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## **ACOUSTICAL REPORT**

### **PROPOSED NEW MECHANICAL PLANT**

### **14 SOUTH STEYNE, MANLY NSW**

**Date:** Wednesday, 10 March 2021

**File Reference:** 4609R20210226pd14SouthSteyneManly\_DA

## DOCUMENT CONTROL

|                           |                                                                                                                                              |               |               |                                      |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------|--------------------------------------|
| <b>Project title</b>      | Acoustical Report<br>Proposed new mechanical plant<br>14 South Steyne, Manly NSW                                                             |               |               |                                      |
| <b>Project number</b>     | 4609                                                                                                                                         |               |               |                                      |
| <b>Document reference</b> | 4609R20210226pd14SouthSteyneManly_DA                                                                                                         |               |               |                                      |
| <b>Document path</b>      | G:\Shared drives\KA Acoustics 2021\REPORT\Mechanical Plant\4609 - 14 South Steyne, Manly\4609R20210226pd14SouthSteyneManly_DA.docx           |               |               |                                      |
|                           |                                                                                                                                              |               |               |                                      |
| <b>Version</b>            | <b>Date</b>                                                                                                                                  | <b>Author</b> | <b>Review</b> | <b>Notes</b>                         |
| V1                        | 10/03/2021                                                                                                                                   | PD            | NK            | Report version 1 available for issue |
|                           |                                                                                                                                              |               |               |                                      |
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**ACOUSTICAL REPORT**  
**PROPOSED NEW MECHANICAL PLANT**  
**14 SOUTH STEYNE, MANLY NSW**

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## 1.0 INTRODUCTION

Koikas Acoustics Pty Ltd was engaged by U+I Building Studio to prepare a noise impact assessment for the proposed development at 14 South Steyne, Manly seeking approval for the alterations and additions to an existing commercial premise that will result in the construction of a new rooftop mechanical plant area.

For the DA proposal, the acoustic adequacy of the proposed design must be assessed in terms of standard planning guidelines issued by Northern Beaches Council in their Local Environment Plan (LEP) and Development Control Plan (DCP), and also in terms of other standard planning guidelines related to common sources of noise.

In accordance with Council guidelines and other standard planning instruments, Koikas Acoustics has determined that mechanical plant noise emission from the proposed development to neighbouring dwellings requires an assessment at the current DA stage.

This report presents the results and findings of an acoustic assessment for the subject proposal. In-principle acoustic treatments and noise control recommendations are included (where required) so that the premises may operate in compliance with the nominated acoustic planning levels.



## 2.0 THE PROPOSAL

The development is proposed for the existing commercial site at 14 South Steyne, Manly. The application is for alterations and additions to the existing structure that will result in a new mechanical plant system and waste storage area. The current development design can be seen in architectural drawings as prepared by U+I Building Studio, detailed in Table 1. All calculations and noise modelled scenarios conducted for this assessment are referenced to these architectural drawings.

**Table 1. Design drawings used in the assessment**

| Drawing Title              | Drawing No.                                                                                                                                                                                                                                            | Revision | Date       | Job No. |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------------|---------|
| Site Analysis/Context Plan | DA01                                                                                                                                                                                                                                                   | B        | 02/03/2021 | -       |
| Existing/Demolition Plans  | E01                                                                                                                                                                                                                                                    | B        | 02/03/2021 | -       |
| Proposed Ground Floor Plan | DA10                                                                                                                                                                                                                                                   | B        | 02/03/2021 | -       |
| Proposed First Floor Plan  | DA11                                                                                                                                                                                                                                                   | B        | 02/03/2021 | -       |
| Proposed Roof Plan         | DA12                                                                                                                                                                                                                                                   | B        | 02/03/2021 | -       |
| Sections                   | DA20                                                                                                                                                                                                                                                   | B        | 02/03/2021 | -       |
| Proposed Elevation         | DA30                                                                                                                                                                                                                                                   | B        | 02/03/2021 | -       |
| Proposed Elevations        | DA31                                                                                                                                                                                                                                                   | B        | 02/03/2021 | -       |
| Notes                      | 1. Detailed above are the plans and drawings available at the time of assessment. Where design changes are made without the prior knowledge of Koikas Acoustics, the assessment results and conclusions published within this report may be incorrect. |          |            |         |

The development location is situated in a primarily urban residential/commercial area. The subject site is located directly across from Manly Beach, with other commercial tenancies located along South Steyne at ground level. High-density residential premises exist to the south-west and north-west of the site, whilst The Sebel Manly Beach hotel adjoins directly to the south-east.

All existing mechanical plant is proposed to be replaced during the development.

The subject site and surrounding properties are identified on the aerial photograph included as Figure 1.

Prevailing ambient noise conditions on-site and in the local area are generally the result of typical environmental noise such as distant traffic and localised domestic/commercial noise sources.



Figure 1. Aerial photo of the subject site and surrounding area (image source – Sixmaps)

### 3.0 AMBIENT NOISE SURVEY

Existing external ambient noise levels were measured by installing a sound level meter data logger on the south-western façade fronting Dubgowan Lane. A Type 1 precision Convergence Instruments RT-W noise logger was used for the survey. The installed location on the facade meant that the microphone was approximately 2.5 metres above the ground level. This meter was placed to measure existing background noise levels that would be common for the residents adjoining the commercial site. The noise logger location is shown in figure 1.

The instrument was set-up to measure A-frequency and 'Fast' time-weighted noise levels. Noise level data was stored within the logger memory at 15-minutes intervals for about one week between Friday 26<sup>th</sup> February and Thursday 4<sup>th</sup> March 2021.

Calibration readings were taken before and after each survey with a NATA calibrated and certified Larson Davis CAL200 precision acoustic calibrator. No system drift was observed for this meter.

BOM weather records for the nearest available weather station indicate that inclement weather conditions adversely impacted the noise survey. All extraneous noise and inclement weather events were removed from the survey. BOM weather reports are attached as **Appendix A**.

| Table 2. Summary of noise logger results [dB] |                        |                                                                                                                                                                                                                                                                           |                                 |
|-----------------------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| Location                                      | Period, T <sup>1</sup> | Ambient noise level<br>LAeq                                                                                                                                                                                                                                               | Rating background level<br>LA90 |
| 14 South Steyne                               | Day                    | 65                                                                                                                                                                                                                                                                        | 61                              |
|                                               | Evening                | 65                                                                                                                                                                                                                                                                        | 61                              |
|                                               | Night                  | 62                                                                                                                                                                                                                                                                        | 59                              |
| Notes                                         | 1.                     | The NSW EPA NPI refers to,<br><b>Daytime:</b> 7 am – 6 pm Monday to Saturday and 8 am to 6 pm Sunday and public holidays.<br><b>Evening:</b> 6 pm – 10 pm Monday to Sunday<br><b>Night:</b> 10 pm – 7 am Monday to Saturday and 10 pm to 8 am Sunday and public holidays. |                                 |

Unattended logger graphs are attached as **Appendix B**.

It is noted that background noise levels in the area are heavily influenced by a mechanical plant of nearby commercial premises, including the adjoining hotel, The Sebel Sydney Manly Beach. The EPA's amenity criteria have been adopted for compliance to still be met in the absence of other mechanical plant noise sources.



## 4.0 ACOUSTICAL REQUIREMENTS

### 4.1 EPA NOISE POLICY FOR INDUSTRY

Noise emission design targets have been referenced from the NSW Environmental Protection Authority Noise Policy (EPA) for Industry (NPfI). The NPfI replaces the former Industrial Noise Policy, also prepared by the EPA.

The NPfI is designed to assess environmental noise impacts associated with scheduled activities prescribed within the Protection of the Environment Operations Act 1997, Schedule 1. It is also commonly used as a reference tool for establishing suitable planning levels for noise generated by mechanical plant and equipment and noise emission from commercial operations.

The guideline applies limits on the short term intrusive nature of a noise or noise-generating development (project intrusive noise level), as well as applying an upper limit on cumulative industrial noise emissions from all surrounding development/industry (project amenity noise level).

The most stringent of the project intrusive noise level and project amenity noise level is applied as the **project noise trigger level**. The project noise trigger level is the point, above which noise emission from a source or development site would trigger a management response.

To be able to define the more stringent of the intrusive and amenity noise levels, the underlying noise metrics must be the same. As the intrusive noise level is defined in terms of an LAeq 15 minutes and the amenity noise level is defined in terms of an LAeq Period, a correction +3dB correction is applied to the project amenity noise level to equate the LAeq Period to LAeq 15 minutes.

### 4.2 OFFENSIVE NOISE (POEO ACT 1997 DEFINITION)

In the definitions of the Protection of the Environment Operations Act 1997, 'offensive noise' means noise:

- (a) *that, by reason of its level, nature, character or quality, or the time at which it is made, or any other circumstances:*
  - (i) *is harmful to (or is likely to be harmful to) a person who is outside the premises from which it is emitted, or*
  - (ii) *interferes unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premises from which it is emitted, or*
- (b) *that is of a level, nature, character or quality prescribed by the regulations or that is made at a time, or in other circumstances, prescribed by the regulations.*



## 5.0 MECHANICAL PLANT AND BUILDING USE NOISE ASSESSMENT

The mechanical plant on this project may include air conditioning condensers units and other equipment such as ventilation fans. 'Building use noise' relates to noise from the use of the kitchen and waste storage area.

