

Project: **481-487 SWIFT STREET ALBURY**

Prepared for: **Joss Construction
206 East Street
Albury NSW 2640**

Attention: **Martin Reid**

Report No.: **Rp001 R04 20230173**

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EXECUTIVE SUMMARY

Joss Construction are proposing the development of a residential apartment building at 481-487 Swift Street Albury including basement parking and commercial tenancies and communal spaces at ground level. Seven (7) levels of residential apartments and a roof terrace will be constructed above.

Joss Construction has commissioned Marshall Day Acoustics Pty Ltd (MDA) to provide acoustic design advice for the proposed residential development at 481-487 Swift Street, Albury.

The site is located adjacent to the Myer Centrepoint Shopping Centre. The development application has been considered by the Southern Regional Planning Panel (SRPP) with the matter deferred pending resolution of issues, including the following acoustic considerations

- Noise emissions generated by the completed use of the development (part paragraph g)
- Noise impacts on the development by the shopping centre operations and plant (part paragraph g)
- Presentation of noise criteria for the project (paragraph f)
- Presentation of design mitigation measures (paragraph i)

Noise from development use

- The assessment in this report has concluded that noise generated by the use of the development can comply with the noise criteria provided within the EPA Noise Policy for industry. It will be necessary to assess noise emissions from plant and equipment associated with the development once design is finalised and to document suitable acoustic controls for construction.

Noise impact on the development

- Noise measurements and monitoring have been carried out on site. The results from these surveys have determined that the site is impacted by noise generated by plant and equipment associated with the Myer Centrepoint Shopping Centre. Joss have instructed that, in the first instance noise from the plant and equipment operated by the shopping centre should be controlled to within the requirements of the EPA Noise Policy for Industry for residential premises at 481 and 487 Swift Street.
- Joss Construction have revised the apartment design and layouts such that there are no windows to habitable rooms facing south (the shopping centre) directly. The remaining windows face north, east and west with wrap around solid facade elements providing partial screening to the apartment balconies. This will significantly reduce noise exposure to windows serving habitable rooms.
- Based on noise level projections to the facade (and allowing for screening some of the plant and equipment by the substation and pool building structure- see drawing 5.53 included in Appendix G) only the eastern apartments on level 1 to level 7 would be partially impacted by noise from the shopping centre ventilation fans. Acoustic controls to limit noise to within the recommendations of AS 2107 would include acoustic rated windows and doors together with an alternative fresh air system such that reliance on open windows is not required. This is commonly specified where apartments are situated adjacent major sources that cannot be directly addressed (for example arterial roads and motorways)
- Nevertheless, it is preferable, in the first instance, that the noise from the shopping centre plant and equipment is controlled directly via plenums and silencers as necessary. This is available as a standard noise control technique. We are aware that progress is being made in coordination with the shopping centre management to address these key sources of noise. Current noise levels at the exhaust fan outlet are 80 dB L_{Aeq} at 3ms. Reducing fan noise levels to approximately 55 dB L_{Aeq} at 3m and assuming the fans do not operate at night, would enable the requirement of AS2107 to be achieved, without the need for upgraded glazing and an alternative fresh air system to the apartments nominated in this report.
- Noise from traffic on Swift Street is not particularly high. Control of noise from traffic can be provided using relatively standard glazing systems comprising 8.38 mm laminated glass or 6-12-6 IGU type

systems. It is recommended that an acoustic rating of R_w 35 be specified for framing, and openable windows and doors.

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1.0 INTRODUCTION

Joss Construction are proposing the development of a residential apartment building at 481-487 Swift Street Albury including basement parking and commercial tenancies and communal spaces at ground level. Seven (7) levels of residential apartments and a roof terrace will be constructed above.

Joss Construction have recently revised the apartment design and layouts such that there are no windows to habitable rooms facing south (the shopping centre) directly. The remaining windows face north, east and west with wrap around solid facade elements providing partial screening to the apartment balconies. This will significantly reduce noise exposure to windows serving habitable rooms.

Joss Construction has commissioned Marshall Day Acoustics Pty Ltd (MDA) to provide an assessment of environmental noise impacts for and on the revised residential development at 481-487 Swift Street, Albury. This follows extensive noise logging and modelling based on existing background and ambient noise levels.

The site is located adjacent to the Myer Centrepoint Shopping Centre. The development application has been considered by the Southern Regional Planning Panel (SRPP) with the matter deferred pending resolution of issues, including the following acoustic considerations provided in SRPP correspondence addressed to Joss Constructions:

REASONS FOR THE DEFERRAL

The Panel agreed to defer the determination of the matter until further information and an addendum assessment report and revised recommended draft instrument of consent had been provided by Council for the Panel's consideration. Matters to be addressed included the following:

1. Noise Impact Assessment. The Panel considered it was not able to determine the application in the absence of a noise impact assessment (NIA) prepared in accordance with the NSW EPA Noise Policy for Industry (2017) and/or other applicable legislation relevant to the acoustic environment. Whilst noting the Applicant's view regarding acoustic compliance of adjoining land uses, the Panel considered that such an assessment was a pre-condition to the grant of consent and could not be dealt with by way of condition. It was further determined that any such assessment should include:
 - a) the project description
 - b) results of background and any other noise measurements
 - c) meteorological conditions and other relevant details at the time of the measurements
 - d) details of instruments and methodology used for noise measurements (including reasons for settings and descriptors used, calibration details)
 - e) a site map showing noise sources, measurement locations and potential noise receivers
 - f) noise criteria applied to the project
 - g) noise predictions for the proposed development including traffic noise including deliveries and waste collection, loading dock noise, supermarket carpark noise and mechanical plant and equipment noise, use of the rooftop swimming pool and other

recreational facilities within the building and other noise associated with the development.

- h) a comparison of noise predictions against noise criteria
- i) a discussion of proposed design mitigation measures, the noise reduction likely following inclusion of these measures, and the feasibility and reasonableness of these measures
- j) acoustic treatment measures that can be practicably incorporated into the building design to ensure appropriate acoustic amenity.

The requirements within the SRPP document are multifaceted and refer to both noise emissions from the development and noise impacts from the adjoining shopping centre on the development. For the purposes of this assessment the following the SRPP requirements have been considered:

Table 1: Planning Panel Assessments

Planning Panel assessment required	Considerations and references	
	Noise Impact on the Development	Noise impact on other properties by the use of the development
Traffic noise	refer section 7.2 and 9.2	refer section 6.2 and 8.1
Deliveries and waste collection		refer section 6.1 and 8.2
Loading Dock Noise		refer section 6.1 and 8.2
Shopping centre carpark	Refer section 6.4 and 10.3	
Mechanical plant and equipment noise	refer section 9.1 Plant and equipment (shopping centre)	refer section 8.4 (plant and equipment apartments)
Use of the swimming pool and other recreational facilities		refer section 6.1 and 8.3

MDA has previously conducted a detailed noise assessment at the site to establish environmental noise limits and assess potential noise impacts on the development due to plant noise emanating from the shopping centre. The assessment indicated that plant noise presently significantly exceeds acceptable noise criteria that would normally be associated with the proposed residential use of the site.

MDA have also been requested by Joss to investigate noise control treatment measures that could be included in the residential building design to mitigate noise impacts on the development. At the time of writing, measures are being investigated to reduce noise from the exhaust fans associated with the shopping centre.

2.0 REFERENCED DOCUMENTS

2.1 Architectural Drawings

This document reference architectural drawings prepared by Cohen Leigh Architects; Project 241004, as follows in Table 2

Table 2: Referenced drawings

Drawing Title	Drawing Number	Date	Rev
Plan – Level Basement	5.10	30.10.2024	B
Plan – Level Ground	5.11	30.10.2024	B
Plan – Level 1	5.12	30.10.2024	B
Plan – Levels 2-5	5.13	30.10.2024	B
Plan – Level 6 and 7	5.14	30.10.2024	B
Plan – Roof Plant	5.15	30.10.2024	B
Plan – Roof	5.16	30.10.2024	B
Elevation – North	5.30	30.10.2024	B
Elevation – East	5.31	30.10.2024	B
Elevation – North	5.32	30.10.2024	B
Elevation – North	5.33	30.10.2024	B
Section 1	5.40	30.10.2024	B
Section 2	5.41	30.10.2024	B
Section 3	5.42	30.10.2024	B
Section 4	5.43	30.10.2024	B
Section 5	5.44	30.10.2024	B
Section 6	5.45	30.10.2024	B
Site 3D Views Sheet 1	5.52	30.10.2024	B
Site 3D Views Sheet 2	5.53	30.10.2024	B

2.2 Traffic Report

Reference has been made to Peter Meredith Consulting, *Amended Traffic Impact Assessment – Modified Multi Storey Mixed-Use Development 481-487 Swift Street Albury NSW Report, Issue F*, dated 15 November 2024.

3.0 SITE DESCRIPTION

The proposed development site is located at 481-487 Swift Street, Albury and is bounded by the shopping centre to the south, the shopping centre carpark to the east and Arnold's Lane and commercial premises to the west. Arnold's Lane provides access to the Woolworths loading dock to the south-west. Swift Street is located to the north, with a licensed premises further to the north.

The nearest residential properties are located as follows:

- Mercure Hotel, Olive Street Albury approximately 130 metres north-west of the development
- Uniting Church Accommodation corner Olive and Wilson Streets approximately 240 metres north-west of the development
- Residential Dwellings Wilson Street Albury approximately 260 metres north of the development

4.0 MYER CENTREPOINT SHOPPING CENTRE OPERATING HOURS

We note that the currently advertised operating hours of the Myer Centrepoint Shopping Centre is as follows:

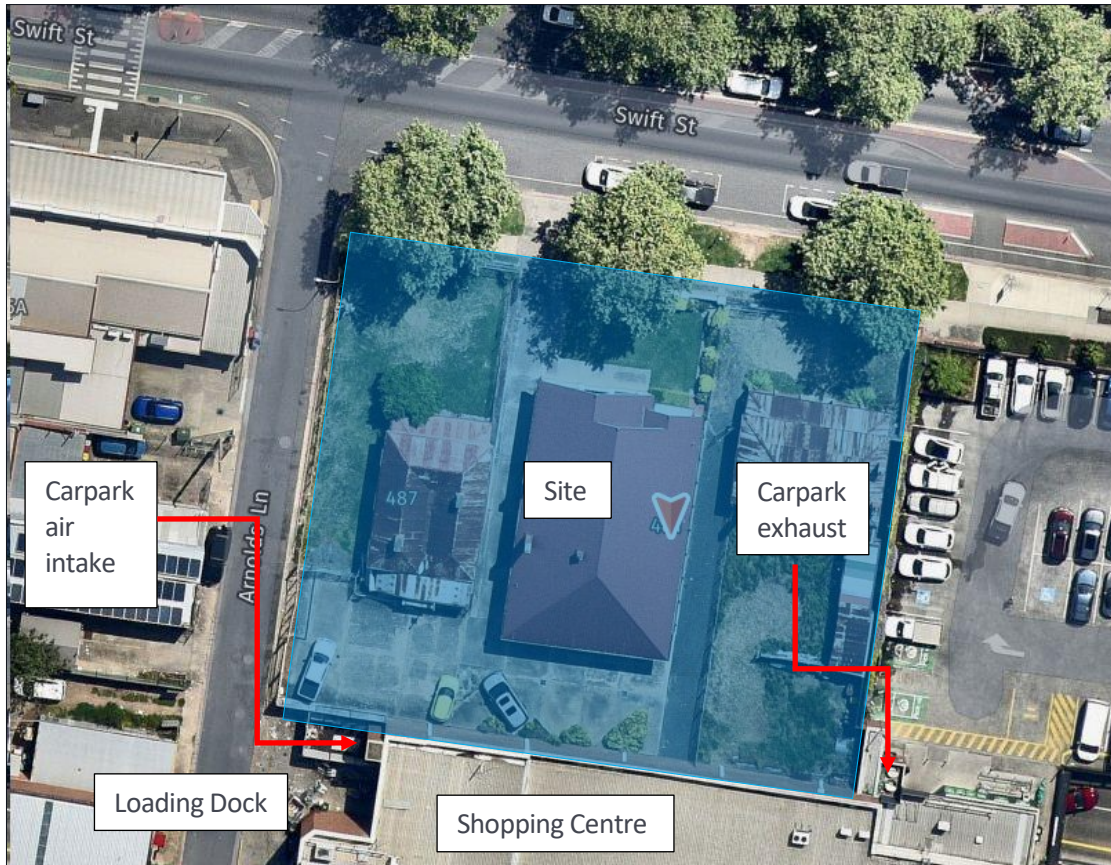
- | | |
|-------------|-------------------|
| • Monday | 9:00 am - 4:00pm |
| • Tuesday | 9:00 am - 5:30pm |
| • Wednesday | 9:00 am - 5:30pm |
| • Today | 9:00 am - 7:00pm |
| • Friday | 9:00 am - 5:30pm |
| • Saturday | 9:00 am - 5:00pm |
| • Sunday | 10:00 am - 4:00pm |

It is also noted that the Woolworths Supermarket within the complex operates over extended hours from 7am to 10pm.

Figure 1: Residential locations



Figure 2: Site and immediate surrounds



5.0 DEVELOPMENT DESCRIPTION

It is proposed to construct an 8 level + basement residential and mixed-use apartment building on the site of 481-487 Swift Street Albury.

The basement will provide 52 parking spaces, stairs and a lift lobby, with a vehicular access ramp to Swift Street to the north.

The ground level provides two (2) commercial tenancies, a central access corridor, meeting room, gymnasium, an enclosed lap pool, further carparking access off Arnold Lane, together with plant and store areas.

Levels 1 – 7 comprise residential apartment with a mix of 1,2 and 3 bedrooms

The roof level includes an access lobby, lift over run and spaces for mechanical plant.

Figure 3: Ground level site layout (source: CohenLeigh Architects)

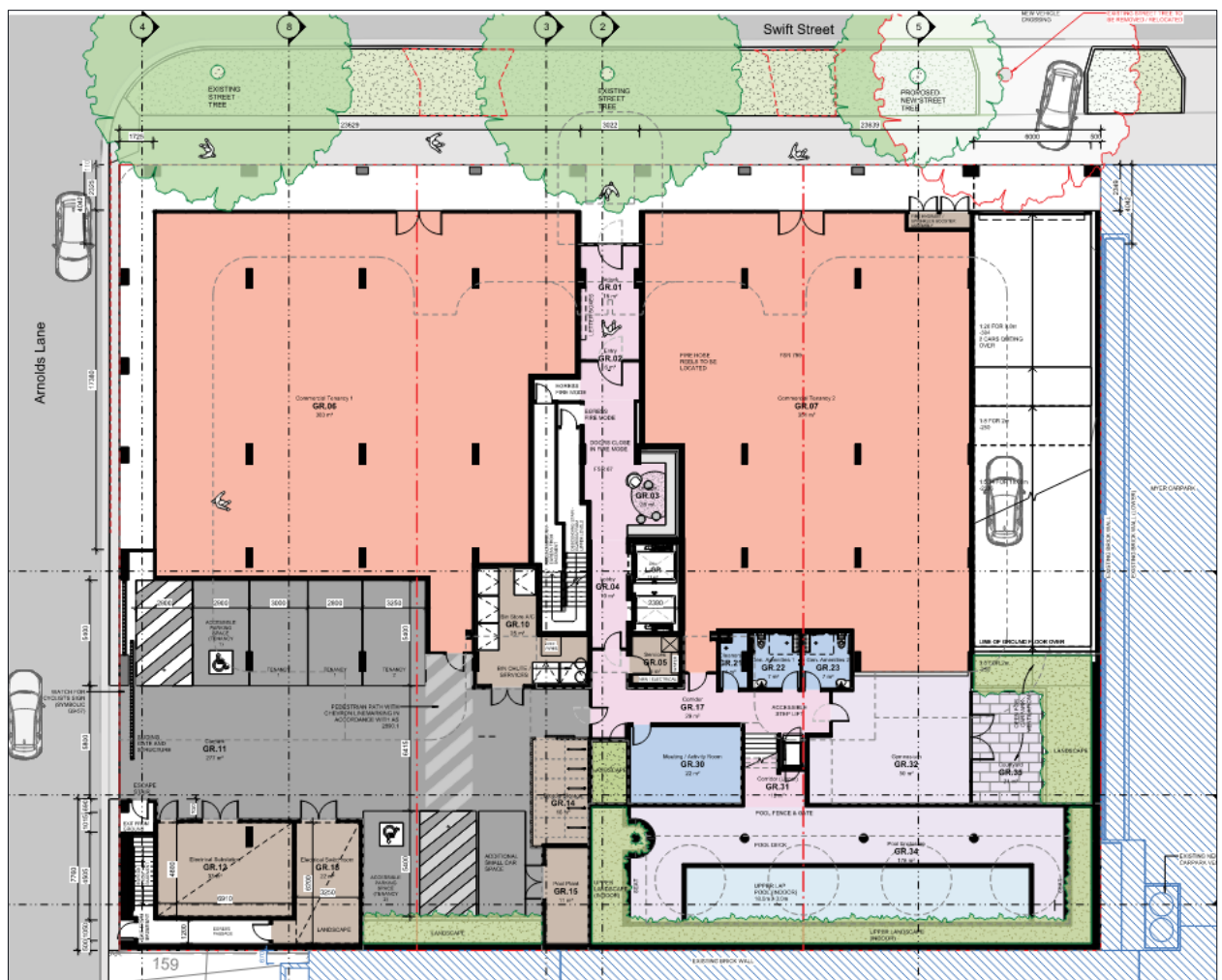
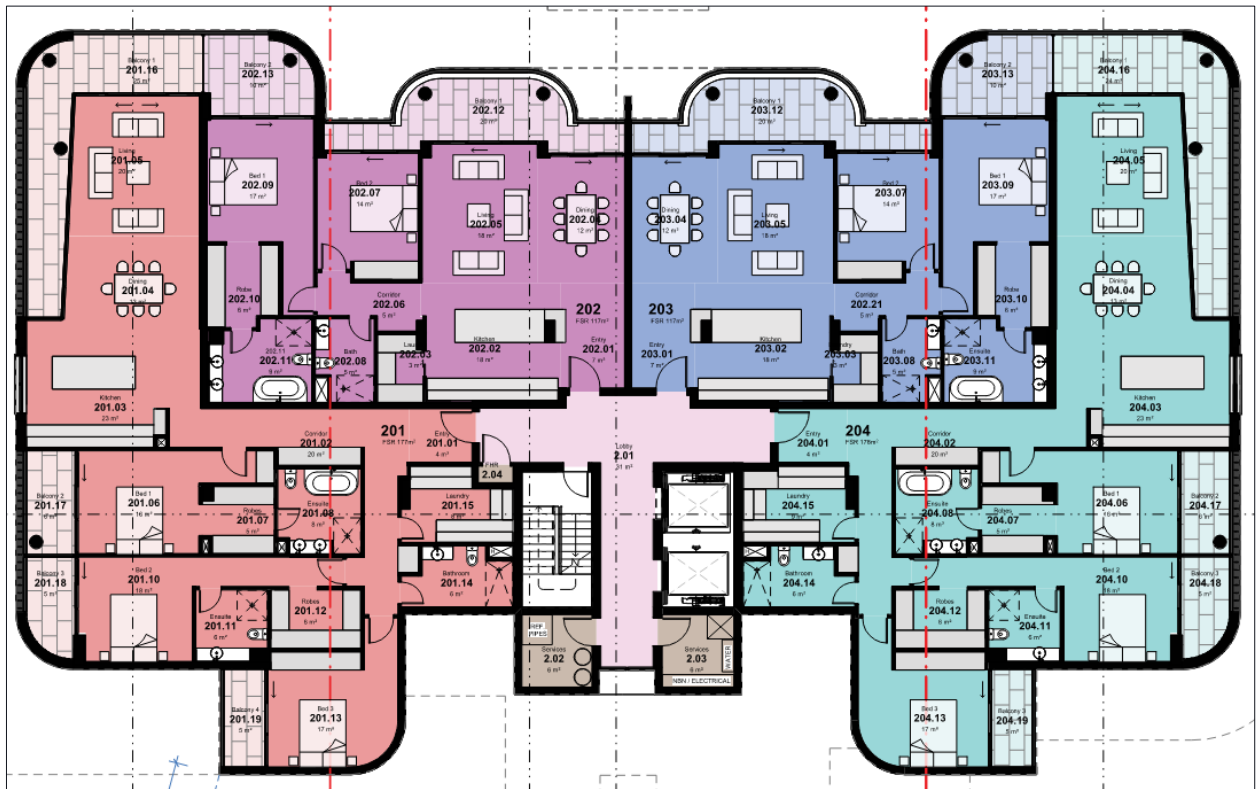


Figure 4: Typical residential level (Levels 2-5) (source: CohenLeigh Architects)



6.0 EXISTING NOISE LEVELS

Noise logging was commissioned in September 2024 to in order to determine the expected background noise levels in the absence of noise components from the plant and equipment associated with the shopping centre. Noise level targets have been developed for the assessment of the shopping centre plant noise impacts on the site, based on advice from Joss Construction that:

- The plant is required to comply with the NSW Environment Protection Authorities Noise Policy for Industry (NPfI) and;
- The site of 481 and 487 Swift Street is a residential receptor.
- The site of 485 Swift Street is a commercial receptor

Additional noise logging was also carried out at the rear of the property, directly exposed to noise from the shopping centre plant to provide an indication of the times that the fans operate and to inform the acoustic design of the building facade and possible noise amelioration.

6.1 Unattended noise monitoring locations

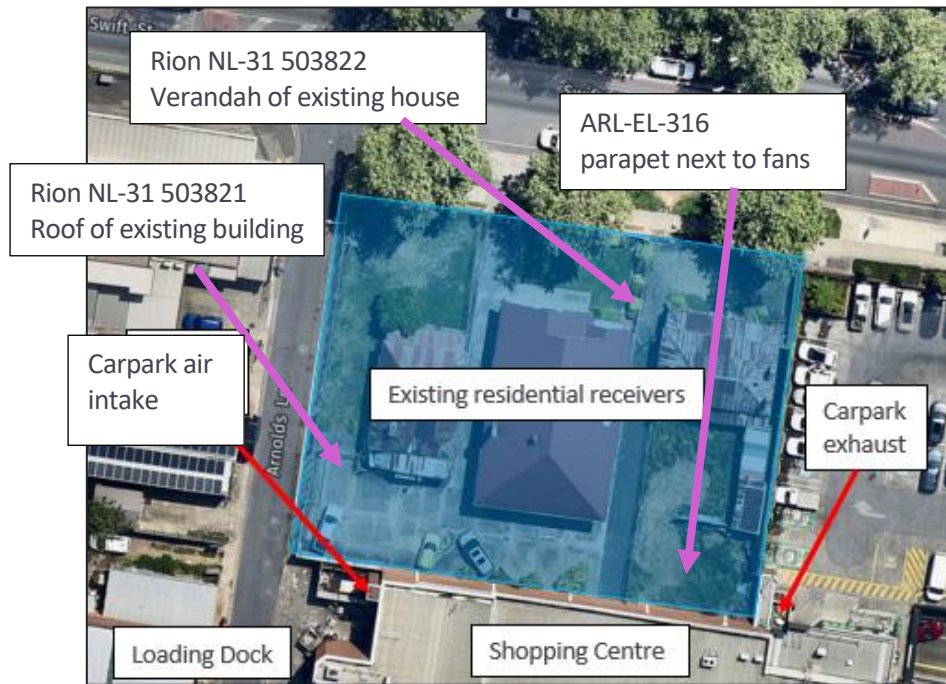
Unattended noise monitoring was undertaken between 13-30 September 2024 using the following noise loggers:

- 1) ARL EL-316 Type 1 noise logger (serial No.16-207-029)
- 2) Rion NL-31 Type 1 noise logger (serial No.503822)
- 3) Rion NL-31 Type 1 noise logger (serial No.503821)

All loggers were configured using the 'Fast' response at 15-minute intervals, and A-Weighting frequency network. The loggers were calibrated at the commencement and completion of the assessment and no significant calibration drift was observed.

The locations of the loggers in relation to the subject site and surrounds are shown in Figure 1 below.

Figure 5: Subject site and measurement locations



Logger NL-31 (serial No.503822) was located on the front verandah of the existing house on the subject site. This position was significantly shielded from noise from the shopping centre plant and is considered to represent the background noise level at the site, in the absence of noise components from the shopping centre plant. The results are used to determine the applicable environmental noise limits for the assessment of the noise from the shopping centre plant, in accordance with the NPfI.

Figure 6: Front veranda of existing house



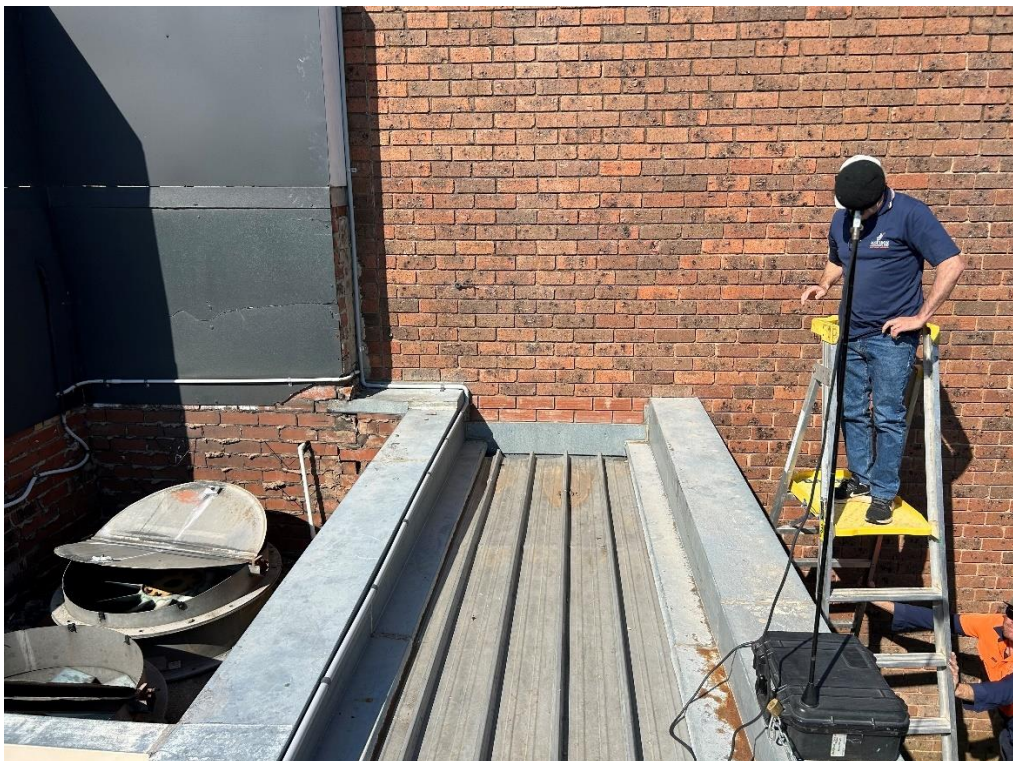
Logger NL-31 (503821) was located on the roof of the existing house (487 Swift Street) on the western portion of the site and was directly exposed to noise from the high-level carpark fresh air intake louvre.

