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ACOUSTICAL REPORT

PROPOSED CHANGE OF USE TO A PRIMARY SCHOOL

83 JOCELYN STREET AND 54 CHESTER HILL ROAD, CHESTER HILL NSW

Date: Monday, 14 April 2025

File Reference: 6263R20240808jt83JocelynSt&54ChesterHillRdChesterHill_DAv3

DOCUMENT CONTROL

Project title	Acoustical Report Proposed change of use to a primary school 83 Jocelyn Street and 54 Chester Hill Road, Chester Hill NSW
Project number	6263
Document reference	6263R20240808jt83JocelynSt&54ChesterHillRdChesterHill_DAv3
Document path	G:\Shared drives\KA Acoustics 2024\REPORT\Schools\6263 (jt) 83 Jocelyn Street and 54 Chester Hill Road, Chester Hill\6263R20240808jt83JocelynSt&54ChesterHillRdChesterHill_DAv3.docx

Date	**Author**	**Review**	**Notes**
14/04/2025	JT	NK	Report available for issue

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ACOUSTICAL REPORT

PROPOSED CHANGE OF USE TO A PRIMARY SCHOOL

83 JOCELYN STREET AND 54 CHESTER HILL ROAD, CHESTER HILL NSW

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1.0 INTRODUCTION

Koikas Acoustics Pty Ltd was commissioned to conduct a noise impact assessment of the proposed conversion of an existing aged care facility to a 228-children primary school at 83 Jocelyn Street and 54 Chester Hill Road, Chester Hill NSW.

For this DA, the acoustical adequacy of the proposed design must be assessed in terms of standard planning guidelines issued by the Canterbury-Bankstown Council in their Local Environment Plan (LEP), Development Control Plan (DCP), and other standard planning guidelines related to common sources of noise.

As per the Council guidelines and other standard planning instruments, Koikas Acoustics has determined the following acoustical components require an assessment at the current DA stage:

- Students in outdoor play areas during break times and scheduled outdoor classes
- Noise breakout from classrooms and other areas such as the hall
- Parking areas, deliveries and onsite waste collection
- On-road vehicle noise resulting from additional traffic generated by the development (cars and school buses)

This report presents the results and findings of an acoustical assessment of the subject proposal. In-principle acoustic treatments and noise control measures detailed within this report are deemed necessary for the development to comply with the nominated acoustical planning levels/project noise objectives.

2.0 THE PROPOSED DEVELOPMENT

The development is proposed to occupy the site at 83 Jocelyn Street and 54 Chester Hill Road, Chester Hill NSW.

This location is situated in a primarily urban residential area classified as R2 'Low-Density Residential' as per relevant land zoning maps included in the Canterbury-Bankstown Council Local Environment Plan 2023. Surrounding properties are also predominantly residential in classification, also located within R2 'Low-Density Residential'.

The subject site and surrounding properties are identified in the aerial photograph in Figure 1.

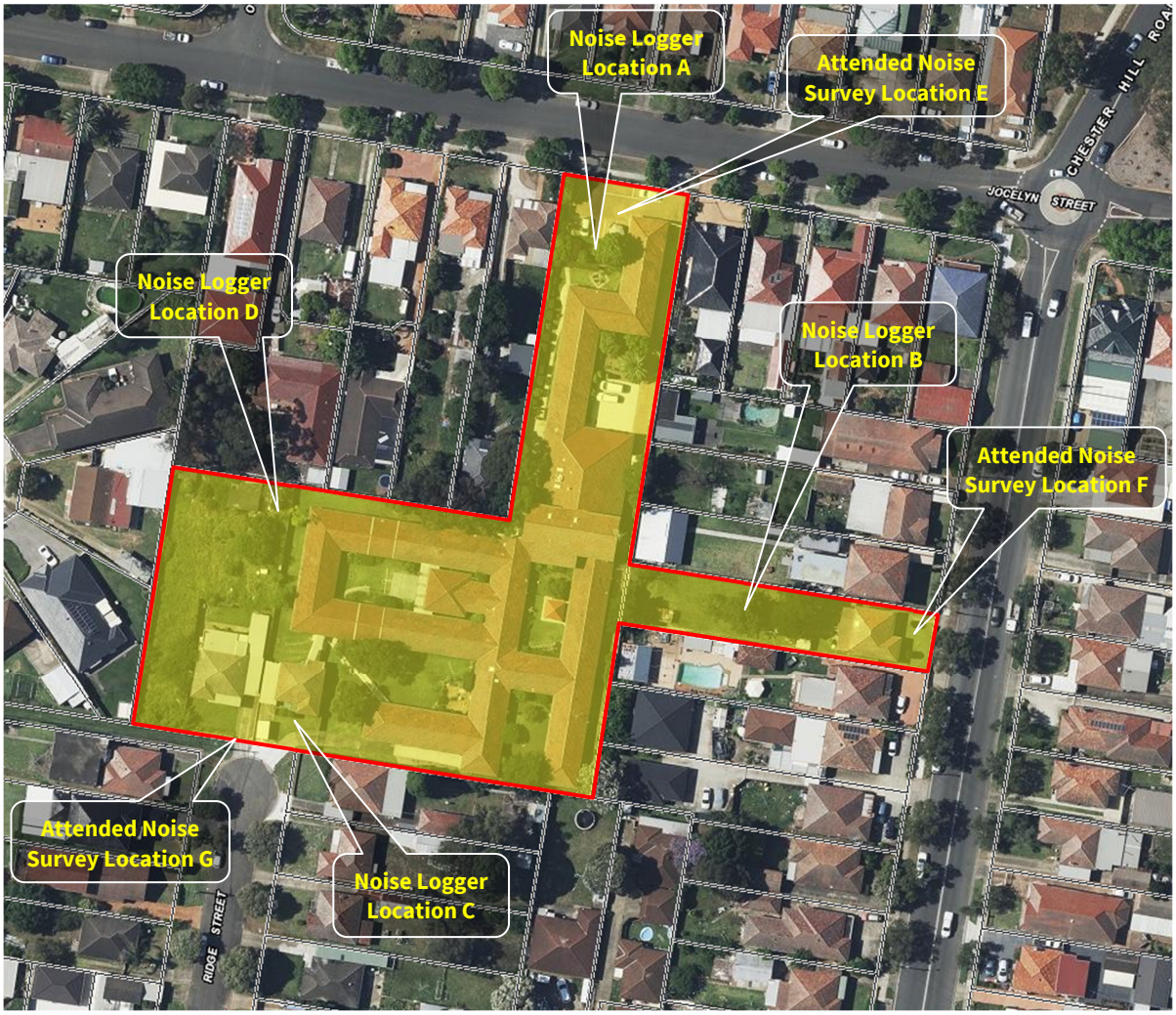


Figure 1. Aerial photo of the subject site, surrounding area and noise logger locations – Image from Six Maps

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 noise sources.

This acoustic report and any associated recommendations are based solely on the architectural design and drawings prepared by Furfaro Architects (Revision: C, Dated: 04.03.2025). Any changes to the design may impact the findings of this report and associated noise control recommendations.

As per the architectural drawings, the proposed development will include:

- Conversion of aged care facility to an educational establishment for a maximum of 228 children from kindergarten to year 3 primary school students
- The proposal involves minor alterations and conversions of approximately 10 existing ground-floor buildings to classrooms.
- Conversion of a building to a creative arts room, and another building to a library/music room. Use of existing buildings fronting Jocelyn Street as school offices/reception and meeting rooms. Conversion of a central building to a hall, and kitchen with amenities.
- Provision of a large oval for recreation and 4 additional play areas scattered throughout the site.
- There will also be a conversion of a second storey of the central building to a staff room, with amenities and meeting rooms.
- There will be a maximum of 25 staff.
- The proposal also seeks to demolish of existing dwelling on 54 Chester Hill Road and construct a school entry and parking area on the site. It is intended cars will enter the site via Chester Hill Road and exit onto Jocelyn Street.
- A total of 30 spaces will be provided, inclusive of 24 staff spaces on the 54 Chester Hill Road site, 2 spaces for staff adjacent to the hall building and bus drop off fronting Jocelyn Street
- The school will be open from about 8 am when the first buses start to arrive and will depart by 3.30 pm.
- There will be about 120 children that arrive on shuttle buses to Chester Hill, 85 of those will stay on the buses and head over to Greenacre on the shuttle service.
- There will only be about 40 children who leave on shuttle buses in the afternoon as all the buses leave the Greenacre campus for their various destinations. The rest of the children will be picked up by parents in the afternoon.
- Waste Management will need to take place on Jocelyn Street and will be a 10.6 m truck. Pick-up times will likely be outside peak periods in the mornings or afternoons.
- The Oval will have a limit of 60 students during recess/lunch and PDHPE classes.

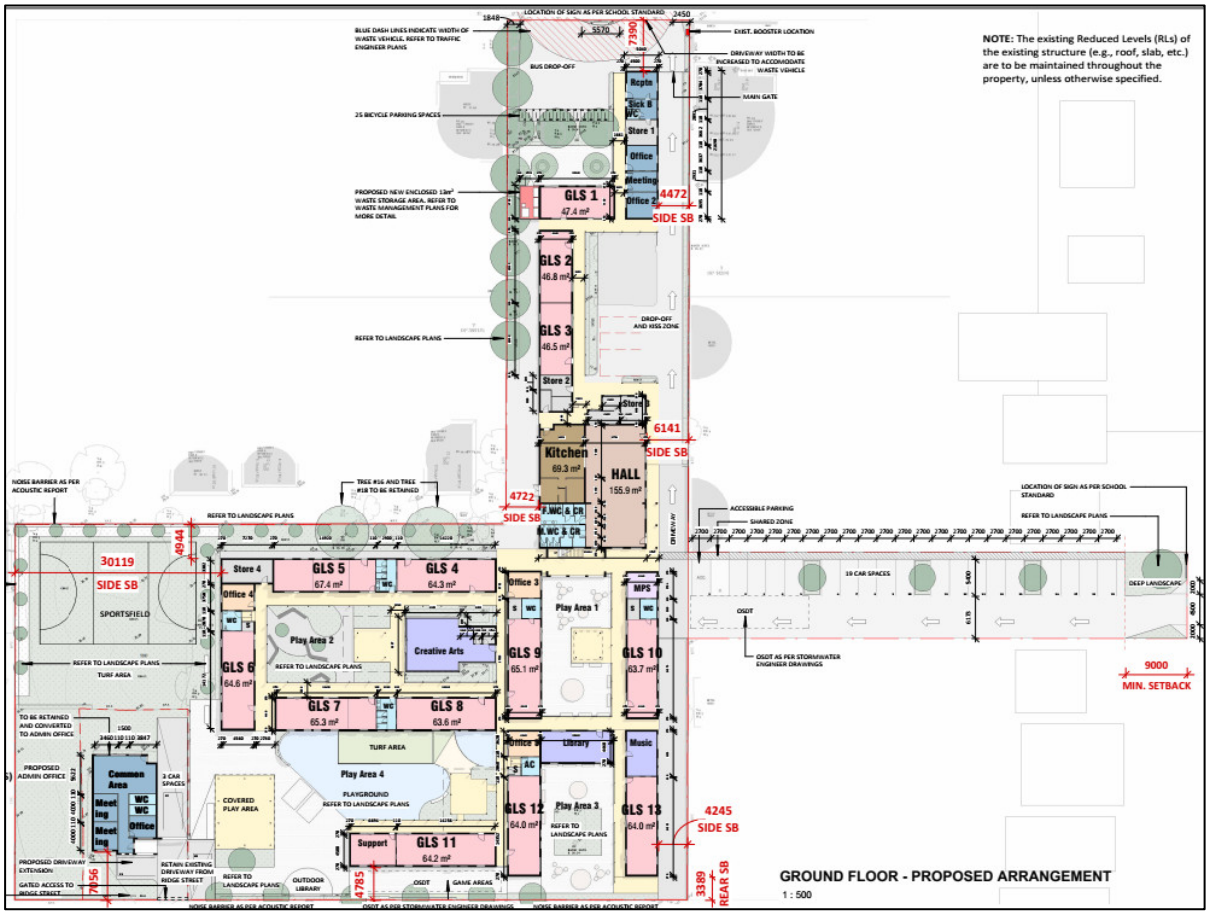


Figure 2. Proposed ground floor plan – Image from Furfaro Architects

K Diamond Individual Timetable – Term 1 2024 — Classroom 2

	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 – 8:35 am - 5min	Assembly and Prayer /Morning Administration - Roll /Prep				
8:35am – 8:45am	PDHPE FITNESS 10 mins per day				
8:45 am – 9:00 am 15 min	ENGLISH	ENGLISH	ENGLISH	ENGLISH	ENGLISH
9:00 am – 9:45 am 45 min	ENGLISH	ENGLISH	ENGLISH	ENGLISH	ENGLISH
9:45 am – 10:30 am 45min	ENGLISH	ENGLISH	ENGLISH	ENGLISH	ENGLISH
10:30 am – 11:00 am Recess - 30 min					
11:00 am – 11:45pm 45 min	HISTORY /Library Lesson	MATHEMATICS	11:00am – 11:15am English 11:15am – 11:45am MATHEMATICS	MATHEMATICS	MATHEMATICS
11:45pm– 12:30 pm 45 min	11:30am-12:00pm HISTORY 12:000pm – 12:30pm MATHEMATICS	MATHEMATICS	11:45am-11:05pm PDHPE 12:05pm – 12:30pm CREATIVE ARTS/CLUBS	MATHEMATICS	Science and Technology
12:30 pm – 1:00pm Lunch - 30 min					
1:00pm – 1:45pm 45 min	LANGUAGE Ms Dib	LANGUAGE Ms Dib	LANGUAGE Ms Dib	LANGUAGE Ms Dib	RELIGION Ms Gnade
1:45 pm – 2:25pm 40 mins	HISTORY	Science and Technology	CREATIVE ARTS/CLUBS	PDHPE	Science and Technology
2:25 pm – 2:55pm 30 min	HISTORY	MATHEMATICS	CREATIVE ARTS/CLUBS	PDHPE	CREATIVE ARTS

NESA Compliance % & Time	English	Mathematics	Science and Technology	History	Creative Arts	PDHPE	Additional
	25-35%	20%	6 – 10 %	6 – 10 %	6 – 10 %	6 – 10 %	Up to 20 %
	415 min – 581 min	315 min	98 min – 164 min	98 min – 164 min	98 min – 164 min	98 min – 164 min	315 min
ASC % & Time	34 %	20 %	8%	8%	8%	8%	15%
1625 min p/week	540 min. (9 hrs. 0min)	315 min. (5hrs. 15 min.)	125 min. (2 hrs 5mins)	130 min. (2 hrs. 10min)	125 min. (2 hrs 5 MINS)	140 min. (2 hrs 20 MINS)	250 min (4 hrs. 10 min)

5 hrs. & 25 min = 325 min per day = 1625 min per week = 27 hrs. 5 min. NB: The classroom teachers except where indicated on the timetable teach all KLA's.

Figure 3. K Diamond individual timetable

3.0 NOISE SURVEYS

3.1 UNATTENDED AMBIENT NOISE SURVEY

Four (4) unattended noise logging survey was conducted between 21st and 27 June 2024 in the following locations:

- **Location A:** the front yard of 83 Jocelyn Street
- **Location B:** the rear yard of 54 Chester Hill Road
- **Location C:** the front yard of 1 Ridge Street
- **Location D:** the rear yard of 1 Ridge Street

The measurement microphone was set at a height of 1.5 metres above the ground and was clear of any sound-reflective surfaces (excl. the ground) by at least 3.5 metres. This satisfies the requirements for a free-field measurement under AS1055-2018 and Fact Sheet B of the NSW EPA Noise Policy for Industry.

Three (3) Type 1 Svantek 977 and one (1) Type 1 Svantek 949 noise loggers were used for this noise survey. The instrument was set up to measure sound pressure levels as 'A' frequency weighting and 'Fast' time response. Noise levels were saved on the quarter-hour within the logger memory.

A NATA-calibrated and certified Larson Davis CAL200 precision acoustic calibrator was used to field calibrate the sound level meter before and after the noise survey. No system drift was observed for this sound level meter.

Weather records were obtained from a weather station located approximately 10 m above the ground at 60 Glenfarne Street Bexley. The distance from this weather station is 13.5 km to the subject site. See **Appendix A** for details.

Data obtained from the weather station was used to ascertain if inclement weather could have increased noise during the noise survey. Where these periods showed an increase in ambient and ambient background levels, the noise data was removed as per the recommendations of the NSW EPA Noise Policy for Industry. Where the meteorological data showed that the wind speed was greater than 5 m/s or that there was precipitation but the noise level trends showed no noticeable increase in the ambient and ambient background noise levels, the noise data was retained.

A summary of the noise survey data is presented below.

Table 1. Summary of noise logger results [dB]

Location	Period, T [1]	Ambient noise level L_{Aeq}	Rating background level L_{A90}	Traffic noise level[2] Max $L_{Aeq, 1hr}$
Location A: the front yard of 83 Jocelyn Street	Day	55	**40**	57
	Evening	53	42	
	Night	49	36	51
Location B: the rear yard of 54 Chester Hill Road	Day	52	**39**	53
	Evening	48	42	
	Night	45	37	47
Location C: the front yard of 1 Ridge Street	Day	53	**41**	55
	Evening	52	47	
	Night	48	39	51
Location D: the rear yard of 1 Ridge Street	Day	51	**42**	53
	Evening	49	45	
	Night	47	41	49

Notes

1. The **NSW EPA Noise Policy for Industry (NPfI)** refers to:
   Daytime: 7 am – 6 pm Monday to Saturday and 8 am to 6 pm Sunday and public holidays.
   Evening: 6 pm – 10 pm Monday to Sunday
   Night: 10 pm - 7 am Monday to Saturday and 10 pm to 8 am Sunday and public holidays.
2. The **EPA/RMS/NSW DoP** refers to:
   Daytime: 7 am – 10 pm seven days per week.
   Night: 10 pm - 7 am seven days per week

Daily logger graphs are attached in **Appendix A**.

3.2 ATTENDED NOISE SURVEYS

Simultaneously attended noise surveys were conducted at the noise logger locations and the attended monitoring location at 1.5 meters above the ground. The sound level meter microphone was placed approximately 1.5 metres above the existing ground floor in 'free-field' conditions, ie. ≥ 3.5 metres from any reflective façade.

Noise level measurements were taken with one (1) NATA-calibrated Type 1 NTi XL2, two (2) Svantek 977 and one (1) Svantek 949 sound level meter. The instrument was set up to measure sound pressure levels as 'A' frequency weighting and 'Fast' time response.

These measurements were used to determine the difference in ambient noise levels between the noise loggers and quantify the noise from surrounding roads. Sound level measurements were taken for durations deemed sufficient to represent the underlying ambient and background noise environment without the influence of extraneous noise.

Simultaneous noise surveys were conducted in areas surrounding the proposed development such that the ambient noise levels could be quantified (See Figure 1):

- **Location A:** the front yard of 83 Jocelyn Street, and
- **Location E:** the front yard of 83 Jocelyn Street (82 vehicle pass-bys),
- **Location B:** the rear yard of 54 Chester Hill Road, and
- **Location F:** the front yard of 54 Chester Hill Road (216 vehicle pass-bys),164
- **Location C:** the front yard of 1 Ridge Street, and
- **Location G:** the front yard of 1 Ridge Street (2 vehicle pass-bys).

A summary of the noise survey results is provided in Table 2.

Table 2. Summary of measured ambient noise levels [dB]

Location	Date	Measurement period	L_{Aeq}	L_{A90}
Location A: front yard of 83 Jocelyn Street	20.06.2024	2.25 pm to 2.55 pm	55	39
Location E: front yard of 83 Jocelyn Street	20.06.2024	2.25 pm to 2.55 pm	58	40
Location B: rear yard of 54 Chester Hill Road	20.06.2024	3.50 pm to 4.20 pm	51	39
Location F: front yard of 54 Chester Hill Road	20.06.2024	3.50 pm to 4.20 pm	62	46
Location C: front yard of 1 Ridge Street	20.06.2024	3.10 pm to 3.40 pm	49	39
Location G: front yard of 1 Ridge Street	20.06.2024	3.10 pm to 3.40 pm	48	40

4.0 ACOUSTICAL REQUIREMENTS

4.1 CANTERBURY-BANKSTOWN DCP 2023

The relevant acoustic matters from Section 10.2 of the Canterbury-Bankstown DCP 2023 has been extracted below.

Development controls

Acoustic privacy

6.1 Air conditioning, mechanical ventilation or any other continuous noise source must not exceed the ambient level at any specified boundary by more than 5dB(A).

6.2 The location and design of schools must consider the projection of noise from various activities to avoid any adverse impacts on the residential amenity of adjoining land.

For the purpose of this clause, Council requires applications to submit an Acoustic Report prepared by a suitably qualified acoustic consultant to determine:

(a) existing noise levels at the identified sensitive receiver locations;
(b) likely noise levels to emanate from the school at the identified sensitive receiver locations;
(c) whether the development must apply measures to ensure the noise of students does not exceed 10dB(A) above the background noise level;
(d) whether the location and setbacks of the development are sufficient to protect the acoustic privacy of adjacent dwellings;
(e) whether the location of the outdoor areas and free play areas should avoid living areas and bedrooms of adjacent dwellings; and
(f) whether the development must install certain noise attenuation measures to protect the acoustic privacy of adjacent dwellings.

The Acoustic Report must measure the noise readings over a 15 minute period and must provide details of all modelling assumptions including source noise data, noise monitoring positions, receiver heights and locations, prevailing meteorological conditions during the monitoring, confirmation of the methodology adopted along with a copy of the model input and output data.

6.3 The maximum height for noise attenuation walls and fences along the boundary of the site is 2m.

Hours of operation

6.4 Council may limit the hours of operation of schools, public access to schools, and special occasions or events.

Management plans

6.5 Council must require the operator of a school in Zone R2 Low Density Residential to organise and chair a Neighbourhood Liaison Committee. The purpose of the Committee is for the operator and neighbours to resolve any issues, such as traffic and noise, arising from the operation of the school. The operation of the Committee must ensure:

(a) The membership of the Neighbourhood Liaison Committee must include residents who live next to and opposite the school.

(b) The Neighbourhood Liaison Committee must meet at least four times during the first 24 months of the school.

(c) The operator of the school must forward the meeting minutes to Committee members.

(d) The operator of the school may forward the meeting minutes to Council for information purposes.

(e) The operator of the school may terminate the Committee once it meets at least four times during the first 24 months of the school operating, or may choose to extend the function of the Committee over a longer period of time.

6.6 Council may require the operator of a school in zones other than Zone R2 Low Density Residential to organise and chair a Neighbourhood Liaison Committee.

The key acoustic objectives from Section 10.2 of the Canterbury-Bankstown DCP 2023 are:

- $L_{Aeq,15mins} \leq L_{A90,period}$ + 5 dB (air conditioning, mechanical ventilation and continuous noise sources)
- $L_{Aeq,15mins} \leq L_{A90,period}$ + 10 dB (noise from students)
- The maximum height of noise attenuation fences along the boundary is 2 meters.

4.2 SEPP (EDUCATIONAL ESTABLISHMENTS AND CHILD CARE FACILITIES) 2017

The State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017 outlines assessment requirements for educational establishments and childcare facilities across NSW. The policy does not present any specific noise limits to apply to the development but rather requires that the regulatory authority appropriately consider the compatibility of the development in the context of the surrounding area. The regulatory authority must also consider applicable provisions of the *Child Care Planning Guideline*.

The centre is not adjacent to a main road or rail corridor meaning Chapter 2 'Infrastructure' of the SEPPTI does not apply.

4.3 CHILD CARE PLANNING GUIDELINE 2017 (CCPG)

The CCPG includes provisions under items C23, C24, C25, and C26 that concern acoustic amenity impacts on neighbours and noise pollution impacts on the development itself. In summary, these provisions require:

- **C23** - An acoustic fence along the property boundary.
- **C23** - Ensure that mechanical plant and equipment are suitably screened to reduce noise.

  C24 - An acoustic report is provided with an application that establishes an appropriate background noise level for times the outdoor play area will be in use, identifies an appropriate target noise level (noise criteria) for childcare centre noise emission, and recommends appropriate heights for any acoustic fences.

C25 and 26 - That the design and location of the building are suitable to minimise the impact of external noise on the development and that an acoustic report is provided that appropriately considers the impact of external noise from industry, aircraft, rail corridors, busy roads, or any other source of substantial external noise.

4.4 AAAC CHILDCARE CENTRE NOISE ASSESSMENT GUIDELINES SEPTEMBER 2020 V 3.0

In the absence of prescriptive noise criteria in the DCP, SEPPTI, and CCPG, Koikas Acoustics considers it appropriate to refer to the acoustic criteria published in the AAAC childcare centre noise assessment guidelines. This document is widely used in the industry and is commonly referenced in matters heard at the NSWLEC as a standard planning tool concerning assessment procedures and relevant noise criteria.

This document discusses the findings of our assessment concerning:

- Noise emission from outdoor play areas,
- Noise emissions from indoor play areas, mechanical plant and drop-off/pick-up areas,
- Sleep disturbance impacts, and
- External noise intrusion.

The AAAC guidelines do not, however, present noise objectives for an assessment of vehicle noise attributed to additional cars on local roads. The NSW Environment Protection Authority (EPA) Road Noise Policy (RNP) is referenced for specific noise objectives related to on-road vehicular noise emissions. This policy is discussed in **Section 4.5** of this report.

4.4.1 Outdoor play areas

Noise criteria related to the outdoor play areas are derived in one of three ways under the AAAC guidelines:

1. If the existing background noise level is less than 40 dB(A), then a base criterion of $L_{Aeq,\ 15\ minutes}$ 45 dB applies, irrespective of the duration of outdoor play.
2. If the existing background noise level is 40 dB(A) or above, and the outdoor play area is used for **more than a total of 4 hours** (2 hours in the morning and 2 hours in the afternoon), then a criterion of background + 5 dB applies.
3. If the existing background noise level (RBL) is 40 dB(A) or above, and the outdoor play area is limited in its use to **not more than a total of 4 hours** (2 hours in the morning and 2 hours in the afternoon), then a noise criterion of background +10 dB applies.

The AAAC V3.0 Guidelines state that, "*the noise logger should be located to measure the background noise environment at a location most representative of the most affected sensitive receiver locations."* Further, the Guidelines state "*This measured representative noise environment should be used to establish relevant criteria for all sensitive receivers*." Koikas Acoustics understands that the above means that sound measurements are taken at a location representative of the background noise of a number of receiver locations. This means that there could be more than one representative receiver location on a development site because the ambient background noise at the rear of a property, where background noise levels are typically lower on account of the shielding of a row of dwellings, is not representative of the most noise affected sensitive receivers adjacent and opposite the front end of the development site where background noise levels may be louder on account of an unimpeded view of passing traffic.

The most affected sensitive receiver locations are assessed at the most affected point on or within the residential boundary:

- at 1.5 metres above the ground,
- on a balcony or outside a window at 1.5 metres above the relevant floor level.

4.4.2 Indoor play area, mechanical plant, pick-up and drop-off

The noise that is generated by indoor activities, mechanical plant & equipment, and site pick-up/drop-off zones must not exceed the RBL by more than 5 dB when assessed at the most noise-affected point within any residential property. Childcare centre noise is assessed as the $L_{Aeq,\ 15\text{-}minutes}$.

4.4.3 Noise intrusion from external sources

The surrounding roads are not arterial/busy roads meaning an assessment of traffic noise is not required under the AAAC guidelines, nor is it required under the SEPPTI as previously noted.

4.4.4 Indoor play area, mechanical plant, pick-up and drop-off

The noise that is generated by indoor activities, mechanical plant & equipment, and site pick-up/drop-off zones must not exceed the RBL by more than 5 dB when assessed at the most noise-affected point within any residential property. Childcare centre noise is assessed as the $L_{Aeq,\ 15\text{-}minutes}$.

4.5 EPA NSW ROAD NOISE POLICY

Traffic-generating developments such as the proposed primary school will introduce additional vehicles onto the local road network. The noise that is associated with these additional vehicles forms part of the acoustical assessment of the proposed development.

The document entitled “NSW Road Noise Policy” has replaced the “Environmental Criteria for Road Traffic Noise” (ECRTN) for assessment procedures and criteria for traffic noise effective from 1st of July 2011.

The EPA RNP recommends that traffic noise levels should not exceed $L_{Aeq,\ 1\text{-}hour}$ 55 dB during daytime hours (7 am to 10 pm) at an assessment location of (one) 1 metre from the façade of an affected residential building and at a height of 1.5 metres above the ground. Outside of daytime hours, the objective becomes $L_{Aeq,\ 1\text{-}hour}$ 50 dB.

An extract of Table 3 and Table 6 of NSW Road Noise Policy from Environmental Climate Change & Water (ECCW) is provided below:

Table 3 Road traffic noise assessment criteria for residential land uses

Road category	Type of project/land use	Assessment criteria – dB(A)	
		Day (7 a.m.–10 p.m.)	Night (10 p.m.–7 a.m.)
Freeway/ arterial/ sub-arterial roads	1. Existing residences affected by noise from **new** freeway/arterial/sub-arterial road corridors	$L_{Aeq, (15\ hour)}$ 55 (external)	$L_{Aeq, (9\ hour)}$ 50 (external)
	2. Existing residences affected by noise from **redevelopment** of existing freeway/arterial/sub-arterial roads 3. Existing residences affected by **additional traffic** on existing freeways/arterial/sub-arterial roads generated by land use developments	$L_{Aeq, (15\ hour)}$ 60 (external)	$L_{Aeq, (9\ hour)}$ 55 (external)
Local roads	4. Existing residences affected by noise from **new** local road corridors 5. Existing residences affected by noise from **redevelopment** of existing local roads 6. Existing residences affected by **additional traffic** on existing local roads generated by land use developments	$L_{Aeq, (1\ hour)}$ 55 (external)	$L_{Aeq, (1\ hour)}$ 50 (external)

Note: Land use developers must meet internal noise goals in the Infrastructure SEPP (Department of Planning NSW 2007) for sensitive developments near busy roads (see **Appendix C10**).