Mechanical plant noise emission has been assessed as per the specification of plant and equipment and installation locations as detailed on the project mechanical services plans, issued by JC Ventilation and Engineering Pty Ltd, Project No. 2021-02, Issue B, dated 17/02/2021.

### 5.1 PROJECT NOISE CRITERIA

Mechanical plant noise is assessed as per the planning levels contained within the NPfI. Acoustic planning levels are largely determined to the existing environmental noise levels. The following NPfI planning levels apply for this project:

| Table 3. NPfI planning levels [dB] |                                                                                                                                                                                                                                                                                                                                                                                                                            |         |                        |                                       |                         |                                      |                    |                                      |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------------------------|---------------------------------------|-------------------------|--------------------------------------|--------------------|--------------------------------------|
| Period,<br>T (Note 1)              | Intrusive                                                                                                                                                                                                                                                                                                                                                                                                                  |         | Amenity                |                                       |                         |                                      |                    | Project<br>noise<br>trigger<br>level |
|                                    | RBL                                                                                                                                                                                                                                                                                                                                                                                                                        | RBL + 5 | Area<br>classification | Recommended<br>amenity noise<br>level | High<br>traffic<br>area | Project<br>amenity<br>noise<br>level | +3dB<br>correction |                                      |
| Daytime                            | 61                                                                                                                                                                                                                                                                                                                                                                                                                         | 66      | Urban                  | 60                                    | No                      | 55                                   | 58                 | 58                                   |
| Evening                            | 61                                                                                                                                                                                                                                                                                                                                                                                                                         | 66      | Urban                  | 50                                    | No                      | 45                                   | 48                 | 48                                   |
| Night                              | 59                                                                                                                                                                                                                                                                                                                                                                                                                         | 64      | Urban                  | 45                                    | No                      | 40                                   | 43                 | 43                                   |
| Notes                              | The NSW EPA NPI refers to,<br><b>1. Daytime:</b> 7 am – 6 pm Monday to Saturday and 8 am to 6 pm Sunday and public holidays.<br><b>Evening:</b> 6 pm – 10 pm Monday to Sunday<br><b>2. Night:</b> 10 pm – 7 am Monday to Saturday and 10 pm to 8 am Sunday and public holidays.<br>Project noise amenity level = recommended noise amenity level – 5dB, except where specific circumstances are met, such as high traffic. |         |                        |                                       |                         |                                      |                    |                                      |

Mechanical plant and building use noise levels assessed to nearby commercial properties are not to exceed a recommended project amenity noise level of  $L_{Aeq}$  Period 63dB during business hours.

### 5.2 EQUIPMENT AND ASSOCIATED SOUND LEVELS

The mechanical services plans identify the following plant and equipment to be installed and other noise sources for the development. Associated noise data is included.



**Table 4. Schedule of equipment and noise levels**

| Equipment selection                       | Descriptor | Noise level, [dBA] | Location |
|-------------------------------------------|------------|--------------------|----------|
| Kitchen Exhaust Fan (Fantech MMD504/4)    | Lp at 3m   | 66                 | Roof     |
| Pizza Oven Exhaust Fan (Fantech MME354/5) | Lp at 3m   | 54                 | Roof     |
| AC Condenser Unit (REYQ12TY1)             | Lp at 1m   | 66                 | Roof     |

Smaller ventilation fans such as toilet exhaust fans have not been included in the assessment of mechanical plant because of their low inherent noise level and therefore low acoustical impact to surrounding premises.

### 5.3 CALCULATED RECEIVER LEVELS

Mechanical plant and building use noise levels have been predicted to nearby residential receivers by way of preparing an acoustic model and conducting point-to-point calculations based on standard sound propagation algorithms. All calculations consider the equipment as selected in the mechanical services plans and their associated sound levels.

The waste storage area is identified on the plans as located on the south-western end of the ground floor of the site adjacent to the internal kitchen area. Noise from the kitchen will be confined to indoor areas where doors are closed. Treatment options are provided for the kitchen entry/exit door.

When predicting noise emission, 2 people are assumed to occupy the external stairway with 50% talking with a normal vocal effort.

Sound power levels attributed to a normal conversational voice are 68 dB  $L_{wAeq}$ .

Reference should also be made to additional noise control recommendations included within Section 5.4 and 5.5 of this report, which also governs the calculated receiver noise levels.

Due to the size of the development, several potentially affected receiver locations must be assessed in terms of their respective noise exposure from mechanical plant and building use noise associated with the development. The most noise-sensitive receiver locations are summarised below.



|    |                                                    |                    |
|----|----------------------------------------------------|--------------------|
| R1 | Residential Apartment (Upper Floor Balcony)        | 46 Victoria Parade |
| R2 | Future Residential Apartment (Upper Floor Balcony) | 31 Victoria Parade |
| R3 | Commercial premise (Upper Floor Window)            | 15 South Steyne    |
| R4 | Sebel Manly Hotel (Upper Floor Window)             | 15 South Steyne    |

Predicted mechanical plant and building use noise levels, inclusive of all identified fans and condenser units are presented in Table 5. CadnaA noise contour graphs are attached as **Appendix C**.

| <b>Table 5. Calculated receiver noise levels [dB] - LAeq 15 mins</b> |                                                                       |                                                                                                                                                                                                                                                                                                            |                    |
|----------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| <b>Receiver Locations</b>                                            | <b>Calculated Mechanical Plant and Building Use Noise Levels (dB)</b> | <b>Night-time Residential Criteria (dB)</b>                                                                                                                                                                                                                                                                | <b>Exceedances</b> |
| R1 - Residential                                                     | 43                                                                    | <b>43</b>                                                                                                                                                                                                                                                                                                  | -                  |
| R2 - Residential                                                     | 41                                                                    |                                                                                                                                                                                                                                                                                                            | -                  |
| R3 - Commercial                                                      | 42                                                                    | <b>63</b>                                                                                                                                                                                                                                                                                                  | -                  |
| R4 - Commercial                                                      | 54                                                                    |                                                                                                                                                                                                                                                                                                            | -                  |
| Notes                                                                | 1.                                                                    | Intrusive noise levels consider that all fans and the mechanical plant may be operating simultaneously over a 15 minutes assessment period during the day, evening, or night period. It is highly unlikely that this scenario would ever occur, therefore actual noise levels may be lower than predicted. |                    |

Mechanical plant and building use noise levels have been assessed to comply with the limiting EPA providing the noise control measures as detailed in **Section 6.4 and Section 6.5** of this report are implemented. Compliance during the night-time period implies compliance during the less stringent daytime and evening periods.

#### 5.4 MECHANICAL PLANT RECOMMENDATIONS

To achieve compliance with the nominated mechanical plant noise criteria at the surrounding residential premises, noise mitigation measures are required to attenuate the noise levels generated by the mechanical plant. The following noise mitigation measures were used during calculations and modelling, and are required within the construction:



**Table 6. Recommended Noise Mitigation Measures to Mechanical Plant**

| Mechanical Plant                                                                     | Noise Mitigation Measures                                                                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Kitchen Exhaust<br><b>Model: Fantech AP0714GP6/23</b>                                | <ul style="list-style-type: none"> <li>A Fantech C2P-031 attenuator should be installed to the outlet side of the fan</li> <li>Ductwork should not emanate more than 1.5m above the roof of the building and should discharge vertically.</li> </ul>                         |
| All other supply/exhaust fans<br><b>Model: Show in Mechanical equipment schedule</b> | <ul style="list-style-type: none"> <li>Should be installed in locations and with ductwork sizes shown in the mechanical service drawings.</li> <li>Equipment to be changed from these referenced drawings should be verified by a qualified acoustical consultant</li> </ul> |
| Air-Conditioner Condenser Unit<br><b>Model: Daikin RXYQ18AYM</b>                     | <ul style="list-style-type: none"> <li>Condenser unit to be installed on the roof as per the mechanical service drawings</li> </ul>                                                                                                                                          |

The following attenuator is recommended to be included in the mechanical equipment installation. Alternate attenuators may be used where they are shown to have comparable insertion loss.

**Table 7. Schedule of attenuators**

| ID         | Attenuator serving                       | Octave band centre frequency insertion loss, [dB] |     |     |     |      |      |      |      |
|------------|------------------------------------------|---------------------------------------------------|-----|-----|-----|------|------|------|------|
|            |                                          | 63                                                | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| Silencer 1 | Kitchen Exhaust outlet (Fantech C2P-031) | 6                                                 | 9   | 14  | 21  | 28   | 28   | 25   | 22   |

## 5.5 BUILDING USE RECOMMENDATIONS

- The 3.6m external stairway privacy screen and the 1.5 m mechanical plant screen should utilise the following construction:
  - 15 mm compressed fibre cement panels with no air gaps at the joins; OR
  - 6 mm compressed fibre cement panels on either side of a 50 mm steel frame with fibre-glass insulation batts (14 kg/m<sup>2</sup>) to the cavity.
- The entry door to the kitchen is not required to be of double door construction. The door should be a minimum 35 - 40mm thick solid-core timber with an acoustical perimeter and door bottom seals. Suitable acoustic seals could be Raven type RP10/RP10si door frame/perimeter seals and RP8si door bottom seals, or an approved equivalent from another manufacturer. The kitchen door should be kept closed at all times.
- Waste should only be collected during the daytime period. Bottle recycling especially must not occur during the night-time.