Figure 7: Logger on roof of existing house



Logger ARL EL-316 (serial No.16-207-029) was located on the southern-east boundary parapet nearest 481 Swift Street and was directly exposed to noise from the southern-eastern exhaust fans.

Figure 8: South-east logger on parapet



Two (2) fans exist at this location as shown below. It is assumed that these are carpark and possible kitchen exhaust fans.

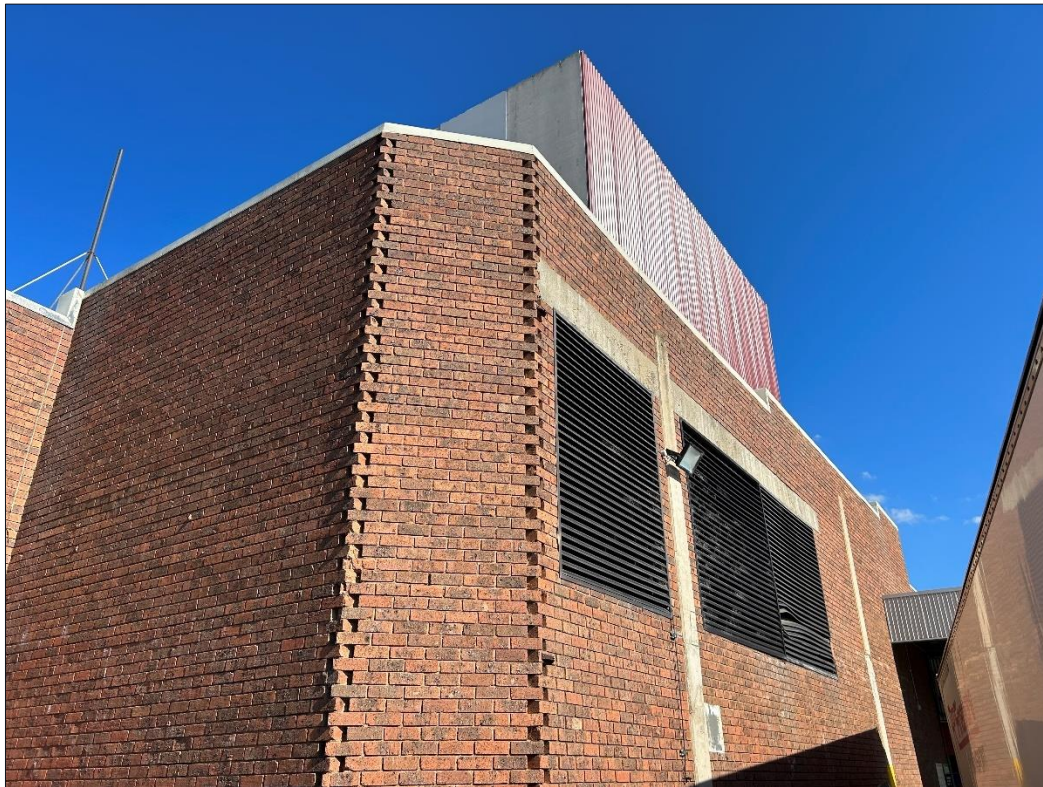
Figure 9: South-east exhaust fans



Figure 10: Carpark fresh air intake serving shopping centre, south-west of site



Figure 11: Plantroom louvre above loading dock



Significant noise was apparent from the louvre above the loading dock. When the carpark exhaust was not operating, noise from compressors and chillers was noted.

6.2 Measured noise levels

The measured noise levels at each logger position are provided in the Appendices. At all locations the measurements terminated prior to 30 September 2024 once the batteries were exhausted.

We provide the following commentary in relation to each measurement location.

6.2.1 Logger NL-31 (serial No.503822) - front verandah

The purpose of this logger position is to establish a background and ambient noise level for 481-487 Swift Street in the absence of influence from noise from the shopping centre plant and equipment. The results from this logger location are used establish noise criteria for the site, allowing for a scenario where the shopping centre plant is required to comply with the EPA NPfI. The result of this survey is also used to establish a typical background noise for the assessment of noise emissions from the proposed development to other properties.

The results of the logger survey together with details on the derivation of the noise limits following NPfI are given in Appendix C and Appendix D.

6.2.2 Logger NL-31 (serial No.503821) – roof

This logger position was directly exposed to noise from the south-west carpark fresh air intake louvre.

From a review of the graphical information the measured noise level was typically in the order of 55 L_{Aeq} dB and relatively constant throughout the day period, which was consistent with attended noise measurements at this location.

Measured noise level reduced outside daytime hours but are likely to be influenced by the south-eastern fans and vehicle movements outside this period. Table 3 provides the overall results

logarithmically averaged across the relevant time periods for the duration of the survey. The daytime and evening time logarithmically averaged L_{Aeq} levels are also consistent with the levels noted above from the graphical information.

Table 3: Measured overall noise levels SW Position (approximate location of rear 485 Swift Street)

Period	Time of day	Typical minimum levels $L_{A90, 15min}$ dB	Equivalent Continuous Noise Level, $L_{Aeq, 15min}$ dB
Day	0700-1800hrs	52	56
Evening	1800-2200hrs	49	55
Night	2200-0700hrs	45	49

6.2.3 Logger ARL-316 (serial No.16-207-029) – south-east parapet

This logger position was directly exposed to noise from the south-east exhaust fans.

From a review of the graphical information the measured noise level was typically in the order of 88 L_{Aeq} dB and constant throughout the day period, which was consistent with attended noise measurements at this location. The daytime logarithmically averaged L_{Aeq} levels are also consistent with the levels noted above from the graphical information.

Measured noise levels are shown to reduce outside daytime hours, however, remain in the order of 60dB L_{Aeq} during the night-time hours, which indicates that one of the fans may continue to operate at all times or at reduced speed. Table 4 provides the overall results logarithmically averaged across the relevant time periods for the duration of the survey.

Table 4: Measured overall noise levels SE parapet

Period	Time of day	Typical minimum levels $L_{A90, 15min}$ dB	Equivalent Continuous Noise Level, $L_{Aeq, 15min}$ dB
Day	0700-1800hrs	83	87
Evening	1800-2200hrs	62	74
Night	2200-0700hrs	58	62

6.3 Traffic noise measurements

Noise from traffic has been measured by Marshall Day Acoustics during a previous site visit in October 2023. The measurements are presented in Table 5.

Table 5: Traffic noise measurements

Description	Measured noise levels (northern boundary)							
	Octave Band Centre Frequency (Hz)							
	A	63	125	250	500	1000	2000	4000
19 October 2023 ; 2000-2015hrs								
Average, dB L_{eq}	56	61	57	53	50	52	50	41
Maximum, dB L_{max}	69	71	58	58	49	50	48	39
20 October 2023 ; 0800-0815hrs								
Average, dB L_{eq}	62	64	61	59	54	57	55	51

Description	Measured noise levels (northern boundary)							
	Octave Band Centre Frequency (Hz)							
	A	63	125	250	500	1000	2000	4000
Maximum, dB L_{max}	77	73	77	69	68	69	62	57

Noise levels at the northern boundary of the site predominantly consisted of noise from cars, trucks and buses passing the site.

6.4 Shopping centre carpark

Part of the shopping centre carpark is located adjacent the eastern boundary of the development. It would be expected that cars parking and circulating would generate a component of noise in addition to those components from traffic on Swift Street and the shopping centre ventilation plant. At this stage however most of the noise impact is generated by the operation of the exhaust fans at the southeastern corner of the development.

Instead, an assessment has been carried out allowing for a sound power level of L_{Aeq} (event) of 91 dB. There are 9 parking spaces located adjacent the eastern boundary of the site. We have based an assessment over a standard period of 15 minutes with cars circulating the carpark at a 10 km/ hr. An allowance has been made for the closest 9 spaces for 2 cars leaving and 2 cars arriving over a 15-minute period. (ie excluding the remainder of the more distant carpark spaces). There is approximately 17 metres between the closest unscreened part of the façade and the parking spaces

Based on the above parameters a level of 43 dB $L_{Aeq(15 \text{ minutes})}$ due to vehicles as the closest parking bay is estimated at the façade of the building excluding any façade reflection or screening from the dividing structure to the carpark.

7.0 CRITERIA FOR NOISE EMISSIONS FROM THE DEVELOPMENT

7.1 Sources within the development boundaries

The SRPP response refers to the EPA Noise Policy for Industry (NPfI) for the assessment of the site

In NSW, the NPfI is the guideline for assessing noise emissions from industrial facilities overseen by the EPA and is commonly used for the assessment of noise emissions from commercial and industrial developments.

The NPfI sets out a procedure such that a noise source can be evaluated against a series of noise assessment levels. In the NPfI, these project specific noise levels are derived from an analysis of the ambient noise environment and the site context (adjacent land uses). The NPfI requires a monitoring period of 7 days in order to report a Rating Background Level (RBL). While this was achieved by the total duration of the noise logger, the NPfI also requires exclusion for adverse weather conditions such as excessive wind velocity or period of rainfall. Adverse weather exclusion was achieved by correlating the results with local BOM records. Following the correlation, we conclude that:

- Daytime 0700-1800: 3 day clear weather (less than the minimum 7 day required)
- Evening time 1800-2200: 7 day clear weather (achieves the minimum 7 day required)
- Night time 2200-0700: 8 day clear weather (more than the minimum 7 day required)

We note however that the BOM weather records are based on those experienced at Albury Airport. It is expected that the noise logger location is likely to be subject to less adverse weather, which would allow more of the measured daytime background noise levels to be included. Notwithstanding this, we are comfortable that the measured background noise levels obtained are a fair, if not

conservative, indication of the existing conditions and are appropriate for determining the applicable noise criteria.

The results of the logger survey together with details on the derivation of the noise limits following NPfI are given in Appendix C and Appendix D.

In summary, compliance with the NPfI would require that total noise from the site not exceed the following limits in Table 6 at the nearby boundaries 1.5 m from ground level.

Table 6: Project Noise trigger level

Receiver	Period	Project trigger level $L_{Aeq, 15min}$, dB
Other residential properties	Day	53
	Evening	48
	Night	43
Other Commercial properties	When in use	63

7.2 Noise from Traffic generated by the development

The EPA Road Noise Policy (RNP) provides noise level criteria for increased traffic flow as a result of a land-use development with the potential to create additional traffic, as detailed in Table 7.

Table 7: Road traffic noise assessment criteria for residential land uses

Type of development	Day (0700-2200 hrs)	Night (2200-0700 hrs)
Existing residences affected by additional traffic on existing freeways/arterial/sub-arterial roads generated by land use developments	60 dB $L_{Aeq, 15 hr}$ (external)	55 dB $L_{Aeq, 9 hr}$ (external)
Existing residences affected by additional traffic on existing local roads generated by land use developments	55 dB $L_{Aeq, 1 hr}$ (external)	50 dB $L_{Aeq, 1 hr}$ (external)

Additionally, the RNP requires that the relative increase in noise levels at residential receivers not exceed 12dB for land use developments with the potential to generate additional traffic on existing freeways, arterial or sub-arterial roads. The relative increase criterion does not apply for local roads.

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

Where night-time construction traffic is likely to occur, an assessment of sleep disturbance is appropriate. The RNP provides guidance:

- Maximum internal noise levels below 50–55dB L_{Amax} are unlikely to awaken people from sleep
- One or two noise events per night, with maximum internal noise levels of 65–70dB L_{Amax} , are not likely to affect health and wellbeing significantly.

Based on the accepted assumption that an open window provides 10dB attenuation, noise levels below 60-65dB L_{Amax} outside an open bedroom window would be unlikely to cause awakening reactions.

Furthermore, one or two events with a noise level of 75-80dB L_{Amax} outside an open bedroom window would be unlikely to affect health and well-being significantly.

8.0 CRITERIA FOR NOISE IMPACTS ON THE DEVELOPMENT

8.1 Recommended boundary noise criteria for shopping centre plant

We are instructed by Joss Constructions that:

- Noise from the shopping centre plant and equipment the plant is required to comply with the NSW Environment Protection Authorities Noise Policy for Industry (NPfI) and;
- The site of 481 and 487 Swift Street is a residential receptor and;
- The site of 485 Swift Street is a commercial receptor

In that instance noise from the plant and equipment from the shopping centre would be required to comply with the same noise criteria as that outlined in Section 7.1 summarised below:

Table 8: Project Noise trigger level

Receiver	Period	Project trigger level $L_{Aeq, 15min}$, dB
481 and 487 Swift Street	Day	53
	Evening	48
	Night	43
485 Swift Street	When in use	63

8.2 Recommended internal noise levels

It may not be feasible in all instances to apply noise control elements directly to the shopping centre plant and equipment and reduce external noise to within the recommended noise criteria described in Table 8.

In that scenario an internal noise limiting criteria would be required within the apartments, which would require a minimum level of acoustic performance for the windows and glazed doors to some of the apartments.

Australian/New Zealand Standard AS/NZS 2107:2016 *Acoustics – Recommended design sound levels and reverberation times for building interiors* provides criteria for acceptable internal noise levels for residential dwellings with different recommendations, depending on the location of the building and type of rooms. Allowing for the classification “Houses and Apartments in inner city areas or entertainment districts” or near major roads AS2107 recommends the following noise criteria for relevant internal spaces.

Living areas	35 – 45 dB L_{Aeq}
Sleeping areas (night-time)	35 – 40 dB L_{Aeq}
Work areas	35 – 45 dB L_{Aeq}

Based on the measured noise levels at site, the above criteria would be achieved with windows closed, provided that moderate to high performance glazing is included.

An allowance of 10 dB is typically made for the reduction of sound levels from outside to inside a habitable room via an open window

For the purposes of this assessment, it would be recommended that allowance be made for the windows to be closed in order to control noise intrusion from the shopping centre plant in the following instances:

- Where noise from the shopping centre plant and equipment is expected to be more than 45 dB L_{Aeq} outside a bedroom window during the night-time hours

- Where noise from the shopping centre plant and equipment is expected to be more than 50 dB L_{Aeq} outside a living room or other habitable room window

9.0 ASSESSMENT OF NOISE EMISSIONS FROM THE DEVELOPMENT

The planning panel have requested an assessment of noise emissions associated with the use of the proposed building. A summary of the assessments required is included in Table 1.

9.1 Traffic generated by the use of the development.

Drawings indicate a basement parking capacity for 52 vehicles, with an exit ramp to Swift Street. The immediate locale in Swift Street comprises commercial buildings. The Traffic Report prepared by Peter Meridith Consulting provides the following predictions:

Residential Component (Swift Street)	Peak 12 vph ¹
Retail / Commercial carpark Arnolds Lane	Peak 15 vph ¹
Total	Peak 29 vph ¹
Existing Traffic Flow Swift Street ¹	AM Peak 457 Vph

¹ Table 3.1 Traffic Impact Assessment prepared by Peter Meridith Consulting

From the above we would expect that the noise impact of the additional traffic flow onto Swift Street would be negligibly low at an increase of less than 0.5 dB and well below the “minor impact” definition within the EPA Road Noise Policy (refer Section 7.2.)

Similarly, based on a sound power level of 91 L_{Aeq} for a low-speed car movement, noise arising from vehicles accessing the carpark is expected to be well below the noise trigger level in Section 7.1 at the distant residential properties described in Section 3.0 .

9.2 Commercial Carpark, loading dock and deliveries

A carpark serving the commercial tenancies of the development is to be located at the side of the building, with the entrance off Arnolds Lane, approximately 130m from the nearest distant residential property (Mercure Hotel) in Olive Street. It is not expected that the distant residential properties will have line of sight to the carpark with properties located in the block boundary Swift and Olive Streets providing significant screening in most instances.

Based on an estimated sound power level of 98 dB L_{Aeq} for loading dock, carpark or delivery operations a level of approximately 44 dB L_{Aeq} is estimated at the upper levels of the Mercure Hotel approximately 130 m from the site. This is expected to be within EPA noise trigger guidelines (refer Table 6) for use of the commercial carpark during the day and evening hours. Night-time (10pm to 7am) use of the commercial carpark may exceed the trigger levels by a marginal amount however it is assumed that the commercial carpark and loading dock would not normally be in use during these times.

9.3 Swimming Pool

A swimming pool is proposed at the ground level of the development. Noise sources would include speech, swimming and diving. Generally, the predominant source is likely to be from raised voices from people at the pool side.

As the swimming pool will be enclosed, screened from the residential areas by the apartment building itself and given the distance to the nearest residential premises (minimum 130m) it is not expected that noise arising from the use of the swimming pool will be significant.

At this stage, information is not available for any mechanical plant associated with the swimming pool; however, it is expected that it will be feasible to specify necessary acoustic controls such that Albury City Council consent conditions can be satisfied.

9.4 Mechanical Plant

It is expected that the development will include various items of mechanical plant including air conditioning condensers, carpark ventilation equipment, outside air fans, toilet exhaust fans and the like. Specific mechanical services designs have not yet been prepared.

We have however prepared a preliminary assessment considering a scenario of 40 condensers located roof top, each having a maximum sound power level of 76 dB L_{Aeq} each (for example Daikin RXYMQ 9AY1). Our preliminary calculations indicate that it should be feasible for the condenser units to comply with the project noise trigger levels (or other specific acoustic consent conditions required by Albury City Council) with suitable acoustic screening and/or night-time low noise set back modes.

Noise from other ventilation plant and equipment can be controlled as necessary using internal duct treatment and silencers where necessary.

10.0 NOISE IMPACTS ON THE SITE

10.1 Noise from shopping centre plant

10.1.1 Comparison of plant noise with criteria

Based on the measured noise levels at the site and the derived NPfI noise criteria for the site (where applicable), Table 9 to Table 12 provides a comparison with the potential NPfI environmental noise criteria. For the purposes of this comparison, it is assumed that:

- 481 Swift Street is a residential receptor
- 485 Swift Street is a commercial receptor
- 487 Swift Street is a residential receptor

Table 9: Comparison for 481 Swift Street

Receiver	Period	Project trigger level dB LAeq, 15min	481 Swift Street near SE exhaust fan dB LAeq, 15min	Complies with NPfI criteria?
481 Swift Street	Day	53	87	No, 34 dB exceedance
	Evening	48	74	No, 26 dB exceedance
	Night	43	62	No, 19 dB exceedance

Table 10: Comparison for 485 Swift Street

Receiver	Period	Project trigger level dB LAeq, 15min	Rear 485 Swift Street dB LAeq, 15min	Complies with NPfI criteria?
485 Swift Street	When in use	63	56, up to 62 dB at an elevated position	Yes

Table 11: Comparison for 487 Swift Street (unattended noise survey results)

Receiver	Period	Project trigger level dB LAeq, 15min	Rear 485 Swift Street dB LAeq, 15min	Complies with NPfI criteria?
487 Swift Street	Day	53	52 ¹	Yes
	Evening	48	49 ¹	No, 1 dB exceedance
	Night	43	45 ¹	No, 2 dB exceedance

¹ See commentary below

Note in regard to 487 Swift Street, the results of the attended survey (refer Appendix E) indicate much higher noise levels closer the southern boundary due to the proximity of the nearby air intake louvres. The following Table 12 shows noise levels that were measured closer to the southern boundary:

Table 12: Attended noise survey results near 487 Swift Street

Measurement location number	Description (refer also site mark-up)	Measured Noise level, dB L _{Aeq}	Complies with NPfI criteria? ²
5	South Boundary elevated	77	No, 24 dB exceedance daytime, 29 dB exceedance evening
6	South Boundary elevated	62	No, 9 dB exceedance daytime, 14 dB exceedance evening
25	SW site corner, 1.5m above ground	59	No, 6 dB exceedance daytime, 11 dB exceedance evening

² Night-time comparison not shown on the basis that the fans do not operate between 10pm and 7am as indicated by long-term noise logging. Inclusion of night-time criteria would further increase the exceedance margin.

10.1.2 Recommendations - control of noise via building facade

In the event it is not feasible to arrange for noise control at the fan outlets and inlets, it will be necessary to implement suitable noise control at the building facades. The southern apartment facades have been designed to minimise exposure to noise from the shopping centre plant incorporating the following features:

- Façade elements comprising precast concrete/masonry/in-situ concrete or the like (to minimum R_w 50)
- Windows and doors to habitable spaces of the southern apartments arranged to face east and west
- Curved solid screening elements to the south

Where the preferred approach to control noise from the fans cannot be fully implemented then it will be necessary to provide acoustic rated glazing systems to control noise from the and equipment to within the recommended noise criteria. Preliminary investigations indicate that the following rooms listed in Table 13 will require upgraded acoustically rated glazing systems in order to meet the recommended internal noise criteria.

Table 13: Facade requiring acoustic upgrade to glazing

Level	Bedrooms	Living room/kitchen	Facade	Criteria achieved with window open
1	104.13, 104.10, 104.06,	104.03, 104.04, 104.05	East	No
2-5	X04.13, X04.10, X04.06,	X04.03, X04.04, X04.05	East	No
6 and 7	X03.13, X03.11	X03.03, X03.05, X03.06	East	No

We note that the open window criteria in Section 8.2 would not be achieved with the windows open in the rooms identified in Table 13. As such, a facility for alternative ventilation requirements to meet relevant codes would be required.

10.1.3 Recommendations - control of noise from plant and equipment

It is recommended that where feasible noise from the shopping centre plant and equipment be controlled by acoustic treatment measures directly to the plant and equipment. It is expected that this would be feasible using standard engineering means such as silencers, plenums and insulated duct extensions.

These controls are available as a standard noise control measures. We are aware that progress is being made in coordination with the shopping centre to address these key sources of noise. Current noise levels at the exhaust are currently 80 dB L_{Aeq} at 3 metres. Where noise from the fans can be reduced to 55 dB L_{Aeq} at 3 metres and assuming the fans do not operate at night, it would likely that the glazing upgrades and alternative means of ventilation would not be required.

Joss Constructions have commissioned the preparation of a preliminary noise control design for the exhaust to the southeast of the site. The design is centred around the provision of two new fans complete with a silencer to each.

While the design is subject to acoustic reviews and coordination between Joss Construction and the shopping centre management, it does show significant progress in the development of acoustic local controls for the plant. A copy of the preliminary proposals developed by Joss Constructions is included in Appendix F.

Noise from the southwest air inlets to the shopping centre will be screened by the substation parapet alignment and is not expected to impact the site to the same degree as the southeastern exhaust fan outlets. A copy of the architectural design showing the screening is included in Appendix G

In the event that noise controls to the fans cannot be provided, it will be necessary to implement a noise control solution as described in Section 10.1.2.

It would also be necessary to ensure that noise from the shopping centre roof top plant is within the shopping centre consent conditions relevant to that plant (Document reference 10.20005.26577.1 issued 16 January 2006) *The operating noise level of plant and equipment is not to exceed 5 dB(A) above the background noise level when measured at the boundary of the premises.* Our site measurements and modelling indicate that compliance with their consent condition is likely to be the case given the existing equipment and acoustic barrier.

10.2 Noise from traffic on Swift Street

Measured noise from traffic on Swift Street is shown in Table 5. The levels are not particularly high (up to 62 dB L_{Aeq}) and can be controlled to within AS 2107 recommendations with relatively standard glazing systems comprising 8.38 laminated glass or an IGU system of 6mm glass, 12mm airspace and 6mm glass. It is recommended that an acoustic rating of R_w 35 be specified for the glazing system inclusive of framing, sash and glass (excluding that possibly affected by noise from the shopping centre) in order to maintain effective acoustic sealing systems.

Sliding door suites that access balconies should be selected to achieve minimum laboratory acoustic rating of R_w 35.

10.3 Noise from the adjacent (eastern) carpark spaces

As noted in Section 6.4 noise in this location is mostly due to existing impacts from the southeastern exhaust fans. An estimate of 43 dB $L_{Aeq(15\text{ minute})}$ at the apartment façade (excluding façade reflection) due to vehicles parking and circulating in the closest point of the carpark has been calculated in Section 6.4. This level is sufficiently low to be controlled by the glazing proposed in Section 10.2. Further we note from the existing shopping hours outlined in Section 4.0 that the Shopping Centre does not open during the night-time hours of 10pm to 7am and as such the car park is unlikely to be in use during that time. The carparking area close to the eastern boundary is distant from the

Pedestrian Shopping Centre access and such is more likely to be unoccupied during the late even/morning hours.

11.0 CONCLUSION

From our site inspection measurements and analysis carried out to date it is possible to conclude the following:

- It is feasible for the residential development to operate such that noise impacts generated by the use and occupation of the apartments development to other residential boundaries do not cause exceedance of the NSW EPA Noise Policy for Industry guideline criteria.
- It is feasible for noise impacts from traffic on Swift Street can be controlled to within the recommended criteria using conventional and readily available glazing systems.
- The site of the proposed development (481 to 487 Swift Street) is exposed to noise emissions from plant and equipment associated with the shopping centre that are above the levels recommended within the EPA Noise Policy for Industry.
- Control of the noise from the mechanical plant associated with the shopping centre is best carried out at the source using silencers, plenums and insulated ductwork. Where this is not feasible, control of noise from the shopping centre plant can be achieved with appropriate facade acoustic performance and alternative means of ventilation as described in Section 10.1.2 and Section 10.1.3 of this report.
- The redesign of the building to exclude windows to habitable rooms from facing south together with balconies that include screening elements, will significantly reduce noise impacts from the plant to the internal spaces.