Figure 4. Table 3 of NSW Road Noise Policy from Environmental Climate Change & Water (ECCW)

In this case, type 6 of the above for local roads will be applicable.

Furthermore, Section 3.4 of NSW Road Noise Policy states the following:

3.4 Applying the assessment and relative increase criteria

The process for applying the criteria involves firstly defining a study area. This helps ensure that noise is assessed and any necessary mitigation applied at those locations most affected. The *UK Design Manual for Roads and Bridges* (United Kingdom Highways Agency 2008) adopts a distance of 600 metres from a project as being adequate for this purpose.

Where existing traffic noise levels are above the noise assessment criteria, the primary objective is to reduce these through feasible and reasonable measures to meet the assessment criteria. A secondary objective is to protect against excessive decreases in amenity as the result of a project by applying the relative increase criteria.

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

Section 3.4.1 provides a step-by-step procedure for applying the noise criteria to each type of project and development covered by the RNP.

Figure 5. Table 6 of NSW Road Noise Policy from Environmental Climate Change & Water (ECCW)

Where the existing traffic noise levels are above the NSW Road Noise Policy (ECCW) assessment criteria, the increase in traffic noise levels due to the proposed development is not to exceed **2 dB**.

4.6 CONSOLIDATION OF CRITERIA

To comply with relevant planning guidelines, the proposed primary school requires a plan of management and noise mitigation measures to satisfy the noise criteria summarised below.

Table 3. Summary of criteria

Noise component	Document	Noise Metric	Criteria
Outdoor/indoor play areas	Council DCP	$L_{Aeq,\ 15\ minutes}$	RBL + 10 dB
Mechanical plant & car park noise levels	Council DCP	$L_{Aeq,\ 15\ minutes}$	RBL + 5 dB
Outdoor play areas (limited to 4 hours total use)	AAAC	$L_{Aeq,\ 15\ minutes}$	RBL + 10 dB
Outdoor play areas (more than 4 hours total use)	AAAC	$L_{Aeq,\ 15\ minutes}$	RBL + 5 dB
Indoor play areas, mechanical plant & carpark noise levels	AAAC	$L_{Aeq,\ 15\ minutes}$	RBL + 5 dB
On-road vehicle noise	NSW RNP	$L_{Aeq,\ 1\ hour}$	55 (7 am to 10 pm) [1]

Notes:
1. In all cases, traffic arising from the development should not lead to an increase in existing noise levels of more than 2 dB to maintain acceptable acoustic amenities for residential neighbours.

Table 4. Calculated noise criteria based on the measured ambient noise levels

Noise component	Location	Criteria
Outdoor play areas	**Location A:** Front of 83 Jocelyn Street	$L_{Aeq,\ 15\ minutes} \leq 50$ dB
	Location B: Rear of 54 Chester Hill Road	$L_{Aeq,\ 15\ minutes} \leq 49$ dB
	Location C: Front of 1 Ridge Street	$L_{Aeq,\ 15\ minutes} \leq 51$ dB
	Location D: Rear of 1 Ridge Street	$L_{Aeq,\ 15\ minutes} \leq 52$ dB
Mechanical plant, car park/vehicle, indoor play areas	**Location A:** Front of 83 Jocelyn Street	$L_{Aeq,\ 15\ minutes} \leq 45$ dB
	Location B: Rear of 54 Chester Hill Road	$L_{Aeq,\ 15\ minutes} \leq 44$ dB
	Location C: Front of 1 Ridge Street	$L_{Aeq,\ 15\ minutes} \leq 46$ dB
	Location D: Rear of 1 Ridge Street	$L_{Aeq,\ 15\ minutes} \leq 47$ dB
On-road vehicle noise	Residential façade fronting Jocelyn Street	+ 2 dB relative increase [Note 1]
	Residential façade fronting Chester Hill Road	+ 2 dB relative increase [Note 1]

Notes:
1. Existing traffic noise levels along the residential façade fronting Jocelyn Street and Chester Hill Road are above the recommended noise level of $L_{Aeq,1hour}$ 55 dB, as such, traffic arising from the development should not lead to an increase in existing noise levels of more than 2 dB to maintain acceptable acoustic amenities for residential neighbours.

5.0 NOISE MODEL

5.1 CADNA

The noise predictions are based on computer simulation (CadnaA) of the site and the surrounding area. The program predicts noise levels to receiver points based on source sound power levels, source-receiver distances, the presence of any acoustic shielding objects, and the effects of acoustic absorption of the ground and other elements. Noise propagation calculations follow *ISO 9613 Acoustics – Attenuation of sound during propagation outdoors*. Per the sound propagation algorithms adopted in the ISO standard, the output of the noise model is a downwind sound pressure level which constitutes an assessment of noise-enhancing weather conditions.

The acoustic assessments consider a range of design parameters that directly influence the output of the noise prediction model. A summary of the relevant design parameters is provided below:

- Breakout noise was modelled through all external glazing of noise-generating areas (classrooms and other areas such as the hall).
- All glazing is considered to be 6.38 mm laminate glass (R_w 32).
- Ground absorption is generally taken as 0.6 for moderately porous ground, except for the subject site where a ground absorption of 0.05 is considered for concrete or paved surfaces.
- Cumulative noise levels are calculated for all proposed noise sources, assessed over any 15 minutes. This presents an absolute worst-case assessment scenario that is unlikely to occur during a typical operation.
- All buildings have been modelled with a 1 dB reflection loss and all barriers/3D reflectors have been modelled with a 0.5 dB reflection loss.
- Koikas Acoustics database noise levels are used elsewhere as no site-specific noise data is available.

The CadnaA model has been used to

- Predict noise emission from the outdoor play areas
- Breakout from the classrooms and other areas such as the hall
- Vehicular noise from drop-off/pick-up, deliveries and waste removal
- Mechanical plant noise such as air conditioners and kitchen fans
- On-road noise from vehicles arriving and departing during morning and afternoon drop-off/pick-up

5.2 NOISE SOURCES

5.2.1 MECHANICAL PLANT

The design of the mechanical systems is not typically completed at the DA stage and thus an assessment of noise emission cannot yet be completed. A detailed review of the mechanical plant shall be prepared by a qualified acoustical consultant once the details are known. Koikas Acoustics has adopted a typical mechanical plant for the primary school, including fifteen (15) AC condenser units located outside each room/building on the ground floor and one (1) kitchen exhaust fan located on the roof above the kitchen. This report presents the noise limits applied to the equipment only.

5.2.2 TRAFFIC VOLUMES

Buses during the morning drop-off period will be between 8 am and 8.30 am. There will be about 120 children that arrive on shuttle buses to Chester Hill, 85 of those will stay on the buses and head over to Greenacre on the Shuttle service. The rest of the children will be dropped off by parents in the morning. The shuttle buses average 20 people per bus, as such, 6 buses would arrive during the morning drop-off period.

Buses during the evening pick-up period will depart in the afternoon between 3 pm and 3.30 pm. There will only be about 40 children who leave on shuttle buses in the afternoon as all the buses leave the Greenacre campus for their various destinations. The rest of the children will be picked up by parents in the afternoon. The shuttle buses average 20 people per bus, as such, 2 buses would depart during the evening pick-up period.

A total of 24 staff spaces on the 54 Chester Hill Road site and 2 spaces for staff adjacent to the hall building.

If up to 40 kids arrive/depart via the shuttle bus service, the remaining 188 kids will get dropped-off/picked-up by parents.

The frequency of parking movements is referenced from standard traffic generation rates for childcare centres per the *RTA Guide to Traffic Generating Development*. The traffic generation rate for childcare centres between 7 am and 9 am is 0.8 vehicle trips per child, i.e. 150 vehicle trips (188 kids) and 26 staff vehicle trips.

Considering the drop-off/pick-up period occurs in 30 minutes, this equates to 88 light vehicles and 3 shuttle-buses trips/parking movements per 15-minute period.

On-road vehicle noise is predicted via the road noise module in CadnaA on the presumption of an additional 176 light vehicles and 6 shuttle buses arriving or departing during the peak hour.

Waste management will take place along Jocelyn Street, outside of peak periods.

5.2.3 OUTDOOR PLAY AREAS AND BREAKOUT NOISE FROM CLASSROOMS/HALL

Area sources were used in the simulations to represent students in each of the outdoor play areas. The sound power levels attributed to the area source were calibrated to coincide with the noise levels measured during the attended surveys conducted at Pittwater House Schools. The sound power level for the junior school play area with 60 kids was L_{Aeq} 98 dB.

Typical internal noise levels within classrooms of L_{Aeq} 70 dB per the research paper entitled Classroom acoustic conditions: Understanding what is suitable through a review of national and international standards, recommendations, and live classroom measurements (Mealings, 2016).

Koikas Acoustics has measured students in a multi-purpose hall to have an internal average sound pressure level of L_{Aeq} 80 dB.

Breakout noise from the indoor classroom and hall was modelled as vertical area sources with the respective indoor spatial average noise level and 6.38 mm laminate glass (R_w 32) as the windows/doors.

5.3 NOISE SOURCES

Noise levels used in the acoustic model have been sourced from database noise levels from previous measurements conducted by Koikas Acoustics at other similar sites.

The source sound power levels and internal room average noise levels for the proposed primary school premises are presented in the table below.

Table 5. Adopted noise levels utilised in the noise model		
Item	**Noise Metric**	**Noise level [dB]**
Play area 1: 26 kids modelled as an area source	$L_{w,Aeq,15mins}$	94
Play area 2: 24 kids modelled as an area source	$L_{w,Aeq,15mins}$	94
Play area 2: 30 kids modelled as an area source	$L_{w,Aeq,15mins}$	95
Play area 3: 26 kids modelled as an area source	$L_{w,Aeq,15mins}$	94
Play area 3: 20 kids modelled as an area source	$L_{w,Aeq,15mins}$	93
Play area 4: 92 kids modelled as an area source	$L_{w,Aeq,15mins}$	100
Oval: 60 kids modelled as an area source	$L_{w,Aeq,15mins}$	98
Indoor classroom modelled as a vertical area source with an indoor noise level through 6.38mm laminate glass	Indoor Spatial $L_{p,Aeq,15mins}$	70
Indoor hall modelled as a vertical area source with an indoor noise level through 6.38mm laminate glass	Indoor Spatial $L_{p,Aeq,15mins}$	80
AC Condenser unit (Daikin RXS60JVMA) modelled as a point source	$L_{w,Aeq,15mins}$	89
Kitchen exhaust fan (Fantech HUD634) modelled as a point source	$L_{w,Aeq,15mins}$	85
Car moving at 5 km/hr modelled as a moving point source	$L_{w,Aeq,15mins}$	78
Car door closing (corrected for 1 event in 15mins) modelled as a point source	$L_{w,Aeq,15mins}$	55
Vehicle engine ignition (corrected for 1 event in 15mins) modelled as a point source	$L_{w,Aeq,15mins}$	53
Delivery van moving at 5 km/hr modelled as a moving point source	$L_{w,Aeq,15mins}$	85
Bus moving at 5 km/hr modelled as a moving point source	$L_{w,Aeq,15mins}$	91
Bus idling (corrected for 1 minute in 15mins) modelled as a point source	$L_{w,Aeq,15mins}$	77
Waste vehicle moving at 5 km/hr modelled as a moving point source	$L_{w,Aeq,15mins}$	96
Waste vehicle loading waste (corrected for 30 seconds in 15 mins) modelled as a point source	$L_{w,Aeq,15mins}$	77

5.4 IDENTIFIED NOISE-AFFECTED RECEIVERS

Noise is assessed at specific assessment locations within each of the identified noise-affected residential receiver sites. The following table and image provide a summary of the locations that have been assessed.

Table 6. Assessment locations

ID	Classification	Address / Receiver Site	Assessment Location
R1	Single-storey dwelling	81 Jocelyn Street	Most noise-affected boundary – ground floor
R2	Single-storey dwelling	48 Chester Hill Road	Most noise-affected boundary – ground floor
R3	Single-storey dwelling	50 Chester Hill Road	Most noise-affected boundary – ground floor
R4	Double-storey dwelling	52 Chester Hill Road	Most noise-affected boundary – ground floor (Scenario 1.1-1.2) Most noise-affected facade – first-floor (Scenario 2-3)
R5	Single-storey dwelling	56 Chester Hill Road	Most noise-affected boundary – ground floor
R6	Single-storey dwelling	60 Chester Hill Road	Most noise-affected boundary – ground floor
R7	Single-storey dwelling	82A McClelland Street	Most noise-affected boundary – ground floor
R8	Single-storey dwelling	1 Ridge Street	Most noise-affected boundary – ground floor
R9	Single-storey dwelling	1 Ridge Street	Most noise-affected boundary – ground floor
R10	Single-storey dwelling	4 Ridge Street	Most noise-affected boundary – ground floor
R11	Single-storey dwelling	3 Lodge Place	Most noise-affected boundary – ground floor
R12	Single-storey dwelling	4 Lodge Place	Most noise-affected boundary – ground floor
R13	Single-storey dwelling	91B Jocelyn Street	Most noise-affected boundary – ground floor
R14	Single-storey dwelling	89A Jocelyn Street	Most noise-affected boundary – ground floor
R15	Single-storey dwelling	87 Jocelyn Street	Most noise-affected boundary – ground floor
R16	Single-storey dwelling	85A Jocelyn Street	Most noise-affected boundary – ground floor
R17	Single-storey dwelling	85A Jocelyn Street	Most noise-affected boundary – ground floor
R18	Single-storey dwelling	85 Jocelyn Street	Most noise-affected boundary – ground floor
R19	Single-storey dwelling	85 Jocelyn Street	Most noise-affected boundary – ground floor
R20	Single-storey dwelling	78 Jocelyn Street	Most noise-affected boundary – ground floor

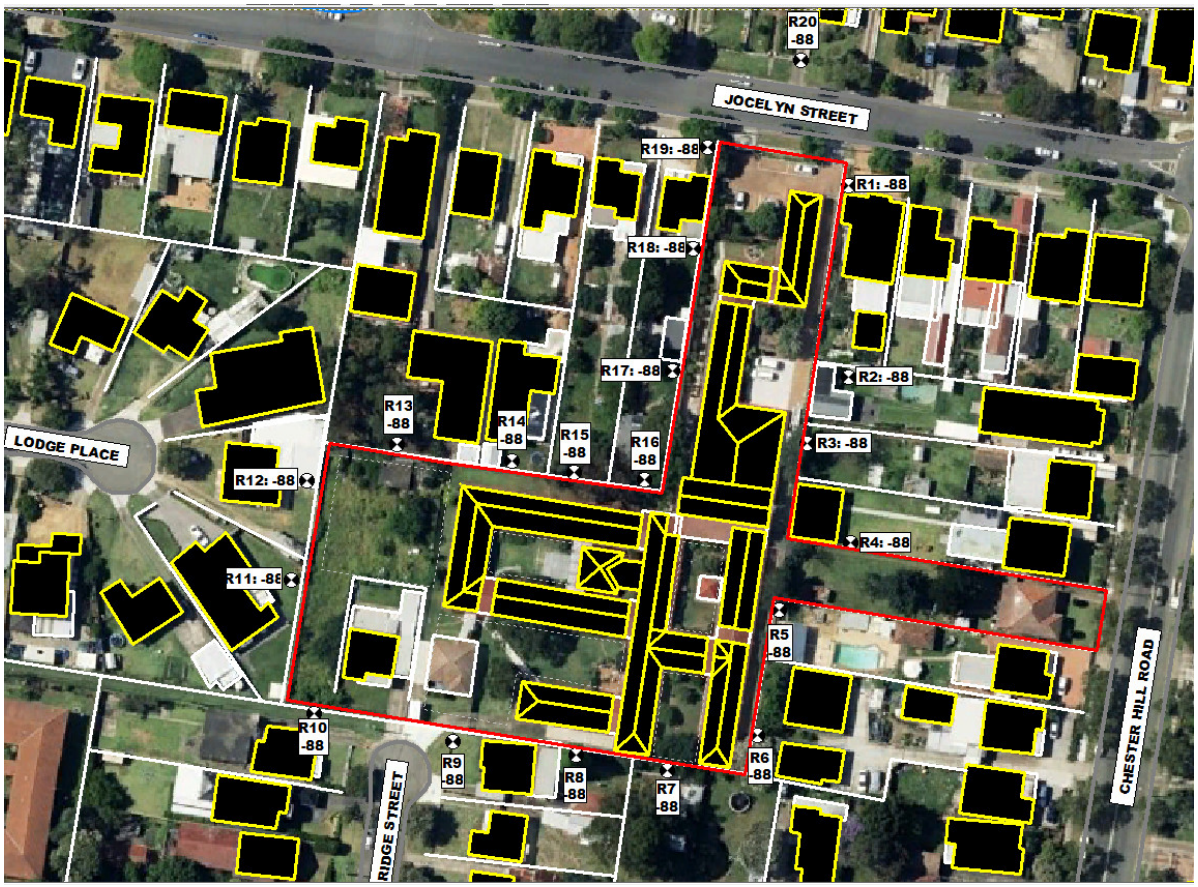


Figure 6. Receiver locations

5.5 ASSESSMENT SCENARIOS

The following design scenarios are assessed. Assumptions included in the design are also noted for reference.

Table 7. Design scenarios and assumptions

Scenario	Design assumptions
1.1 (existing)	Outdoor play areas: • Play area 1: 26 kids • Play area 2: 24 kids • Play area 3: 26 kids • Play area 4: 92 kids • Oval: 60 kids
1.2 (proposed barriers and restricted play area 3)	Outdoor play areas: • Play area 1: 26 kids • Play area 2: 30 kids • Play area 3: 20 kids • Play area 4: 92 kids • Oval: 60 kids
2	Indoor classroom, mechanical plant and delivery/garbage truck • 15 x AC condenser units • 1 x kitchen exhaust fan • 1 x delivery truck driving at 10 km/hr • 1 x garbage truck driving at 10 km/hr • 1 x garbage truck loading and unloading bins • 2 x vehicle doors opening/closing • 1 x vehicle engine starting • Breakout noise from classrooms • Breakout noise from the hall
3	Morning drop-off (8 am to 8:30 am) & Evening pick-up (3 pm to 3:30 pm) • 88 x light vehicles driving at 10 km/hr • 3 x buses driving at 10 km/hr • 3 x buses idling for 1 minute each. • 91 x vehicle doors opening/closing
4.1	Daytime – increased road traffic noise • Existing peak traffic along Chester Hill Road and Jocelyn Street
4.2	Daytime – increased road traffic noise • Proposed traffic increased along Chester Hill Road and Jocelyn Street with an additional 176 light vehicles and 6 shuttle buses arriving or departing during the peak hour

5.6 CALCULATED RECEIVER LEVELS

Due to the size of the development, several potentially affected receiver locations must be assessed in terms of their respective noise exposure associated with the development. The most noise-sensitive receiver locations are summarised below. Refer to **Appendix B** for receiver locations.

Reference should also be made to additional noise control recommendations included within Section 5.7 of this report, which also govern the calculated receiver noise levels.

Predicted outdoor play area noise levels (Scenario 1.1) are presented in Table 8 for the existing building and fencing.

Table 8. Outdoor Play Areas Noise Levels to the Surrounding Premises [dB] – Scenario 1.1

Receivers	Calculated External Noise Levels $L_{Aeq,15min}$	Project Noise Trigger Level $L_{Aeq,15min}$	Compliance/ Exceedance
R1 (Residential)	45	**50**	**Yes**
R2 (Residential)	45	**49**	**Yes**
R3 (Residential)	43	**49**	**Yes**
R4 (Residential)	48	**49**	**Yes**
R5 (Residential)	51	**49**	**+2**
R6 (Residential)	51	**49**	**+2**
R7 (Residential)	53	**49**	**+4**
R8 (Residential)	54	**51**	**+3**
R9 (Residential)	57	**51**	**+6**
R10 (Residential)	52	**51**	**Yes (+1)** Note 1
R11 (Residential)	56	**52**	**+4**
R12 (Residential)	58	**52**	**+6**
R13 (Residential)	58	**52**	**+6**
R14 (Residential)	54	**52**	**+2**
R15 (Residential)	51	**52**	**Yes**
R16 (Residential)	52	**52**	**Yes**
R17 (Residential)	49	**52**	**Yes**
R18 (Residential)	47	**50**	**Yes**
R19 (Residential)	43	**50**	**Yes**
R20 (Residential)	44	**50**	**Yes**

Notes:

1. A marginal 1-2 dB exceedance is considered negligible under the EPA's Noise Policy for Industry.

Predicted outdoor play area noise levels (Scenario 1.2) are presented in Table 9 with proposed noise barriers and restrictions to play area 3 as recommended in Section 5.7 of this report.

Table 8. Outdoor Play Areas Noise Levels to the Surrounding Premises [dB] – Scenario 1.2

Receivers	Calculated External Noise Levels $L_{Aeq,15min}$	Project Noise Trigger Level $L_{Aeq,15min}$	Compliance Achieved
R1 (Residential)	45	**50**	**Yes**
R2 (Residential)	45	**49**	**Yes**
R3 (Residential)	43	**49**	**Yes**
R4 (Residential)	48	**49**	**Yes**
R5 (Residential)	51	**49**	**Yes (+2)** Note 1
R6 (Residential)	51	**49**	**Yes (+2)** Note 1
R7 (Residential)	51	**49**	**Yes (+2)** Note 1
R8 (Residential)	52	**51**	**Yes (+1)** Note 1
R9 (Residential)	53	**51**	**Yes (+2)** Note 1
R10 (Residential)	53	**51**	**Yes (+2)** Note 1
R11 (Residential)	54	**52**	**Yes (+2)** Note 1
R12 (Residential)	54	**52**	**Yes (+2)** Note 1
R13 (Residential)	53	**52**	**Yes (+1)** Note 1
R14 (Residential)	54	**52**	**Yes (+2)** Note 1
R15 (Residential)	51	**52**	**Yes**
R16 (Residential)	52	**52**	**Yes**
R17 (Residential)	49	**52**	**Yes**
R18 (Residential)	47	**50**	**Yes**
R19 (Residential)	43	**50**	**Yes**
R20 (Residential)	44	**50**	**Yes**

Notes:

1. A marginal 1-2 dB exceedance is considered negligible under the EPA's Noise Policy for Industry.

Predicted indoor areas, mechanical plant and vehicle noise levels (Scenario 2) are presented in Table 9.

Table 9. Indoor areas, mechanical plant & vehicle noise levels to the Surrounding Premises [dB] – Scenario 2

Receivers	Calculated External Noise Levels $L_{Aeq,15min}$	Project Noise Trigger Level $L_{Aeq,15min}$	Compliance Achieved
R1 (Residential)	41	**45**	**Yes**
R2 (Residential)	37	**49**	**Yes**
R3 (Residential)	40	**49**	**Yes**
R4 (Residential)	36	**49**	**Yes**
R5 (Residential)	33	**49**	**Yes**
R6 (Residential)	36	**49**	**Yes**
R7 (Residential)	28	**49**	**Yes**
R8 (Residential)	33	**46**	**Yes**
R9 (Residential)	29	**46**	**Yes**
R10 (Residential)	25	**46**	**Yes**
R11 (Residential)	26	**47**	**Yes**
R12 (Residential)	27	**47**	**Yes**
R13 (Residential)	31	**47**	**Yes**
R14 (Residential)	37	**47**	**Yes**
R15 (Residential)	39	**47**	**Yes**
R16 (Residential)	43	**47**	**Yes**
R17 (Residential)	40	**47**	**Yes**
R18 (Residential)	39	**45**	**Yes**
R19 (Residential)	40	**45**	**Yes**
R20 (Residential)	43	**45**	**Yes**

Notes:

1. A marginal 1-2 dB exceedance is considered negligible under the EPA's Noise Policy for Industry.

Predicted morning drop-off and afternoon pick-up noise levels (Scenario 3) are presented in Table 10.

Table 10. Morning drop-off and afternoon pick-up noise levels to the Surrounding Premises [dB] – Scenario 3

Receivers	Calculated External Noise Levels $L_{Aeq,15min}$	Project Noise Trigger Level $L_{Aeq,15min}$	Compliance Achieved
R1 (Residential)	44	**45**	**Yes**
R2 (Residential)	45	**49**	**Yes**
R3 (Residential)	44	**49**	**Yes**
R4 (Residential)	47	**49**	**Yes**
R5 (Residential)	43	**49**	**Yes**
R6 (Residential)	34	**49**	**Yes**
R7 (Residential)	31	**49**	**Yes**
R8 (Residential)	24	**46**	**Yes**
R9 (Residential)	23	**46**	**Yes**
R10 (Residential)	23	**46**	**Yes**
R11 (Residential)	26	**47**	**Yes**
R12 (Residential)	26	**47**	**Yes**
R13 (Residential)	26	**47**	**Yes**
R14 (Residential)	34	**47**	**Yes**
R15 (Residential)	36	**47**	**Yes**
R16 (Residential)	35	**47**	**Yes**
R17 (Residential)	37	**47**	**Yes**
R18 (Residential)	41	**45**	**Yes**
R19 (Residential)	43	**45**	**Yes**
R20 (Residential)	46	**45**	**Yes (+1)** Note 1

Notes:

1. A marginal 1-2 dB exceedance is considered negligible under the EPA's Noise Policy for Industry.

Compliance has been achieved with the adopted noise criteria, provided the recommendations in Section 5.7 have been implemented.

5.6.1 ADDITIONAL ROAD TRAFFIC NOISE

Due to the proposed development, additional road traffic along Chester Hill Road and Jocelyn Street could potentially affect a number of residential premises along the road. The most noise-sensitive receiver locations are summarised below and are shown in **Appendix B**.

Noise modelling was conducted using the road module of Cadna. The existing traffic volumes of the road were calibrated based on the road surface, speed, light/heavy vehicle volumes. The additional vehicles due to the use of the development were then added to the calibrated existing volumes to determine the road traffic noise increase.

As such, Koikas Acoustics has conducted the increased road traffic assessment using the road noise source in Cadna/A that calculates the road traffic noise levels in accordance RLS 90 standards and the following parameters:

- Proposed peak period: additional 182 vehicles per hour with 3% heavy vehicles (buses)
- Koikas Acoustics has assumed that 5 % of vehicles are heavy vehicles
- Road width of 12 meters
- Speed limit of 50 km/hr for vehicles.
- Road surface of smooth mastix asphalt
- Road gradient: auto AV
- Drefl of 0 as buildings are sporadic

The existing and proposed additional road traffic noise impact from the proposed primary school to surrounding residential premises are summarised in Table 11.

Table 11. Additional Road Traffic Noise Levels at the Surrounding Premises – Scenario 4.1 and 4.2 [dB]

Receivers		Calculated External Noise Levels $L_{Aeq,1hr}$	Noise Criterion $L_{Aeq,1hr}$	Compliance Achieved
Scenario 4.1 (Existing)	R1 (Residential)	60	2 dB Increased	-
	R2 (Residential)	58		-
	R3 (Residential)	59		-
	R4 (Residential)	60		-
	R5 (Residential)	61		-
	R6 (Residential)	65		-
	R7 (Residential)	62		-
	R8 (Residential)	63		-
	R9 (Residential)	61		-
	R10 (Residential)	62		-
	R11 (Residential)	65		-
	R12 (Residential)	66		-
	R13 (Residential)	61		-
	R14 (Residential)	58		-
	R15 (Residential)	57		-
Scenario 4.2 (Proposed)	R1 (Residential)	62	**62**	Yes
	R2 (Residential)	60	**60**	Yes
	R3 (Residential)	61	**61**	Yes
	R4 (Residential)	62	**62**	Yes
	R5 (Residential)	63	**63**	Yes
	R6 (Residential)	66	**67**	Yes
	R7 (Residential)	63	**64**	Yes
	R8 (Residential)	64	**65**	Yes
	R9 (Residential)	62	**63**	Yes
	R10 (Residential)	62	**64**	Yes
	R11 (Residential)	65	**67**	Yes
	R12 (Residential)	67	**68**	Yes
	R13 (Residential)	62	**63**	Yes
	R14 (Residential)	59	**60**	Yes
	R15 (Residential)	59	**59**	Yes

Refer to **Appendix B** for the receiver locations and Cadna/A noise contour maps.

The proposed increased road traffic noise impacts due to the operation of the proposed community facility are found to be within the allowable 2 dB increase outlined in the EPA's Road Noise Policy, and therefore, no further noise mitigation measures are required.

5.7 RECOMMENDATIONS

The assessment has found that noise emissions from the proposed primary school (outdoor and indoor), mechanical plant, waste/deliveries and noise generated during drop-off/pick-up will meet the project noise objectives with the following requirements for noise mitigation implemented in the design and operation of the premises:

5.7.1 Outdoor play areas

- The outdoor play areas should be restricted to the following capacities:
    - Play area 1: 26 kids
    - Play area 2: 30 kids
    - Play area 3: 20 kids
    - Play area 4: 92 kids
    - Oval: 60 kids

5.7.2 Indoor play areas

- Windows and doors must be closed so that the noise is suitably contained internally.
- Glass windows and doors are to be no less than 6.38 mm laminated glass and fitted with acoustic seals.

