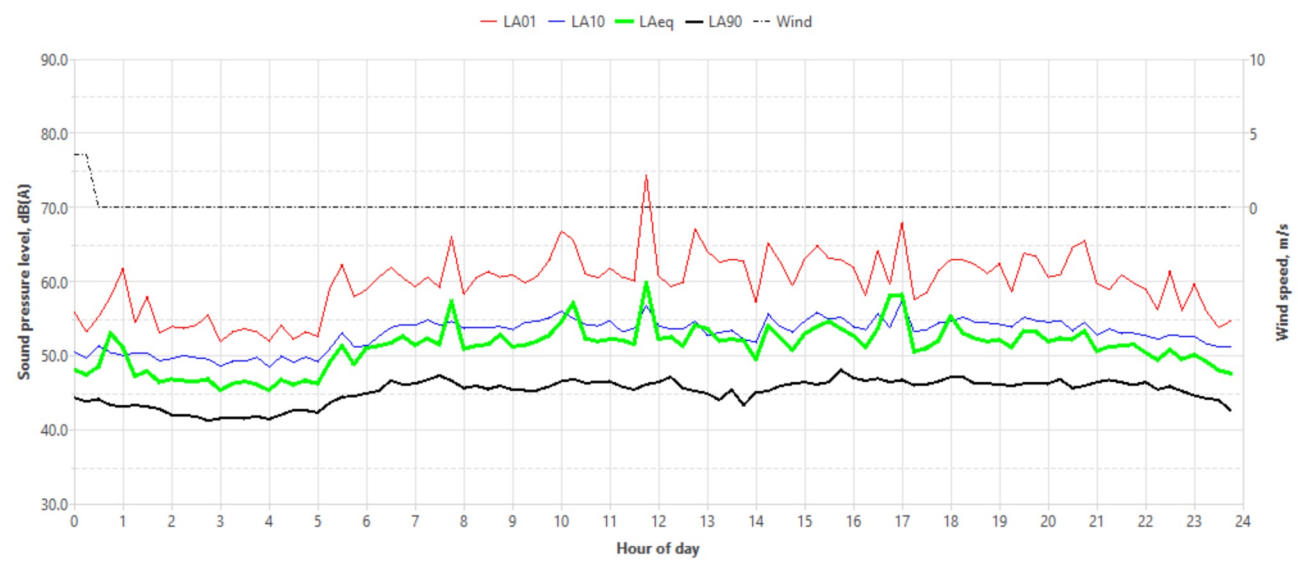


Friday, 12 September 2025



Saturday, 13 September 2025





24A Marsh St, Arncliffe

Ambient noise monitoring report



Item	Information
Logger Type	NL-42
Serial number	00546394
Address	24A Marsh St, Arncliffe
Location	Front yard adjacent to Marsh Street
Facade / free field	Free field
Environment	Ambient noise controlled by road traffic

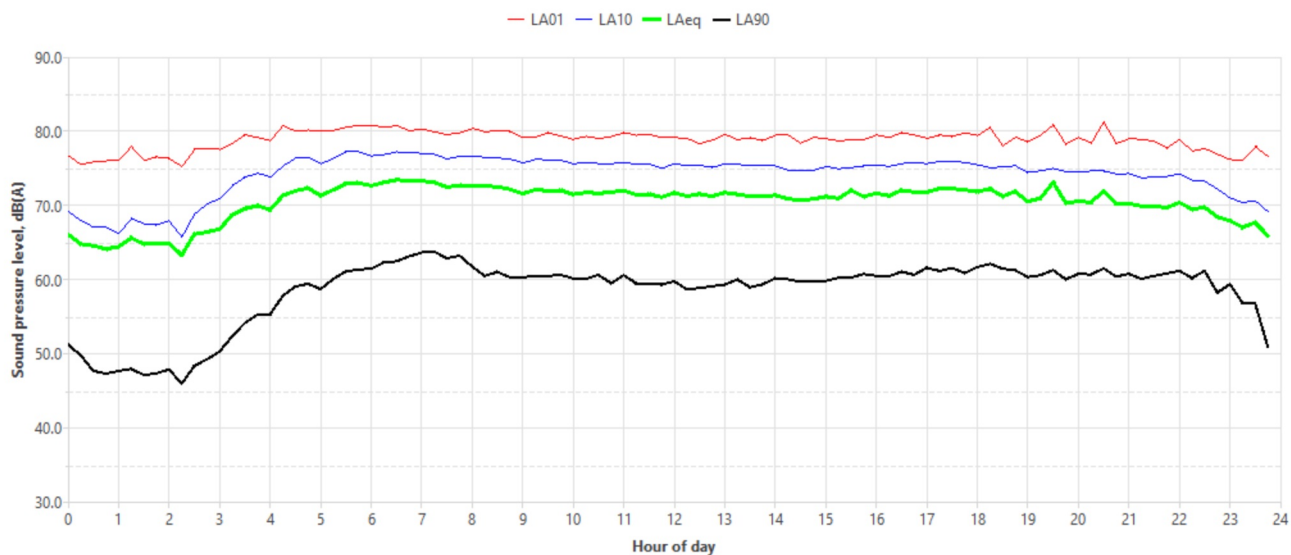
Measured noise levels

Logging date	Rating Background Level				L _{Aeq,period}			
	Morning Shoulder 5am-7am	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am	Morning Shoulder 5am-7am	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am
Tue 02 Sep 2025	61	60	58	47	74	72	71	71
Wed 03 Sep 2025	60	59	57	45	74	72	71	70
Thu 04 Sep 2025	59	60	59	44	74	72	71	70
Fri 05 Sep 2025	59	61	62	48	74	73	71	70
Sat 06 Sep 2025	57	59	60	45	72	72	71	69
Sun 07 Sep 2025	58	59	59	45	72	71	70	69
Mon 08 Sep 2025	59	59	58	45	74	72	70	70
Tue 09 Sep 2025	62	60	59	46	74	72	70	70
Wed 10 Sep 2025	62	-	-	-	76	-	-	-
Thu 11 Sep 2025	69	-	60	-	80	-	71	-
Fri 12 Sep 2025	61	60	60	46	74	72	71	71
Sat 13 Sep 2025	59	58	61	46	72	71	71	70
Sun 14 Sep 2025	57	57	59	47	72	71	71	69
Summary	59	59	59	46	74	72	71	70

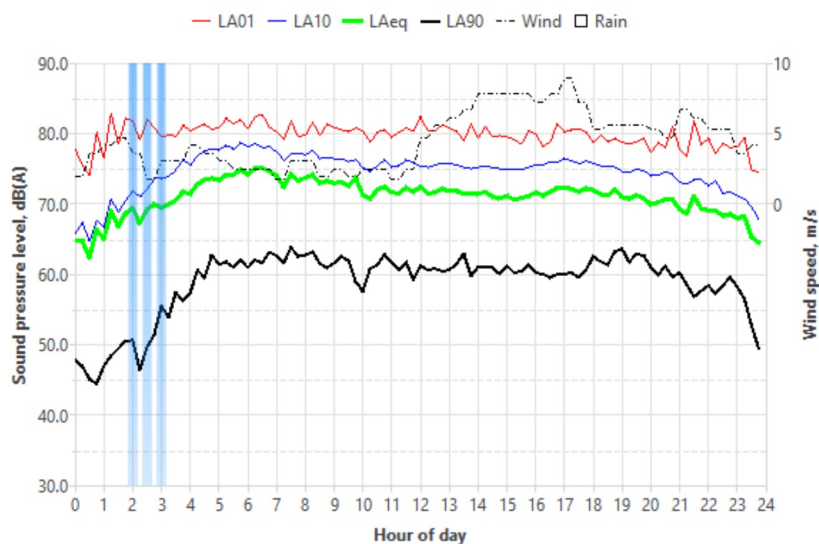
Note: Results with a '-' identify that there were not enough measurements available to correctly calculate the level, in accordance with the Noise Policy for Industry. The data has been excluded either from weather or manual exclusions. See the charts for more information

Logger location	Logger deployment photo

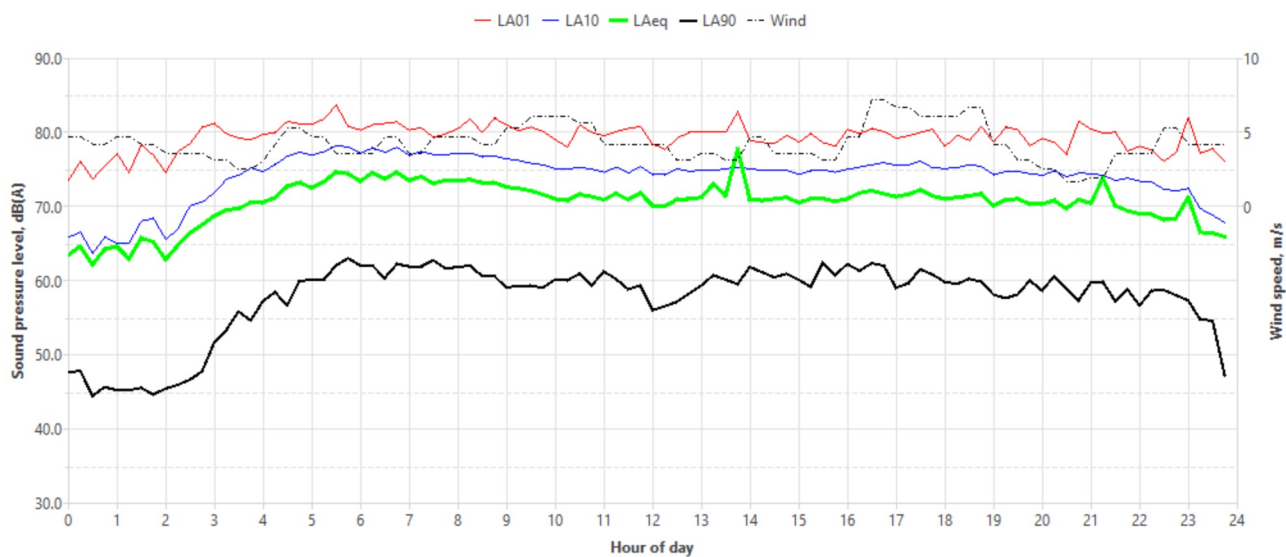
Typical Day



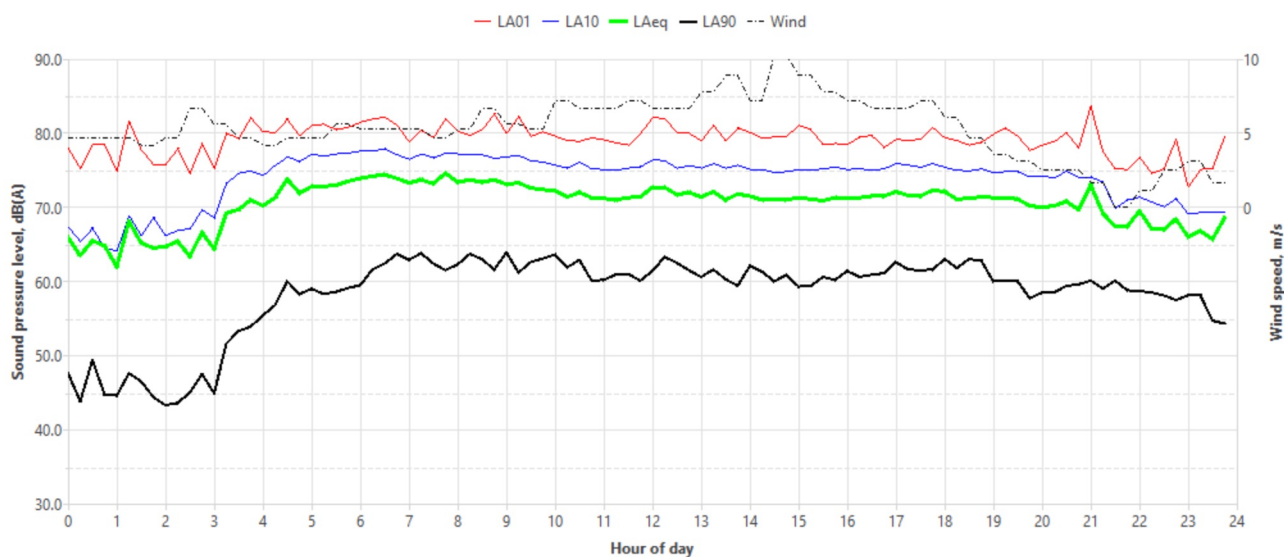
Tuesday, 2 September 2025



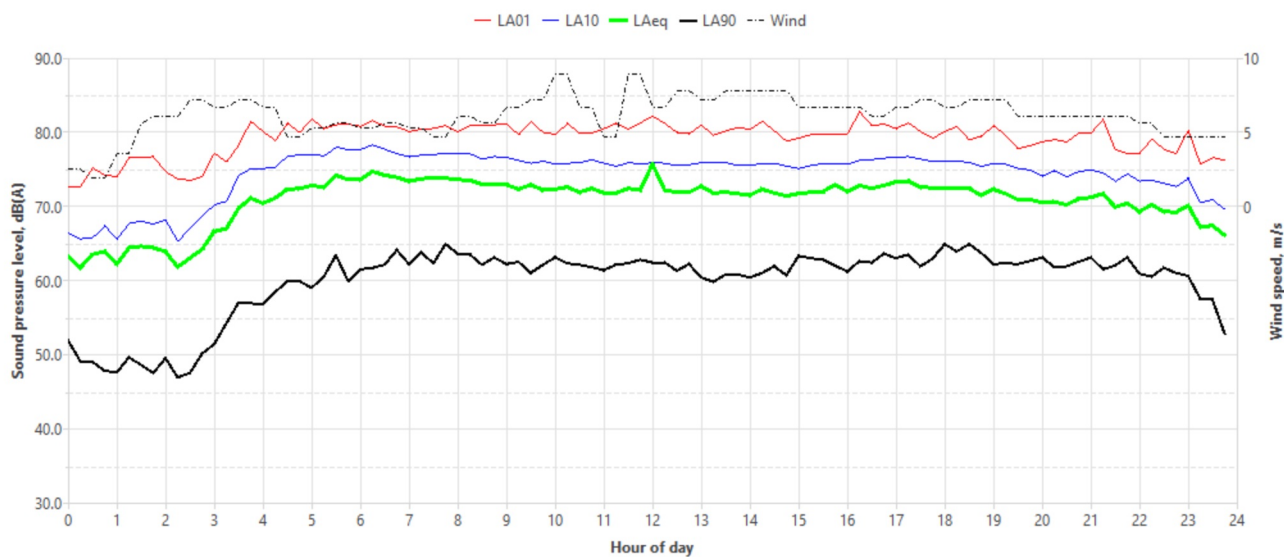
Wednesday, 3 September 2025



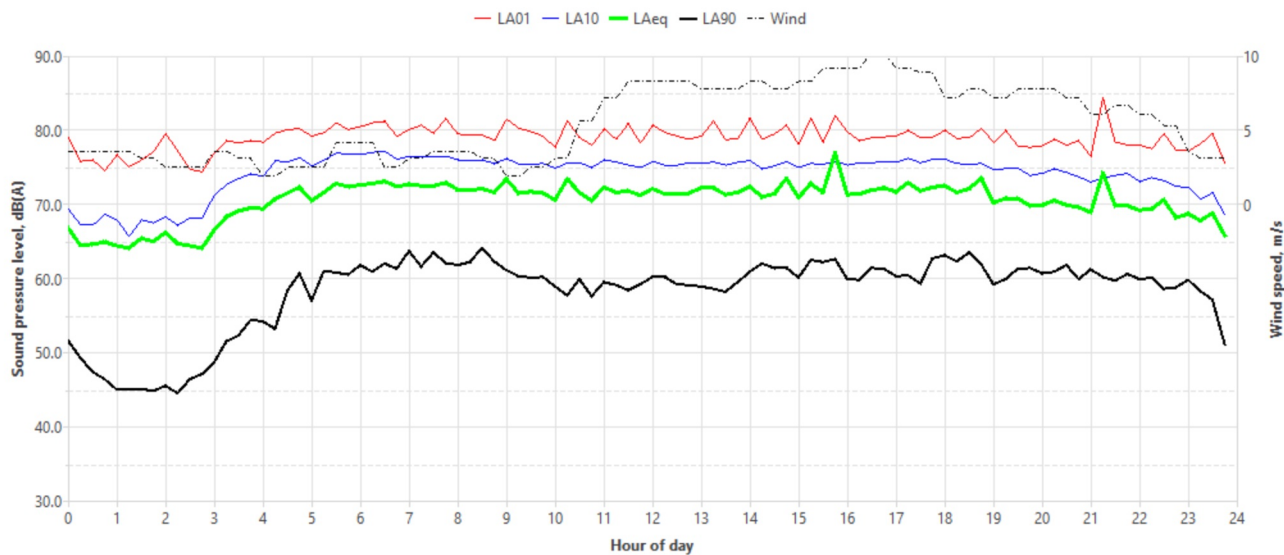
Thursday, 4 September 2025



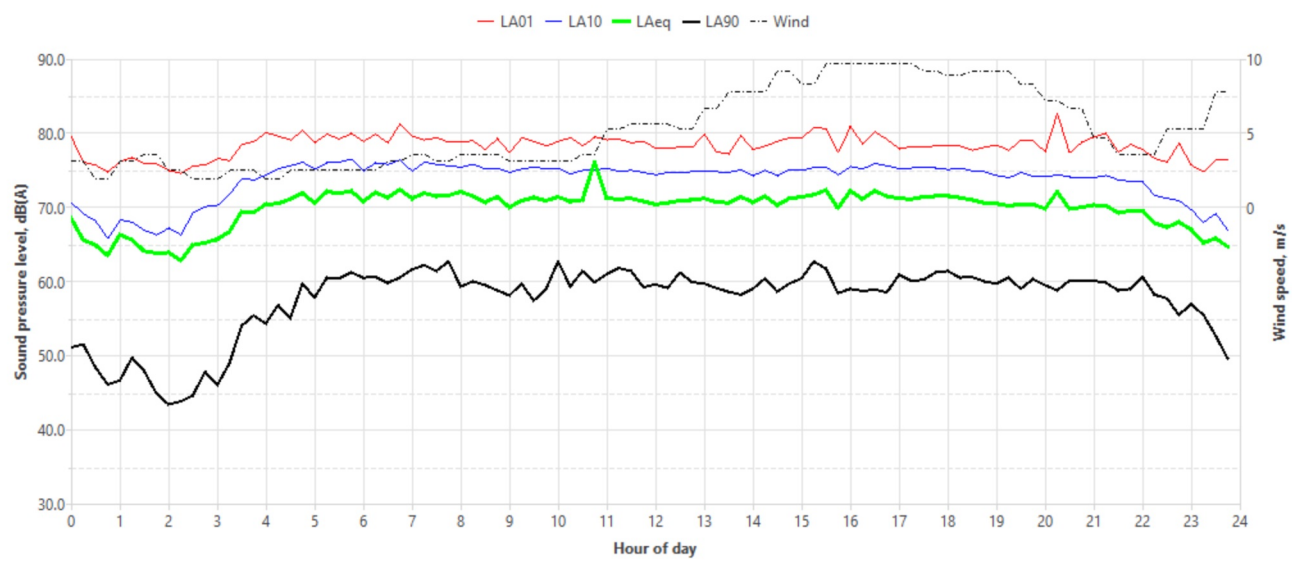
Friday, 5 September 2025



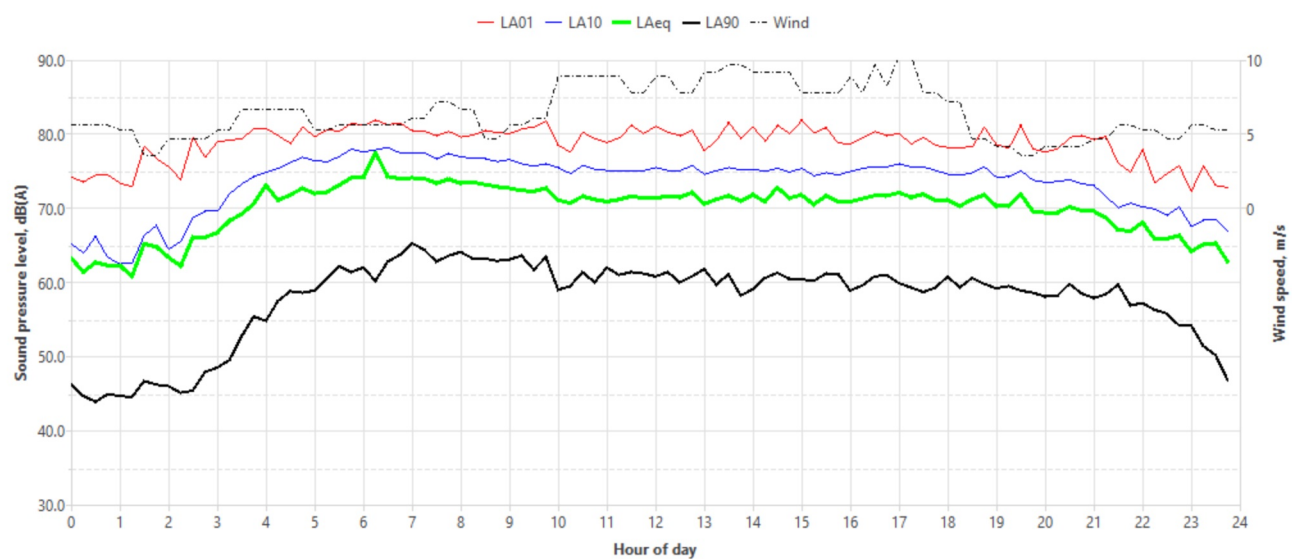
Saturday, 6 September 2025



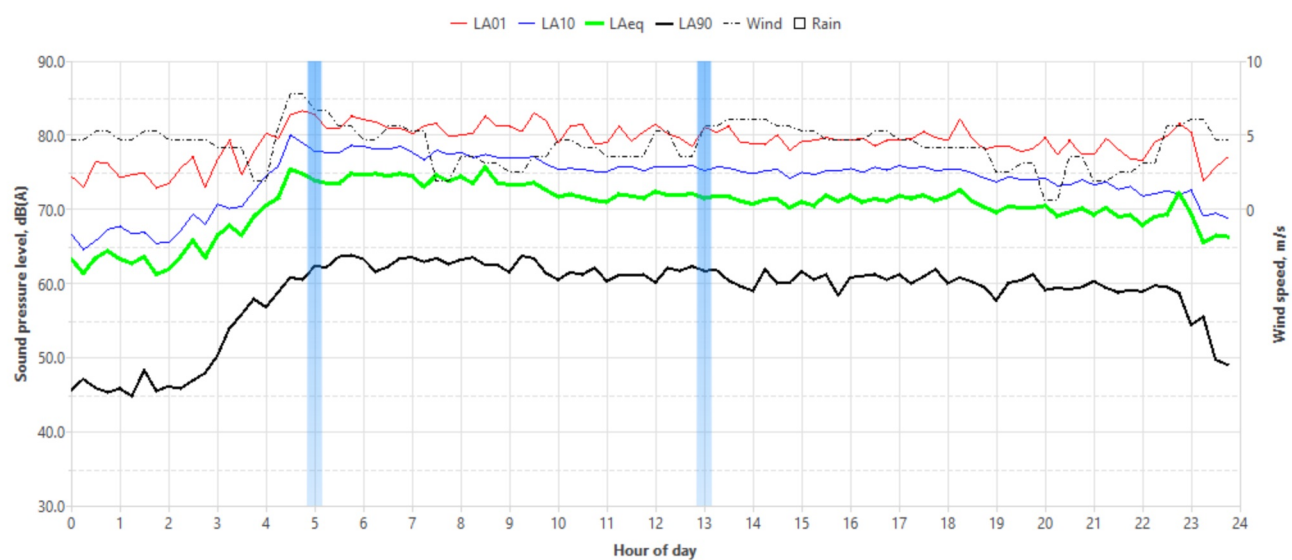
Sunday, 7 September 2025



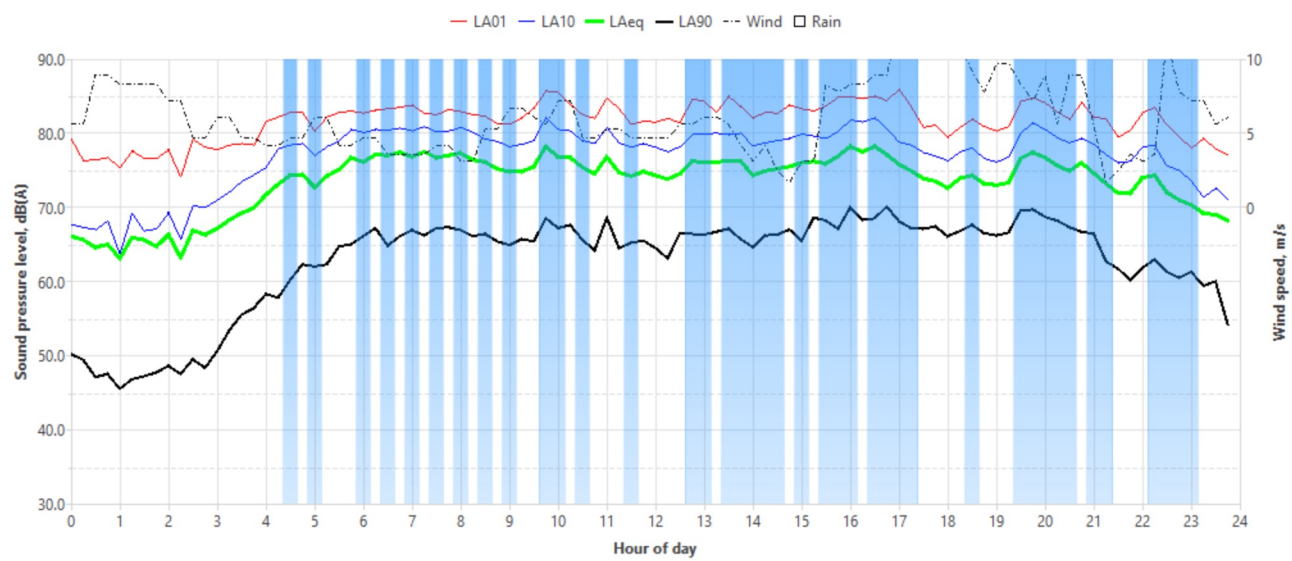
Monday, 8 September 2025



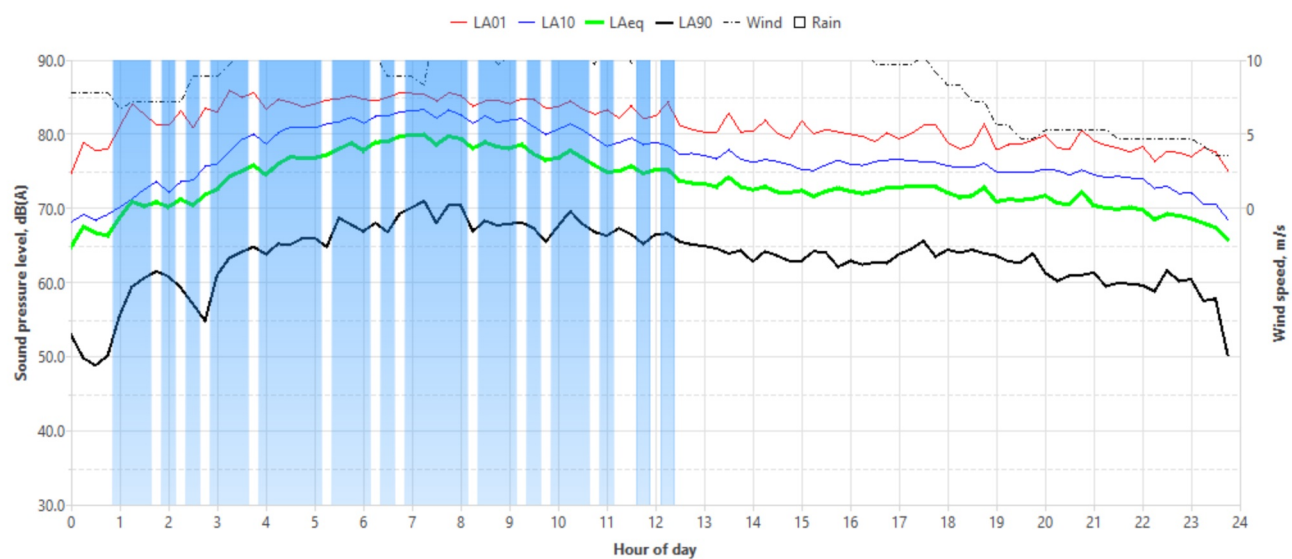
Tuesday, 9 September 2025



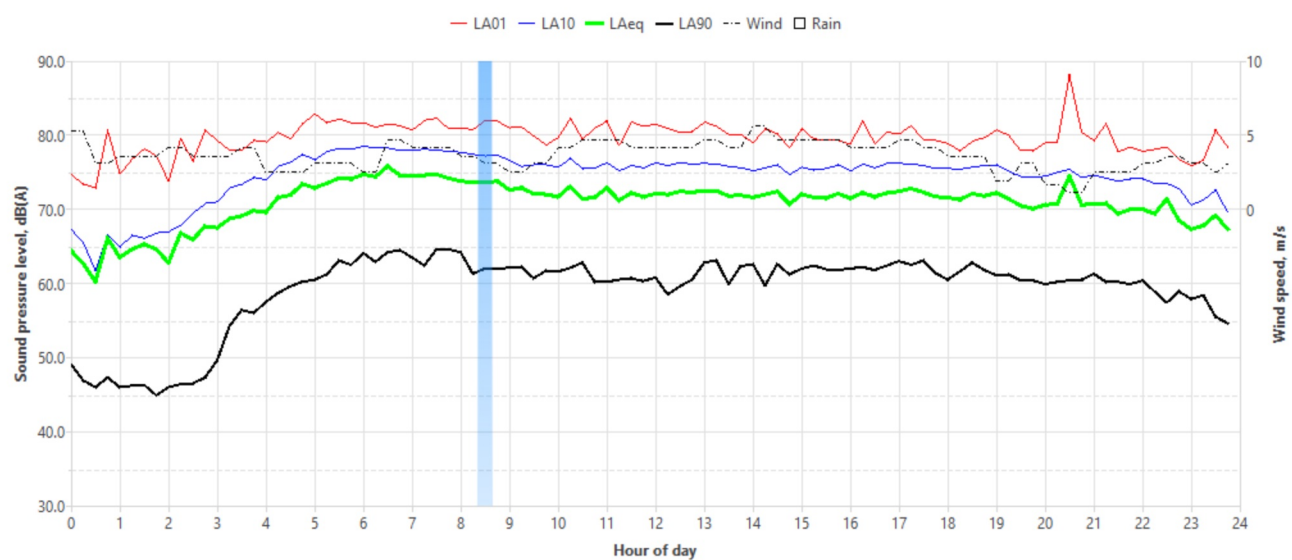
Wednesday, 10 September 2025



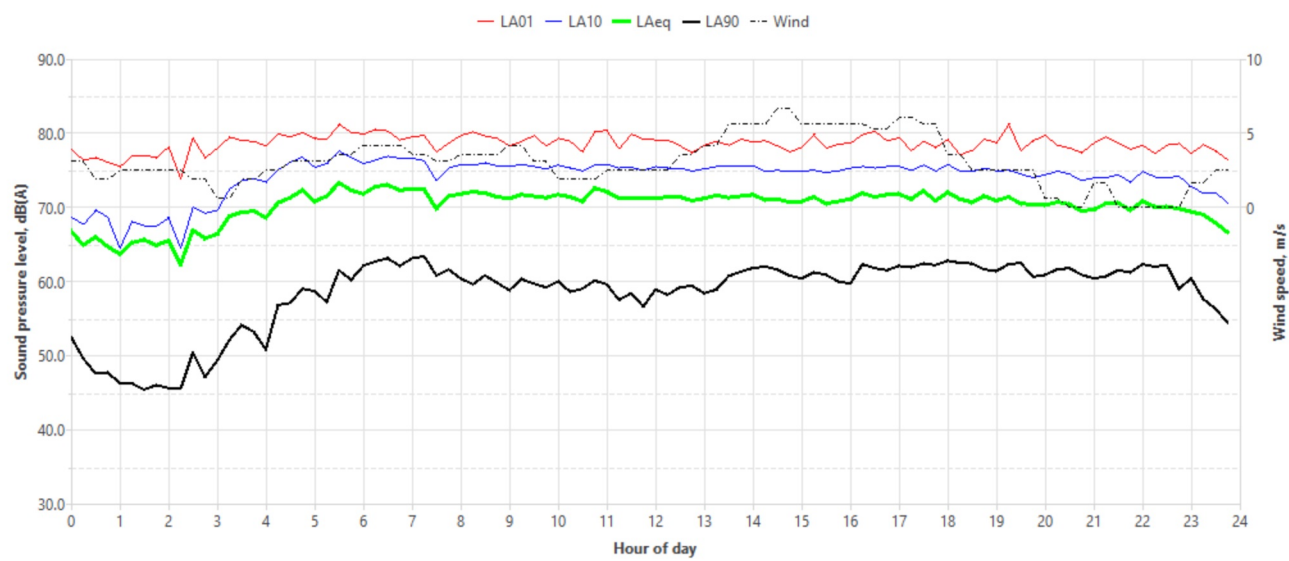
Thursday, 11 September 2025



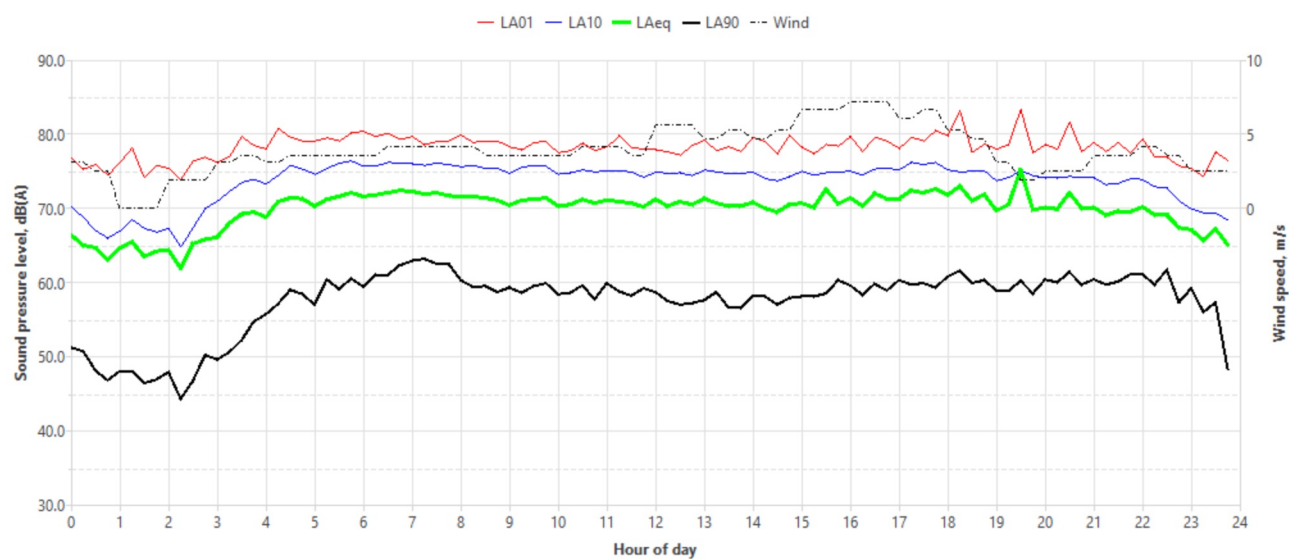
Friday, 12 September 2025



Saturday, 13 September 2025



Sunday, 14 September 2025



19 Valada Avenue, Arncliffe

Ambient noise monitoring report



Item	Information
Logger Type	NL-42
Serial number	00810713
Address	19 Valada Avenue, Arncliffe
Location	Front yard of house
Facade / free field	Free field
Environment	Ambient noise controlled by road traffic

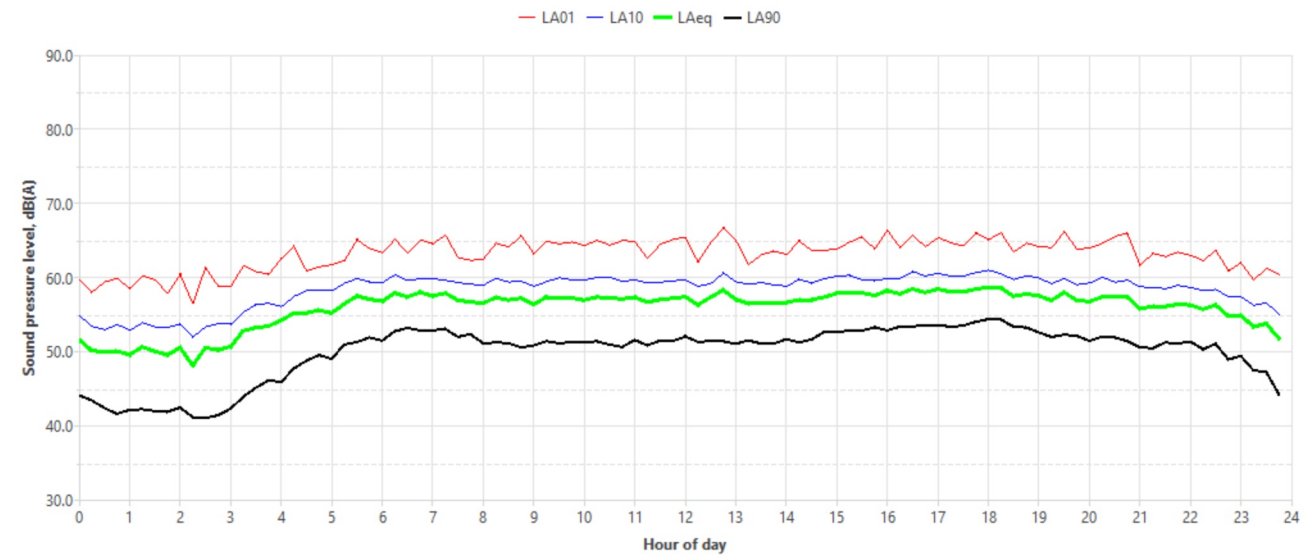
Measured noise levels

Logging date	Rating Background Level				L _{Aeq,period}			
	Morning Shoulder 5am-7am	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am	Morning Shoulder 5am-7am	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am
Mon 01 Sep 2025	-	-	53	-	-	-	58	-
Tue 02 Sep 2025	54	52	50	42	59	58	58	56
Wed 03 Sep 2025	52	50	50	39	58	57	57	55
Thu 04 Sep 2025	50	51	50	40	58	57	57	55
Fri 05 Sep 2025	51	53	53	43	58	58	58	56
Sat 06 Sep 2025	49	51	51	41	57	58	58	54
Sun 07 Sep 2025	49	50	51	41	56	58	58	54
Mon 08 Sep 2025	53	52	48	41	59	58	56	55
Tue 09 Sep 2025	53	50	49	41	58	57	56	55
Wed 10 Sep 2025	55	-	-	-	61	-	-	-
Thu 11 Sep 2025	61	-	51	-	65	-	57	-
Fri 12 Sep 2025	52	51	51	40	59	58	58	55
Sat 13 Sep 2025	48	50	52	40	57	57	57	54
Sun 14 Sep 2025	48	49	49	42	56	57	57	53
Summary	50	51	51	41	58	58	57	55