APPENDIX A GLOSSARY OF TERMINOLOGY

Parameter	Description
D_w	<p>Weighted Sound Level Difference. A single number rating of the sound level difference between two rooms.</p> <p>D_w is typically used to measure the on-site sound insulation performance of a building element such as a wall, floor or ceiling</p>
R_w	<p>Weighted Sound Reduction Index. A single number system for quantifying the transmission loss through a building element. The measured transmission loss, in third octave bands from 100 Hz to 3.15 kHz, is compared to a standard reference contour to determine the single number value. Can only be measured in laboratory conditions</p>
Sound insulation	The ability of a material or construction to reduce sound travelling through it.
Background sound	The sound that is continuously present in a room or outdoor location. Often expressed as the A-weighted sound level exceeded for 90 % of a given time period i.e. L_{A90} .
Emission	Sound that is generated by, and propagates away from a source.
Frequency	<p>Sound occurs over a range of frequencies, extending from the very low (e.g. thunder) to the very high (e.g. mosquito buzz). Measured in units of Hertz (Hz).</p> <p>Humans typically hear sounds between 20 Hz and 20 kHz. High frequency acuity naturally reduces with age most adults can hear up to 15 kHz.</p>
Noise	A subjective term used to describe sound that is unwanted by, or distracting to, the receiver.
Notional boundary	<p>A line 20 metres from any side of a dwelling, or the legal boundary where this is closer to the dwelling.</p> <p>This definition is from NZS 6802:2008.</p>
Prescribed time frame	<p>‘Daytime’, ‘night-time’, ‘evening’, or any other relevant period specified in any rule or national environmental standard.</p> <p>This definition is from NZS 6802:2008.</p>
A-weighting	<p>A set of frequency-dependent sound level adjustments that are used to better represent how humans hear sounds. Humans are less sensitive to low and very high frequency sounds.</p> <p>Sound levels using an “A” frequency weighting are expressed as dB L_A. Alternative ways of expressing A-weighted decibels are dBA or dB(A).</p>
L_{A90}	The A-weighted sound level exceeded for 90 % of the measurement period, measured in dB. Commonly referred to as the background noise level.
L_{Aeq}	The equivalent continuous A-weighted sound level. Commonly referred to as the average sound level and is measured in dB.
L_{Amax}	The A-weighted maximum sound level. The highest sound level which occurs during the measurement period. Usually measured with a fast time-weighting i.e. L_{AFmax}

APPENDIX B ENVIRONMENTAL NOISE GUIDELINES

In NSW, the Environmental Protection Authority's NPfI is the guideline for assessing noise emissions from industrial facilities. The NPfI sets out a procedure where an industrial facility can be assessed against a series of noise levels. Project specific noise levels are derived from an analysis of the ambient noise environment and zoning information.

In this instance, this procedure would be used to assess the impact of noise emissions from the shopping centre on a residential receptor. In respect of this site the NPfI would normally be implemented where:

- Noise from the shopping centre plant and equipment is required by the Consent Authority such as Albury Council or the EPA to comply with the requirements of the NPfI and;
- The sites of 481 and 487 Swift Street Albury is a residential receptor
- The site of 485 Swift Street Albury is a commercial receptor

We understand that to date, Council have declined to enforce the NPfI noise control requirements and as such the procedure below is an approach that can be considered where all relevant parties agree to its implementation.

As the site of 481-487 Swift Street Albury is currently impacted to a large extent by noise emissions from plant and equipment associated with the shopping centre, the background noise in the absence of contribution the plant operation must be determined.

As such, the background and ambient noise levels for this project were measured at the front verandah facing Swift Street, as a means of excluding this component.

The NPfI requires a monitoring period of 7 days in order to report a background noise level. While this was achieved by the total duration of the noise logger, the NPfI also requires exclusion for adverse weather conditions such as excessive wind velocity or period of rainfall. Adverse weather exclusion was achieved by correlating the results with local BOM records. Following the correlation, we conclude that:

- Daytime 0700-1800: 3 day clear weather (less than the minimum 7 day required)
- Evening time 1800-2200: 7 day clear weather (achieves the minimum 7 day required)
- Night time 2200-0700: 8 day clear weather (more than the minimum 7 day required)

We note however that the BOM weather records are based on those experienced at Albury Airport. It is expected that the noise logger location is likely to be subject to less adverse weather, which would allow more of the measured daytime background noise levels to be included. Notwithstanding this, we are comfortable that the measured background noise levels obtained are a fair, if not conservative, indication of the existing conditions and are appropriate for determining the applicable noise criteria.

The evening and nighttime RBLs are however in accordance with the NPfI requirements.

The measured noise levels are summarised in Table 14 below. In the NPfI, the background noise level is called the Rating Background Level (RBL).

Table 14: NPfI Time Periods and Measured Background Noise Levels

Period	Time of day	Rating Background Level, dB LA90, 15min	Equivalent Continuous Noise Level, dB LAeq, 15min
Day	0700*-1800hrs	48 ¹	57
Evening	1800-2200hrs	44	55
Night	2200-0700*hrs	38	49

*0800 Sundays and Public Holidays

¹ Refer comments regarding minimum period without adverse weather conditions

An NPfl assessment requires the derivation of two Project Noise Trigger Levels, one is derived from an Intrusiveness assessment and another from an Amenity assessment.

B1 Intrusive Noise Level

The intrusiveness noise assessment is applicable to residential receivers and is based on knowledge of the background noise level at the receiver location. The intrusiveness level is the background noise level at the nearest noise sensitive location plus 5dB. Therefore, the noise emissions from the premises are considered to be intrusive if the A-weighted source noise level ($L_{Aeq(15\text{ min})}$) is greater than the background noise level (L_{A90}) plus 5dB. In this instance the logger position at the veranda is largely screened from the influence of noise from the exhaust fans and, as such can be considered to represent the background noise of the residential site in the absence of noise from the exhaust fans or other shopping centre plant

Based upon the data for summarised in Table 14 the Intrusiveness Criteria have been calculated in accordance with the NPfl and are presented in Table 15 below.

Table 15: Derived Intrusiveness Noise level

Period	Rating Background Level, dB $L_{A90, 15\text{ min}}$	Intrusive Noise Level Criteria (RBL + 5 dB), dB $L_{Aeq, 15\text{ min}}$
Day	48	53
Evening	44	49
Night	38	43

B2 Amenity Noise Levels

Project amenity noise trigger levels are designed to prevent industrial noise continually increasing above an acceptable level over time with expansion of infrastructure and development. The initial stage in determining the Amenity level is to correct the acceptable noise levels set for the appropriate amenity area with the baseline noise monitoring.

A review of the noise levels measured indicates that the residential noise environment is typical of urban area. Modification is undertaken to account for the standardisation of the assessment time periods to recommended amenity noise levels (as detailed in Section 2.2 of the NPfl) as well as to account for other potential commercial noise sources in the area (as detailed in Section 2.4 of the NPfl). Resultant levels and the relevant modifications are presented in Table 16.

Table 16: Derived Amenity noise level

Receiver	Period	Time period	Recommended Amenity Noise Level, dB L_{Aeq}	Modified Amenity Noise Level dB $L_{Aeq, 15\text{ min}}$
Residential (Urban)	Day	0700 ¹ -1800hrs	60	58 (60-5+3)
	Evening	1800-2200hrs	50	48 (50-5+3)
	Night	2200-0700 ¹ hrs	45	43 (45-5+3)
Commercial premises	All	All	65	63 (65-5+3)
Industrial Premises	All	All	70	67 (65-5+3)

¹0800 Sundays and Public holidays

Source: Table 2.2 NSW Noise Policy for Industry

B3 Project Noise Trigger Levels

The final process in determining the operational noise limits for the development is to derive the Project Noise Trigger Levels. The Project Noise Trigger Levels are levels that, if exceeded, would indicate a potential noise impact on the community, and so 'trigger' a management response, for example, further investigation of mitigation measures.

The Project Noise Trigger Levels are derived by selecting the more stringent of either the Intrusiveness or Amenity noise levels. The Project Noise Trigger Levels applicable to the Subject site are shown in Table 17.

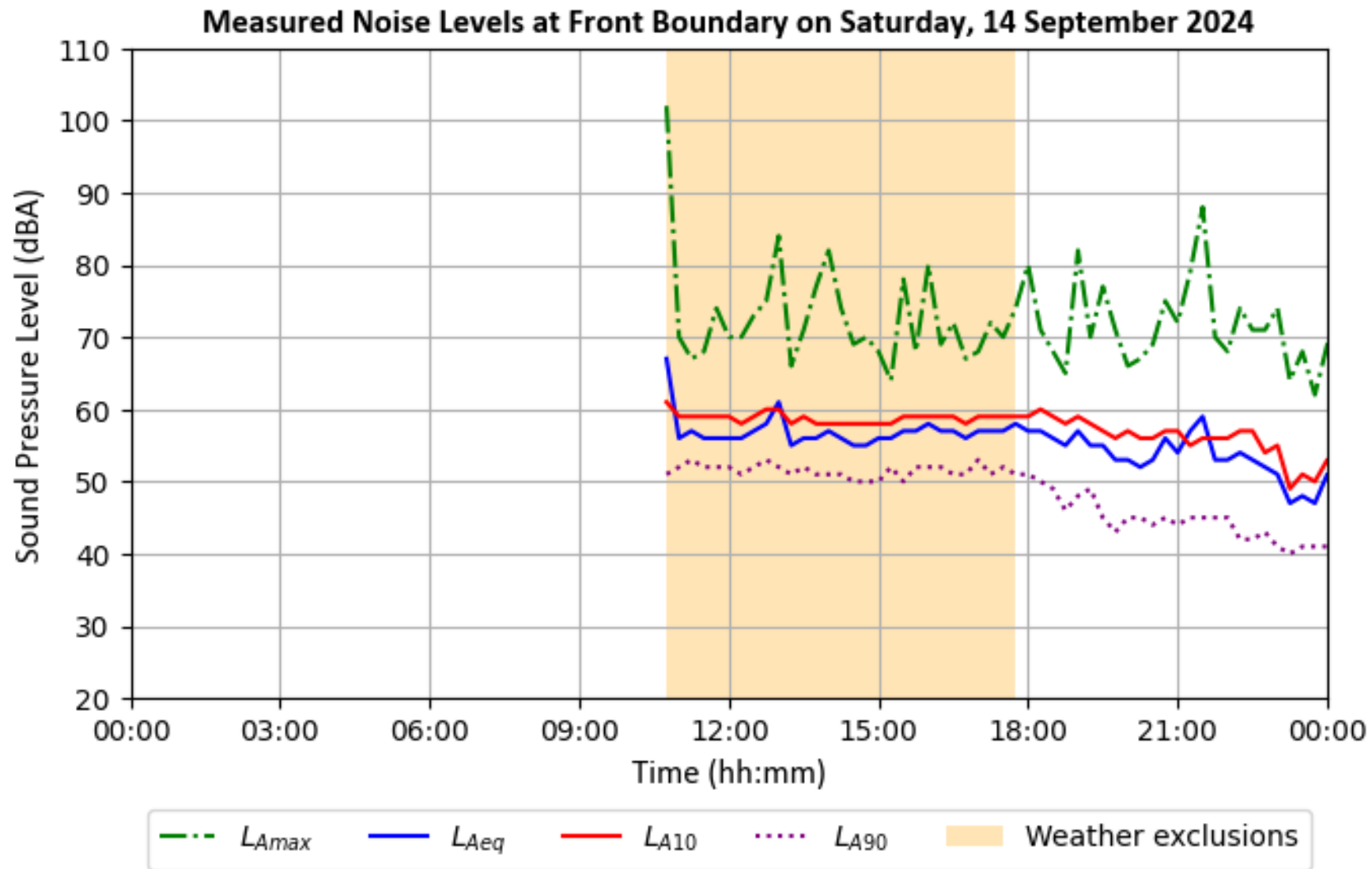
Table 17: Project Noise trigger level

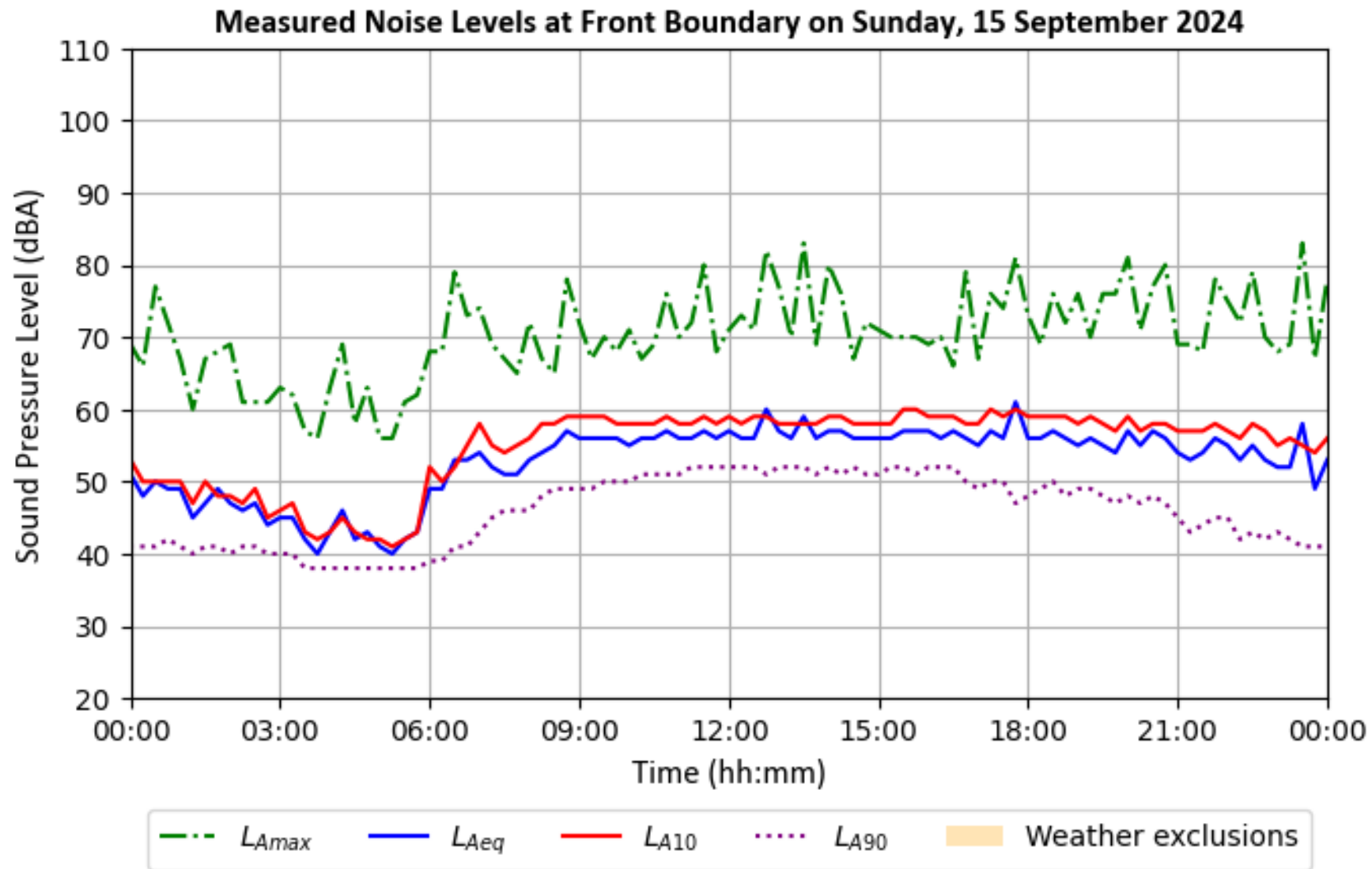
Receiver	Period	Project trigger level, dB $L_{Aeq, 15min}$
Residential	Day	53
	Evening	48
	Night	43
Commercial	When in use	63

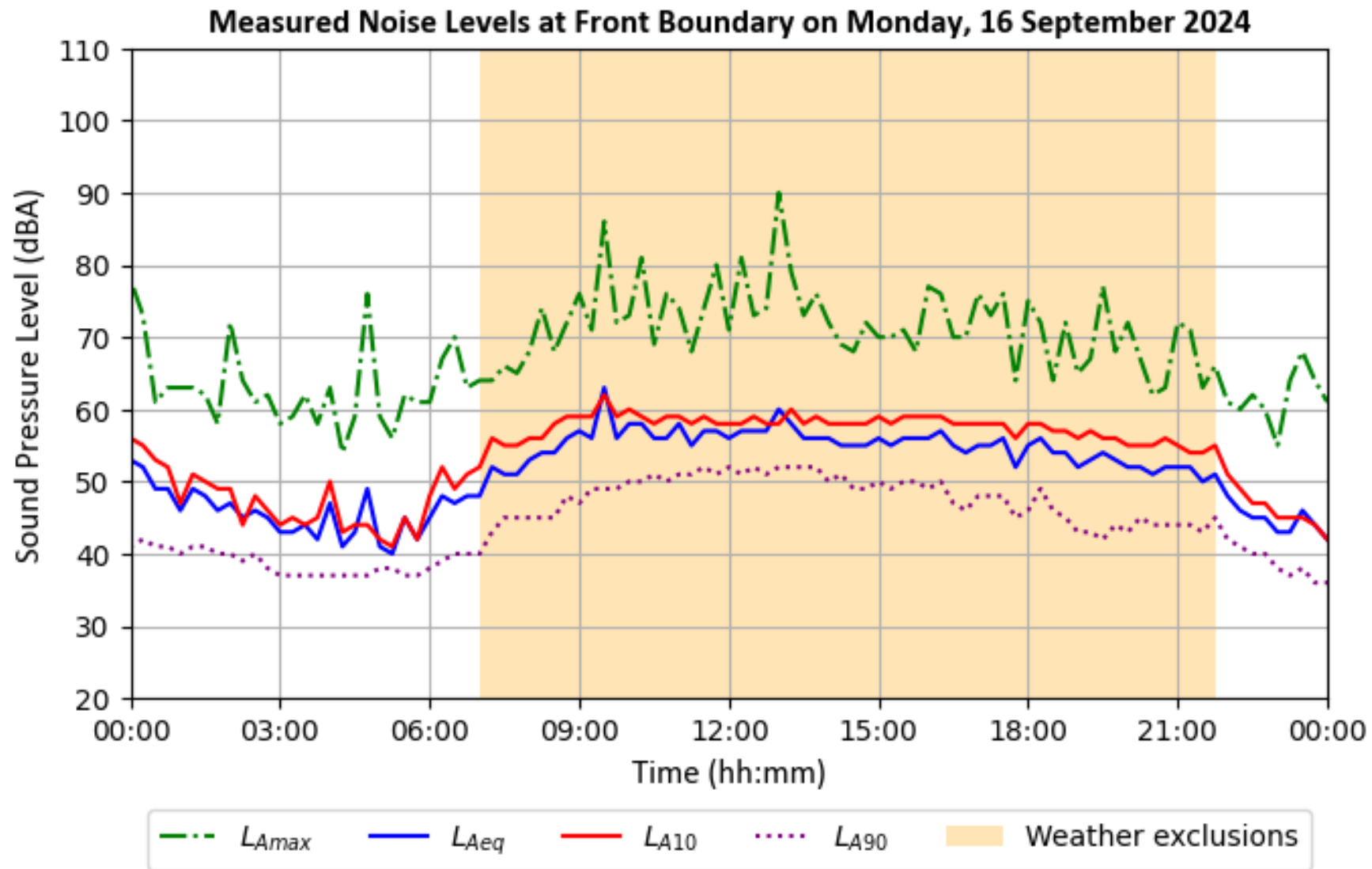
The NPfI Project Trigger Noise Levels are applicable at the property boundary of the nearest affected receivers.

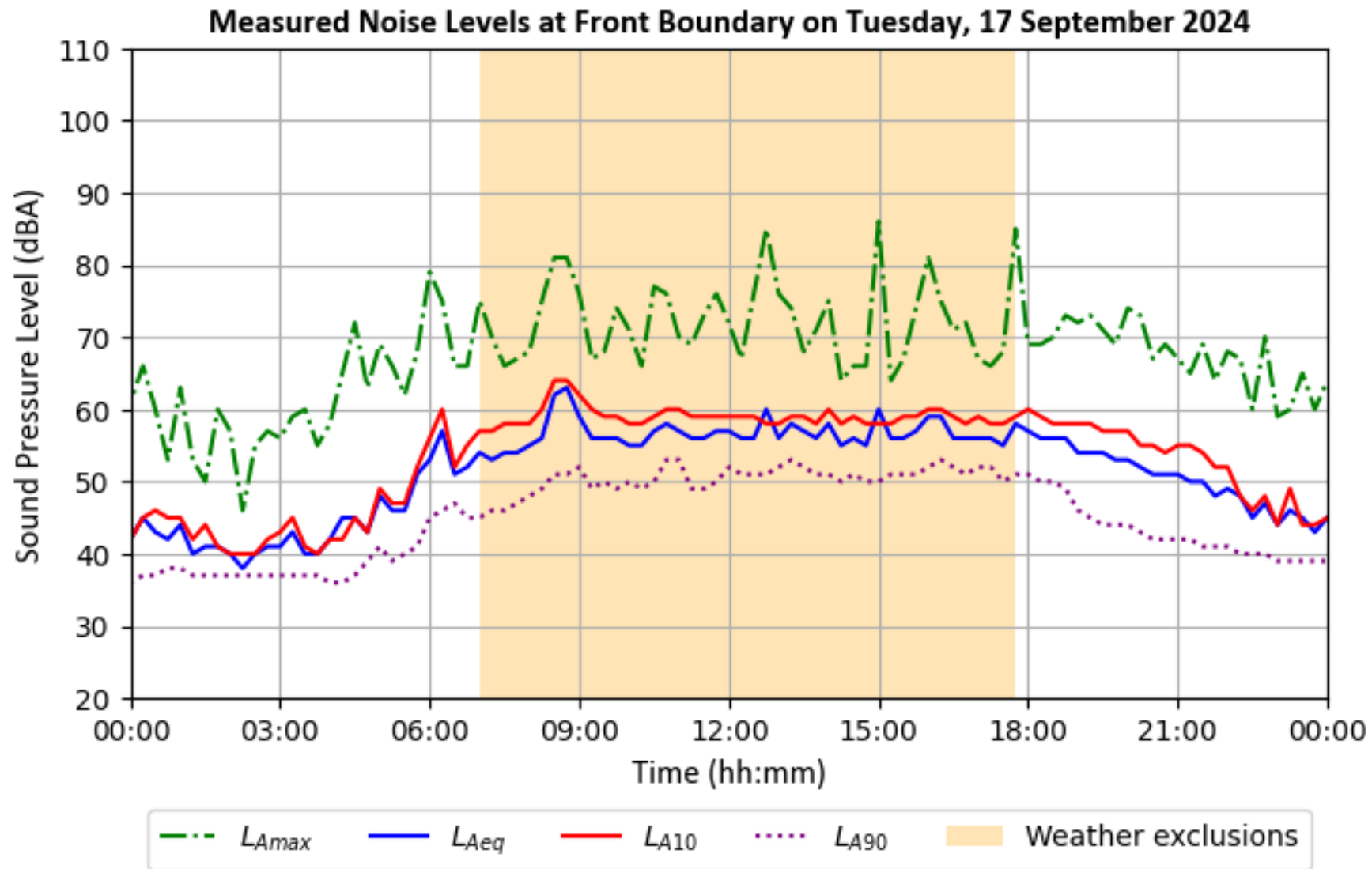
APPENDIX C LOGGER NL-31 (SERIAL NO.503822) - FRONT VERANDAH

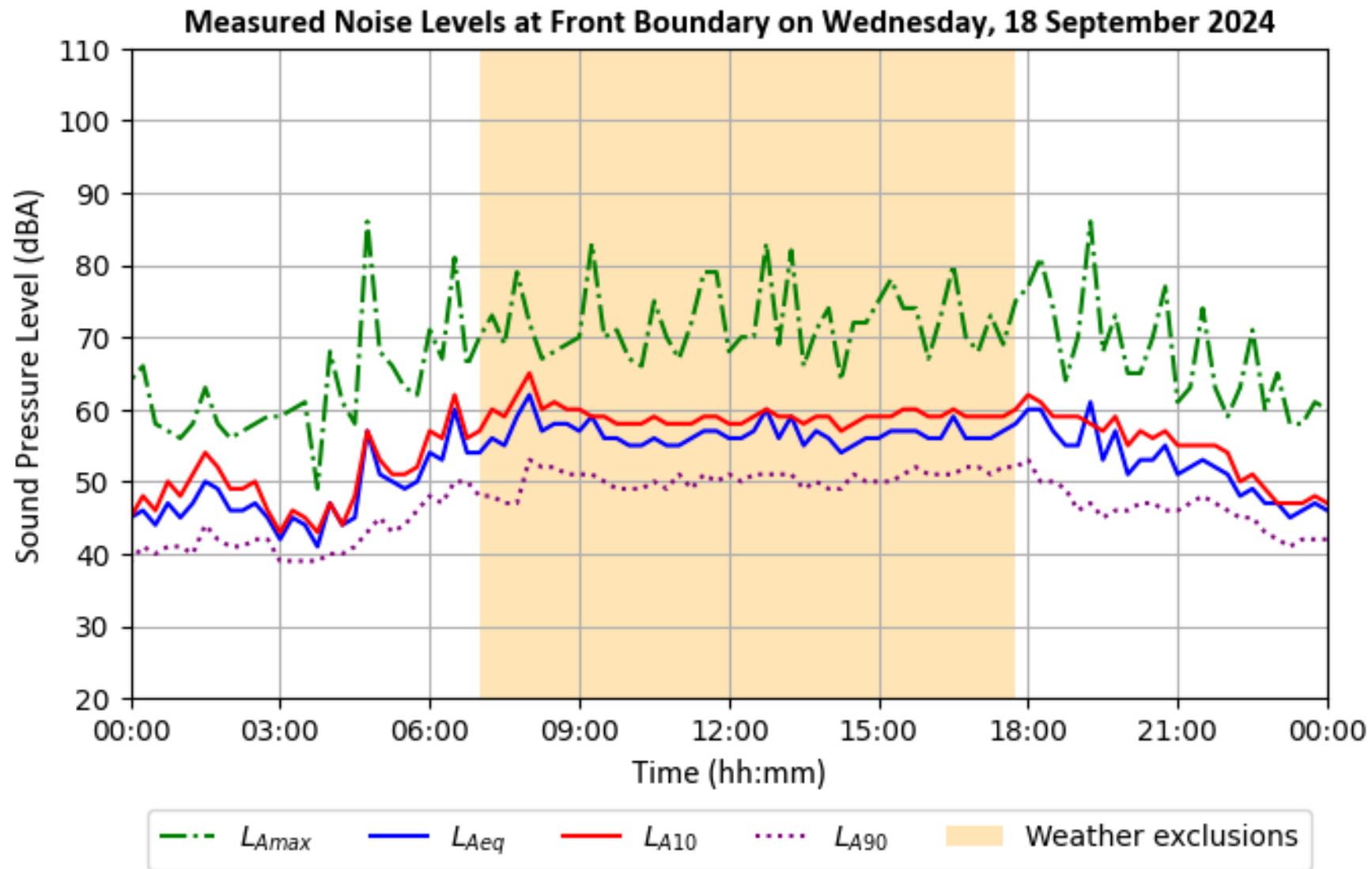
Appendix C provides the graphical results of the noise levels at the front veranda of the site, with exclusions shown for adverse weather conditions in accordance with NPfl procedures. Appendix B provides detailed commentary on the NPfl procedures.