5.7.3 Mechanical plant and equipment

- The Fantech HUD634 kitchen exhaust fan will require a silencer that achieves a 10 dB reduction. Alternatively, another kitchen exhaust fan could be installed with an L_{Aweq} 75 dB or lower.
- A preliminary mechanical plant noise assessment has been conducted including fifteen (15) typical AC condenser units and one (1) typical kitchen exhaust fan located on the roof was found to achieve the nominated acoustic planning levels.
- A detailed assessment of mechanical plant noise must be completed before construction once the details and locations of the mechanical plant have been confirmed.

5.7.4 Barrier construction materials

- Unless otherwise specified in this report, proposed noise barriers on the architectural drawings and those specified by Koikas Acoustics are to be constructed of either:
  a. Double-lapped and capped timber
  b. 9 mm fibre cement sheeting fixed to a suitable framing structure
  c. Masonry (70 mm thick or above)
  d. Transparent materials such as 10.38 mm laminated glass or 15 mm thick Perspex panels
  e. 'Slenderline' from Quickbuild Systems or other proprietary noise wall solutions such as SlimWall by Modular Walls, Klionic panels or similar.
- It is to be noted that gaps between the panels and the posts or the ground will significantly reduce the effectiveness of the noise barrier and may lead to non-compliant noise levels at the adjoining premises. Therefore, all gaps should be minimised.
- 2.4 m high solid noise barriers with the top 0.5 m cantilevered 45° to the play areas are required to the extent indicated in **red** as seen in Figure 7. A section view of the proposed noise barrier is shown in Figure 8.

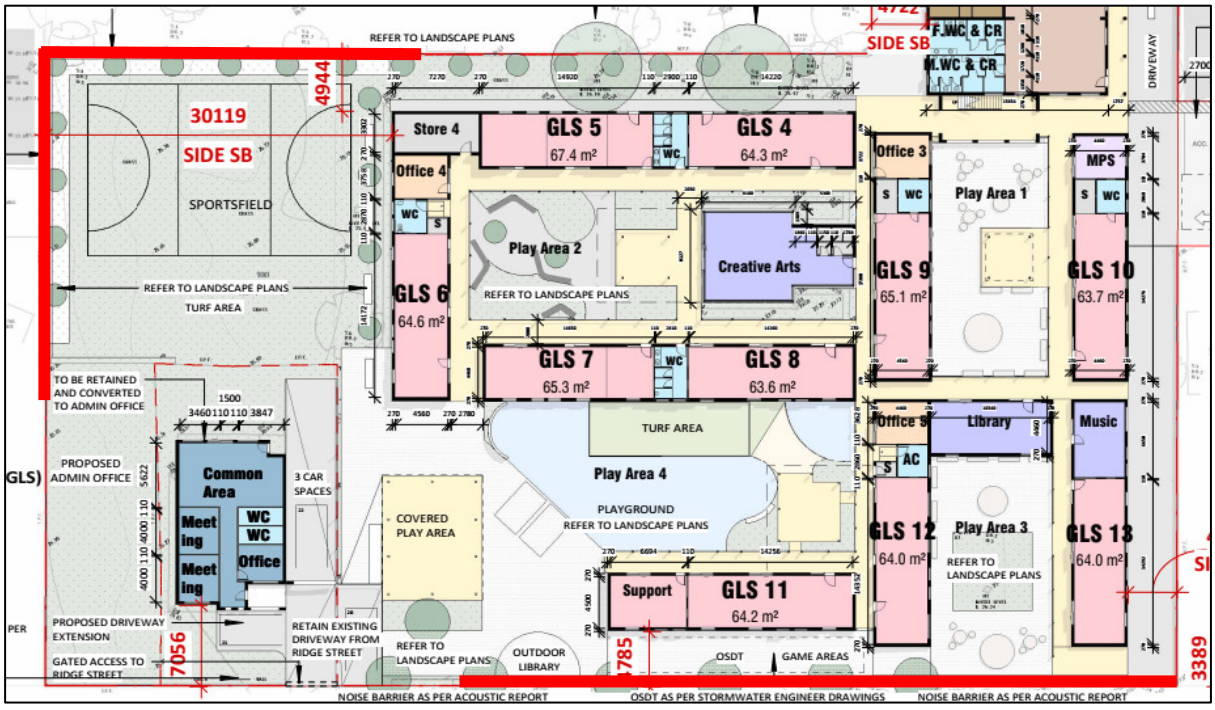


Figure 7. Extent of proposed noise barriers (image source - Furfaro Architects)

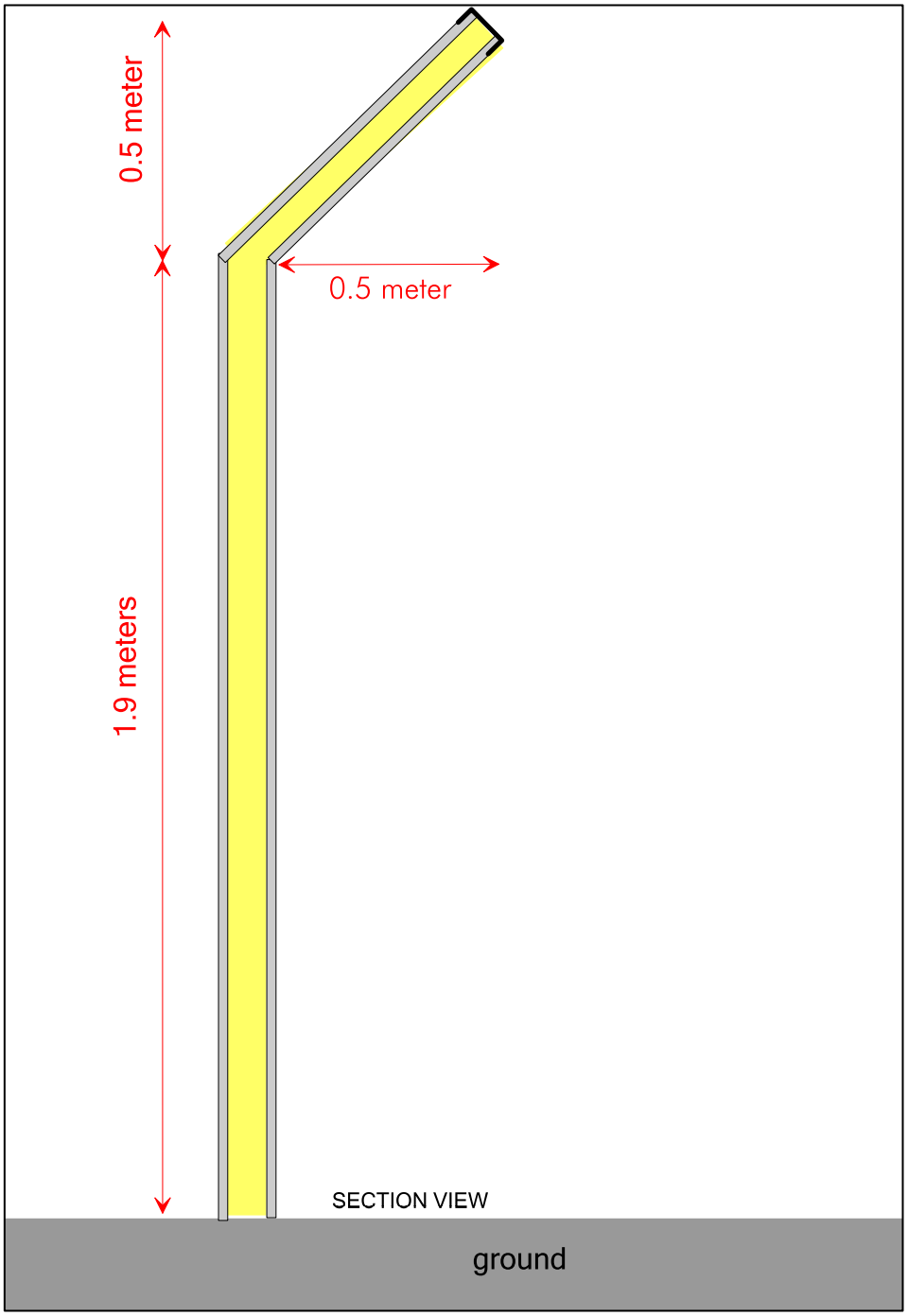


Figure 8. Section view of proposed noise barriers (image source – Koikas Acoustics)

5.7.5 COMPLAINTS HANDLING

A site contact and phone number should be distributed to all surrounding premises and displayed on the site noticeboard for any complaints arising due to noise and/or vibration generated during the operation of the site. The site should have clear complaints-handling procedures and staff who are well-versed in the complaints handling procedures.

A register of all complaints must be kept on-site and readily available. Details within the complaints register should include, but not be limited to:

- Date and time of the complaint,
- The person receiving a complaint,
- Complainant's phone number,
- Site contact to who the complaint was referred for action,
- Description of the complaint,
- Action to be taken,
- The time frame for action to be implemented.

All complaints should be given a fair hearing and adequately investigated. This may involve scheduling a relevant consultant to substantiate or refute any received complaint, and/or verifying any remedial action taken by the site manager by way of on-site testing.

6.0 CONCLUSION

Koikas Acoustics was requested to conduct an acoustical assessment and prepare a report for the proposed conversion of an existing aged care facility to a 228-children primary school at 83 Jocelyn Street and 54 Chester Hill Road, Chester Hill NSW. The acoustical report is to accompany a development application to be submitted to Canterbury-Bankstown Council.

The assessment considers potential noise impacts on surrounding residents such that acceptable acoustic amenity is maintained.

Acoustic planning levels have been referenced from the Canterbury-Bankstown DCP 2023, SEPP (Educational Establishments And Child Care Facilities) 2017, Child Care Planning Guideline 2017 (CCPG), AAAC Childcare Centre Noise Assessment Guidelines September 2020 V 3.0, EPA's NSW Road Noise Policy and EPA's Noise Policy for Industry.

The included recommendations are based on designs prepared by Furfaro Architects.

The conclusions reached in this acoustical report should assist the Council in making their determination of the proposal. A further detailed acoustical report is 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:

- Operational noise assessment of the proposed primary school to surrounding premises was found to reasonably achieve the nominated planning noise levels, provided the recommended noise mitigation measures are implemented.

- The design of the mechanical systems is not completed at the DA stage and, therefore, an assessment of noise emission cannot be completed. A detailed assessment of mechanical plant noise should be prepared for the subject development before construction.

- Road traffic noise increase due to the use of the development was found to be within the planning guidelines. No further mitigation measures are required.

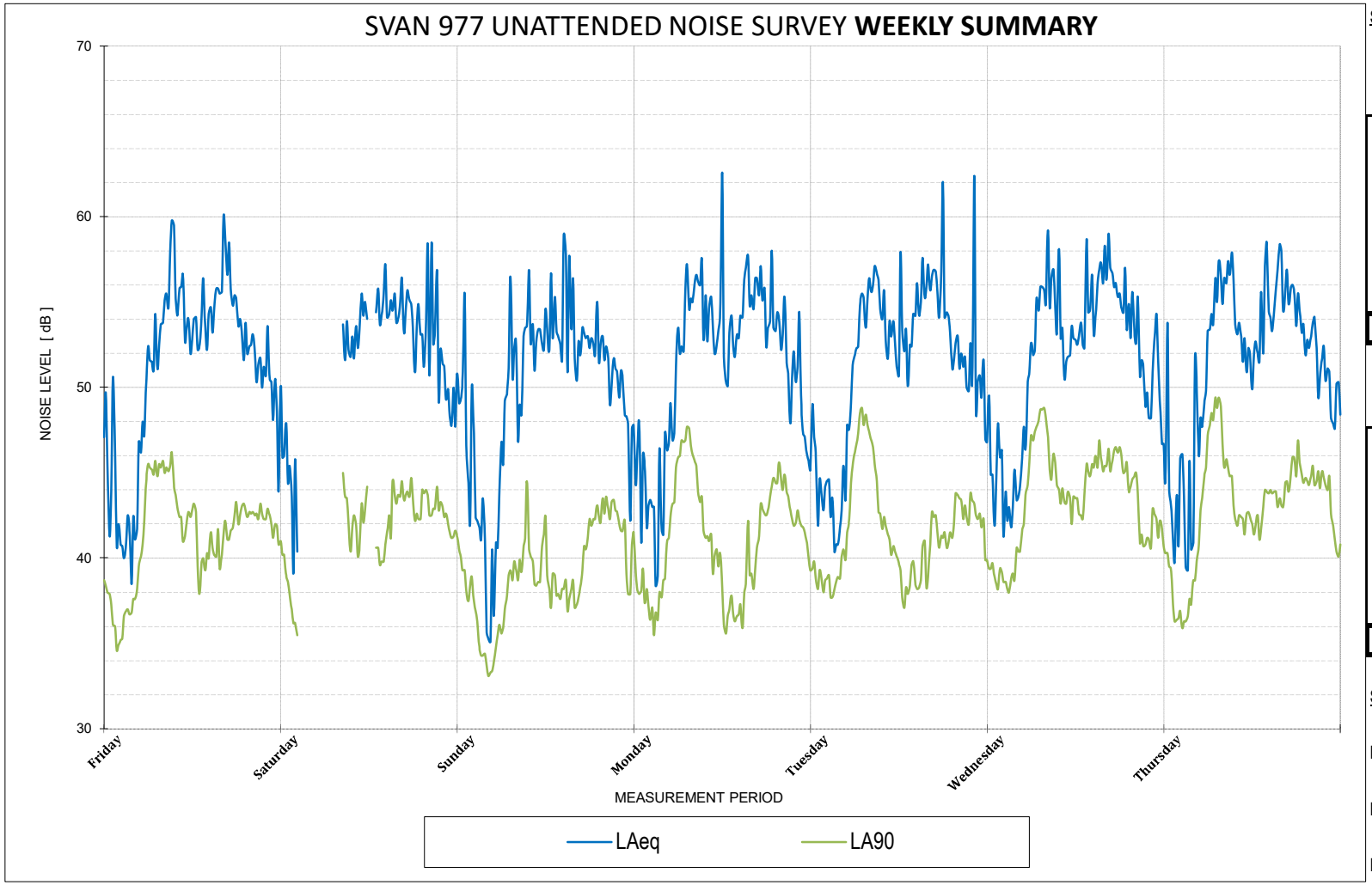
In our professional opinion, there is sufficient scope within the proposed building design to achieve the applied acoustic planning guidelines.

APPENDIX A

APPENDIX A

APPENDIX A

WEEKLY SUMMARY **LOGGER LOCATION:** Jocelyn Street **PERIOD:** 21st to the 27th June 2024



Sundays and Public Holidays the hours change to 0800

Noise Sentry: ANn2BHU423U%KJIC4wDZND

SUMMARY OF AMBIENT LEVELS

	LA90 Daytime	*LA90* Evening	*LA90* Night-time
Day 1	40	42	36
Day 2	40	42	36
Day 3	38	42	34
Day 4	37	42	37
Day 5	38	41	38
Day 6	43	41	39
Day 7	42	44	36
RBL	**40**	**42**	**36**

	LAeq Daytime	*LAeq* Evening	*LAeq* Night-time
Day 1	56	53	47
Day 2	54	54	48
Day 3	54	52	49
Day 4	55	53	48
Day 5	55	54	49
Day 6	55	54	51
Day 7	55	53	49
Average	**55**	**53**	**49**

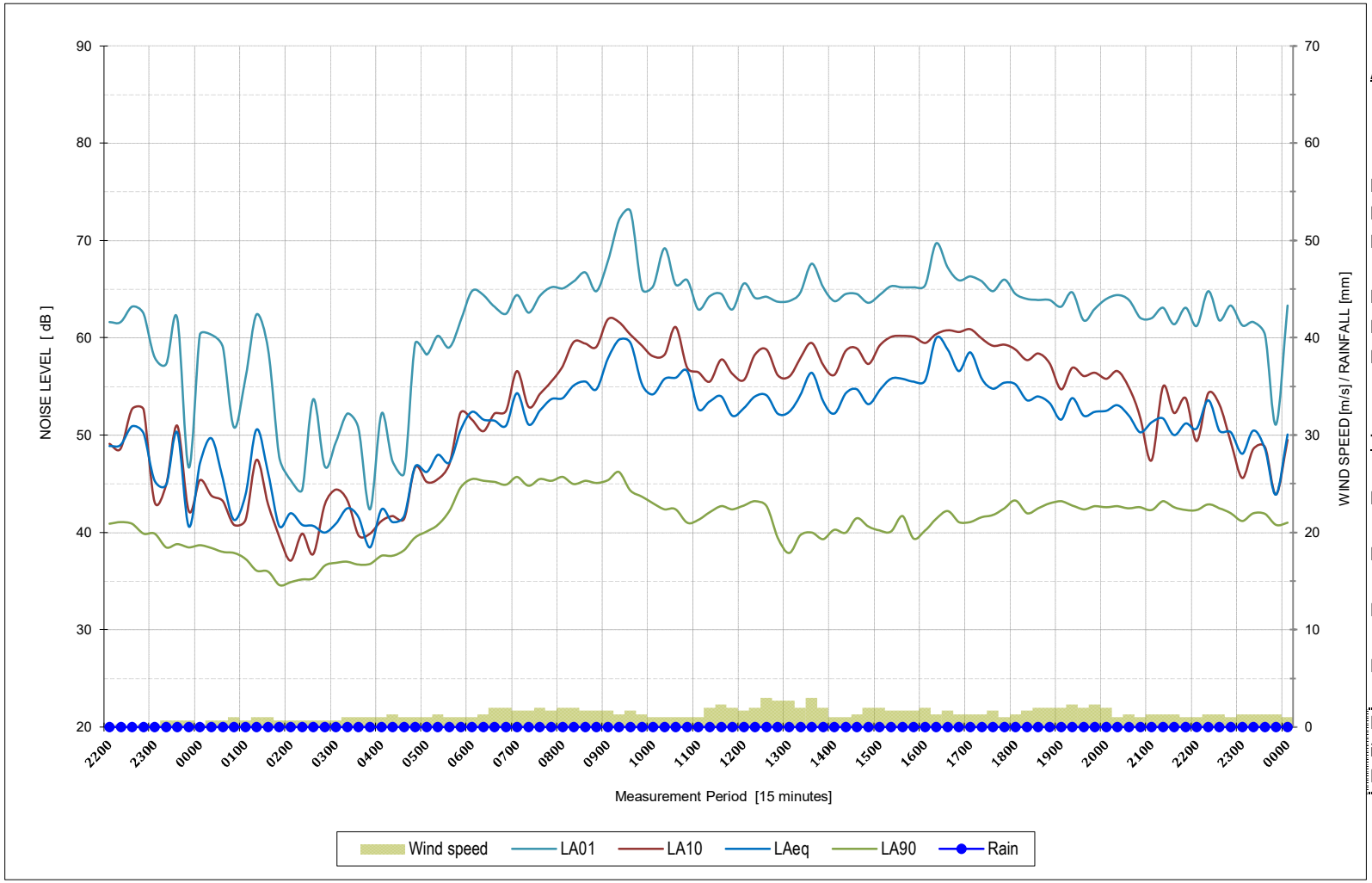
SUMMARY OF TRAFFIC LEVELS

LAeq 15 hrs	0700-2200	55	dB
LAeq 9 hrs	2200-0700	49	dB
Max LAeq 1 hr	0700-2200	57	dB
Max LAeq 1 hr	2200-0700	51	dB

Maximum noise events as defined in the Environmental Noise Management Manual 7 day average - [LAmax - LAeq ≥ 15]	30

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 1 **LOGGER LOCATION:** Jocelyn Street **DATE:** Friday, 21 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1600	40	dB
LA90 Evening	1800-2200	42	dB
LA90 Night-time	2200-0700	36	dB
LAeq Daytime	0700-1800	56	dB
LAeq Evening	1800-2200	53	dB
LAeq Night-time	2200-0700	47	dB

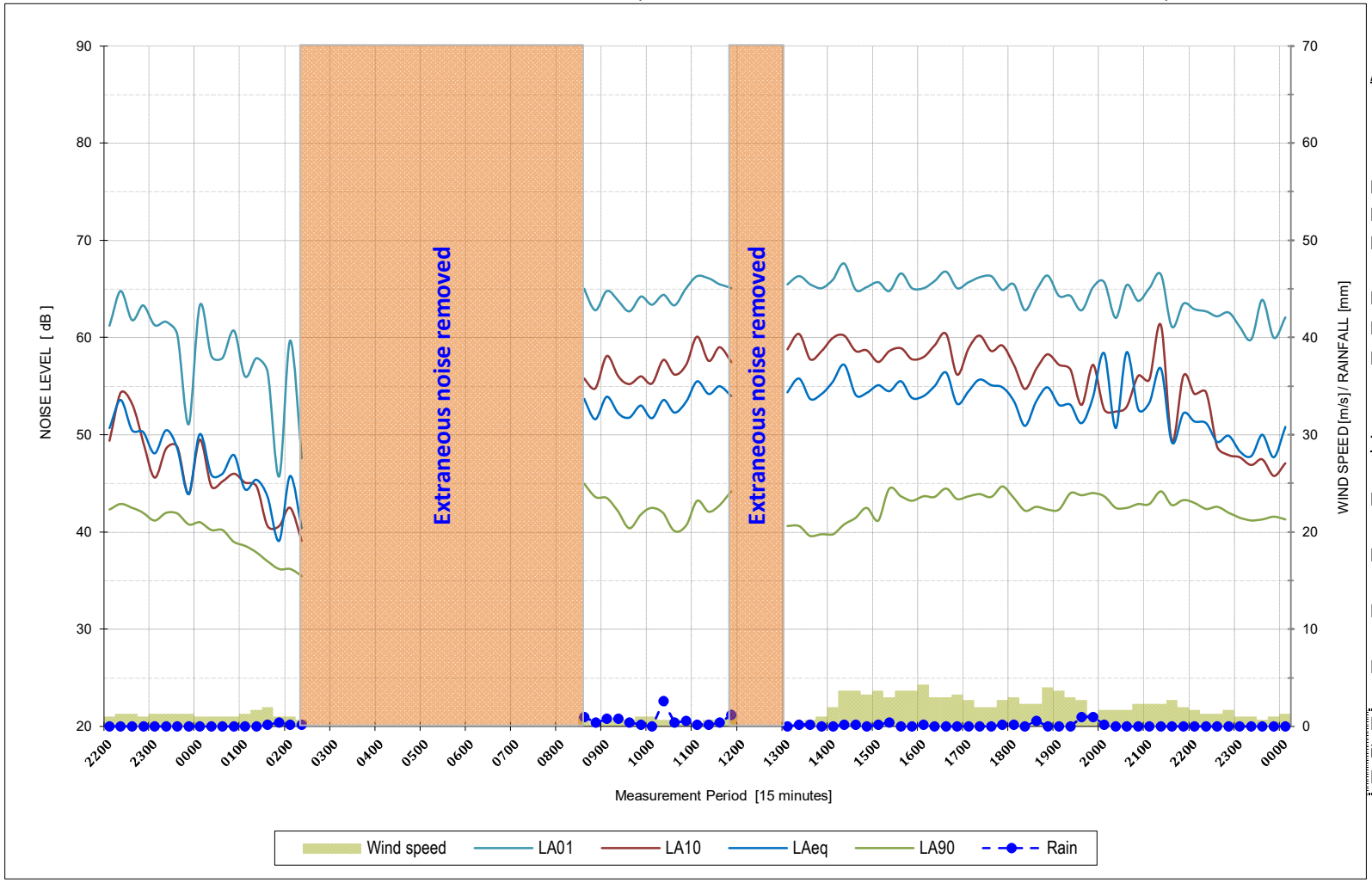
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	55	dB
LAeq 9 hours	2200-0700	47	dB
Max LAeq 1 hour	0700-2200	58	dB
Max LAeq 1 hour	2200-0700	50	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	32

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 2 **LOGGER LOCATION:** Jocelyn Street **DATE:** Saturday, 22 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0800-1600	40	dB
LA90 Evening	1800-2200	42	dB
LA90 Night-time	2200-0700	36	dB
LAeq Daytime	0700-1800	54	dB
LAeq Evening	1800-2200	54	dB
LAeq Night-time	2200-0700	48	dB

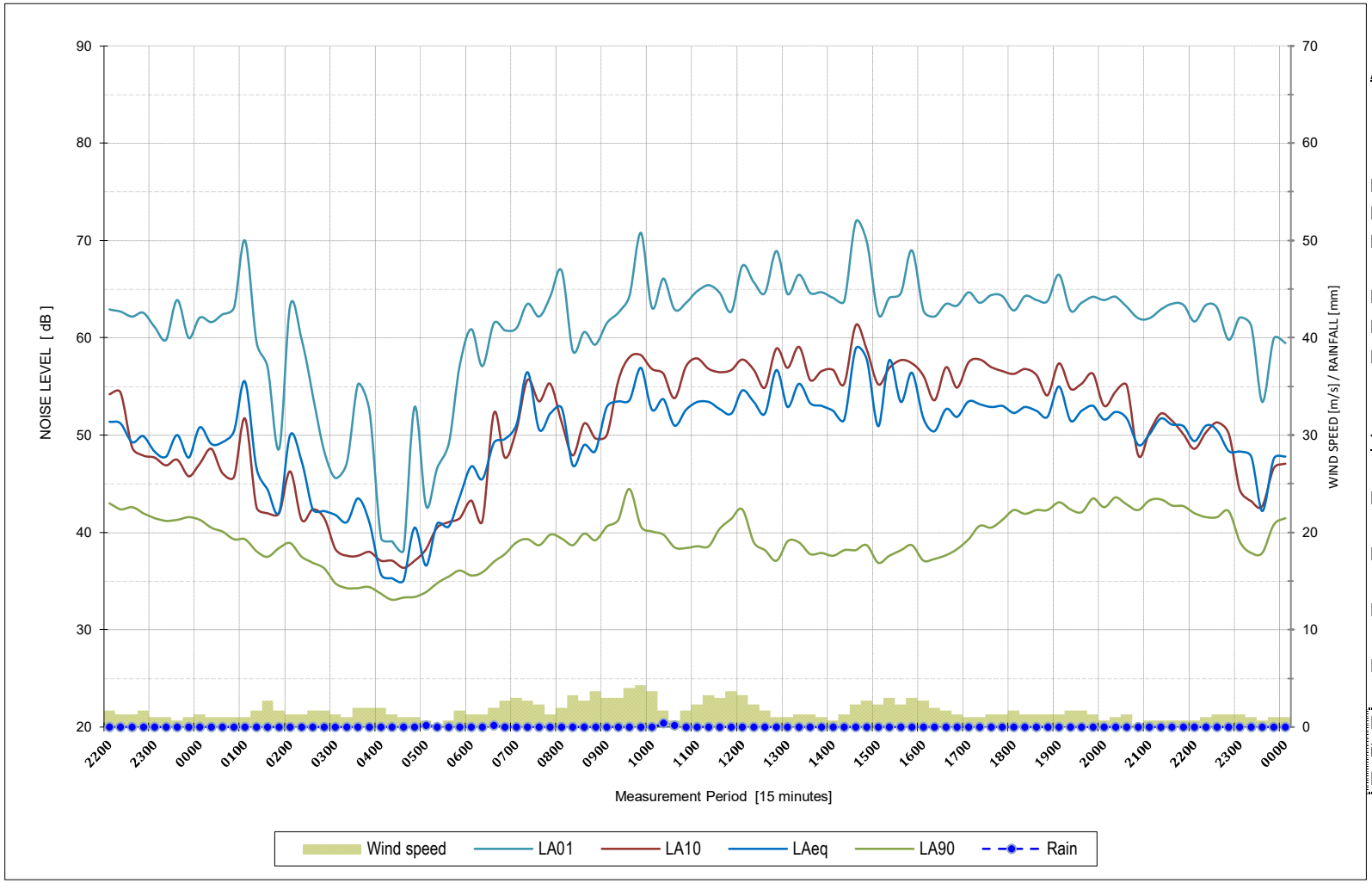
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	54	dB
LAeq 9 hours	2200-0700	48	dB
Max LAeq 1 hour	0700-2200	55	dB
Max LAeq 1 hour	2200-0700	51	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	17

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 3 **LOGGER LOCATION:** Jocelyn Street **DATE:** Sunday, 23 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0800-1800	38	dB
LA90 Evening	1800-2200	42	dB
LA90 Night-time	2200-0800	34	dB
LAeq Daytime	0800-1800	54	dB
LAeq Evening	1800-2200	52	dB
LAeq Night-time	2200-0800	49	dB