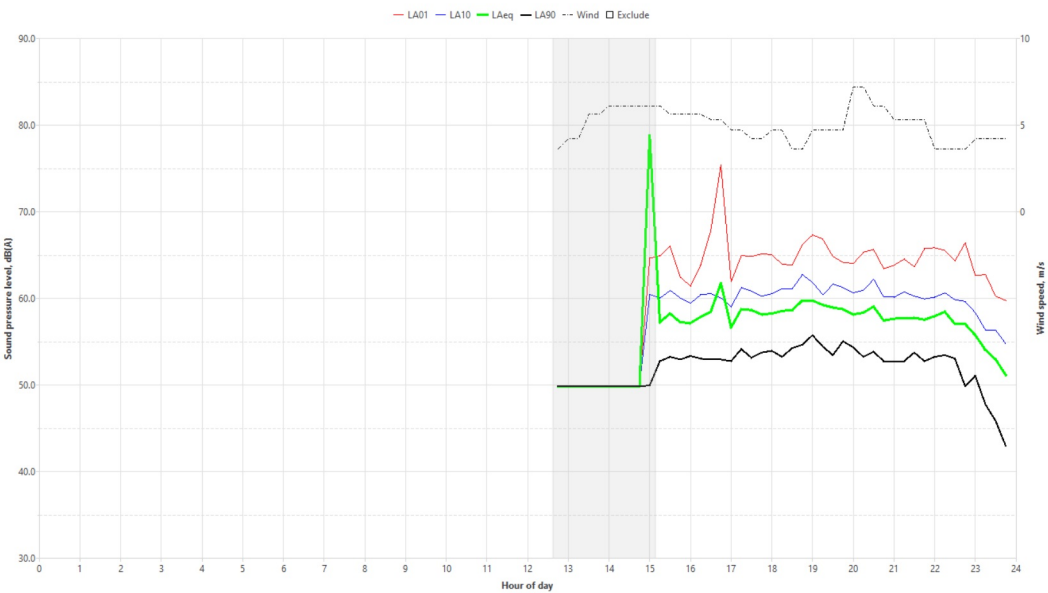
Note: Results with a '-' identify that there were not enough measurements available to correctly calculate the level, in accordance with the Noise Policy for Industry. The data has been excluded either from weather or manual exclusions. See the charts for more information

Logger location	Logger deployment photo

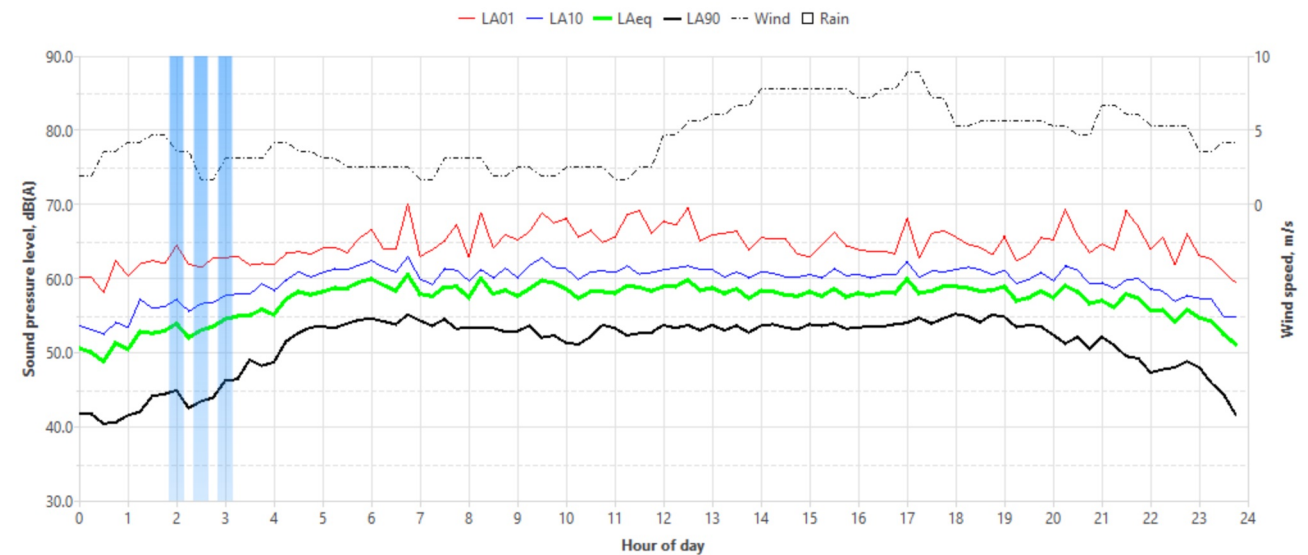
Typical Day



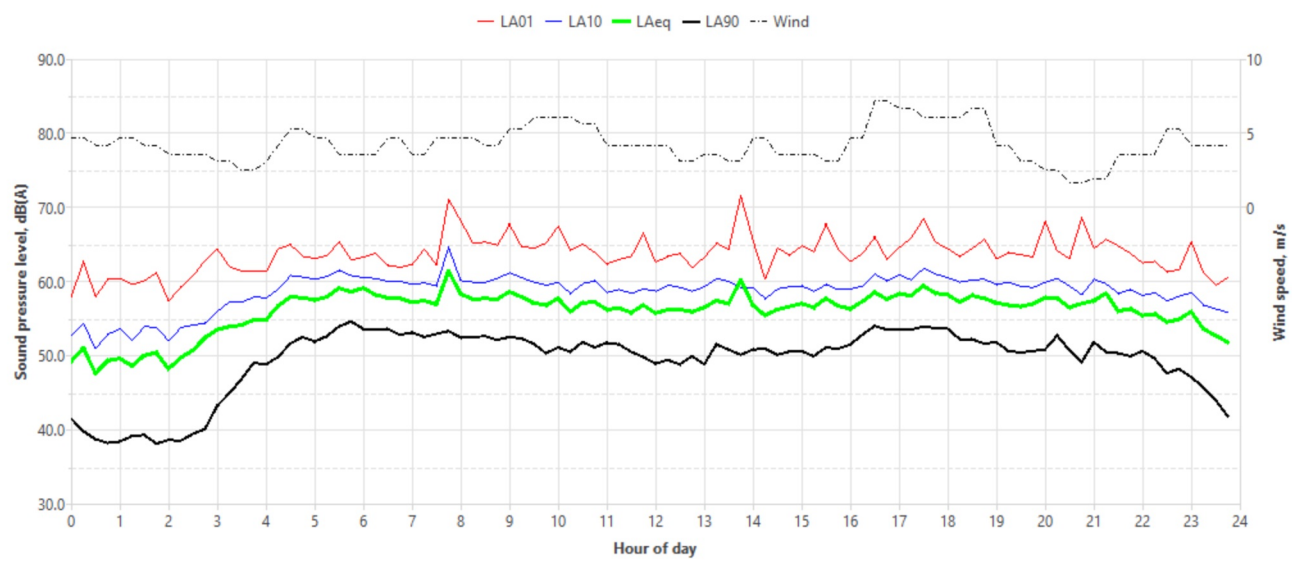
Monday, 1 September 2025



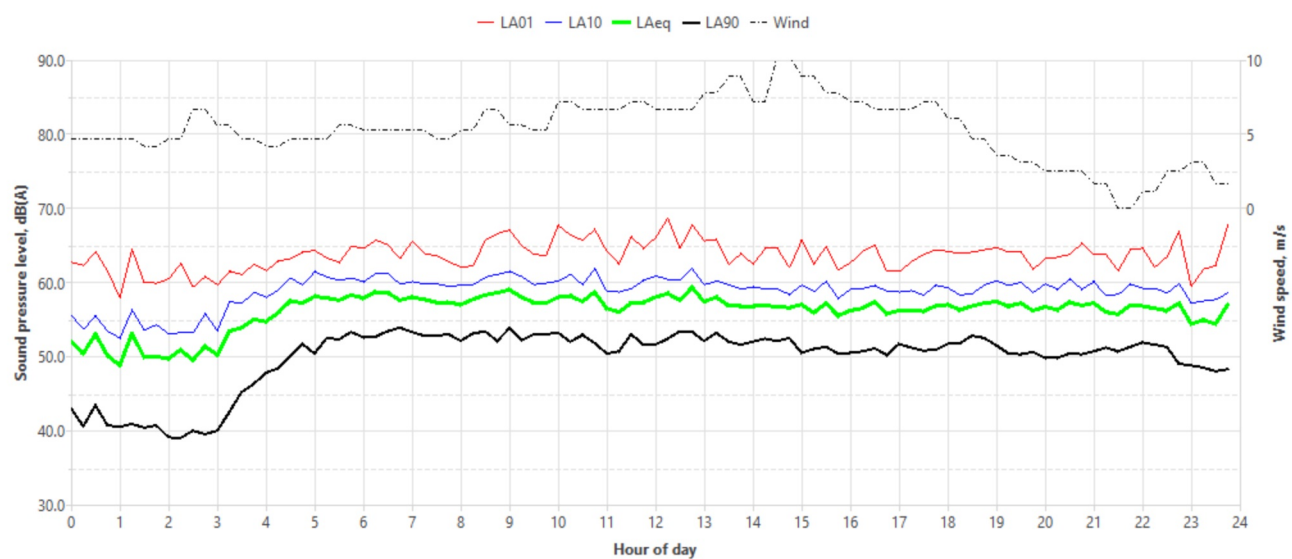
Tuesday, 2 September 2025



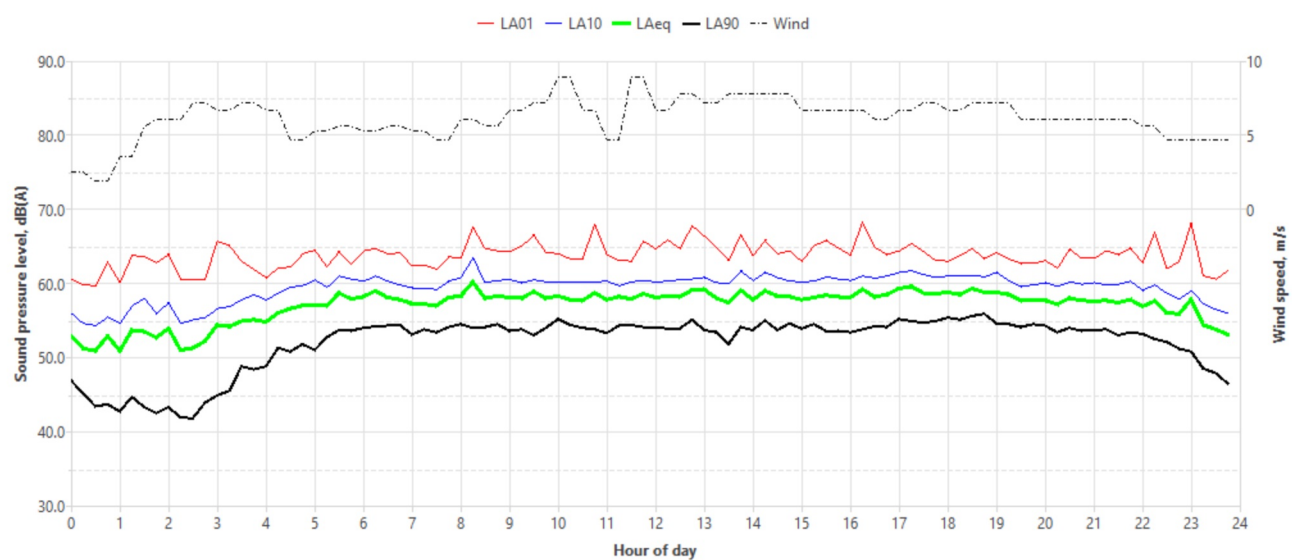
Wednesday, 3 September 2025



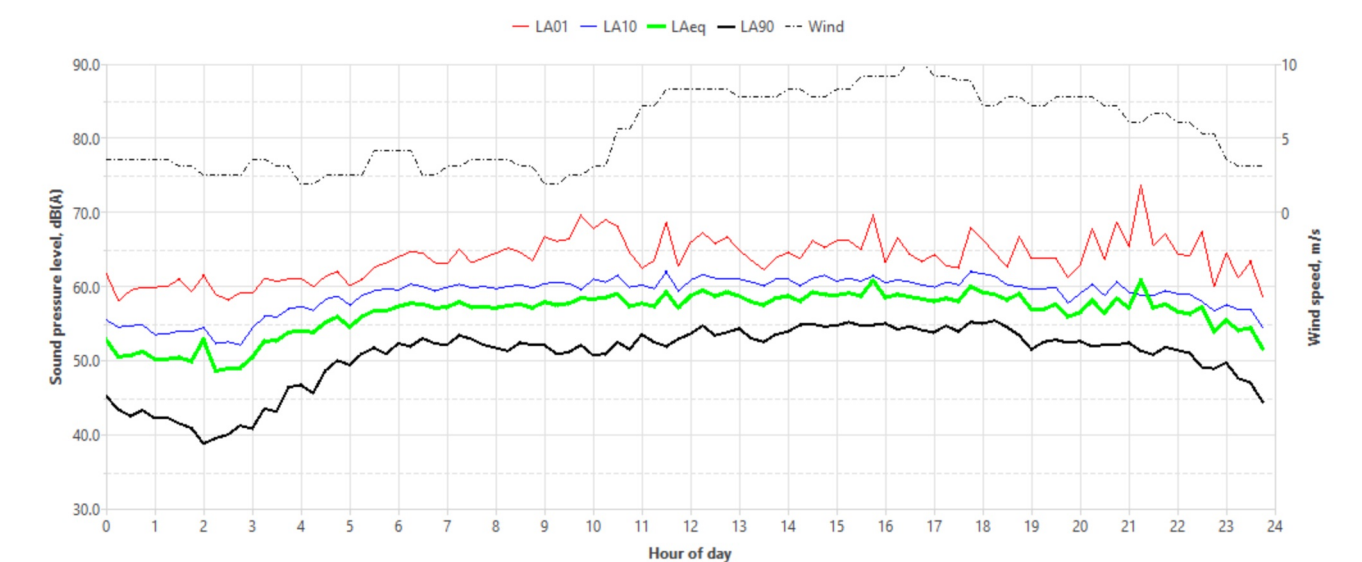
Thursday, 4 September 2025



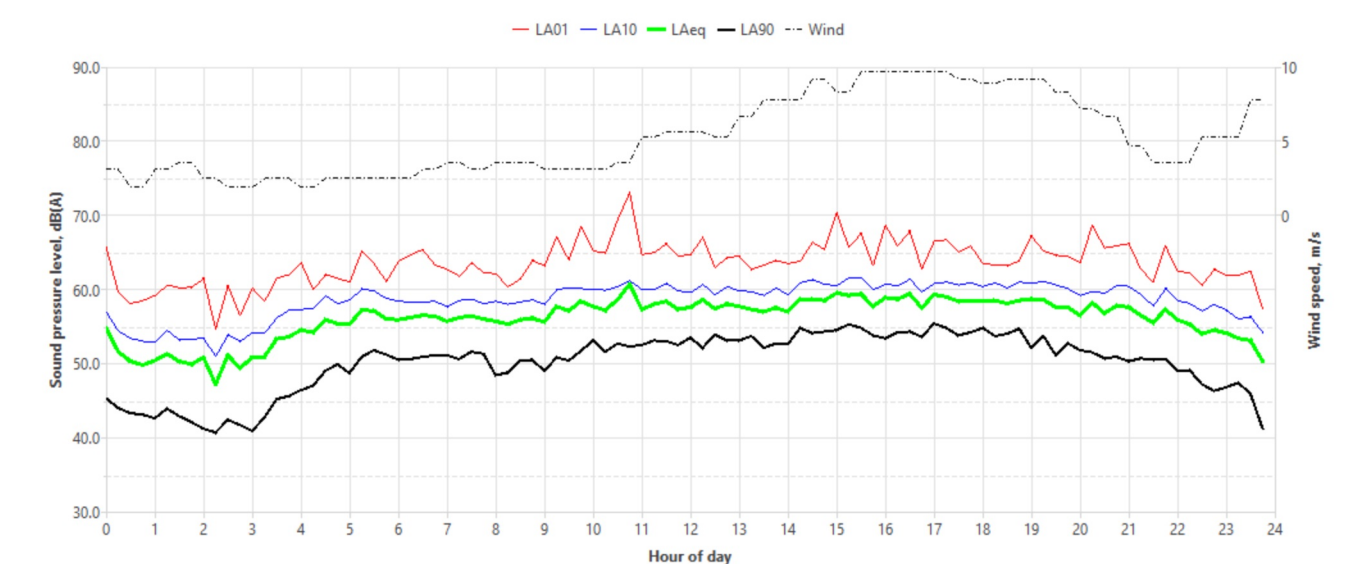
Friday, 5 September 2025



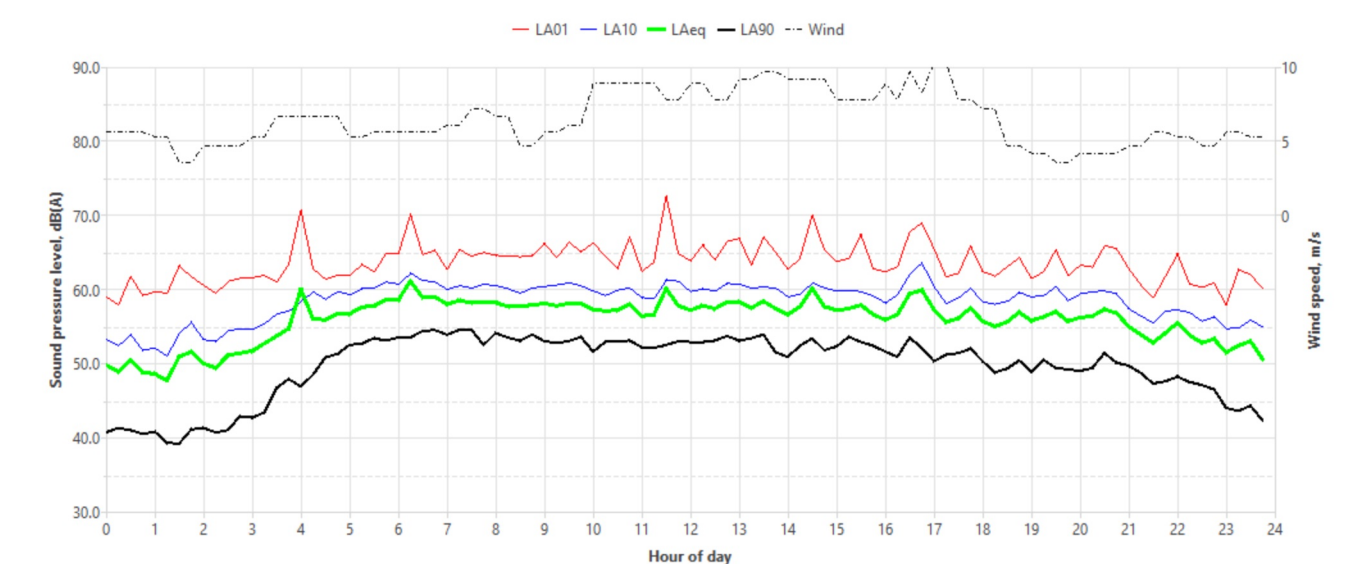
Saturday, 6 September 2025



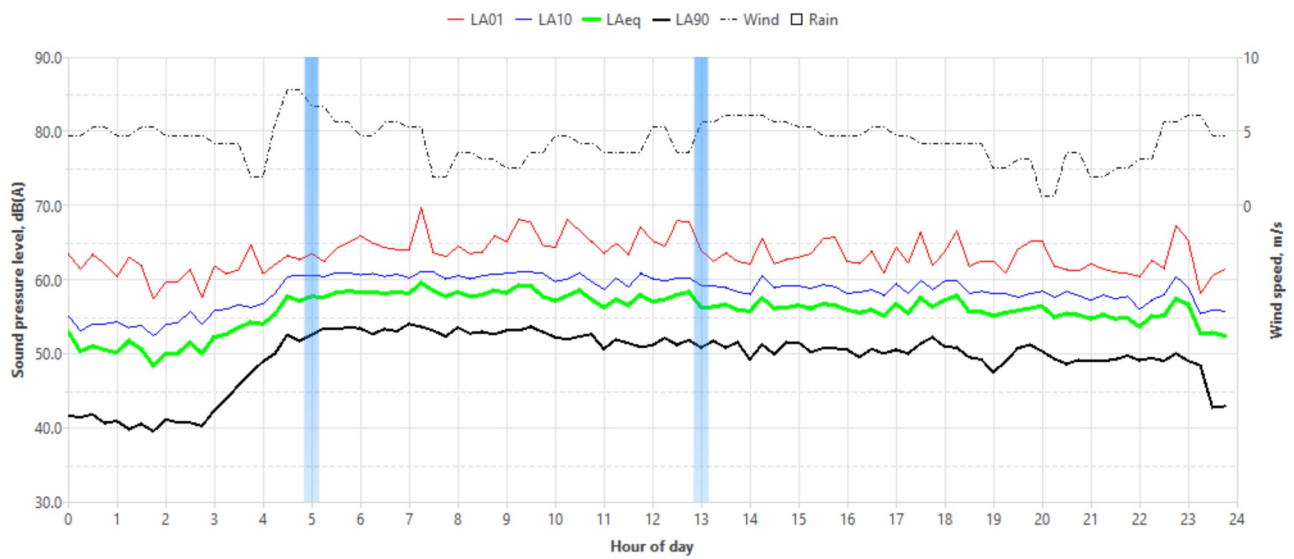
Sunday, 7 September 2025



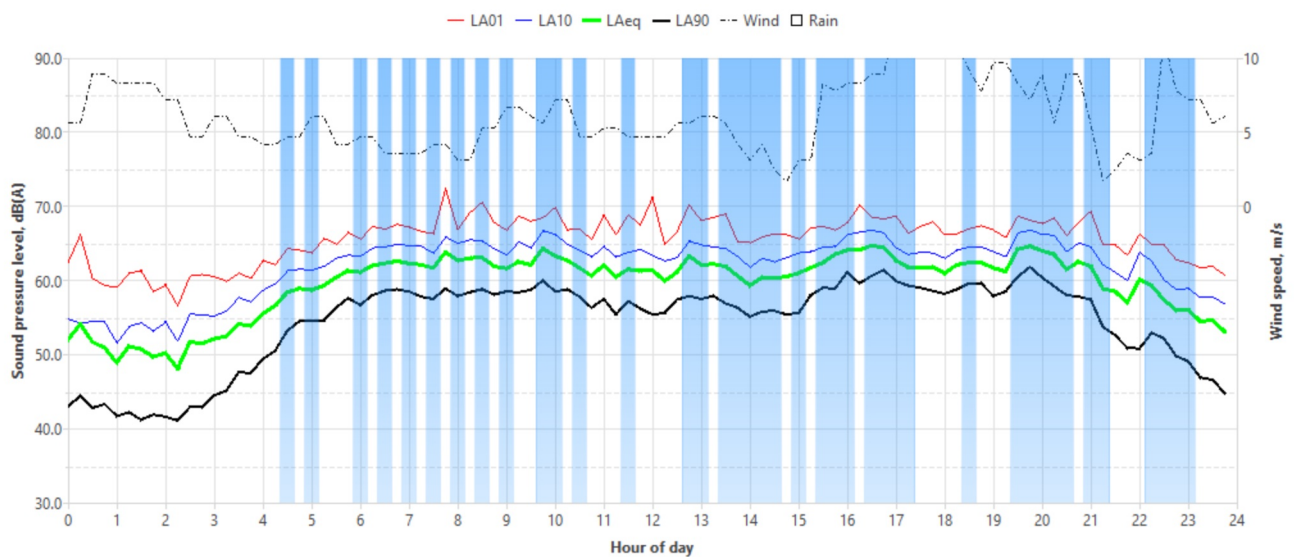
Monday, 8 September 2025



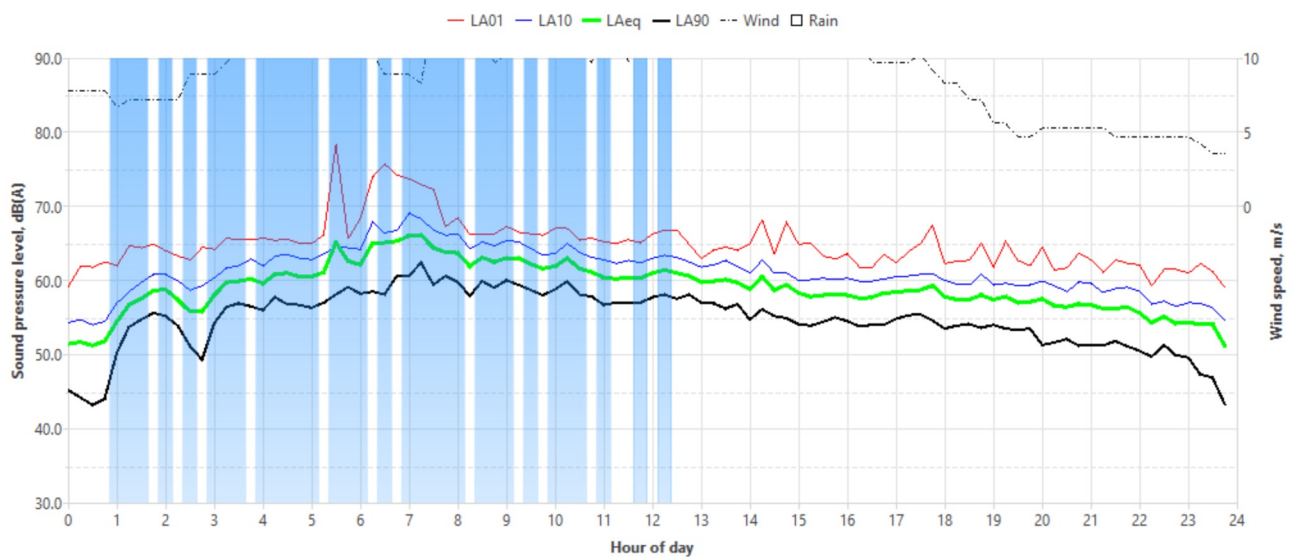
Tuesday, 9 September 2025



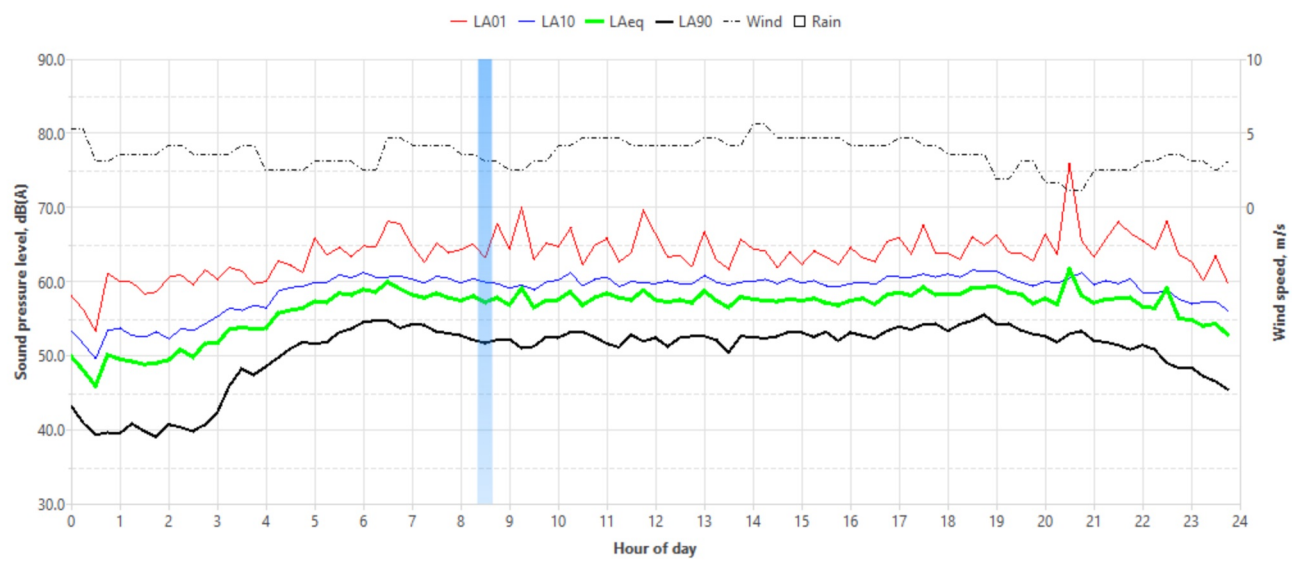
Wednesday, 10 September 2025



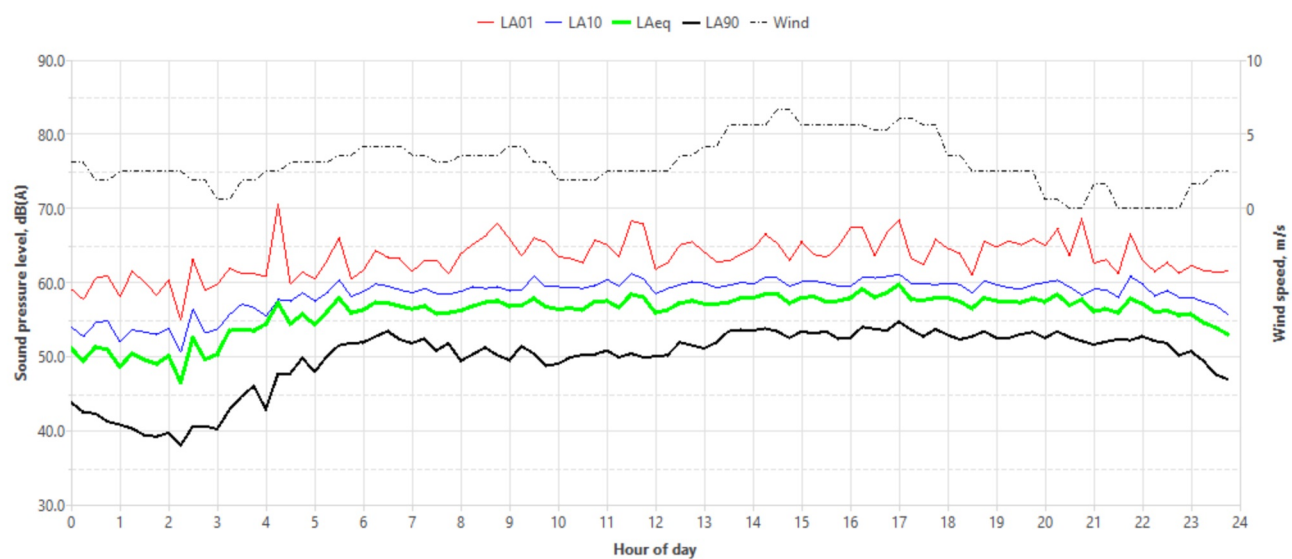
Thursday, 11 September 2025



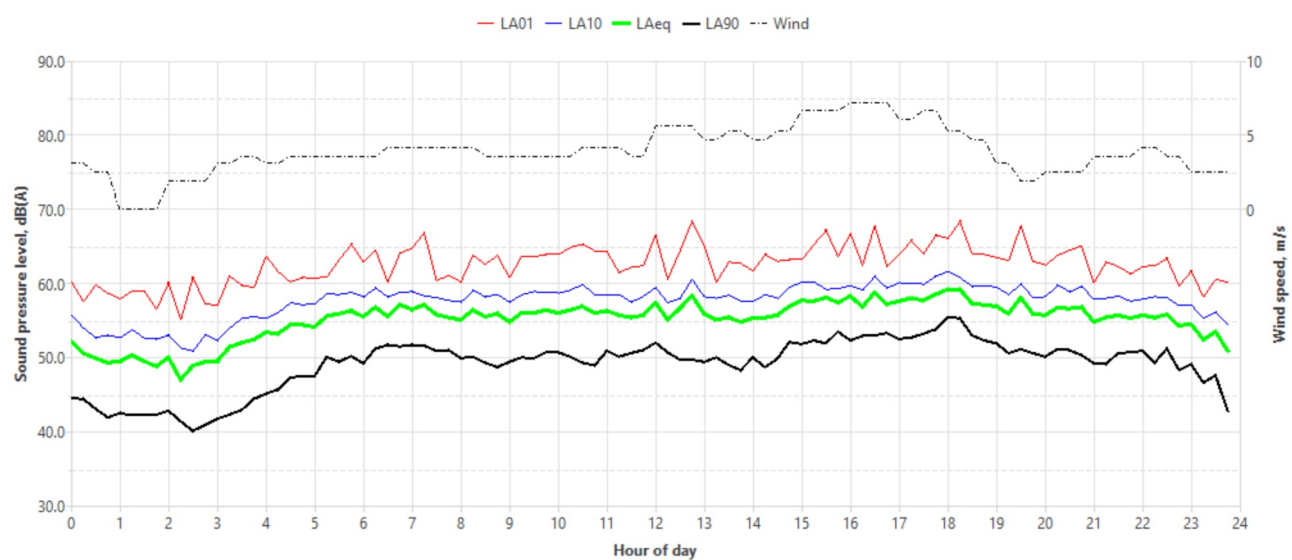
Friday, 12 September 2025



Saturday, 13 September 2025



Sunday, 14 September 2025



9 Eve Street, Arncliffe

Ambient noise monitoring report



Item	Information
Logger Type	NL-42
Serial number	00597172
Address	9 Eve Street, Arncliffe
Location	Front yard of property
Facade / free field	Free field
Environment	Ambient noise environment controlled by road traffic noise

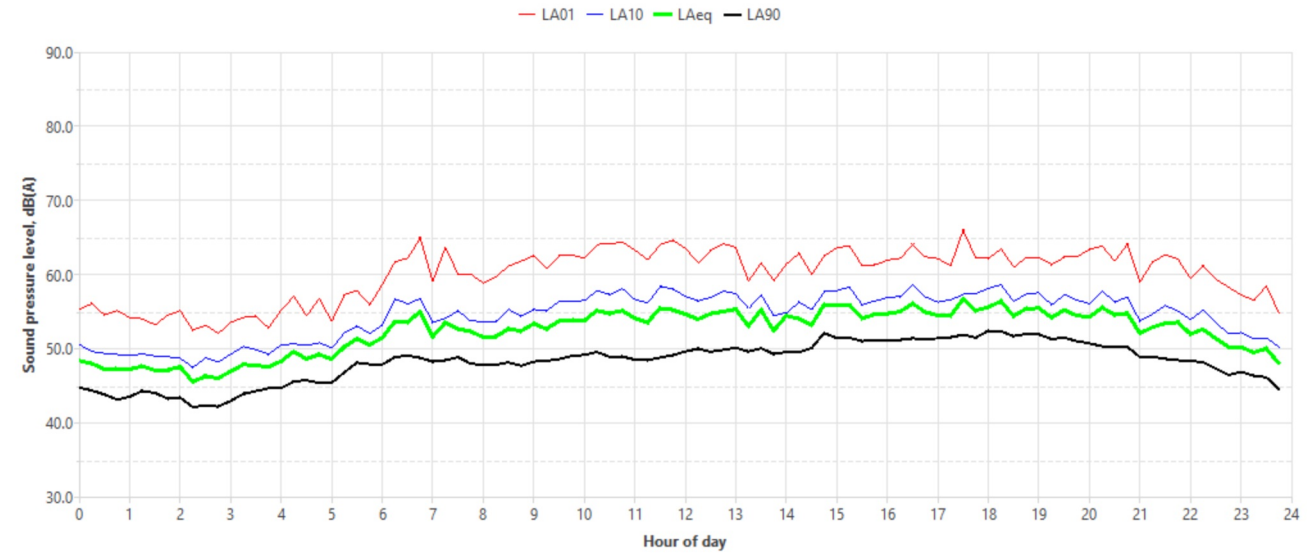
Measured noise levels

Logging date	Rating Background Level				L _{Aeq,period}			
	Morning Shoulder 5am-7am	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am	Morning Shoulder 5am-7am	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am
Tue 02 Sep 2025	48	49	48	43	56	55	55	52
Wed 03 Sep 2025	49	47	48	40	53	54	53	50
Thu 04 Sep 2025	48	48	47	41	53	55	52	50
Fri 05 Sep 2025	46	48	49	40	52	54	54	50
Sat 06 Sep 2025	45	48	50	41	52	56	55	50
Sun 07 Sep 2025	44	46	50	42	49	55	55	49
Mon 08 Sep 2025	50	51	47	41	54	56	52	51
Tue 09 Sep 2025	49	48	46	41	52	53	51	50
Wed 10 Sep 2025	50	-	-	-	56	-	-	-
Thu 11 Sep 2025	58	-	48	-	65	-	54	-
Fri 12 Sep 2025	48	49	51	40	58	56	56	54
Sat 13 Sep 2025	45	47	51	40	52	54	56	50
Sun 14 Sep 2025	43	46	46	43	50	54	54	49
Summary	46	48	48	41	54	55	54	50

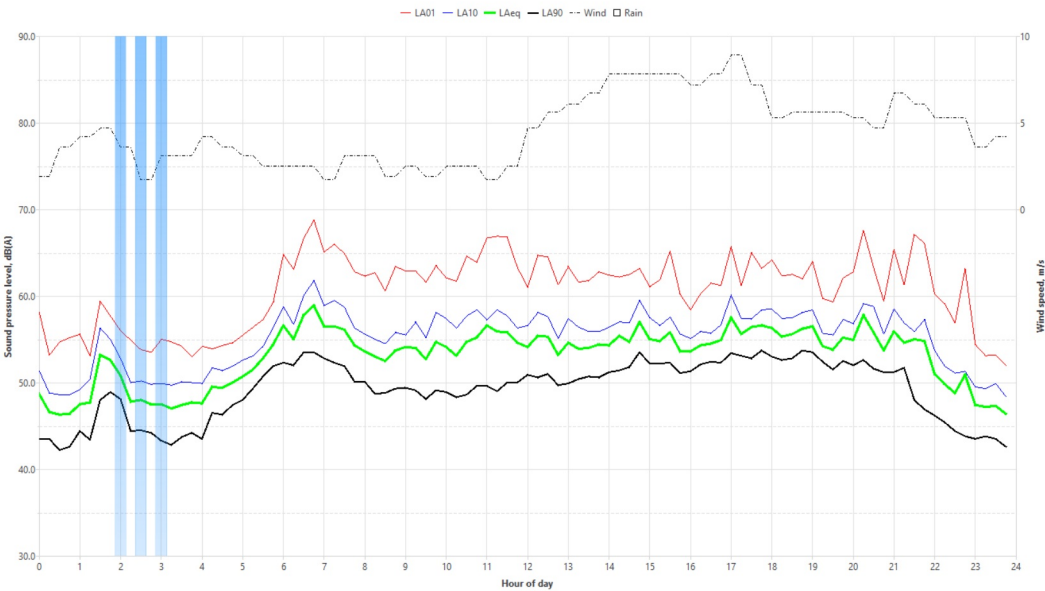
Note: Results with a '-' identify that there were not enough measurements available to correctly calculate the level, in accordance with the Noise Policy for Industry. The data has been excluded either from weather or manual exclusions. See the charts for more information