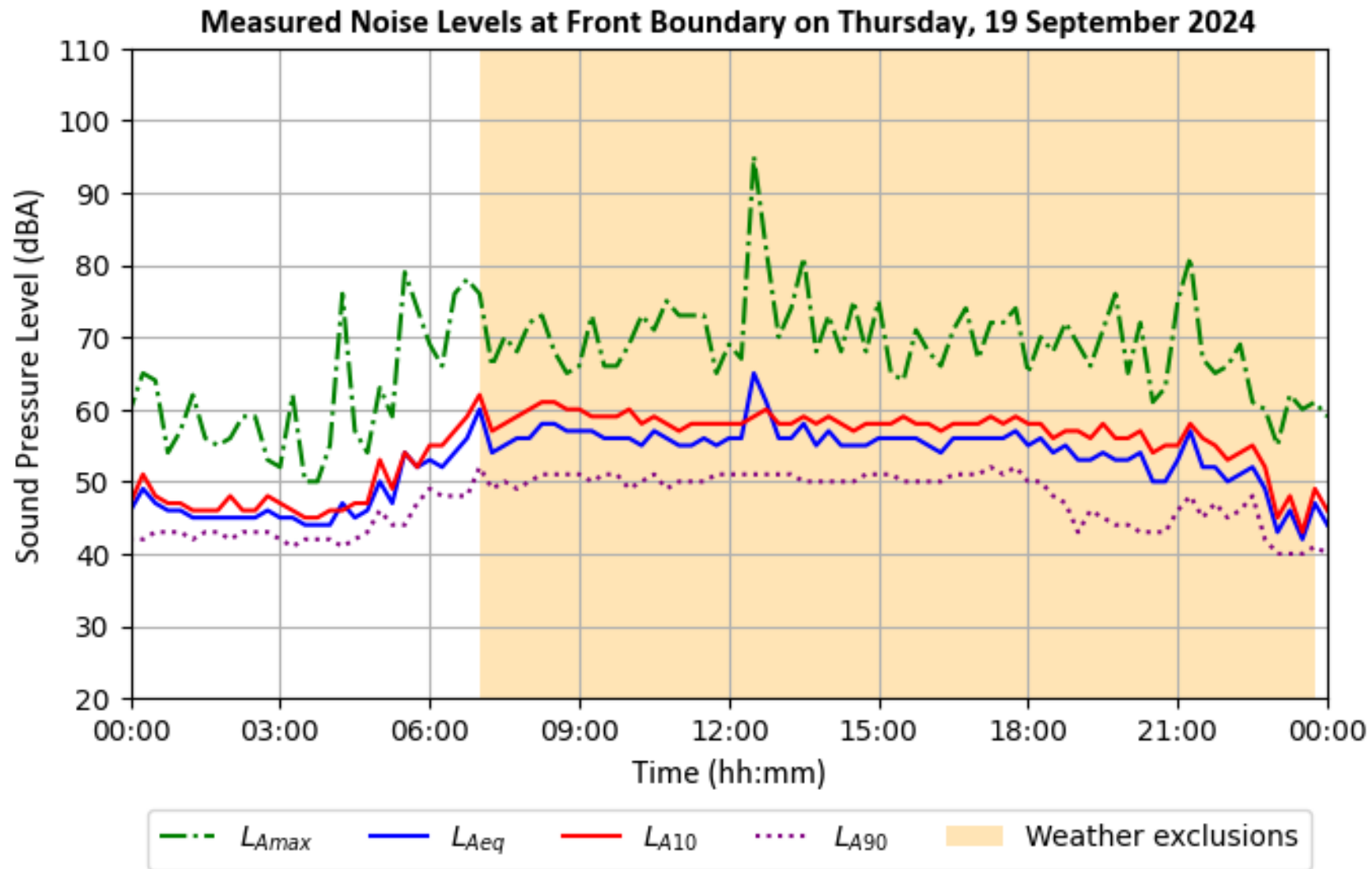


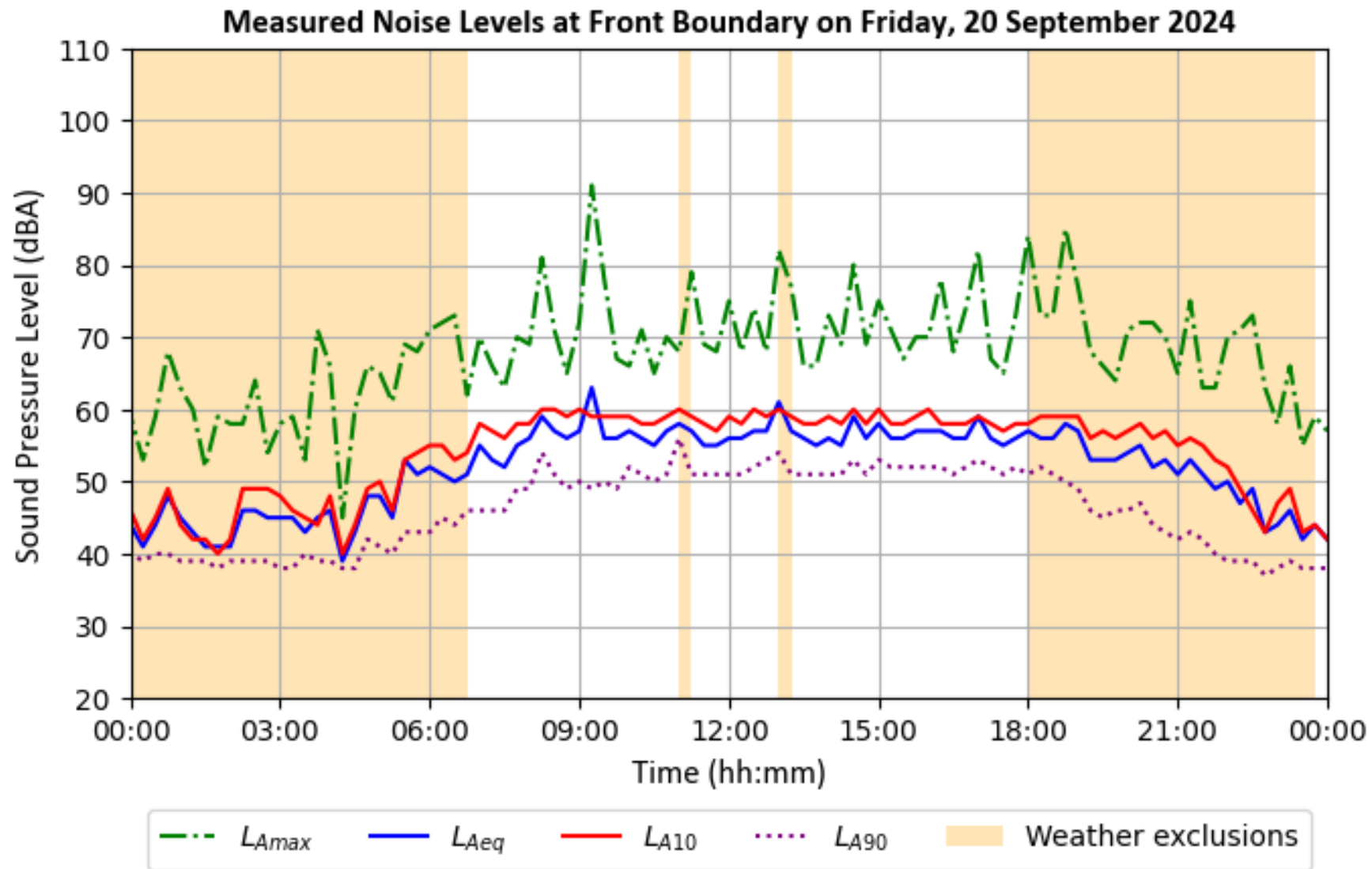


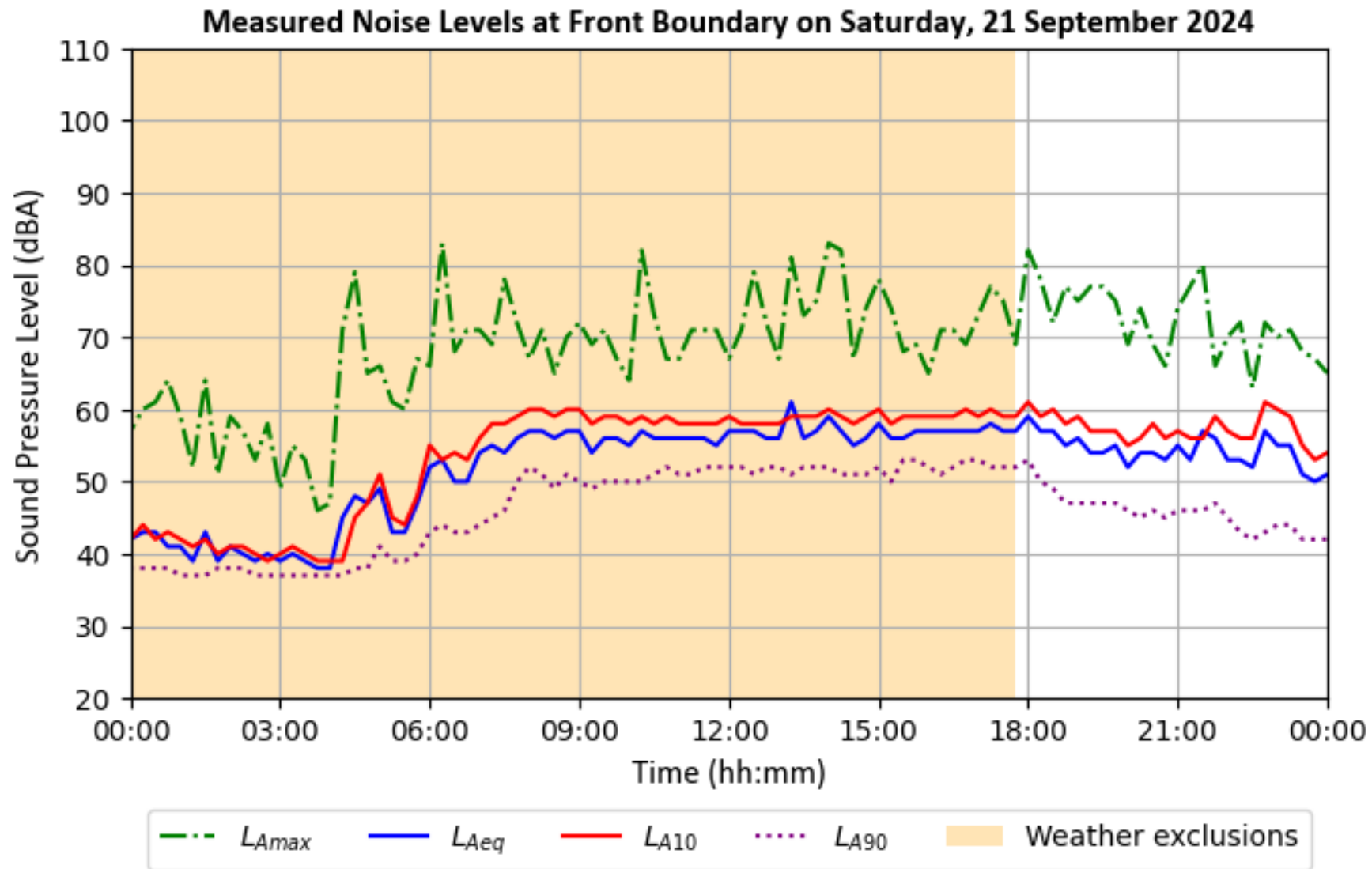


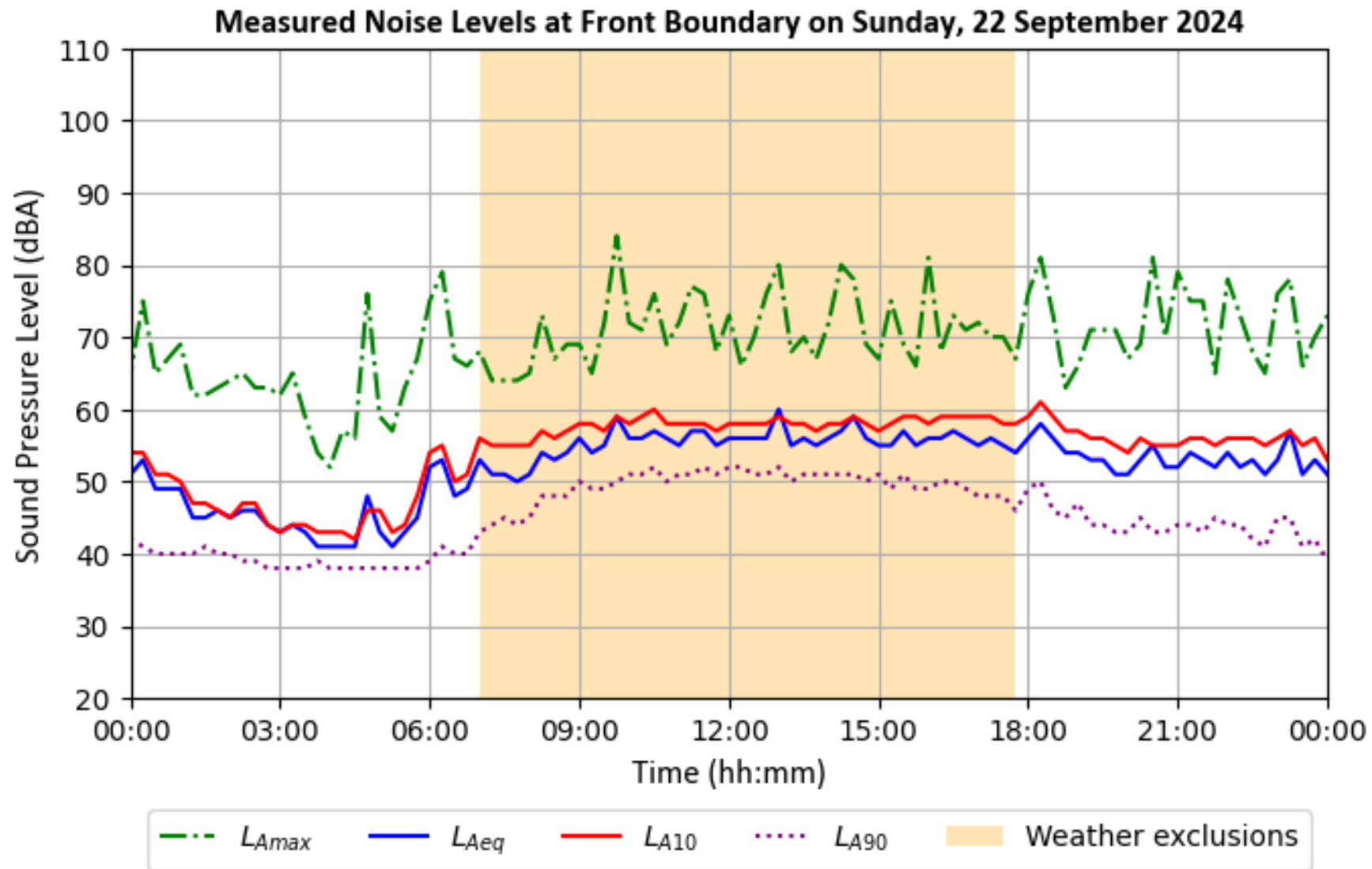


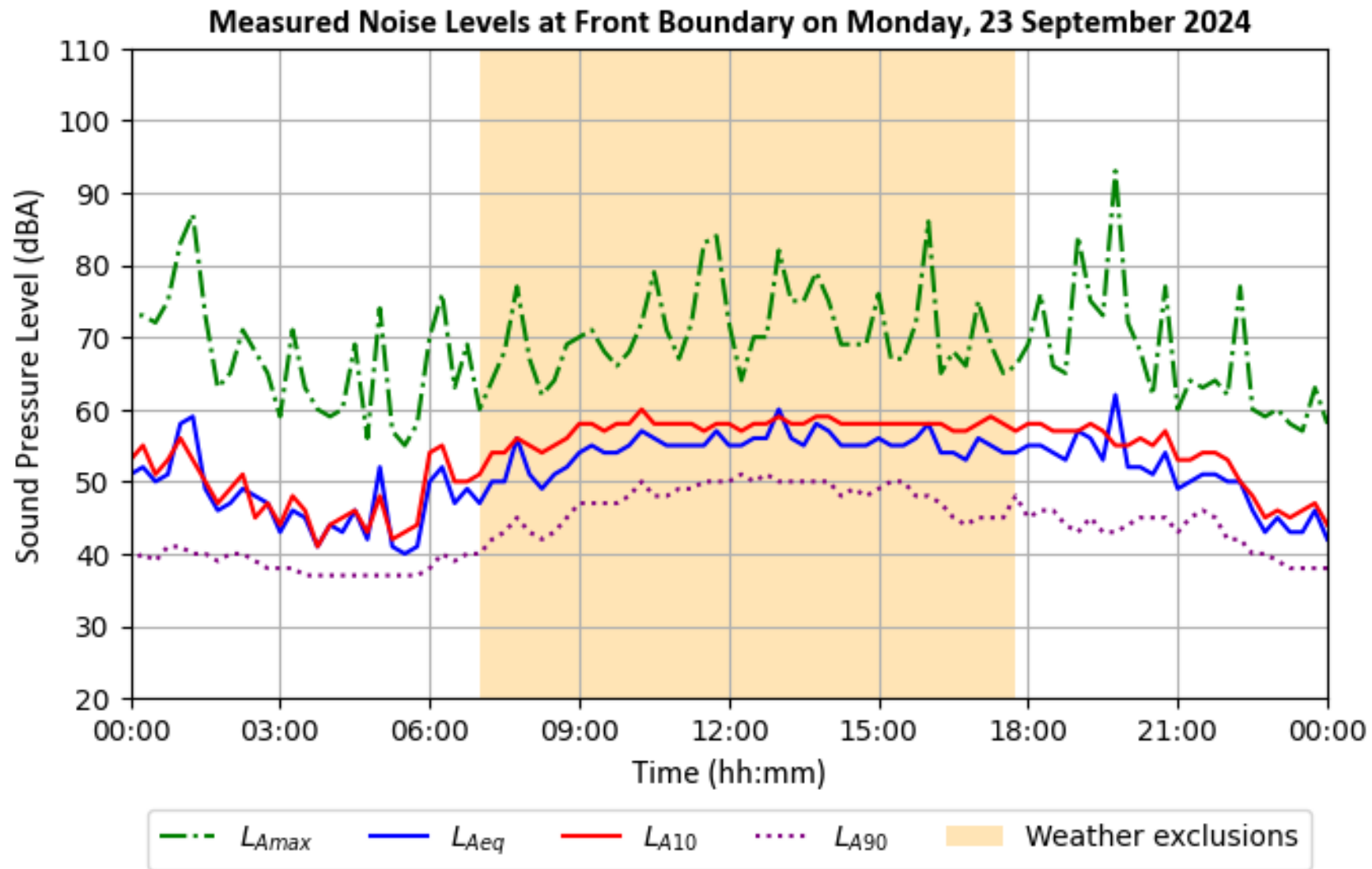


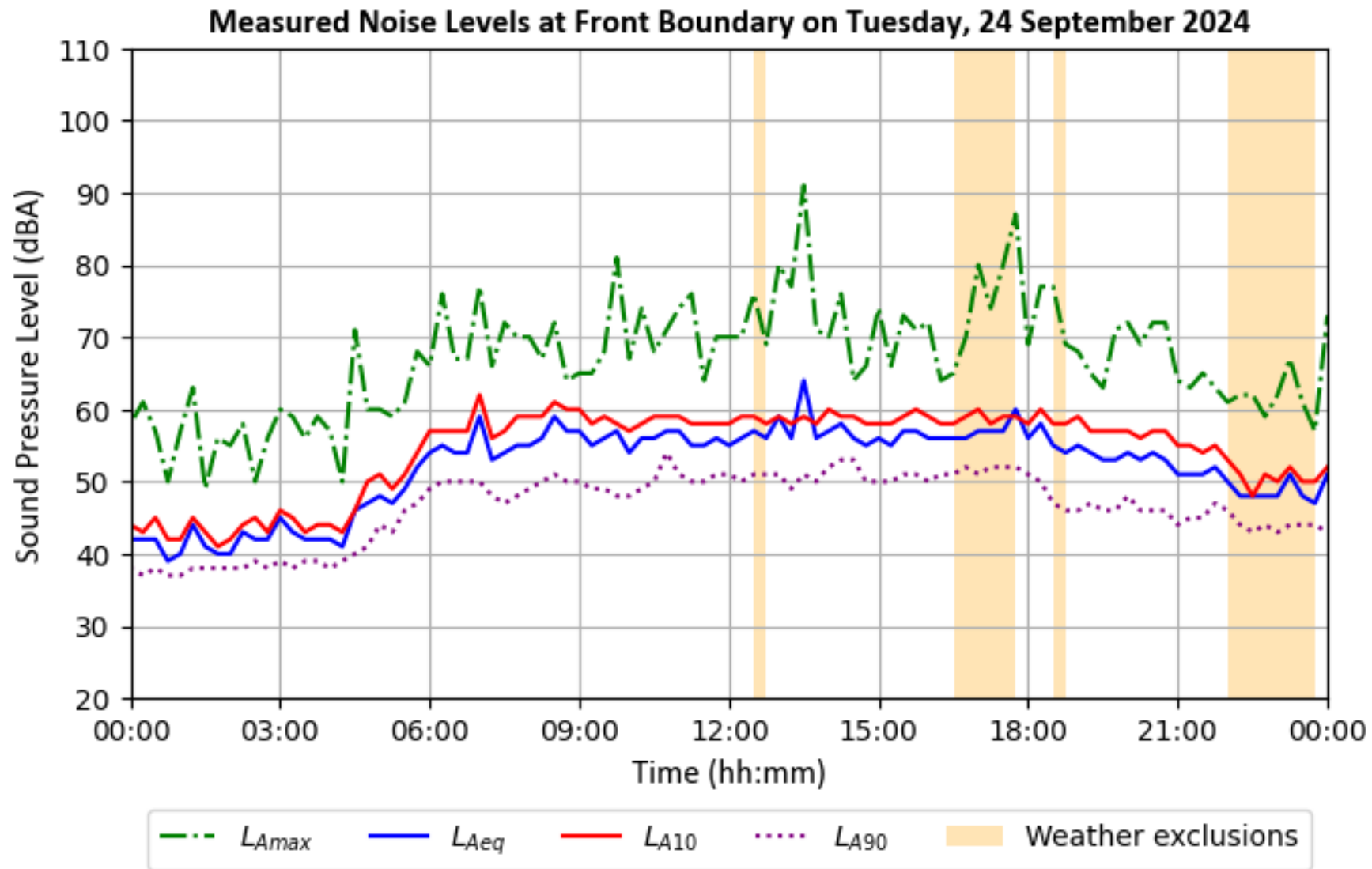


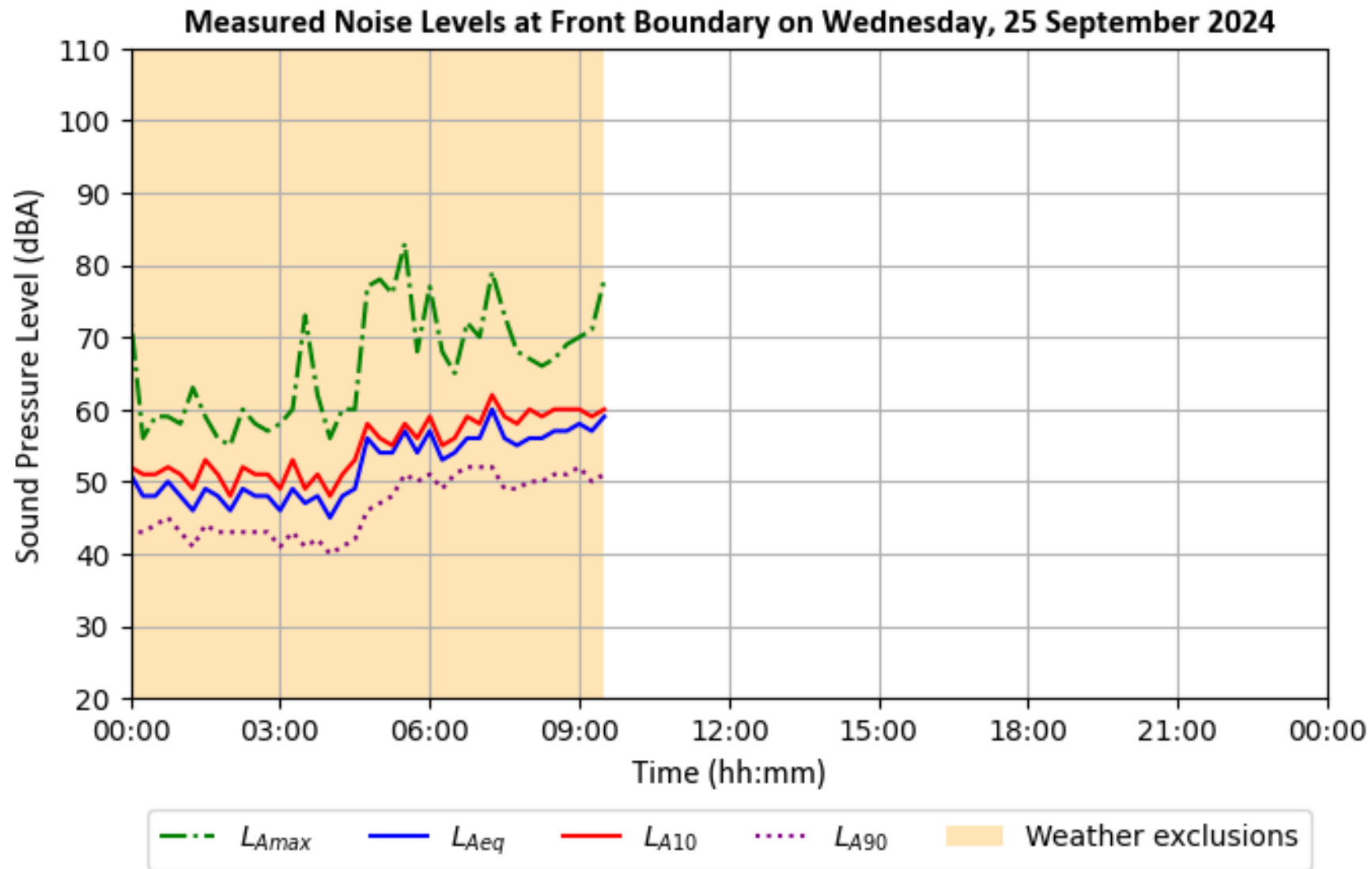






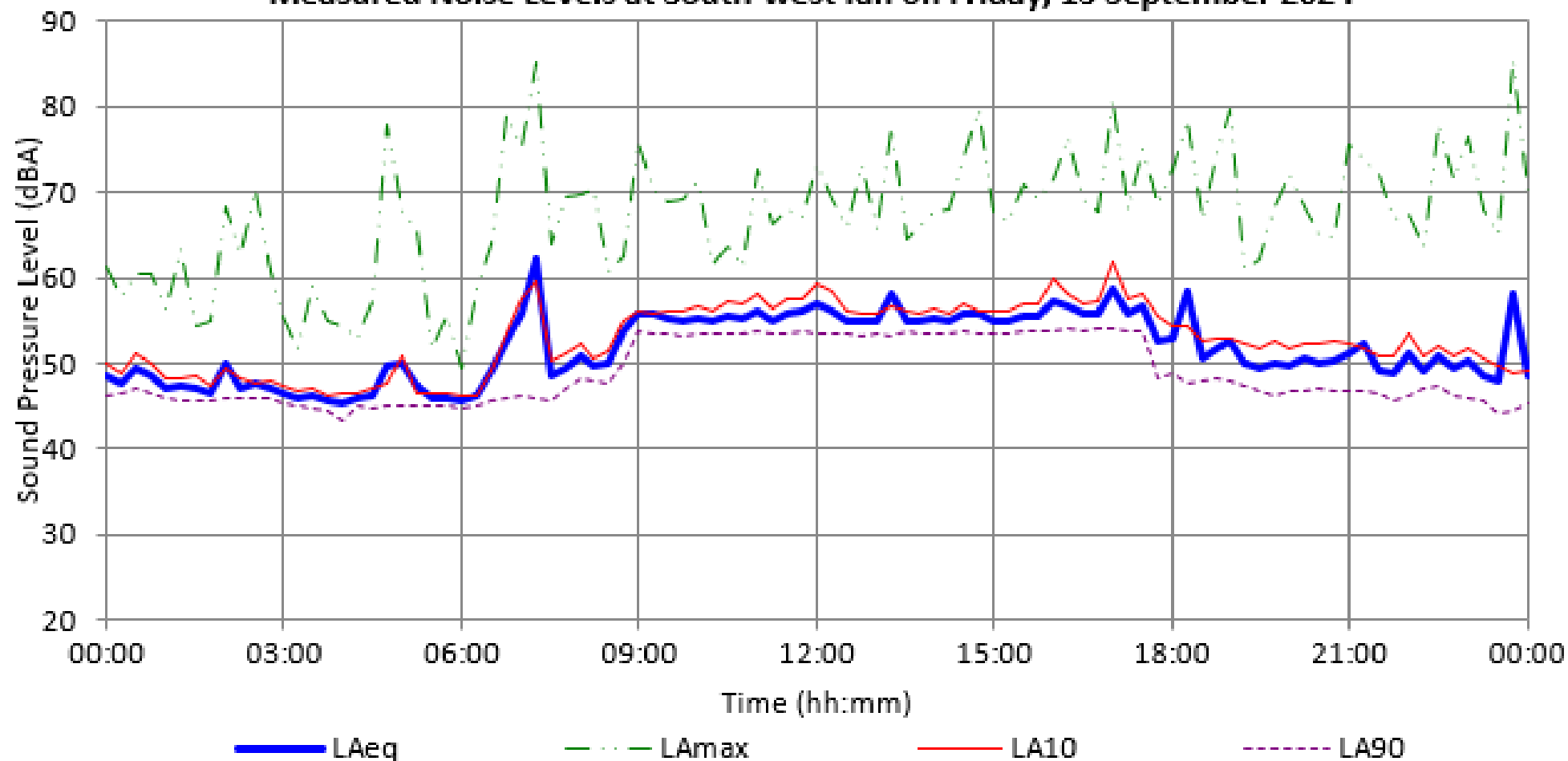




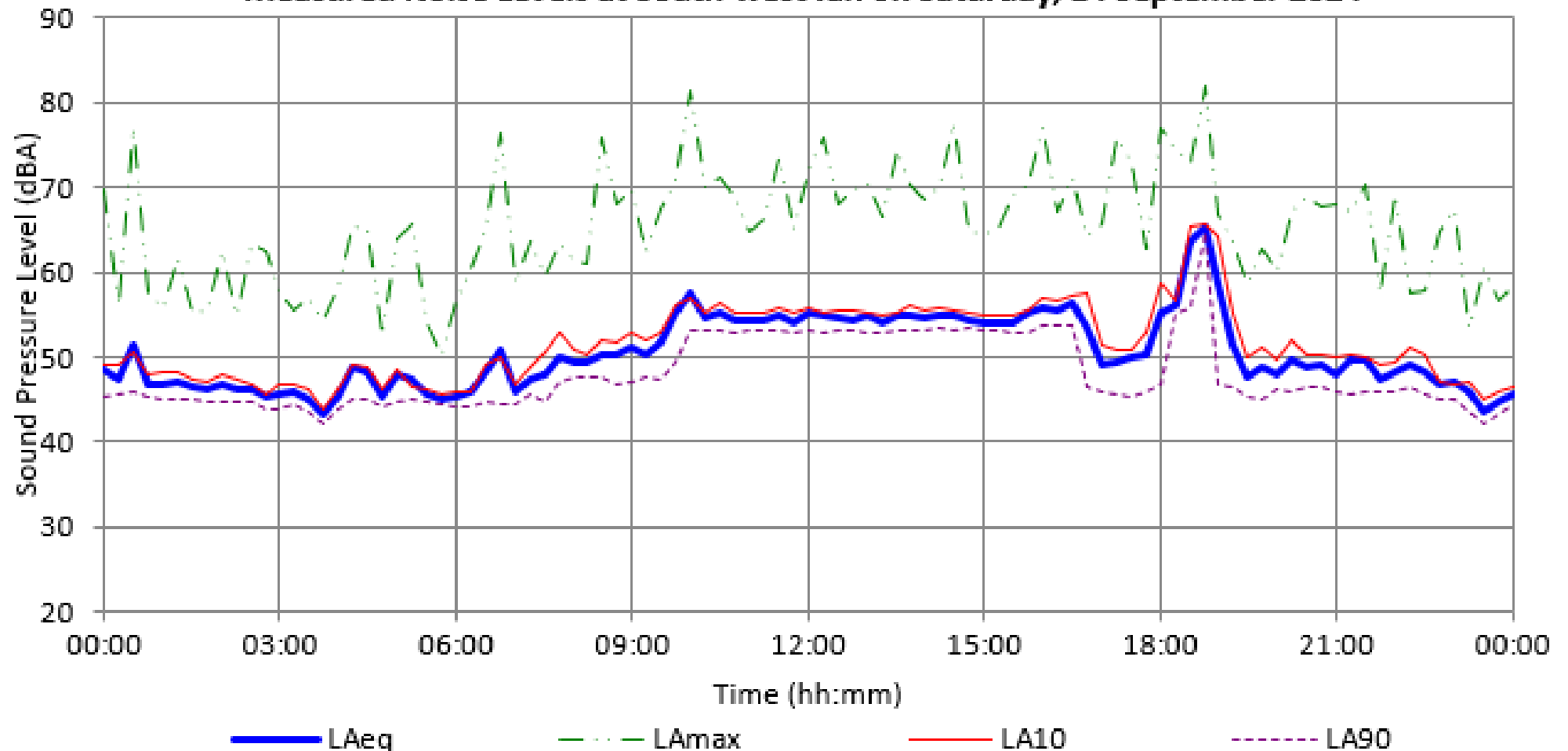


APPENDIX D LOGGER NL-31 (SERIAL NO.503821) – ROOF – SOUTH-WEST LOUVRE