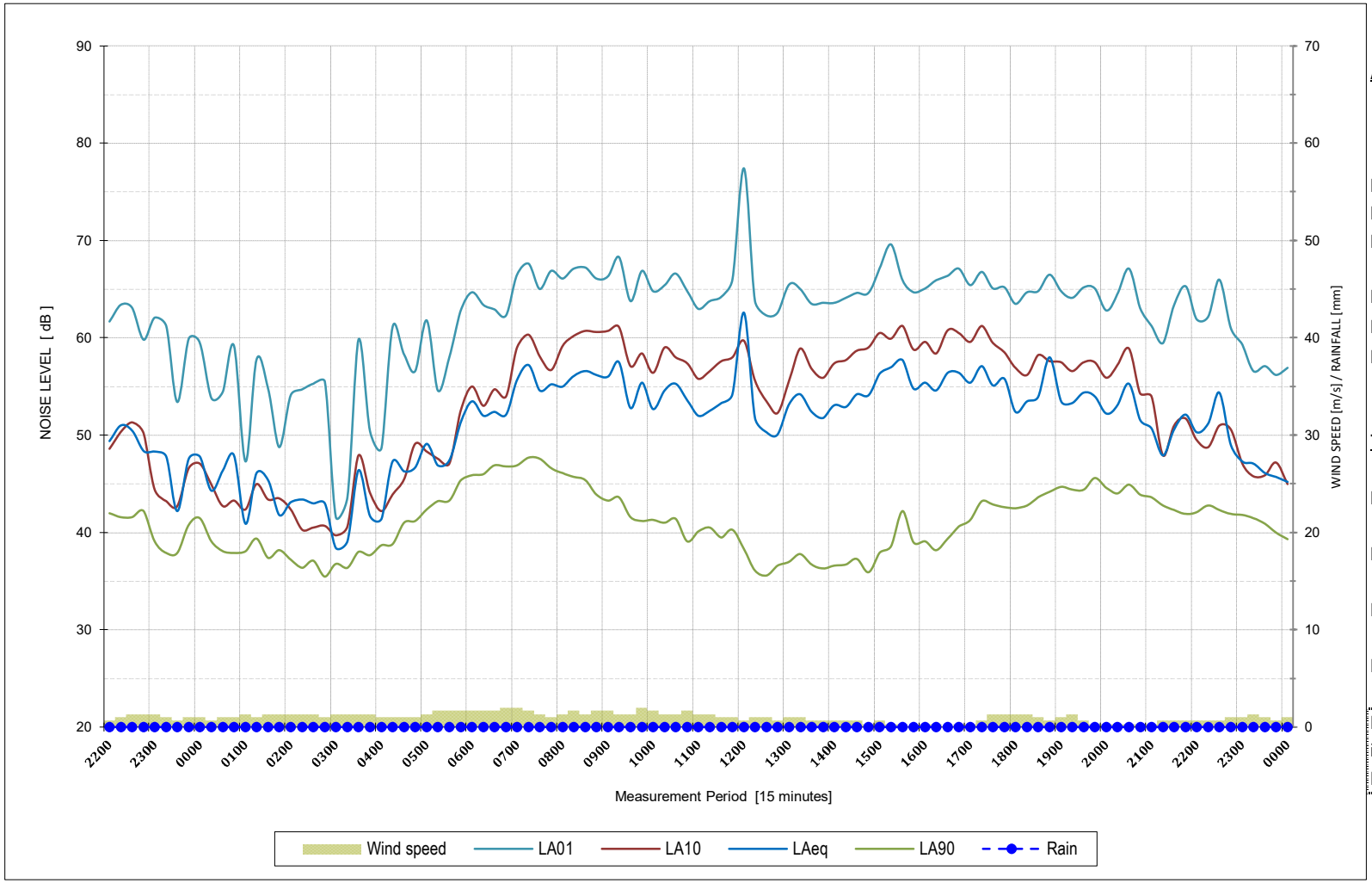
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	53	dB
LAeq 9 hours	2200-0700	48	dB
Max LAeq 1 hour	0700-2200	55	dB
Max LAeq 1 hour	2200-0700	51	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	33

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 4 **LOGGER LOCATION:** Jocelyn Street **DATE:** Monday, 24 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	37	dB
LA90 Evening	1800-2200	42	dB
LA90 Night-time	2200-0700	37	dB
LAeq Daytime	0700-1800	55	dB
LAeq Evening	1800-2200	53	dB
LAeq Night-time	2200-0700	48	dB

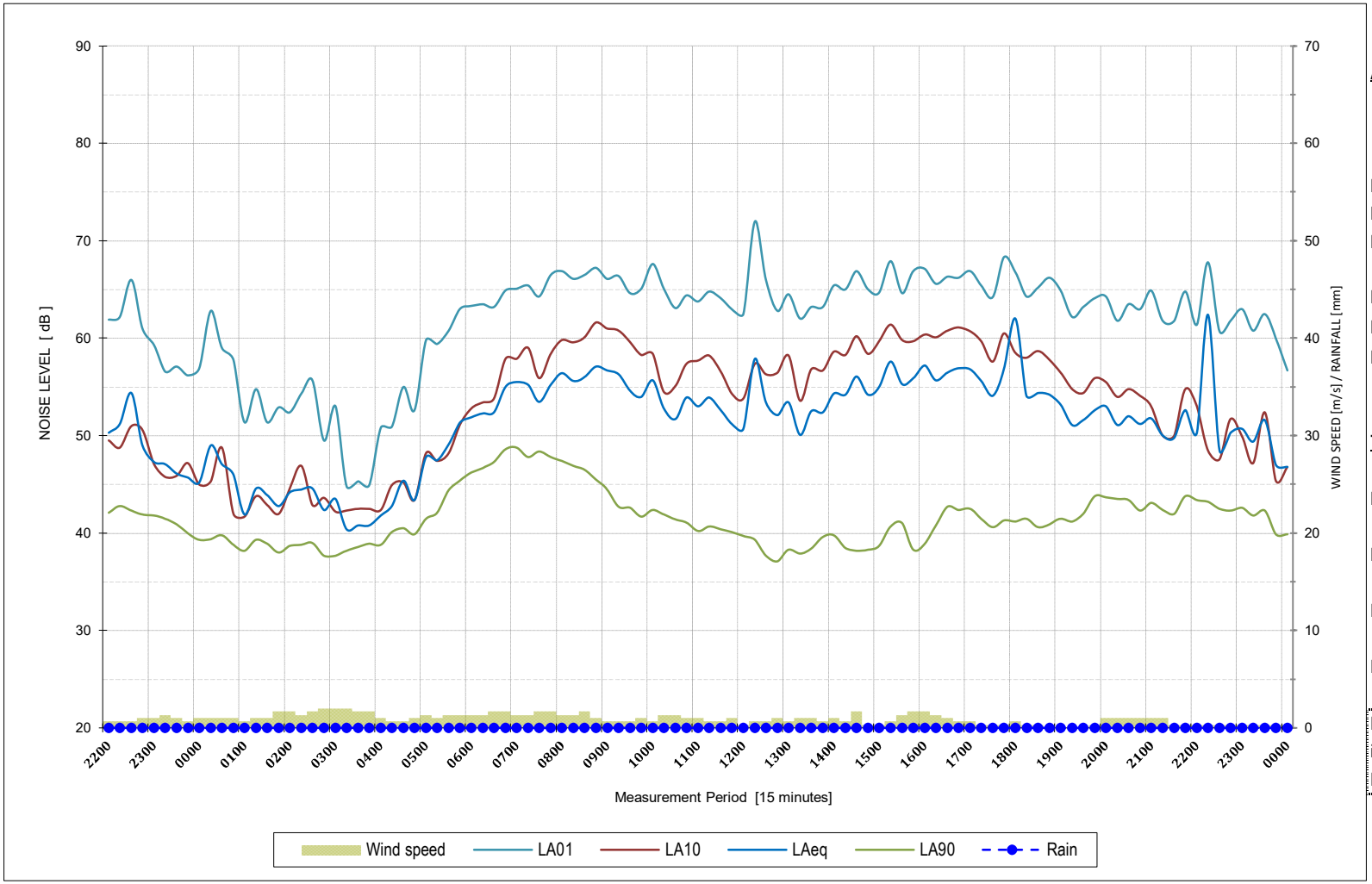
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	55	dB
LAeq 9 hours	2200-0700	48	dB
Max LAeq 1 hour	0700-2200	57	dB
Max LAeq 1 hour	2200-0700	50	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	32

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 5 **LOGGER LOCATION:** Jocelyn Street **DATE:** Tuesday, 25 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	38	dB
LA90 Evening	1800-2200	41	dB
LA90 Night-time	2200-0700	38	dB
LAeq Daytime	0700-1800	55	dB
LAeq Evening	1800-2200	54	dB
LAeq Night-time	2200-0700	49	dB

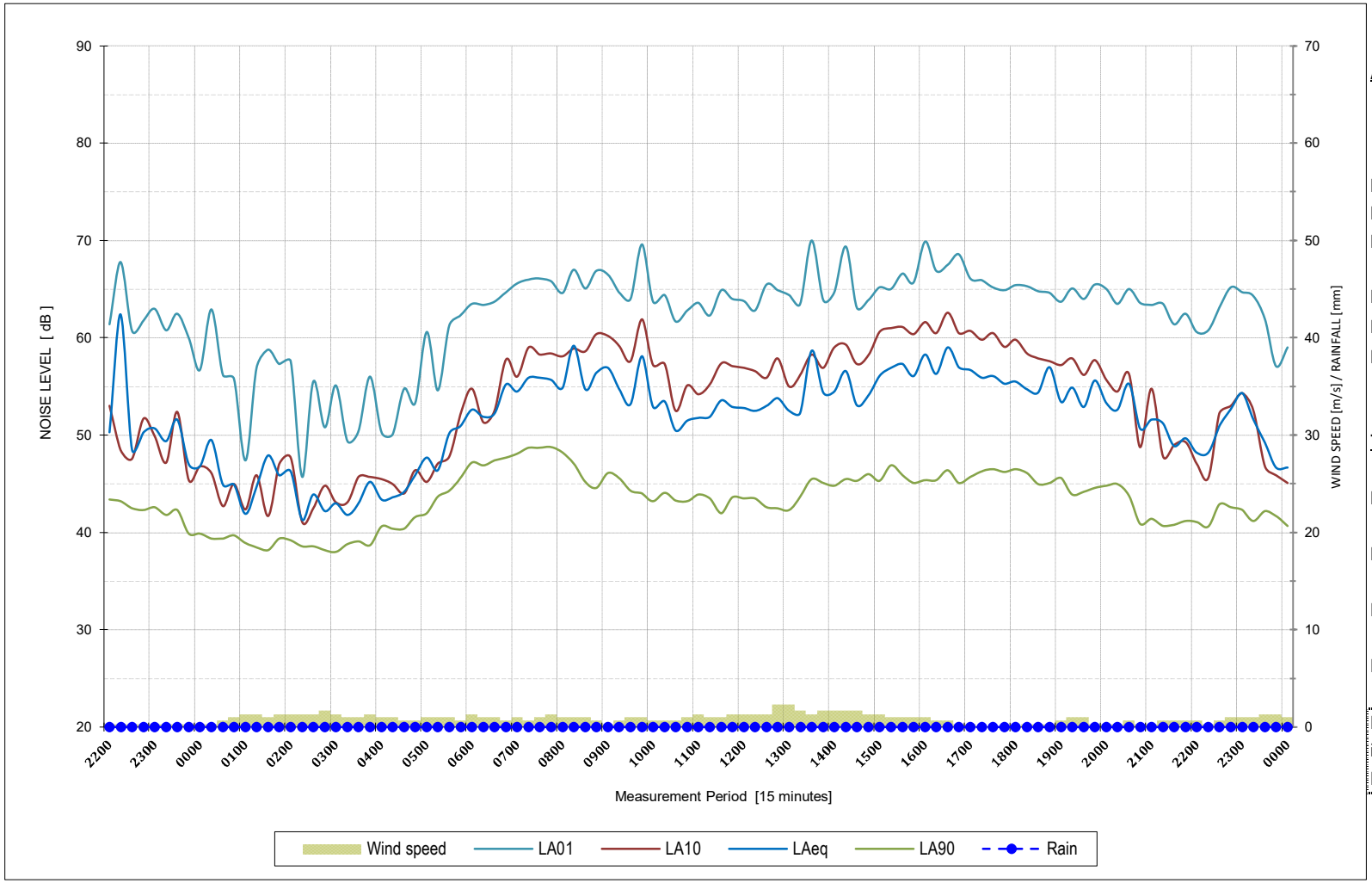
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	55	dB
LAeq 9 hours	2200-0700	49	dB
Max LAeq 1 hour	0700-2200	57	dB
Max LAeq 1 hour	2200-0700	51	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	33

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 6 **LOGGER LOCATION:** Jocelyn Street **DATE:** Wednesday, 26 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	43	dB
LA90 Evening	1800-2200	41	dB
LA90 Night-time	2200-0700	39	dB
LAeq Daytime	0700-1800	55	dB
LAeq Evening	1800-2200	54	dB
LAeq Night-time	2200-0700	51	dB

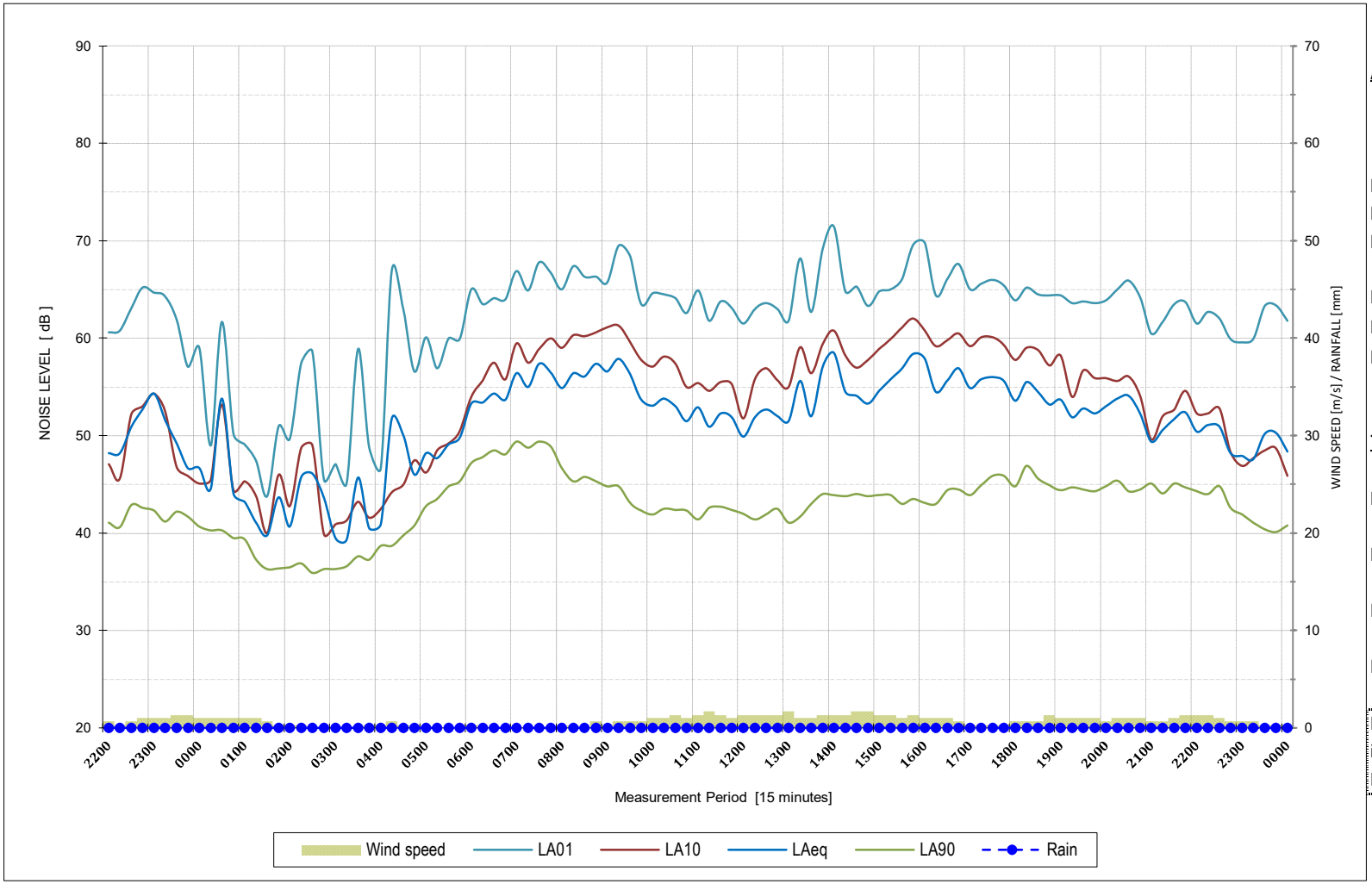
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	55	dB
LAeq 9 hours	2200-0700	51	dB
Max LAeq 1 hour	0700-2200	57	dB
Max LAeq 1 hour	2200-0700	52	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	33

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 7 **LOGGER LOCATION:** Jocelyn Street **DATE:** Thursday, 27 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	42	dB
LA90 Evening	1800-2200	44	dB
LA90 Night-time	2200-0700	36	dB
LAeq Daytime	0700-1800	55	dB
LAeq Evening	1800-2200	53	dB
LAeq Night-time	2200-0700	49	dB

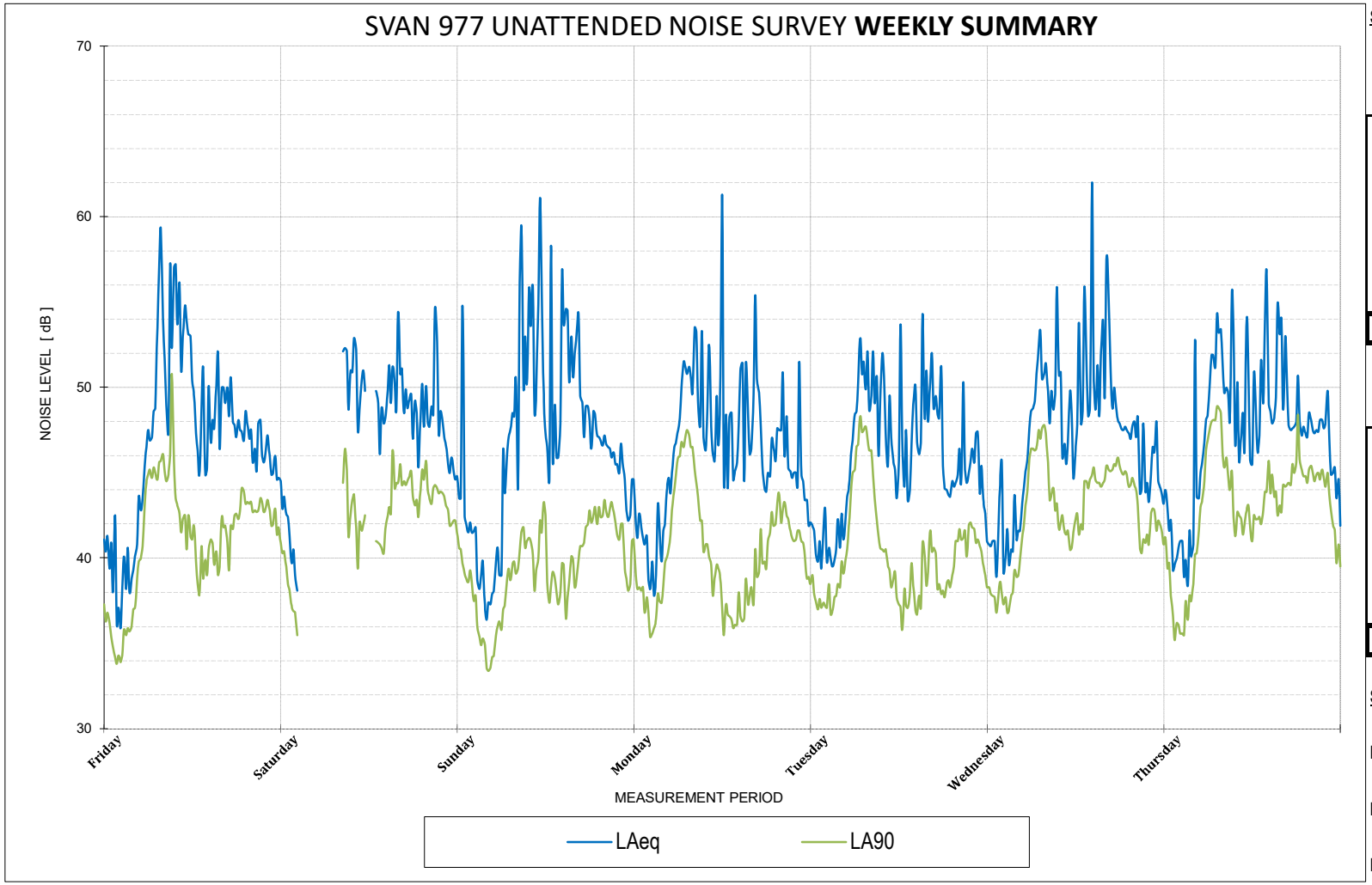
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	55	dB
LAeq 9 hours	2200-0700	49	dB
Max LAeq 1 hour	0700-2200	57	dB
Max LAeq 1 hour	2200-0700	52	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	33

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

WEEKLY SUMMARY **LOGGER LOCATION:** Chester Hill Road - rear yard **PERIOD:** 21st to the 27th June 2024



Sundays and Public Holidays the hours change to 0800

Noise Sentry: ANn2BHU423U%KJIC4wDZND

SUMMARY OF AMBIENT LEVELS

	LA90 Daytime	*LA90* Evening	*LA90* Night-time
Day 1	39	43	34
Day 2	41	43	37
Day 3	38	42	34
Day 4	36	41	37
Day 5	37	38	37
Day 6	42	41	37
Day 7	42	45	36
RBL	**39**	**42**	**37**

	LAeq Daytime	*LAeq* Evening	*LAeq* Night-time
Day 1	52	47	43
Day 2	50	50	44
Day 3	53	47	45
Day 4	51	47	45
Day 5	49	45	45
Day 6	52	47	45
Day 7	51	48	46
Average	**52**	**48**	**45**

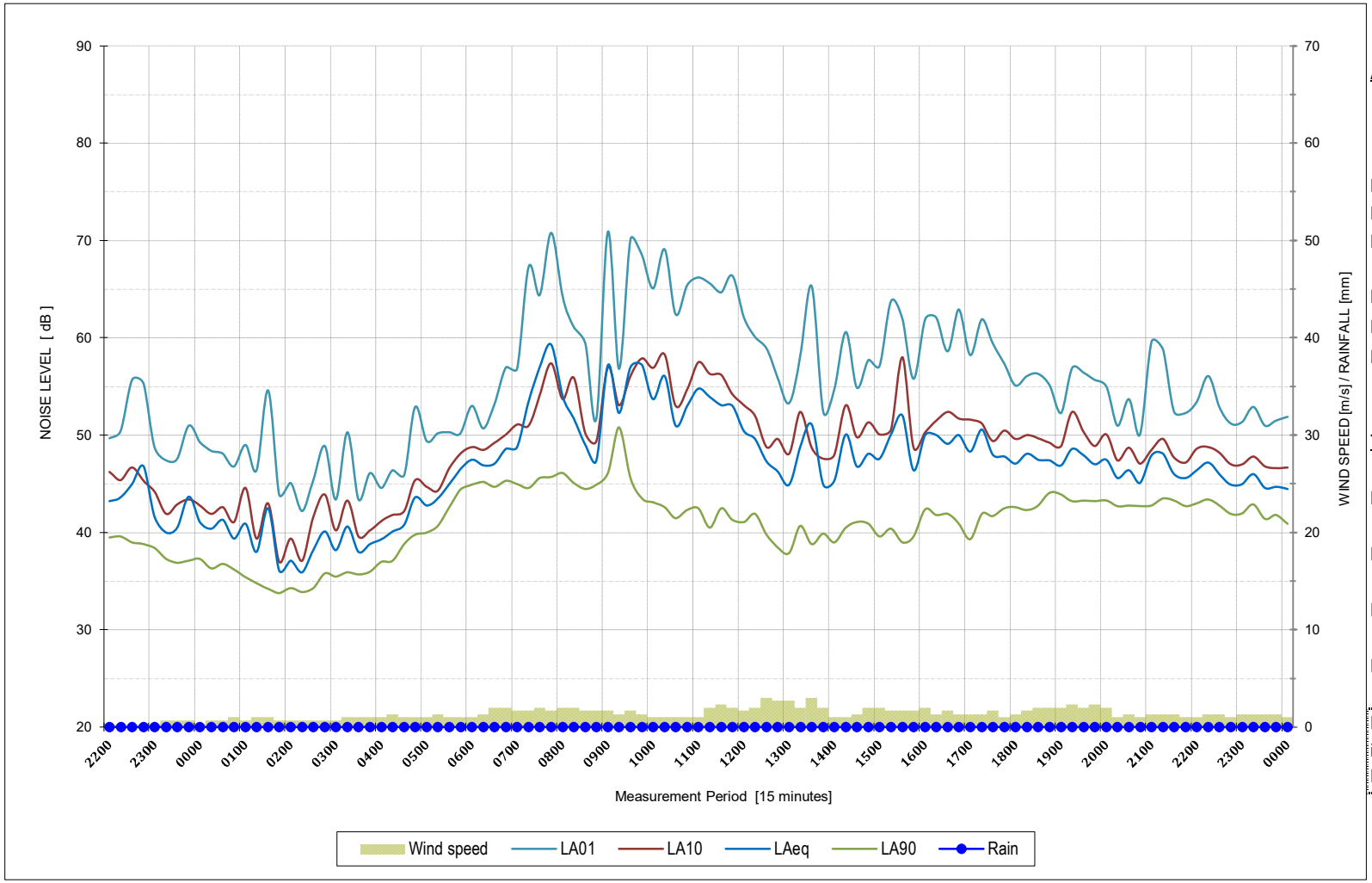
SUMMARY OF TRAFFIC LEVELS

LAeq 15 hrs	0700-2200	51	dB
LAeq 9 hrs	2200-0700	45	dB
Max LAeq 1 hr	0700-2200	53	dB
Max LAeq 1 hr	2200-0700	47	dB

Maximum noise events as defined in the Environmental Noise Management Manual 7 day average - [LAmax - LAeq ≥ 15]	14

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 1 **LOGGER LOCATION:** Chester Hill Road - rear yard **DATE:** Friday, 21 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1600	39	dB
LA90 Evening	1800-2200	43	dB
LA90 Night-time	2200-0700	34	dB
LAeq Daytime	0700-1800	52	dB
LAeq Evening	1800-2200	47	dB
LAeq Night-time	2200-0700	43	dB

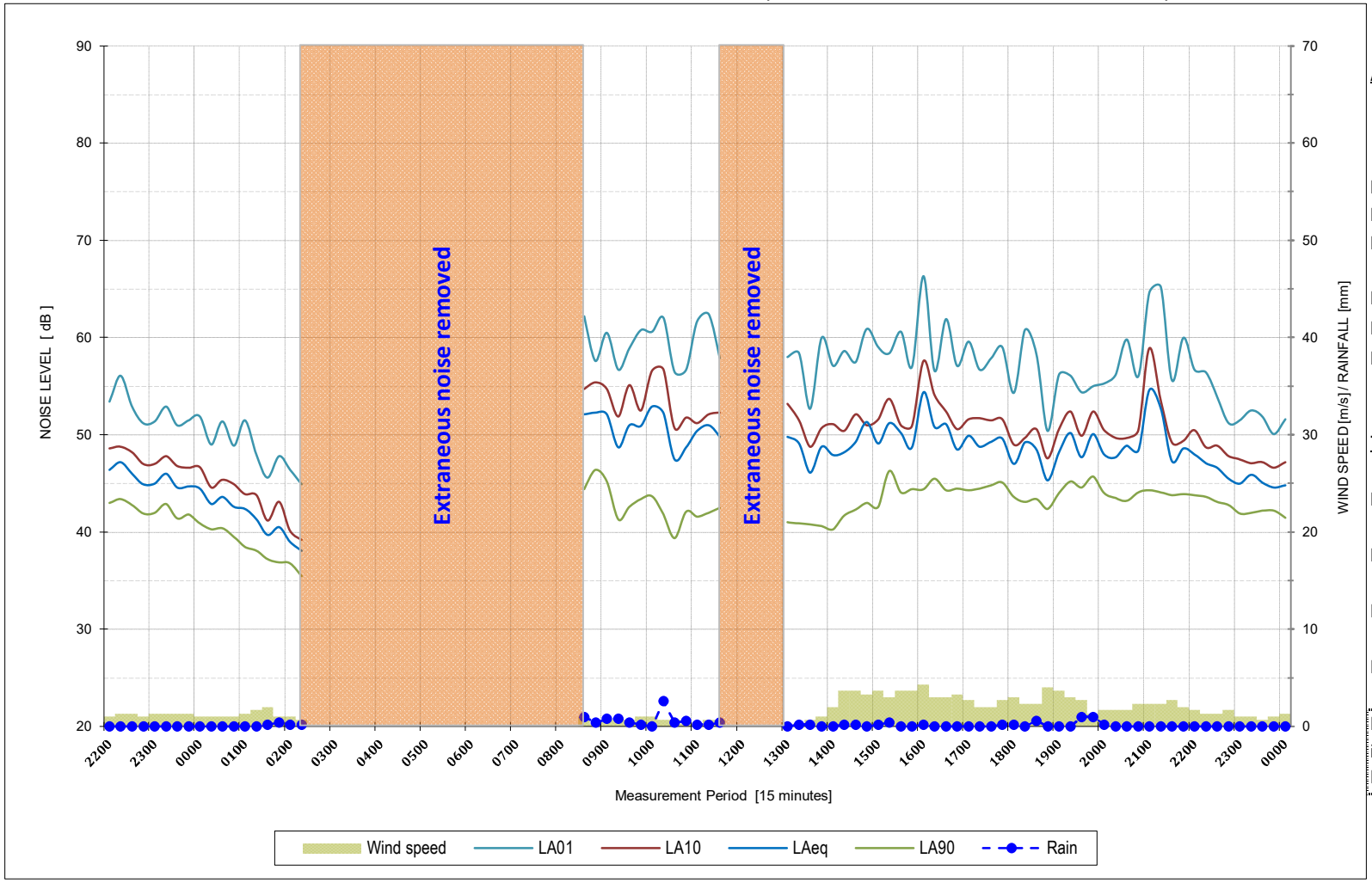
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	52	dB
LAeq 9 hours	2200-0700	43	dB
Max LAeq 1 hour	0700-2200	55	dB
Max LAeq 1 hour	2200-0700	46	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	17

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 2 **LOGGER LOCATION:** Chester Hill Road - rear yard **DATE:** Saturday, 22 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0800-1600	41	dB
LA90 Evening	1800-2200	43	dB
LA90 Night-time	2200-0700	37	dB
LAeq Daytime	0700-1800	50	dB
LAeq Evening	1800-2200	50	dB
LAeq Night-time	2200-0700	44	dB