Logger location	Logger deployment photo

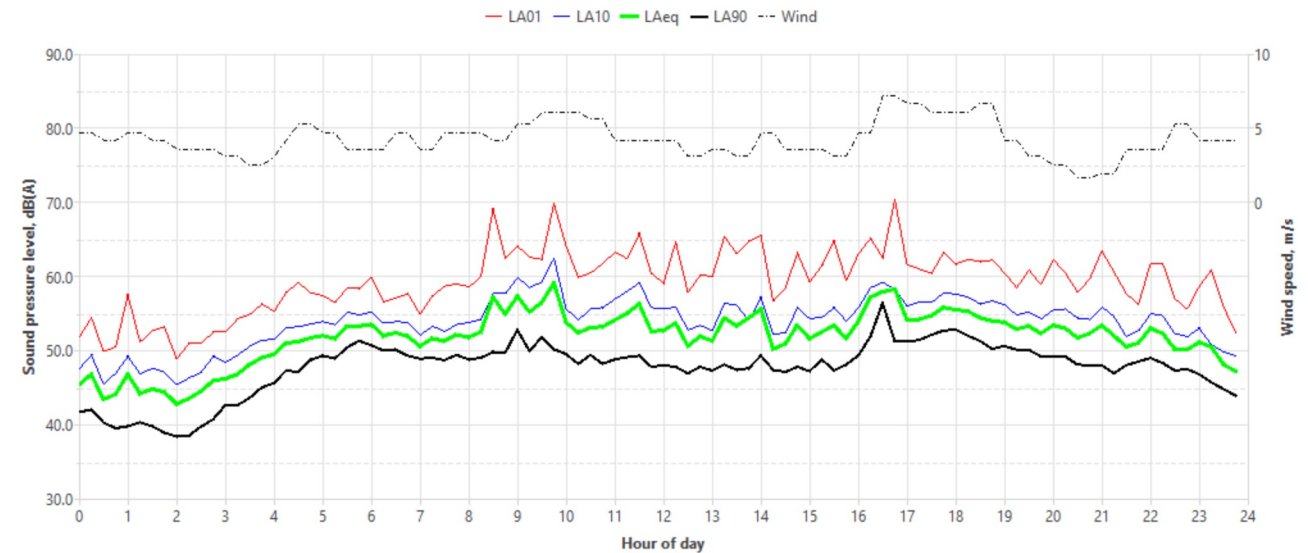
Typical Day



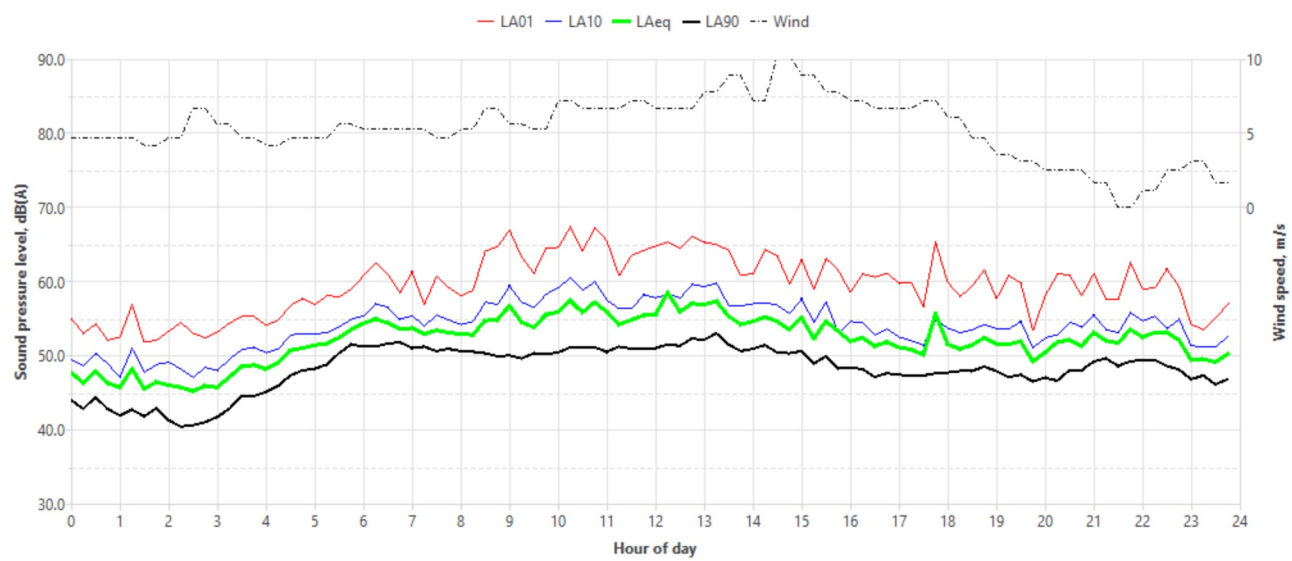
Tuesday, 2 September 2025



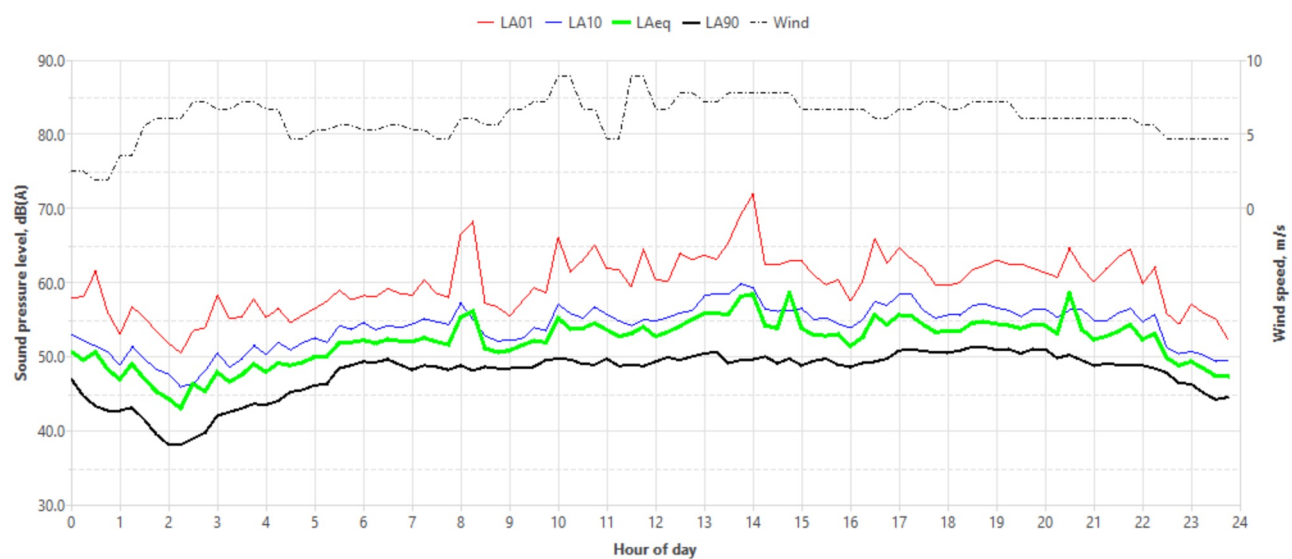
Wednesday, 3 September 2025



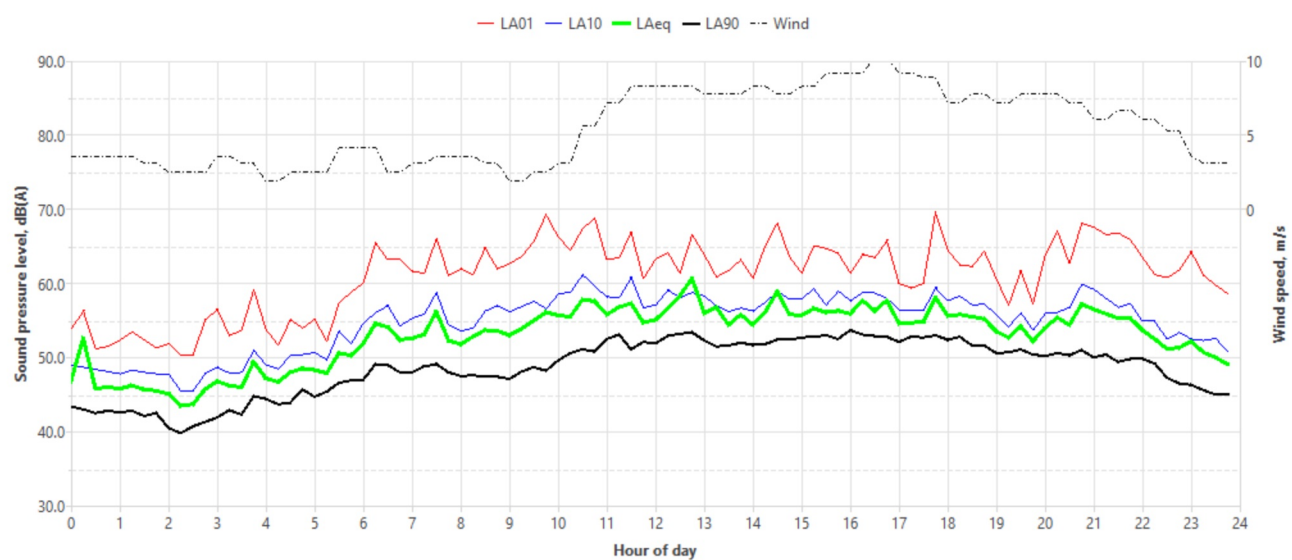
Thursday, 4 September 2025



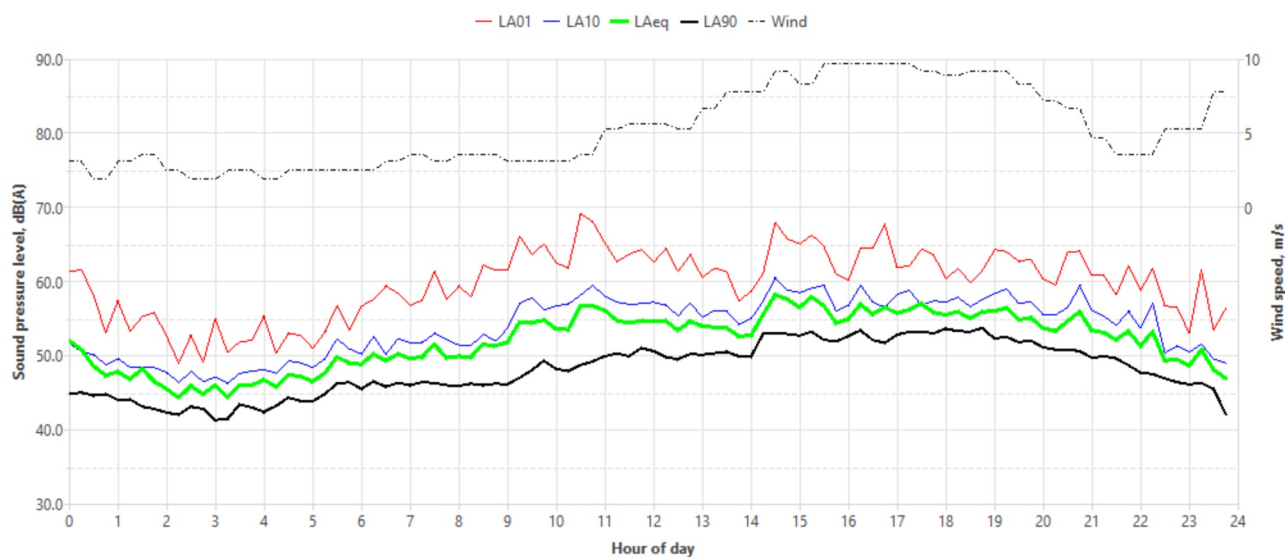
Friday, 5 September 2025



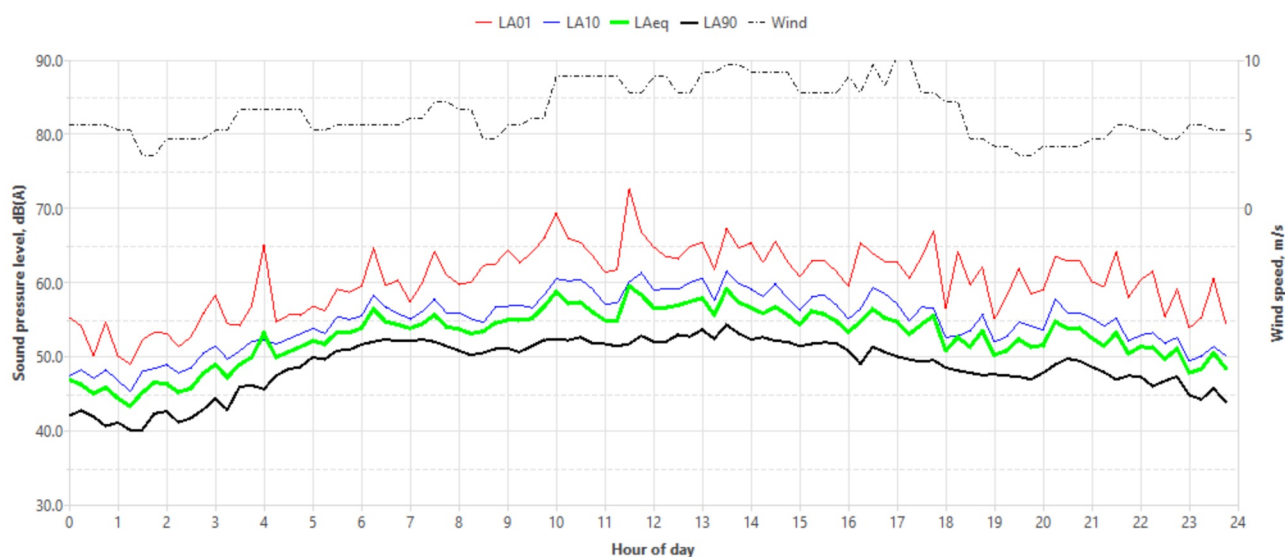
Saturday, 6 September 2025



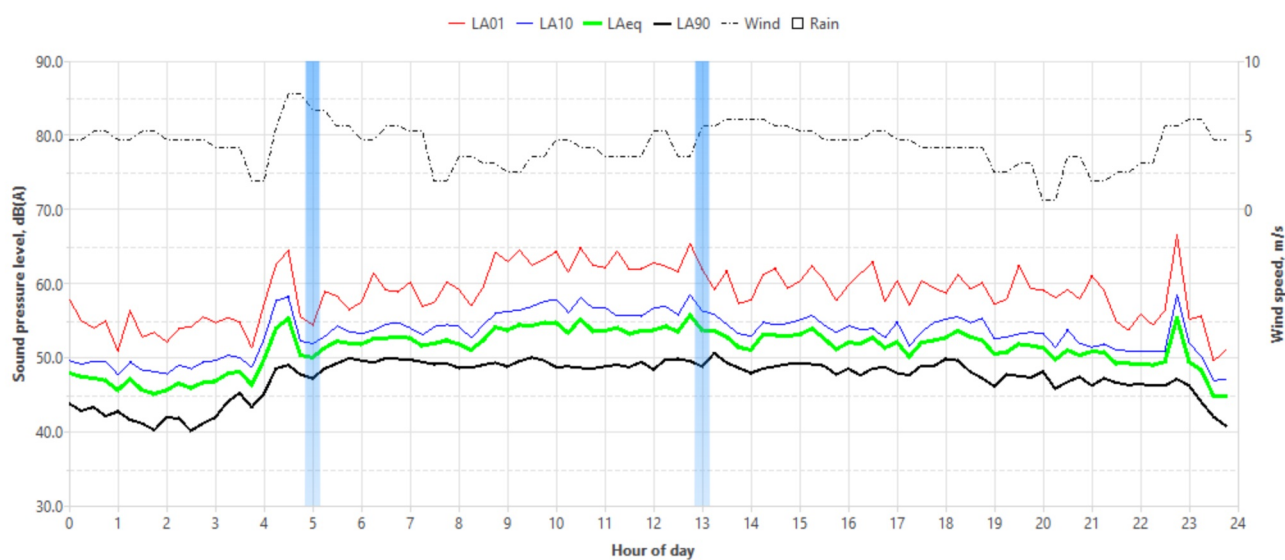
Sunday, 7 September 2025



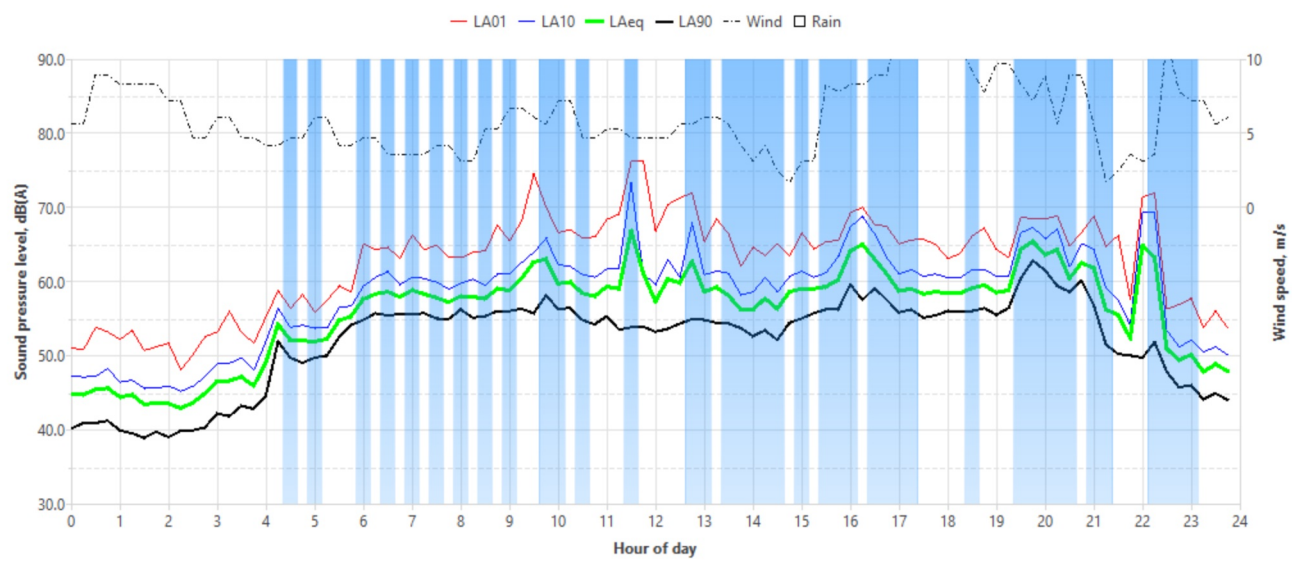
Monday, 8 September 2025



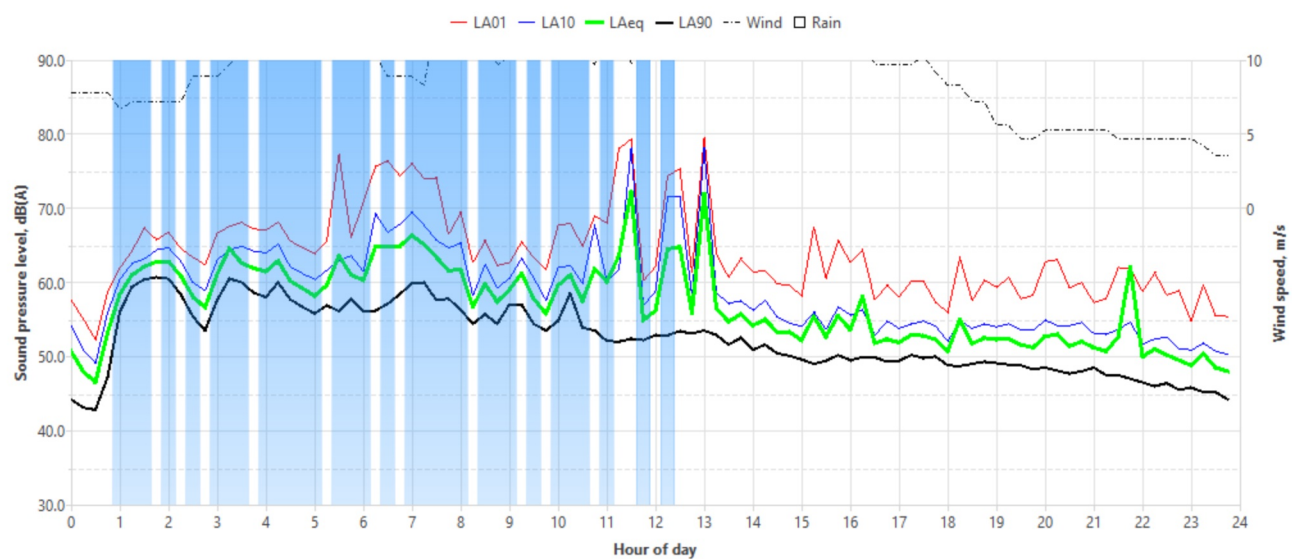
Tuesday, 9 September 2025



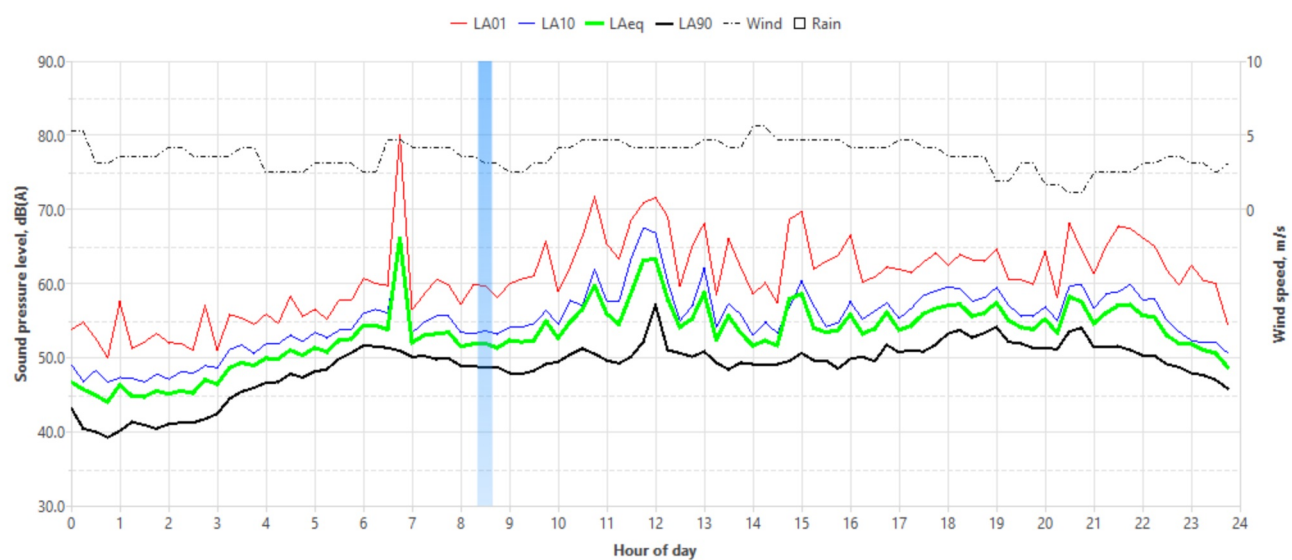
Wednesday, 10 September 2025



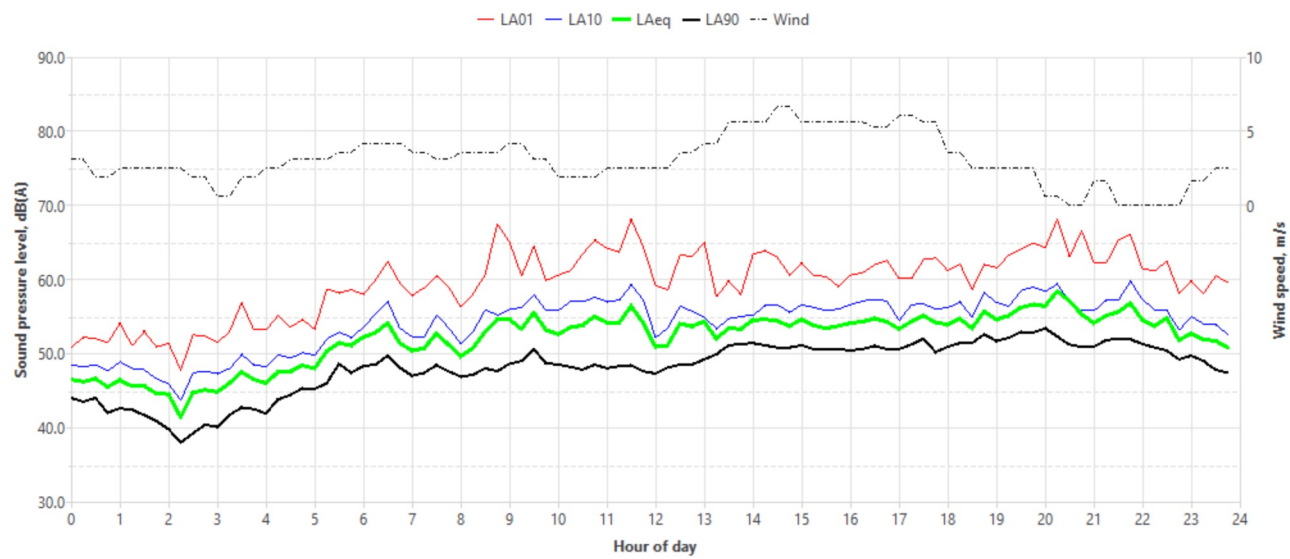
Thursday, 11 September 2025



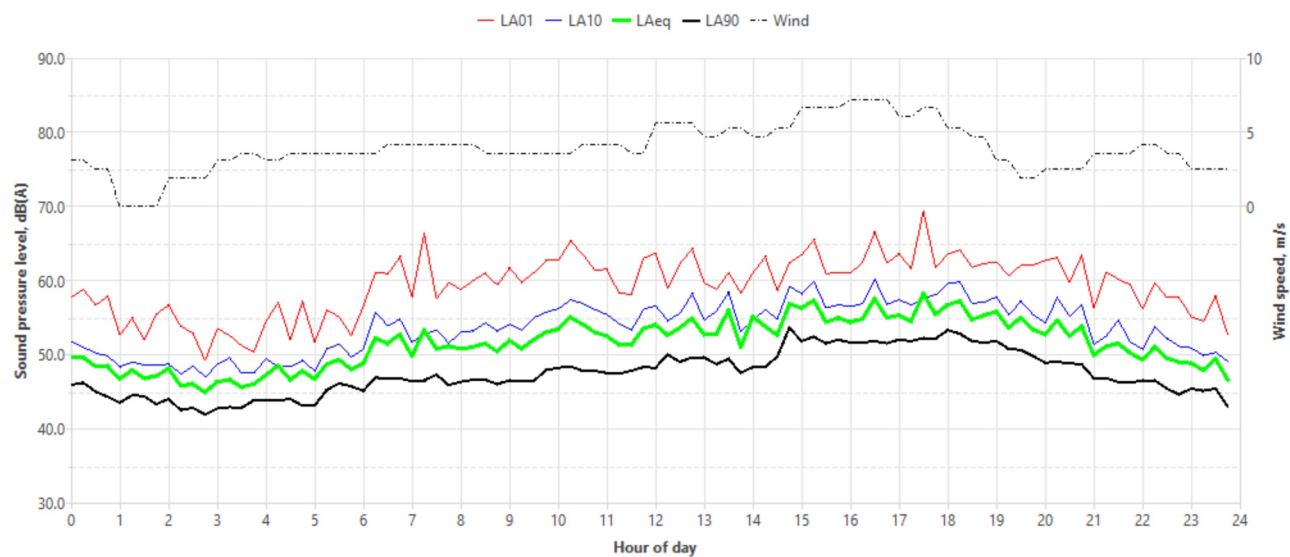
Friday, 12 September 2025



Saturday, 13 September 2025



Sunday, 14 September 2025



22 Brennans Rd, Arncliffe

Ambient noise monitoring report



Item	Information
Logger Type	NL-42
Serial number	1173624
Address	22 Brennans Rd, Arncliffe
Location	Front yard of house
Facade / free field	Free field
Environment	Ambient noise controlled by road traffic

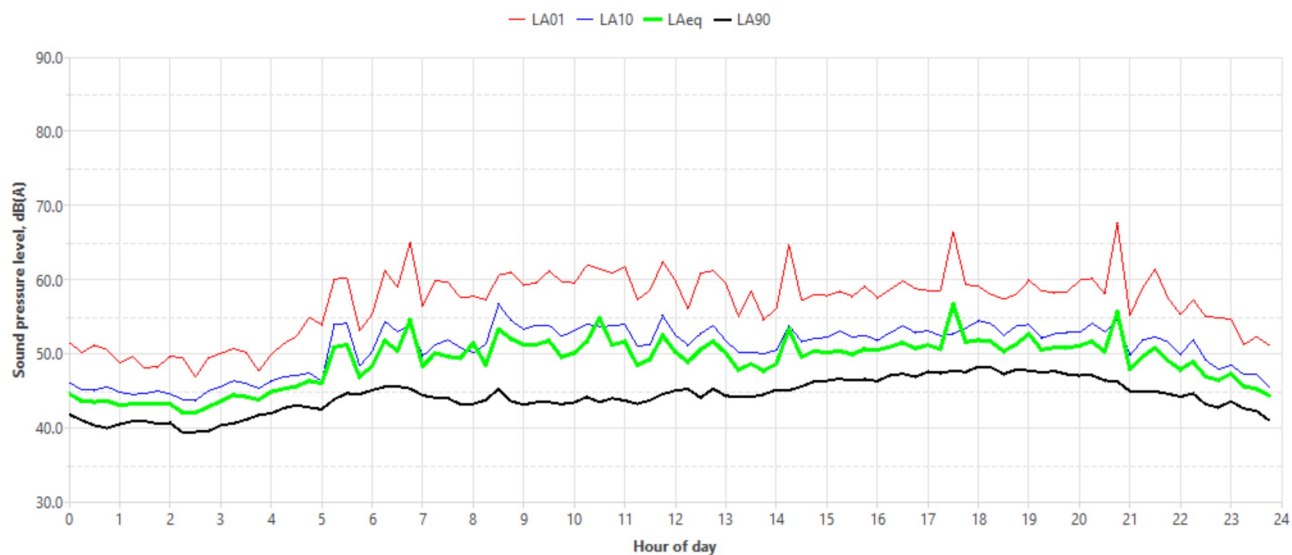
Measured noise levels

Logging date	Rating Background Level				L _{Aeq,period}			
	Morning Shoulder 5am-7am	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am	Morning Shoulder 5am-7am	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am
Tue 02 Sep 2025	44	45	45	40	54	67	52	50
Wed 03 Sep 2025	45	42	44	37	49	50	50	46
Thu 04 Sep 2025	45	44	43	40	51	53	48	48
Fri 05 Sep 2025	42	43	44	35	50	49	51	46
Sat 06 Sep 2025	42	43	46	38	49	56	52	47
Sun 07 Sep 2025	40	42	46	40	47	54	52	45
Mon 08 Sep 2025	47	47	42	39	52	54	48	48
Tue 09 Sep 2025	46	43	42	38	51	50	47	47
Wed 10 Sep 2025	46	-	-	-	53	-	-	-
Thu 11 Sep 2025	55	-	42	-	65	-	48	-
Fri 12 Sep 2025	46	43	47	38	57	50	52	51
Sat 13 Sep 2025	42	42	47	37	50	50	52	47
Sun 14 Sep 2025	40	42	43	40	49	53	52	46
Summary	43	43	44	38	53	58	51	48

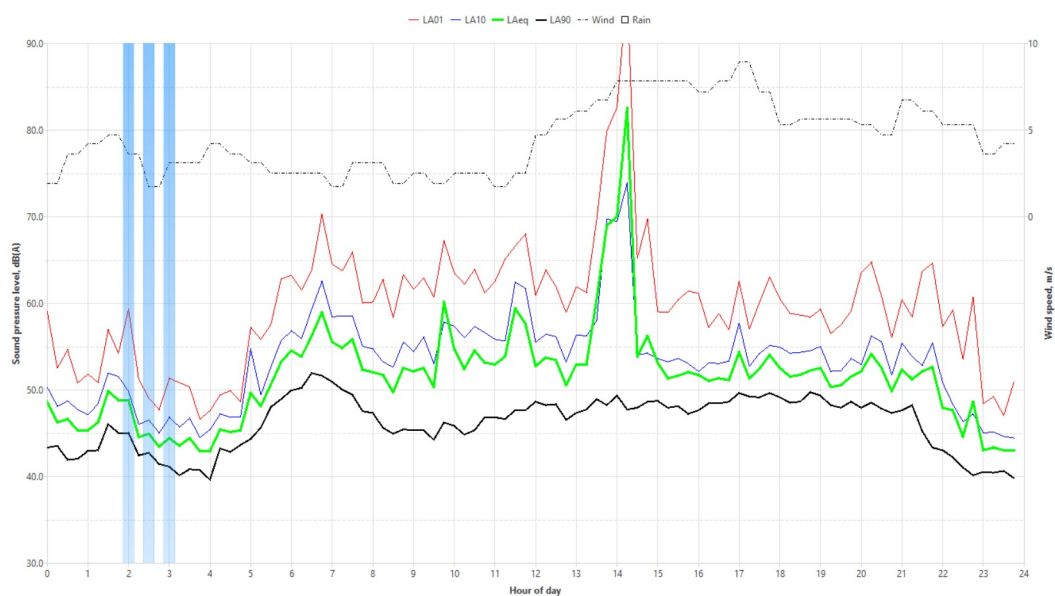
Note: Results with a '-' identify that there were not enough measurements available to correctly calculate the level, in accordance with the Noise Policy for Industry. The data has been excluded either from weather or manual exclusions. See the charts for more information