## 6.0 CONCLUSION

Koikas Acoustics was requested to prepare an acoustic report for the proposed alterations and additions to the existing commercial premise at 14 South Steyne, Manly. The acoustic report is to accompany a development application being submitted to Northern Beaches Council.

The assessment considers potential noise impacts to future occupants of the development, and to surrounding residents such that acceptable acoustic amenity for the area is maintained.

Acoustic planning levels have been referenced from current EPA acoustic planning guidelines and requirements.

The included recommendations are based on designs prepared by U+I Building Studio.

The conclusions reached in this report should assist Council in making their determination of the proposal in terms of compliance with the necessary acoustic design requirements. A further detailed acoustic report may be required for the CC submission should the building design be amended, or as required by Council.

Of the assessed components of noise, the following conclusions have been reached:

1. Mechanical plant noise emissions are calculated to be within the acoustic design standards.
2. Building use noise is not expected to exceed the nominated noise criteria provided the recommendations outlined in section 5.5 of this report are properly implemented.

In our professional opinion, there is sufficient scope within the proposed building design to achieve the applied acoustic planning guidelines.



**APPENDIX      A**

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A**

**APPENDIX      A**

## Daily Rainfall (millimetres)

### COLLARROY (LONG REEF GOLF CLUB)

Station Number: 066126 · State: NSW · Opened: 1965 · Status: Open · Latitude: 33.74°S · Longitude: 151.31°E · Elevation: 2 m

| 2021          | Jan  | Feb   | Mar  | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---------------|------|-------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1st           | 0    | 0.8   | 0    |     |     |     |     |     |     |     |     |     |
| 2nd           | 0.8  | 8.4   | 0    |     |     |     |     |     |     |     |     |     |
| 3rd           | 5.8  | 4.2   | 15.2 |     |     |     |     |     |     |     |     |     |
| 4th           | 1.2  | 0     |      |     |     |     |     |     |     |     |     |     |
| 5th           | 8.2  | 0     |      |     |     |     |     |     |     |     |     |     |
| 6th           | 42.6 | ↓     |      |     |     |     |     |     |     |     |     |     |
| 7th           | 0    | 2.2   |      |     |     |     |     |     |     |     |     |     |
| 8th           | 0    | 0     |      |     |     |     |     |     |     |     |     |     |
| 9th           | 0    | 0     |      |     |     |     |     |     |     |     |     |     |
| 10th          | 0    | 5.2   |      |     |     |     |     |     |     |     |     |     |
| 11th          | 0    | 0     |      |     |     |     |     |     |     |     |     |     |
| 12th          | 0    | 0     |      |     |     |     |     |     |     |     |     |     |
| 13th          | 0    | 9.8   |      |     |     |     |     |     |     |     |     |     |
| 14th          | 0    | 13.6  |      |     |     |     |     |     |     |     |     |     |
| 15th          | 2.0  | 0     |      |     |     |     |     |     |     |     |     |     |
| 16th          | 0    | 4.8   |      |     |     |     |     |     |     |     |     |     |
| 17th          | 0    | 0     |      |     |     |     |     |     |     |     |     |     |
| 18th          | 0    | 4.8   |      |     |     |     |     |     |     |     |     |     |
| 19th          | 0    | 14.6  |      |     |     |     |     |     |     |     |     |     |
| 20th          | 2.0  | 0.8   |      |     |     |     |     |     |     |     |     |     |
| 21st          | 0    | 0.4   |      |     |     |     |     |     |     |     |     |     |
| 22nd          | 0    | 0     |      |     |     |     |     |     |     |     |     |     |
| 23rd          | 0    | 0.4   |      |     |     |     |     |     |     |     |     |     |
| 24th          | 0    | 34.0  |      |     |     |     |     |     |     |     |     |     |
| 25th          | 0    | 0     |      |     |     |     |     |     |     |     |     |     |
| 26th          | 0    | 0.6   |      |     |     |     |     |     |     |     |     |     |
| 27th          | 0    | 0     |      |     |     |     |     |     |     |     |     |     |
| 28th          | 8.4  | 0.8   |      |     |     |     |     |     |     |     |     |     |
| 29th          | 8.6  |       |      |     |     |     |     |     |     |     |     |     |
| 30th          | 19.4 |       |      |     |     |     |     |     |     |     |     |     |
| 31st          | 0.6  |       |      |     |     |     |     |     |     |     |     |     |
| Highest daily | 42.6 | 34.0  | 15.2 |     |     |     |     |     |     |     |     |     |
| Monthly Total | 99.6 | 105.4 |      |     |     |     |     |     |     |     |     |     |

↓ This day is part of an accumulated total

Quality control: 12.3 Done & acceptable, 12.3 Not completed or unknown

Product code: IDCJAC0009 reference: 73119532



Australian Government  
Bureau of Meteorology

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## Daily Rainfall (millimetres)

### COLLARROY (LONG REEF GOLF CLUB)

Station Number: 066126 · State: NSW · Opened: 1965 · Status: Open · Latitude: 33.74°S · Longitude: 151.31°E · Elevation: 2 m

#### Statistics for this station calculated over all years of data

|                              | Jan         | Feb          | Mar          | Apr          | May         | Jun         | Jul         | Aug         | Sep         | Oct         | Nov          | Dec          |
|------------------------------|-------------|--------------|--------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|
| <b>Mean</b>                  | 116.4       | 132.6        | 132.4        | 105.8        | 104.8       | 143.2       | 68.7        | 62.1        | 68.7        | 64.3        | 85.8         | 69.7         |
| <b>Median</b>                | 92.5        | 124.4        | 101.0        | 73.1         | 82.9        | 123.9       | 48.3        | 45.2        | 60.5        | 59.2        | 76.0         | 66.1         |
| <b>Highest daily</b>         | 206.0       | 138.2        | 115.4        | 119.6        | 88.0        | 114.4       | 86.0        | 149.0       | 99.1        | 83.0        | 151.4        | 100.6        |
| <b>Date of highest daily</b> | 8th<br>1973 | 10th<br>2020 | 20th<br>2011 | 13th<br>1971 | 3rd<br>2009 | 5th<br>2010 | 1st<br>2005 | 7th<br>1998 | 2nd<br>1970 | 2nd<br>2004 | 14th<br>1969 | 10th<br>1970 |

#### 1) Calculation of statistics

Summary statistics, other than the Highest and Lowest values, are only calculated if there are at least 20 years of data available.

#### 2) Gaps and missing data

Gaps may be caused by a damaged instrument, a temporary change to the site operation, or due to the absence or illness of an observer.

#### 3) Further information

<http://www.bom.gov.au/climate/cdo/about/about-rain-data.shtml>.

Product code: IDCJAC0009 reference: 73119532 Created on Fri 05 Mar 2021 16:13:49 PM AEDT