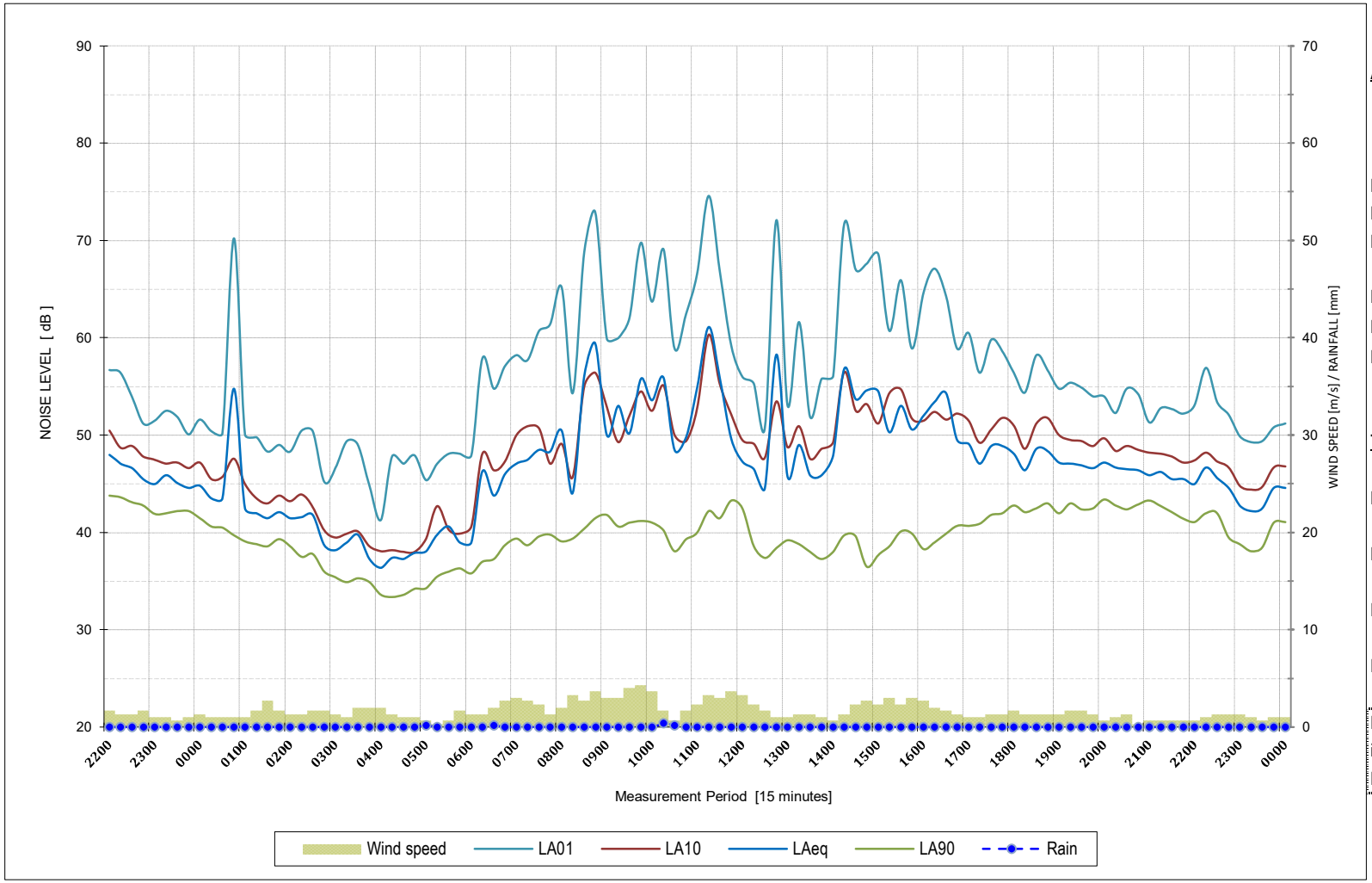
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	50	dB
LAeq 9 hours	2200-0700	44	dB
Max LAeq 1 hour	0700-2200	52	dB
Max LAeq 1 hour	2200-0700	46	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	5

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 3 **LOGGER LOCATION:** Chester Hill Road - rear yard **DATE:** Sunday, 23 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0800-1800	38	dB
LA90 Evening	1800-2200	42	dB
LA90 Night-time	2200-0800	34	dB
LAeq Daytime	0800-1800	53	dB
LAeq Evening	1800-2200	47	dB
LAeq Night-time	2200-0800	45	dB

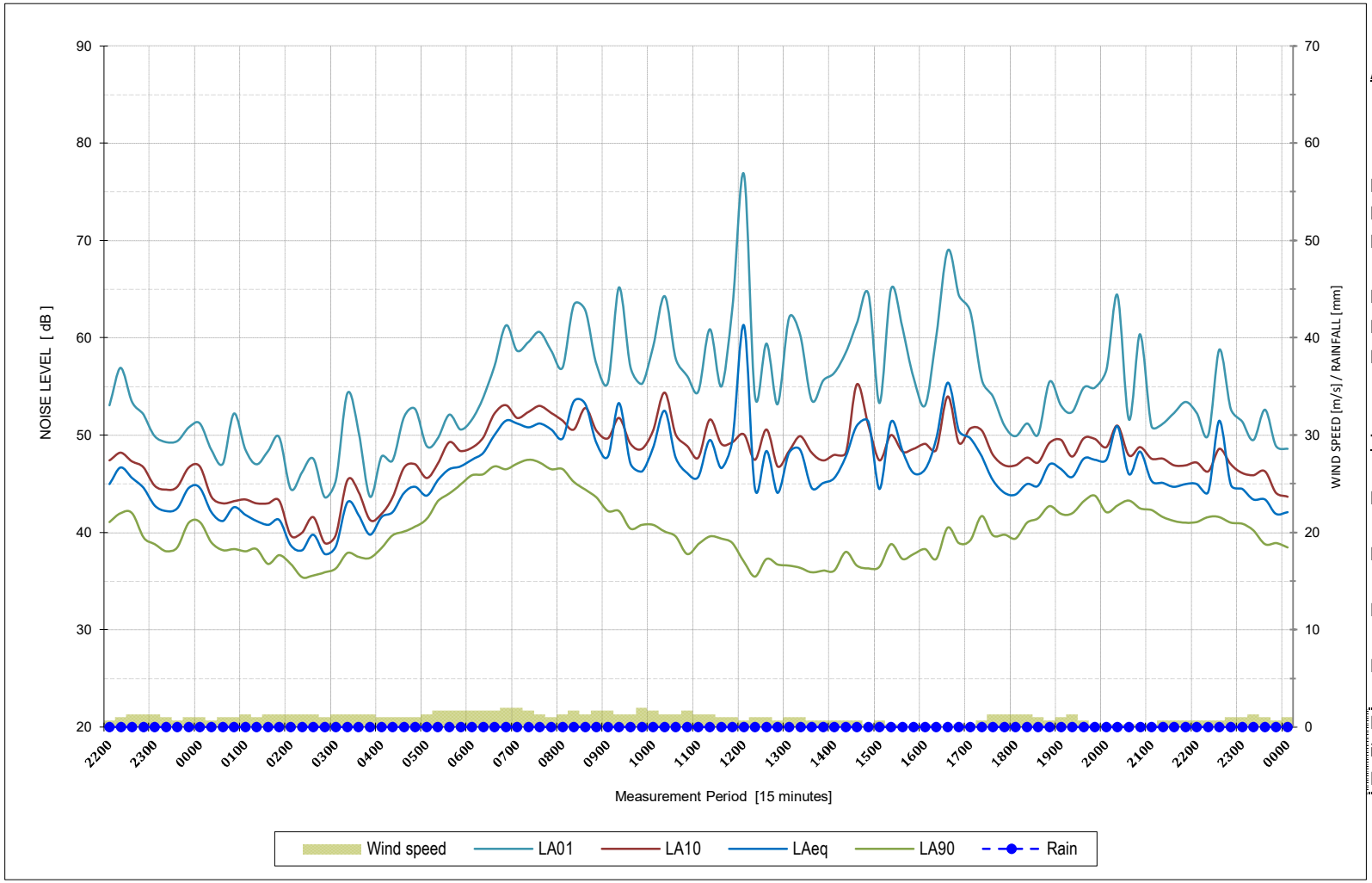
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	52	dB
LAeq 9 hours	2200-0700	45	dB
Max LAeq 1 hour	0700-2200	55	dB
Max LAeq 1 hour	2200-0700	49	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	23

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 4 **LOGGER LOCATION:** Chester Hill Road - rear yard **DATE:** Monday, 24 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	36	dB
LA90 Evening	1800-2200	41	dB
LA90 Night-time	2200-0700	37	dB
LAeq Daytime	0700-1800	51	dB
LAeq Evening	1800-2200	47	dB
LAeq Night-time	2200-0700	45	dB

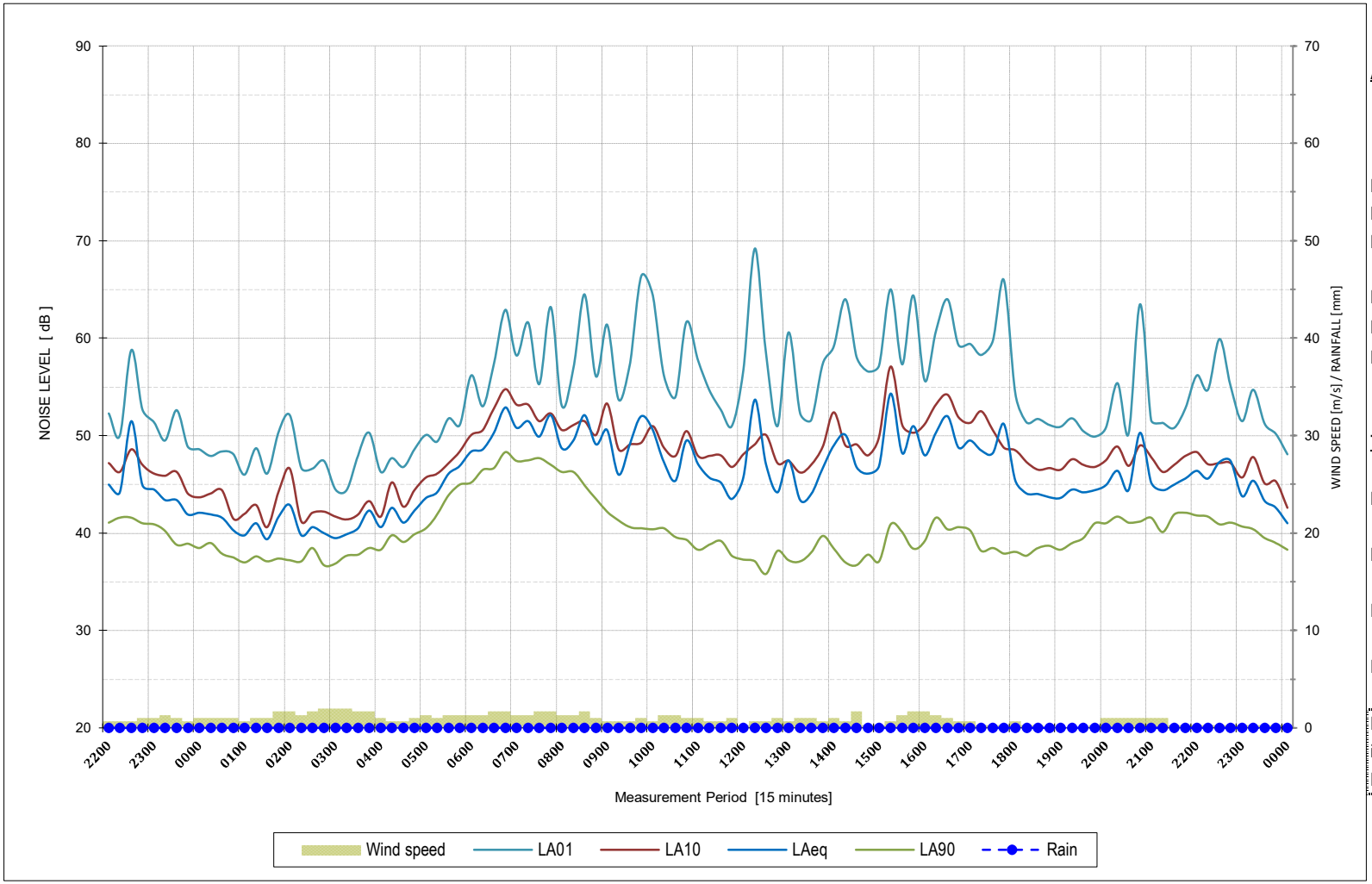
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	50	dB
LAeq 9 hours	2200-0700	45	dB
Max LAeq 1 hour	0700-2200	52	dB
Max LAeq 1 hour	2200-0700	46	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	14

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 5 **LOGGER LOCATION:** Chester Hill Road - rear yard **DATE:** Tuesday, 25 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	37	dB
LA90 Evening	1800-2200	38	dB
LA90 Night-time	2200-0700	37	dB
LAeq Daytime	0700-1800	49	dB
LAeq Evening	1800-2200	45	dB
LAeq Night-time	2200-0700	45	dB

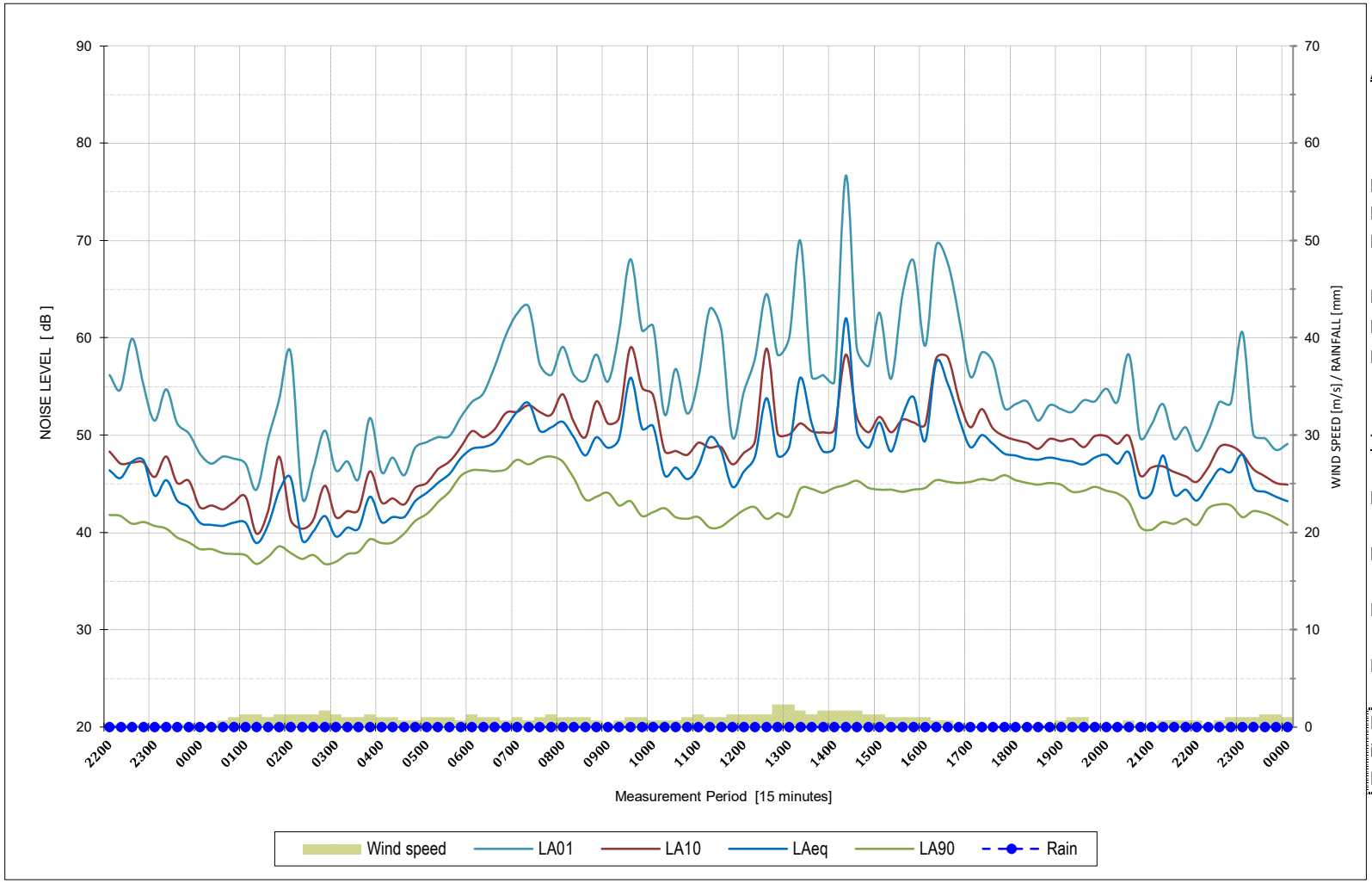
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	49	dB
LAeq 9 hours	2200-0700	45	dB
Max LAeq 1 hour	0700-2200	51	dB
Max LAeq 1 hour	2200-0700	48	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	13

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 6 **LOGGER LOCATION:** Chester Hill Road - rear yard **DATE:** Wednesday, 26 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	42	dB
LA90 Evening	1800-2200	41	dB
LA90 Night-time	2200-0700	37	dB
LAeq Daytime	0700-1800	52	dB
LAeq Evening	1800-2200	47	dB
LAeq Night-time	2200-0700	45	dB

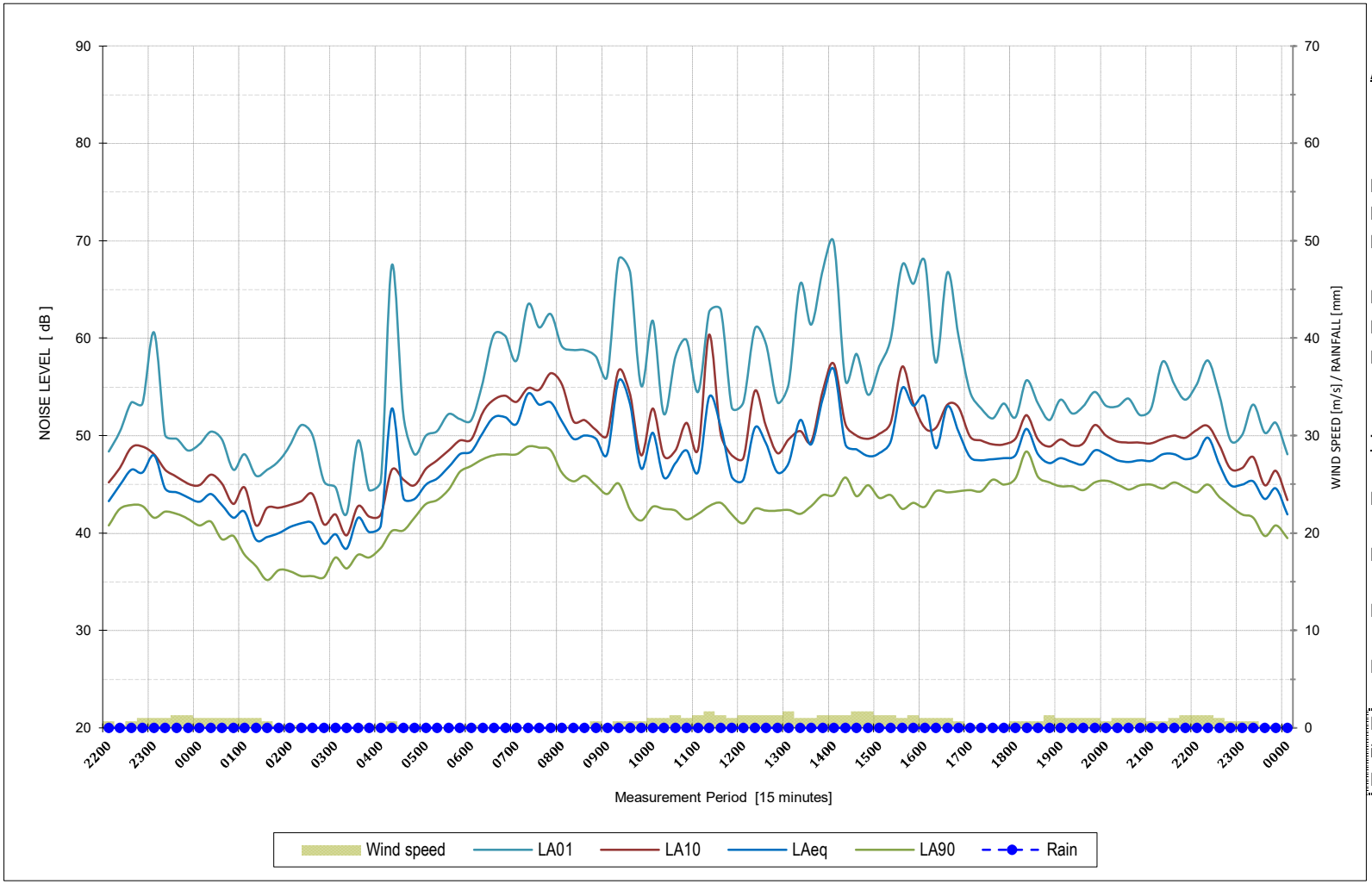
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	51	dB
LAeq 9 hours	2200-0700	45	dB
Max LAeq 1 hour	0700-2200	55	dB
Max LAeq 1 hour	2200-0700	47	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	13

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 7 **LOGGER LOCATION:** Chester Hill Road - rear yard **DATE:** Thursday, 27 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	42	dB
LA90 Evening	1800-2200	45	dB
LA90 Night-time	2200-0700	36	dB
LAeq Daytime	0700-1800	51	dB
LAeq Evening	1800-2200	48	dB
LAeq Night-time	2200-0700	46	dB

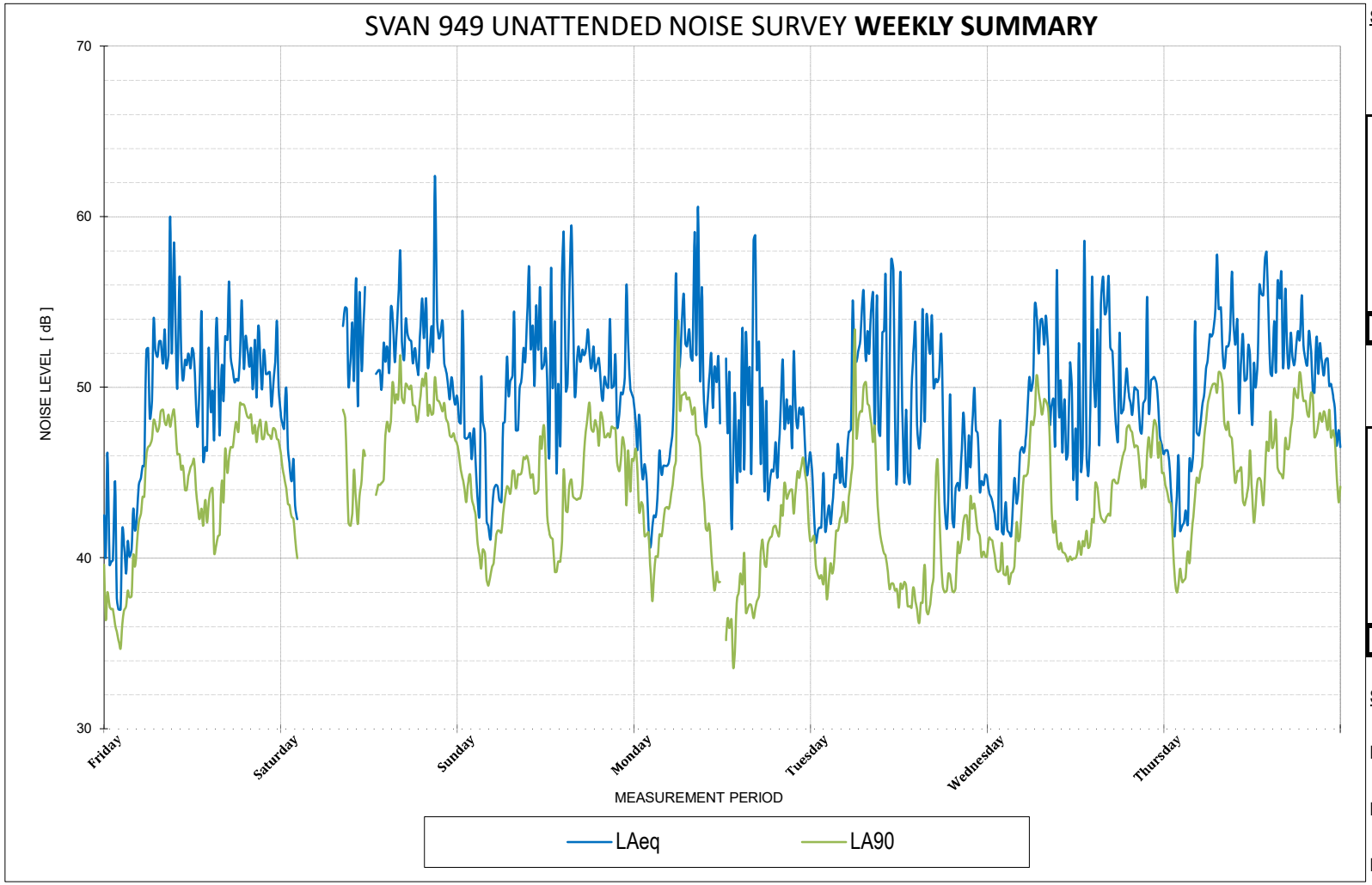
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	50	dB
LAeq 9 hours	2200-0700	46	dB
Max LAeq 1 hour	0700-2200	53	dB
Max LAeq 1 hour	2200-0700	48	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	10

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

WEEKLY SUMMARY **LOGGER LOCATION:** Ridge Street - front yard **PERIOD:** 21st to the 27th June 2024



Sundays and Public Holidays the hours change to 0800

Noise Sentry: ANn2BHU423U%KJIC4wDZND

SUMMARY OF AMBIENT LEVELS

	LA90 Daytime	*LA90* Evening	*LA90* Night-time
Day 1	42	47	36
Day 2	42	48	42
Day 3	41	47	39
Day 4	36	41	40
Day 5	37	38	39
Day 6	40	44	39
Day 7	43	48	39
RBL	**41**	**47**	**39**

	LAeq Daytime	*LAeq* Evening	*LAeq* Night-time
Day 1	53	52	47
Day 2	53	55	49
Day 3	53	51	49
Day 4	53	48	50
Day 5	53	46	48
Day 6	52	50	47
Day 7	54	52	49
Average	**53**	**52**	**48**

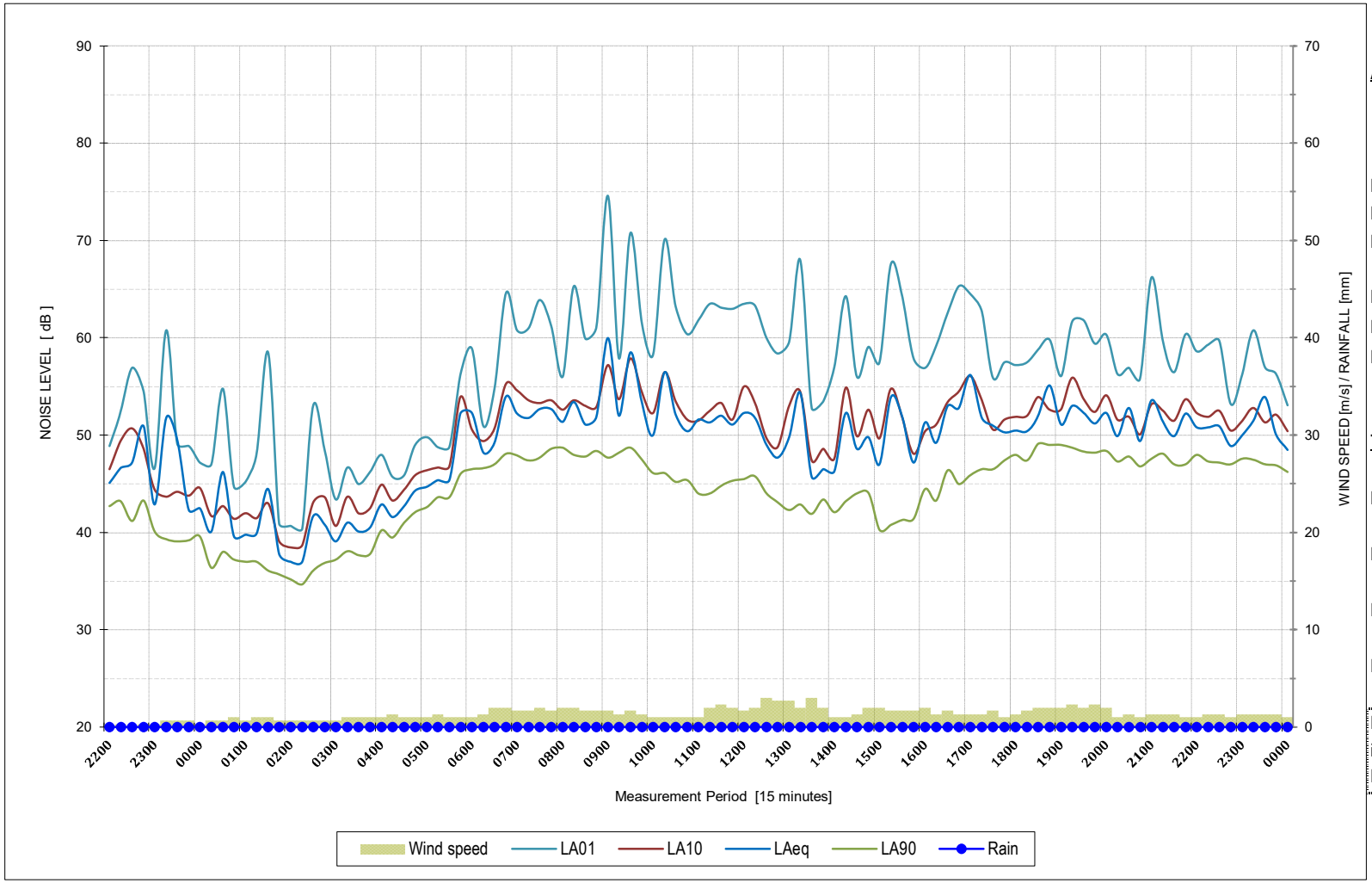
SUMMARY OF TRAFFIC LEVELS

LAeq 15 hrs	0700-2200	53	dB
LAeq 9 hrs	2200-0700	48	dB
Max LAeq 1 hr	0700-2200	55	dB
Max LAeq 1 hr	2200-0700	51	dB