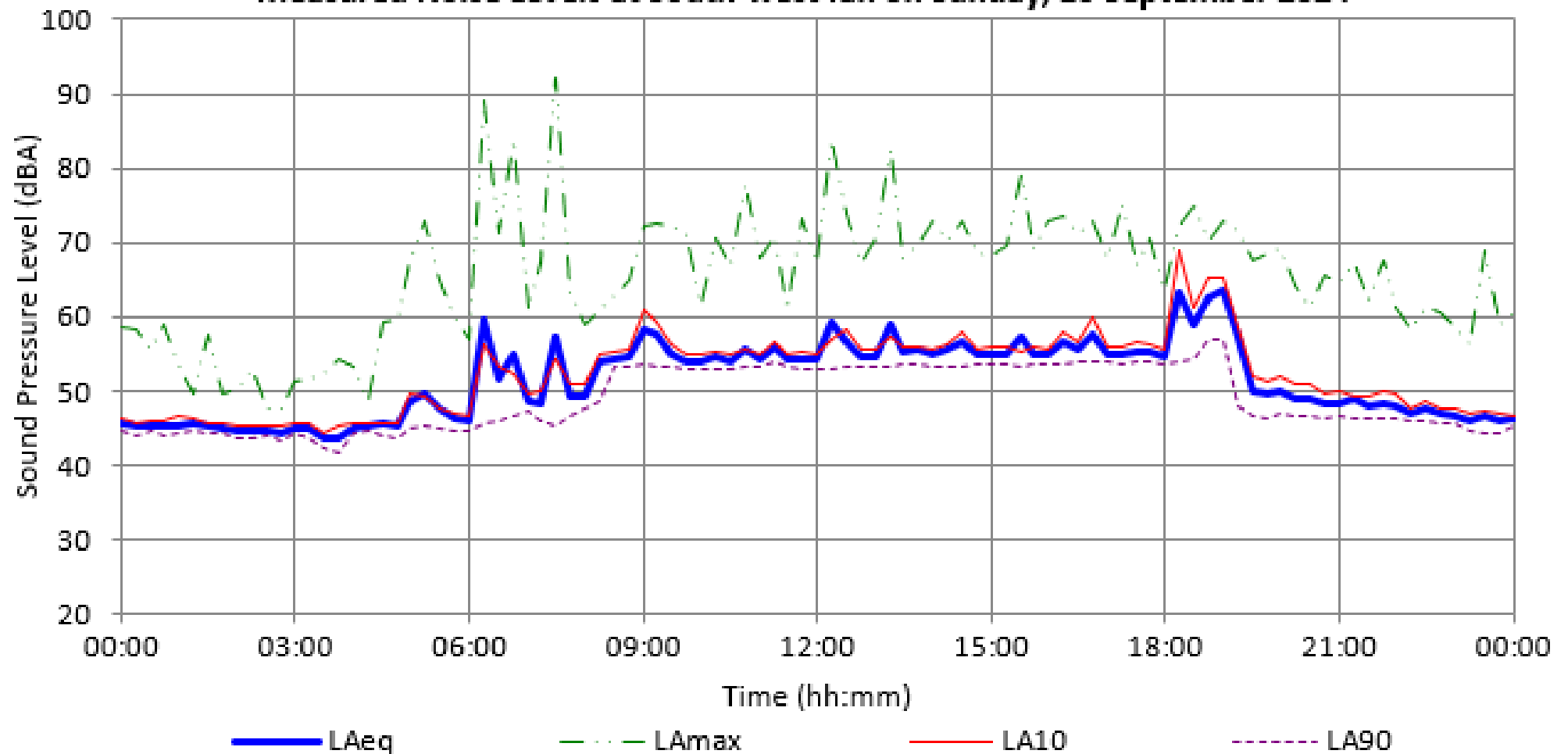
Measured Noise Levels at South-west fan on Friday, 13 September 2024



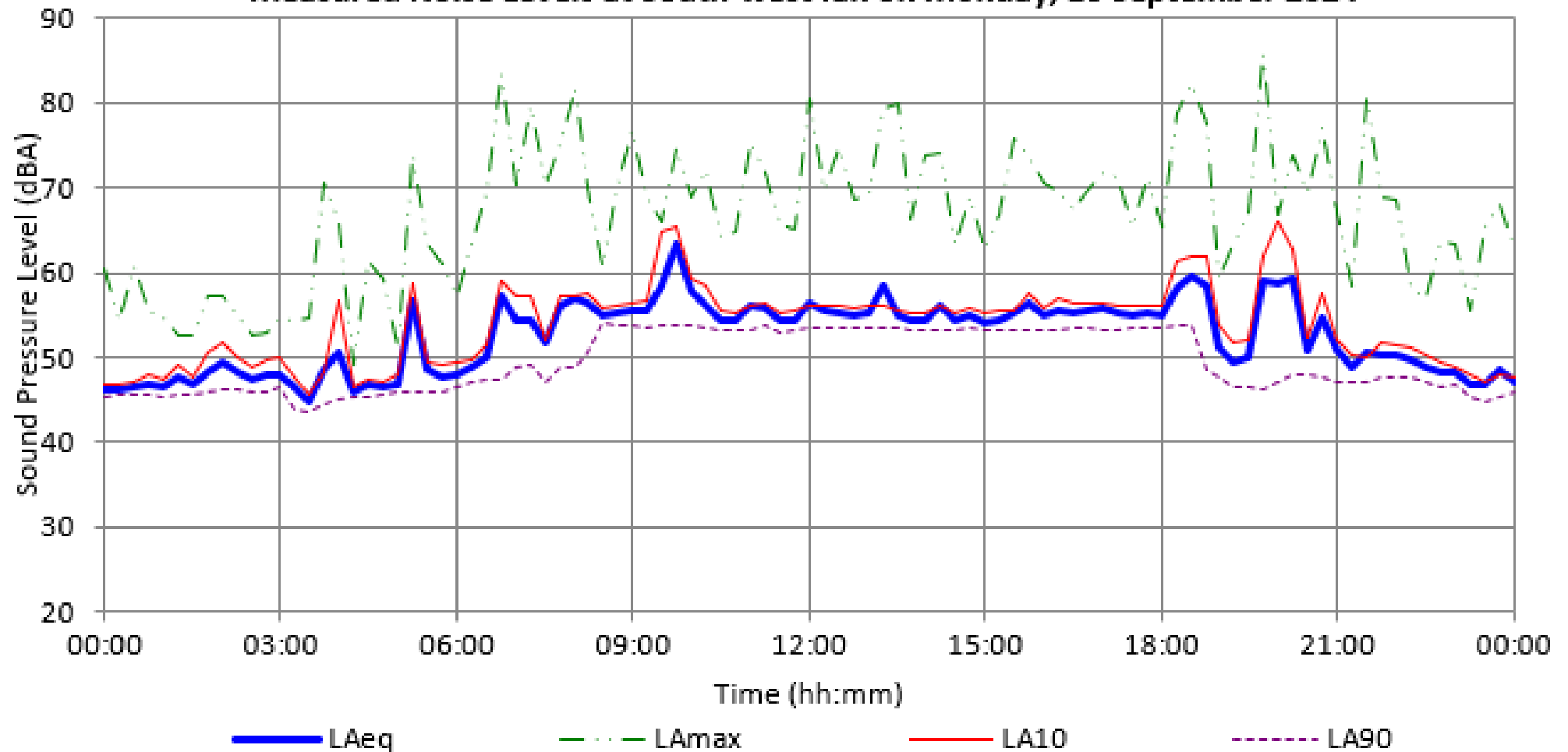
Measured Noise Levels at South-west fan on Saturday, 14 September 2024



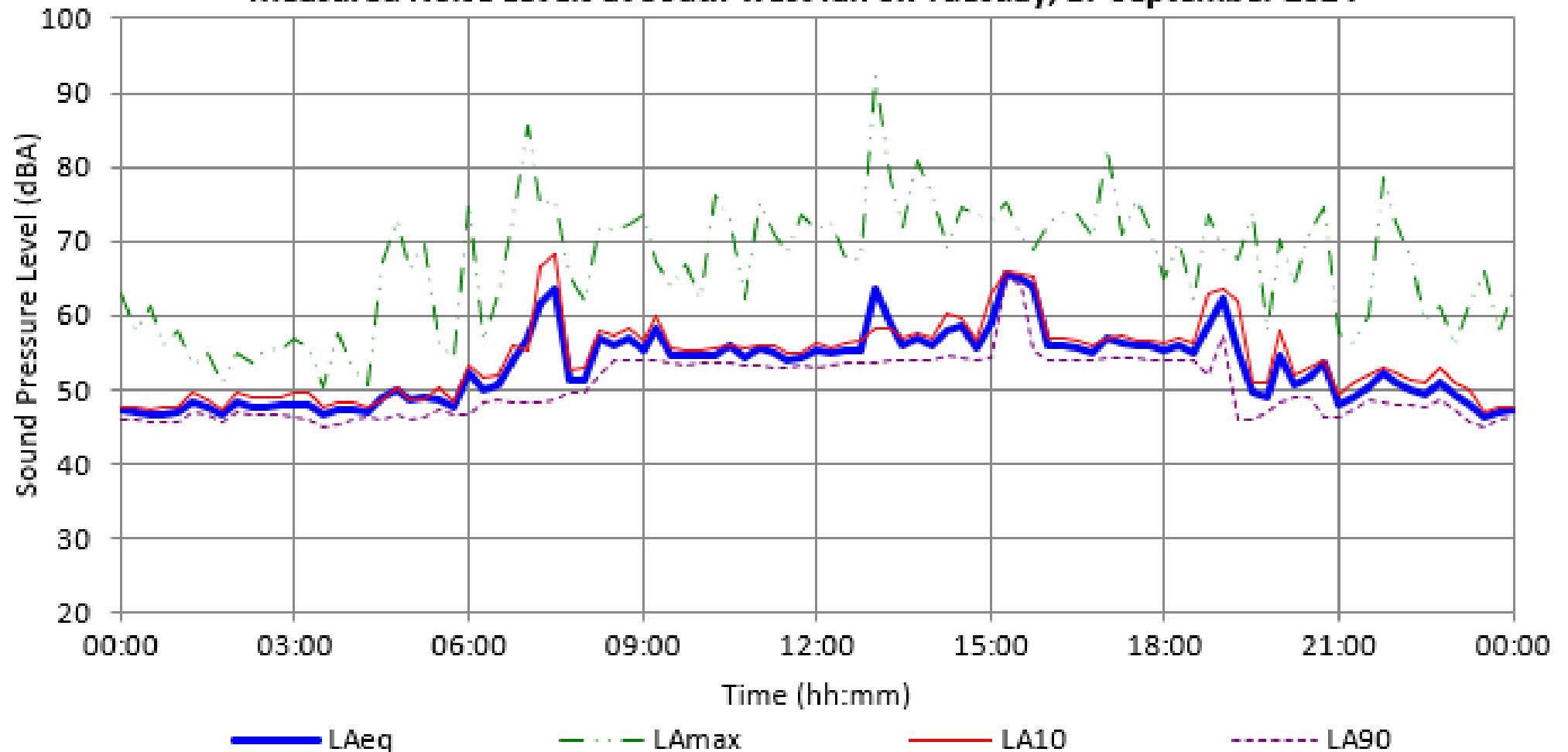
Measured Noise Levels at South-west fan on Sunday, 15 September 2024



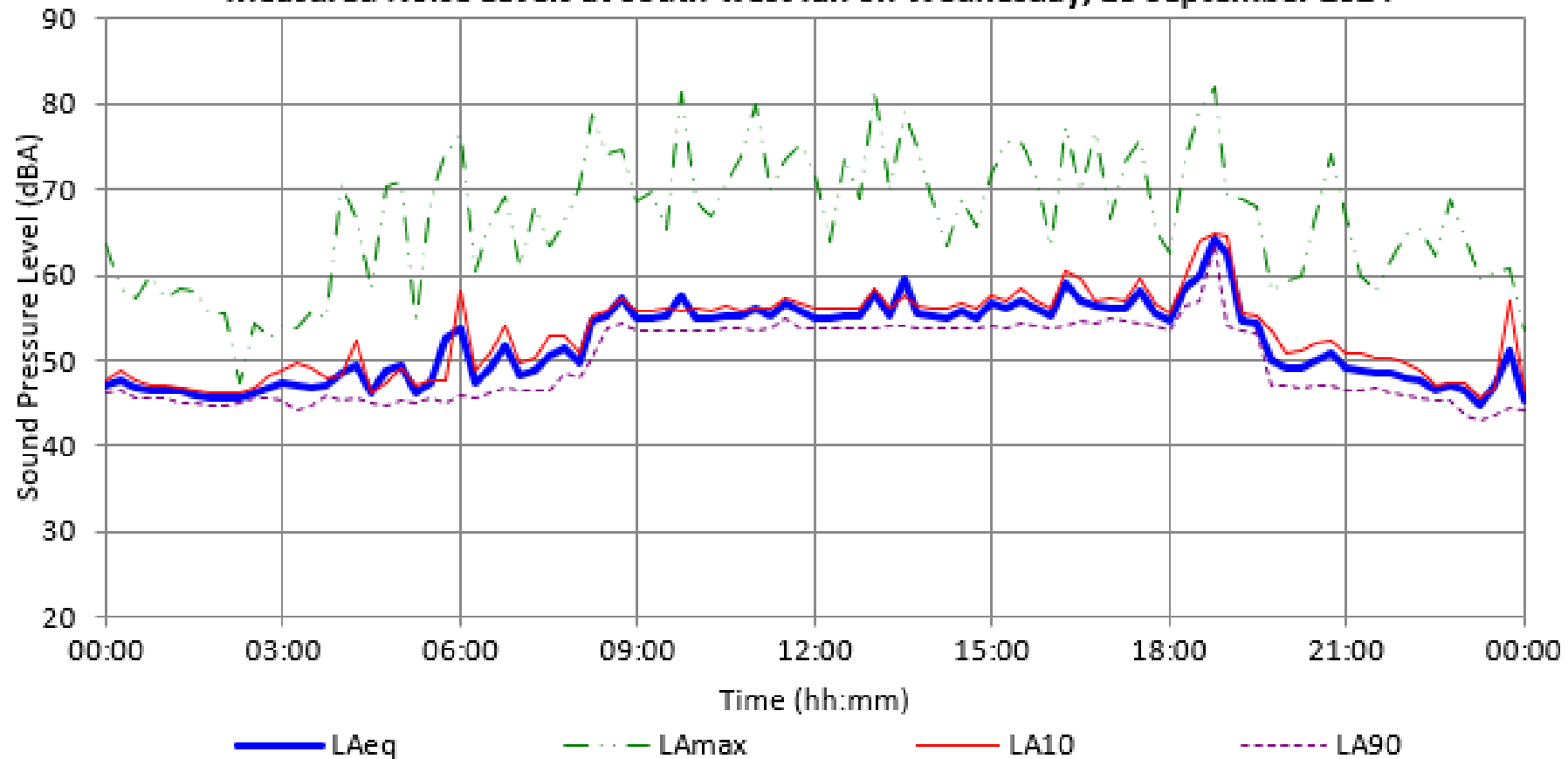
Measured Noise Levels at South-west fan on Monday, 16 September 2024