Logger location	Logger deployment photo

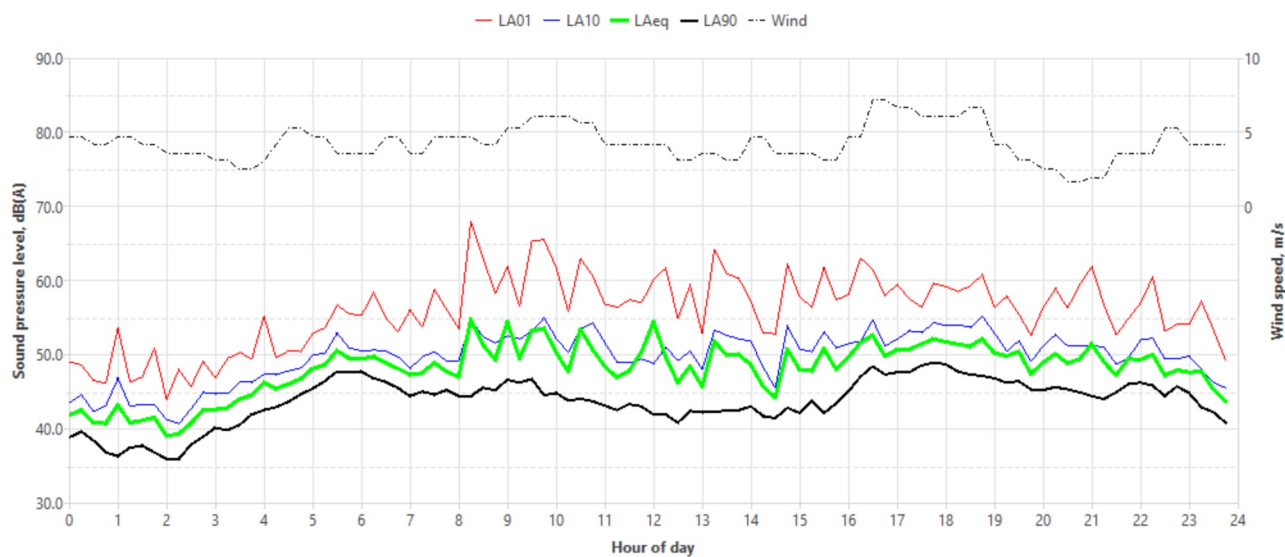
Typical Day



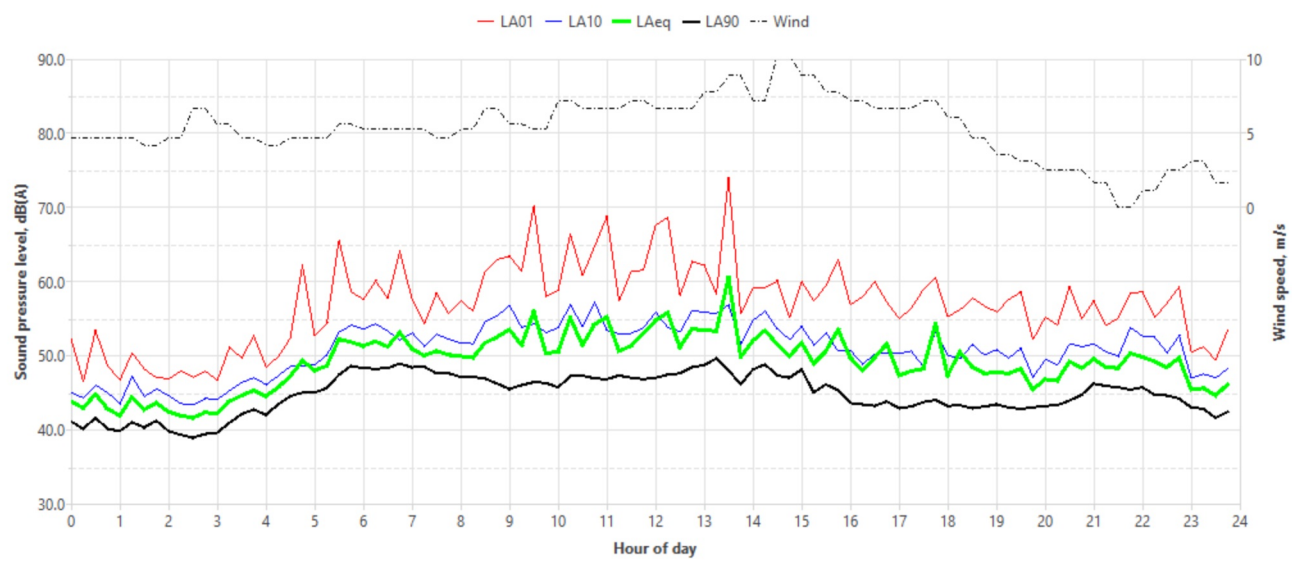
Tuesday, 2 September 2025



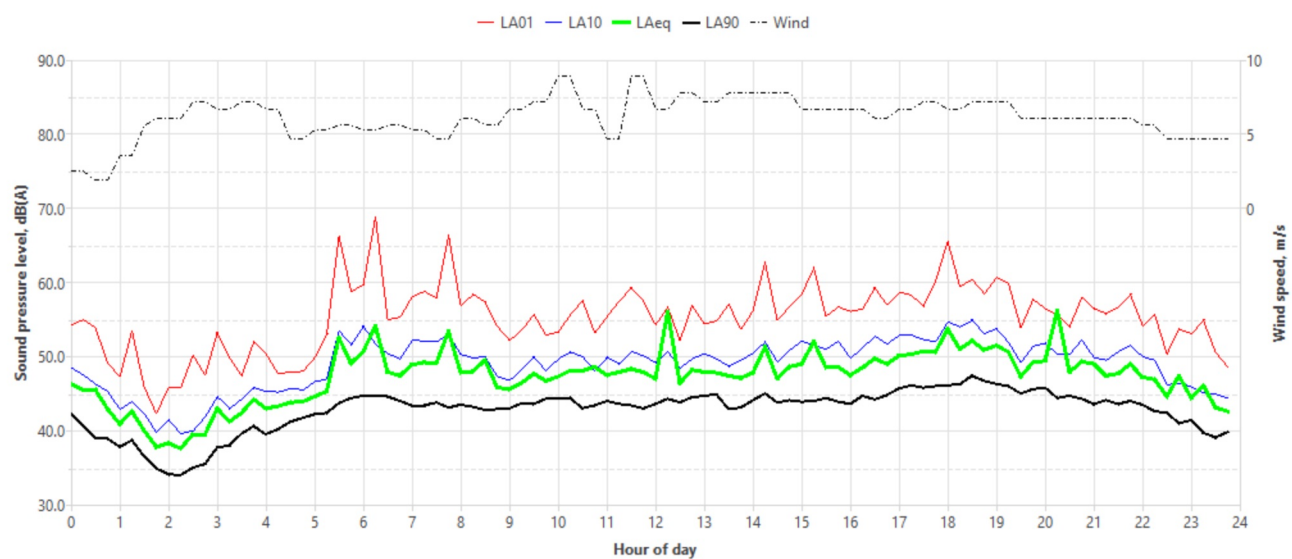
Wednesday, 3 September 2025



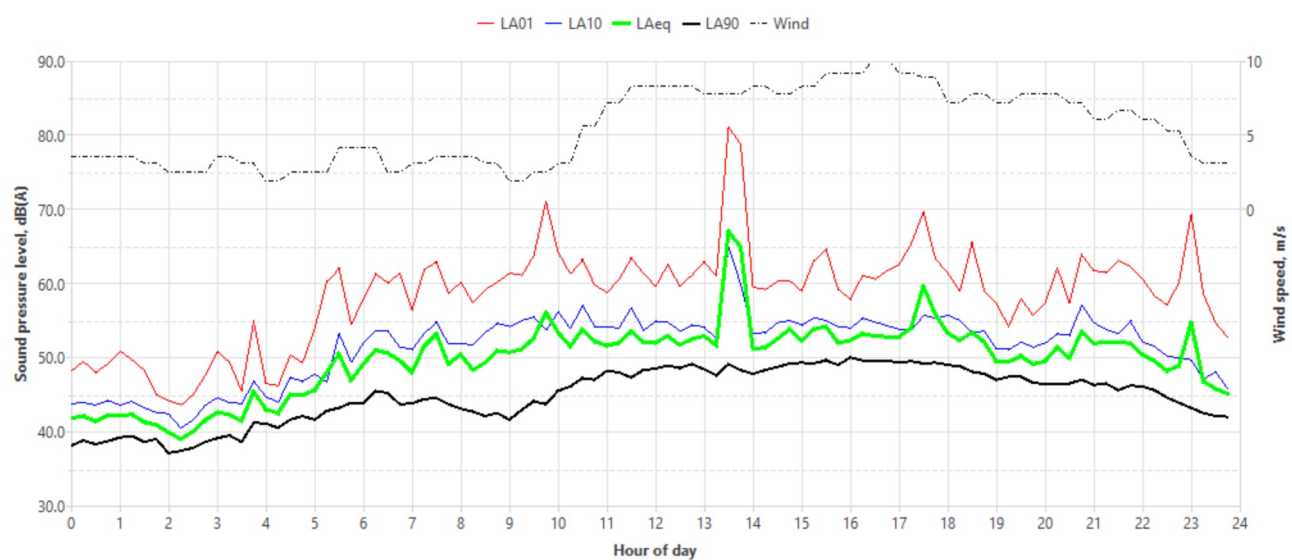
Thursday, 4 September 2025



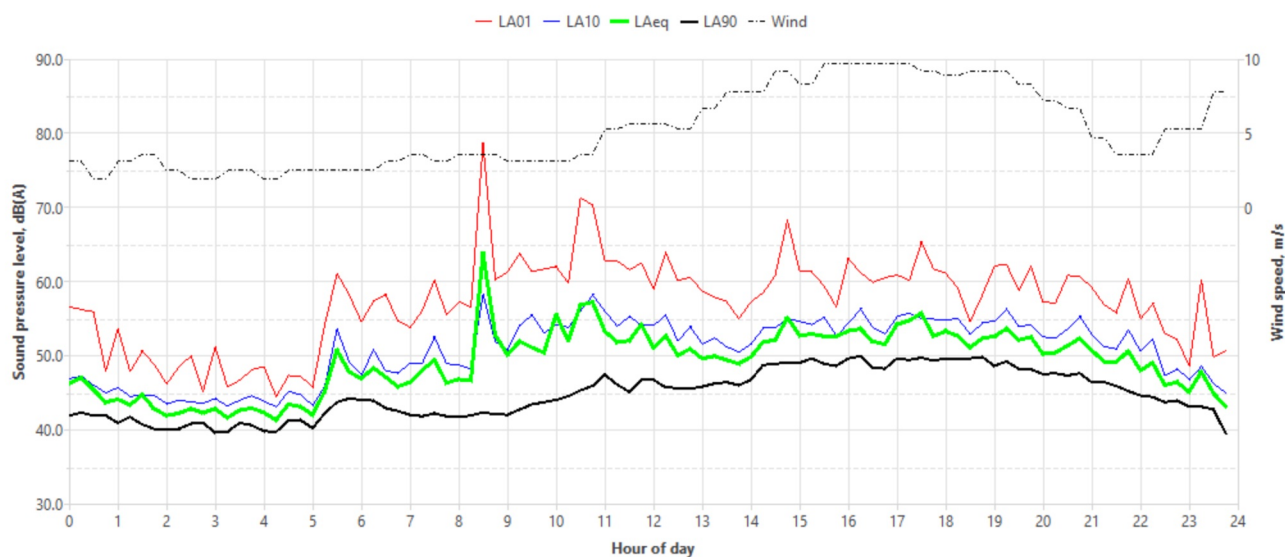
Friday, 5 September 2025



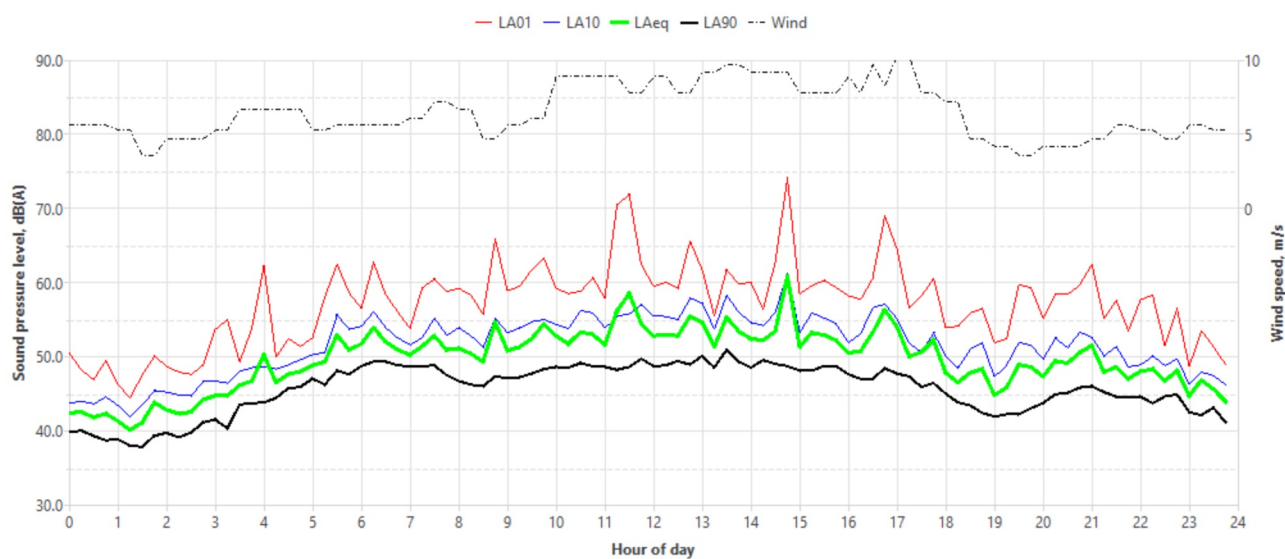
Saturday, 6 September 2025



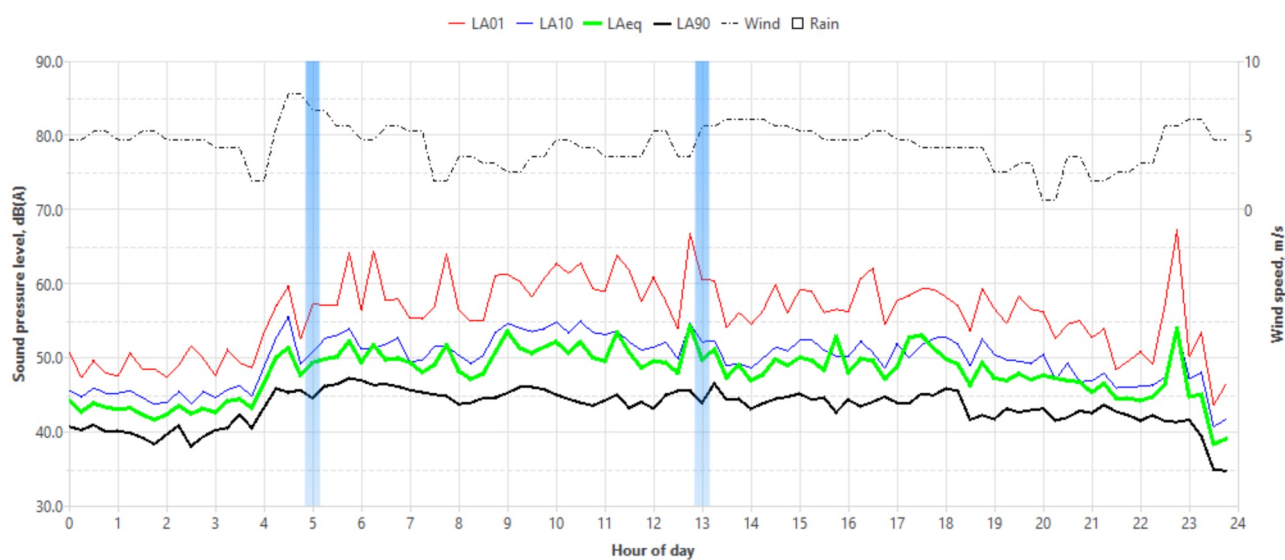
Sunday, 7 September 2025



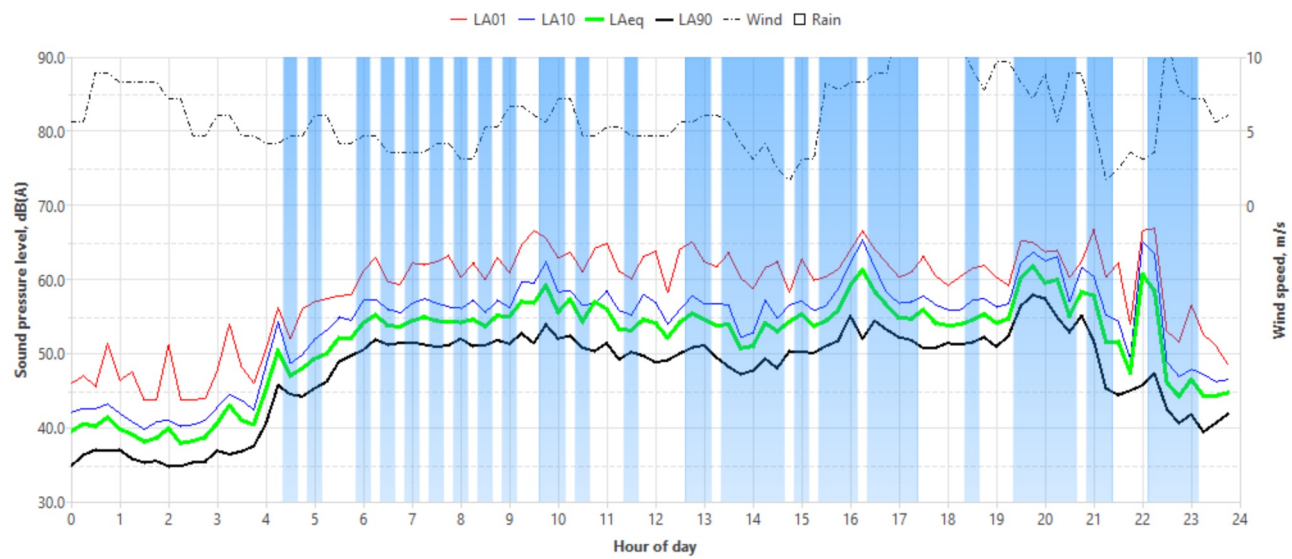
Monday, 8 September 2025



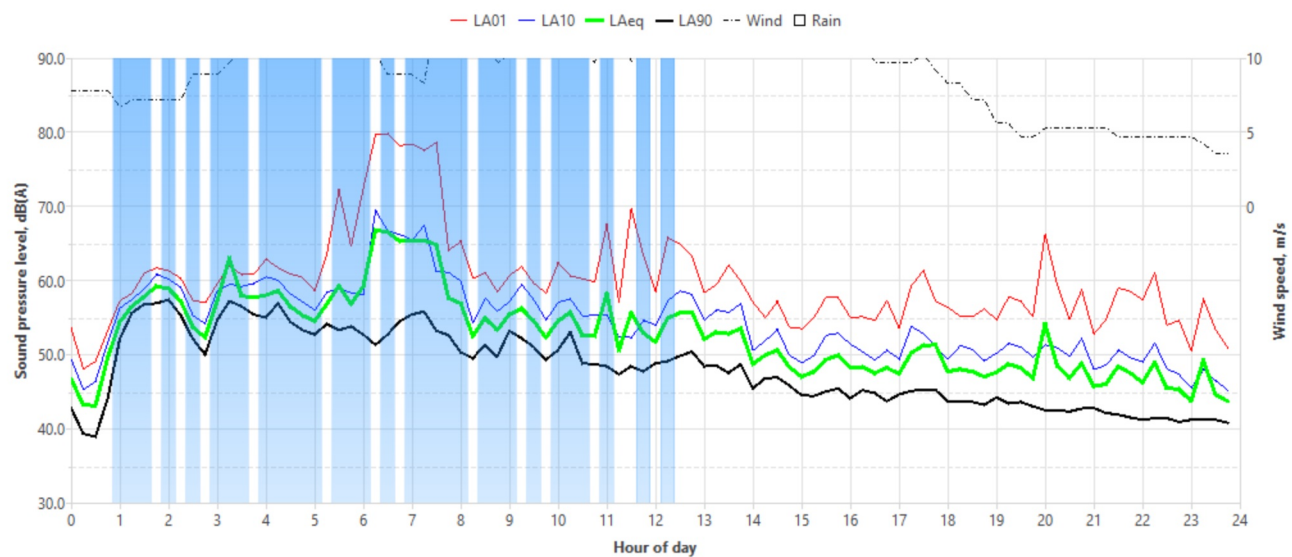
Tuesday, 9 September 2025



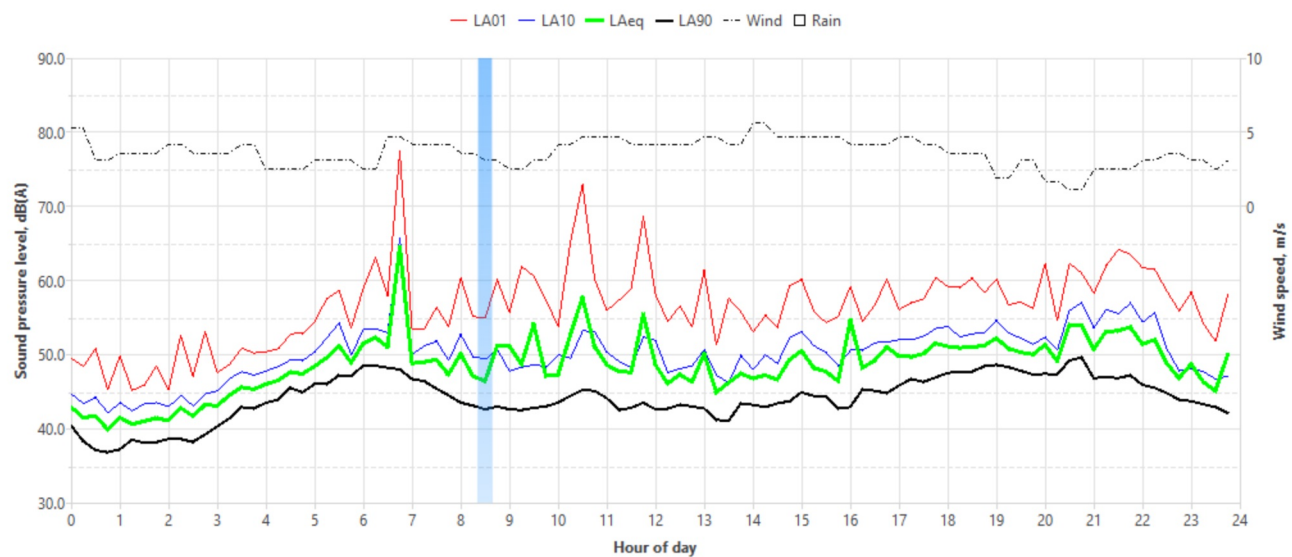
Wednesday, 10 September 2025



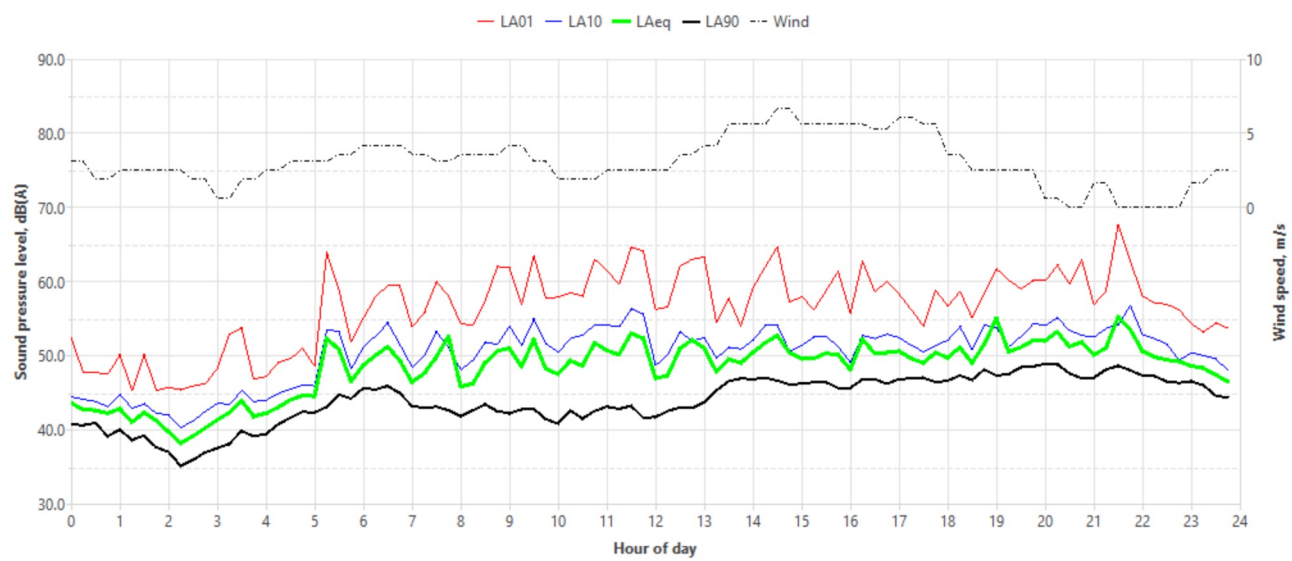
Thursday, 11 September 2025



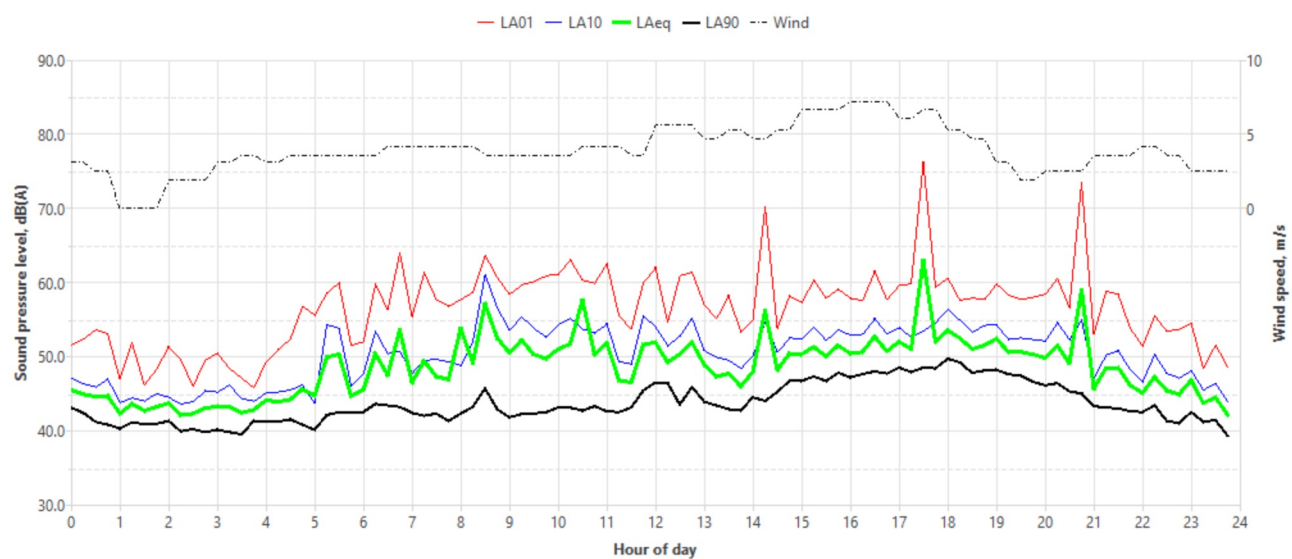
Friday, 12 September 2025



Saturday, 13 September 2025



Sunday, 14 September 2025



Mutch Avenue, Kyeemagh

Ambient noise monitoring report



Item	Information
Logger Type	NL-43
Serial number	00653006
Address	Mutch Avenue, Kyeemagh
Location	Mutch Avenue, Kyeemagh
Facade / free field	Free field
Environment	Noise environment dominated by general suburban noise

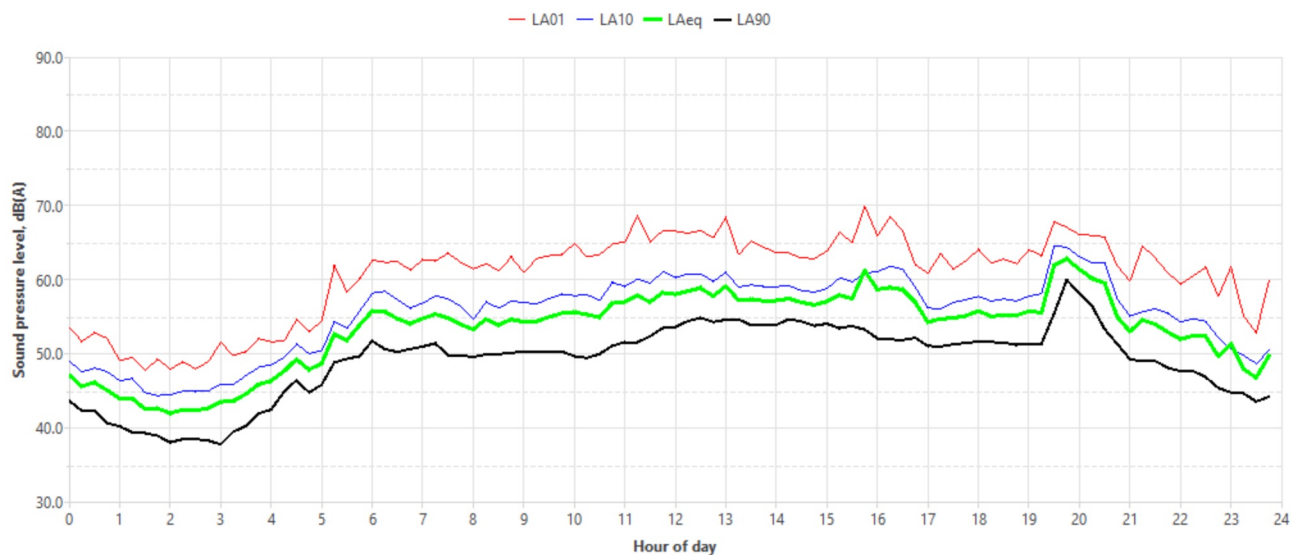
Measured noise levels

Logging date	Rating Background Level				L _{Aeq,period}			
	Morning Shoulder 5am-7am	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am	Morning Shoulder 5am-7am	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am
Mon 20 Oct 2025	-	-	51	-	-	-	58	-
Tue 21 Oct 2025	51	49	53	42	55	56	58	53
Wed 22 Oct 2025	47	-	46	37	53	-	70	48
Thu 23 Oct 2025	44	-	53	36	50	-	59	51
Fri 24 Oct 2025	43	48	49	36	51	56	56	50
Sat 25 Oct 2025	45	50	51	41	55	58	57	52
Sun 26 Oct 2025	44	49	44	40	52	56	54	49
Mon 27 Oct 2025	46	48	-	-	53	58	-	-
Tue 28 Oct 2025	47	-	-	-	57	-	-	-
Wed 29 Oct 2025	51	49	54	-	53	59	60	-
Thu 30 Oct 2025	44	48	46	36	54	54	59	50
Fri 31 Oct 2025	47	50	-	-	54	58	-	50
Summary	45	49	51	37	54	57	62	51

Note: Results with a '-' identify that there were not enough measurements available to correctly calculate the level, in accordance with the Noise Policy for Industry. The data has been excluded either from weather or manual exclusions. See the charts for more information