Maximum noise events as defined in the Environmental Noise Management Manual 7 day average - [LAmax - LAeq ≥ 15]	18

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 1 **LOGGER LOCATION:** Ridge Street - front yard **DATE:** Friday, 21 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1600	42	dB
LA90 Evening	1800-2200	47	dB
LA90 Night-time	2200-0700	36	dB
LAeq Daytime	0700-1800	53	dB
LAeq Evening	1800-2200	52	dB
LAeq Night-time	2200-0700	47	dB

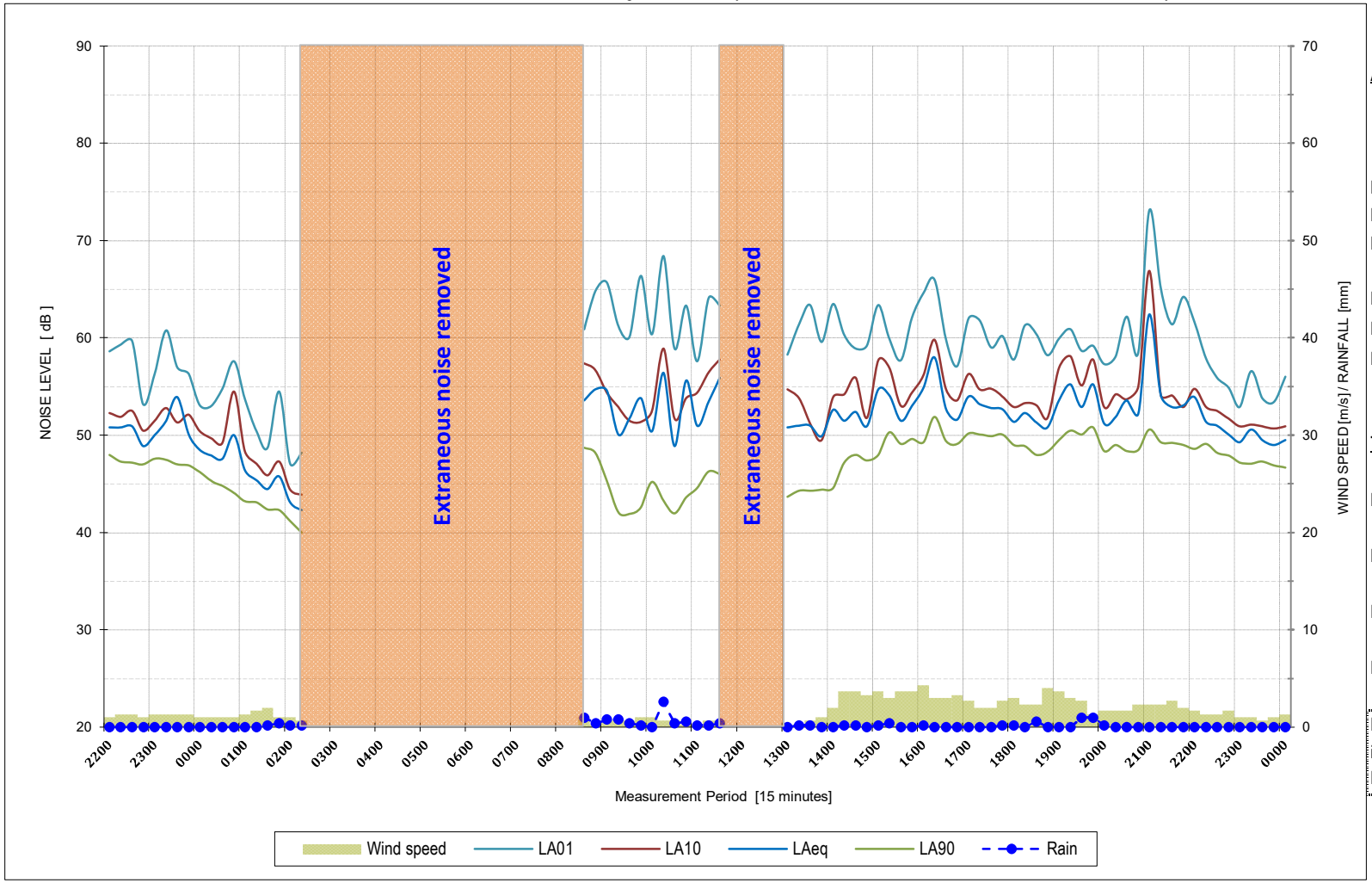
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	52	dB
LAeq 9 hours	2200-0700	47	dB
Max LAeq 1 hour	0700-2200	54	dB
Max LAeq 1 hour	2200-0700	50	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	21

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 2 **LOGGER LOCATION:** Ridge Street - front yard **DATE:** Saturday, 22 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0800-1600	42	dB
LA90 Evening	1800-2200	48	dB
LA90 Night-time	2200-0700	42	dB
LAeq Daytime	0700-1800	53	dB
LAeq Evening	1800-2200	55	dB
LAeq Night-time	2200-0700	49	dB

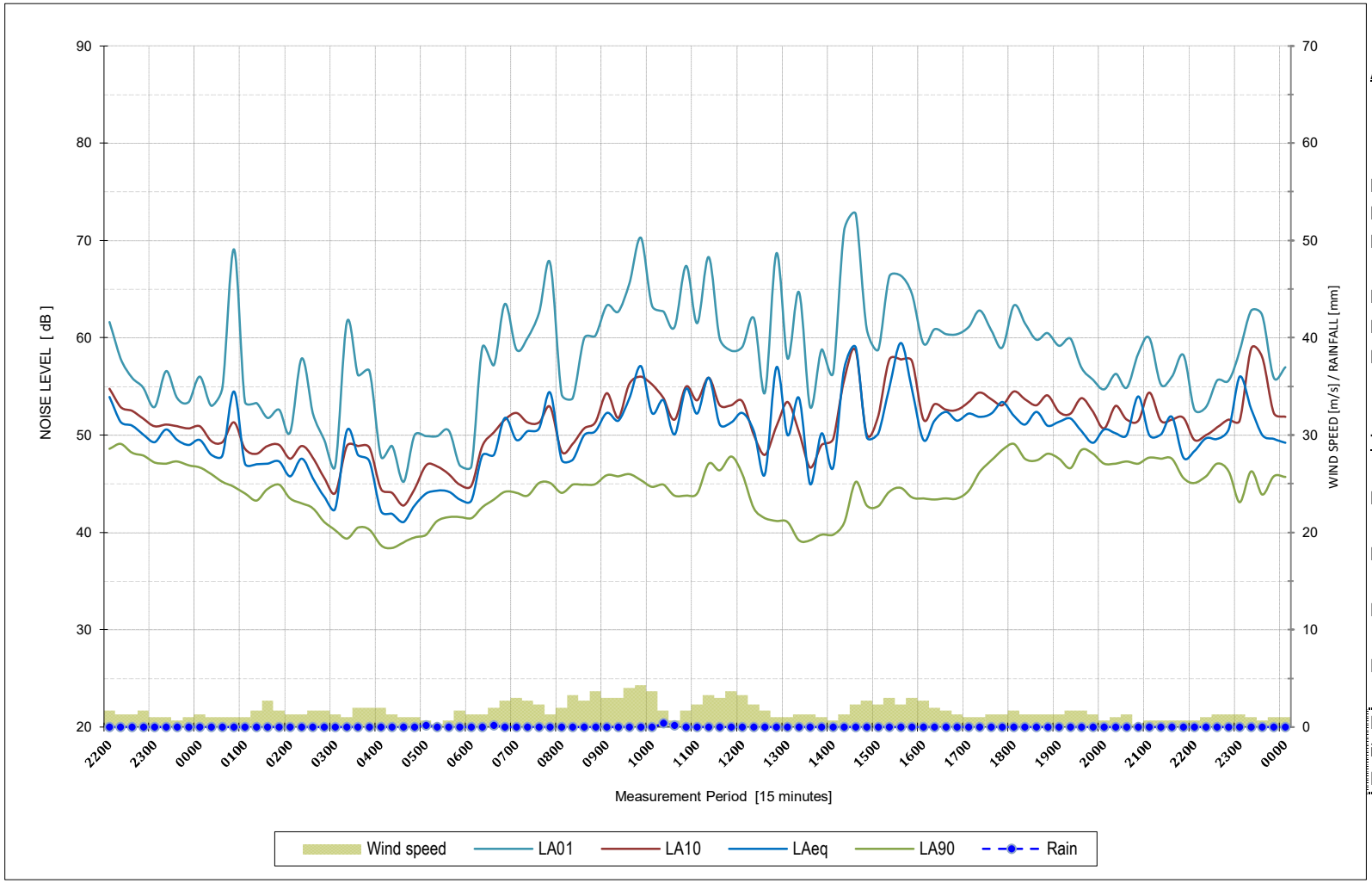
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	54	dB
LAeq 9 hours	2200-0700	49	dB
Max LAeq 1 hour	0700-2200	55	dB
Max LAeq 1 hour	2200-0700	51	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	9

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 3 **LOGGER LOCATION:** Ridge Street - front yard **DATE:** Sunday, 23 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0800-1800	41	dB
LA90 Evening	1800-2200	47	dB
LA90 Night-time	2200-0800	39	dB
LAeq Daytime	0800-1800	53	dB
LAeq Evening	1800-2200	51	dB
LAeq Night-time	2200-0800	49	dB

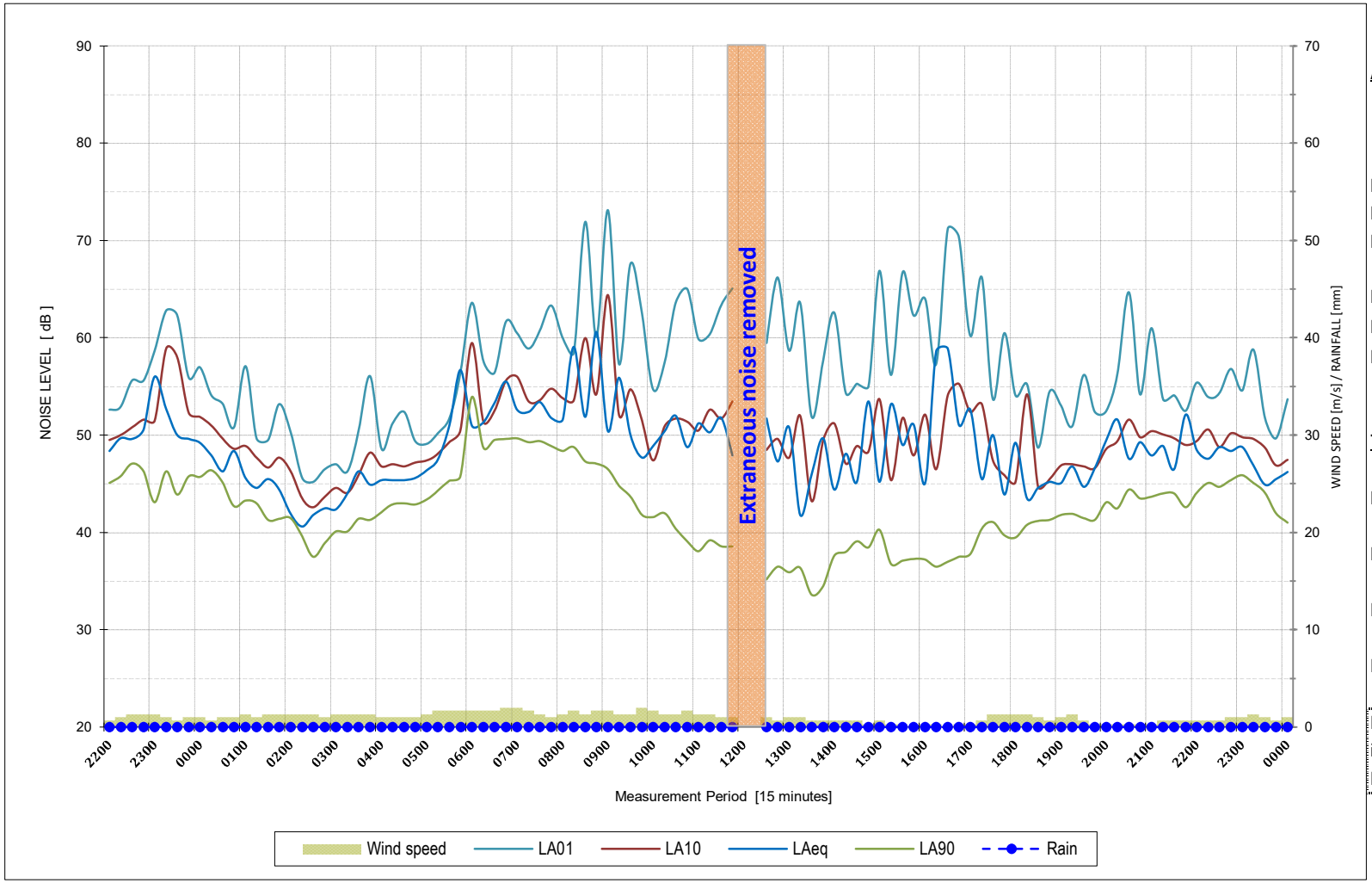
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	53	dB
LAeq 9 hours	2200-0700	48	dB
Max LAeq 1 hour	0700-2200	55	dB
Max LAeq 1 hour	2200-0700	51	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	22

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 4 **LOGGER LOCATION:** Ridge Street - front yard **DATE:** Monday, 24 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	36	dB
LA90 Evening	1800-2200	41	dB
LA90 Night-time	2200-0700	40	dB
LAeq Daytime	0700-1800	53	dB
LAeq Evening	1800-2200	48	dB
LAeq Night-time	2200-0700	50	dB

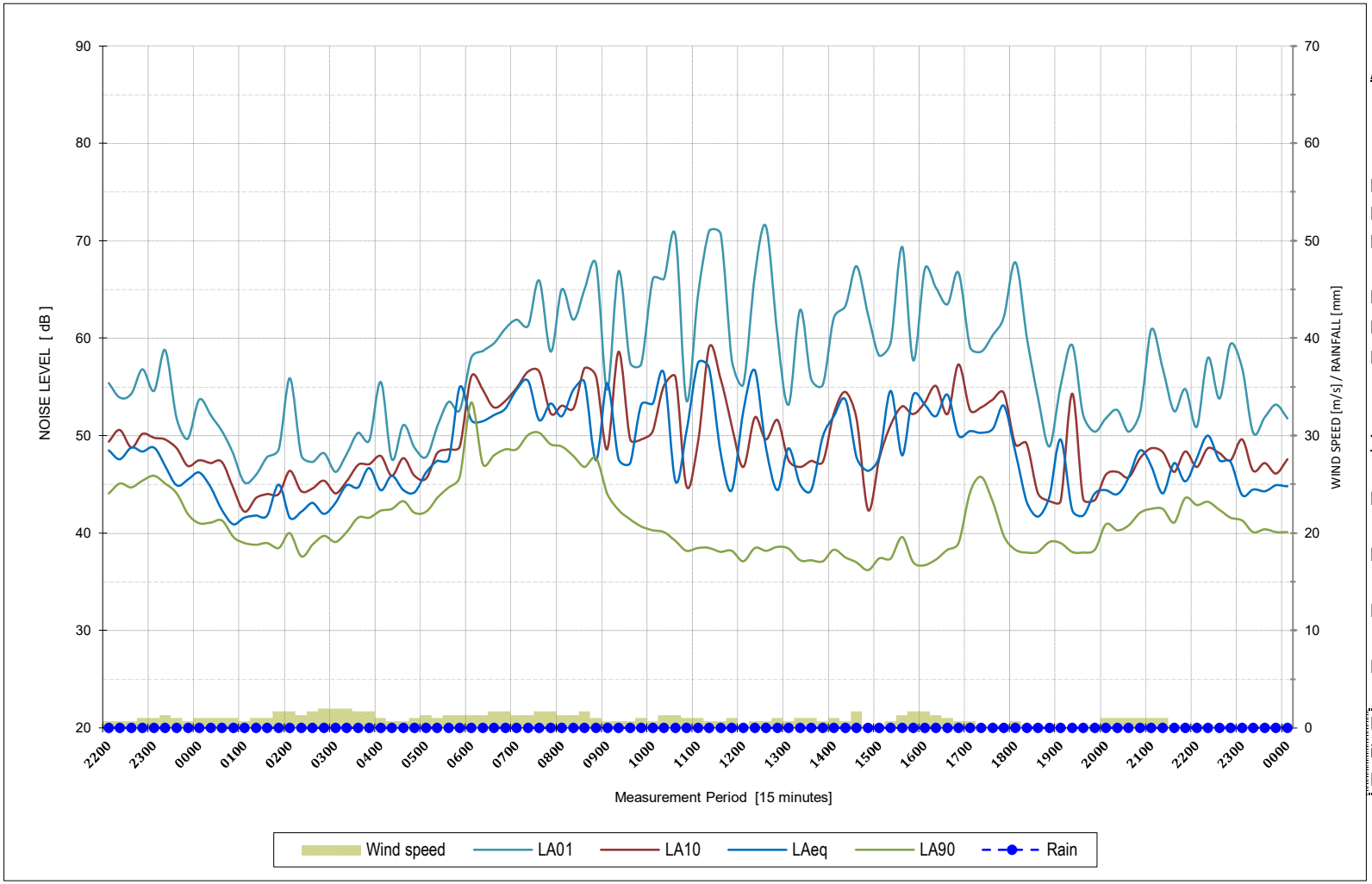
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	52	dB
LAeq 9 hours	2200-0700	50	dB
Max LAeq 1 hour	0700-2200	56	dB
Max LAeq 1 hour	2200-0700	53	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	18

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 5 **LOGGER LOCATION:** Ridge Street - front yard **DATE:** Tuesday, 25 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	37	dB
LA90 Evening	1800-2200	38	dB
LA90 Night-time	2200-0700	39	dB
LAeq Daytime	0700-1800	53	dB
LAeq Evening	1800-2200	46	dB
LAeq Night-time	2200-0700	48	dB

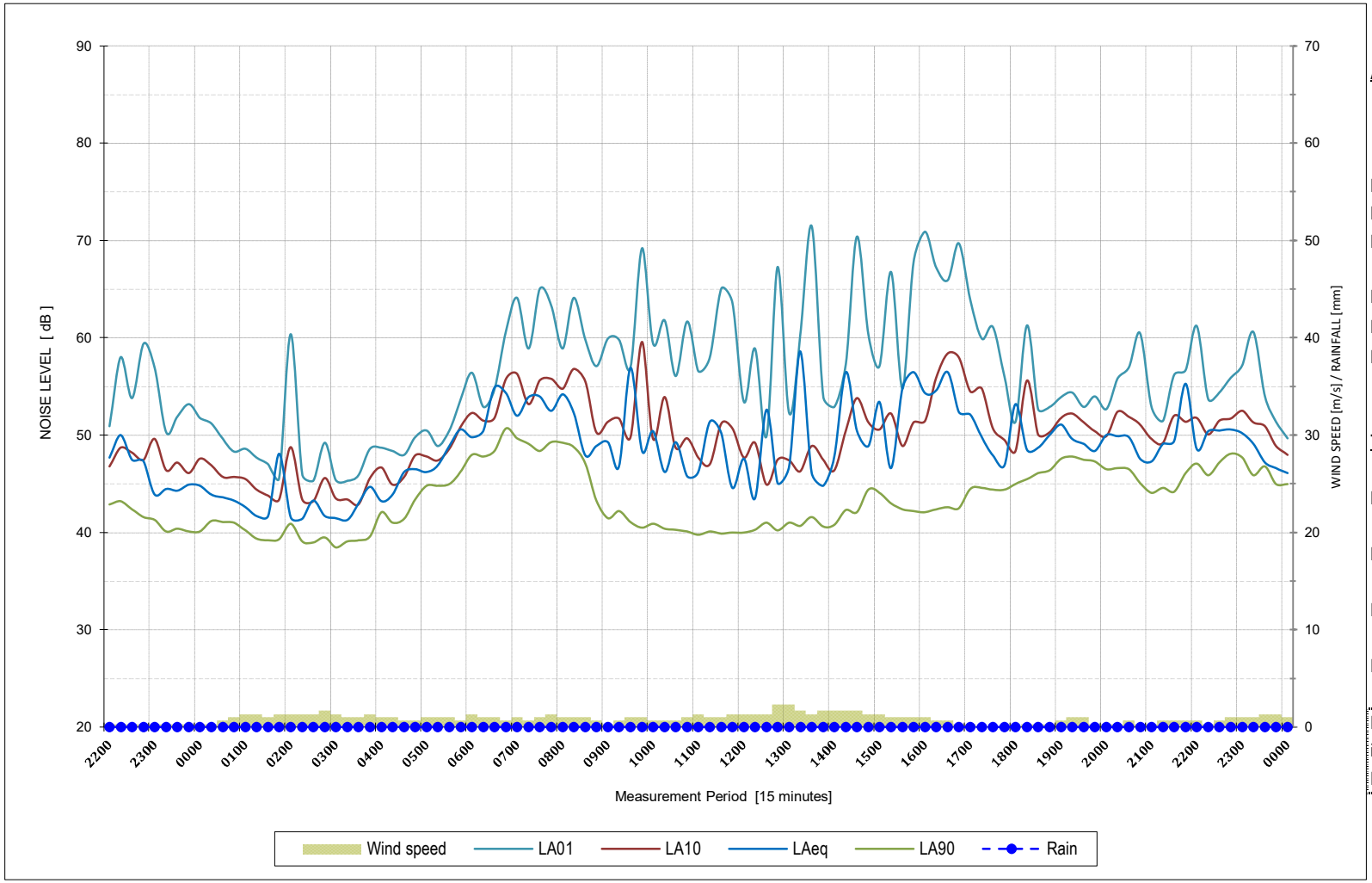
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	52	dB
LAeq 9 hours	2200-0700	48	dB
Max LAeq 1 hour	0700-2200	54	dB
Max LAeq 1 hour	2200-0700	51	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	19

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 6 **LOGGER LOCATION:** Ridge Street - front yard **DATE:** Wednesday, 26 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	40	dB
LA90 Evening	1800-2200	44	dB
LA90 Night-time	2200-0700	39	dB
LAeq Daytime	0700-1800	52	dB
LAeq Evening	1800-2200	50	dB
LAeq Night-time	2200-0700	47	dB

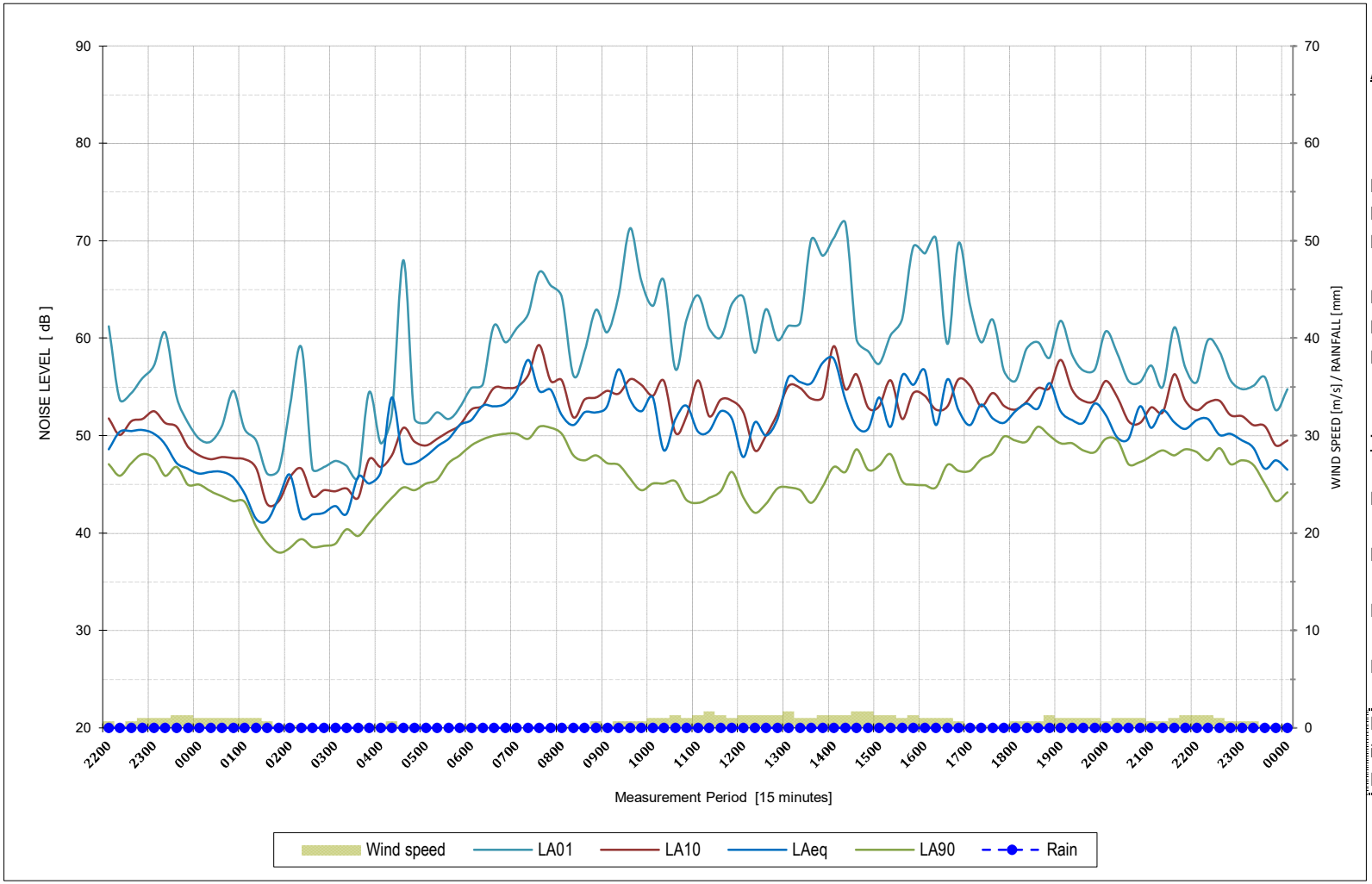
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	52	dB
LAeq 9 hours	2200-0700	47	dB
Max LAeq 1 hour	0700-2200	54	dB
Max LAeq 1 hour	2200-0700	49	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	19

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 7 **LOGGER LOCATION:** Ridge Street - front yard **DATE:** Thursday, 27 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	43	dB
LA90 Evening	1800-2200	48	dB
LA90 Night-time	2200-0700	39	dB
LAeq Daytime	0700-1800	54	dB
LAeq Evening	1800-2200	52	dB
LAeq Night-time	2200-0700	49	dB

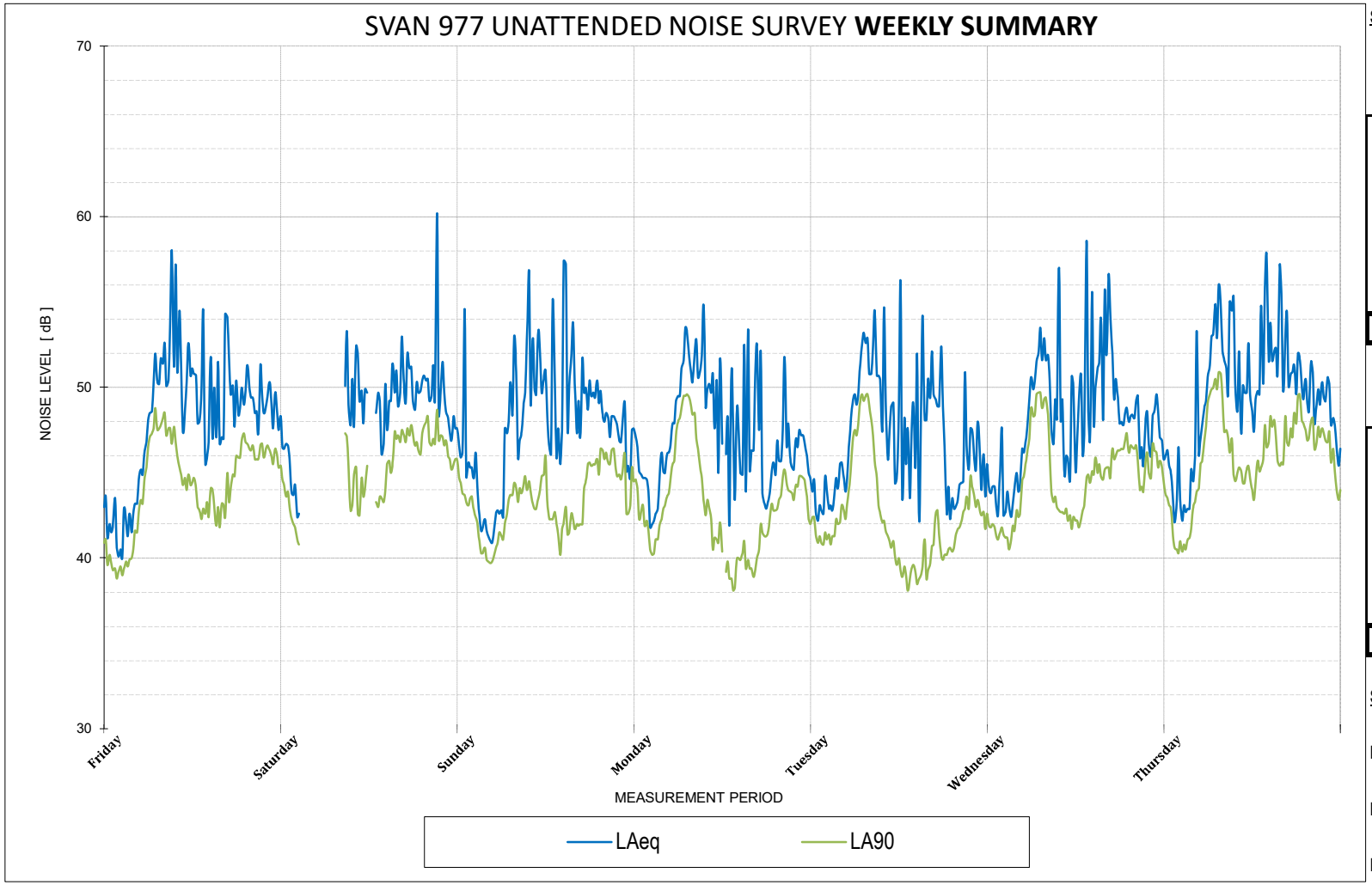
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	53	dB
LAeq 9 hours	2200-0700	49	dB
Max LAeq 1 hour	0700-2200	55	dB
Max LAeq 1 hour	2200-0700	50	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	17