Australian Government  
Bureau of Meteorology

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**APPENDIX B**

**A  
P  
P  
E  
N  
D  
I  
X**

**B**

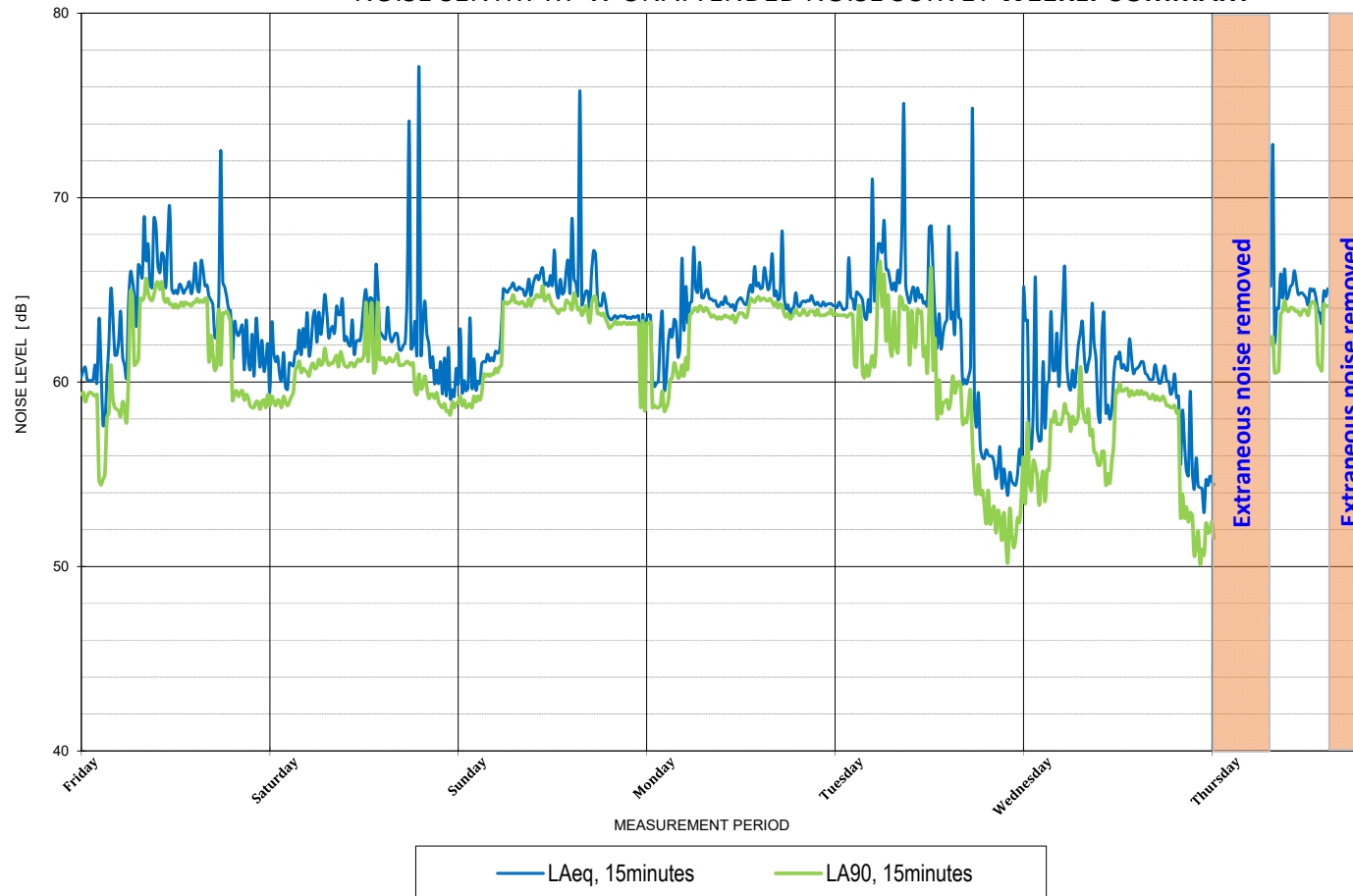
**APPENDIX B**

## WEEKLY SUMMARY

LOGGER LOCATION: 14 South Steyne, Manly

PERIOD: 26th Feb to the 4th March 2021

## NOISE SENTRY RT-W UNATTENDED NOISE SURVEY WEEKLY SUMMARY



## SUMMARY OF AMBIENT NOISE LEVELS

|            | LA90<br>Daytime | LA90<br>Evening | LA90<br>Night-time |
|------------|-----------------|-----------------|--------------------|
| Day 1      | 59              | 61              | 54                 |
| Day 2      | 61              | 61              | 59                 |
| Day 3      | 61              | 64              | 59                 |
| Day 4      | 61              | 64              | 59                 |
| Day 5      | 59              | 55              | 64                 |
| Day 6      | 56              | 59              | 51                 |
| Day 7      | 61              | 64              | 51                 |
| <b>RBL</b> | <b>61</b>       | <b>61</b>       | <b>59</b>          |

|                | LAeq<br>Daytime | LAeq<br>Evening | LAeq<br>Night-time |
|----------------|-----------------|-----------------|--------------------|
| Day 1          | 66              | 66              | 60                 |
| Day 2          | 63              | 65              | 62                 |
| Day 3          | 65              | 68              | 64                 |
| Day 4          | 65              | 65              | 63                 |
| Day 5          | 66              | 66              | 64                 |
| Day 6          | 62              | 61              | 59                 |
| Day 7          | 66              | 65              | 57                 |
| <b>Average</b> | <b>65</b>       | <b>65</b>       | <b>62</b>          |

## SUMMARY OF TRAFFIC &amp; MISC. NOISE LEVELS

|               |           |    |    |
|---------------|-----------|----|----|
| LAeq 15 hrs   | 0700-2200 | 65 | dB |
| LAeq 9 hrs    | 2200-0700 | 62 | dB |
| Max LAeq 1 hr | 0700-2200 | 67 | dB |
| Max LAeq 1 hr | 2200-0700 | 63 | dB |

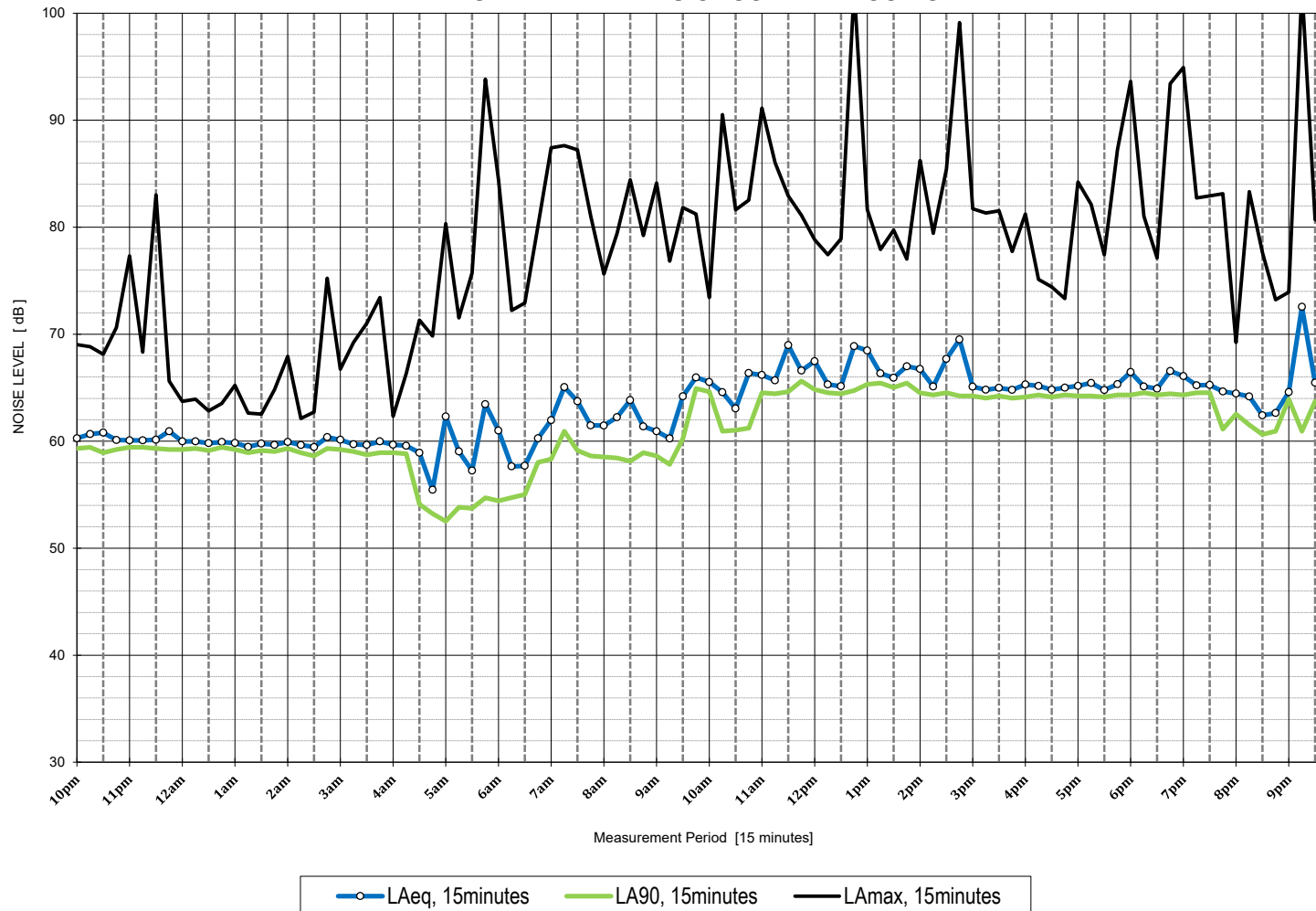
\* Sundays and Public Holidays the hours change to 0800

DAY 1

LOGGER LOCATION: 14 South Steyne, Manly

DATE: Friday, 26 February 2021

## UNATTENDED NOISE SURVEY RESULTS



## AMBIENT BACKGROUND NOISE METRICS

| Descriptor      | Period    | Level | Units |
|-----------------|-----------|-------|-------|
| LA90 Daytime    | 0700-1800 | 59    | dB    |
| LA90 Evening    | 1800-2200 | 61    | dB    |
| LA90 Night-time | 2200-0700 | 54    | dB    |

## AMBIENT NOISE METRICS

|                 |           |    |    |
|-----------------|-----------|----|----|
| LAeq Daytime    | 0700-1800 | 66 | dB |
| LAeq Evening    | 1800-2200 | 66 | dB |
| LAeq Night-time | 2200-0700 | 60 | dB |