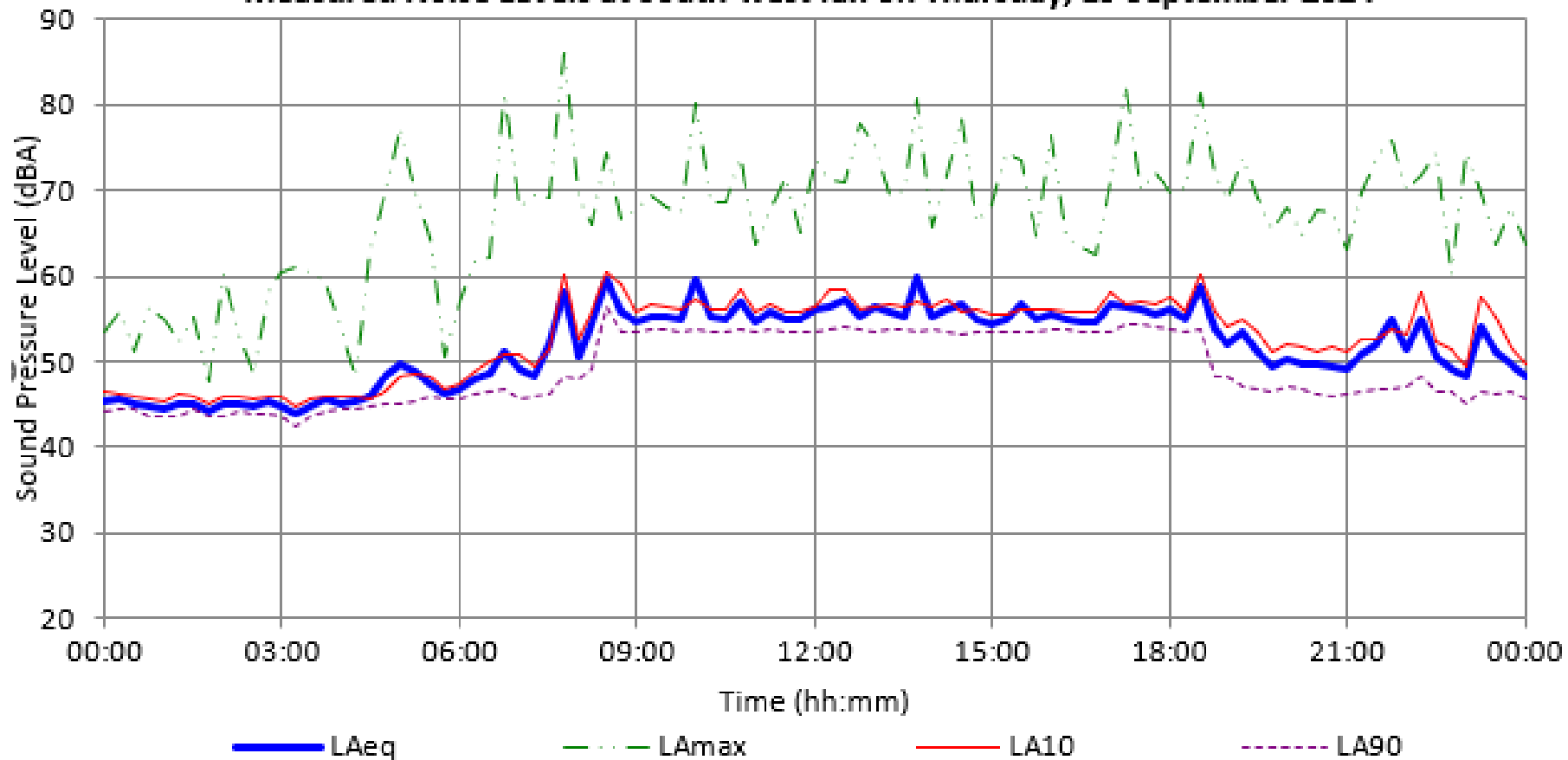
Measured Noise Levels at South-west fan on Tuesday, 17 September 2024



Measured Noise Levels at South-west fan on Wednesday, 18 September 2024

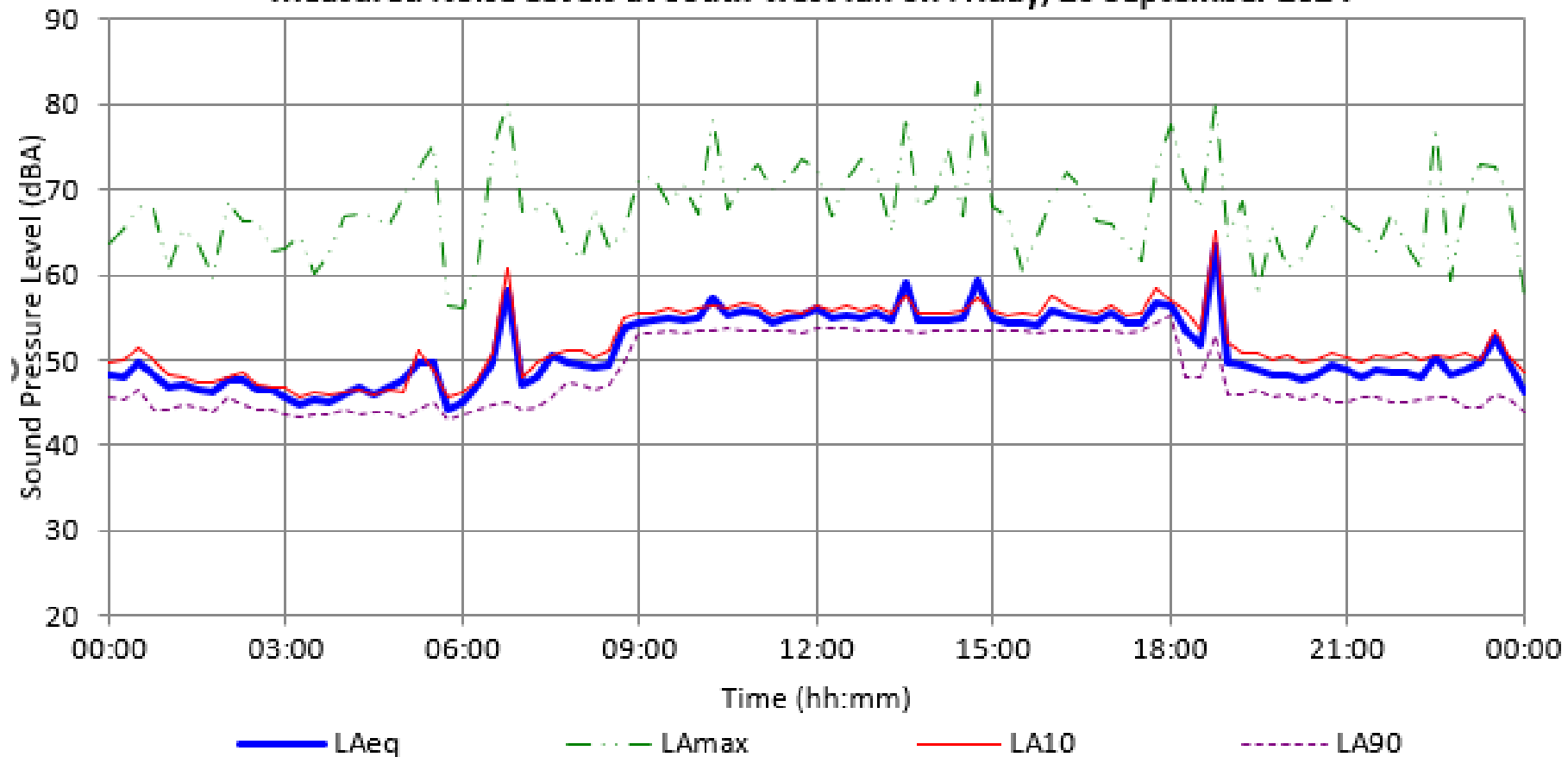


Measured Noise Levels at South-west fan on Thursday, 19 September 2024



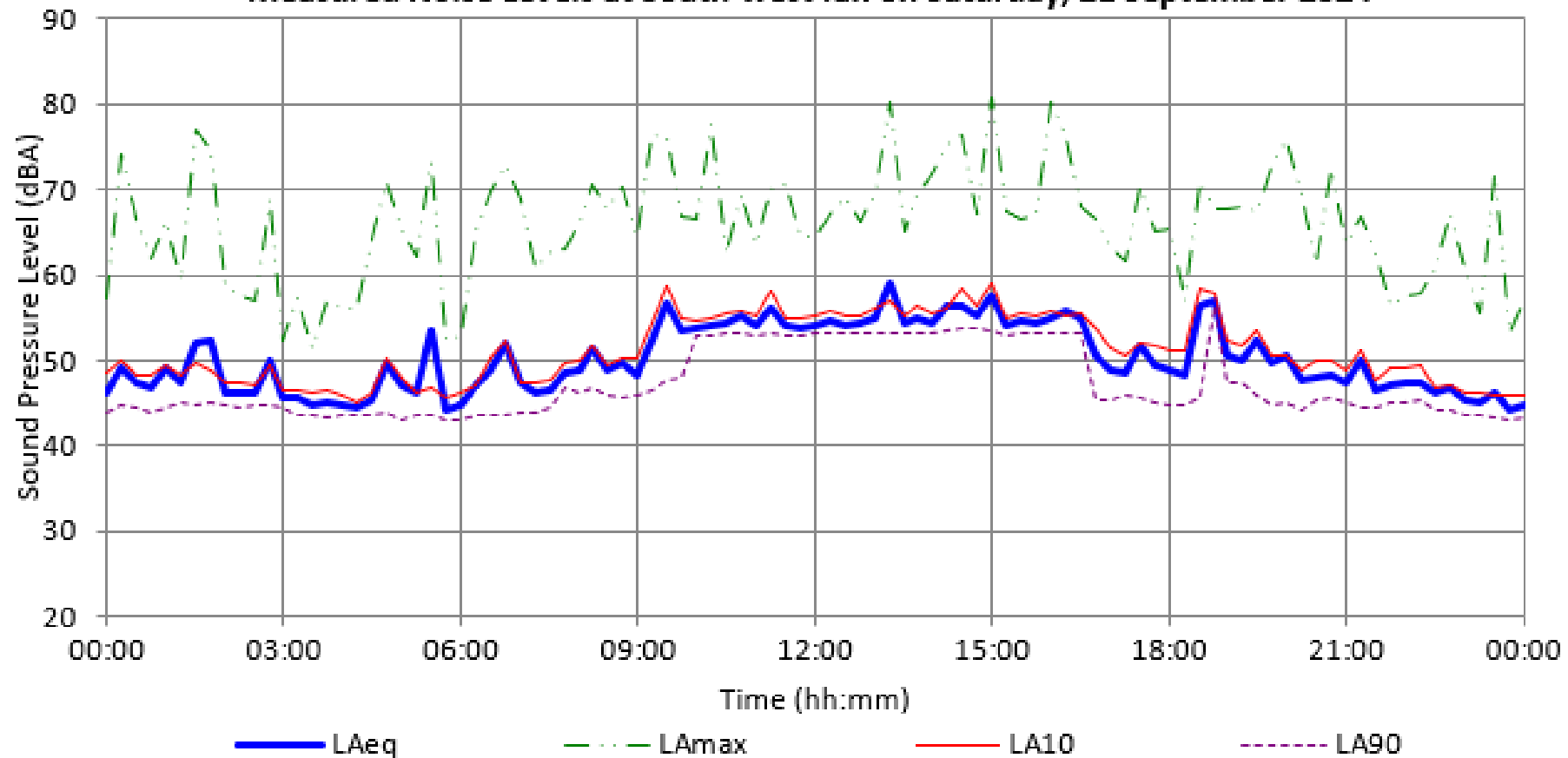


Measured Noise Levels at South-west fan on Friday, 20 September 2024

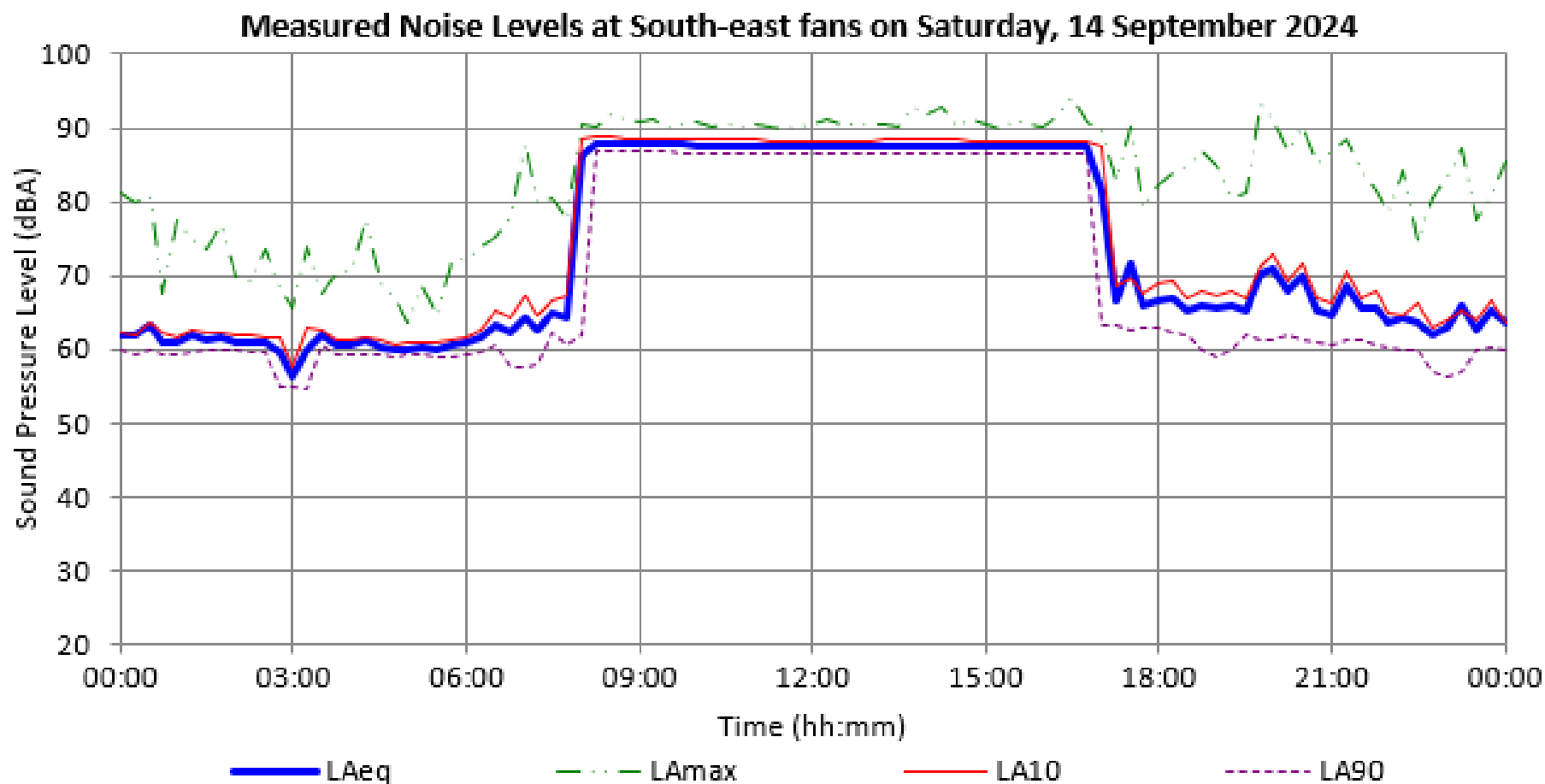




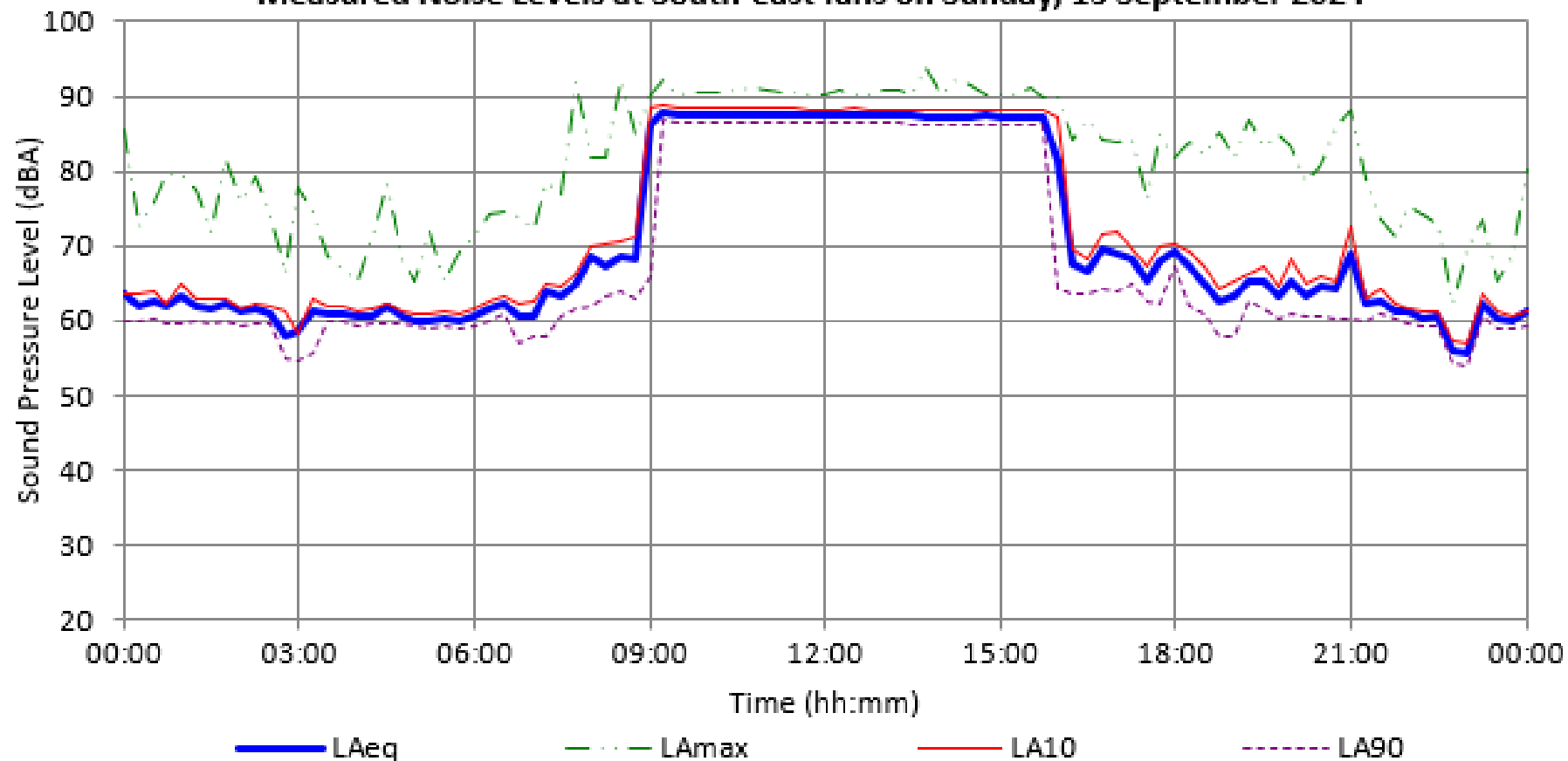
Measured Noise Levels at South-west fan on Saturday, 21 September 2024



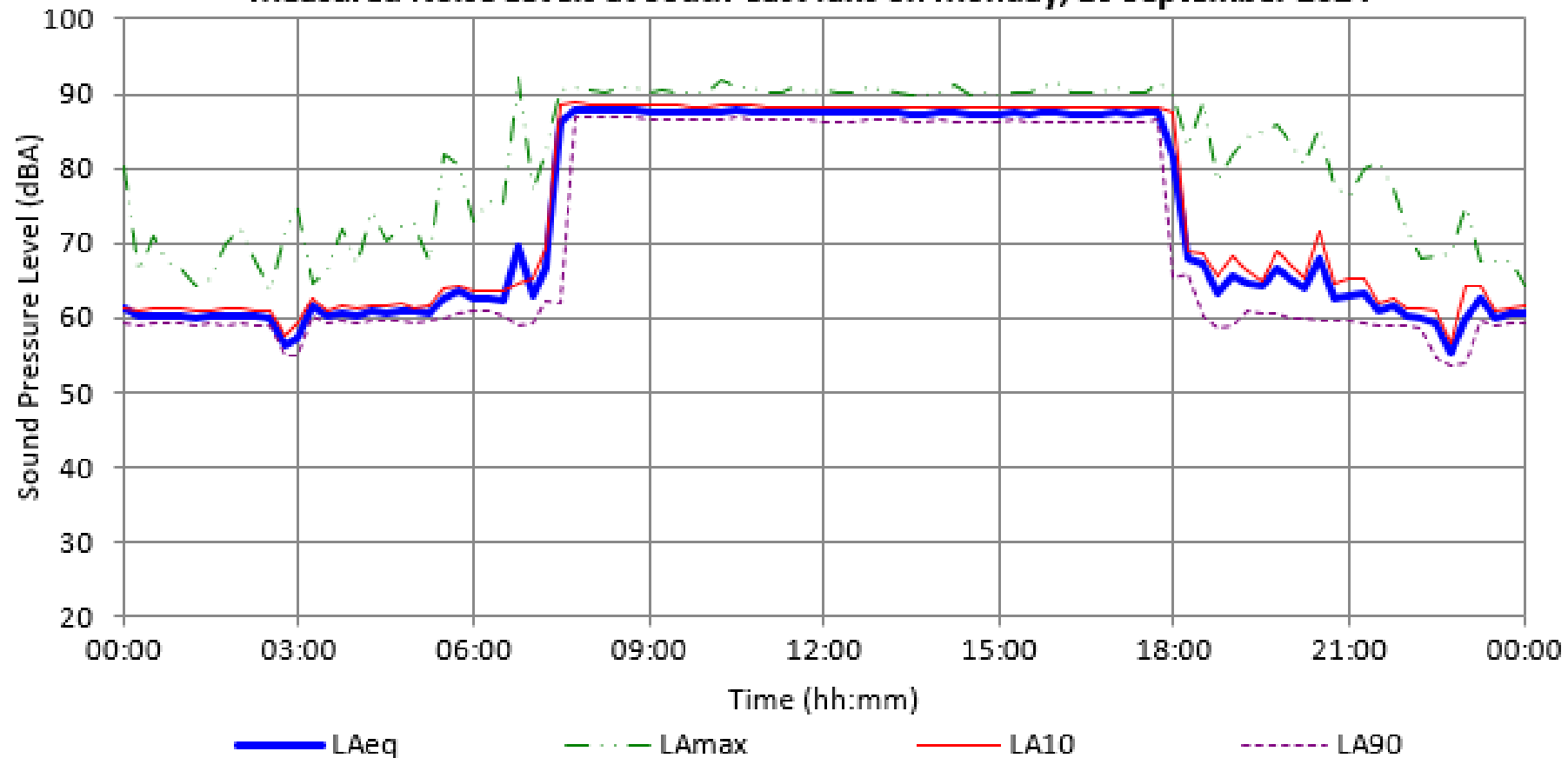
APPENDIX E LOGGER ARL EL-316 (SERIAL NO.16-207-029) – PARAPET – SOUTH-EAST EXHAUST FANS



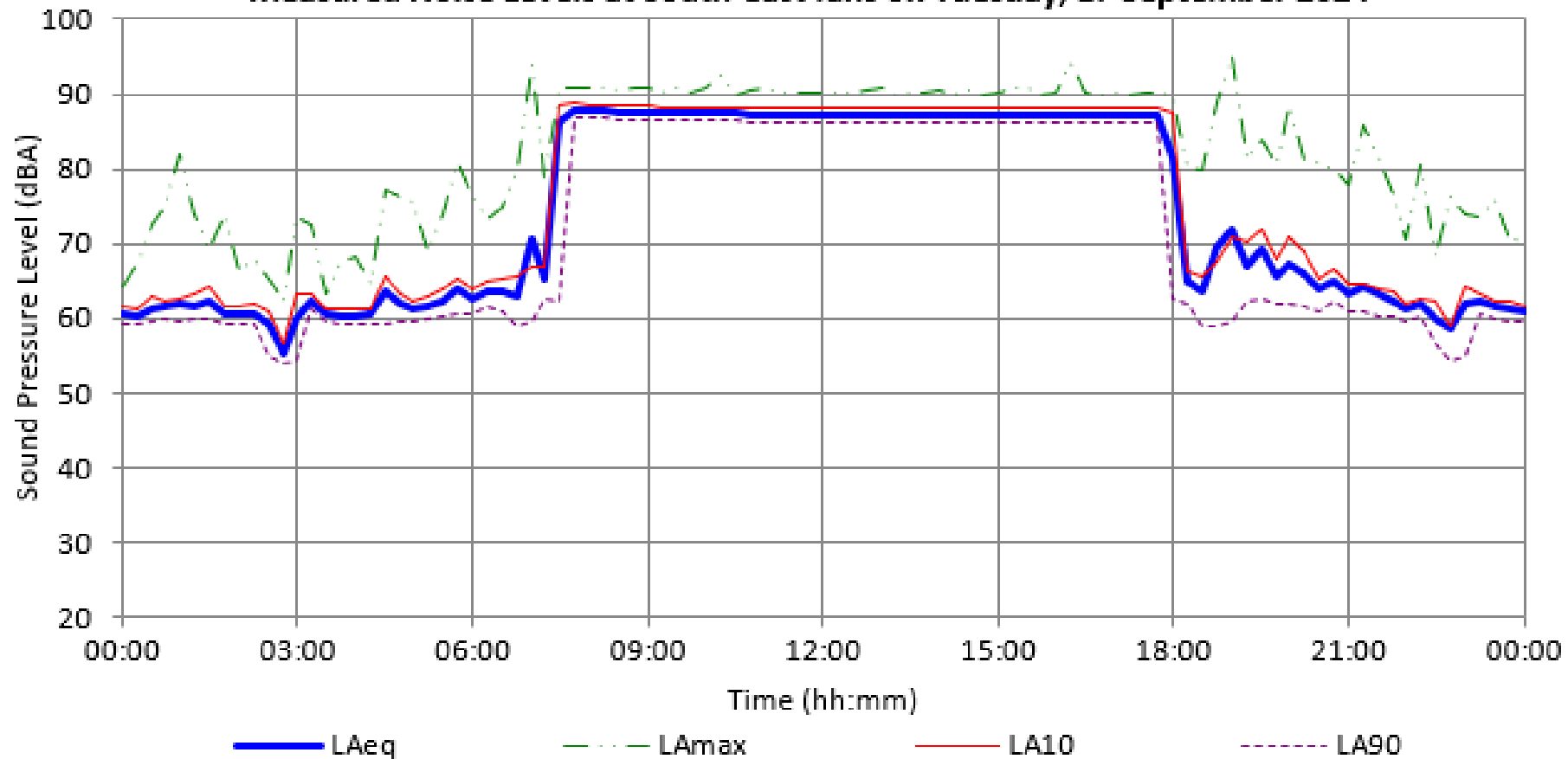
Measured Noise Levels at South-east fans on Sunday, 15 September 2024