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

WEEKLY SUMMARY **LOGGER LOCATION:** Ridge Street - rear yard **PERIOD:** 21st to the 27th June 2024



Sundays and Public Holidays the hours change to 0800

Noise Sentry: ANn2BHU423U%KJIC4wDZND

SUMMARY OF AMBIENT LEVELS

	LA90 Daytime	*LA90* Evening	*LA90* Night-time
Day 1	43	46	39
Day 2	43	46	42
Day 3	42	45	40
Day 4	39	42	41
Day 5	39	40	41
Day 6	42	44	41
Day 7	44	47	41
RBL	**42**	**45**	**41**

	LAeq Daytime	*LAeq* Evening	*LAeq* Night-time
Day 1	52	50	45
Day 2	50	52	47
Day 3	51	49	47
Day 4	50	46	47
Day 5	50	46	46
Day 6	52	48	46
Day 7	53	50	48
Average	**51**	**49**	**47**

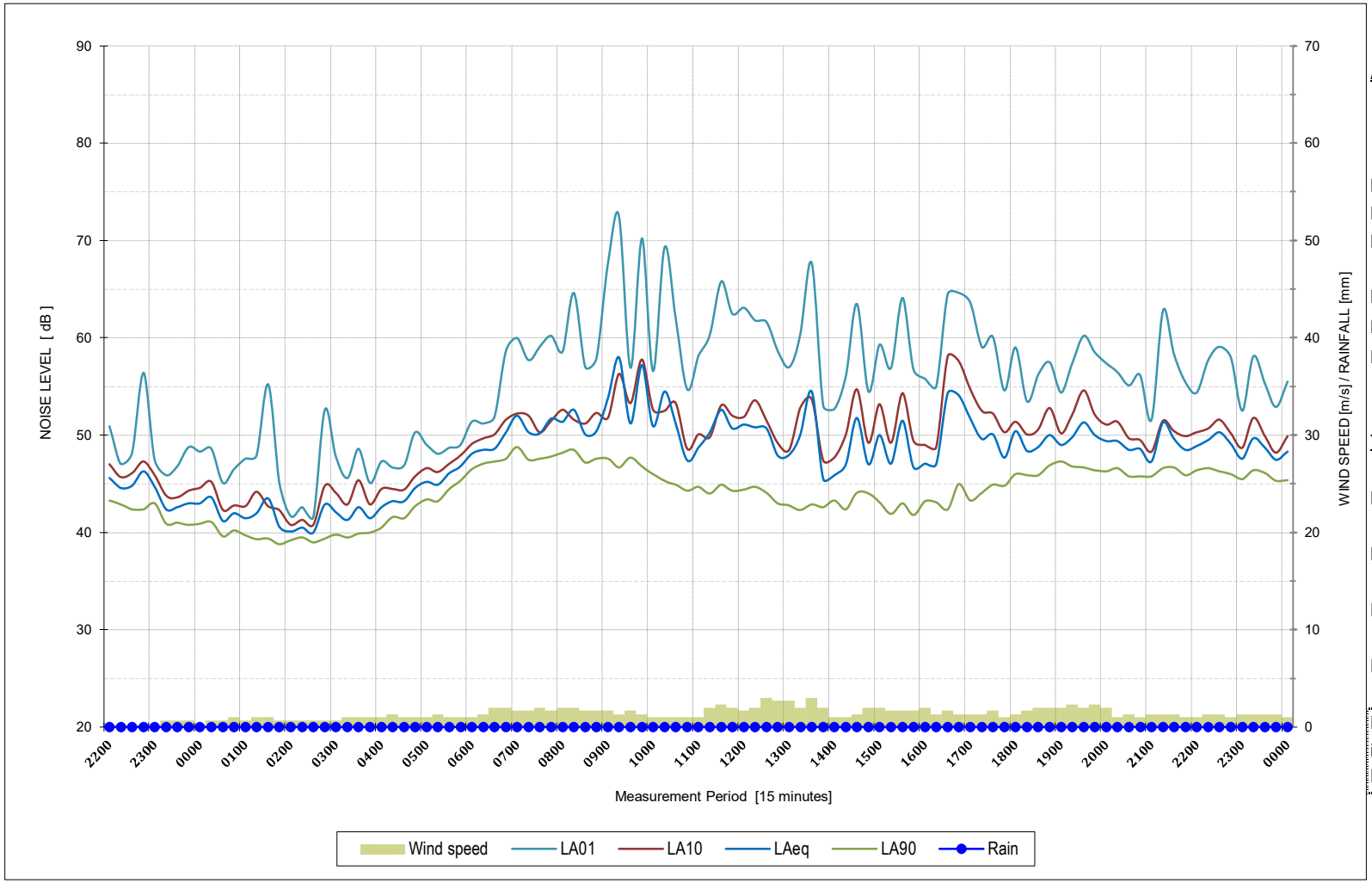
SUMMARY OF TRAFFIC LEVELS

LAeq 15 hrs	0700-2200	51	dB
LAeq 9 hrs	2200-0700	47	dB
Max LAeq 1 hr	0700-2200	53	dB
Max LAeq 1 hr	2200-0700	49	dB

Maximum noise events as defined in the Environmental Noise Management Manual 7 day average - [LAmax - LAeq ≥ 15]	10

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 1 **LOGGER LOCATION:** Ridge Street - rear yard **DATE:** Friday, 21 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1600	43	dB
LA90 Evening	1800-2200	46	dB
LA90 Night-time	2200-0700	39	dB
LAeq Daytime	0700-1800	52	dB
LAeq Evening	1800-2200	50	dB
LAeq Night-time	2200-0700	45	dB

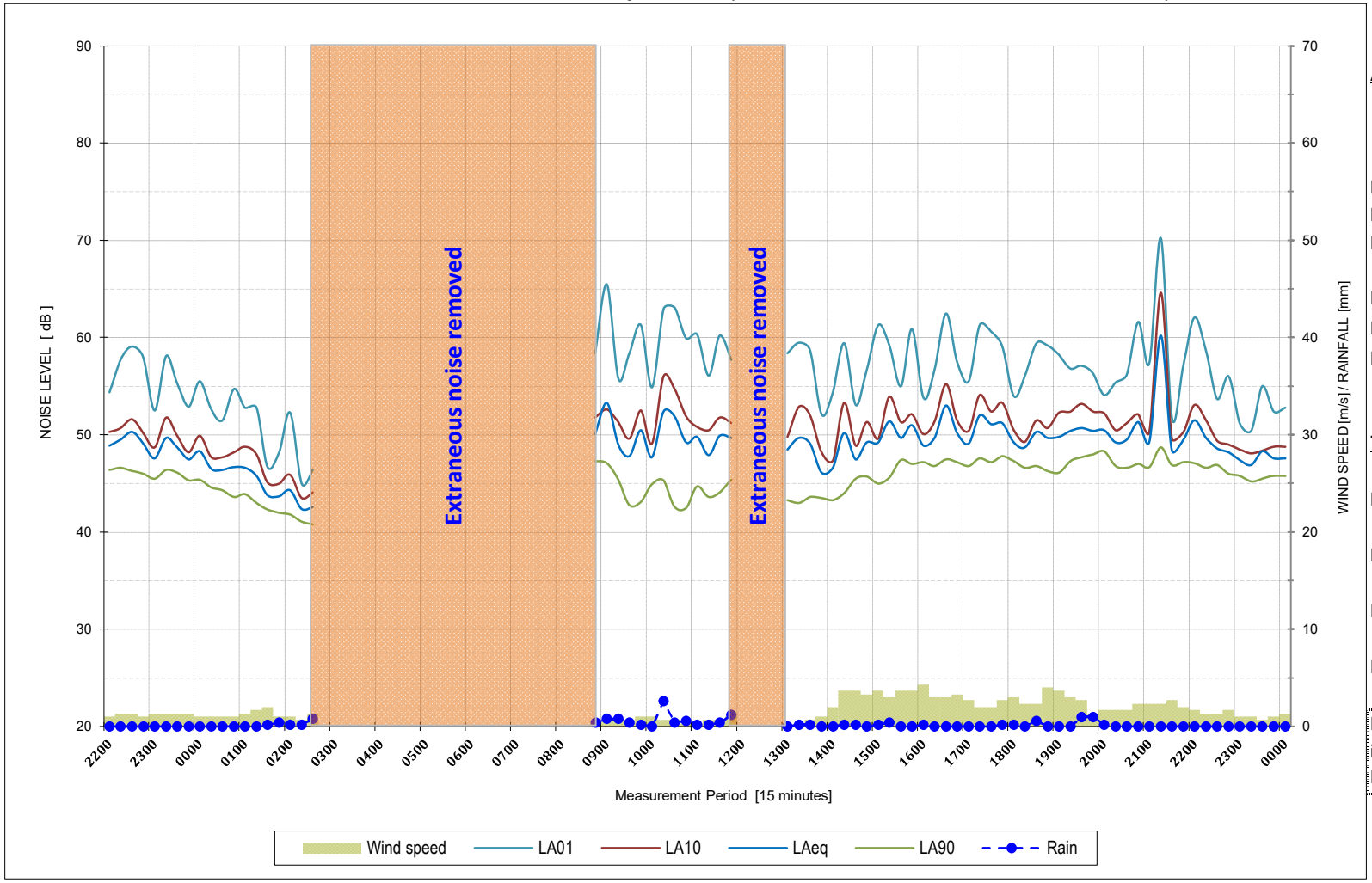
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	51	dB
LAeq 9 hours	2200-0700	45	dB
Max LAeq 1 hour	0700-2200	53	dB
Max LAeq 1 hour	2200-0700	46	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	8

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 2 **LOGGER LOCATION:** Ridge Street - rear yard **DATE:** Saturday, 22 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0800-1600	43	dB
LA90 Evening	1800-2200	46	dB
LA90 Night-time	2200-0700	42	dB
LAeq Daytime	0700-1800	50	dB
LAeq Evening	1800-2200	52	dB
LAeq Night-time	2200-0700	47	dB

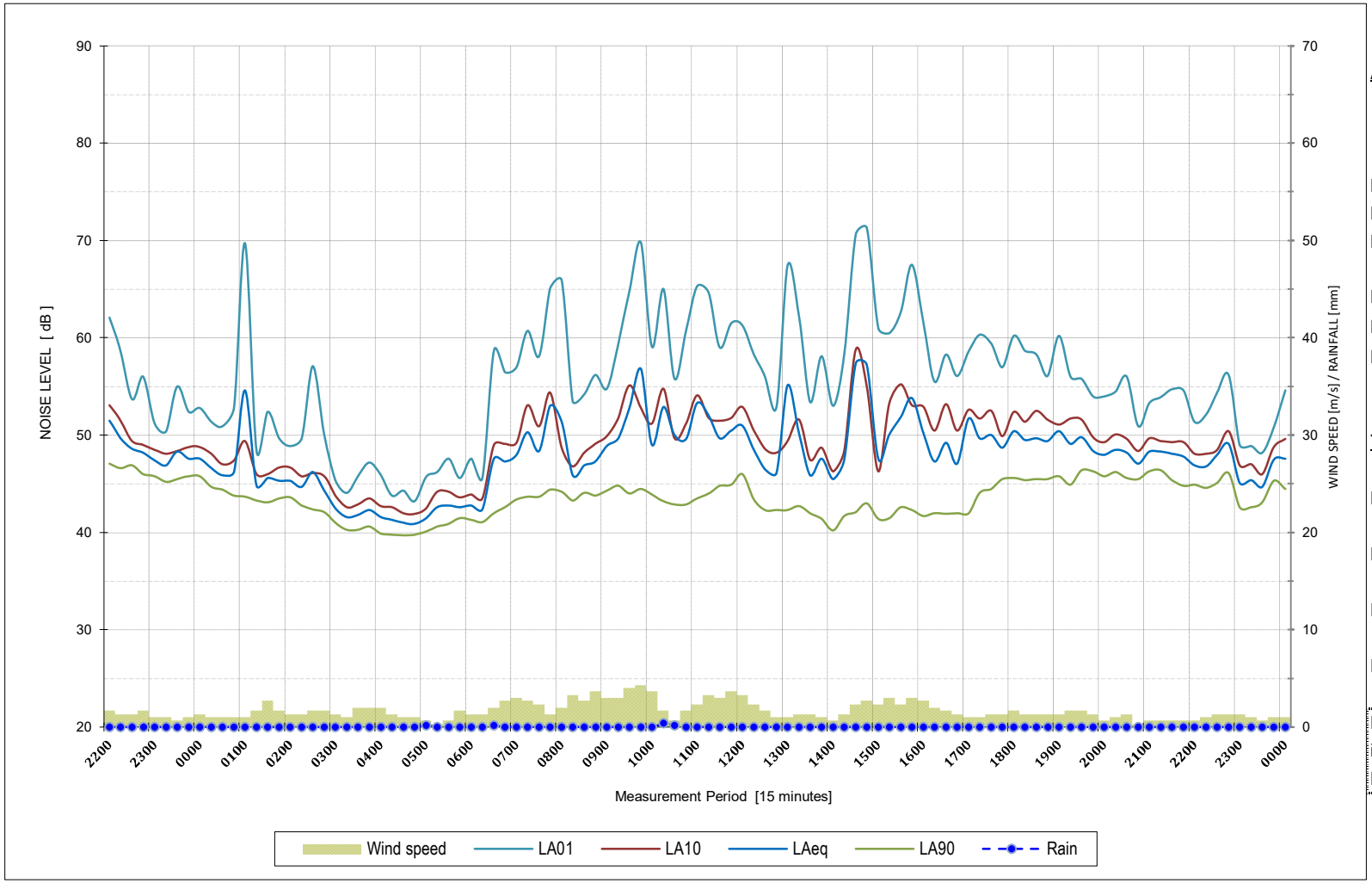
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	51	dB
LAeq 9 hours	2200-0700	47	dB
Max LAeq 1 hour	0700-2200	51	dB
Max LAeq 1 hour	2200-0700	49	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	8

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 3 **LOGGER LOCATION:** Ridge Street - rear yard **DATE:** Sunday, 23 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0800-1800	42	dB
LA90 Evening	1800-2200	45	dB
LA90 Night-time	2200-0800	40	dB
LAeq Daytime	0800-1800	51	dB
LAeq Evening	1800-2200	49	dB
LAeq Night-time	2200-0800	47	dB

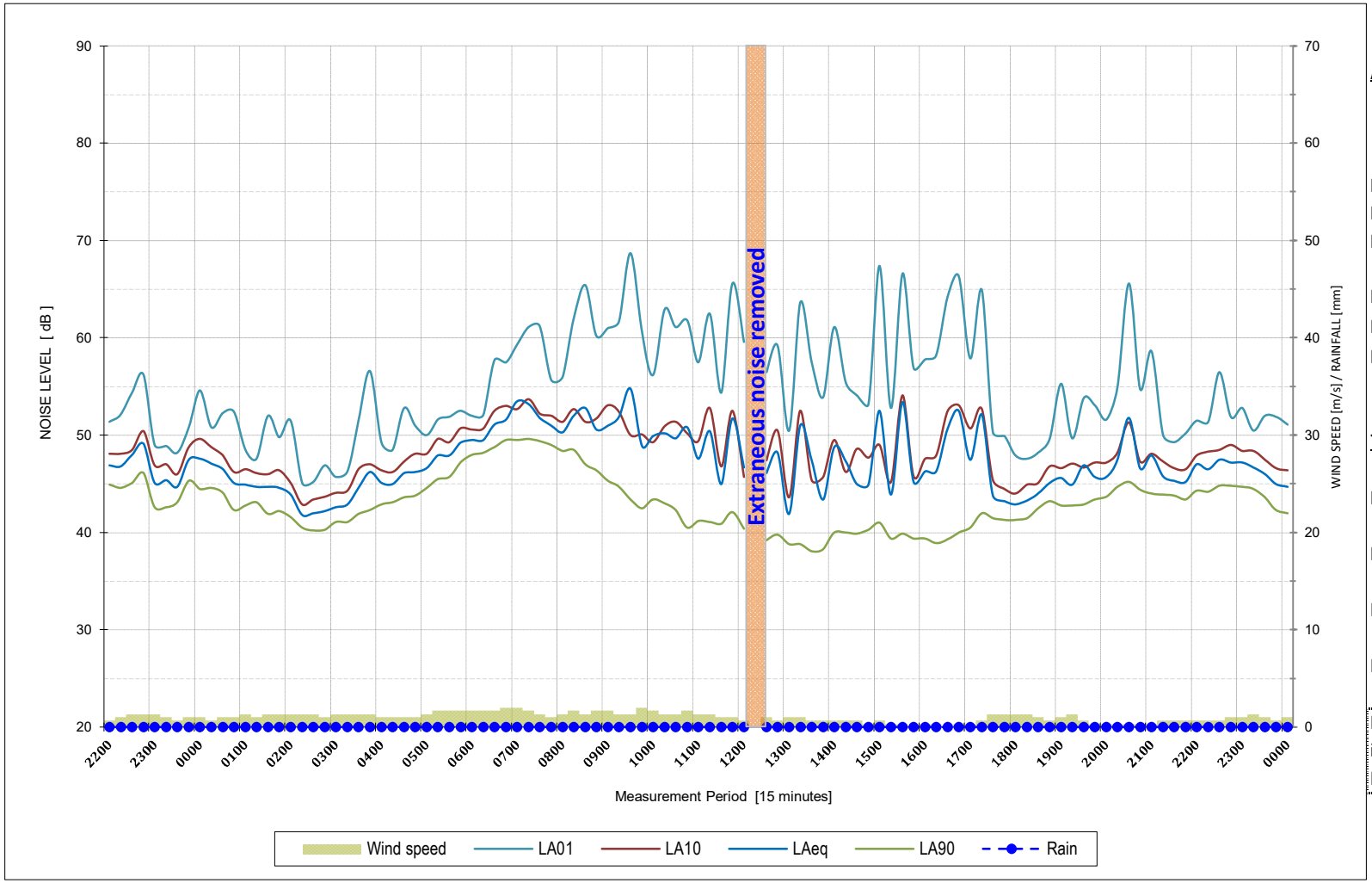
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	51	dB
LAeq 9 hours	2200-0700	47	dB
Max LAeq 1 hour	0700-2200	53	dB
Max LAeq 1 hour	2200-0700	50	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	10

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 4 **LOGGER LOCATION:** Ridge Street - rear yard **DATE:** Monday, 24 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	39	dB
LA90 Evening	1800-2200	42	dB
LA90 Night-time	2200-0700	41	dB
LAeq Daytime	0700-1800	50	dB
LAeq Evening	1800-2200	46	dB
LAeq Night-time	2200-0700	47	dB

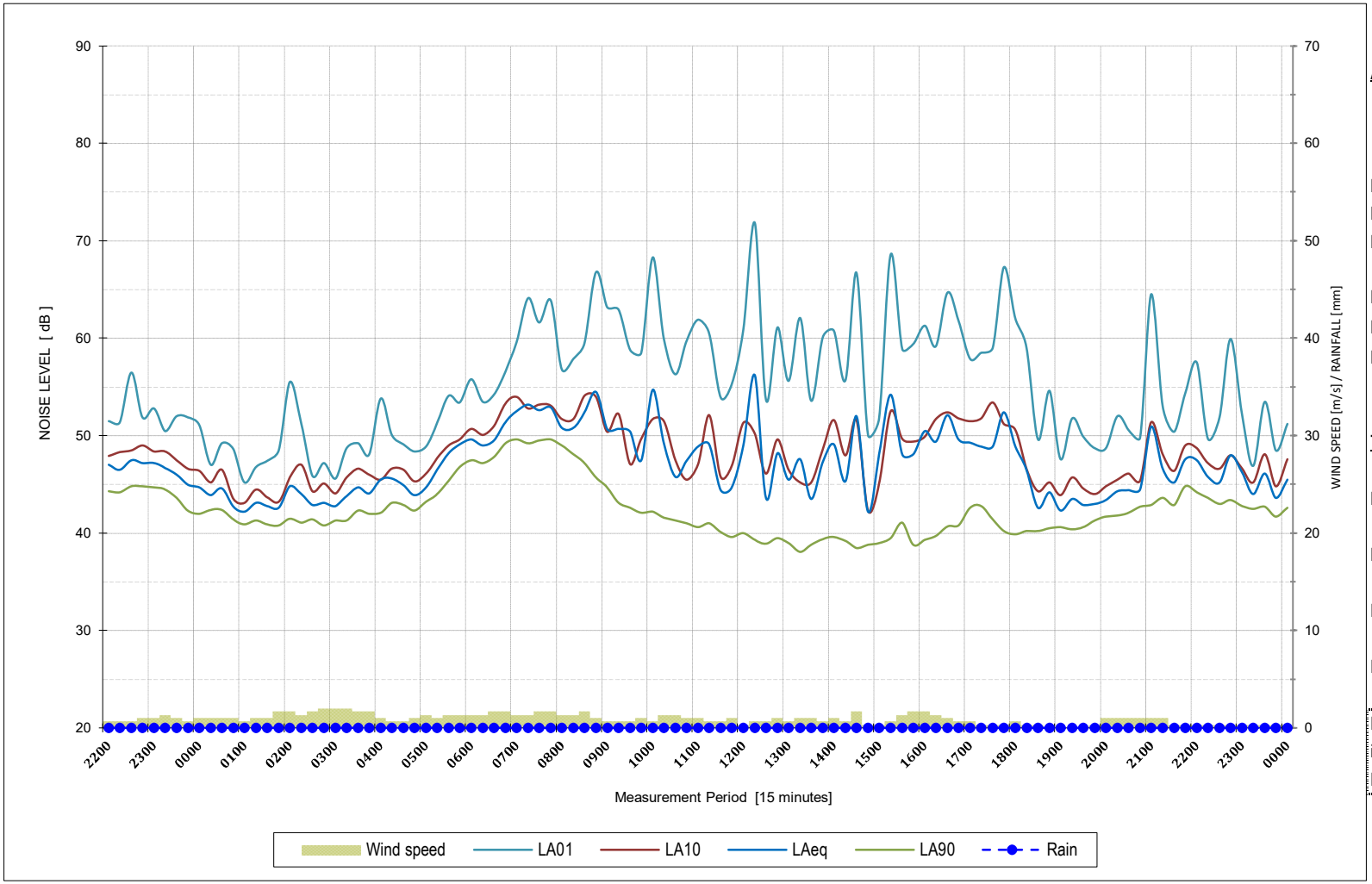
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	49	dB
LAeq 9 hours	2200-0700	47	dB
Max LAeq 1 hour	0700-2200	52	dB
Max LAeq 1 hour	2200-0700	49	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	10

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 5 **LOGGER LOCATION:** Ridge Street - rear yard **DATE:** Tuesday, 25 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	39	dB
LA90 Evening	1800-2200	40	dB
LA90 Night-time	2200-0700	41	dB
LAeq Daytime	0700-1800	50	dB
LAeq Evening	1800-2200	46	dB
LAeq Night-time	2200-0700	46	dB

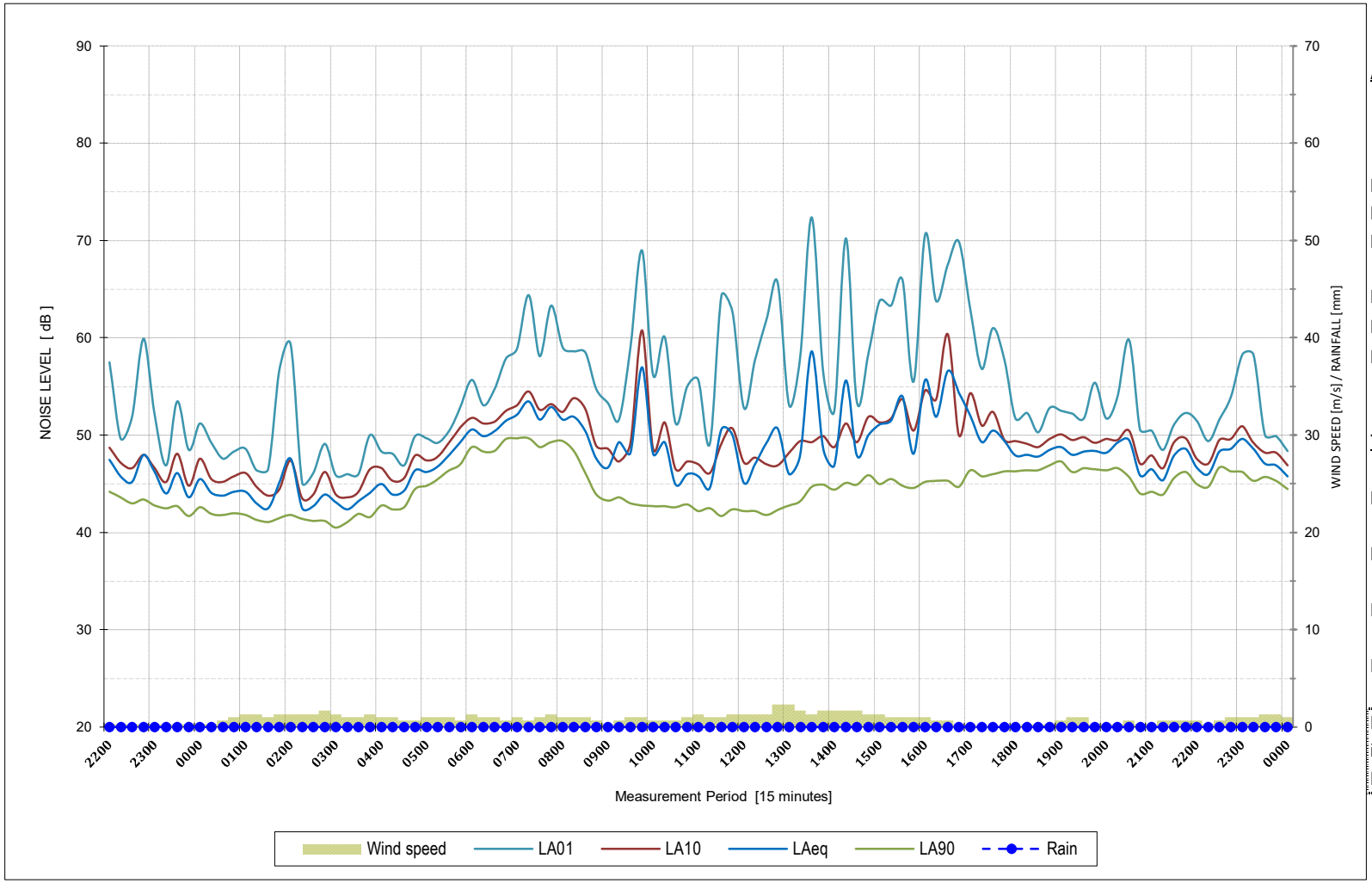
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	50	dB
LAeq 9 hours	2200-0700	46	dB
Max LAeq 1 hour	0700-2200	52	dB
Max LAeq 1 hour	2200-0700	48	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	11

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 6 **LOGGER LOCATION:** Ridge Street - rear yard **DATE:** Wednesday, 26 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	42	dB
LA90 Evening	1800-2200	44	dB
LA90 Night-time	2200-0700	41	dB
LAeq Daytime	0700-1800	52	dB
LAeq Evening	1800-2200	48	dB
LAeq Night-time	2200-0700	46	dB