## TRAFFIC &amp; MISC. NOISE METRICS

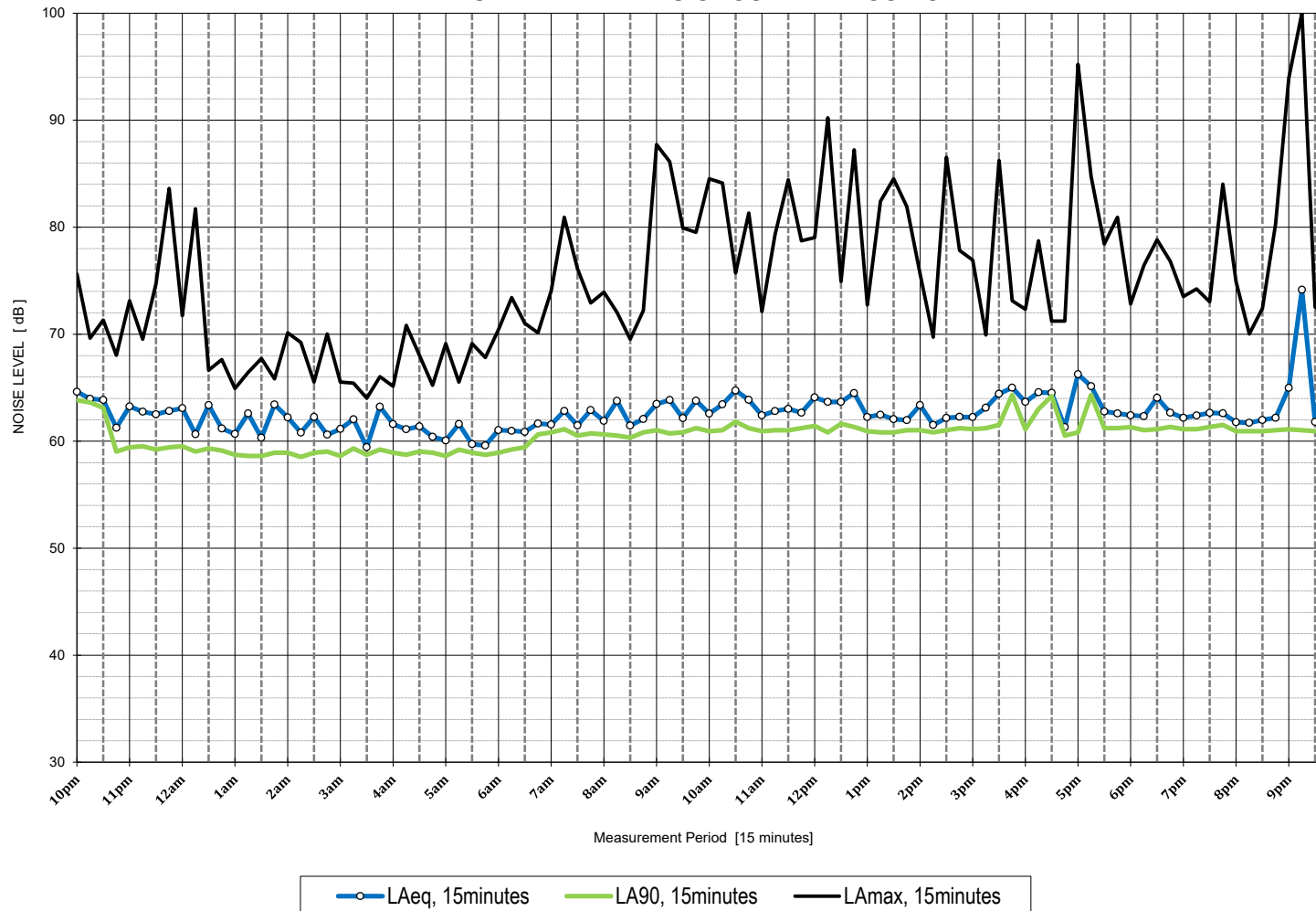
|                 |           |    |    |
|-----------------|-----------|----|----|
| LAeq 15 hours   | 0700-2200 | 66 | dB |
| LAeq 9 hours    | 2200-0700 | 60 | dB |
| Max LAeq 1 hour | 0700-2200 | 67 | dB |
| Max LAeq 1 hour | 2200-0700 | 61 | dB |

DAY 2

LOGGER LOCATION: 14 South Steyne, Manly

DATE: Saturday, 27 February 2021

## UNATTENDED NOISE SURVEY RESULTS



## AMBIENT BACKGROUND NOISE METRICS

| Descriptor      | Period    | Level | Units |
|-----------------|-----------|-------|-------|
| LA90 Daytime    | 0700-1800 | 61    | dB    |
| LA90 Evening    | 1800-2200 | 61    | dB    |
| LA90 Night-time | 2200-0700 | 59    | dB    |

## AMBIENT NOISE METRICS

|                 |           |    |    |
|-----------------|-----------|----|----|
| LAeq Daytime    | 0700-1800 | 63 | dB |
| LAeq Evening    | 1800-2200 | 65 | dB |
| LAeq Night-time | 2200-0700 | 62 | dB |

## TRAFFIC &amp; MISC. NOISE METRICS

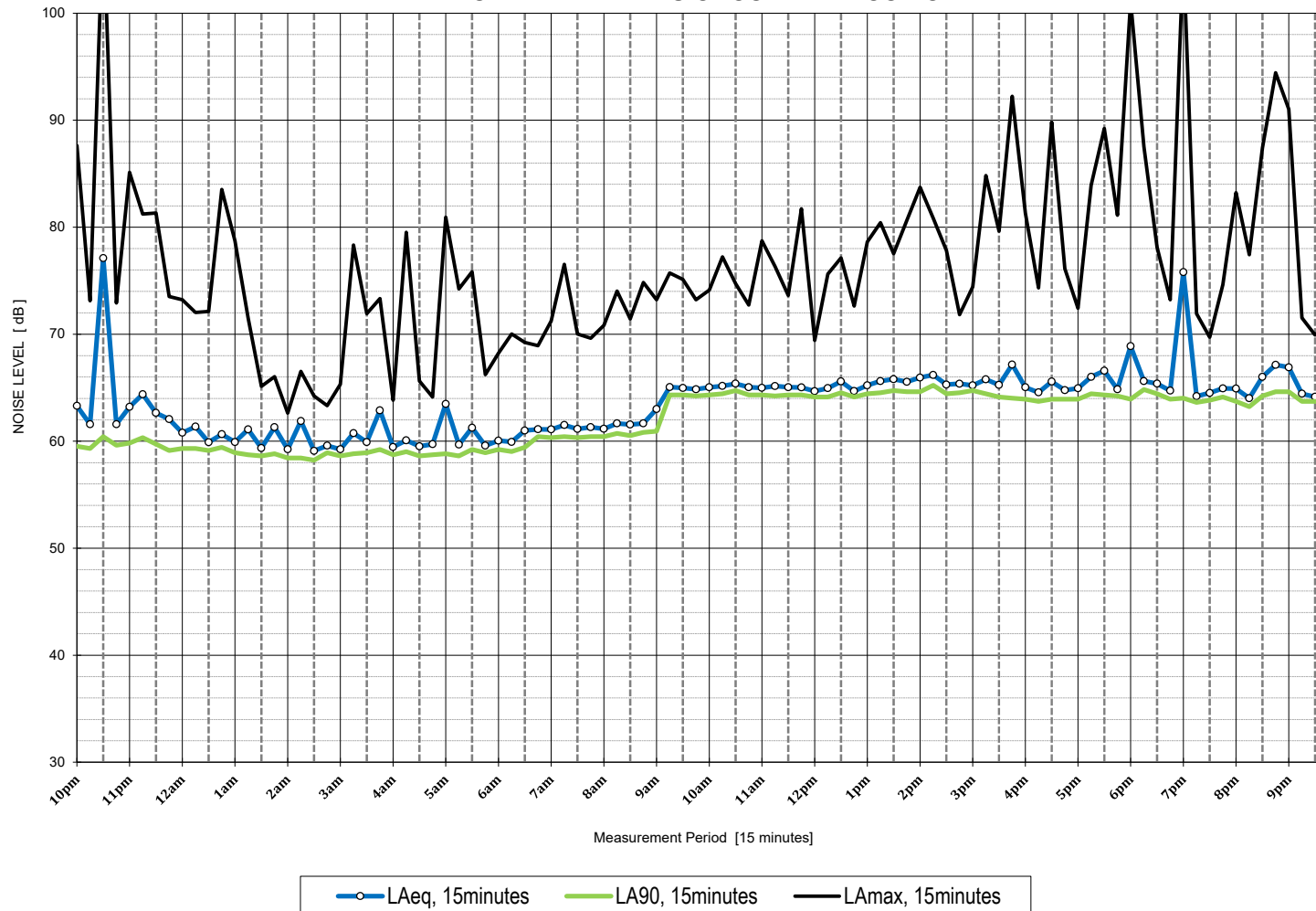
|                 |           |    |    |
|-----------------|-----------|----|----|
| LAeq 15 hours   | 0700-2200 | 64 | dB |
| LAeq 9 hours    | 2200-0700 | 62 | dB |
| Max LAeq 1 hour | 0700-2200 | 64 | dB |
| Max LAeq 1 hour | 2200-0700 | 63 | dB |