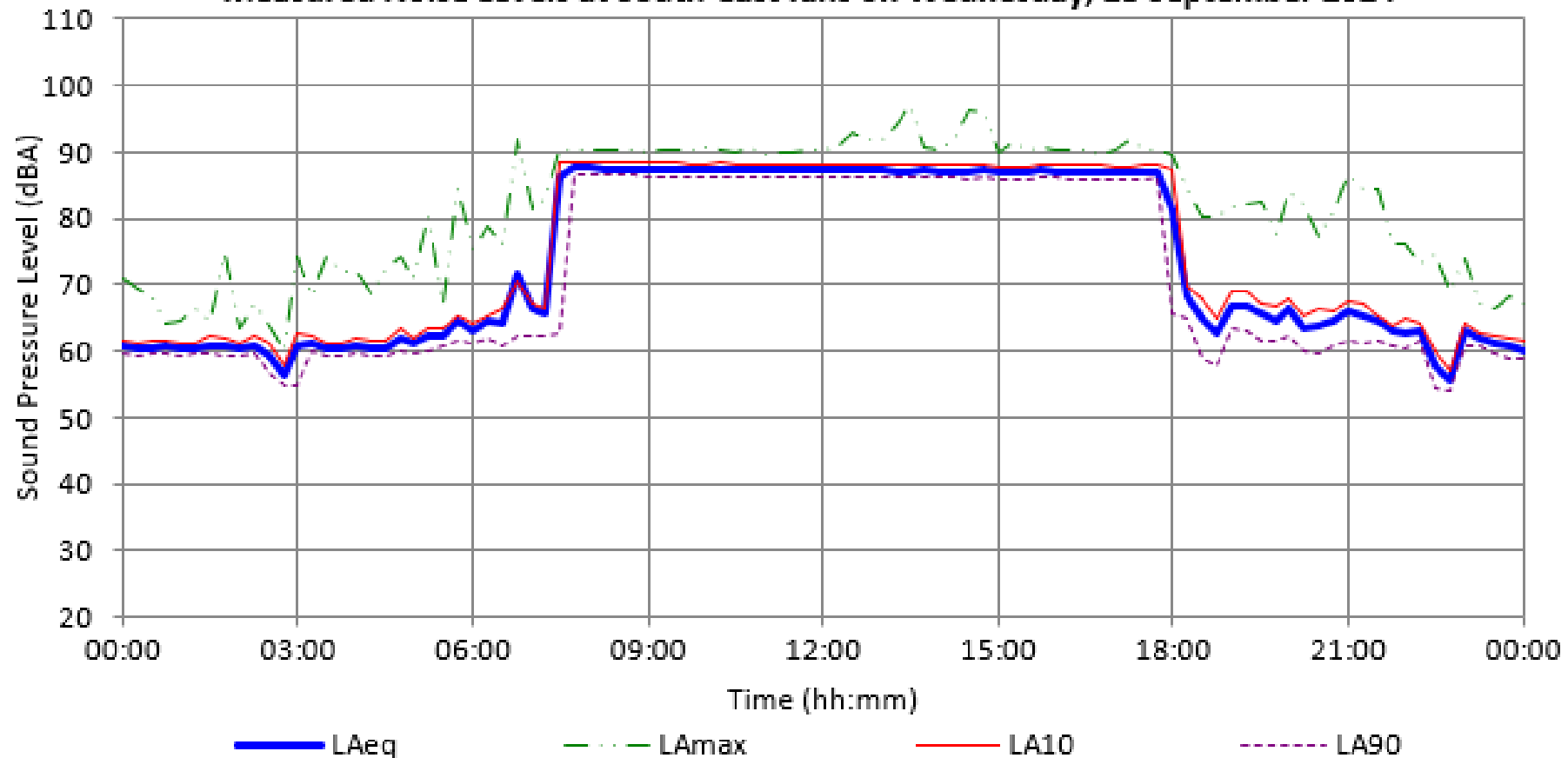
Measured Noise Levels at South-east fans on Monday, 16 September 2024



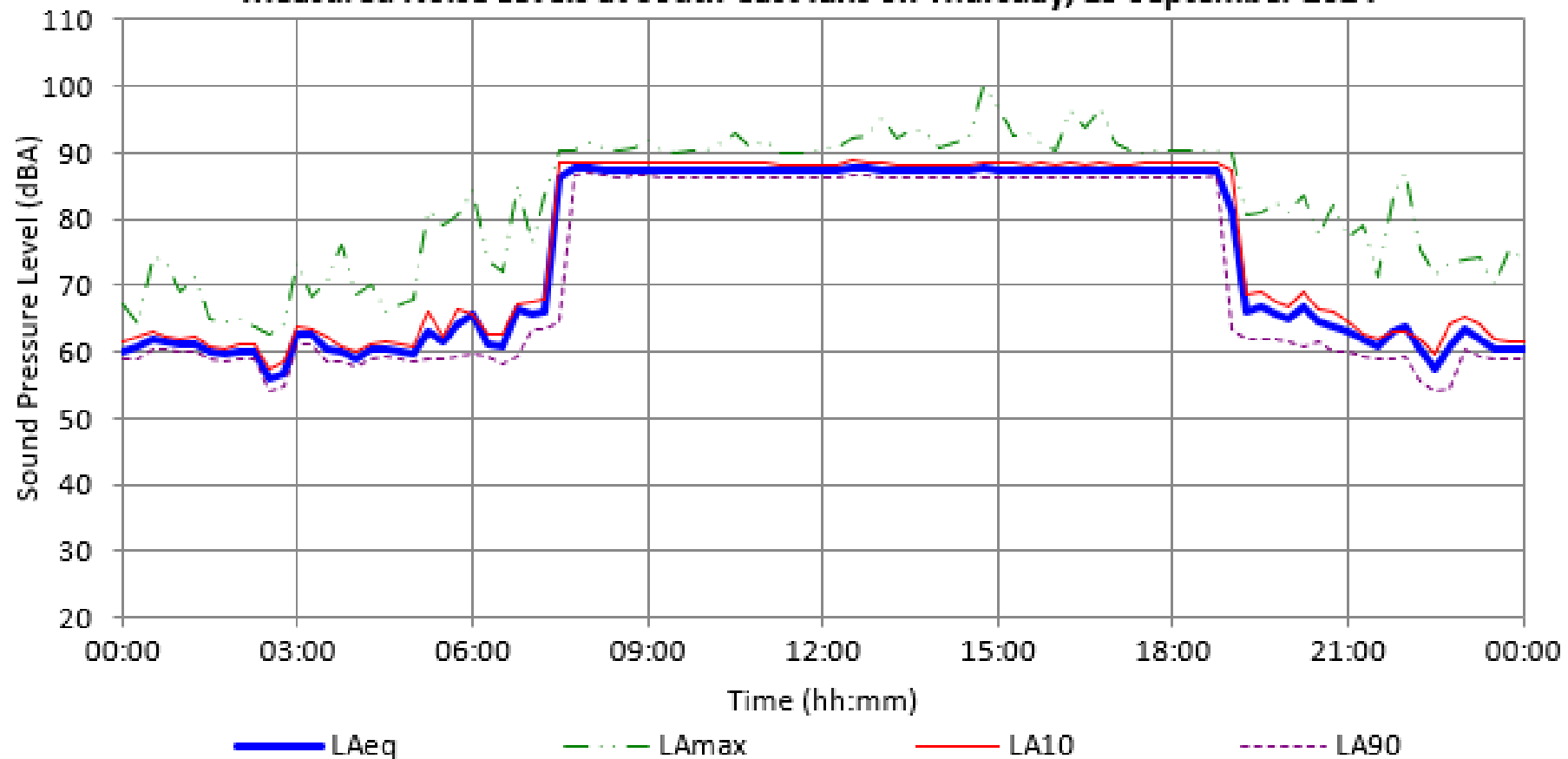
Measured Noise Levels at South-east fans on Tuesday, 17 September 2024



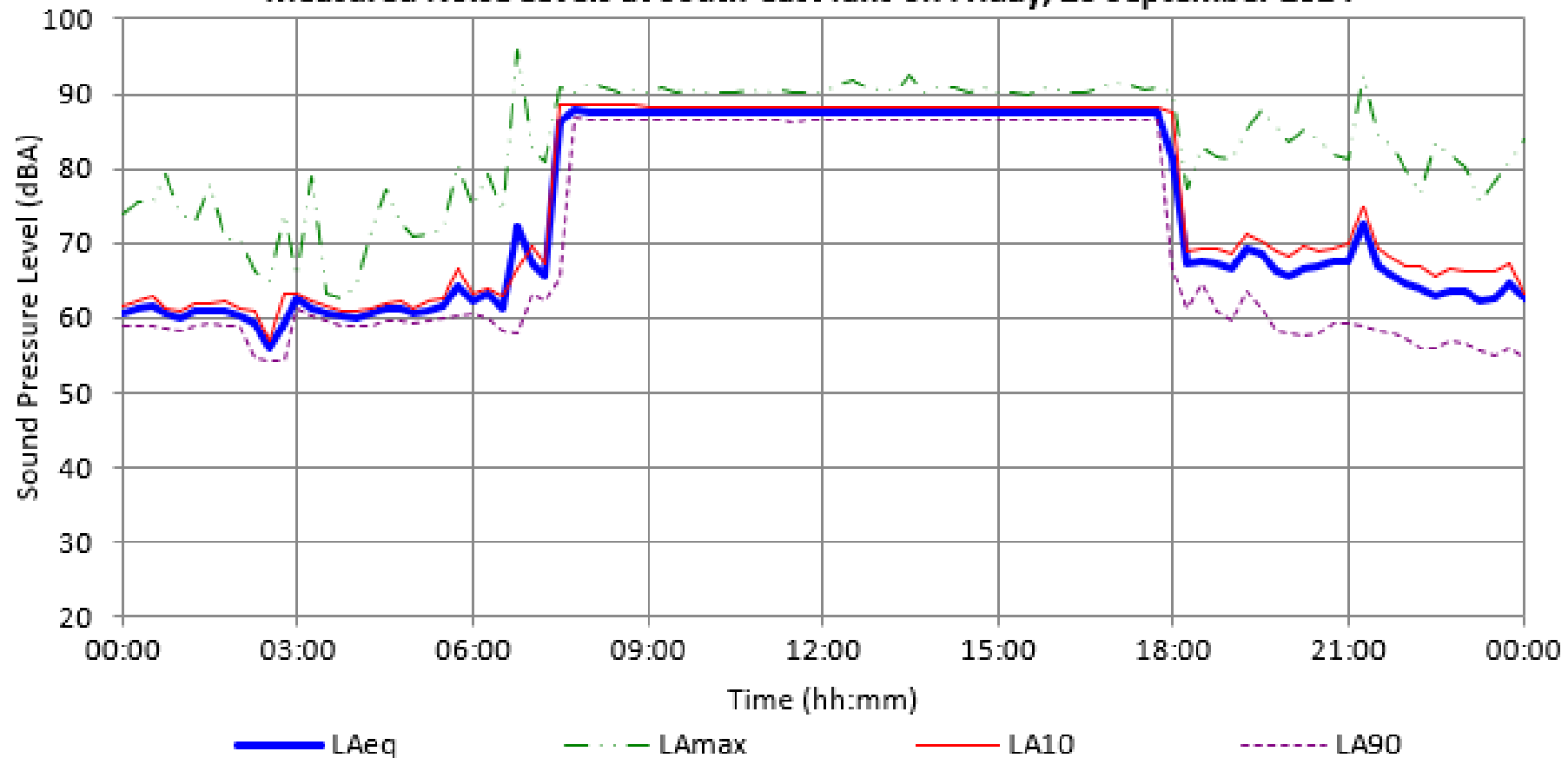
Measured Noise Levels at South-east fans on Wednesday, 18 September 2024

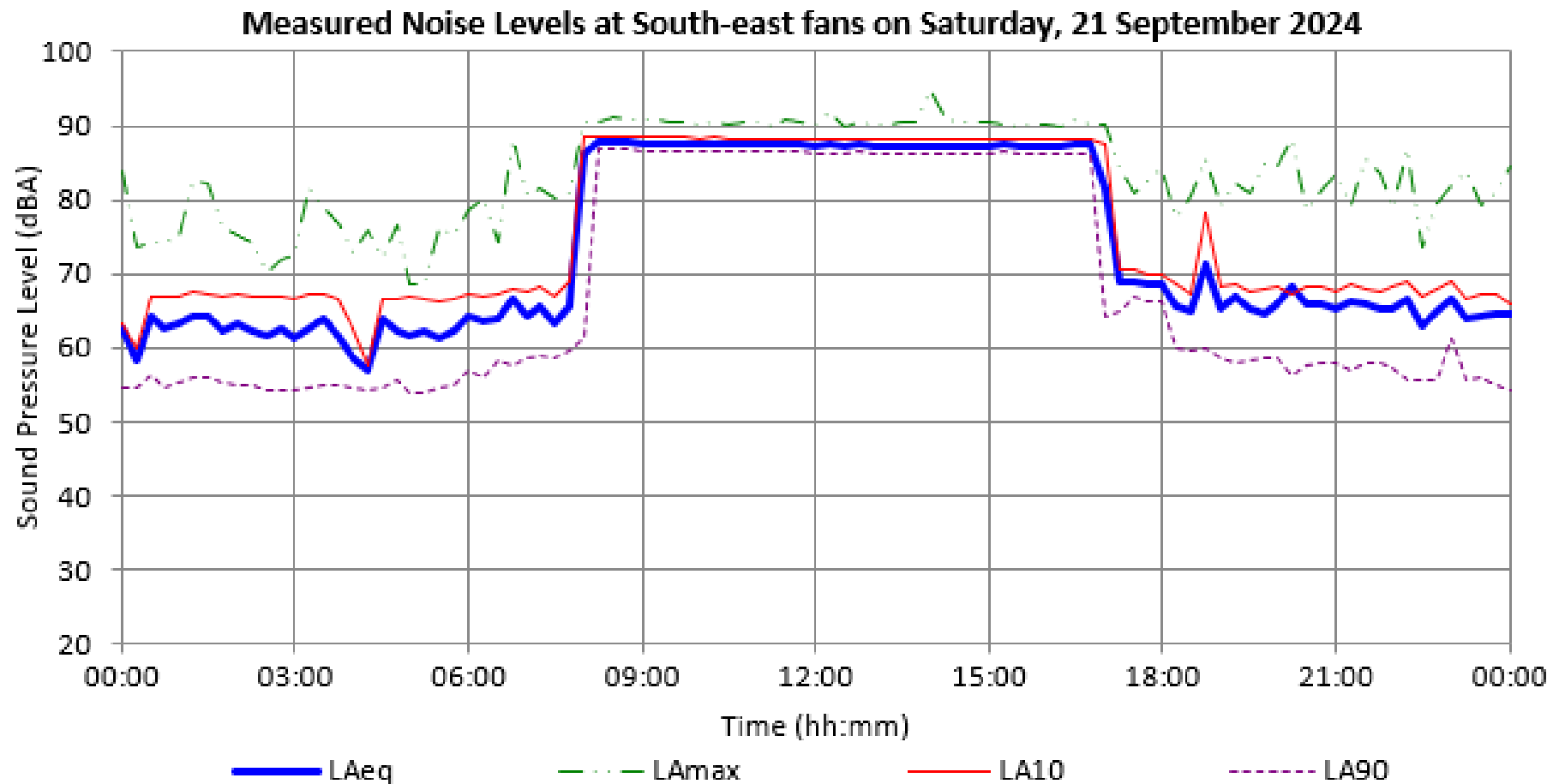


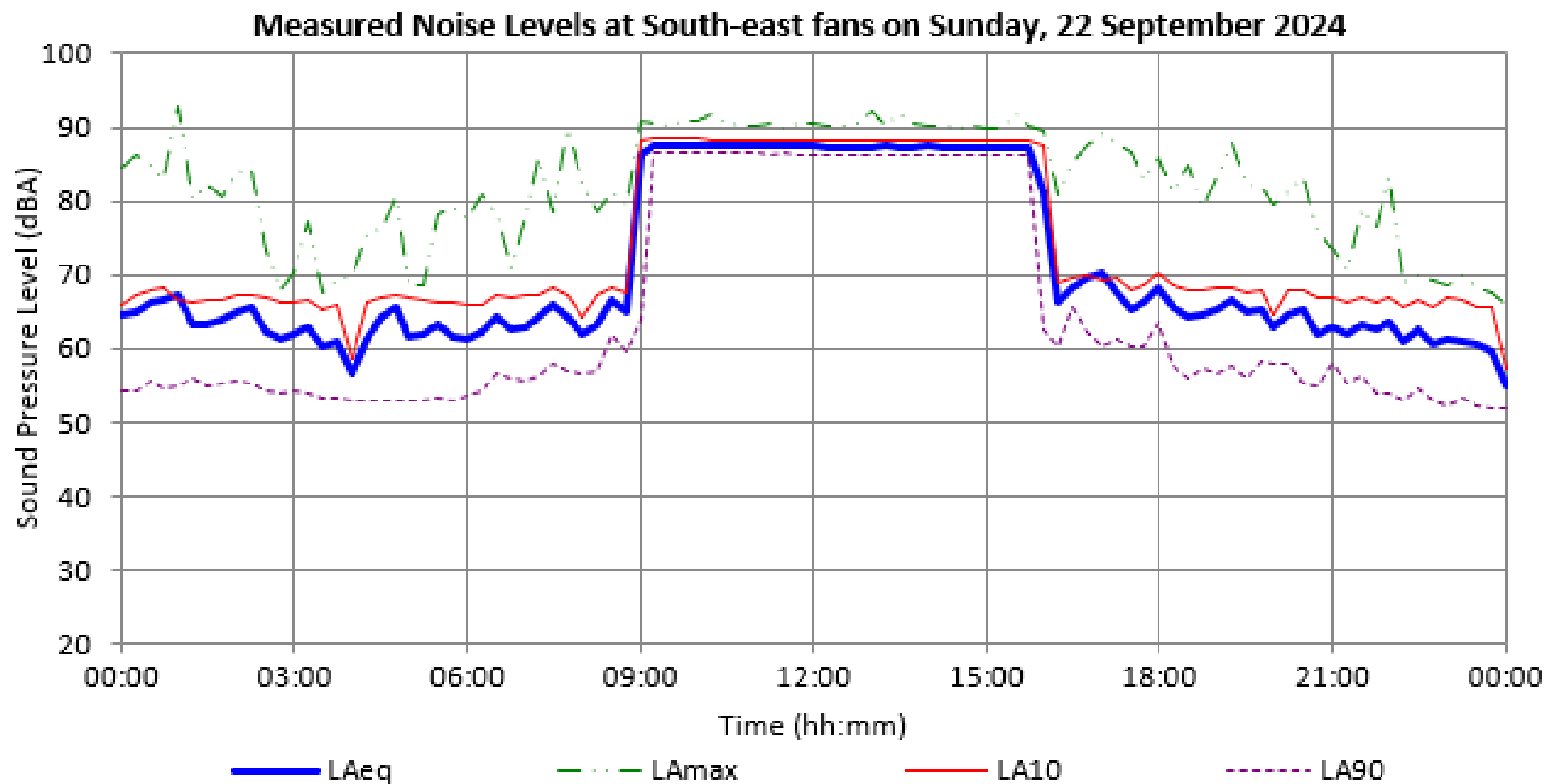
Measured Noise Levels at South-east fans on Thursday, 19 September 2024



Measured Noise Levels at South-east fans on Friday, 20 September 2024

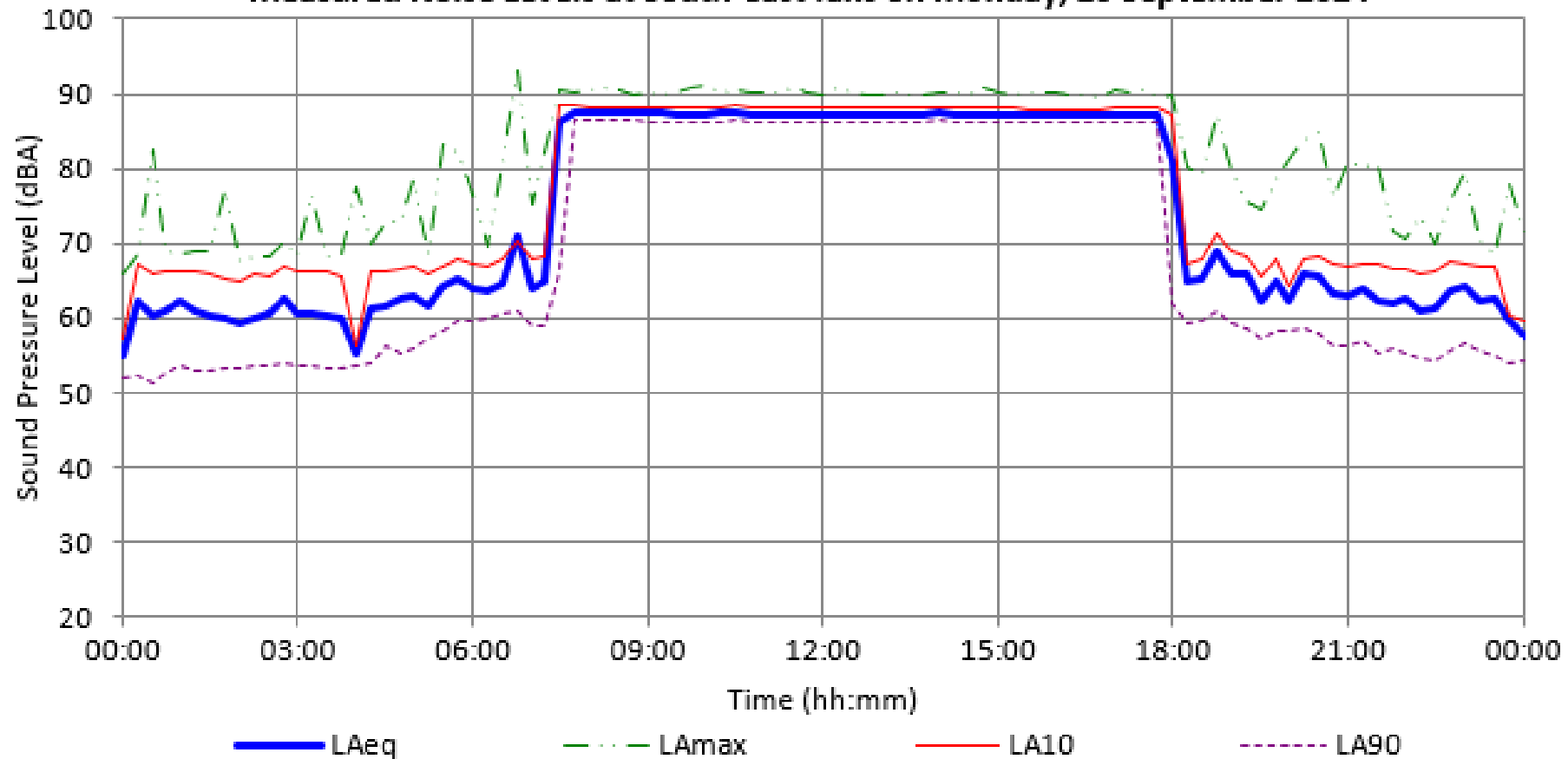








Measured Noise Levels at South-east fans on Monday, 23 September 2024



APPENDIX F PRELIMINARY SE FANS NOISE CONTROL PROPOSAL



AERIAL - LOCATION OF SITE



AERIAL - LOCATION OF FANS



ELEVATION PHOTO - HIGH PARAPET WALL



PHOTO - EXISTING FANS

NOTES

CONTRACTOR SHALL REMOVE THE EXISTING FANS & ASSOCIATED AIR DISCHARGE BAROMETRIC FLAPS, INCLUDE OVER & UNDER-FLASHING.

MAKE GOOD THE DISCHARGE MOUNTS, PREPARE TO POSITION NEW FANS C/W ANTI-VIBRATION SUPPORT AS PER MANUFACTURERS RECOMMENDATIONS.

FANS SHALL BE MANUFACTURED BY FANTECH MODEL APV0804C6/15 OR EQUIVALENT.

ACOUSTIC POD MATCHING FANTECH MODEL C2080.

CONTRACTOR TO INCLUDE ALL AUXILIARY COMPONENTS TO ENSURE THAT THE STRUCTURE IS SOUND & COMPLIANT.

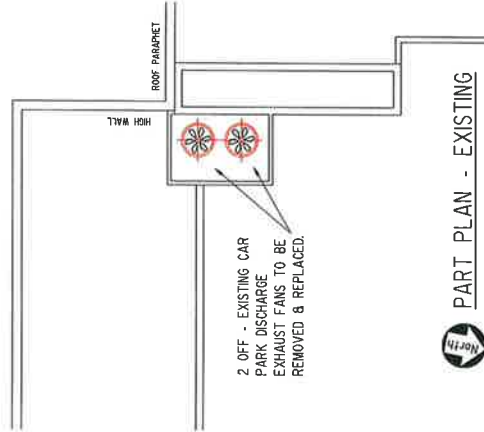
SUBJECT TO THE FINAL SELECTION BY THE CONTRACTOR, FURTHER DETAIL MAY BE PRESENTED TO THE CLIENTS REPRESENTATIVE REGARDING WEATHERPROOFING & STABILITY, IE DOWN ETC.

Technical Data - Fan Model APV0804C6/15-C2

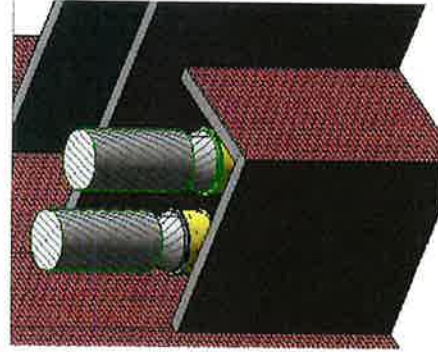
Technical Data - Silencer Model C2-080

NOTE

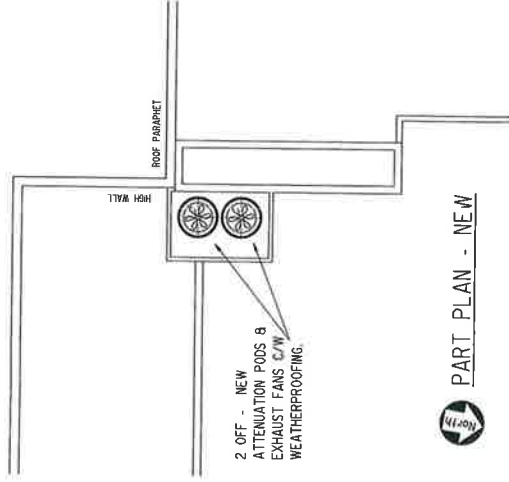
THIS IS A DBC DOCUMENT, THE INTENT IS TO REDUCE THE SOUND / NOISE REVERBERATING FROM THE EXISTING FAN INSTALLATION.
SELECTION CRITERIA WAS SORT FROM FANTECH. MODELS OF FANS & PODS HAVE BEEN BASED ON SUCH RECOMMENDATIONS. CONTRACTOR TO PRESENT THEIR OFFERINGS FOR APPROVAL PRIOR TO FINAL ORDERING.