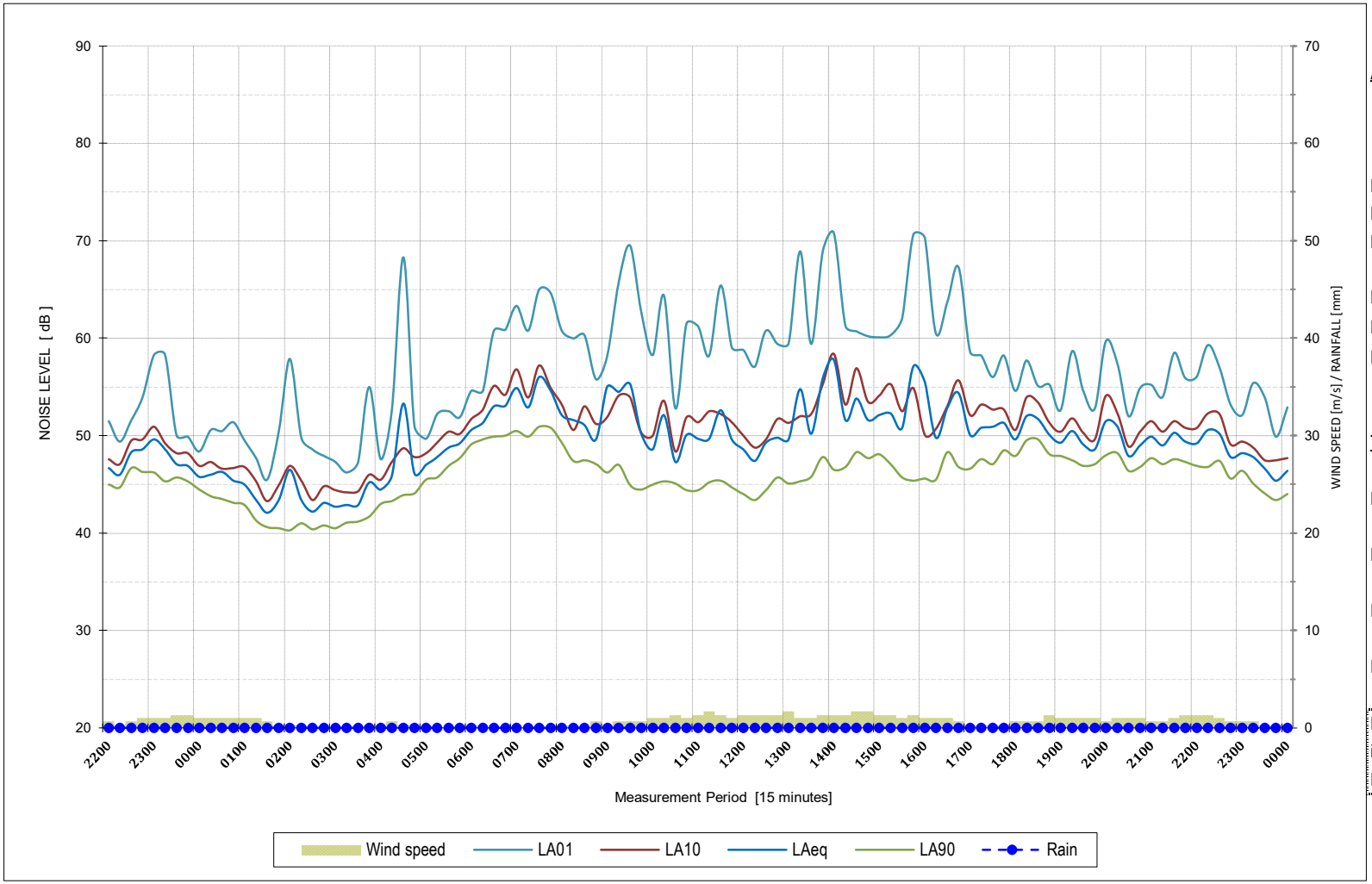
TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	51	dB
LAeq 9 hours	2200-0700	46	dB
Max LAeq 1 hour	0700-2200	54	dB
Max LAeq 1 hour	2200-0700	49	dB

Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	9

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

DAY 7 **LOGGER LOCATION:** Ridge Street - rear yard **DATE:** Thursday, 27 June 2024



AMBIENT NOISE METRICS

Descriptor	Period	Level	Units
LA90 Daytime	0700-1800	44	dB
LA90 Evening	1800-2200	47	dB
LA90 Night-time	2200-0700	41	dB
LAeq Daytime	0700-1800	53	dB
LAeq Evening	1800-2200	50	dB
LAeq Night-time	2200-0700	48	dB

TRAFFIC & MISC. NOISE METRICS

LAeq 15 hours	0700-2200	52	dB
LAeq 9 hours	2200-0700	48	dB
Max LAeq 1 hour	0700-2200	55	dB
Max LAeq 1 hour	2200-0700	50	dB

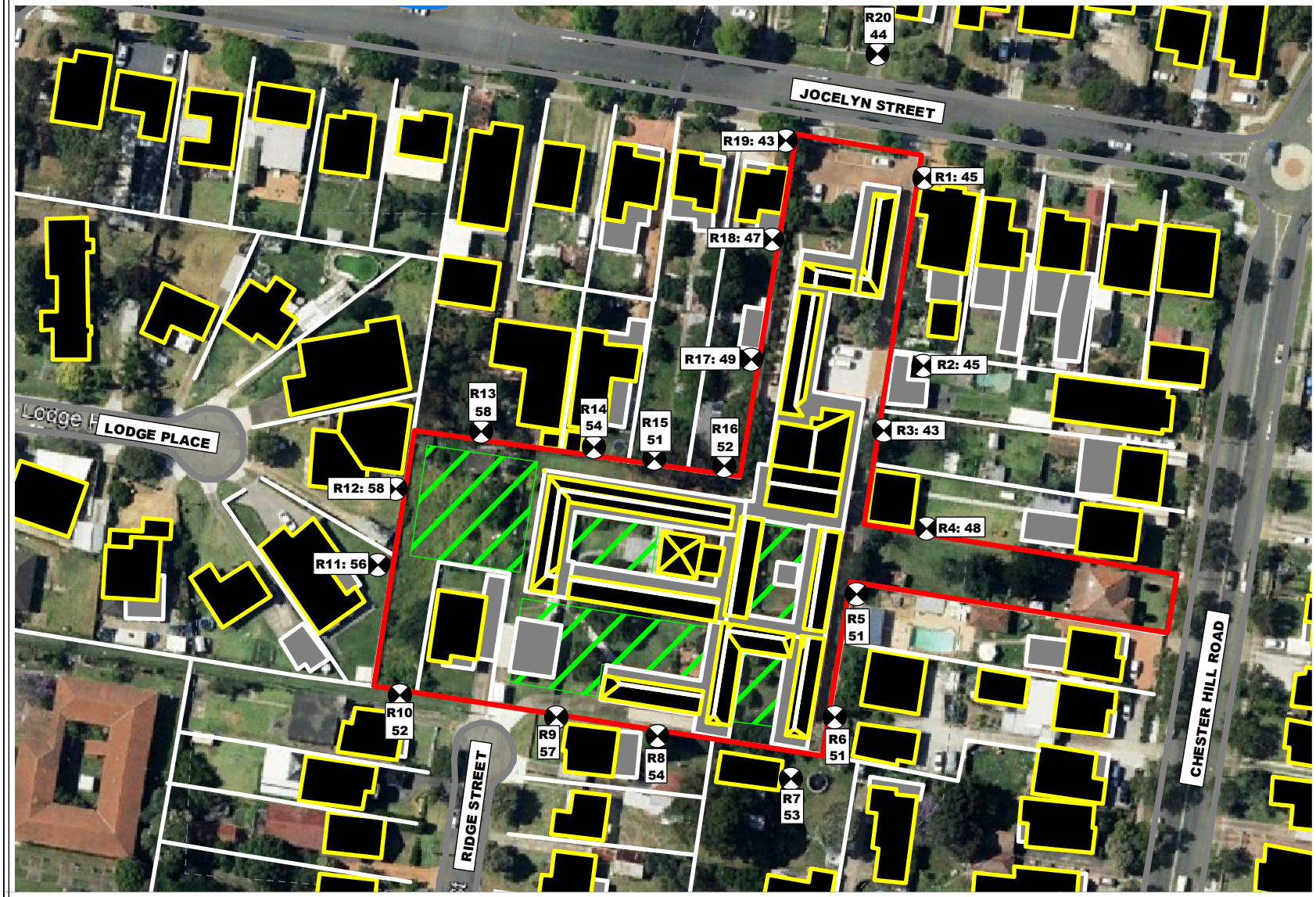
Maximum noise events as defined in the Environmental Noise Management Manual [LAmax - LAeq ≥ 15]	11

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

APPENDIX B

APPENDIX B

APPENDIX B



Scenario 1.1 - existing (outdoor play areas)

Noise Sources:

~ Play area 1: 26 kids
~ Play area 2: 24 kids
~ Play area 3: 26 kids
~ Play area 4: 92 kids
~ Oval: 60 kids

Note:

- Receiver points and noise contours are at a height of 1.5 m above the ground.

- The maximum reading at the noise affected residential premise is LAeq,15mins 58 dB.

PRINT DATE: 04/09/24

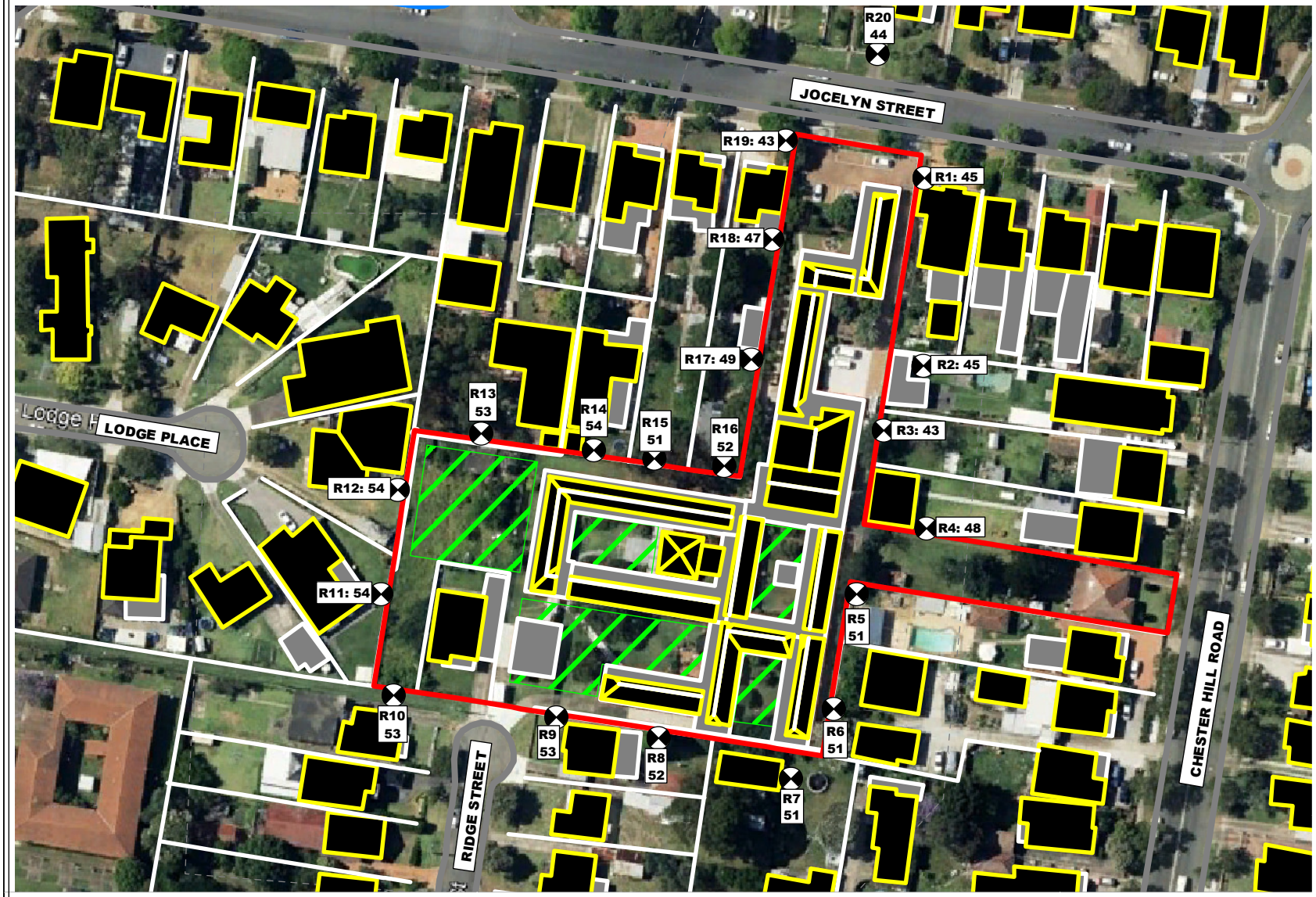
Area Source
Building
Barrier
3D-Reflector
Ground Absorption
Contour Line
Receiver
Calculation Area
Vertical Grid

> 50.0 dB
> 55.0 dB
> 60.0 dB
> 65.0 dB
> 70.0 dB
> 75.0 dB
> 80.0 dB
> 85.0 dB

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

JOB NUMBER: 6263
CLIENT: Al Sadiq College C/- Pivotal Planning
SITE ADDRESS: 83 Jocelyn Street &54 Chester Hill Road, Chester H
ASSESSED TO: See acoustic report
LIMITING CRITERIA: LAeq 49-51 dB

N
W E
S



Scenario 1.2 - proposed barriers and restrictions (outdoor play areas)

Noise Sources:

~ Play area 1: 26 kids
~ Play area 2: 30 kids
~ Play area 3: 20 kids
~ Play area 4: 92 kids
~ Oval: 60 kids

Note:

- Receiver points and noise contours are at a height of 1.5 m above the ground.

- The maximum reading at the noise affected residential premise is LAeq,15mins 54 dB.

PRINT DATE: 14/04/25

Area Source
Building
Barrier
3D-Reflector
Ground Absorption
Contour Line
Receiver
Calculation Area
Vertical Grid

> 50.0 dB
> 55.0 dB
> 60.0 dB
> 65.0 dB
> 70.0 dB
> 75.0 dB
> 80.0 dB
> 85.0 dB

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

JOB NUMBER: 6263
CLIENT: Al Sadiq College C/- Pivotal Planning
SITE ADDRESS: 83 Jocelyn Street &54 Chester Hill Road, Chester H
ASSESSED TO: See acoustic report
LIMITING CRITERIA: LAeq 49-52 dB

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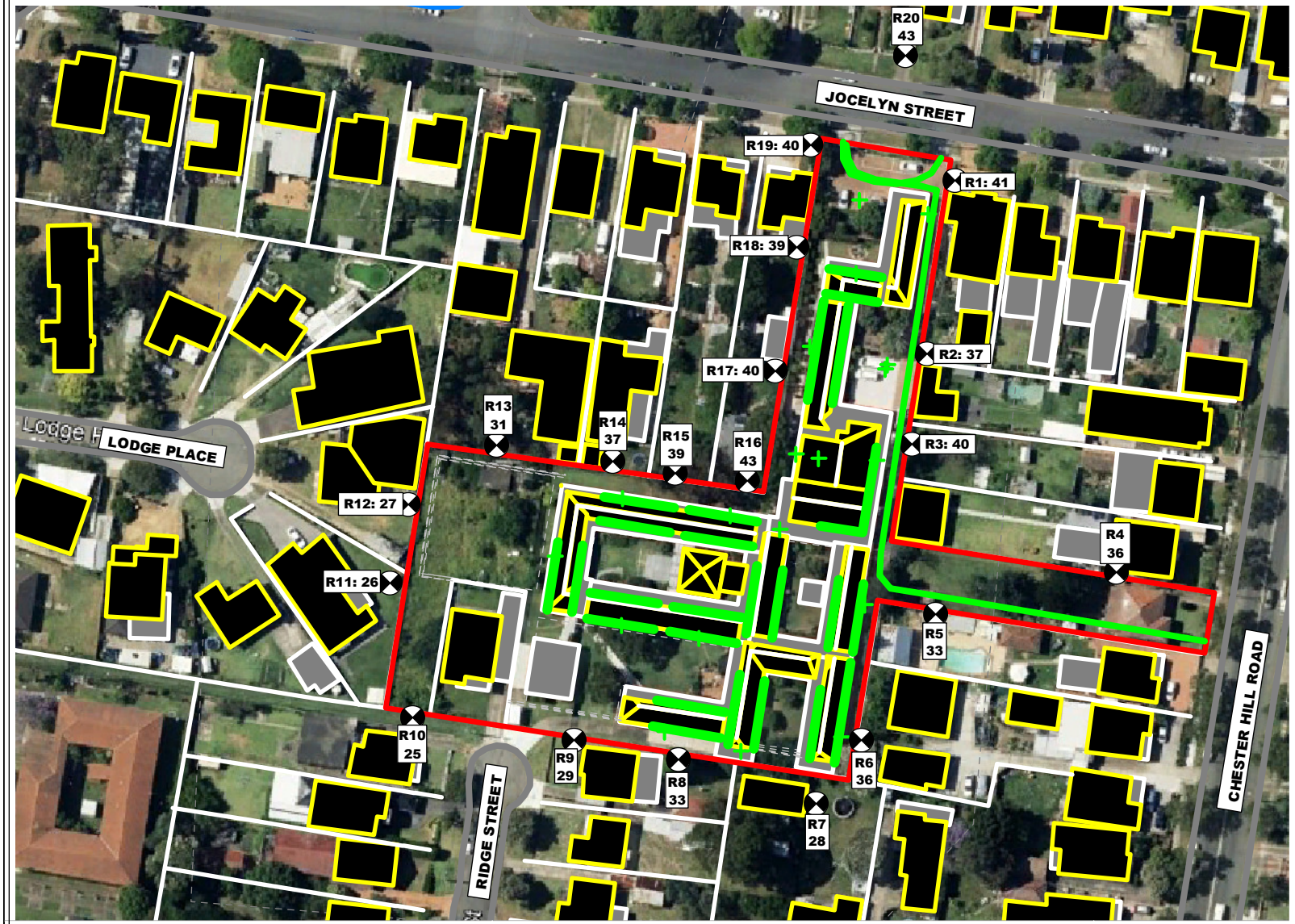

Scenario 2
(indoor areas, mechanical plant & vehicle noise levels)

Noise Sources:

- *15 x AC condenser units*
- *1 x kitchen exhaust fan*
- *1 x delivery truck driving at 10 km/hr*
- *1 x garbage truck driving at 10 km/hr*
- *2 x vehicle doors opening/closing*
- *1 x vehicle engine starting*
- *Breakout noise from classrooms*
- *Breakout noise from the hall*

Note:

- *Receiver points and noise contours are at a height of 1.5 m above the ground, except R4 is 4.5 m above the ground.*

- *The maximum reading at the noise affected residential premise is LAeq,15mins 43 dB.*

PRINT DATE: 02/09/24

Point Source
Line Source
Area Source
vert. Area Source
Building
Barrier
3D-Reflector
Ground Absorption
Contour Line
Receiver
Calculation Area

> 50.0 dB
> 55.0 dB
> 60.0 dB
> 65.0 dB
> 70.0 dB
> 75.0 dB
> 80.0 dB
> 85.0 dB

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

JOB NUMBER: 6263
CLIENT: Al Sadiq College C/- Pivotal Planning
SITE ADDRESS: 83 Jocelyn Street &54 Chester Hill Road, Chester H
ASSESSED TO: See acoustic report
LIMITING CRITERIA: LAeq 45-49 dB

N
W
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Scenario 3
(drop-off & pick-ups)

Noise Sources:

~ 88 x light vehicles driving at 10 km/hr
~ 3 x buses driving at 10 km/hr
~ 3 x buses idling for 1 minutes each.
~ 91 x vehicle doors opening/closing

Note:

- Receiver points and noise contours are at a height of 1.5 m above the ground, except R4 is 4.5 m above the ground.

- The maximum reading at the noise affected residential premise is LAeq,15mins 47 dB.

PRINT DATE: 04/09/24

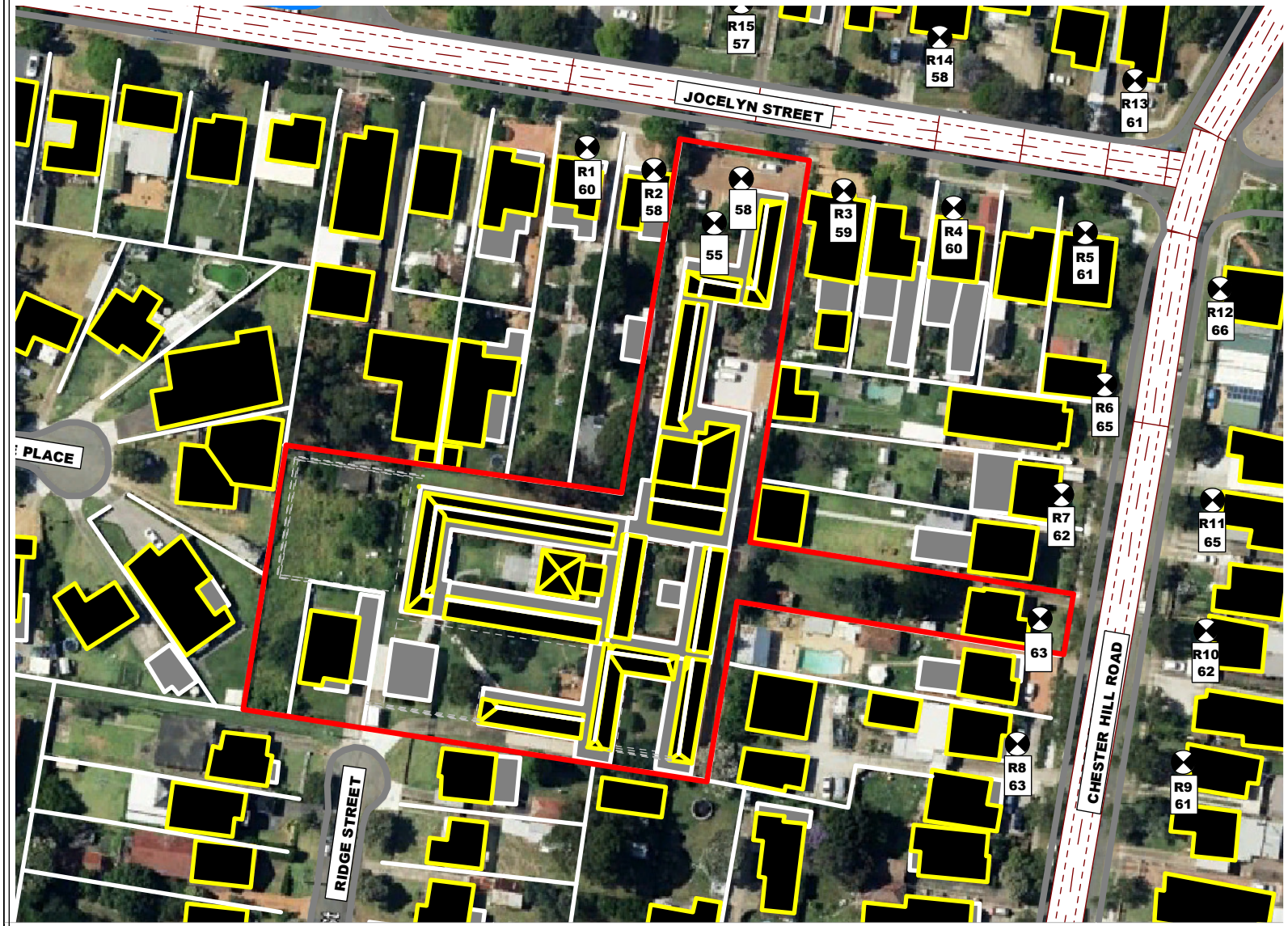
Point Source
Line Source
Area Source
Building
Barrier
3D-Reflector
Ground Absorption
Contour Line
Receiver
Vertical Grid

> 50.0 dB
> 55.0 dB
> 60.0 dB
> 65.0 dB
> 70.0 dB
> 75.0 dB
> 80.0 dB
> 85.0 dB

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

JOB NUMBER: 6263
CLIENT: Al Sadiq College C/- Pivotal Planning
SITE ADDRESS: 83 Jocelyn Street &54 Chester Hill Road, Chester H
ASSESSED TO: See acoustic report
LIMITING CRITERIA: LAeq 45-49 dB

N
W
S



Scenario 4.1 - existing
(increased road traffic noise)

Noise Sources:

~ Existing traffic noise along Jocelyn Street
~ Existing traffic noise along Chester Hill Road

Note:

- Receiver points and noise contours are at a height of 1.5 m above the ground.

- The maximum reading at the noise affected residential premise is LAeq,1hr 65 dB.

PRINT DATE: 02/09/24

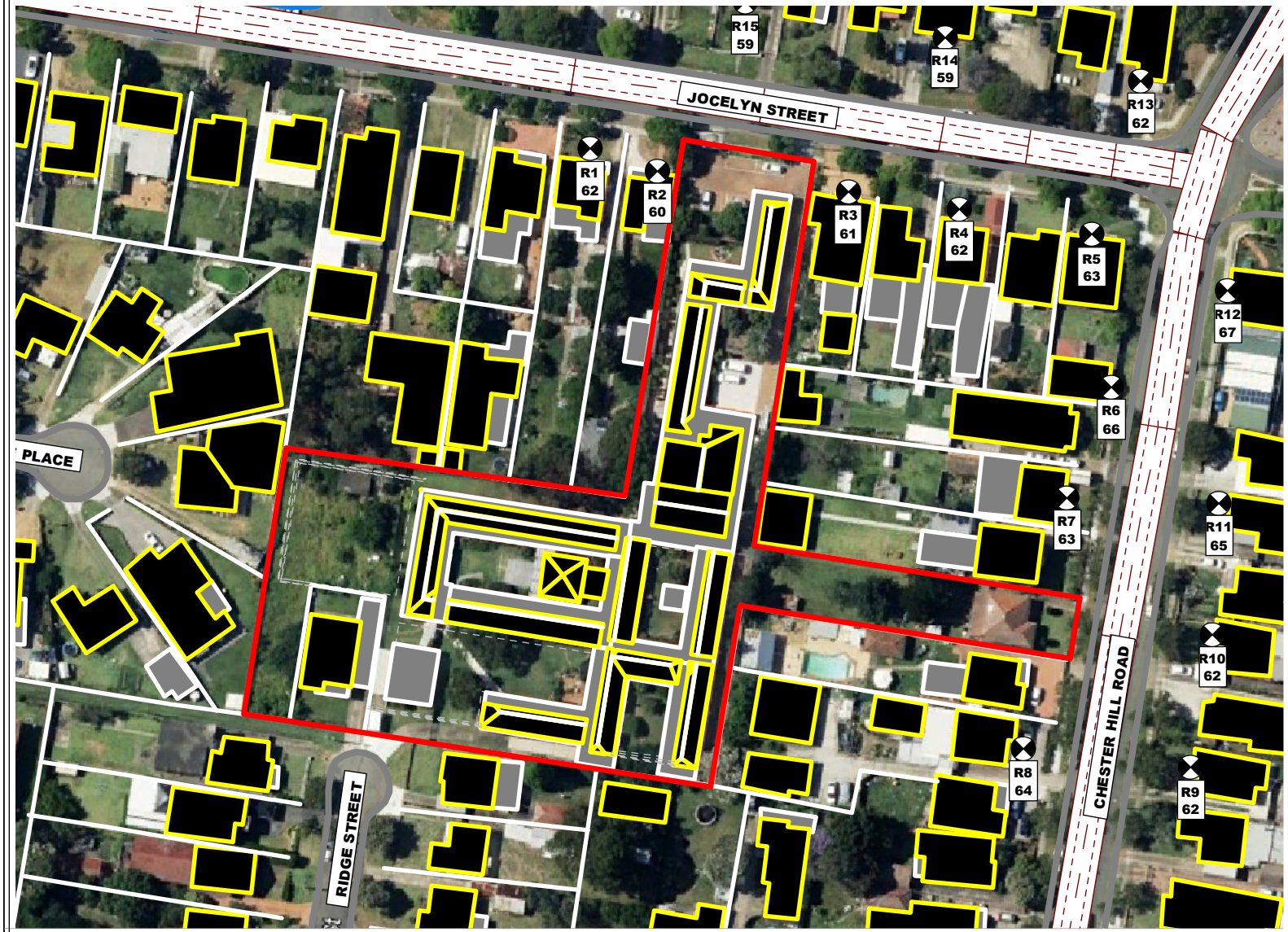
Area Source
Road
Building
Barrier
3D-Reflector
Ground Absorption
Contour Line
Receiver
Vertical Grid

> 50.0 dB
> 55.0 dB
> 60.0 dB
> 65.0 dB
> 70.0 dB
> 75.0 dB
> 80.0 dB
> 85.0 dB

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

JOB NUMBER: 6263
CLIENT: Al Sadiq College C/- Pivotal Planning
SITE ADDRESS: 83 Jocelyn Street &54 Chester Hill Road, Chester H
ASSESSED TO: See acoustic report
LIMITING CRITERIA: + 2 dB allowable increase

N
W
S



Scenario 4.2 - proposed
(increased road traffic noise)

Noise Sources:

~ Proposed traffic noise along Jocelyn Street
~ Proposed traffic noise along Chester Hill Road

Note:

- Receiver points and noise contours are at a height of 1.5 m above the ground.

- The maximum reading at the noise affected residential premise is LAeq,1hr 67 dB.

PRINT DATE: 04/09/24

Area Source
Road
Building
Barrier
3D-Reflector
Ground Absorption
Contour Line
Receiver
Vertical Grid

> 50.0 dB
> 55.0 dB
> 60.0 dB
> 65.0 dB
> 70.0 dB
> 75.0 dB
> 80.0 dB
> 85.0 dB

koikas acoustics PTY LTD
CONSULTANTS IN NOISE & VIBRATION

JOB NUMBER: 6263
CLIENT: Al Sadiq College C/- Pivotal Planning
SITE ADDRESS: 83 Jocelyn Street &54 Chester Hill Road, Chester H
ASSESSED TO: See acoustic report
LIMITING CRITERIA: + 2 dB allowable increase

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