Logger location	Logger deployment photo

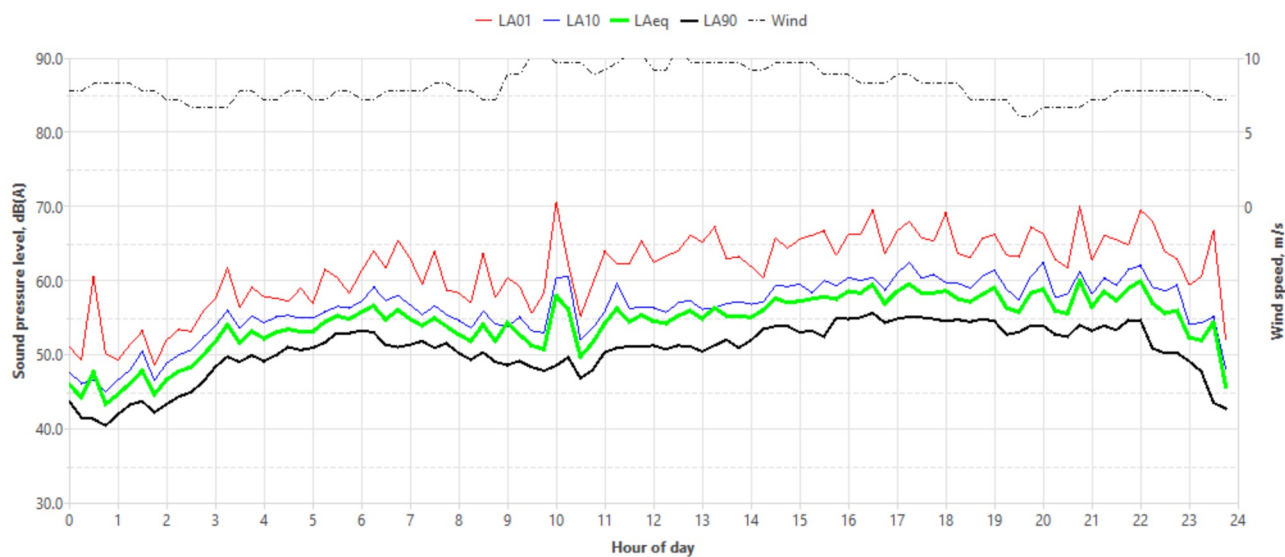
Typical Day



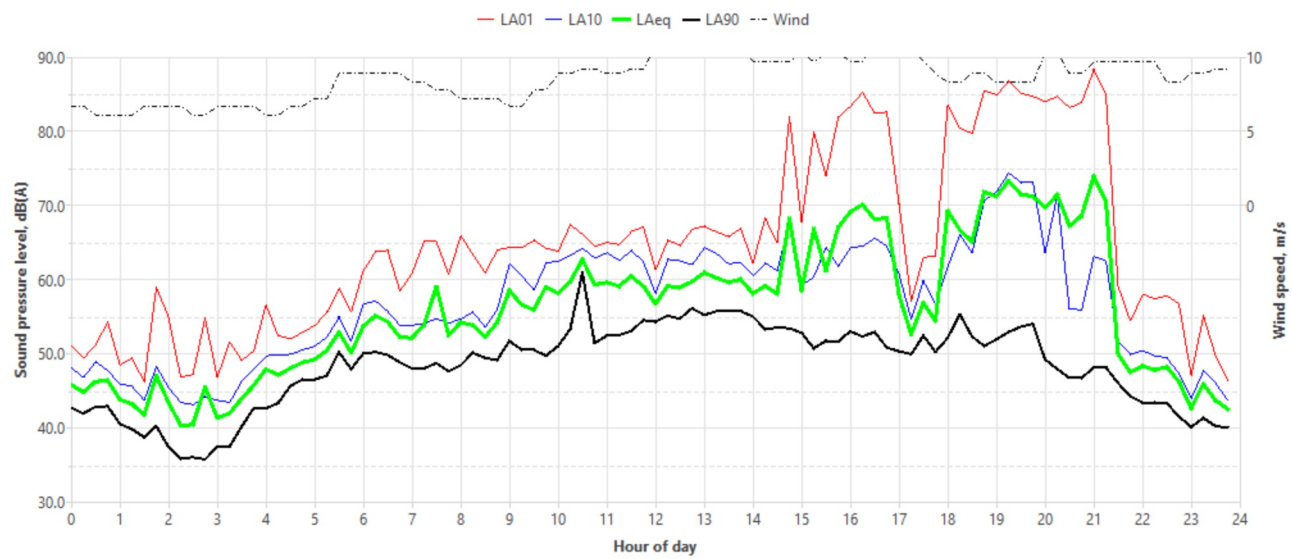
Monday, 20 October 2025



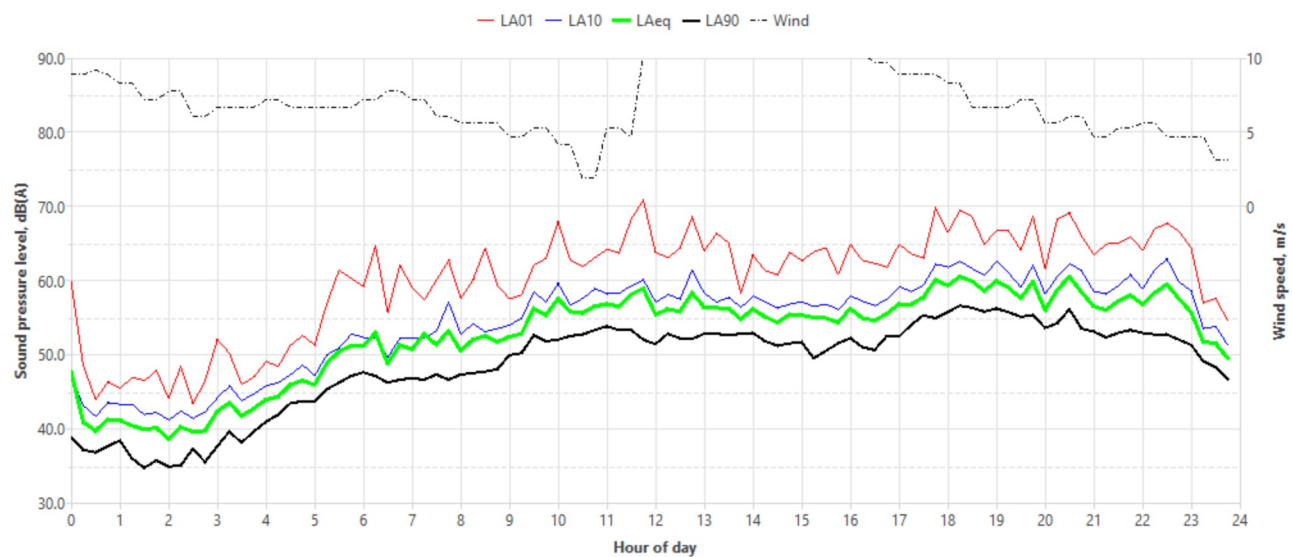
Tuesday, 21 October 2025



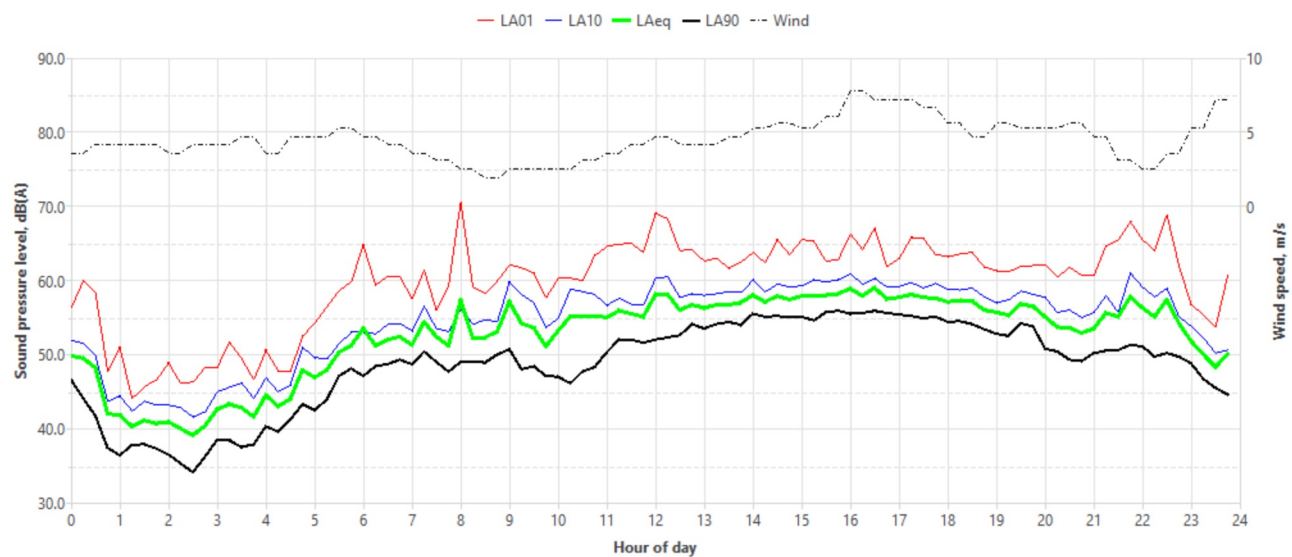
Wednesday, 22 October 2025



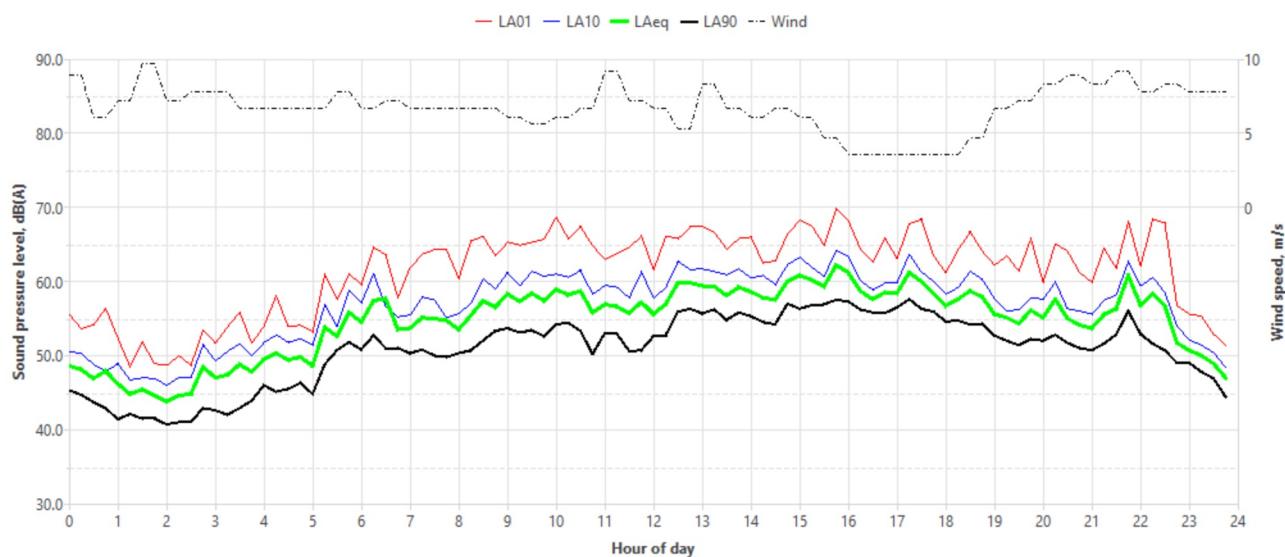
Thursday, 23 October 2025



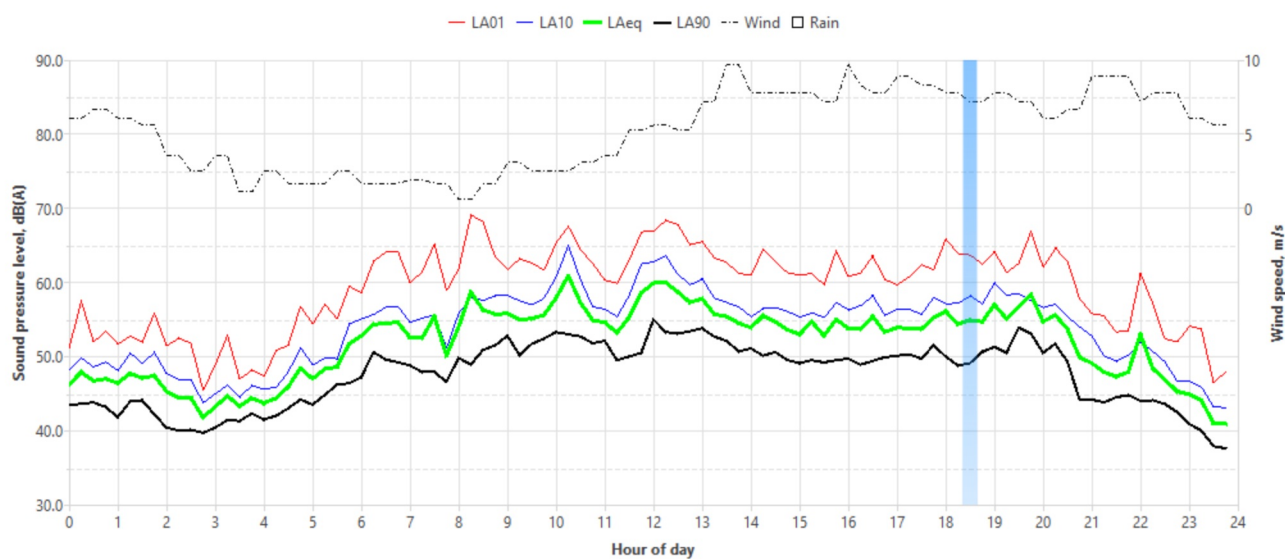
Friday, 24 October 2025



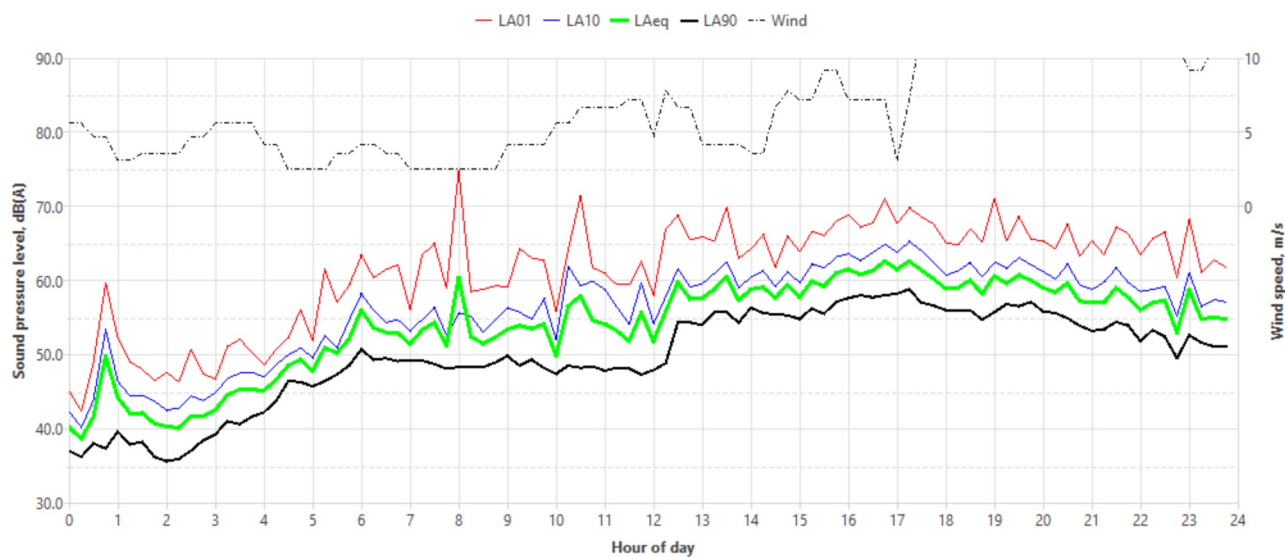
Saturday, 25 October 2025



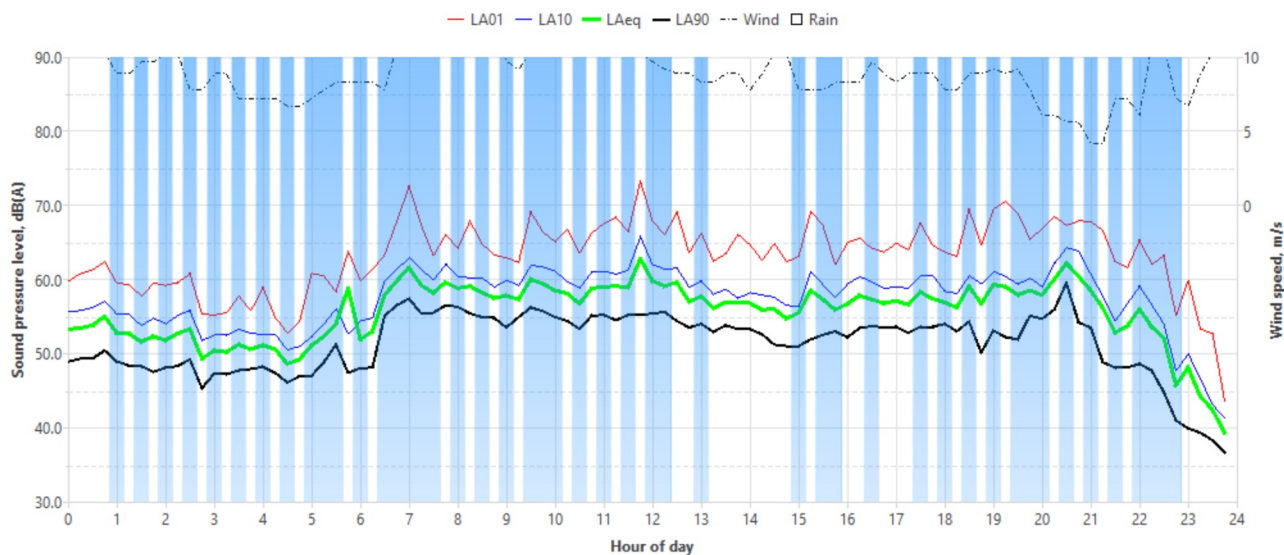
Sunday, 26 October 2025



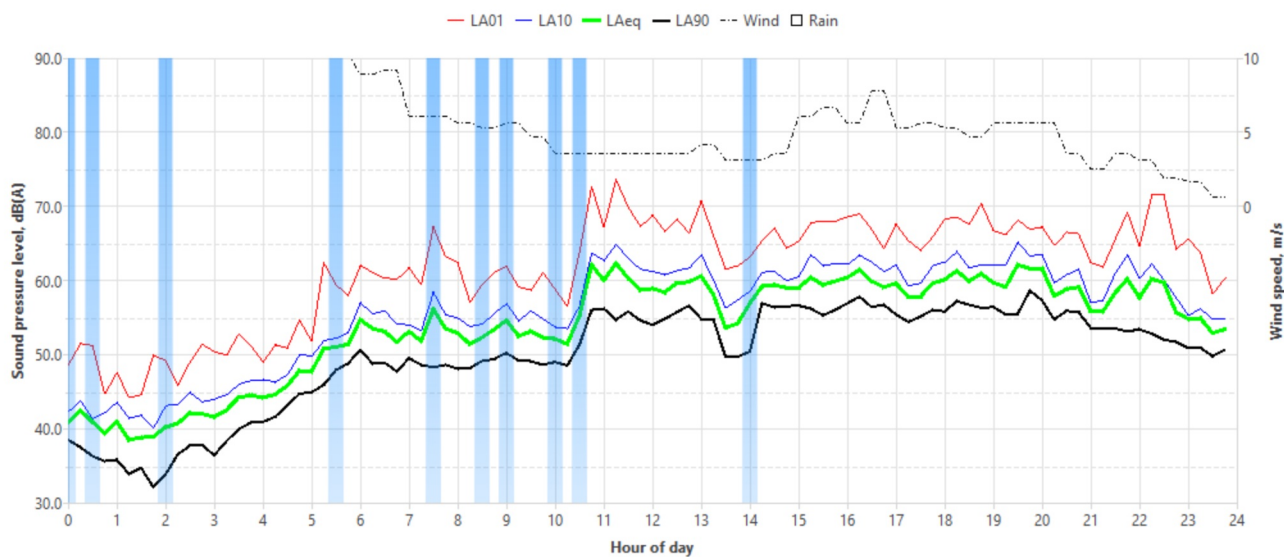
Monday, 27 October 2025



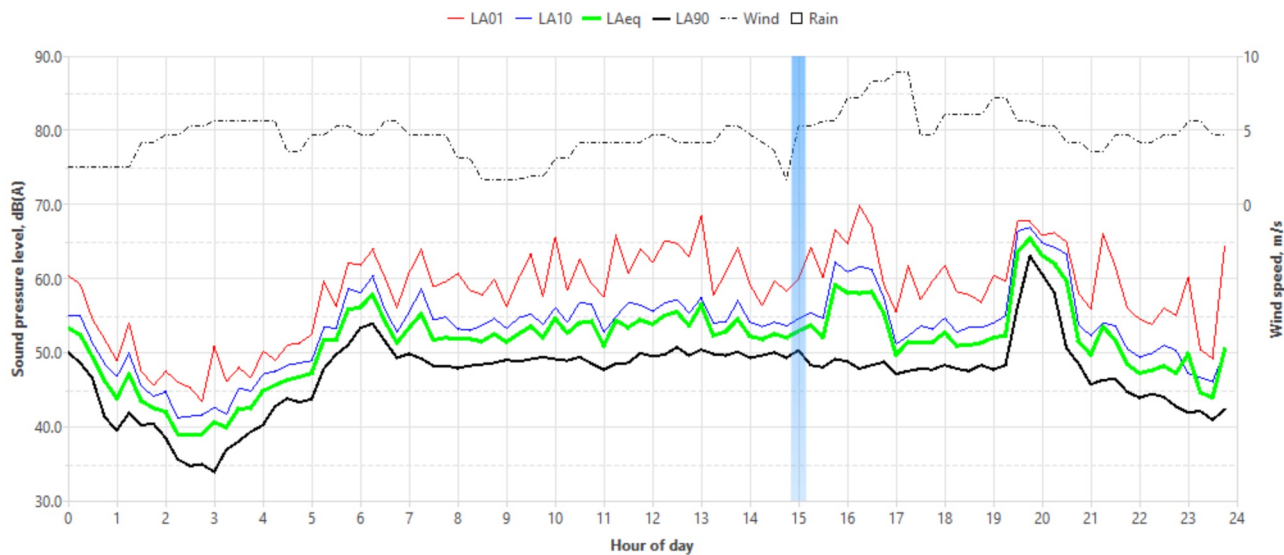
Tuesday, 28 October 2025

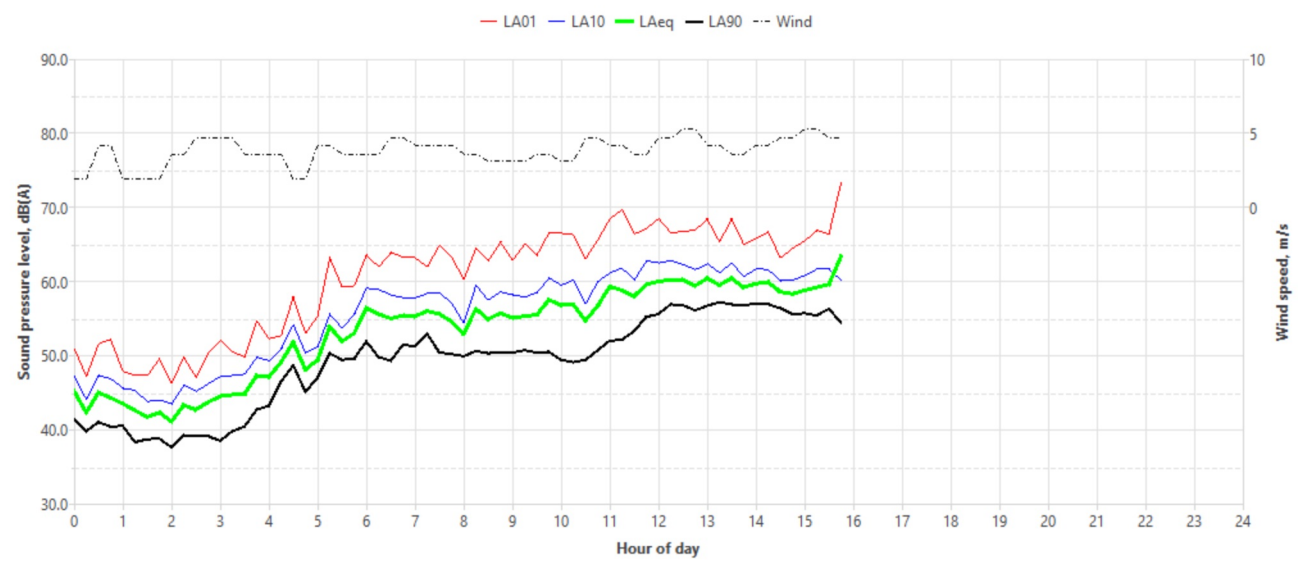


Wednesday, 29 October 2025



Thursday, 30 October 2025





APPENDIX C. SOURCE NOISE LEVEL REFERENCES

C.1. Heavy vehicle measurements

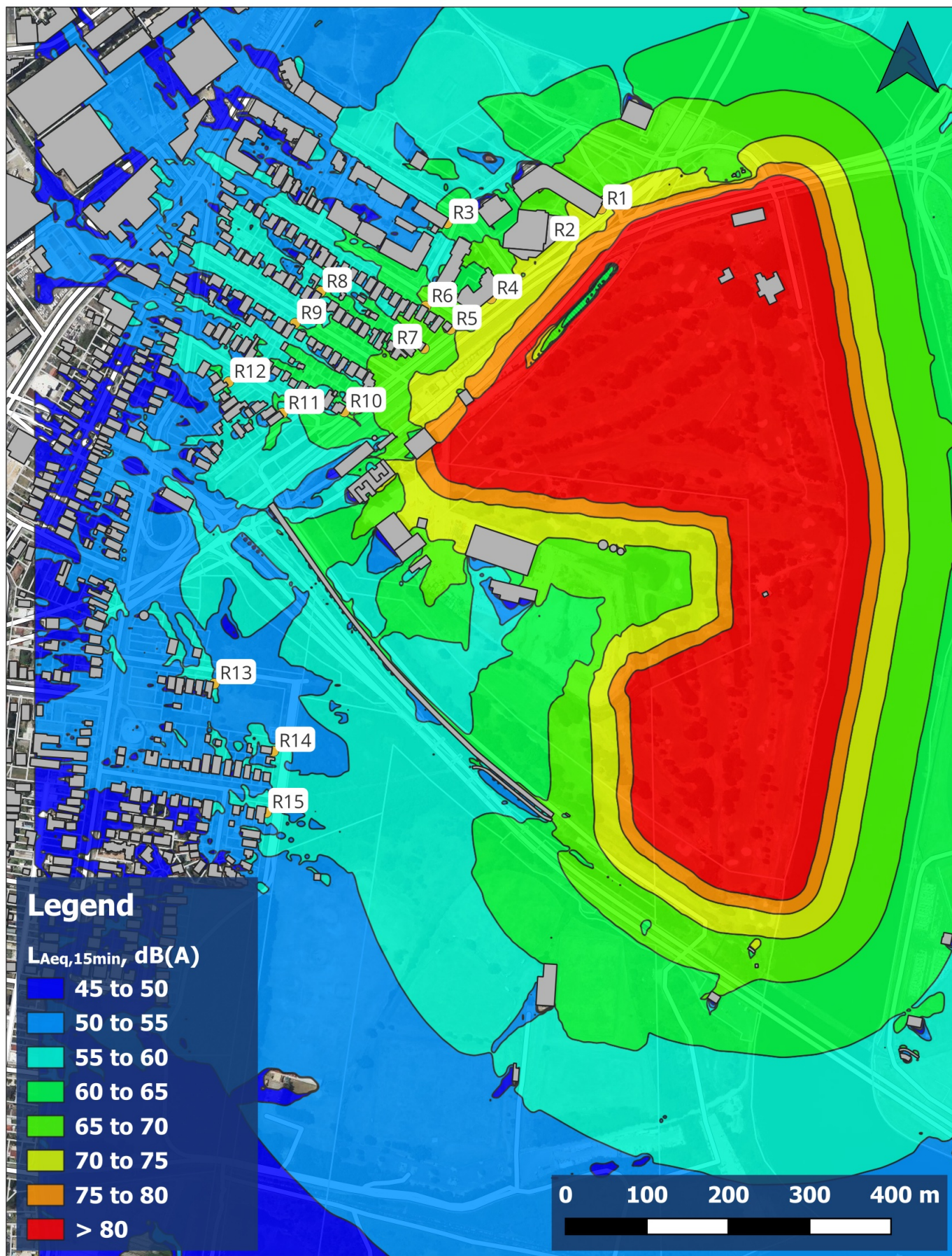
Presented below is a summary of the source noise measurements undertaken.

				Leg L ₉₀ L ₁₀		
Echoshush panels → Pyrotek		Viterolite R/B		14	Strapping on goods 1 st Part 1 (5m)	
↳ several colours		→ More durability		15	Strapping on goods 1 st Part 2 (5m)	
↳ subcontractors to install		→ Less sound absorption		16	Strapping on goods 3 rd (5m)	
↳ adhesive fixing		→ More suitable for mesh fixing		17	Truck moving P1 (Hwy) (13.5)	
↳ need specs, casting...		→ 600x600		18	Truck Idle P2 (Hwy) (13.5m)	
BAC - PCT0808 - 2-K				19	Truck Idle P3 (Hwy) (13.4m)	
2.59 x 2.59 x 3.33				20	Truck moving brakes (13.3m)	
Project #1		Location		21	Truck Idle (weird noise) (13.3m)	
2	Noise logger	4m 2m		22	" " (4" " " (7m)	
3	Lift fork ramp down	66.9 60.5 32		23	" " (no noise) 3m	
4	Lift fork up ramp	77.4 69 82		24	Truck moving (4m)	
5	* Lift Loading Part 2			25	Truck reversing (3m)	
6	* Lift Loading Part 2			26	" " (3m)	
7	* Forklift Idling (5m 7m)			27	" " (3m)	
8	Actual Loading (7m)			28	" " (Brakes Bleeding) (3m)	
9	Unloading Cylinder (~7.7m)			29	Roller Compactor - rolling (18m)	
10	Lift Loading P1 (~3-6m)			30	" " - Idle (4m)	
11	Lift Loading v2 P2 (4m)			31	" " - moving alongside (4m)	
12	Lift moving 5m Part 1 (~4.5m)			32	Putting shift in container (4m)	
13	Lift Loading 3 rd Part # (5-6m)			33	Roller Compactor - rolling (5m)	
				34	" " " (5m) 44 55 68	
				35	Forklift (3m)	
				36	Forklift on road with bump (2m) (2.5m long)	

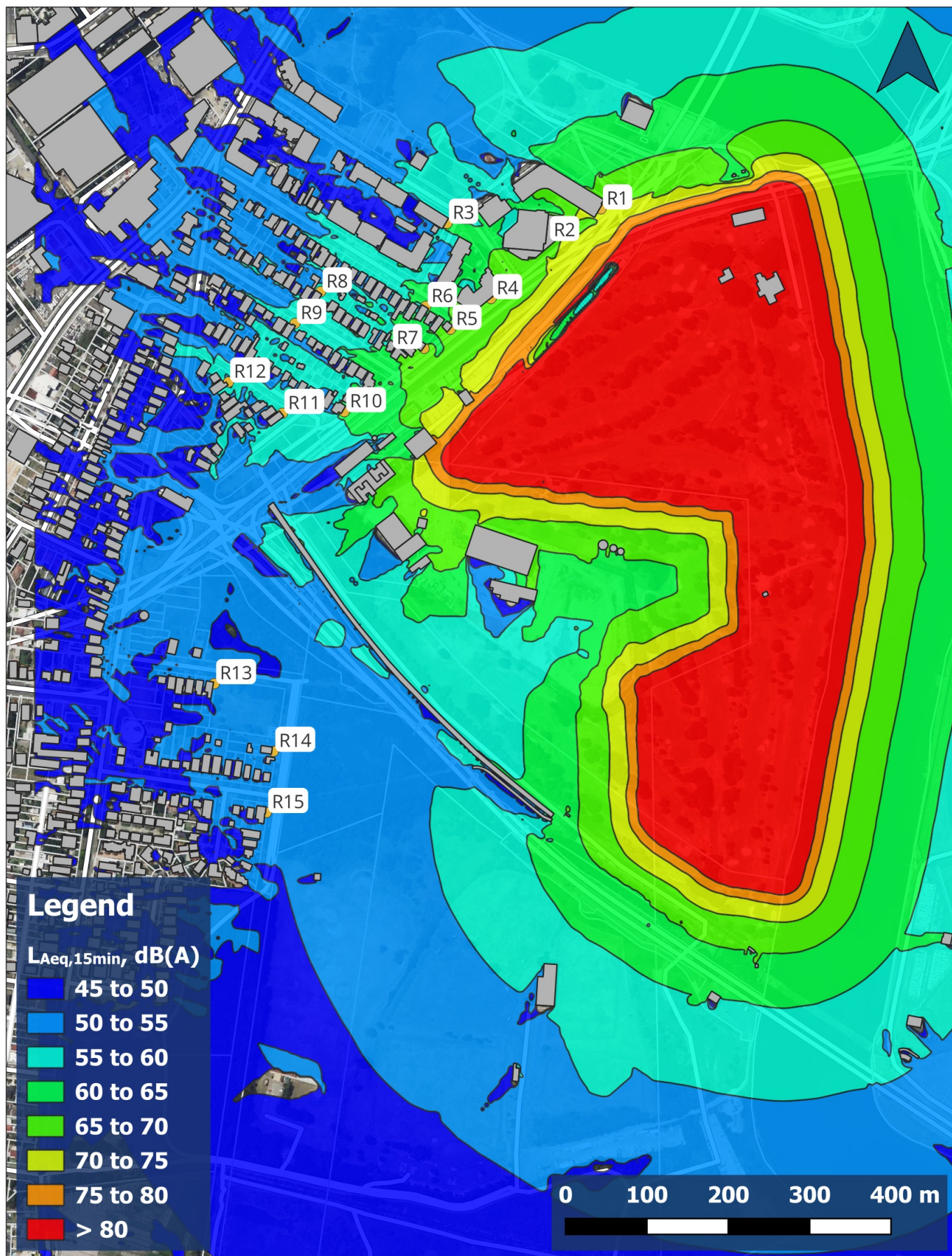




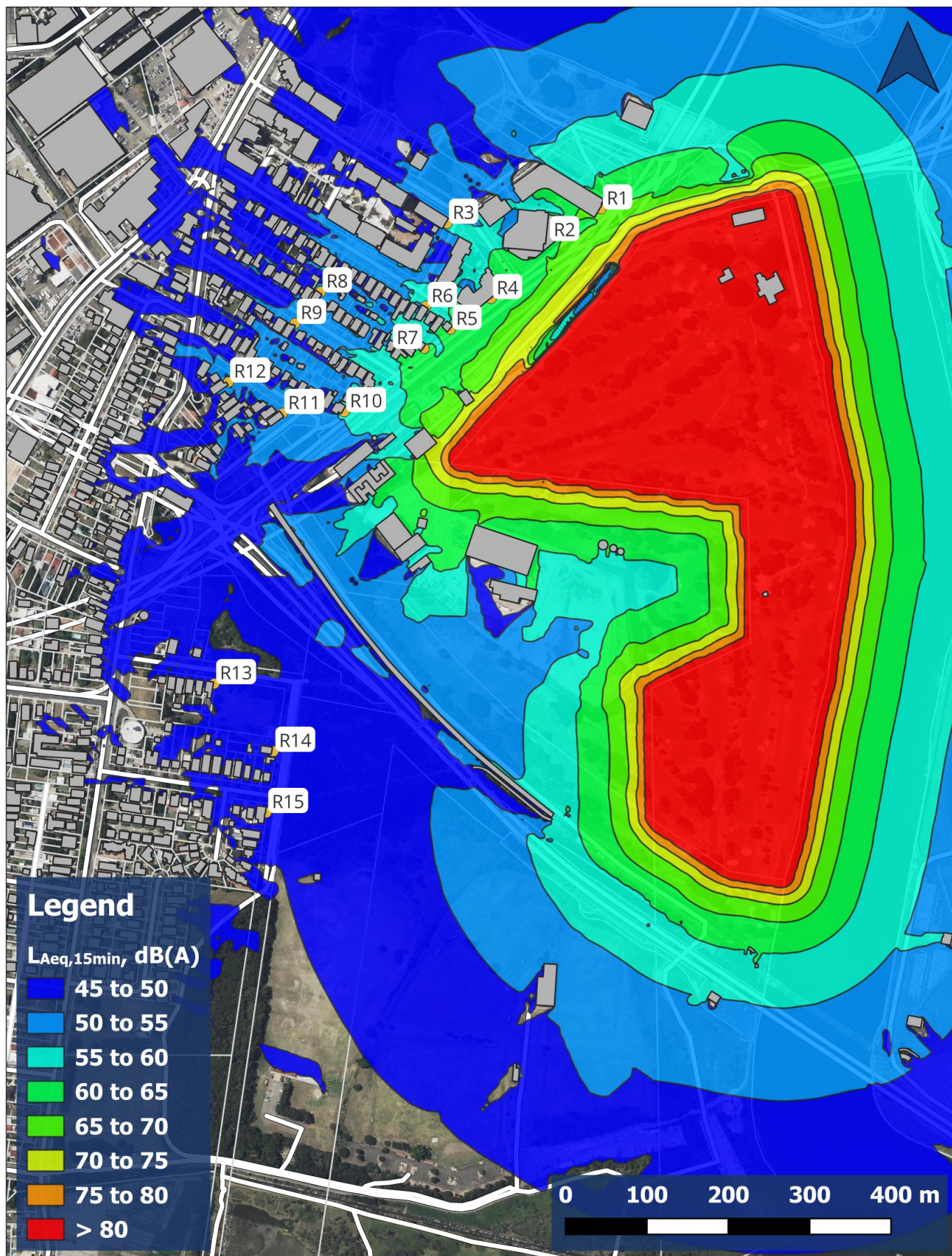
APPENDIX D. CONSTRUCTION NOISE CONTOURS



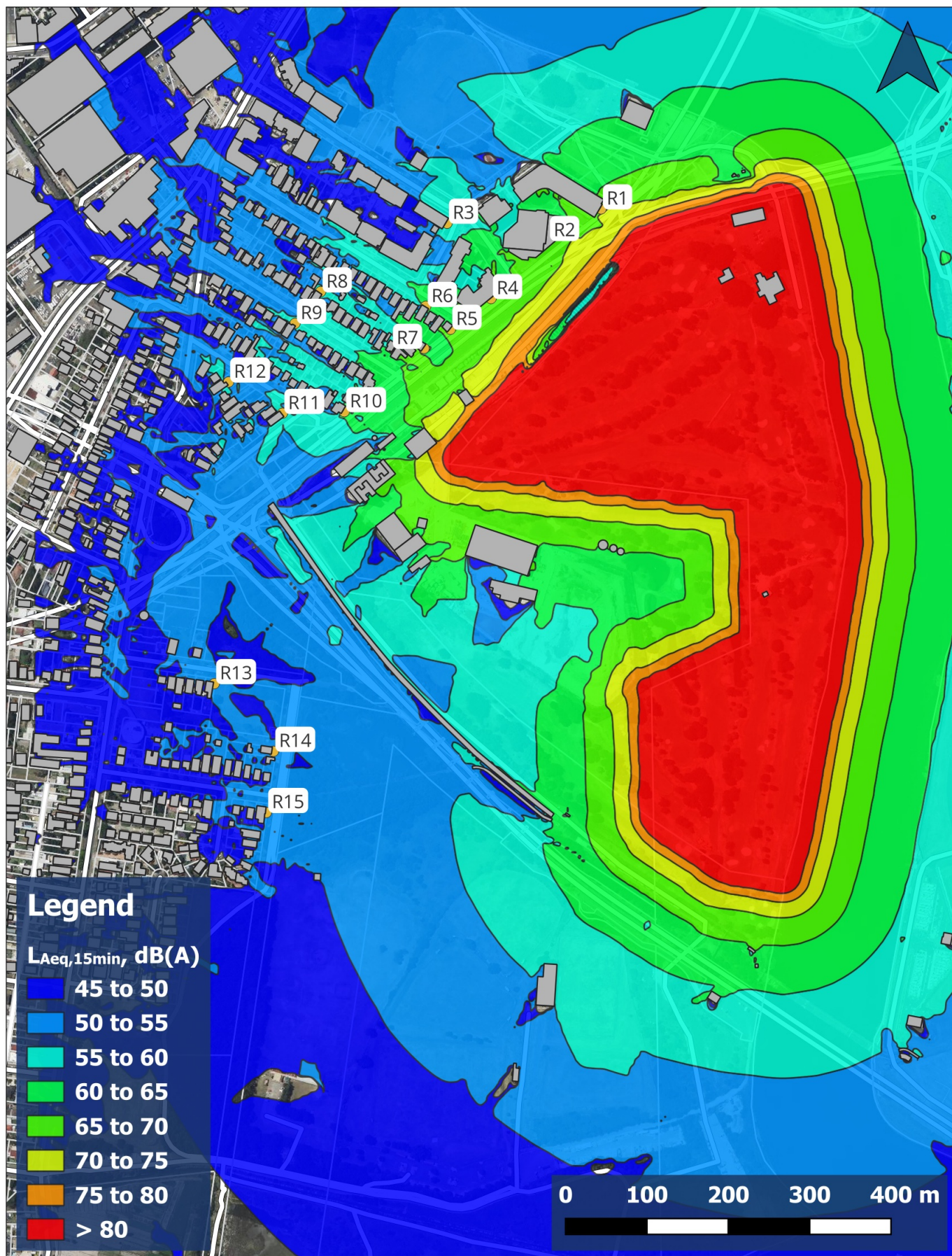
Kogarah Golf Club Redevelopment
Construction Noise Impacts
Demolition



Kogarah Golf Club Redevelopment
Construction Noise Impacts
Excavation and shoring



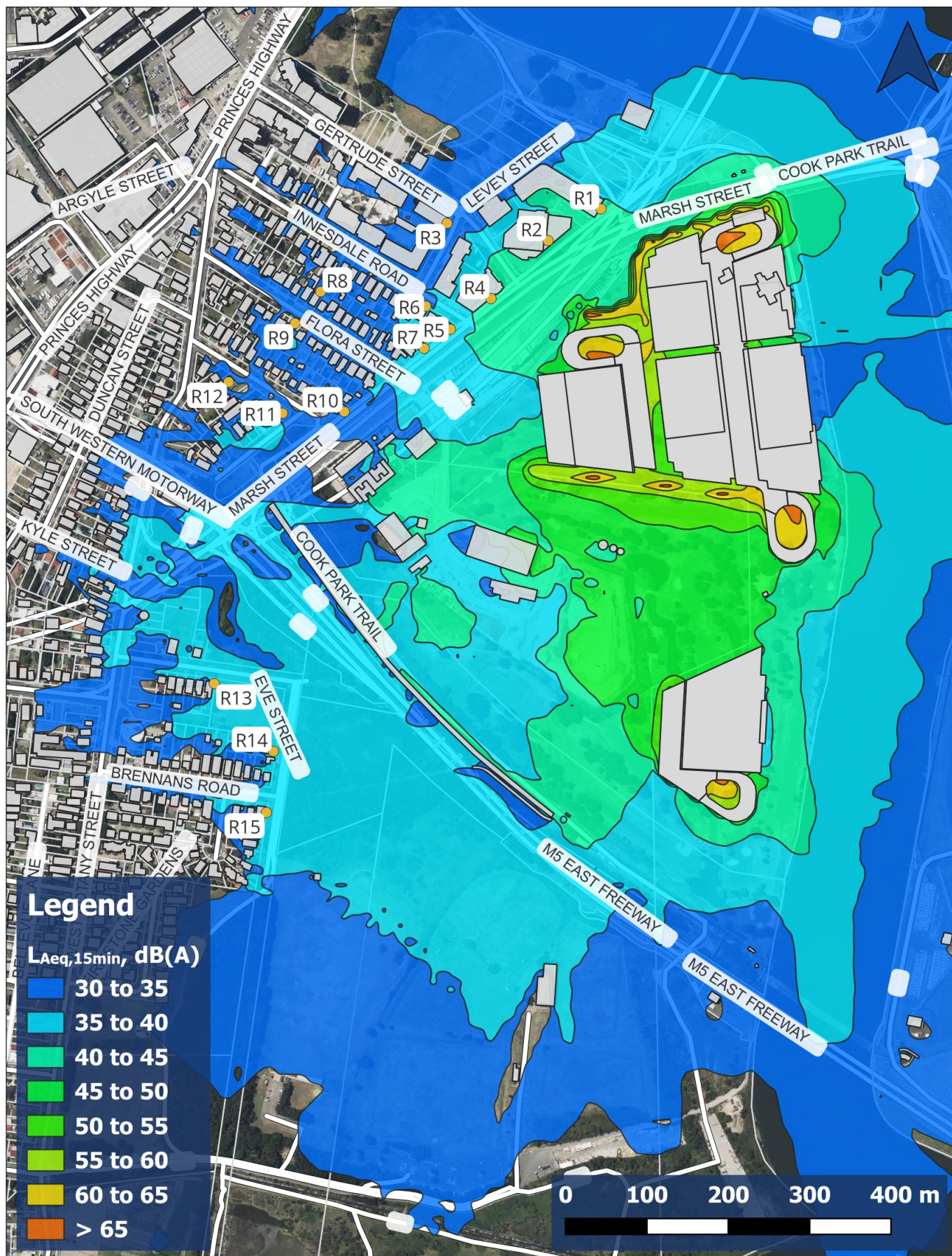
**Kogarah Golf Club Redevelopment
Construction Noise Impacts
Site Servicing and Infrastructure**



Kogarah Golf Club Redevelopment
Construction Noise Impacts
Parking area construction

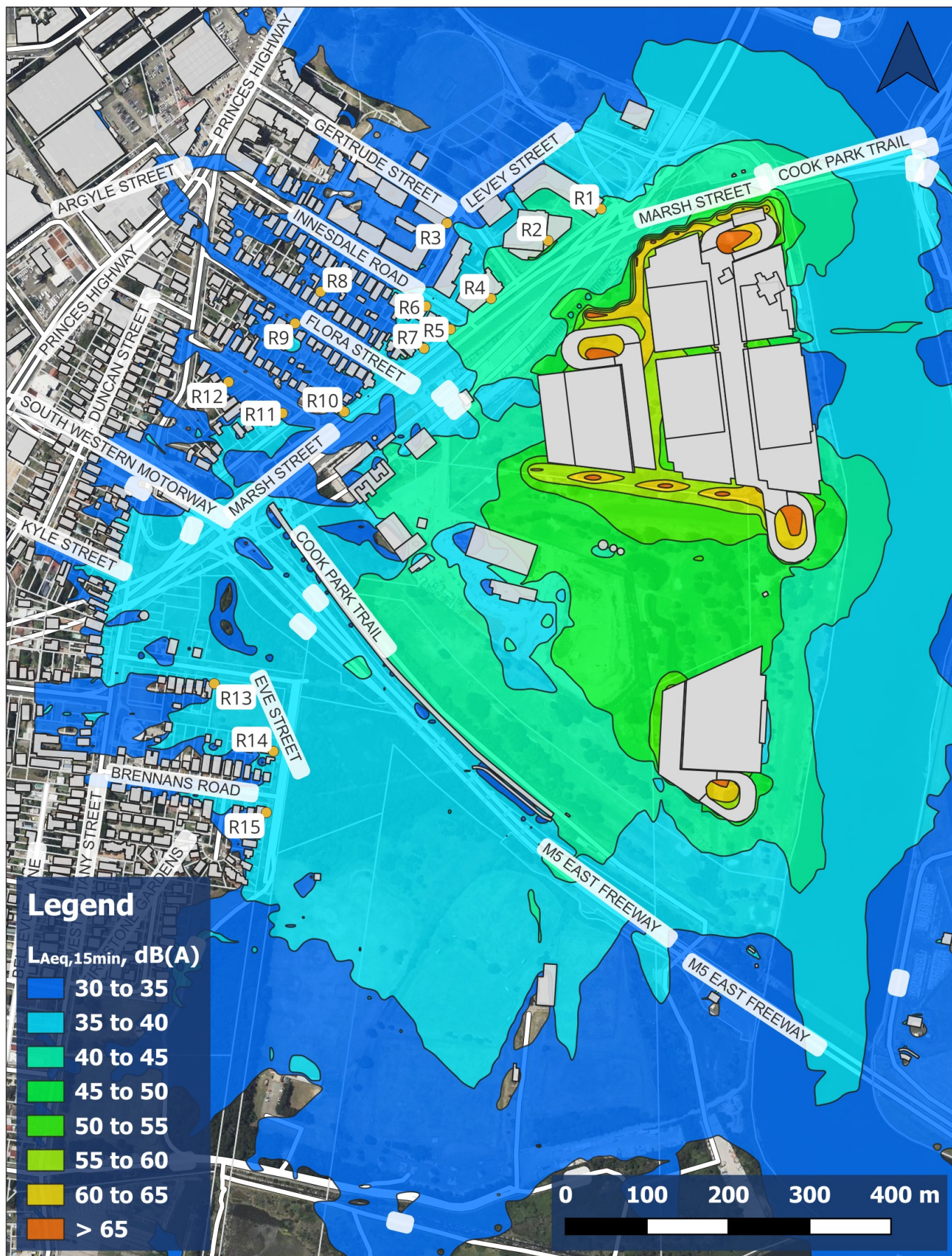


APPENDIX E. OPERATIONAL NOISE CONTOURS

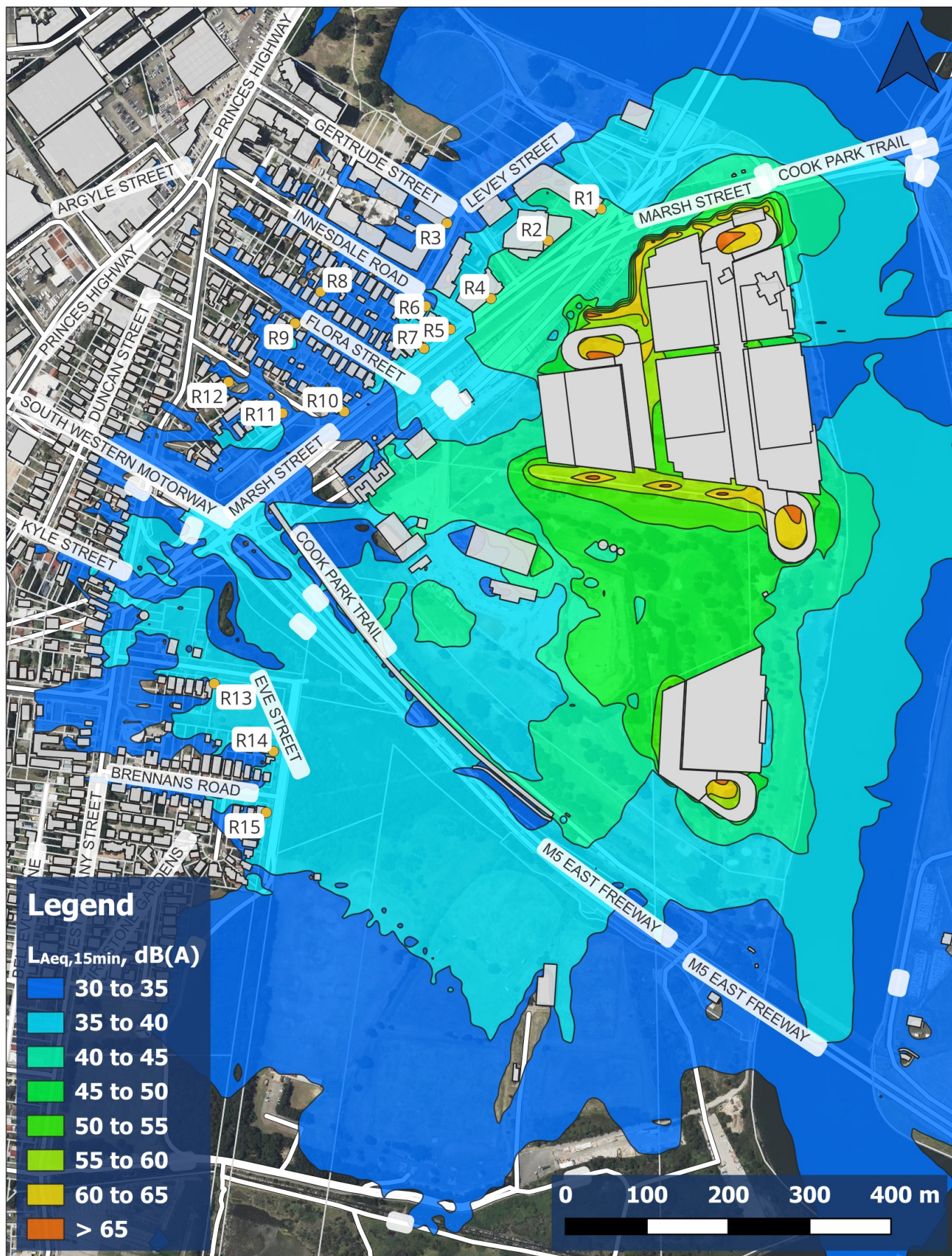


Kogarah Golf Club Redevelopment
Scenario 1 Logistics Only
Morning Shoulder Operational Noise Impacts with Mitigation