DAY 3

LOGGER LOCATION: 14 South Steyne, Manly

DATE: Sunday, 28 February 2021

## UNATTENDED NOISE SURVEY RESULTS



## AMBIENT BACKGROUND NOISE METRICS

| Descriptor      | Period    | Level | Units |
|-----------------|-----------|-------|-------|
| LA90 Daytime    | 0800-1800 | 61    | dB    |
| LA90 Evening    | 1800-2200 | 64    | dB    |
| LA90 Night-time | 2200-0800 | 59    | dB    |

## AMBIENT NOISE METRICS

|                 |           |    |    |
|-----------------|-----------|----|----|
| LAeq Daytime    | 0800-1800 | 65 | dB |
| LAeq Evening    | 1800-2200 | 68 | dB |
| LAeq Night-time | 2200-0800 | 64 | dB |

## TRAFFIC &amp; MISC. NOISE METRICS

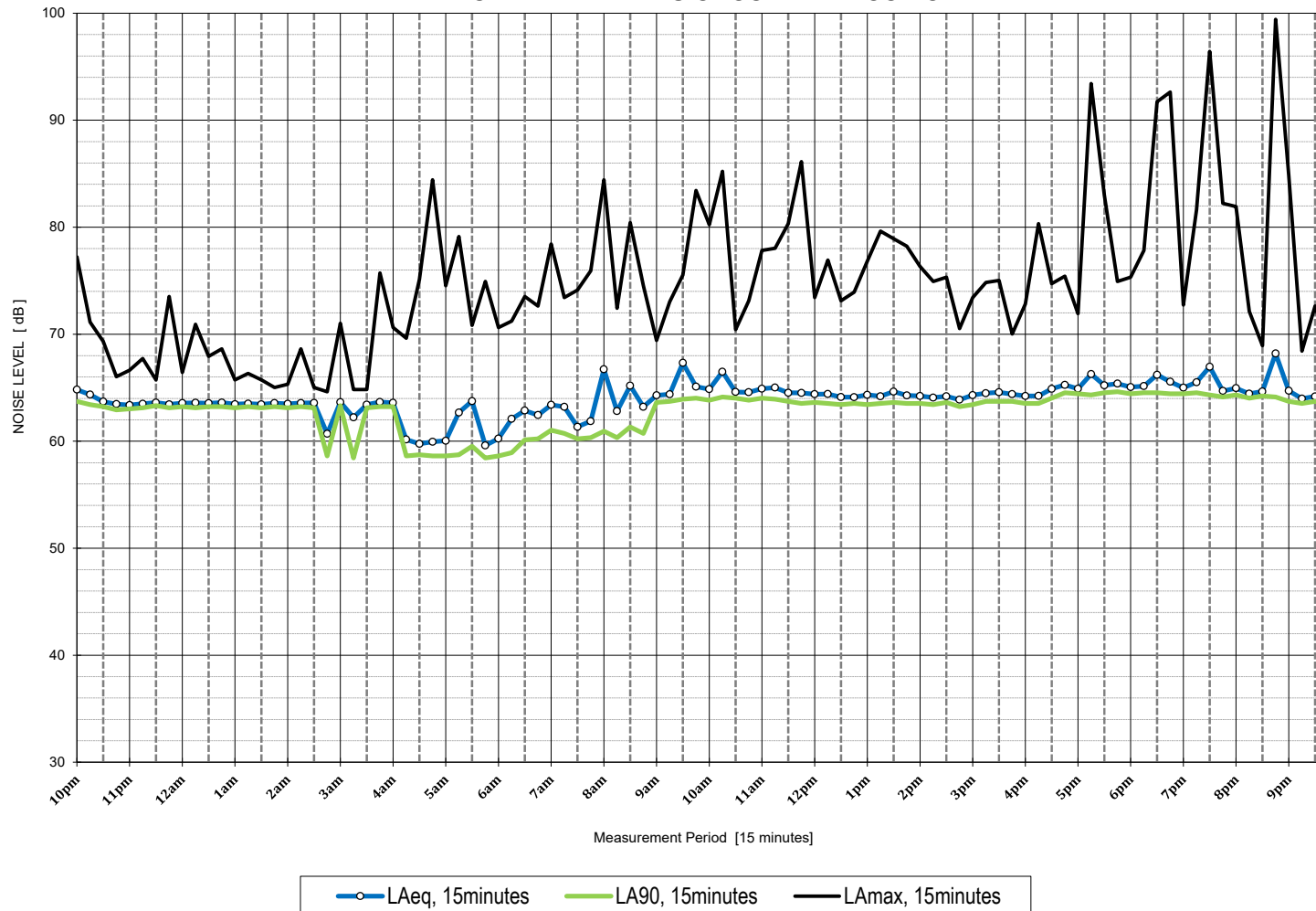
|                 |           |    |    |
|-----------------|-----------|----|----|
| LAeq 15 hours   | 0700-2200 | 66 | dB |
| LAeq 9 hours    | 2200-0700 | 64 | dB |
| Max LAeq 1 hour | 0700-2200 | 67 | dB |
| Max LAeq 1 hour | 2200-0700 | 63 | dB |

DAY 4

LOGGER LOCATION: 14 South Steyne, Manly

DATE: Monday, 1 March 2021

## UNATTENDED NOISE SURVEY RESULTS



## AMBIENT BACKGROUND NOISE METRICS

| Descriptor      | Period    | Level | Units |
|-----------------|-----------|-------|-------|
| LA90 Daytime    | 0700-1800 | 61    | dB    |
| LA90 Evening    | 1800-2200 | 64    | dB    |
| LA90 Night-time | 2200-0700 | 59    | dB    |

## AMBIENT NOISE METRICS

|                 |           |    |    |
|-----------------|-----------|----|----|
| LAeq Daytime    | 0700-1800 | 65 | dB |
| LAeq Evening    | 1800-2200 | 65 | dB |
| LAeq Night-time | 2200-0700 | 63 | dB |

## TRAFFIC &amp; MISC. NOISE METRICS

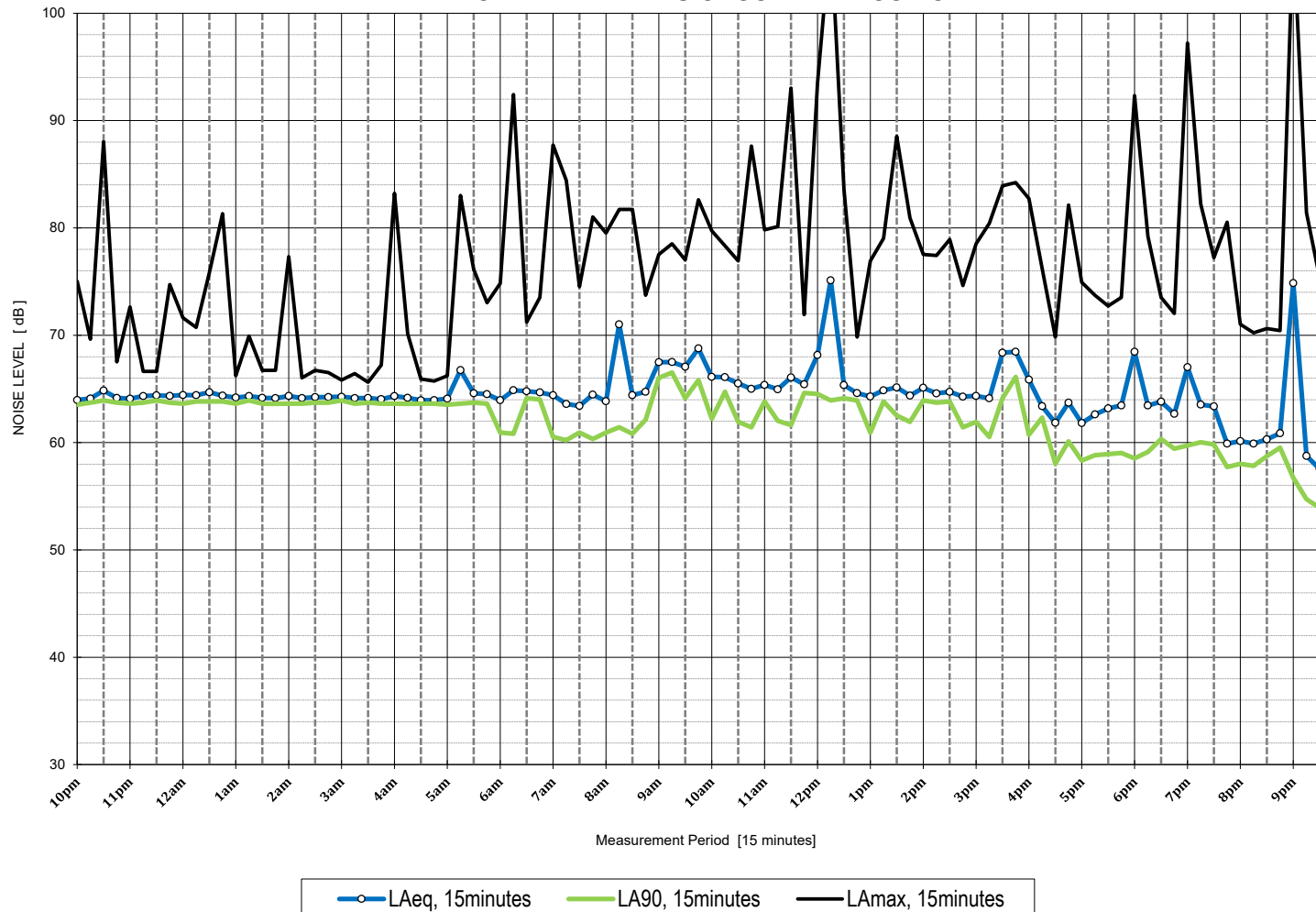
|                 |           |    |    |
|-----------------|-----------|----|----|
| LAeq 15 hours   | 0700-2200 | 65 | dB |
| LAeq 9 hours    | 2200-0700 | 63 | dB |
| Max LAeq 1 hour | 0700-2200 | 66 | dB |
| Max LAeq 1 hour | 2200-0700 | 64 | dB |