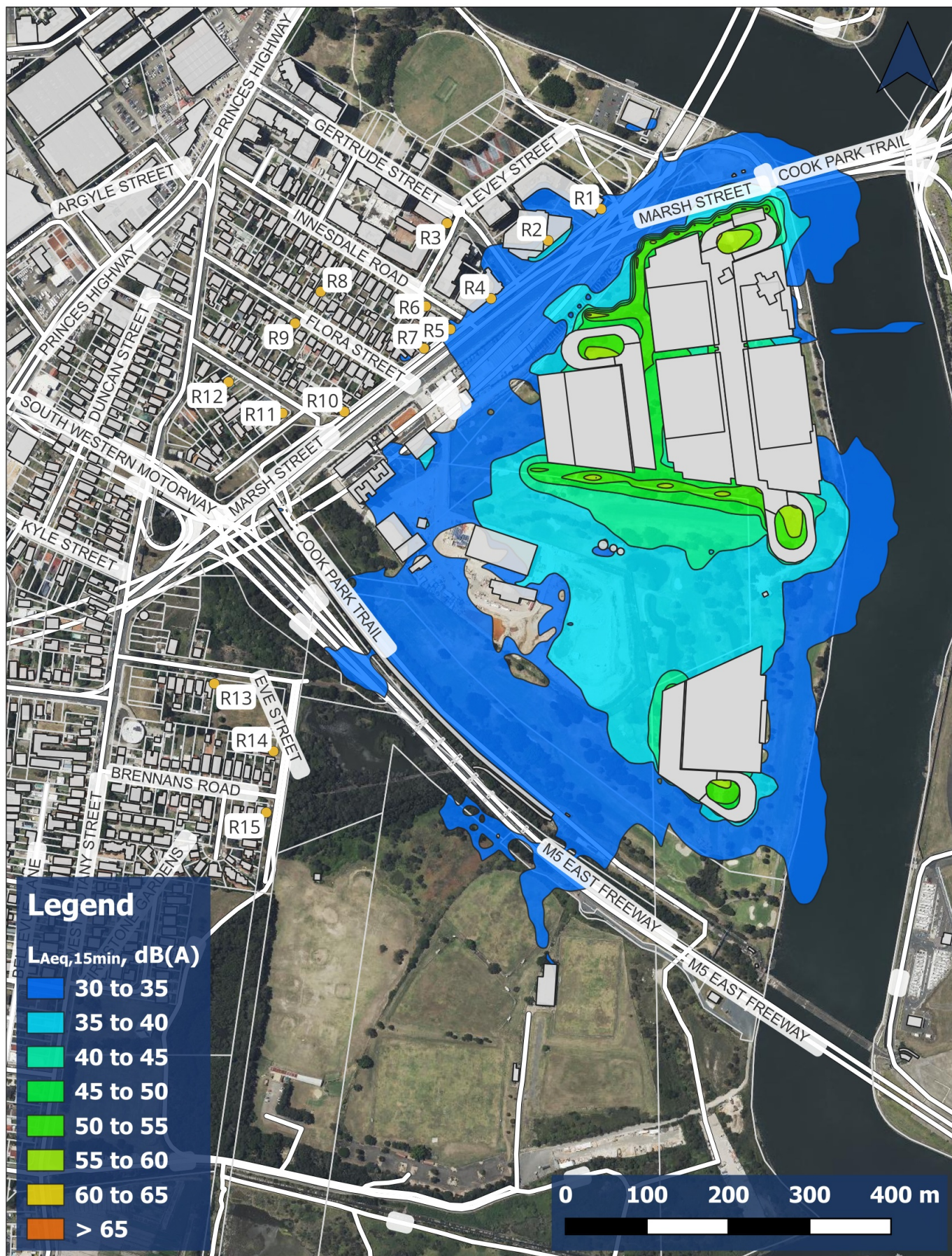


Kogarah Golf Club Redevelopment
Scenario 1 Logistics Only
Daytime Operational Noise Impacts with Mitigation

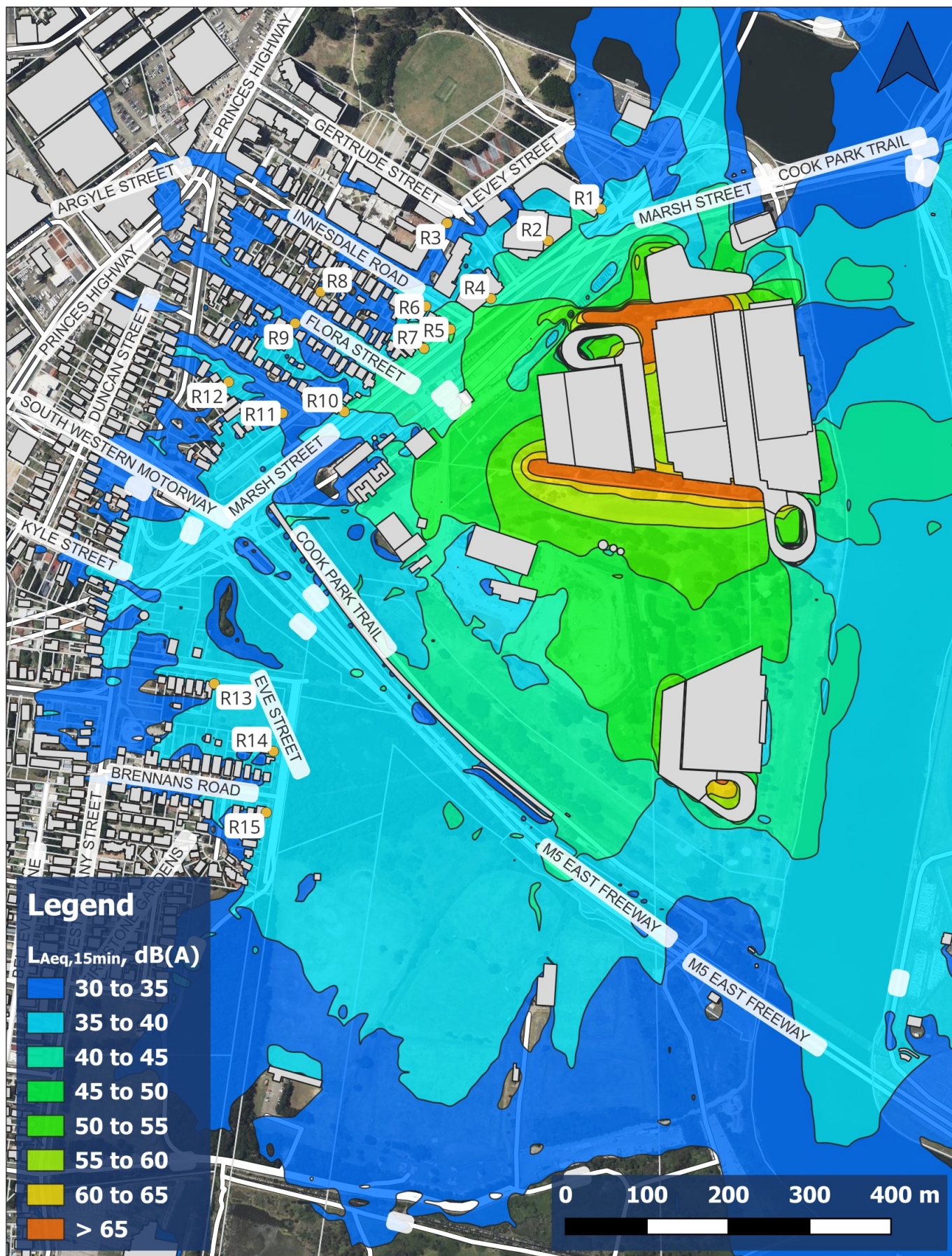


Kogarah Golf Club Redevelopment
Scenario 1 Logistics Only
Evening Operational Noise Impacts with Mitigation

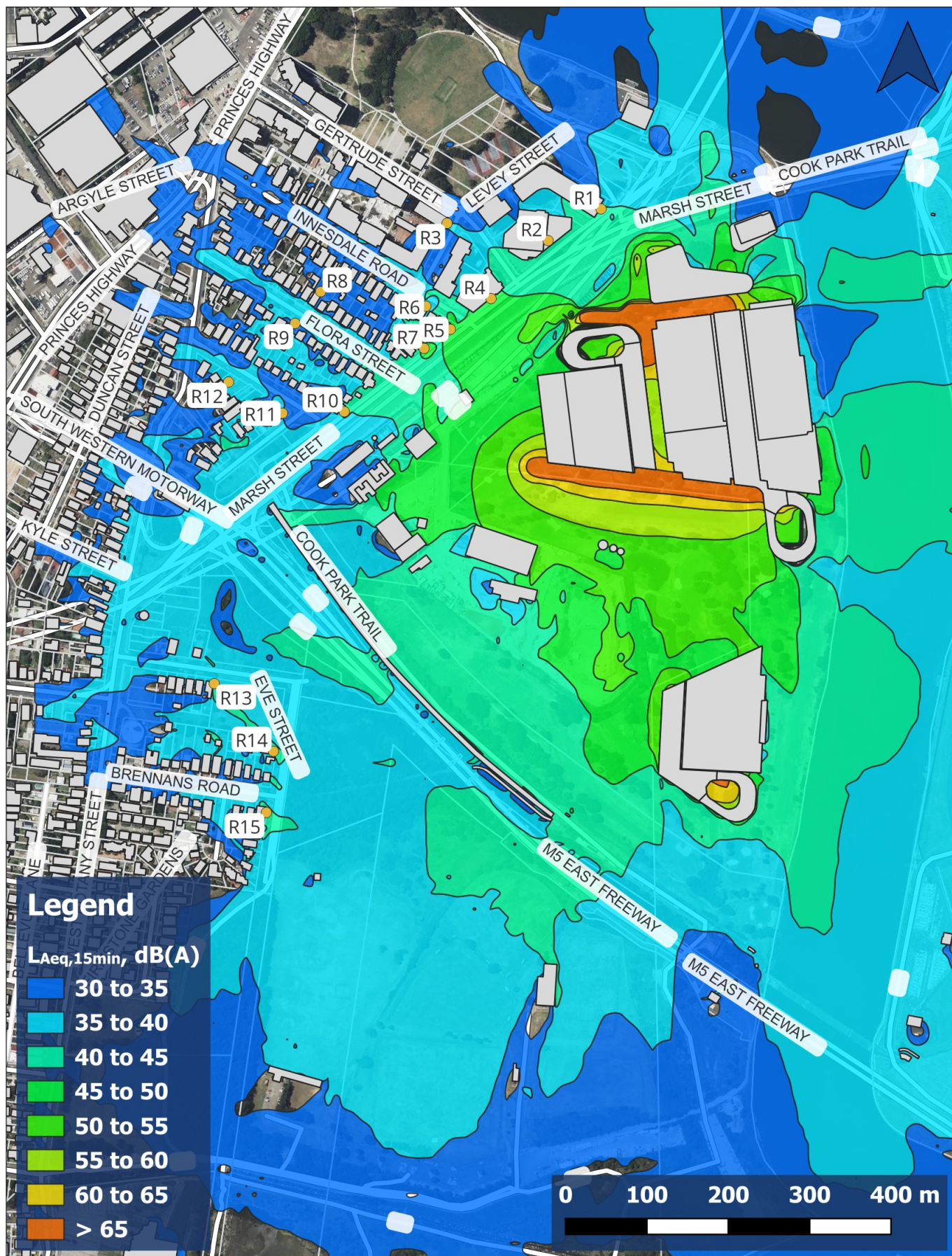




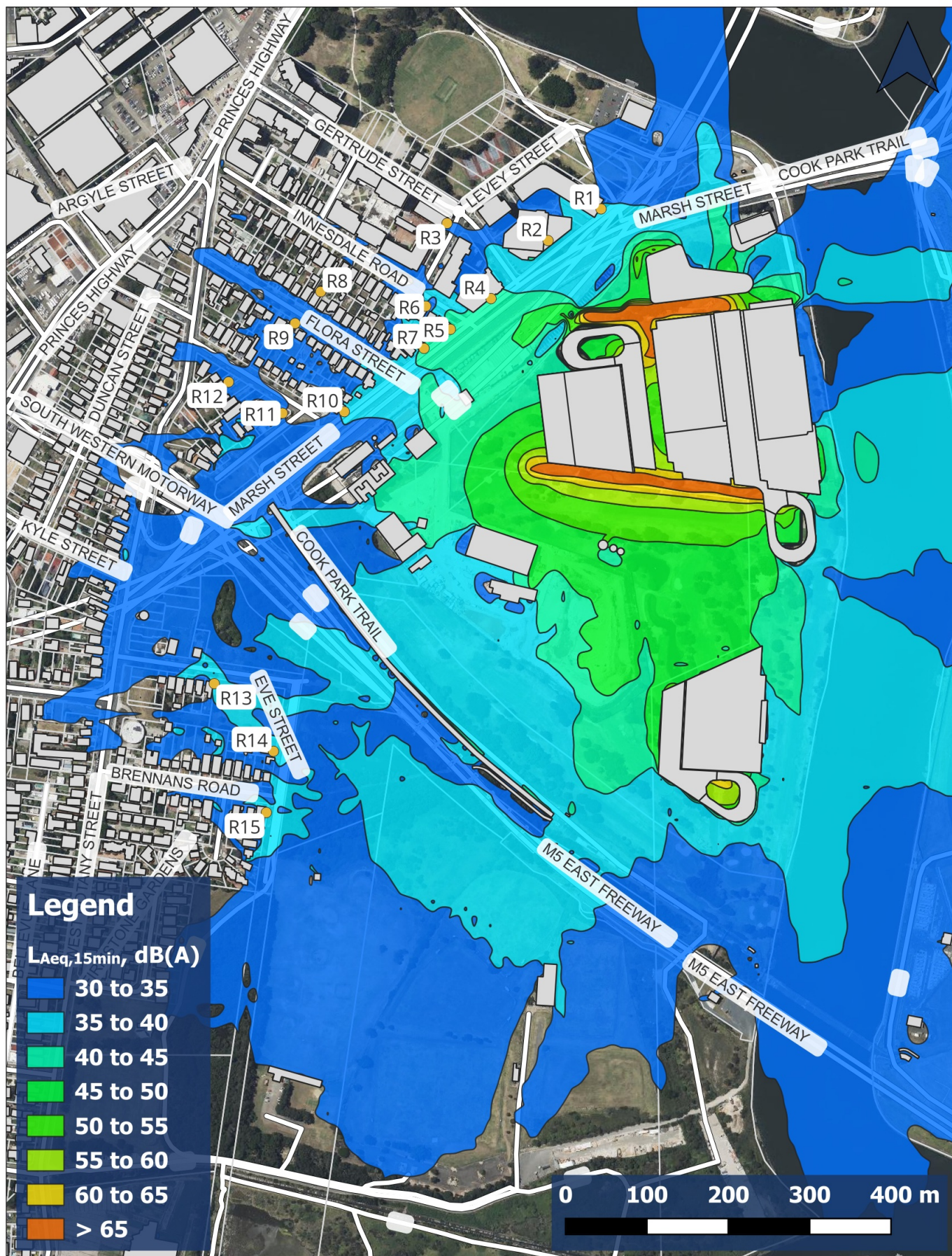
Kogarah Golf Club Redevelopment
Scenario 1 Logistics Only
Night-time Operational Noise Impacts with Mitigation



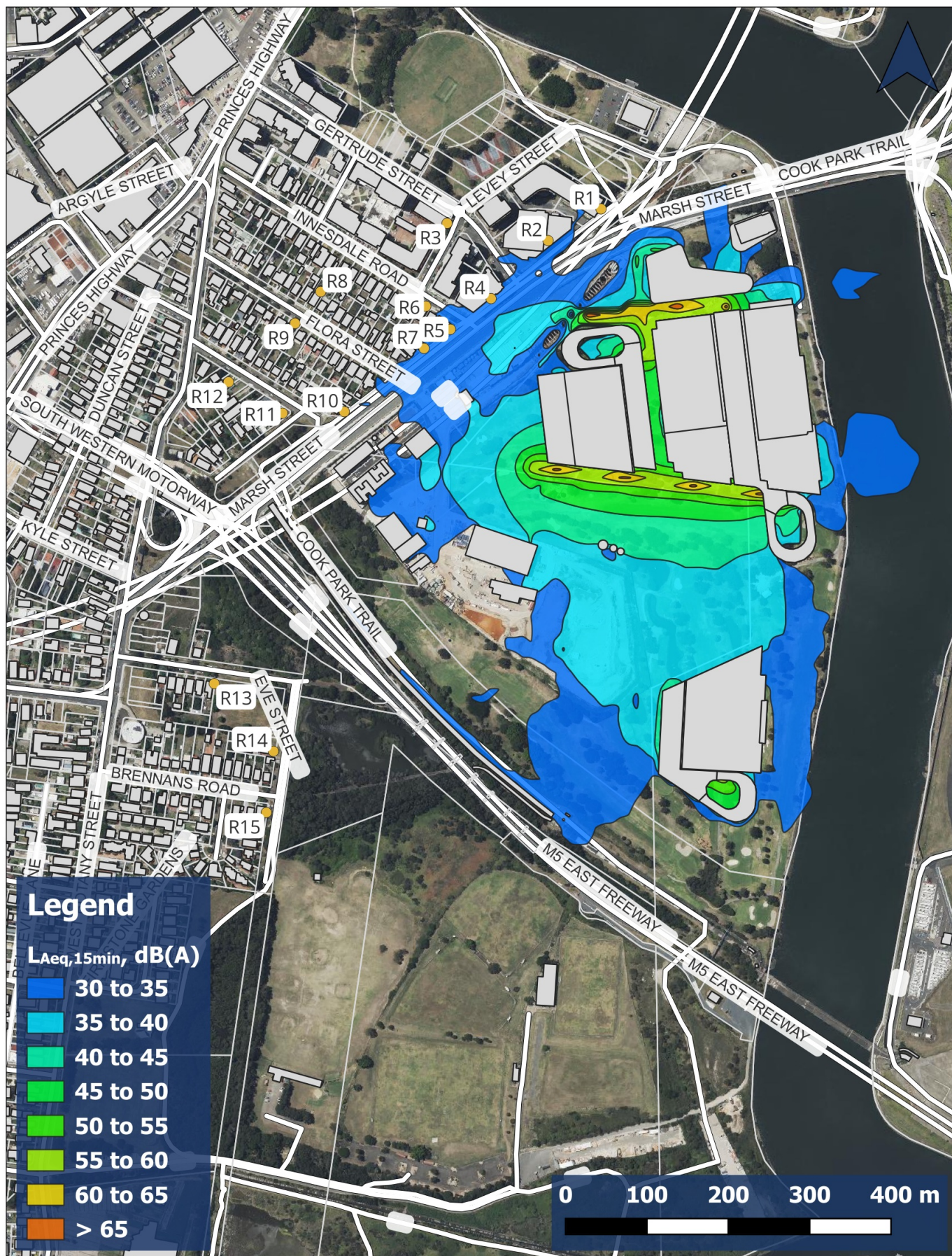
**Kogarah Golf Club Redevelopment
Scenario 2 Logistics and Mixed Use
Morning Shoulder Operational Noise Impacts with Mitigation**



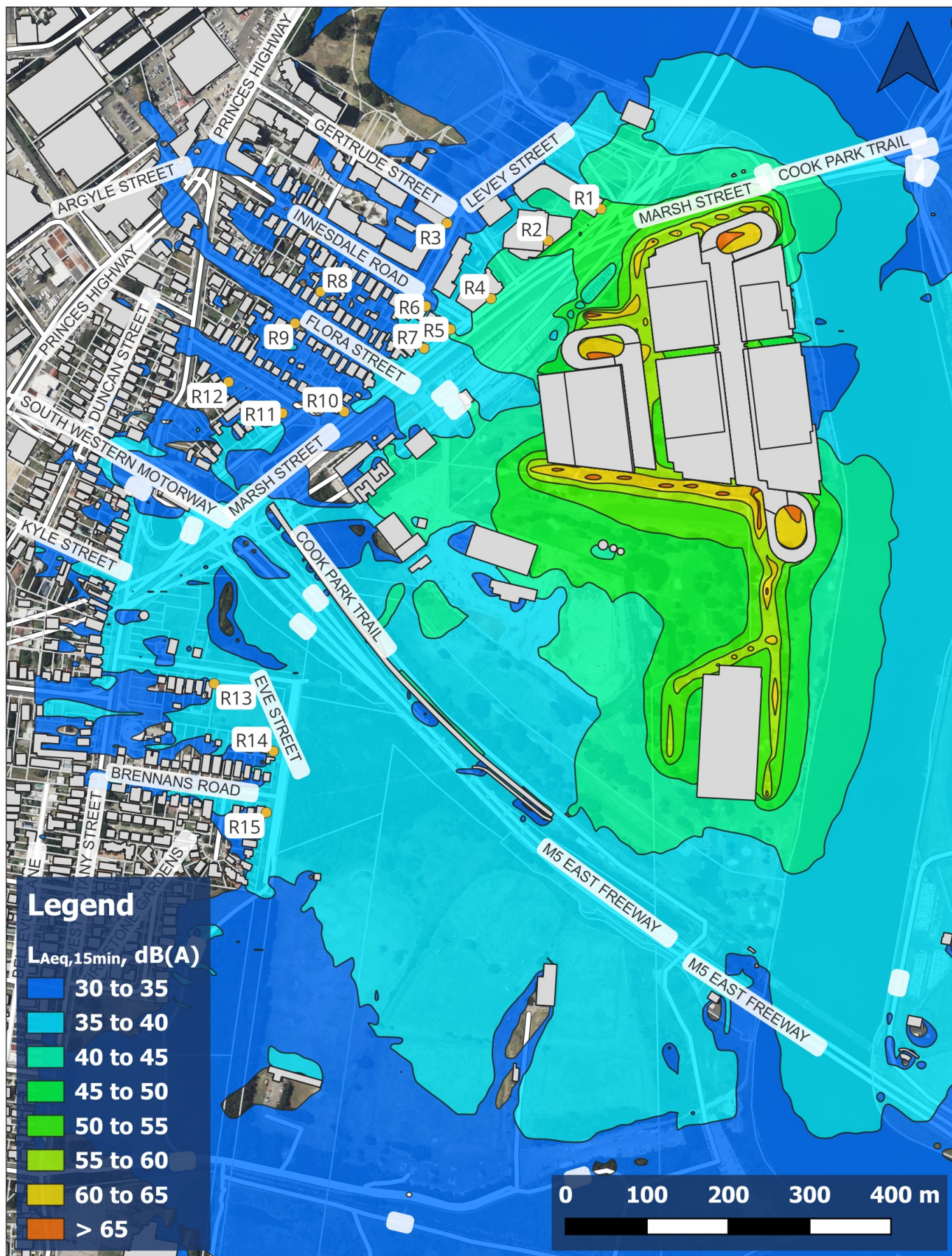
**Kogarah Golf Club Redevelopment
Scenario 2 Logistics and Mixed Use
Daytime Operational Noise Impacts with Mitigation**



**Kogarah Golf Club Redevelopment
Scenario 2 Logistics and mixed use
Evening Operational Noise Impacts with Mitigation**



**Kogarah Golf Club Redevelopment
Scenario 2 Logistics and Mixed Use
Night-time Operational Noise Impacts with Mitigation**



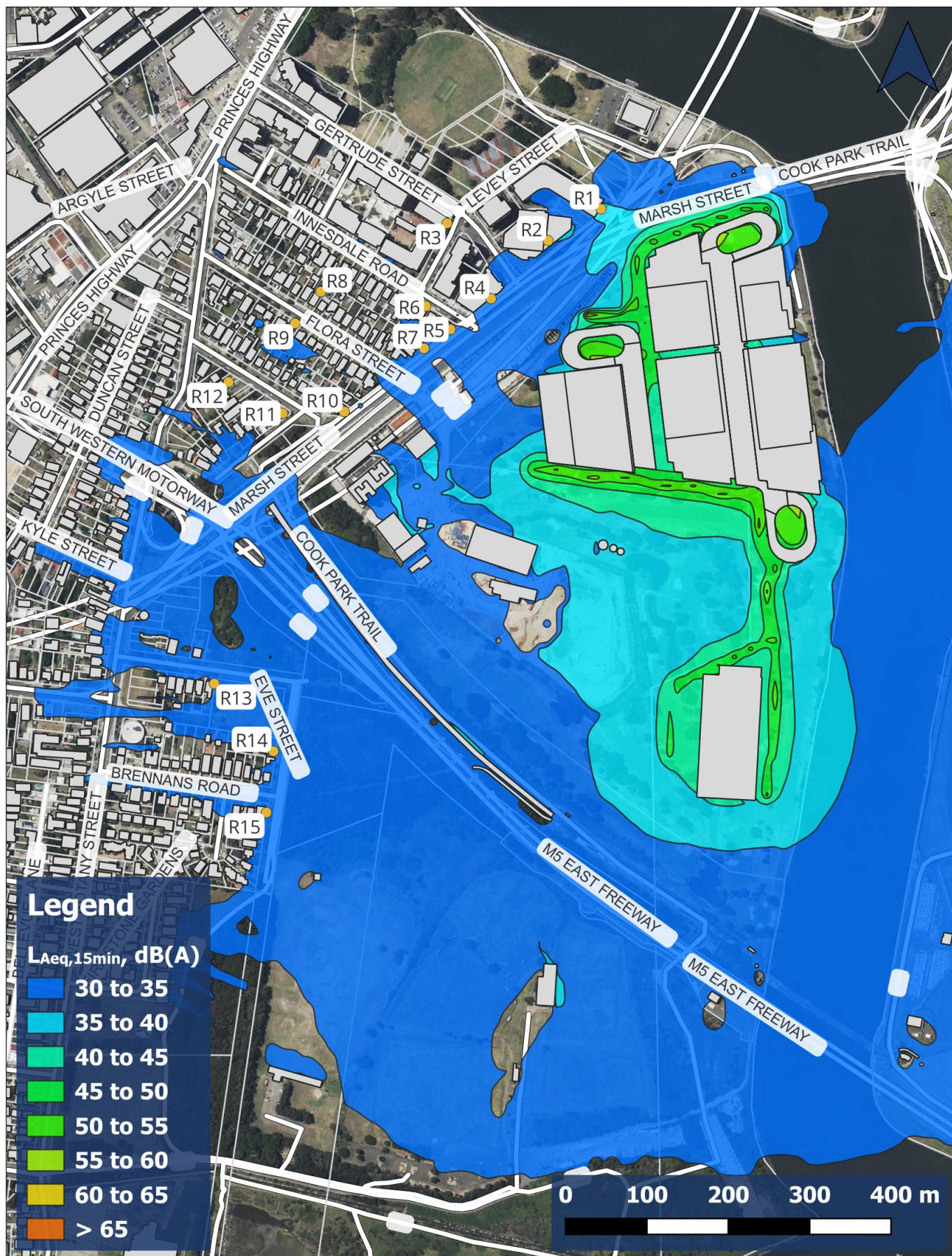
**Kogarah Golf Club Redevelopment
Scenario 3 Logistics and Datacentre
Morning Shoulder Operational Noise Impacts with Mitigation**



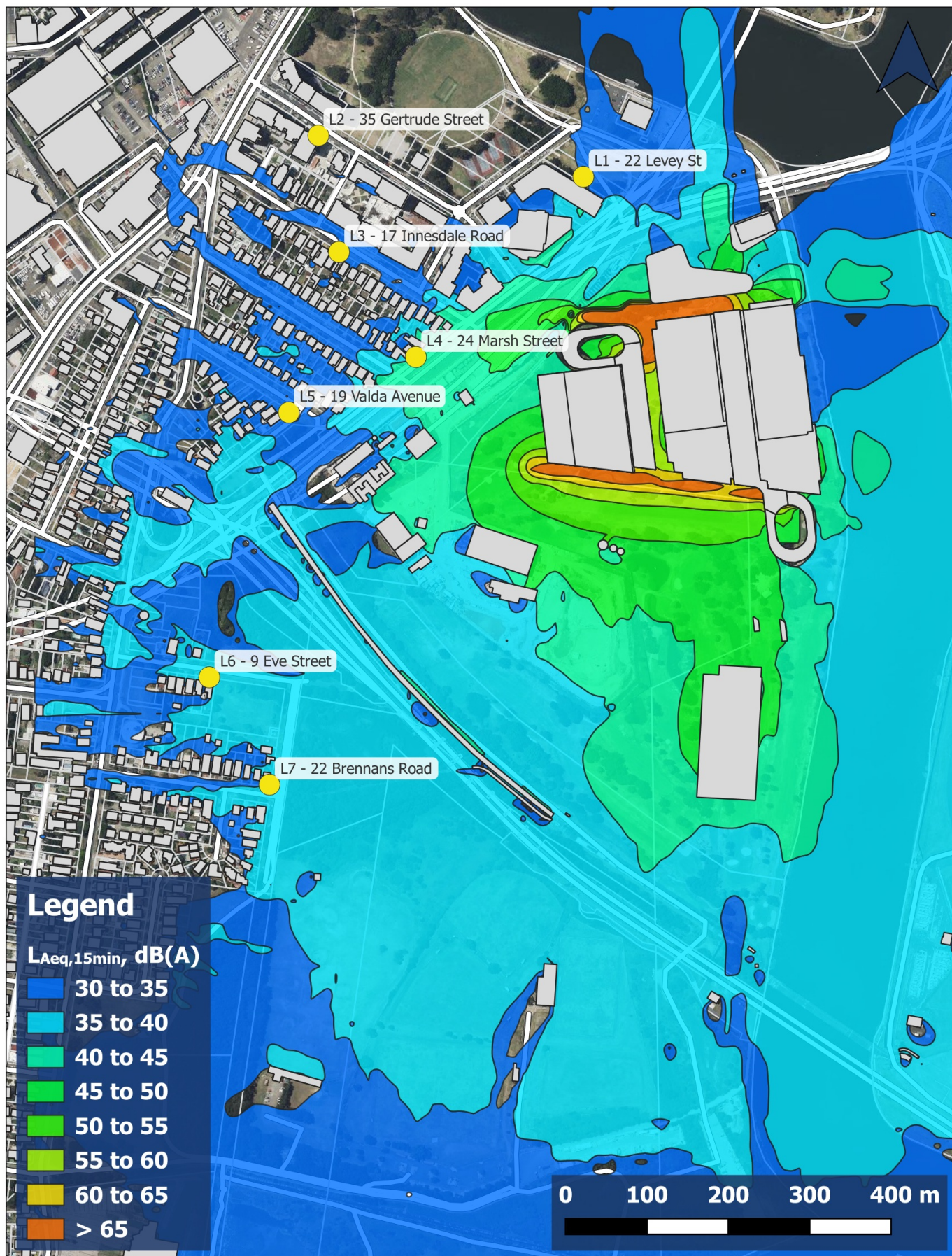
**Kogarah Golf Club Redevelopment
Scenario 3 Logistics and Datacentre
Daytime Operational Noise Impacts with Mitigation**



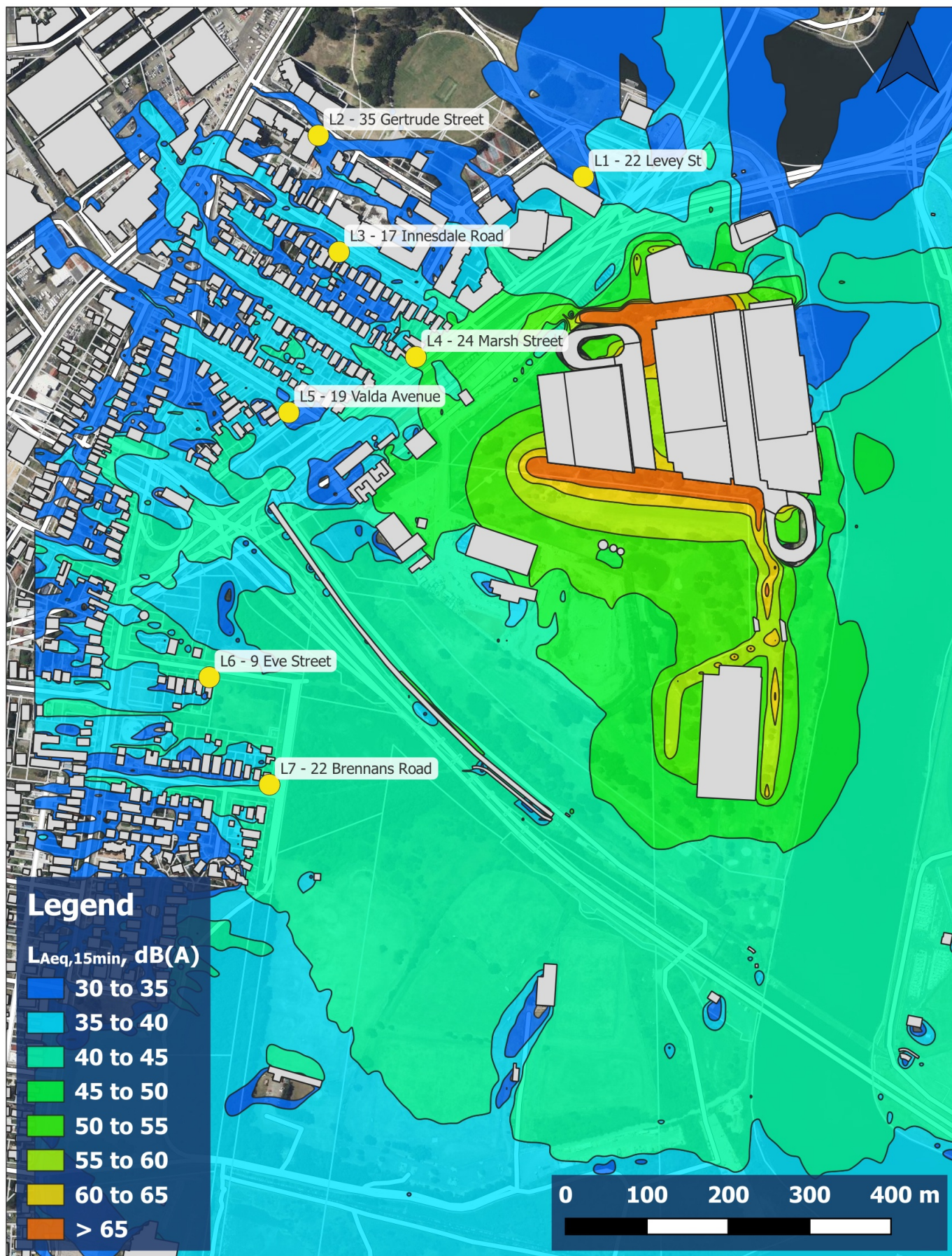
**Kogarah Golf Club Redevelopment
Scenario 3 Logistics and Datacentre
Evening Operational Noise Impacts with Mitigation**



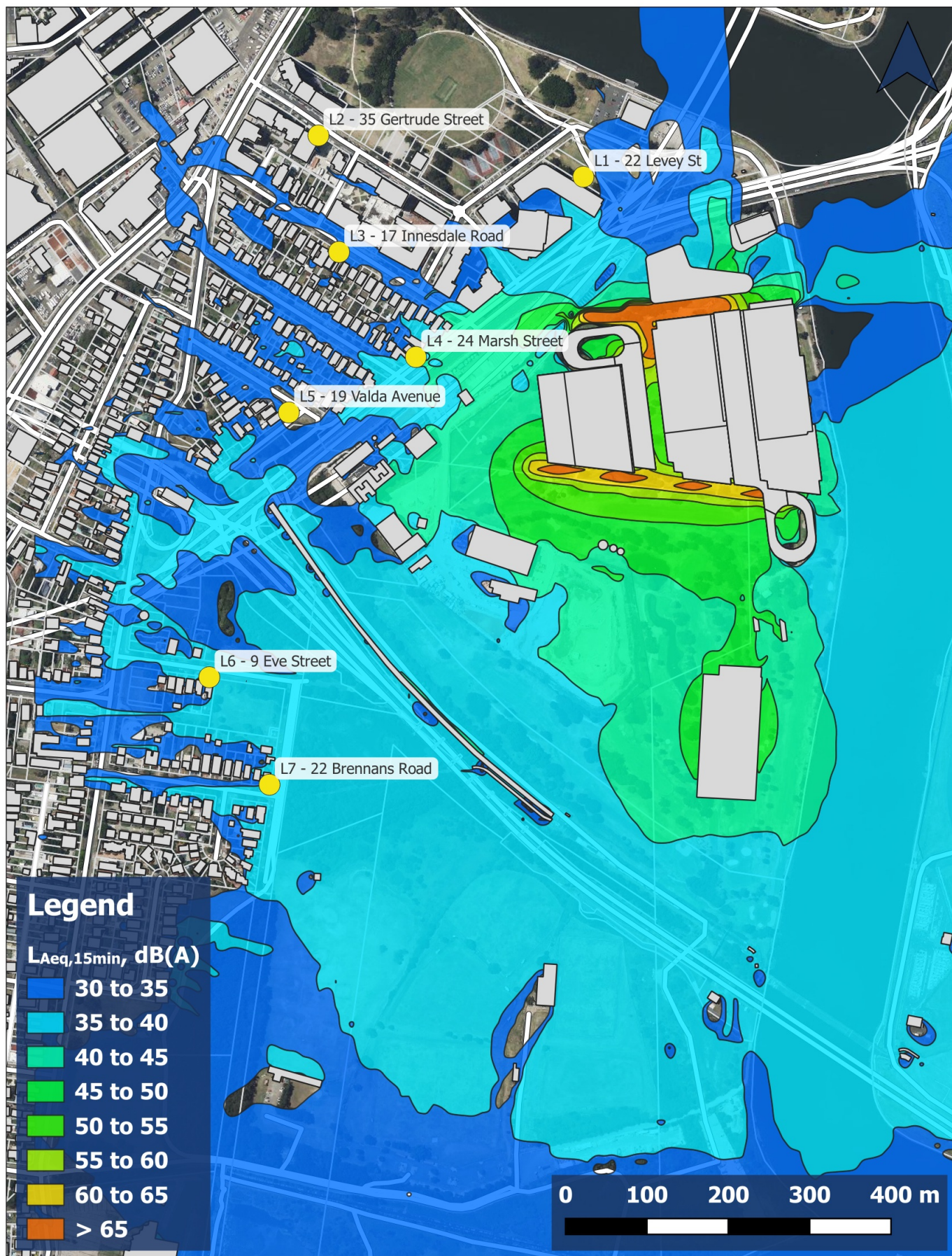
**Kogarah Golf Club Redevelopment
Scenario 3 Logistics and Datacentre
Night-time Operational Noise Impacts with Mitigation**



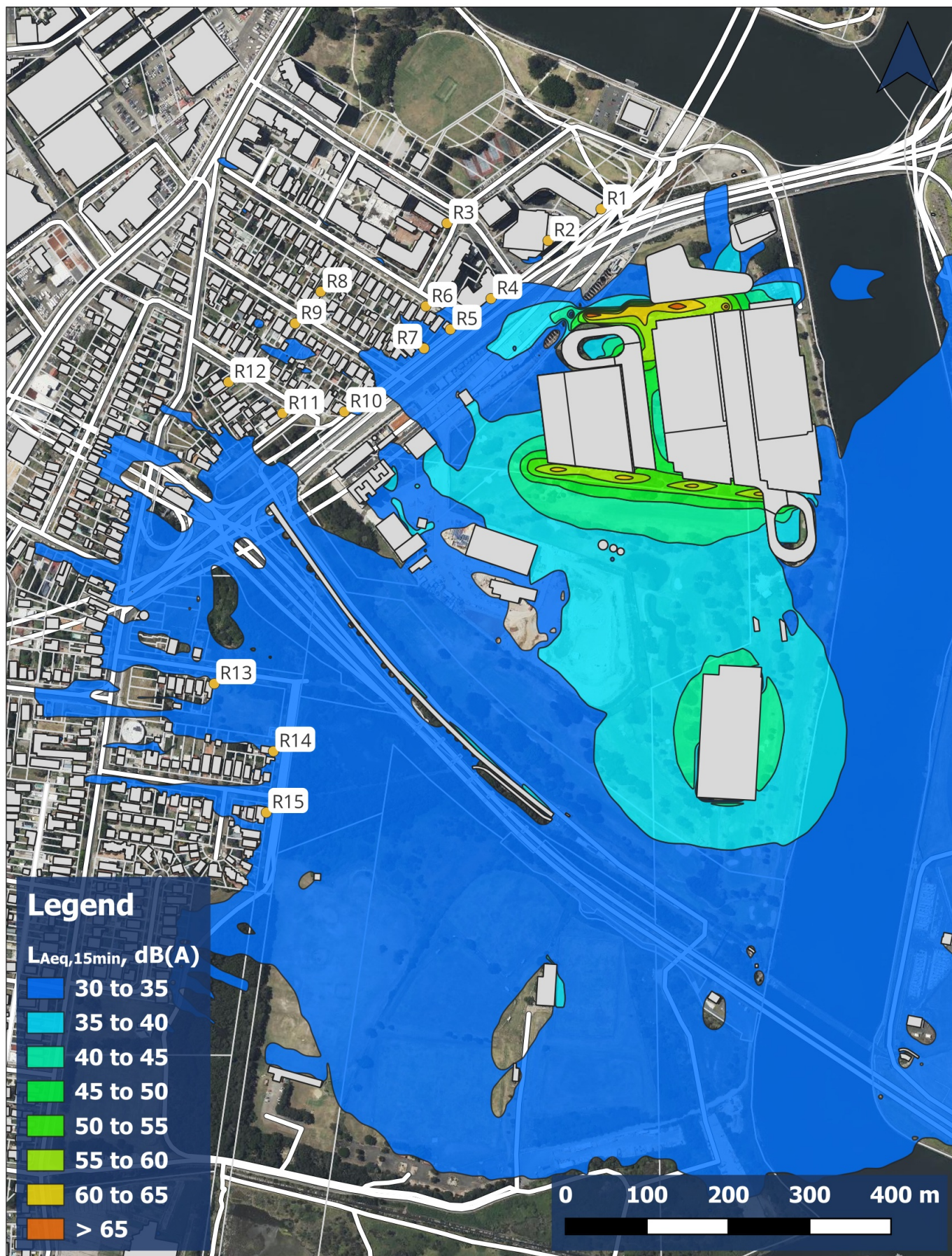
Kogarah Golf Club Redevelopment
Scenario 4 Logistics, Mixed Use, and Datacentre
Morning Shoulder Operational Noise Impacts with Mitigation