DAY 5

LOGGER LOCATION: 14 South Steyne, Manly

DATE: Tuesday, 2 March 2021

## UNATTENDED NOISE SURVEY RESULTS



## AMBIENT BACKGROUND NOISE METRICS

| Descriptor      | Period    | Level | Units |
|-----------------|-----------|-------|-------|
| LA90 Daytime    | 0700-1800 | 59    | dB    |
| LA90 Evening    | 1800-2200 | 55    | dB    |
| LA90 Night-time | 2200-0700 | 64    | dB    |

## AMBIENT NOISE METRICS

|                 |           |    |    |
|-----------------|-----------|----|----|
| LAeq Daytime    | 0700-1800 | 66 | dB |
| LAeq Evening    | 1800-2200 | 66 | dB |
| LAeq Night-time | 2200-0700 | 64 | dB |

## TRAFFIC &amp; MISC. NOISE METRICS

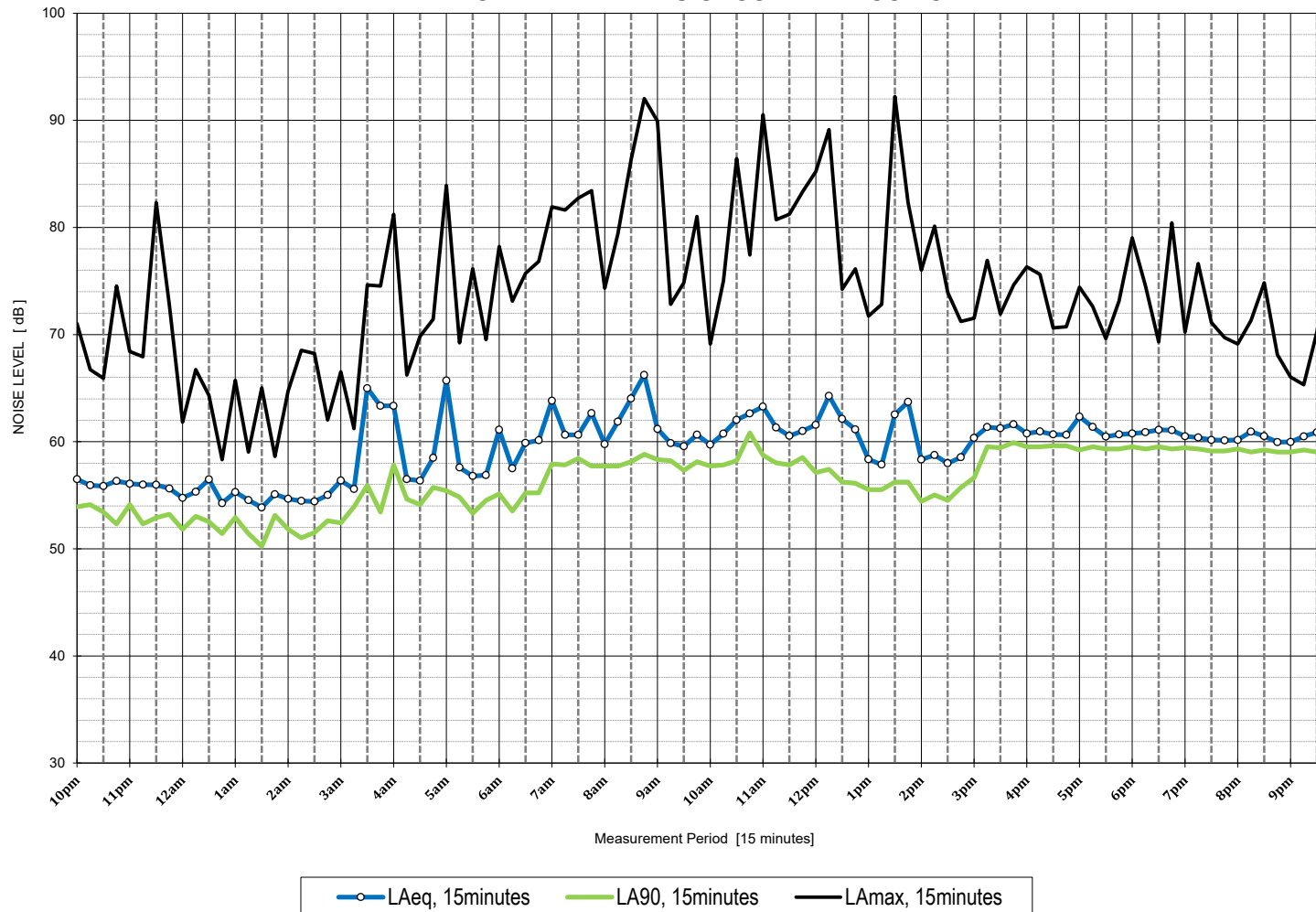
|                 |           |    |    |
|-----------------|-----------|----|----|
| LAeq 15 hours   | 0700-2200 | 66 | dB |
| LAeq 9 hours    | 2200-0700 | 64 | dB |
| Max LAeq 1 hour | 0700-2200 | 69 | dB |
| Max LAeq 1 hour | 2200-0700 | 65 | dB |

DAY 6

LOGGER LOCATION: 14 South Steyne, Manly

DATE: Wednesday, 3 March 2021

## UNATTENDED NOISE SURVEY RESULTS



## AMBIENT BACKGROUND NOISE METRICS

| Descriptor      | Period    | Level | Units |
|-----------------|-----------|-------|-------|
| LA90 Daytime    | 0700-1800 | 56    | dB    |
| LA90 Evening    | 1800-2200 | 59    | dB    |
| LA90 Night-time | 2200-0700 | 51    | dB    |

## AMBIENT NOISE METRICS

|                 |           |    |    |
|-----------------|-----------|----|----|
| LAeq Daytime    | 0700-1800 | 62 | dB |
| LAeq Evening    | 1800-2200 | 61 | dB |
| LAeq Night-time | 2200-0700 | 59 | dB |