Kogarah Golf Club Redevelopment
Scenario 4 Logistics, Mixed Use, and Datacentre
Daytime Operational Noise Impacts with Mitigation



Kogarah Golf Club Redevelopment
Scenario 4 Logistics, Mixed Use, and Datacentre
Evening Operational Noise Impacts with Mitigation



Kogarah Golf Club Redevelopment
Scenario 4 Logistics, Mixed Use, and Datacentre
Night-time Operational Noise Impacts with Mitigation

APPENDIX F. OPERATIONAL NOISE RESULTS

F.1. Scenario one operational noise

Table 60 Logistics only shoulder noise impacts, $L_{Aeq,15min}$ dB(A)

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
1	26 Levey Street	GF	58	58	-	41	-
1	26 Levey Street	F 1	58	59	1	43	-
1	26 Levey Street	F 2	58	59	1	45	-
1	26 Levey Street	F 3	58	59	1	46	-
1	26 Levey Street	F 4	58	59	1	46	-
1	26 Levey Street	F 5	58	60	2	46	-
1	26 Levey Street	F 6	58	60	2	46	-
1	26 Levey Street	F 7	58	60	2	46	-
1	26 Levey Street	F 8	58	60	2	46	-
1	26 Levey Street	F 9	58	60	2	46	-
1	26 Levey Street	F 10	58	60	2	46	-
1	26 Levey Street	F 11	58	60	2	47	-
1	26 Levey Street	F 12	58	60	2	47	-
1	26 Levey Street	F 13	58	60	2	47	-
2	Novotel Hotel	F 2	63	60	-	43	-
2	Novotel Hotel	F 3	63	60	-	43	-
2	Novotel Hotel	F 4	63	60	-	43	-
2	Novotel Hotel	F 5	63	60	-	43	-
2	Novotel Hotel	F 6	63	60	-	44	-
2	Novotel Hotel	F 7	63	60	-	44	-
2	Novotel Hotel	F 8	63	61	-	44	-
3	33 Levey Street	GF	53	48	-	30	-
3	33 Levey Street	F 1	53	49	-	30	-
3	33 Levey Street	F 2	53	49	-	31	-
3	33 Levey Street	F 3	53	49	-	31	-
3	33 Levey Street	F 4	53	49	-	31	-
3	33 Levey Street	F 5	53	49	-	31	-

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
3	33 Levey Street	F 6	53	49	-	31	-
3	33 Levey Street	F 7	53	49	-	31	-
3	33 Levey Street	F 8	53	49	-	32	-
3	33 Levey Street	F 9	53	50	-	32	-
3	33 Levey Street	F 10	53	50	-	33	-
3	33 Levey Street	F 11	53	50	-	34	-
3	33 Levey Street	F 12	53	51	-	35	-
3	33 Levey Street	F 13	53	52	-	36	-
3	33 Levey Street	F 14	53	53	-	36	-
4	26-32 Marsh Street	GF	60	56	-	37	-
4	26-32 Marsh Street	F 1	60	57	-	37	-
4	26-32 Marsh Street	F 2	60	58	-	38	-
4	26-32 Marsh Street	F 3	60	58	-	38	-
4	26-32 Marsh Street	F 4	60	58	-	37	-
4	26-32 Marsh Street	F 5	60	59	-	38	-
4	26-32 Marsh Street	F 6	60	59	-	38	-
4	26-32 Marsh Street	F 7	60	59	-	39	-
4	26-32 Marsh Street	F 8	60	59	-	39	-
5	43 Innesdale Road	GF	60	54	-	39	-
6	37 Innesdale Road	GF	49	52	3	34	-
7	24A Marsh Street	GF	60	53	-	38	-
8	16 Flora Street	GF	49	46	-	31	-
9	32 Valda Avenue	GF	49	44	-	28	-
10	19 Valda Avenue	GF	60	49	-	36	-
11	7 Valda Avenue	GF	55	47	-	34	-
12	11 Eve Street	GF	55	46	-	30	-
13	15 Eve Street	GF	51	44	-	43	-
14	15 Brennans Road	GF	48	45	-	44	-
15	21 Flora Street	GF	48	45	-	43	-
16	88 Mutch Avenue	GF	50	41	-	37	-

Table 61 Logistics only daytime noise impacts, $L_{Aeq,15min}$ dB(A)

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
1	26 Levey Street	GF	58	59	1	42	-
1	26 Levey Street	F 1	58	60	2	44	-
1	26 Levey Street	F 2	58	60	2	47	-
1	26 Levey Street	F 3	58	60	2	47	-
1	26 Levey Street	F 4	58	61	3	47	-
1	26 Levey Street	F 5	58	61	3	47	-
1	26 Levey Street	F 6	58	61	3	47	-
1	26 Levey Street	F 7	58	61	3	47	-
1	26 Levey Street	F 8	58	61	3	47	-
1	26 Levey Street	F 9	58	61	3	48	-
1	26 Levey Street	F 10	58	61	3	48	-
1	26 Levey Street	F 11	58	61	3	48	-
1	26 Levey Street	F 12	58	61	3	48	-
1	26 Levey Street	F 13	58	61	3	48	-
2	Novotel Hotel	F 2	63	61	-	44	-
2	Novotel Hotel	F 3	63	61	-	44	-
2	Novotel Hotel	F 4	63	61	-	44	-
2	Novotel Hotel	F 5	63	62	-	45	-
2	Novotel Hotel	F 6	63	62	-	45	-
2	Novotel Hotel	F 7	63	62	-	45	-
2	Novotel Hotel	F 8	63	62	-	45	-
3	33 Levey Street	GF	53	50	-	31	-
3	33 Levey Street	F 1	53	50	-	32	-
3	33 Levey Street	F 2	53	50	-	32	-
3	33 Levey Street	F 3	53	50	-	32	-
3	33 Levey Street	F 4	53	51	-	32	-
3	33 Levey Street	F 5	53	51	-	32	-
3	33 Levey Street	F 6	53	51	-	32	-
3	33 Levey Street	F 7	53	51	-	32	-
3	33 Levey Street	F 8	53	51	-	33	-

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
3	33 Levey Street	F 9	53	51	-	33	-
3	33 Levey Street	F 10	53	51	-	34	-
3	33 Levey Street	F 11	53	51	-	35	-
3	33 Levey Street	F 12	53	52	-	37	-
3	33 Levey Street	F 13	53	53	-	37	-
3	33 Levey Street	F 14	53	54	-	38	-
4	26-32 Marsh Street	GF	60	58	-	38	-
4	26-32 Marsh Street	F 1	60	58	-	38	-
4	26-32 Marsh Street	F 2	60	59	-	39	-
4	26-32 Marsh Street	F 3	60	59	-	39	-
4	26-32 Marsh Street	F 4	60	59	-	39	-
4	26-32 Marsh Street	F 5	60	60	-	39	-
4	26-32 Marsh Street	F 6	60	60	-	40	-
4	26-32 Marsh Street	F 7	60	60	-	40	-
4	26-32 Marsh Street	F 8	60	60	-	40	-
5	43 Innesdale Road	GF	60	55	-	40	-
6	37 Innesdale Road	GF	49	53	1	36	-
7	24A Marsh Street	GF	60	54	-	40	-
8	16 Flora Street	GF	49	47	-	33	-
9	32 Valda Avenue	GF	49	45	-	29	-
10	19 Valda Avenue	GF	60	50	-	38	-
11	7 Valda Avenue	GF	55	48	-	35	-
12	11 Eve Street	GF	55	47	-	31	-
13	15 Eve Street	GF	51	46	-	44	-
14	15 Brennans Road	GF	48	47	-	45	-
15	21 Flora Street	GF	48	47	-	44	-
16	88 Mutch Avenue	GF	50	42	-	38	-

Table 62 Logistics only evening noise impacts, $L_{Aeq,15min}$ dB(A)

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
1	26 Levey Street	GF	48	58	10	41	-
1	26 Levey Street	F 1	48	59	11	43	-
1	26 Levey Street	F 2	48	59	11	45	-
1	26 Levey Street	F 3	48	59	11	46	-
1	26 Levey Street	F 4	48	59	11	46	-
1	26 Levey Street	F 5	48	60	12	46	-
1	26 Levey Street	F 6	48	60	12	46	-
1	26 Levey Street	F 7	48	60	12	46	-
1	26 Levey Street	F 8	48	60	12	46	-
1	26 Levey Street	F 9	48	60	12	46	-
1	26 Levey Street	F 10	48	60	12	46	-
1	26 Levey Street	F 11	48	60	12	47	-
1	26 Levey Street	F 12	48	60	12	47	-
1	26 Levey Street	F 13	48	60	12	47	-
2	Novotel Hotel	F 2	53	60	7	43	-
2	Novotel Hotel	F 3	53	60	7	43	-
2	Novotel Hotel	F 4	53	60	7	43	-
2	Novotel Hotel	F 5	53	60	7	43	-
2	Novotel Hotel	F 6	53	60	7	44	-
2	Novotel Hotel	F 7	53	60	7	44	-
2	Novotel Hotel	F 8	53	61	8	44	-
3	33 Levey Street	GF	48	48	-	30	-
3	33 Levey Street	F 1	48	49	1	30	-
3	33 Levey Street	F 2	48	49	1	31	-
3	33 Levey Street	F 3	48	49	1	31	-
3	33 Levey Street	F 4	48	49	1	31	-
3	33 Levey Street	F 5	48	49	1	31	-
3	33 Levey Street	F 6	48	49	1	31	-
3	33 Levey Street	F 7	48	49	1	31	-
3	33 Levey Street	F 8	48	49	1	32	-

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
3	33 Levey Street	F 9	48	50	2	32	-
3	33 Levey Street	F 10	48	50	2	33	-
3	33 Levey Street	F 11	48	50	2	34	-
3	33 Levey Street	F 12	48	51	3	35	-
3	33 Levey Street	F 13	48	52	4	36	-
3	33 Levey Street	F 14	48	53	5	36	-
4	26-32 Marsh Street	GF	59	56	-	37	-
4	26-32 Marsh Street	F 1	59	57	-	37	-
4	26-32 Marsh Street	F 2	59	58	-	38	-
4	26-32 Marsh Street	F 3	59	58	-	38	-
4	26-32 Marsh Street	F 4	59	58	-	37	-
4	26-32 Marsh Street	F 5	59	59	-	38	-
4	26-32 Marsh Street	F 6	59	59	-	38	-
4	26-32 Marsh Street	F 7	59	59	-	39	-
4	26-32 Marsh Street	F 8	59	59	-	39	-
5	43 Innesdale Road	GF	59	54	-	39	-
6	37 Innesdale Road	GF	48	52	4	34	-
7	24A Marsh Street	GF	59	53	-	38	-
8	16 Flora Street	GF	48	46	-	31	-
9	32 Valda Avenue	GF	48	44	-	28	-
10	19 Valda Avenue	GF	59	49	-	36	-
11	7 Valda Avenue	GF	48	47	-	34	-
12	11 Eve Street	GF	48	46	-	30	-
13	15 Eve Street	GF	43	44	1	42	-
14	15 Brennans Road	GF	43	45	2	43	-
15	21 Flora Street	GF	43	45	2	42	-
16	88 Mutch Avenue	GF	43	41	-	37	-

Table 63 Logistics only night-time noise impacts, $L_{Aeq,15min}$ dB(A)

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
1	26 Levey Street	GF	43	50	7	32	-
1	26 Levey Street	F 1	43	50	7	35	-
1	26 Levey Street	F 2	43	51	8	37	-
1	26 Levey Street	F 3	43	51	8	38	-
1	26 Levey Street	F 4	43	51	8	37	-
1	26 Levey Street	F 5	43	51	8	38	-
1	26 Levey Street	F 6	43	51	8	38	-
1	26 Levey Street	F 7	43	51	8	38	-
1	26 Levey Street	F 8	43	51	8	38	-
1	26 Levey Street	F 9	43	51	8	38	-
1	26 Levey Street	F 10	43	52	9	38	-
1	26 Levey Street	F 11	43	52	9	38	-
1	26 Levey Street	F 12	43	51	8	38	-
1	26 Levey Street	F 13	43	51	8	38	-
2	Novotel Hotel	F 2	48	51	3	35	-
2	Novotel Hotel	F 3	48	52	4	34	-
2	Novotel Hotel	F 4	48	52	4	35	-
2	Novotel Hotel	F 5	48	52	4	35	-
2	Novotel Hotel	F 6	48	52	4	35	-
2	Novotel Hotel	F 7	48	52	4	35	-
2	Novotel Hotel	F 8	48	52	4	36	-
3	33 Levey Street	GF	43	40	-	22	-
3	33 Levey Street	F 1	43	40	-	22	-
3	33 Levey Street	F 2	43	41	-	22	-
3	33 Levey Street	F 3	43	41	-	23	-
3	33 Levey Street	F 4	43	41	-	23	-
3	33 Levey Street	F 5	43	41	-	23	-
3	33 Levey Street	F 6	43	41	-	23	-
3	33 Levey Street	F 7	43	41	-	23	-
3	33 Levey Street	F 8	43	41	-	24	-

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
3	33 Levey Street	F 9	43	41	-	24	-
3	33 Levey Street	F 10	43	41	-	25	-
3	33 Levey Street	F 11	43	42	-	25	-
3	33 Levey Street	F 12	43	42	-	27	-
3	33 Levey Street	F 13	43	43	-	28	-
3	33 Levey Street	F 14	43	45	2	28	-
4	26-32 Marsh Street	GF	51	48	-	28	-
4	26-32 Marsh Street	F 1	51	49	-	28	-
4	26-32 Marsh Street	F 2	51	49	-	29	-
4	26-32 Marsh Street	F 3	51	50	-	29	-
4	26-32 Marsh Street	F 4	51	50	-	29	-
4	26-32 Marsh Street	F 5	51	50	-	30	-
4	26-32 Marsh Street	F 6	51	50	-	30	-
4	26-32 Marsh Street	F 7	51	51	-	30	-
4	26-32 Marsh Street	F 8	51	51	-	31	-
5	43 Innesdale Road	GF	51	46	-	31	-
6	37 Innesdale Road	GF	43	44	1	26	-
7	24A Marsh Street	GF	51	44	-	30	-
8	16 Flora Street	GF	43	37	-	23	-
9	32 Valda Avenue	GF	43	36	-	20	-
10	19 Valda Avenue	GF	51	41	-	28	-
11	7 Valda Avenue	GF	43	39	-	26	-
12	11 Eve Street	GF	43	38	-	21	-
13	15 Eve Street	GF	38	36	-	34	-
14	15 Brennans Road	GF	38	37	-	36	-
15	21 Flora Street	GF	38	37	-	34	-
16	88 Mutch Avenue	GF	38	32	-	29	-

Table 64 Logistics only sleep disturbance noise impacts, $L_{Aeq,15min}$ dB(A)

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
1	26 Levey Street	GF	68	71	3	50	-
1	26 Levey Street	F 1	68	71	3	53	-
1	26 Levey Street	F 2	68	72	4	60	-
1	26 Levey Street	F 3	68	71	3	62	-
1	26 Levey Street	F 4	68	72	4	57	-
1	26 Levey Street	F 5	68	72	4	54	-
1	26 Levey Street	F 6	68	71	3	54	-
1	26 Levey Street	F 7	68	72	4	53	-
1	26 Levey Street	F 8	68	71	3	54	-
1	26 Levey Street	F 9	68	72	4	57	-
1	26 Levey Street	F 10	68	72	4	62	-
1	26 Levey Street	F 11	68	71	3	63	-
1	26 Levey Street	F 12	68	72	4	63	-
1	26 Levey Street	F 13	68	72	4	63	-
2	Novotel Hotel	F 2	68	73	5	58	-
2	Novotel Hotel	F 3	68	74	6	56	-
2	Novotel Hotel	F 4	68	74	6	55	-
2	Novotel Hotel	F 5	68	74	6	55	-
2	Novotel Hotel	F 6	68	74	6	53	-
2	Novotel Hotel	F 7	68	73	5	52	-
2	Novotel Hotel	F 8	68	73	5	53	-
3	33 Levey Street	GF	58	66	8	42	-
3	33 Levey Street	F 1	58	66	8	42	-
3	33 Levey Street	F 2	58	66	8	42	-
3	33 Levey Street	F 3	58	66	8	43	-
3	33 Levey Street	F 4	58	66	8	43	-
3	33 Levey Street	F 5	58	66	8	42	-
3	33 Levey Street	F 6	58	65	7	43	-
3	33 Levey Street	F 7	58	65	7	43	-
3	33 Levey Street	F 8	58	65	7	42	-

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
3	33 Levey Street	F 9	58	65	7	43	-
3	33 Levey Street	F 10	58	65	7	44	-
3	33 Levey Street	F 11	58	66	8	49	-
3	33 Levey Street	F 12	58	66	8	57	-
3	33 Levey Street	F 13	58	67	9	57	-
3	33 Levey Street	F 14	58	67	9	58	-
4	26-32 Marsh Street	GF	61	72	11	53	-
4	26-32 Marsh Street	F 1	61	72	11	51	-
4	26-32 Marsh Street	F 2	61	73	12	55	-
4	26-32 Marsh Street	F 3	61	73	12	55	-
4	26-32 Marsh Street	F 4	61	73	12	54	-
4	26-32 Marsh Street	F 5	61	73	12	50	-
4	26-32 Marsh Street	F 6	61	73	12	49	-
4	26-32 Marsh Street	F 7	61	73	12	49	-
4	26-32 Marsh Street	F 8	61	73	12	48	-
5	43 Innesdale Road	GF	61	69	8	51	-
6	37 Innesdale Road	GF	55	68	13	44	-
7	24A Marsh Street	GF	61	68	7	49	-
8	16 Flora Street	GF	55	64	9	43	-
9	32 Valda Avenue	GF	55	60	5	38	-
10	19 Valda Avenue	GF	61	63	2	54	-
11	7 Valda Avenue	GF	56	61	5	55	-
12	11 Eve Street	GF	56	61	5	42	-
13	15 Eve Street	GF	56	56	-	56	-
14	15 Brennans Road	GF	53	56	3	53	-
15	21 Flora Street	GF	53	57	4	53	-
16	88 Mutch Avenue	GF	52	55	3	52	-

F.2. Scenario two operational noise

Table 65 Scenario two shoulder noise impacts, $L_{Aeq,15min}$ dB(A)

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
1	26 Levey Street	GF	58	56	-	39	-
1	26 Levey Street	F 1	58	57	-	40	-
1	26 Levey Street	F 2	58	57	-	41	-
1	26 Levey Street	F 3	58	57	-	42	-
1	26 Levey Street	F 4	58	57	-	43	-
1	26 Levey Street	F 5	58	58	-	45	-
1	26 Levey Street	F 6	58	59	1	46	-
1	26 Levey Street	F 7	58	59	1	49	-
1	26 Levey Street	F 8	58	59	1	49	-
1	26 Levey Street	F 9	58	59	1	50	-
1	26 Levey Street	F 10	58	59	1	50	-
1	26 Levey Street	F 11	58	59	1	50	-
1	26 Levey Street	F 12	58	59	1	49	-
1	26 Levey Street	F 13	58	59	1	50	-
2	Novotel Hotel	F 2	63	59	-	42	-
2	Novotel Hotel	F 3	63	59	-	43	-
2	Novotel Hotel	F 4	63	60	-	44	-
2	Novotel Hotel	F 5	63	60	-	45	-
2	Novotel Hotel	F 6	63	60	-	45	-
2	Novotel Hotel	F 7	63	61	-	47	-
2	Novotel Hotel	F 8	63	61	-	48	-
3	33 Levey Street	GF	53	49	-	35	-
3	33 Levey Street	F 1	53	50	-	35	-
3	33 Levey Street	F 2	53	50	-	35	-
3	33 Levey Street	F 3	53	50	-	36	-
3	33 Levey Street	F 4	53	50	-	37	-
3	33 Levey Street	F 5	53	50	-	38	-
3	33 Levey Street	F 6	53	50	-	38	-

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
3	33 Levey Street	F 7	53	50	-	38	-
3	33 Levey Street	F 8	53	50	-	39	-
3	33 Levey Street	F 9	53	51	-	39	-
3	33 Levey Street	F 10	53	51	-	40	-
3	33 Levey Street	F 11	53	52	-	41	-
3	33 Levey Street	F 12	53	52	-	42	-
3	33 Levey Street	F 13	53	53	-	43	-
3	33 Levey Street	F 14	53	53	-	44	-
4	26-32 Marsh Street	GF	60	56	-	44	-
4	26-32 Marsh Street	F 1	60	57	-	45	-
4	26-32 Marsh Street	F 2	60	58	-	45	-
4	26-32 Marsh Street	F 3	60	58	-	45	-
4	26-32 Marsh Street	F 4	60	58	-	45	-
4	26-32 Marsh Street	F 5	60	59	-	48	-
4	26-32 Marsh Street	F 6	60	59	-	48	-
4	26-32 Marsh Street	F 7	60	59	-	50	-
4	26-32 Marsh Street	F 8	60	60	-	51	-
5	43 Innesdale Road	GF	60	55	-	46	-
6	37 Innesdale Road	GF	49	53	4	38	-
7	24A Marsh Street	GF	60	53	-	47	-
8	16 Flora Street	GF	49	46	-	34	-
9	32 Valda Avenue	GF	49	44	-	37	-
10	19 Valda Avenue	GF	60	49	-	43	-
11	7 Valda Avenue	GF	55	48	-	44	-
12	11 Eve Street	GF	55	46	-	42	-
13	15 Eve Street	GF	51	46	-	45	-
14	15 Brennans Road	GF	48	46	-	46	-
15	21 Flora Street	GF	48	46	-	46	-
16	88 Mutch Avenue	GF	50	41	-	41	-

Table 66 Scenario two daytime noise impacts, $L_{Aeq,15min}$ dB(A)

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
1	26 Levey Street	GF	58	58	-	41	-
1	26 Levey Street	F 1	58	58	-	42	-
1	26 Levey Street	F 2	58	59	1	42	-
1	26 Levey Street	F 3	58	59	1	44	-
1	26 Levey Street	F 4	58	59	1	45	-
1	26 Levey Street	F 5	58	60	2	46	-
1	26 Levey Street	F 6	58	60	2	48	-
1	26 Levey Street	F 7	58	60	2	50	-
1	26 Levey Street	F 8	58	60	2	51	-
1	26 Levey Street	F 9	58	60	2	51	-
1	26 Levey Street	F 10	58	60	2	51	-
1	26 Levey Street	F 11	58	60	2	51	-
1	26 Levey Street	F 12	58	60	2	51	-
1	26 Levey Street	F 13	58	60	2	51	-
2	Novotel Hotel	F 2	63	60	-	44	-
2	Novotel Hotel	F 3	63	61	-	45	-
2	Novotel Hotel	F 4	63	61	-	46	-
2	Novotel Hotel	F 5	63	62	-	46	-
2	Novotel Hotel	F 6	63	62	-	47	-
2	Novotel Hotel	F 7	63	62	-	48	-
2	Novotel Hotel	F 8	63	62	-	50	-
3	33 Levey Street	GF	53	51	-	36	-
3	33 Levey Street	F 1	53	51	-	36	-
3	33 Levey Street	F 2	53	52	-	37	-
3	33 Levey Street	F 3	53	52	-	38	-
3	33 Levey Street	F 4	53	52	-	39	-
3	33 Levey Street	F 5	53	52	-	39	-
3	33 Levey Street	F 6	53	52	-	39	-
3	33 Levey Street	F 7	53	52	-	39	-
3	33 Levey Street	F 8	53	52	-	41	-

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
3	33 Levey Street	F 9	53	52	-	41	-
3	33 Levey Street	F 10	53	53	-	41	-
3	33 Levey Street	F 11	53	53	-	43	-
3	33 Levey Street	F 12	53	54	-	44	-
3	33 Levey Street	F 13	53	54	-	45	-
3	33 Levey Street	F 14	53	55	-	45	-
4	26-32 Marsh Street	GF	60	57	-	46	-
4	26-32 Marsh Street	F 1	60	58	-	46	-
4	26-32 Marsh Street	F 2	60	59	-	46	-
4	26-32 Marsh Street	F 3	60	59	-	46	-
4	26-32 Marsh Street	F 4	60	60	-	47	-
4	26-32 Marsh Street	F 5	60	60	-	49	-
4	26-32 Marsh Street	F 6	60	61	1	50	-
4	26-32 Marsh Street	F 7	60	61	1	51	-
4	26-32 Marsh Street	F 8	60	61	1	52	-
5	43 Innesdale Road	GF	60	56	-	47	-
6	37 Innesdale Road	GF	49	54	2	39	-
7	24A Marsh Street	GF	60	55	-	48	-
8	16 Flora Street	GF	49	47	-	36	-
9	32 Valda Avenue	GF	49	46	-	38	-
10	19 Valda Avenue	GF	60	51	-	45	-
11	7 Valda Avenue	GF	55	49	-	45	-
12	11 Eve Street	GF	55	48	-	43	-
13	15 Eve Street	GF	51	47	-	46	-
14	15 Brennans Road	GF	48	48	-	47	-
15	21 Flora Street	GF	48	48	-	47	-
16	88 Mutch Avenue	GF	50	43	-	43	-

Table 67 Scenario two evening noise impacts, $L_{Aeq,15min}$ dB(A)

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
1	26 Levey Street	GF	48	53	5	37	-
1	26 Levey Street	F 1	48	54	6	37	-
1	26 Levey Street	F 2	48	54	6	38	-
1	26 Levey Street	F 3	48	54	6	39	-
1	26 Levey Street	F 4	48	55	7	40	-
1	26 Levey Street	F 5	48	55	7	42	-
1	26 Levey Street	F 6	48	56	8	43	-
1	26 Levey Street	F 7	48	56	8	46	-
1	26 Levey Street	F 8	48	56	8	47	-
1	26 Levey Street	F 9	48	56	8	47	-
1	26 Levey Street	F 10	48	56	8	47	-
1	26 Levey Street	F 11	48	56	8	47	-
1	26 Levey Street	F 12	48	56	8	47	-
1	26 Levey Street	F 13	48	56	8	47	-
2	Novotel Hotel	F 2	53	56	3	39	-
2	Novotel Hotel	F 3	53	56	3	41	-
2	Novotel Hotel	F 4	53	57	4	41	-
2	Novotel Hotel	F 5	53	57	4	42	-
2	Novotel Hotel	F 6	53	57	4	43	-
2	Novotel Hotel	F 7	53	58	5	44	-
2	Novotel Hotel	F 8	53	58	5	45	-
3	33 Levey Street	GF	48	47	-	32	-
3	33 Levey Street	F 1	48	47	-	32	-
3	33 Levey Street	F 2	48	47	-	33	-
3	33 Levey Street	F 3	48	47	-	33	-
3	33 Levey Street	F 4	48	47	-	35	-
3	33 Levey Street	F 5	48	47	-	35	-
3	33 Levey Street	F 6	48	47	-	35	-
3	33 Levey Street	F 7	48	47	-	35	-
3	33 Levey Street	F 8	48	48	-	36	-

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
3	33 Levey Street	F 9	48	48	-	37	-
3	33 Levey Street	F 10	48	48	-	37	-
3	33 Levey Street	F 11	48	49	1	38	-
3	33 Levey Street	F 12	48	49	1	39	-
3	33 Levey Street	F 13	48	50	2	40	-
3	33 Levey Street	F 14	48	50	2	41	-
4	26-32 Marsh Street	GF	59	53	-	42	-
4	26-32 Marsh Street	F 1	59	54	-	42	-
4	26-32 Marsh Street	F 2	59	55	-	42	-
4	26-32 Marsh Street	F 3	59	55	-	42	-
4	26-32 Marsh Street	F 4	59	55	-	42	-
4	26-32 Marsh Street	F 5	59	56	-	45	-
4	26-32 Marsh Street	F 6	59	56	-	45	-
4	26-32 Marsh Street	F 7	59	57	-	47	-
4	26-32 Marsh Street	F 8	59	57	-	48	-
5	43 Innesdale Road	GF	59	52	-	43	-
6	37 Innesdale Road	GF	48	50	2	35	-
7	24A Marsh Street	GF	59	50	-	44	-
8	16 Flora Street	GF	48	43	-	31	-
9	32 Valda Avenue	GF	48	41	-	34	-
10	19 Valda Avenue	GF	59	46	-	41	-
11	7 Valda Avenue	GF	48	45	-	41	-
12	11 Eve Street	GF	48	44	-	39	-
13	15 Eve Street	GF	43	43	-	42	-
14	15 Brennans Road	GF	43	44	1	43	-
15	21 Flora Street	GF	43	43	-	43	-
16	88 Mutch Avenue	GF	43	38	-	38	-

Table 68 Scenario two night-time noise impacts, $L_{Aeq,15min}$ dB(A)

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
1	26 Levey Street	GF	43	45	2	28	-
1	26 Levey Street	F 1	43	46	3	29	-
1	26 Levey Street	F 2	43	46	3	30	-
1	26 Levey Street	F 3	43	46	3	31	-
1	26 Levey Street	F 4	43	46	3	32	-
1	26 Levey Street	F 5	43	47	4	33	-
1	26 Levey Street	F 6	43	47	4	35	-
1	26 Levey Street	F 7	43	47	4	37	-
1	26 Levey Street	F 8	43	47	4	38	-
1	26 Levey Street	F 9	43	47	4	38	-
1	26 Levey Street	F 10	43	48	5	38	-
1	26 Levey Street	F 11	43	47	4	39	-
1	26 Levey Street	F 12	43	47	4	38	-
1	26 Levey Street	F 13	43	48	5	38	-
2	Novotel Hotel	F 2	48	48	-	31	-
2	Novotel Hotel	F 3	48	48	-	32	-
2	Novotel Hotel	F 4	48	48	-	33	-
2	Novotel Hotel	F 5	48	49	1	34	-
2	Novotel Hotel	F 6	48	49	1	34	-
2	Novotel Hotel	F 7	48	49	1	36	-
2	Novotel Hotel	F 8	48	50	2	37	-
3	33 Levey Street	GF	43	38	-	23	-
3	33 Levey Street	F 1	43	39	-	24	-
3	33 Levey Street	F 2	43	39	-	24	-
3	33 Levey Street	F 3	43	39	-	25	-
3	33 Levey Street	F 4	43	39	-	26	-
3	33 Levey Street	F 5	43	39	-	26	-
3	33 Levey Street	F 6	43	39	-	27	-
3	33 Levey Street	F 7	43	39	-	27	-
3	33 Levey Street	F 8	43	39	-	28	-

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
3	33 Levey Street	F 9	43	40	-	28	-
3	33 Levey Street	F 10	43	40	-	29	-
3	33 Levey Street	F 11	43	40	-	30	-
3	33 Levey Street	F 12	43	41	-	31	-
3	33 Levey Street	F 13	43	42	-	32	-
3	33 Levey Street	F 14	43	42	-	33	-
4	26-32 Marsh Street	GF	51	45	-	33	-
4	26-32 Marsh Street	F 1	51	46	-	33	-
4	26-32 Marsh Street	F 2	51	46	-	33	-
4	26-32 Marsh Street	F 3	51	47	-	34	-
4	26-32 Marsh Street	F 4	51	47	-	34	-
4	26-32 Marsh Street	F 5	51	48	-	36	-
4	26-32 Marsh Street	F 6	51	48	-	37	-
4	26-32 Marsh Street	F 7	51	48	-	38	-
4	26-32 Marsh Street	F 8	51	49	-	40	-
5	43 Innesdale Road	GF	51	43	-	35	-
6	37 Innesdale Road	GF	43	41	-	26	-
7	24A Marsh Street	GF	51	42	-	35	-
8	16 Flora Street	GF	43	35	-	23	-
9	32 Valda Avenue	GF	43	33	-	25	-
10	19 Valda Avenue	GF	51	38	-	32	-
11	7 Valda Avenue	GF	43	36	-	33	-
12	11 Eve Street	GF	43	35	-	31	-
13	15 Eve Street	GF	38	34	-	34	-
14	15 Brennans Road	GF	38	35	-	35	-
15	21 Flora Street	GF	38	35	-	35	-
16	88 Mutch Avenue	GF	38	30	-	30	-

Table 69 Scenario two sleep disturbance noise impacts, $L_{Aeq,15min}$ dB(A)

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
1	26 Levey Street	GF	68	71	3	54	-
1	26 Levey Street	F 1	68	72	4	56	-
1	26 Levey Street	F 2	68	72	4	56	-
1	26 Levey Street	F 3	68	71	3	56	-
1	26 Levey Street	F 4	68	71	3	54	-
1	26 Levey Street	F 5	68	71	3	54	-
1	26 Levey Street	F 6	68	72	4	58	-
1	26 Levey Street	F 7	68	72	4	59	-
1	26 Levey Street	F 8	68	70	2	59	-
1	26 Levey Street	F 9	68	70	2	59	-
1	26 Levey Street	F 10	68	70	2	59	-
1	26 Levey Street	F 11	68	70	2	59	-
1	26 Levey Street	F 12	68	70	2	58	-
1	26 Levey Street	F 13	68	70	2	59	-
2	Novotel Hotel	F 2	68	73	5	56	-
2	Novotel Hotel	F 3	68	74	6	56	-
2	Novotel Hotel	F 4	68	73	5	56	-
2	Novotel Hotel	F 5	68	73	5	56	-
2	Novotel Hotel	F 6	68	73	5	56	-
2	Novotel Hotel	F 7	68	73	5	57	-
2	Novotel Hotel	F 8	68	73	5	57	-
3	33 Levey Street	GF	58	66	8	49	-
3	33 Levey Street	F 1	58	66	8	49	-
3	33 Levey Street	F 2	58	66	8	50	-
3	33 Levey Street	F 3	58	66	8	50	-
3	33 Levey Street	F 4	58	66	8	50	-
3	33 Levey Street	F 5	58	66	8	50	-
3	33 Levey Street	F 6	58	66	8	51	-
3	33 Levey Street	F 7	58	66	8	51	-
3	33 Levey Street	F 8	58	66	8	52	-

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
3	33 Levey Street	F 9	58	66	8	52	-
3	33 Levey Street	F 10	58	66	8	53	-
3	33 Levey Street	F 11	58	66	8	54	-
3	33 Levey Street	F 12	58	66	8	55	-
3	33 Levey Street	F 13	58	67	9	56	-
3	33 Levey Street	F 14	58	67	9	57	-
4	26-32 Marsh Street	GF	61	71	10	61	-
4	26-32 Marsh Street	F 1	61	72	11	61	-
4	26-32 Marsh Street	F 2	61	73	12	61	-
4	26-32 Marsh Street	F 3	61	73	12	61	-
4	26-32 Marsh Street	F 4	61	73	12	61	-
4	26-32 Marsh Street	F 5	61	73	12	60	-
4	26-32 Marsh Street	F 6	61	73	12	60	-
4	26-32 Marsh Street	F 7	61	73	12	60	-
4	26-32 Marsh Street	F 8	61	73	12	60	-
5	43 Innesdale Road	GF	61	69	8	60	-
6	37 Innesdale Road	GF	55	69	14	55	-
7	24A Marsh Street	GF	61	68	7	61	-
8	16 Flora Street	GF	55	64	9	52	-
9	32 Valda Avenue	GF	55	60	5	53	-
10	19 Valda Avenue	GF	61	63	2	57	-
11	7 Valda Avenue	GF	56	61	5	56	-
12	11 Eve Street	GF	56	61	5	54	-
13	15 Eve Street	GF	56	56	-	56	-
14	15 Brennans Road	GF	53	57	4	53	-
15	21 Flora Street	GF	53	57	4	53	-
16	88 Mutch Avenue	GF	52	56	4	51	-

F.3. Scenario three operational noise

Table 70 Scenario three shoulder noise impacts, $L_{Aeq,15min}$ dB(A)

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
1	26 Levey Street	GF	58	59	1	48	-
1	26 Levey Street	F 1	58	59	1	49	-
1	26 Levey Street	F 2	58	59	1	49	-
1	26 Levey Street	F 3	58	60	2	49	-
1	26 Levey Street	F 4	58	60	2	49	-
1	26 Levey Street	F 5	58	60	2	49	-
1	26 Levey Street	F 6	58	60	2	49	-
1	26 Levey Street	F 7	58	60	2	49	-
1	26 Levey Street	F 8	58	60	2	49	-
1	26 Levey Street	F 9	58	60	2	49	-
1	26 Levey Street	F 10	58	60	2	49	-
1	26 Levey Street	F 11	58	60	2	50	-
1	26 Levey Street	F 12	58	60	2	50	-
1	26 Levey Street	F 13	58	60	2	50	-
2	Novotel Hotel	F 2	63	60	-	46	-
2	Novotel Hotel	F 3	63	61	-	46	-
2	Novotel Hotel	F 4	63	61	-	46	-
2	Novotel Hotel	F 5	63	61	-	47	-
2	Novotel Hotel	F 6	63	61	-	47	-
2	Novotel Hotel	F 7	63	61	-	48	-
2	Novotel Hotel	F 8	63	61	-	48	-
3	33 Levey Street	GF	53	48	-	35	-
3	33 Levey Street	F 1	53	49	-	35	-
3	33 Levey Street	F 2	53	49	-	35	-
3	33 Levey Street	F 3	53	49	-	36	-
3	33 Levey Street	F 4	53	49	-	36	-
3	33 Levey Street	F 5	53	49	-	36	-
3	33 Levey Street	F 6	53	49	-	36	-