## TRAFFIC &amp; MISC. NOISE METRICS

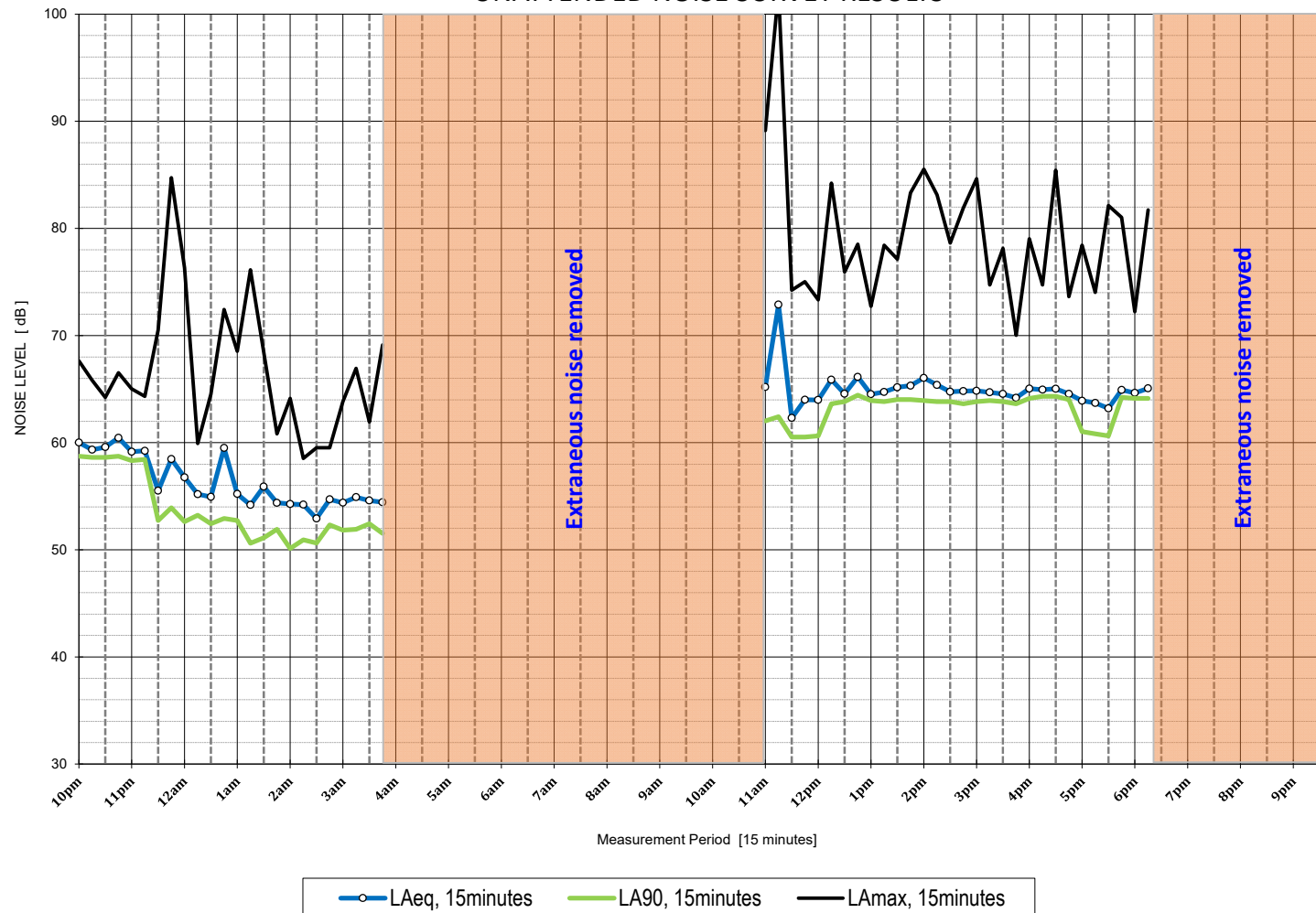
|                 |           |    |    |
|-----------------|-----------|----|----|
| LAeq 15 hours   | 0700-2200 | 61 | dB |
| LAeq 9 hours    | 2200-0700 | 59 | dB |
| Max LAeq 1 hour | 0700-2200 | 62 | dB |
| Max LAeq 1 hour | 2200-0700 | 61 | dB |

DAY 7

LOGGER LOCATION: 14 South Steyne, Manly

DATE: Thursday, 4 March 2021

## UNATTENDED NOISE SURVEY RESULTS



## AMBIENT BACKGROUND NOISE METRICS

| Descriptor      | Period    | Level | Units |
|-----------------|-----------|-------|-------|
| LA90 Daytime    | 0700-1800 | 61    | dB    |
| LA90 Evening    | 1800-2200 | 64    | dB    |
| LA90 Night-time | 2200-0700 | 51    | dB    |

## AMBIENT NOISE METRICS

|                 |           |    |    |
|-----------------|-----------|----|----|
| LAeq Daytime    | 0700-1800 | 66 | dB |
| LAeq Evening    | 1800-2200 | 65 | dB |
| LAeq Night-time | 2200-0700 | 57 | dB |

## TRAFFIC &amp; MISC. NOISE METRICS

|                 |           |    |    |
|-----------------|-----------|----|----|
| LAeq 15 hours   | 0700-2200 | 65 | dB |
| LAeq 9 hours    | 2200-0700 | 57 | dB |
| Max LAeq 1 hour | 0700-2200 | 68 | dB |
| Max LAeq 1 hour | 2200-0700 | 60 | dB |



**Scenario 1  
(Mechanical Plant and  
Building Use Noise)**

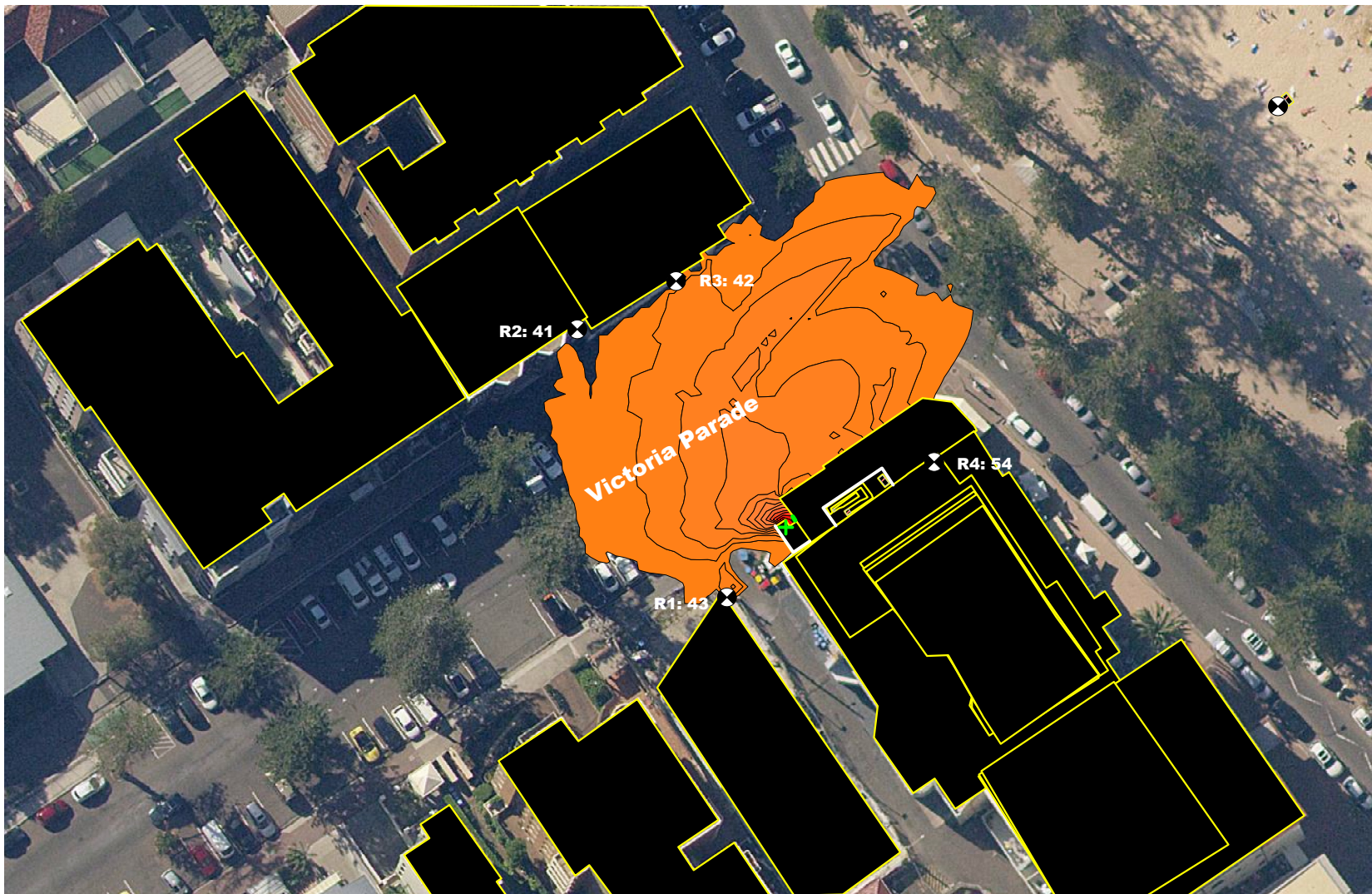
**\*\* NOISE SOURCES \*\***

- ~ 2x Kitchen Exhaust Fans
- ~ 1x Daikin AC Condenser unit operating continuously
- ~ 2x Kitchen workers on outdoor stairway speaking
- ~ Noise from kitchen (door closed)

**Note:**

- LAeq,15minute noise contours and receiver point R3 is at a height of 4.5 m above ground level.
- All other receiver points are 10.5m above ground level.
- The maximum reading at the nearest resident is 43 dB.
- The maximum reading at the nearest commercial receiver is 54 dB.

PRINT DATE: 10/03/21



- + Point Source
- Area Source
- vert. Area Source
- Building
- Barrier
- Contour Line
- Receiver

- > 40.0 dB
- > 50.0 dB
- > 55.0 dB
- > 60.0 dB
- > 65.0 dB
- > 70.0 dB

**koikasacoustics** PTY LTD  
CONSULTANTS IN NOISE & VIBRATION

JOB NUMBER: 4609  
CLIENT: Stephen Hayes  
SITE ADDRESS: 14 South Steyne, Manly  
ASSESSED TO: EPA's Noise Policy For Industry  
LIMITING CRITERIA: 43 dB(A) - Night-time (22:00-07:00)