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
3	33 Levey Street	F 7	53	49	-	36	-
3	33 Levey Street	F 8	53	49	-	36	-
3	33 Levey Street	F 9	53	50	-	36	-
3	33 Levey Street	F 10	53	50	-	37	-
3	33 Levey Street	F 11	53	50	-	38	-
3	33 Levey Street	F 12	53	51	-	40	-
3	33 Levey Street	F 13	53	52	-	40	-
3	33 Levey Street	F 14	53	53	-	41	-
4	26-32 Marsh Street	GF	60	58	-	43	-
4	26-32 Marsh Street	F 1	60	58	-	43	-
4	26-32 Marsh Street	F 2	60	59	-	43	-
4	26-32 Marsh Street	F 3	60	59	-	43	-
4	26-32 Marsh Street	F 4	60	59	-	43	-
4	26-32 Marsh Street	F 5	60	59	-	44	-
4	26-32 Marsh Street	F 6	60	59	-	44	-
4	26-32 Marsh Street	F 7	60	60	-	44	-
4	26-32 Marsh Street	F 8	60	60	-	45	-
5	43 Innesdale Road	GF	60	56	-	41	-
6	37 Innesdale Road	GF	49	53	4	36	-
7	24A Marsh Street	GF	60	54	-	40	-
8	16 Flora Street	GF	49	46	-	32	-
9	32 Valda Avenue	GF	49	45	-	30	-
10	19 Valda Avenue	GF	60	50	-	35	-
11	7 Valda Avenue	GF	55	47	-	35	-
12	11 Eve Street	GF	55	46	-	31	-
13	15 Eve Street	GF	51	47	-	37	-
14	15 Brennans Road	GF	48	48	-	37	-
15	21 Flora Street	GF	48	48	-	36	-
16	88 Mutch Avenue	GF	50	43	-	29	-

Table 71 Scenario three daytime noise impacts, $L_{Aeq,15min}$ dB(A)

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
1	26 Levey Street	GF	58	60	2	48	-
1	26 Levey Street	F 1	58	61	3	49	-
1	26 Levey Street	F 2	58	61	3	49	-
1	26 Levey Street	F 3	58	61	3	49	-
1	26 Levey Street	F 4	58	61	3	49	-
1	26 Levey Street	F 5	58	62	4	49	-
1	26 Levey Street	F 6	58	62	4	49	-
1	26 Levey Street	F 7	58	62	4	49	-
1	26 Levey Street	F 8	58	62	4	49	-
1	26 Levey Street	F 9	58	62	4	49	-
1	26 Levey Street	F 10	58	62	4	49	-
1	26 Levey Street	F 11	58	62	4	50	-
1	26 Levey Street	F 12	58	62	4	50	-
1	26 Levey Street	F 13	58	62	4	50	-
2	Novotel Hotel	F 2	63	62	-	46	-
2	Novotel Hotel	F 3	63	62	-	46	-
2	Novotel Hotel	F 4	63	62	-	46	-
2	Novotel Hotel	F 5	63	62	-	47	-
2	Novotel Hotel	F 6	63	62	-	47	-
2	Novotel Hotel	F 7	63	62	-	48	-
2	Novotel Hotel	F 8	63	62	-	48	-
3	33 Levey Street	GF	53	50	-	35	-
3	33 Levey Street	F 1	53	50	-	35	-
3	33 Levey Street	F 2	53	51	-	35	-
3	33 Levey Street	F 3	53	51	-	36	-
3	33 Levey Street	F 4	53	51	-	36	-
3	33 Levey Street	F 5	53	51	-	36	-
3	33 Levey Street	F 6	53	51	-	36	-
3	33 Levey Street	F 7	53	51	-	36	-
3	33 Levey Street	F 8	53	51	-	36	-

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
3	33 Levey Street	F 9	53	51	-	36	-
3	33 Levey Street	F 10	53	52	-	37	-
3	33 Levey Street	F 11	53	52	-	38	-
3	33 Levey Street	F 12	53	52	-	40	-
3	33 Levey Street	F 13	53	53	-	40	-
3	33 Levey Street	F 14	53	55	-	41	-
4	26-32 Marsh Street	GF	60	59	-	43	-
4	26-32 Marsh Street	F 1	60	60	-	43	-
4	26-32 Marsh Street	F 2	60	60	-	43	-
4	26-32 Marsh Street	F 3	60	60	-	43	-
4	26-32 Marsh Street	F 4	60	61	1	43	-
4	26-32 Marsh Street	F 5	60	61	1	44	-
4	26-32 Marsh Street	F 6	60	61	1	44	-
4	26-32 Marsh Street	F 7	60	61	1	44	-
4	26-32 Marsh Street	F 8	60	61	1	45	-
5	43 Innesdale Road	GF	60	57	-	41	-
6	37 Innesdale Road	GF	49	54	2	36	-
7	24A Marsh Street	GF	60	55	-	40	-
8	16 Flora Street	GF	49	47	-	32	-
9	32 Valda Avenue	GF	49	46	-	30	-
10	19 Valda Avenue	GF	60	51	-	35	-
11	7 Valda Avenue	GF	55	49	-	35	-
12	11 Eve Street	GF	55	48	-	31	-
13	15 Eve Street	GF	51	45	-	37	-
14	15 Brennans Road	GF	48	46	-	37	-
15	21 Flora Street	GF	48	45	-	36	-
16	88 Mutch Avenue	GF	50	37	-	29	-

Table 72 Scenario three evening noise impacts, $L_{Aeq,15min}$ dB(A)

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
1	26 Levey Street	GF	48	56	8	44	-
1	26 Levey Street	F 1	48	56	8	44	-
1	26 Levey Street	F 2	48	57	9	45	-
1	26 Levey Street	F 3	48	57	9	45	-
1	26 Levey Street	F 4	48	57	9	45	-
1	26 Levey Street	F 5	48	57	9	45	-
1	26 Levey Street	F 6	48	57	9	45	-
1	26 Levey Street	F 7	48	57	9	45	-
1	26 Levey Street	F 8	48	57	9	45	-
1	26 Levey Street	F 9	48	57	9	45	-
1	26 Levey Street	F 10	48	57	9	45	-
1	26 Levey Street	F 11	48	58	10	45	-
1	26 Levey Street	F 12	48	58	10	45	-
1	26 Levey Street	F 13	48	58	10	45	-
2	Novotel Hotel	F 2	53	57	4	42	-
2	Novotel Hotel	F 3	53	58	5	42	-
2	Novotel Hotel	F 4	53	58	5	42	-
2	Novotel Hotel	F 5	53	58	5	43	-
2	Novotel Hotel	F 6	53	58	5	43	-
2	Novotel Hotel	F 7	53	58	5	43	-
2	Novotel Hotel	F 8	53	58	5	43	-
3	33 Levey Street	GF	48	46	-	30	-
3	33 Levey Street	F 1	48	46	-	31	-
3	33 Levey Street	F 2	48	47	-	31	-
3	33 Levey Street	F 3	48	46	-	32	-
3	33 Levey Street	F 4	48	46	-	32	-
3	33 Levey Street	F 5	48	46	-	32	-
3	33 Levey Street	F 6	48	46	-	32	-
3	33 Levey Street	F 7	48	46	-	32	-
3	33 Levey Street	F 8	48	47	-	32	-

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
3	33 Levey Street	F 9	48	47	-	32	-
3	33 Levey Street	F 10	48	47	-	32	-
3	33 Levey Street	F 11	48	47	-	34	-
3	33 Levey Street	F 12	48	48	-	35	-
3	33 Levey Street	F 13	48	49	1	36	-
3	33 Levey Street	F 14	48	50	2	37	-
4	26-32 Marsh Street	GF	59	55	-	39	-
4	26-32 Marsh Street	F 1	59	55	-	39	-
4	26-32 Marsh Street	F 2	59	56	-	40	-
4	26-32 Marsh Street	F 3	59	56	-	41	-
4	26-32 Marsh Street	F 4	59	56	-	39	-
4	26-32 Marsh Street	F 5	59	57	-	39	-
4	26-32 Marsh Street	F 6	59	57	-	39	-
4	26-32 Marsh Street	F 7	59	57	-	40	-
4	26-32 Marsh Street	F 8	59	57	-	41	-
5	43 Innesdale Road	GF	59	53	-	39	-
6	37 Innesdale Road	GF	48	50	2	33	-
7	24A Marsh Street	GF	59	52	-	39	-
8	16 Flora Street	GF	48	43	-	29	-
9	32 Valda Avenue	GF	48	42	-	28	-
10	19 Valda Avenue	GF	59	47	-	33	-
11	7 Valda Avenue	GF	48	45	-	31	-
12	11 Eve Street	GF	48	44	-	29	-
13	15 Eve Street	GF	43	47	4	38	-
14	15 Brennans Road	GF	43	48	5	38	-
15	21 Flora Street	GF	43	48	5	38	-
16	88 Mutch Avenue	GF	43	43	-	35	-

Table 73 Scenario three night-time noise impacts, $L_{Aeq,15min}$ dB(A)

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
1	26 Levey Street	GF	43	48	5	35	-
1	26 Levey Street	F 1	43	48	5	36	-
1	26 Levey Street	F 2	43	48	5	36	-
1	26 Levey Street	F 3	43	49	6	37	-
1	26 Levey Street	F 4	43	49	6	36	-
1	26 Levey Street	F 5	43	49	6	36	-
1	26 Levey Street	F 6	43	49	6	37	-
1	26 Levey Street	F 7	43	49	6	37	-
1	26 Levey Street	F 8	43	49	6	37	-
1	26 Levey Street	F 9	43	49	6	37	-
1	26 Levey Street	F 10	43	49	6	37	-
1	26 Levey Street	F 11	43	50	7	37	-
1	26 Levey Street	F 12	43	50	7	37	-
1	26 Levey Street	F 13	43	50	7	37	-
2	Novotel Hotel	F 2	48	49	1	34	-
2	Novotel Hotel	F 3	48	49	1	34	-
2	Novotel Hotel	F 4	48	49	1	34	-
2	Novotel Hotel	F 5	48	50	2	35	-
2	Novotel Hotel	F 6	48	50	2	35	-
2	Novotel Hotel	F 7	48	50	2	35	-
2	Novotel Hotel	F 8	48	50	2	35	-
3	33 Levey Street	GF	43	37	-	23	-
3	33 Levey Street	F 1	43	38	-	23	-
3	33 Levey Street	F 2	43	39	-	24	-
3	33 Levey Street	F 3	43	38	-	24	-
3	33 Levey Street	F 4	43	38	-	24	-
3	33 Levey Street	F 5	43	38	-	24	-
3	33 Levey Street	F 6	43	38	-	24	-
3	33 Levey Street	F 7	43	38	-	24	-
3	33 Levey Street	F 8	43	38	-	24	-

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
3	33 Levey Street	F 9	43	39	-	24	-
3	33 Levey Street	F 10	43	39	-	25	-
3	33 Levey Street	F 11	43	39	-	26	-
3	33 Levey Street	F 12	43	40	-	27	-
3	33 Levey Street	F 13	43	41	-	28	-
3	33 Levey Street	F 14	43	42	-	29	-
4	26-32 Marsh Street	GF	51	46	-	31	-
4	26-32 Marsh Street	F 1	51	47	-	31	-
4	26-32 Marsh Street	F 2	51	48	-	31	-
4	26-32 Marsh Street	F 3	51	48	-	31	-
4	26-32 Marsh Street	F 4	51	48	-	31	-
4	26-32 Marsh Street	F 5	51	48	-	32	-
4	26-32 Marsh Street	F 6	51	48	-	32	-
4	26-32 Marsh Street	F 7	51	48	-	32	-
4	26-32 Marsh Street	F 8	51	48	-	33	-
5	43 Innesdale Road	GF	51	46	-	33	-
6	37 Innesdale Road	GF	43	41	-	25	-
7	24A Marsh Street	GF	51	46	-	33	-
8	16 Flora Street	GF	43	35	-	22	-
9	32 Valda Avenue	GF	43	34	-	23	-
10	19 Valda Avenue	GF	51	40	-	27	-
11	7 Valda Avenue	GF	43	36	-	24	-
12	11 Eve Street	GF	43	36	-	22	-
13	15 Eve Street	GF	38	43	5	33	-
14	15 Brennans Road	GF	38	44	6	33	-
15	21 Flora Street	GF	38	44	6	34	-
16	88 Mutch Avenue	GF	38	39	1	31	-

Table 74 Scenario three sleep disturbance noise impacts, $L_{Aeq,15min}$ dB(A)

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
1	26 Levey Street	GF	68	71	3	61	-
1	26 Levey Street	F 1	68	72	4	63	-
1	26 Levey Street	F 2	68	74	6	64	-
1	26 Levey Street	F 3	68	74	6	64	-
1	26 Levey Street	F 4	68	74	6	59	-
1	26 Levey Street	F 5	68	74	6	57	-
1	26 Levey Street	F 6	68	74	6	56	-
1	26 Levey Street	F 7	68	72	4	55	-
1	26 Levey Street	F 8	68	72	4	57	-
1	26 Levey Street	F 9	68	71	3	60	-
1	26 Levey Street	F 10	68	71	3	64	-
1	26 Levey Street	F 11	68	71	3	66	-
1	26 Levey Street	F 12	68	72	4	66	-
1	26 Levey Street	F 13	68	72	4	66	-
2	Novotel Hotel	F 2	68	76	8	60	-
2	Novotel Hotel	F 3	68	75	7	58	-
2	Novotel Hotel	F 4	68	75	7	58	-
2	Novotel Hotel	F 5	68	75	7	58	-
2	Novotel Hotel	F 6	68	75	7	56	-
2	Novotel Hotel	F 7	68	75	7	56	-
2	Novotel Hotel	F 8	68	74	6	56	-
3	33 Levey Street	GF	58	66	8	48	-
3	33 Levey Street	F 1	58	66	8	48	-
3	33 Levey Street	F 2	58	66	8	48	-
3	33 Levey Street	F 3	58	66	8	48	-
3	33 Levey Street	F 4	58	66	8	49	-
3	33 Levey Street	F 5	58	66	8	49	-
3	33 Levey Street	F 6	58	65	7	50	-
3	33 Levey Street	F 7	58	65	7	50	-
3	33 Levey Street	F 8	58	65	7	51	-

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
3	33 Levey Street	F 9	58	65	7	51	-
3	33 Levey Street	F 10	58	65	7	52	-
3	33 Levey Street	F 11	58	66	8	52	-
3	33 Levey Street	F 12	58	66	8	58	-
3	33 Levey Street	F 13	58	67	9	58	-
3	33 Levey Street	F 14	58	67	9	58	-
4	26-32 Marsh Street	GF	61	73	12	56	-
4	26-32 Marsh Street	F 1	61	74	13	55	-
4	26-32 Marsh Street	F 2	61	74	13	56	-
4	26-32 Marsh Street	F 3	61	74	13	56	-
4	26-32 Marsh Street	F 4	61	74	13	55	-
4	26-32 Marsh Street	F 5	61	74	13	55	-
4	26-32 Marsh Street	F 6	61	74	13	56	-
4	26-32 Marsh Street	F 7	61	74	13	56	-
4	26-32 Marsh Street	F 8	61	74	13	57	-
5	43 Innesdale Road	GF	61	71	10	53	-
6	37 Innesdale Road	GF	55	69	14	49	-
7	24A Marsh Street	GF	61	69	8	51	-
8	16 Flora Street	GF	55	63	8	48	-
9	32 Valda Avenue	GF	55	61	6	44	-
10	19 Valda Avenue	GF	61	63	2	51	-
11	7 Valda Avenue	GF	56	61	5	55	-
12	11 Eve Street	GF	56	61	5	49	-
13	15 Eve Street	GF	56	56	-	56	-
14	15 Brennans Road	GF	53	56	3	53	-
15	21 Flora Street	GF	53	56	3	52	-
16	88 Mutch Avenue	GF	52	49	-	49	-

Table 75 Scenario three daytime generator testing noise impacts, $L_{Aeq,15min}$ dB(A)

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
1	26 Levey Street	GF	58	60	2	48	-
1	26 Levey Street	F 1	58	61	3	49	-
1	26 Levey Street	F 2	58	61	3	49	-
1	26 Levey Street	F 3	58	61	3	49	-
1	26 Levey Street	F 4	58	61	3	49	-
1	26 Levey Street	F 5	58	62	4	49	-
1	26 Levey Street	F 6	58	62	4	49	-
1	26 Levey Street	F 7	58	62	4	49	-
1	26 Levey Street	F 8	58	62	4	49	-
1	26 Levey Street	F 9	58	62	4	49	-
1	26 Levey Street	F 10	58	62	4	49	-
1	26 Levey Street	F 11	58	62	4	50	-
1	26 Levey Street	F 12	58	62	4	50	-
1	26 Levey Street	F 13	58	62	4	50	-
2	Novotel Hotel	F 2	63	62	-	46	-
2	Novotel Hotel	F 3	63	62	-	46	-
2	Novotel Hotel	F 4	63	62	-	46	-
2	Novotel Hotel	F 5	63	62	-	47	-
2	Novotel Hotel	F 6	63	62	-	47	-
2	Novotel Hotel	F 7	63	62	-	48	-
2	Novotel Hotel	F 8	63	62	-	48	-
3	33 Levey Street	GF	53	50	-	35	-
3	33 Levey Street	F 1	53	50	-	36	-
3	33 Levey Street	F 2	53	51	-	40	-
3	33 Levey Street	F 3	53	51	-	41	-
3	33 Levey Street	F 4	53	51	-	41	-
3	33 Levey Street	F 5	53	51	-	36	-
3	33 Levey Street	F 6	53	51	-	36	-
3	33 Levey Street	F 7	53	51	-	36	-
3	33 Levey Street	F 8	53	51	-	36	-

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
3	33 Levey Street	F 9	53	51	-	36	-
3	33 Levey Street	F 10	53	52	-	37	-
3	33 Levey Street	F 11	53	52	-	38	-
3	33 Levey Street	F 12	53	52	-	40	-
3	33 Levey Street	F 13	53	53	-	40	-
3	33 Levey Street	F 14	53	55	-	42	-
4	26-32 Marsh Street	GF	60	59	-	44	-
4	26-32 Marsh Street	F 1	60	60	-	44	-
4	26-32 Marsh Street	F 2	60	60	-	44	-
4	26-32 Marsh Street	F 3	60	60	-	44	-
4	26-32 Marsh Street	F 4	60	61	1	44	-
4	26-32 Marsh Street	F 5	60	61	1	44	-
4	26-32 Marsh Street	F 6	60	61	1	44	-
4	26-32 Marsh Street	F 7	60	61	1	44	-
4	26-32 Marsh Street	F 8	60	61	1	45	-
5	43 Innesdale Road	GF	60	57	-	48	-
6	37 Innesdale Road	GF	49	54	2	42	-
7	24A Marsh Street	GF	60	55	-	46	-
8	16 Flora Street	GF	49	47	-	34	-
9	32 Valda Avenue	GF	49	46	-	35	-
10	19 Valda Avenue	GF	60	52	-	44	-
11	7 Valda Avenue	GF	55	49	-	36	-
12	11 Eve Street	GF	55	48	-	33	-
13	15 Eve Street	GF	51	48	-	46	-
14	15 Brennans Road	GF	48	50	2	48	-
15	21 Flora Street	GF	48	49	1	48	-
16	88 Mutch Avenue	GF	50	42	-	40	-

F.4. Scenario four operational noise

Table 76 Scenario four shoulder noise impacts, $L_{Aeq,15min}$ dB(A)

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
1	26 Levey Street	GF	58	53	-	37	-
1	26 Levey Street	F 1	58	54	-	38	-
1	26 Levey Street	F 2	58	54	-	39	-
1	26 Levey Street	F 3	58	54	-	40	-
1	26 Levey Street	F 4	58	54	-	41	-
1	26 Levey Street	F 5	58	56	-	42	-
1	26 Levey Street	F 6	58	57	-	43	-
1	26 Levey Street	F 7	58	57	-	44	-
1	26 Levey Street	F 8	58	57	-	45	-
1	26 Levey Street	F 9	58	57	-	45	-
1	26 Levey Street	F 10	58	57	-	45	-
1	26 Levey Street	F 11	58	57	-	45	-
1	26 Levey Street	F 12	58	57	-	45	-
1	26 Levey Street	F 13	58	57	-	46	-
2	Novotel Hotel	F 2	63	56	-	42	-
2	Novotel Hotel	F 3	63	56	-	43	-
2	Novotel Hotel	F 4	63	57	-	44	-
2	Novotel Hotel	F 5	63	57	-	44	-
2	Novotel Hotel	F 6	63	58	-	45	-
2	Novotel Hotel	F 7	63	58	-	46	-
2	Novotel Hotel	F 8	63	58	-	48	-
3	33 Levey Street	GF	53	47	-	34	-
3	33 Levey Street	F 1	53	47	-	35	-
3	33 Levey Street	F 2	53	48	-	35	-
3	33 Levey Street	F 3	53	47	-	36	-
3	33 Levey Street	F 4	53	47	-	36	-
3	33 Levey Street	F 5	53	47	-	37	-
3	33 Levey Street	F 6	53	47	-	37	-

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
3	33 Levey Street	F 7	53	47	-	37	-
3	33 Levey Street	F 8	53	48	-	38	-
3	33 Levey Street	F 9	53	48	-	38	-
3	33 Levey Street	F 10	53	49	-	39	-
3	33 Levey Street	F 11	53	50	-	41	-
3	33 Levey Street	F 12	53	51	-	42	-
3	33 Levey Street	F 13	53	51	-	43	-
3	33 Levey Street	F 14	53	51	-	44	-
4	26-32 Marsh Street	GF	60	53	-	43	-
4	26-32 Marsh Street	F 1	60	54	-	43	-
4	26-32 Marsh Street	F 2	60	54	-	44	-
4	26-32 Marsh Street	F 3	60	55	-	44	-
4	26-32 Marsh Street	F 4	60	55	-	44	-
4	26-32 Marsh Street	F 5	60	56	-	47	-
4	26-32 Marsh Street	F 6	60	56	-	48	-
4	26-32 Marsh Street	F 7	60	56	-	49	-
4	26-32 Marsh Street	F 8	60	57	-	50	-
5	43 Innesdale Road	GF	60	52	-	45	-
6	37 Innesdale Road	GF	49	49	-	34	-
7	24A Marsh Street	GF	60	51	-	45	-
8	16 Flora Street	GF	49	42	-	29	-
9	32 Valda Avenue	GF	49	41	-	33	-
10	19 Valda Avenue	GF	60	46	-	40	-
11	7 Valda Avenue	GF	55	44	-	40	-
12	11 Eve Street	GF	55	43	-	37	-
13	15 Eve Street	GF	51	46	-	41	-
14	15 Brennans Road	GF	48	47	-	41	-
15	21 Flora Street	GF	48	47	-	41	-
16	88 Mutch Avenue	GF	50	42	-	37	-

Table 77 Scenario four daytime noise impacts, $L_{Aeq,15min}$ dB(A)

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
1	26 Levey Street	GF	58	58	-	41	-
1	26 Levey Street	F 1	58	58	-	42	-
1	26 Levey Street	F 2	58	59	1	42	-
1	26 Levey Street	F 3	58	59	1	43	-
1	26 Levey Street	F 4	58	59	1	44	-
1	26 Levey Street	F 5	58	60	2	45	-
1	26 Levey Street	F 6	58	60	2	46	-
1	26 Levey Street	F 7	58	60	2	48	-
1	26 Levey Street	F 8	58	60	2	49	-
1	26 Levey Street	F 9	58	60	2	49	-
1	26 Levey Street	F 10	58	60	2	49	-
1	26 Levey Street	F 11	58	60	2	49	-
1	26 Levey Street	F 12	58	60	2	49	-
1	26 Levey Street	F 13	58	60	2	49	-
2	Novotel Hotel	F 2	63	60	-	44	-
2	Novotel Hotel	F 3	63	61	-	45	-
2	Novotel Hotel	F 4	63	61	-	46	-
2	Novotel Hotel	F 5	63	62	-	46	-
2	Novotel Hotel	F 6	63	62	-	47	-
2	Novotel Hotel	F 7	63	62	-	48	-
2	Novotel Hotel	F 8	63	62	-	49	-
3	33 Levey Street	GF	53	51	-	36	-
3	33 Levey Street	F 1	53	51	-	37	-
3	33 Levey Street	F 2	53	52	-	37	-
3	33 Levey Street	F 3	53	52	-	38	-
3	33 Levey Street	F 4	53	52	-	38	-
3	33 Levey Street	F 5	53	52	-	38	-
3	33 Levey Street	F 6	53	52	-	39	-
3	33 Levey Street	F 7	53	52	-	39	-
3	33 Levey Street	F 8	53	52	-	39	-

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
3	33 Levey Street	F 9	53	52	-	40	-
3	33 Levey Street	F 10	53	53	-	40	-
3	33 Levey Street	F 11	53	53	-	42	-
3	33 Levey Street	F 12	53	54	-	43	-
3	33 Levey Street	F 13	53	54	-	44	-
3	33 Levey Street	F 14	53	55	-	45	-
4	26-32 Marsh Street	GF	60	57	-	46	-
4	26-32 Marsh Street	F 1	60	58	-	46	-
4	26-32 Marsh Street	F 2	60	59	-	46	-
4	26-32 Marsh Street	F 3	60	59	-	46	-
4	26-32 Marsh Street	F 4	60	60	-	47	-
4	26-32 Marsh Street	F 5	60	60	-	49	-
4	26-32 Marsh Street	F 6	60	61	1	50	-
4	26-32 Marsh Street	F 7	60	61	1	51	-
4	26-32 Marsh Street	F 8	60	61	1	52	-
5	43 Innesdale Road	GF	60	57	-	48	-
6	37 Innesdale Road	GF	49	54	2	38	-
7	24A Marsh Street	GF	60	56	-	48	-
8	16 Flora Street	GF	49	48	-	32	-
9	32 Valda Avenue	GF	49	46	-	36	-
10	19 Valda Avenue	GF	60	52	-	41	-
11	7 Valda Avenue	GF	55	49	-	36	-
12	11 Eve Street	GF	55	48	-	37	-
13	15 Eve Street	GF	51	52	-	43	-
14	15 Brennans Road	GF	48	53	5	43	-
15	21 Flora Street	GF	48	53	5	43	-
16	88 Mutch Avenue	GF	50	48	-	40	-

Table 78 Scenario four evening noise impacts, $L_{Aeq,15min}$ dB(A)

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
1	26 Levey Street	GF	48	56	8	40	-
1	26 Levey Street	F 1	48	57	9	41	-
1	26 Levey Street	F 2	48	57	9	42	-
1	26 Levey Street	F 3	48	57	9	43	-
1	26 Levey Street	F 4	48	57	9	44	-
1	26 Levey Street	F 5	48	59	11	45	-
1	26 Levey Street	F 6	48	59	11	46	-
1	26 Levey Street	F 7	48	59	11	47	-
1	26 Levey Street	F 8	48	59	11	48	-
1	26 Levey Street	F 9	48	59	11	48	-
1	26 Levey Street	F 10	48	59	11	48	-
1	26 Levey Street	F 11	48	59	11	48	-
1	26 Levey Street	F 12	48	59	11	48	-
1	26 Levey Street	F 13	48	59	11	48	-
2	Novotel Hotel	F 2	53	58	5	44	-
2	Novotel Hotel	F 3	53	59	6	46	-
2	Novotel Hotel	F 4	53	59	6	47	-
2	Novotel Hotel	F 5	53	60	7	47	-
2	Novotel Hotel	F 6	53	60	7	47	-
2	Novotel Hotel	F 7	53	61	8	49	-
2	Novotel Hotel	F 8	53	61	8	51	-
3	33 Levey Street	GF	48	49	1	37	-
3	33 Levey Street	F 1	48	50	2	37	-
3	33 Levey Street	F 2	48	50	2	38	-
3	33 Levey Street	F 3	48	50	2	38	-
3	33 Levey Street	F 4	48	50	2	39	-
3	33 Levey Street	F 5	48	50	2	39	-
3	33 Levey Street	F 6	48	50	2	40	-
3	33 Levey Street	F 7	48	50	2	40	-
3	33 Levey Street	F 8	48	50	2	40	-

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
3	33 Levey Street	F 9	48	51	3	41	-
3	33 Levey Street	F 10	48	52	4	41	-
3	33 Levey Street	F 11	48	53	5	43	-
3	33 Levey Street	F 12	48	53	5	44	-
3	33 Levey Street	F 13	48	54	6	46	-
3	33 Levey Street	F 14	48	54	6	46	-
4	26-32 Marsh Street	GF	59	56	-	46	-
4	26-32 Marsh Street	F 1	59	56	-	46	-
4	26-32 Marsh Street	F 2	59	57	-	46	-
4	26-32 Marsh Street	F 3	59	57	-	46	-
4	26-32 Marsh Street	F 4	59	58	-	47	-
4	26-32 Marsh Street	F 5	59	58	-	50	-
4	26-32 Marsh Street	F 6	59	59	-	51	-
4	26-32 Marsh Street	F 7	59	59	-	52	-
4	26-32 Marsh Street	F 8	59	59	-	53	-
5	43 Innesdale Road	GF	59	55	-	48	-
6	37 Innesdale Road	GF	48	51	3	37	-
7	24A Marsh Street	GF	59	53	-	47	-
8	16 Flora Street	GF	48	44	-	31	-
9	32 Valda Avenue	GF	48	44	-	35	-
10	19 Valda Avenue	GF	59	49	-	43	-
11	7 Valda Avenue	GF	48	46	-	43	-
12	11 Eve Street	GF	48	45	-	40	-
13	15 Eve Street	GF	43	48	5	43	-
14	15 Brennans Road	GF	43	49	6	43	-
15	21 Flora Street	GF	43	49	6	43	-
16	88 Mutch Avenue	GF	43	44	1	39	-

Table 79 Scenario four night-time noise impacts, $L_{Aeq,15min}$ dB(A)

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
1	26 Levey Street	GF	43	47	4	31	-
1	26 Levey Street	F 1	43	47	4	32	-
1	26 Levey Street	F 2	43	47	4	32	-
1	26 Levey Street	F 3	43	48	5	33	-
1	26 Levey Street	F 4	43	48	5	34	-
1	26 Levey Street	F 5	43	49	6	35	-
1	26 Levey Street	F 6	43	50	7	36	-
1	26 Levey Street	F 7	43	50	7	37	-
1	26 Levey Street	F 8	43	50	7	38	-
1	26 Levey Street	F 9	43	50	7	38	-
1	26 Levey Street	F 10	43	50	7	38	-
1	26 Levey Street	F 11	43	50	7	38	-
1	26 Levey Street	F 12	43	50	7	38	-
1	26 Levey Street	F 13	43	50	7	39	-
2	Novotel Hotel	F 2	48	48	-	35	-
2	Novotel Hotel	F 3	48	49	1	36	-
2	Novotel Hotel	F 4	48	50	2	37	-
2	Novotel Hotel	F 5	48	50	2	37	-
2	Novotel Hotel	F 6	48	50	2	38	-
2	Novotel Hotel	F 7	48	51	3	39	-
2	Novotel Hotel	F 8	48	51	3	41	-
3	33 Levey Street	GF	43	40	-	27	-
3	33 Levey Street	F 1	43	40	-	28	-
3	33 Levey Street	F 2	43	41	-	28	-
3	33 Levey Street	F 3	43	40	-	29	-
3	33 Levey Street	F 4	43	40	-	29	-
3	33 Levey Street	F 5	43	40	-	30	-
3	33 Levey Street	F 6	43	40	-	30	-
3	33 Levey Street	F 7	43	40	-	30	-
3	33 Levey Street	F 8	43	41	-	31	-

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
3	33 Levey Street	F 9	43	41	-	31	-
3	33 Levey Street	F 10	43	42	-	32	-
3	33 Levey Street	F 11	43	43	-	34	-
3	33 Levey Street	F 12	43	44	1	35	-
3	33 Levey Street	F 13	43	44	1	36	-
3	33 Levey Street	F 14	43	44	1	37	-
4	26-32 Marsh Street	GF	51	46	-	36	-
4	26-32 Marsh Street	F 1	51	47	-	36	-
4	26-32 Marsh Street	F 2	51	47	-	37	-
4	26-32 Marsh Street	F 3	51	48	-	37	-
4	26-32 Marsh Street	F 4	51	48	-	37	-
4	26-32 Marsh Street	F 5	51	49	-	40	-
4	26-32 Marsh Street	F 6	51	49	-	41	-
4	26-32 Marsh Street	F 7	51	49	-	42	-
4	26-32 Marsh Street	F 8	51	50	-	43	-
5	43 Innesdale Road	GF	51	46	-	38	-
6	37 Innesdale Road	GF	43	42	-	27	-
7	24A Marsh Street	GF	51	46	-	39	-
8	16 Flora Street	GF	43	35	-	23	-
9	32 Valda Avenue	GF	43	35	-	26	-
10	19 Valda Avenue	GF	51	40	-	33	-
11	7 Valda Avenue	GF	43	37	-	33	-
12	11 Eve Street	GF	43	36	-	30	-
13	15 Eve Street	GF	38	43	5	35	-
14	15 Brennans Road	GF	38	44	6	36	-
15	21 Flora Street	GF	38	44	6	36	-
16	88 Mutch Avenue	GF	38	39	1	32	-

Table 80 Scenario four sleep disturbance noise impacts, $L_{Aeq,15min}$ dB(A)

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
1	26 Levey Street	GF	68	71	3	54	-
1	26 Levey Street	F 1	68	72	4	56	-
1	26 Levey Street	F 2	68	72	4	56	-
1	26 Levey Street	F 3	68	71	3	56	-
1	26 Levey Street	F 4	68	71	3	54	-
1	26 Levey Street	F 5	68	71	3	54	-
1	26 Levey Street	F 6	68	72	4	54	-
1	26 Levey Street	F 7	68	72	4	54	-
1	26 Levey Street	F 8	68	70	2	55	-
1	26 Levey Street	F 9	68	70	2	56	-
1	26 Levey Street	F 10	68	70	2	56	-
1	26 Levey Street	F 11	68	70	2	57	-
1	26 Levey Street	F 12	68	70	2	58	-
1	26 Levey Street	F 13	68	70	2	59	-
2	Novotel Hotel	F 2	68	73	5	57	-
2	Novotel Hotel	F 3	68	74	6	57	-
2	Novotel Hotel	F 4	68	73	5	57	-
2	Novotel Hotel	F 5	68	73	5	57	-
2	Novotel Hotel	F 6	68	73	5	57	-
2	Novotel Hotel	F 7	68	73	5	57	-
2	Novotel Hotel	F 8	68	73	5	57	-
3	33 Levey Street	GF	58	66	8	49	-
3	33 Levey Street	F 1	58	66	8	49	-
3	33 Levey Street	F 2	58	66	8	50	-
3	33 Levey Street	F 3	58	66	8	50	-
3	33 Levey Street	F 4	58	66	8	50	-
3	33 Levey Street	F 5	58	66	8	50	-
3	33 Levey Street	F 6	58	66	8	51	-
3	33 Levey Street	F 7	58	66	8	51	-
3	33 Levey Street	F 8	58	66	8	52	-

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
3	33 Levey Street	F 9	58	66	8	52	-
3	33 Levey Street	F 10	58	66	8	53	-
3	33 Levey Street	F 11	58	66	8	54	-
3	33 Levey Street	F 12	58	66	8	55	-
3	33 Levey Street	F 13	58	67	9	56	-
3	33 Levey Street	F 14	58	67	9	57	-
4	26-32 Marsh Street	GF	61	71	10	61	-
4	26-32 Marsh Street	F 1	61	72	11	61	-
4	26-32 Marsh Street	F 2	61	73	12	61	-
4	26-32 Marsh Street	F 3	61	73	12	61	-
4	26-32 Marsh Street	F 4	61	73	12	61	-
4	26-32 Marsh Street	F 5	61	73	12	60	-
4	26-32 Marsh Street	F 6	61	73	12	60	-
4	26-32 Marsh Street	F 7	61	73	12	60	-
4	26-32 Marsh Street	F 8	61	73	12	60	-
5	43 Innesdale Road	GF	61	69	8	60	-
6	37 Innesdale Road	GF	55	69	14	55	-
7	24A Marsh Street	GF	61	68	7	61	-
8	16 Flora Street	GF	55	64	9	50	-
9	32 Valda Avenue	GF	55	60	5	53	-
10	19 Valda Avenue	GF	61	63	2	53	-
11	7 Valda Avenue	GF	56	61	5	53	-
12	11 Eve Street	GF	56	61	5	52	-
13	15 Eve Street	GF	56	56	-	53	-
14	15 Brennans Road	GF	53	57	4	52	-
15	21 Flora Street	GF	53	56	3	52	-
16	88 Mutch Avenue	GF	52	50	-	50	-

Table 81 Scenario four daytime generator testing noise impacts, $L_{Aeq,15min}$ dB(A)

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
1	26 Levey Street	GF	58	58	-	41	-
1	26 Levey Street	F 1	58	58	-	42	-
1	26 Levey Street	F 2	58	59	1	42	-
1	26 Levey Street	F 3	58	59	1	43	-
1	26 Levey Street	F 4	58	59	1	44	-
1	26 Levey Street	F 5	58	60	2	45	-
1	26 Levey Street	F 6	58	60	2	46	-
1	26 Levey Street	F 7	58	60	2	48	-
1	26 Levey Street	F 8	58	60	2	49	-
1	26 Levey Street	F 9	58	60	2	49	-
1	26 Levey Street	F 10	58	60	2	49	-
1	26 Levey Street	F 11	58	60	2	49	-
1	26 Levey Street	F 12	58	60	2	49	-
1	26 Levey Street	F 13	58	60	2	49	-
2	Novotel Hotel	F 2	63	60	-	44	-
2	Novotel Hotel	F 3	63	61	-	45	-
2	Novotel Hotel	F 4	63	61	-	46	-
2	Novotel Hotel	F 5	63	62	-	46	-
2	Novotel Hotel	F 6	63	62	-	47	-
2	Novotel Hotel	F 7	63	62	-	48	-
2	Novotel Hotel	F 8	63	62	-	49	-
3	33 Levey Street	GF	53	51	-	36	-
3	33 Levey Street	F 1	53	51	-	37	-
3	33 Levey Street	F 2	53	52	-	39	-
3	33 Levey Street	F 3	53	52	-	40	-
3	33 Levey Street	F 4	53	52	-	40	-
3	33 Levey Street	F 5	53	52	-	38	-
3	33 Levey Street	F 6	53	52	-	39	-
3	33 Levey Street	F 7	53	52	-	39	-
3	33 Levey Street	F 8	53	52	-	39	-

ID	Address	Floor	PSNTL	Without mitigation		With mitigation	
				Predict	Exceedance	Prediction	Exceedance
3	33 Levey Street	F 9	53	52	-	40	-
3	33 Levey Street	F 10	53	53	-	40	-
3	33 Levey Street	F 11	53	53	-	42	-
3	33 Levey Street	F 12	53	54	-	43	-
3	33 Levey Street	F 13	53	54	-	44	-
3	33 Levey Street	F 14	53	55	-	45	-
4	26-32 Marsh Street	GF	60	57	-	46	-
4	26-32 Marsh Street	F 1	60	58	-	46	-
4	26-32 Marsh Street	F 2	60	59	-	46	-
4	26-32 Marsh Street	F 3	60	59	-	46	-
4	26-32 Marsh Street	F 4	60	60	-	47	-
4	26-32 Marsh Street	F 5	60	60	-	49	-
4	26-32 Marsh Street	F 6	60	61	1	50	-
4	26-32 Marsh Street	F 7	60	61	1	51	-
4	26-32 Marsh Street	F 8	60	61	1	52	-
5	43 Innesdale Road	GF	60	57	-	50	-
6	37 Innesdale Road	GF	49	54	2	41	-
7	24A Marsh Street	GF	60	56	-	49	-
8	16 Flora Street	GF	49	48	-	33	-
9	32 Valda Avenue	GF	49	46	-	37	-
10	19 Valda Avenue	GF	60	52	-	44	-
11	7 Valda Avenue	GF	55	49	-	37	-
12	11 Eve Street	GF	55	48	-	37	-
13	15 Eve Street	GF	51	53	-	46	-
14	15 Brennans Road	GF	48	54	6	47	-
15	21 Flora Street	GF	48	54	6	47	-
16	88 Mutch Avenue	GF	50	48	-	42	-