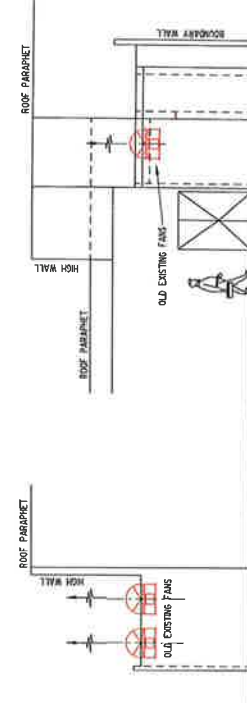
PART PLAN - EXISTING



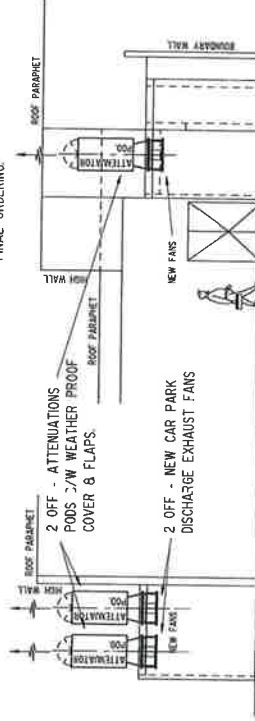
3D IMPRESSION - SILENCERS



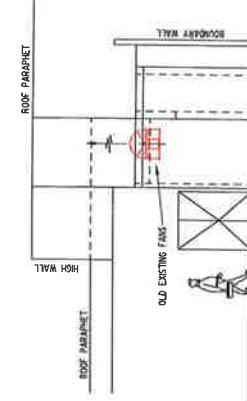
PART PLAN - NEW



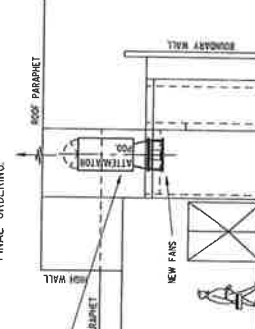
LONGITUDINAL SECTION - EXISTING



LONGITUDINAL SECTION - NEW



FRONT ELEVATION - EXISTING



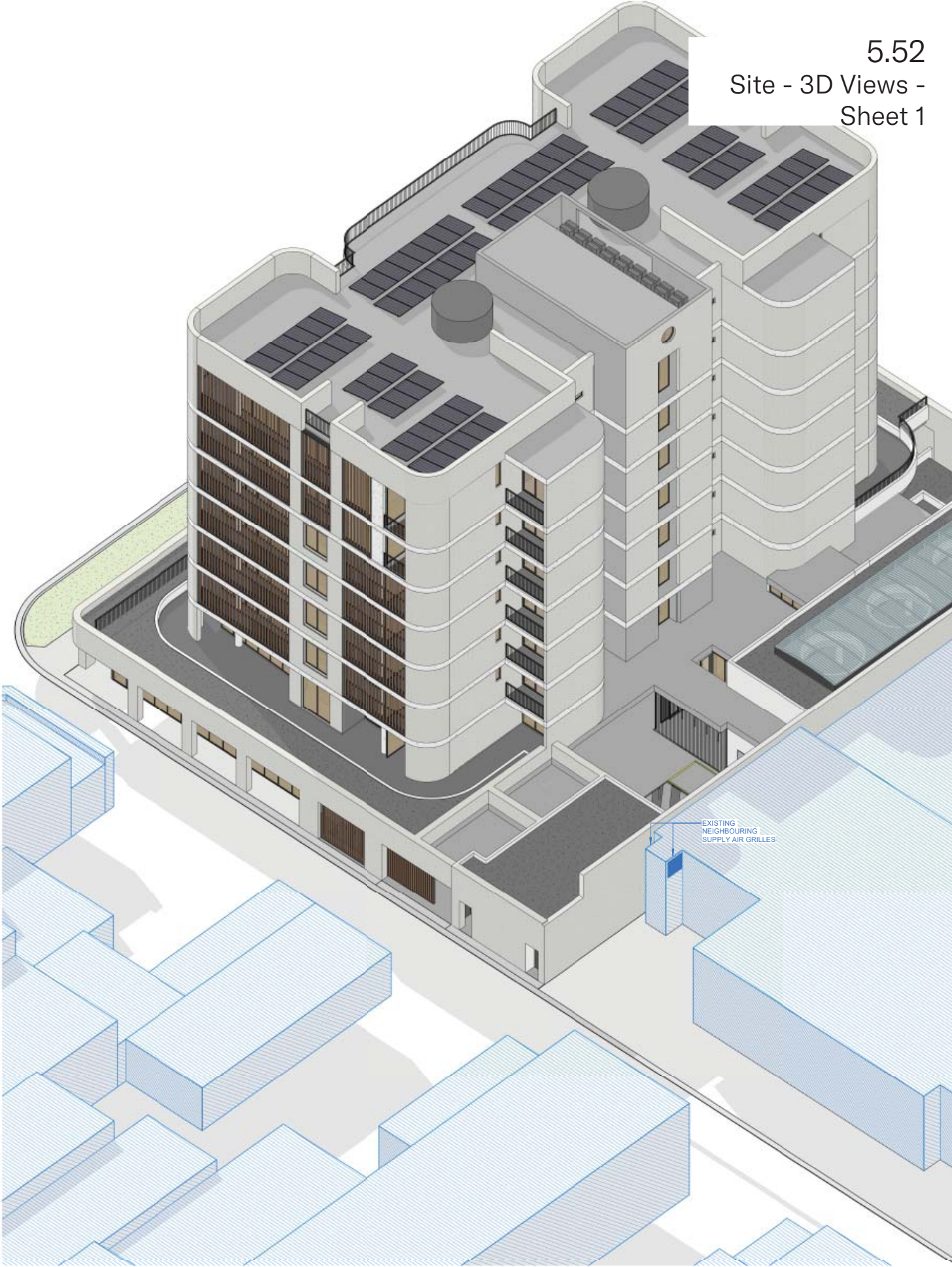
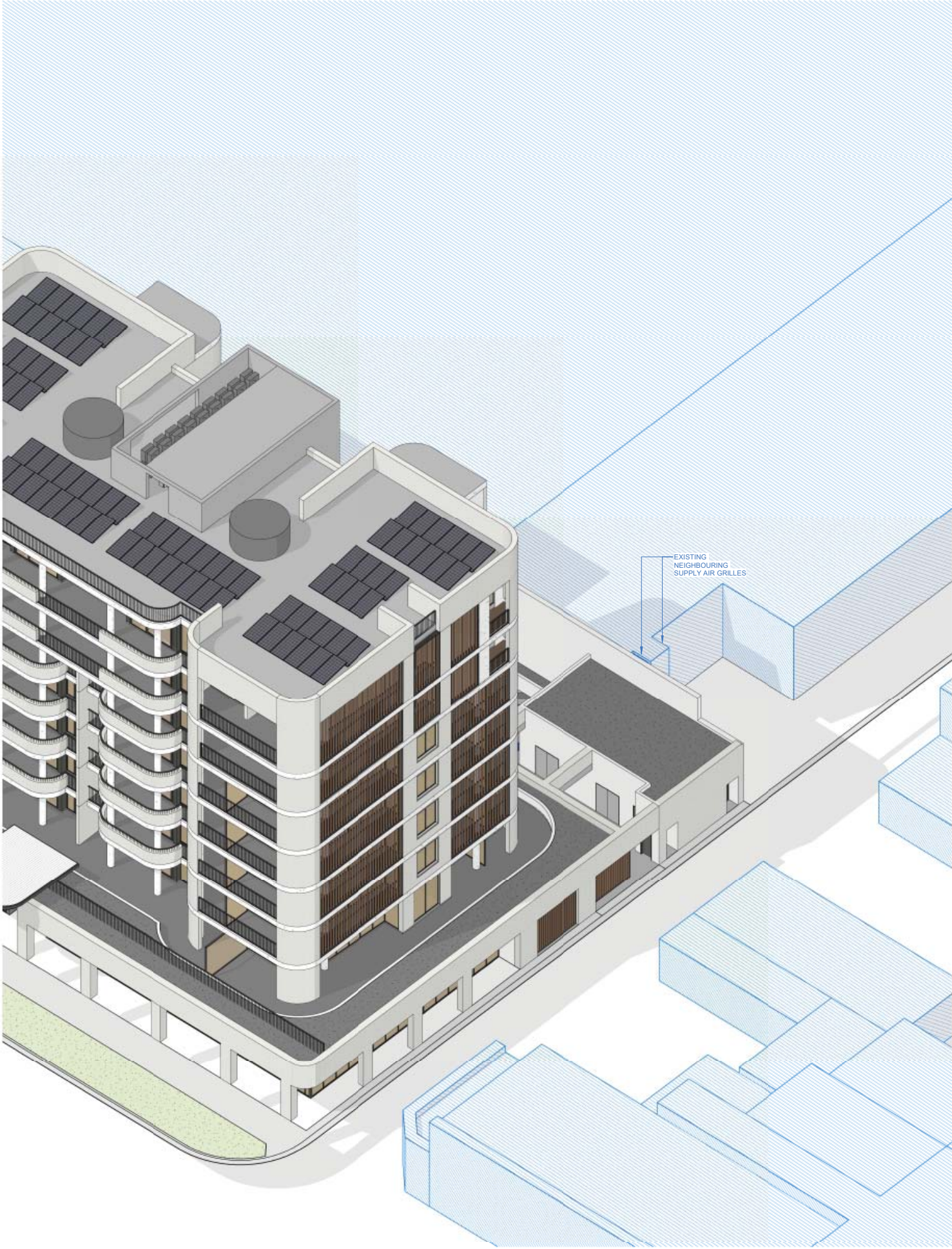
FRONT ELEVATION - NEW

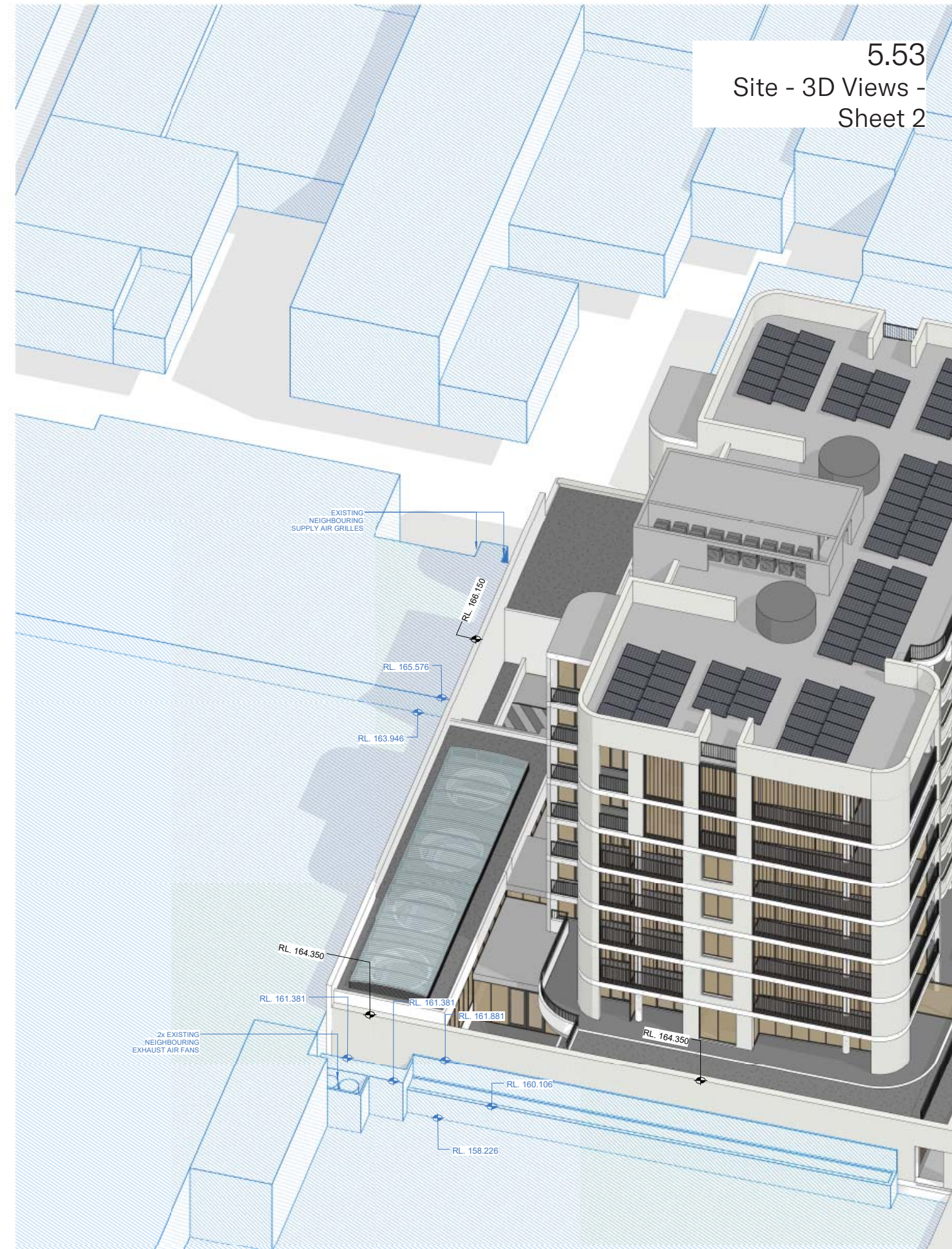
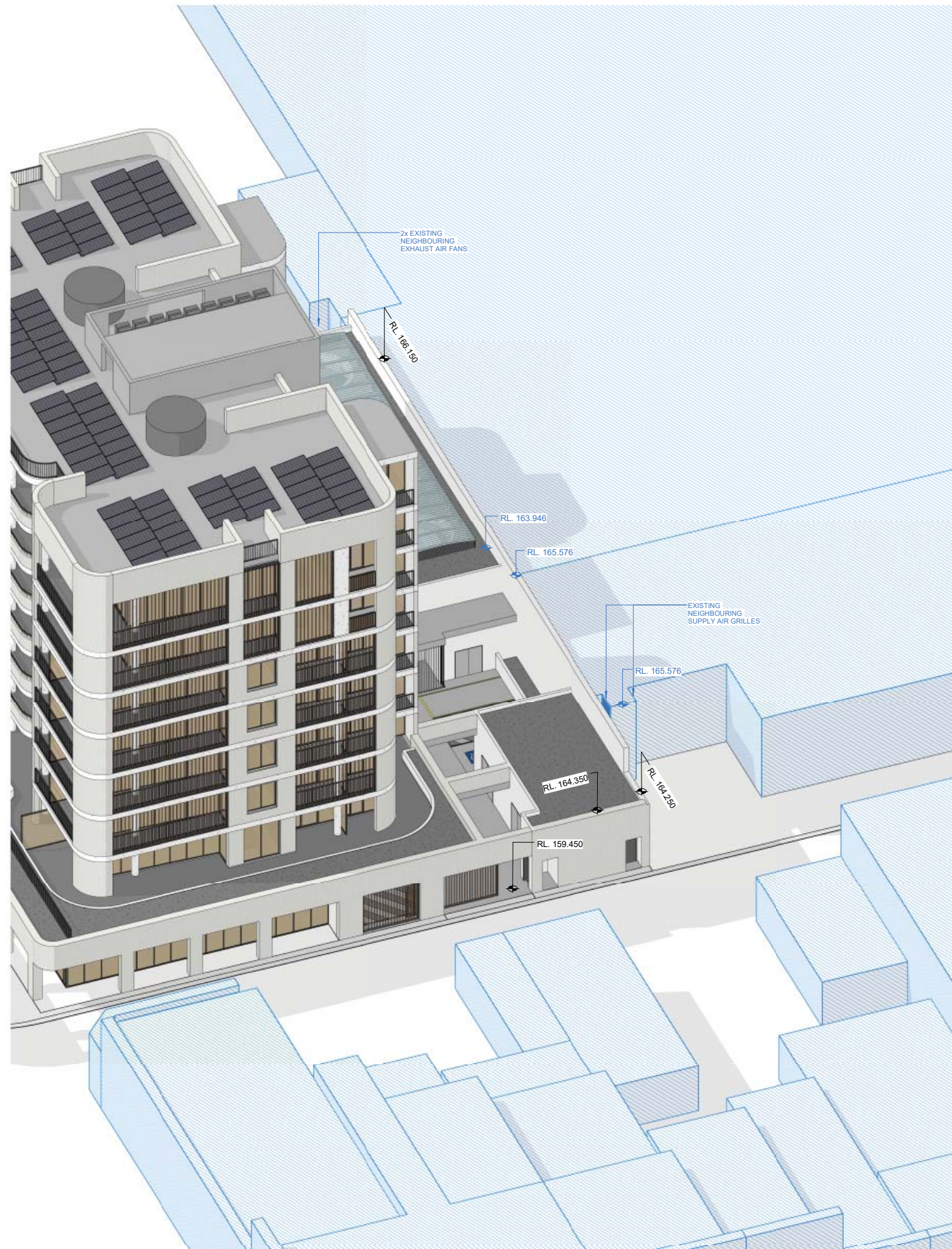
I	TENDER	07-10-2024	DARYL R RYAN
REV	REVISION DESCRIPTION	DATE	CHANGE NOTE

ADAPTA	Building Services Group 
555 Hume Street, Albury NSW 2640 Ph: 02 602 14680 Darwin Suite 4, 60 Vinnella Road, Vinnella NT 0821 Ph: 08 89844245	
BUILDING SERVICES CONSULTING ENGINEERING GROUP <input checked="" type="checkbox"/> MECHANICAL <input type="checkbox"/> ELECTRICAL <input type="checkbox"/> HYDRAULIC <input type="checkbox"/> FIRE <input type="checkbox"/> OTHER	
Client	

JOSS	
Project CAR PARK EXHAUST RECTIFICATION MYRE CENTREPOINT ALBURY	
Title MECHANICAL SERVICES EXISTING & PROPOSED PLANS & ELEVATIONS	
Drawn DARYL R RYAN	Date 25-10-2024
Scale 1:100	Plotted Date 06/11/24
Drawing Number 10309 - SK-01	Revision 1

APPENDIX G ARCHITECTURAL DRAWINGS 5.52 AND 5.53





13 March 2025

Joss Construction
206 East Street
Albury NSW 2640

Attention: Martin Reid

DA 10.2023.40336.1 ASSESSMENT RESPONSE

Dear Martin

Further to your request we have reviewed the correspondence from Albury City Council dated 26th February 2025. This provides comments following a preliminary assessment by Albury City Council of the DA documentation submitted by Joss Construction. The DA documentation included the Marshall Day Acoustics Report Rp 001 R04 20230173 dated 18th November 2024. (the acoustic report)

We address the comments in Councils Correspondence in the table appended to this note.

Yours faithfully

MARSHALL DAY ACOUSTICS PTY LTD



Simon Connolly
Associate

Item	Environmental Health Comments	MDA Response
1	<i>Recommendations – control of noise via building façade</i> - The final note indicates that this measure is not achievable with open windows in the rooms as outlined on table 13 – How will this be addressed noting ventilation requirements? Is a further redesign required?	<p>For rooms where windows need to be closed in order to meet the internal noise criteria we recommend that such rooms are provided with an alternative form of ventilation (i.e. other than opening the window) so that the occupant can keep windows closed (if desired) and still be provided with adequate fresh air.</p> <p><i>For affected rooms (as highlighted in the acoustic report), during the detailed design development phase, Joss Construction would finalise the detailed design and implement a ventilation system that does not require the exposed windows to be open to achieve the ventilation requirements.</i></p> <p>This is a commonly accepted and adopted approach where residential premises are constructed near busy roads and railways. For external context we direct Council to similar approaches used in other jurisdictions.</p> <p>The City of Sydney DCP 2012 https://www.cityofsydney.nsw.gov.au/-/media/corporate/files/publications/development-control-plans/section4_dcp2012_091222.pdf?download=true.</p> <p>section 4.2.3.11 “Acoustic privacy” provides an example of internal noise criteria approaches where natural ventilation cannot be achieved.</p> <p>A similar approach (but with differing noise criteria) can be found within the NSW Department of Planning <i>Development near Rail Corridors and busy Roads – Interim Guideline</i> Development Near Rail Corridors and Busy Roads – Interim Guideline. This document includes the statement that <i>If internal noise levels with windows or doors open exceed the criteria by more than 10dBA, the design of the ventilation for these rooms should be such that occupants can leave windows closed, if they so desire, and also to meet the ventilation requirements of the Building Code of Australia.</i></p> <p>Both criteria require that where specific internal noise criteria cannot be achieved with windows open, an alternative means of ventilation is required that would meet both ventilation requirements and internal noise criteria.</p> <p>Ventilation and noise methodologies of these types are proposed for the noise affected windows for this project. Provided the required alternative means of ventilation is included, a further building redesign would not be required to meet the proposed internal noise limits. The rooms requiring the provision of alternative ventilation are set out in Table 13 of the acoustic report. It will be necessary to specify acoustic ratings for each window and door during detailed design stages.</p>

Item	Environmental Health Comments	MDA Response
	<p><i>Recommendations – control of noise from plant and equipment – it is recommended that where feasible noise from the shopping centre plant and equipment be controlled by acoustic treatment measures directly to the plant and equipment.</i></p> <p>While it's noted that Joss have been working towards the development of a preliminary noise control design for the plant, this potential measure pertains to another property and cannot typically be considered as part of this development assessment. How is this issues proposed to be addressed?</p>	<p>The executive summary to the acoustic report notes that it is preferred that noise from the shopping centre plant be reduced at source. As noted in the Council correspondence, Joss Constructions have developed options to provide the recommended noise reduction. These efforts and negotiations with the shopping centre had not been concluded at the time of the acoustic report preparation however they are ongoing.</p> <p>The noise control method using alternative ventilation described in section 10.1.2 of the acoustic report (and above) is not however contingent on the plant noise at source control being implemented. In the event that that the plant noise control is not implemented, it would be possible to achieve acceptable noise levels inside the apartments with windows closed and an acceptable alternative means of ventilation provided.</p>
2	<p>The report concludes that:</p> <p>'The site of the proposed development (481 to 487 Swift Street) is exposed to noise emissions from plant and equipment associated with the shopping centre that are above the levels recommended within the EPA Noise Policy for Industry.'</p> <p>'Control of the noise from the mechanical plant associated with the shopping centre is best carried out at the source using silencers, plenums and insulated ductwork' OR</p>	<p>This is a comparative statement confirming that the noise levels generated by the nearby ventilation fans associated with the shopping centre are above that recommended by the Noise Policy for Industry (NPfI) .</p> <p>We note that the policy is normally imposed either by the EPA or Council as the Consent Authority on the noise emitter not the receptor. It is our understanding from Joss at this stage that relevant consent conditions on the shopping centre fans do not refer to the NPfI .</p> <p>This statement should be read in the full context of the acoustic report text. The actual statements in the acoustic report are:</p> <p><i>Control of the noise from the mechanical plant associated with the shopping centre is best carried out at the source using silencers, plenums and insulated ductwork. Where this is not feasible, control of noise from the shopping centre plant can be achieved with appropriate facade acoustic performance and alternative means of ventilation as described in Section 10.1.2 and Section 10.1.3 of this report.</i></p> <p>The conclusions in the acoustic report are recommending noise control to the shopping centre fans, or where this cannot be carried out, the noise control at the façade itself with the alternative ventilation means as discussed in in the acoustic report and above.</p>

Item	Environmental Health Comments	MDA Response
	<p>'the redesign of the building to exclude windows to habitable rooms from facing south together with balconies that include screening element' and refers to the recommendations as discussed above in (1).</p>	<p>This statement is presented as a separate dot point and refers to the effect of the building redesign that has already been carried out and documented within this Development Applications. The improvements noted in the acoustic report comments with reference to the current development application design that significantly reduces window exposure to the shopping centre fans, when compared to the previous development application proposal.</p> <p>The statement in the acoustic report does not constitute a recommendation to further redesign the building.</p> <p>For clarity we redraft the statement as:</p> <p><i>This Amended Development Application presents a redesign of the building to exclude windows to habitable rooms from facing south, together with balconies that include screening elements, which will significantly reduce noise impacts from the plant to the internal spaces when compared to the previous application.</i></p>
3.	<p>It has been assumed in the Acoustic Report that the carpark ventilation system does not operate at night-time. This needs to be confirmed with shopping centre management.</p>	<p>The noise logger records included in the acoustic report show a significant reduction in noise level at the site during the night-time hours, consistent with the carpark ventilation fans not operating at night.</p> <p>The signs at the entrance to the carpark confirm the carpark is CLOSED at night and again consistent with the noise logger results.</p>
4.	<p>The report states that plant and equipment associated with the use of the development have not yet been determined nor acoustically assessed e.g. air conditioning condensers, carpark ventilation equipment, outside air fans, toilet exhaust fans, swimming pool and spa filters and the like. It is necessary to establish these impacts as they form part of an accumulative noise impact associated with the development.</p>	<p>Detailed acoustic assessment of these items are not normally carried during this stage of the design. Typically, detailed mechanical designs and specifications by the mechanical consultant are not carried out until post DA stage.</p> <p>Noise emission from plant and equipment associated with the development can be suitably conditioned by reference to the EPA Noise Policy for Industry (NPfI).</p> <p><i>We would anticipate that given the plant and equipment required, and the nominated locations, compliance with the NPfI could be readily achieved with practical and feasible noise control options.</i></p>

2 May 2025

Joss Constructions
206 East Street
Albury NSW 2640

Attention: Martin Reid

FACADE NOISE LEVEL IMPACTS

Dear Martin

Further to the meeting with Albury City Council on 29th April 2025 we have prepared this explanatory note to provide further clarity in relation to the expected noise levels incident along the south and eastern facades of the proposed apartment building, currently the subject of DA 10.2023.40336.1.

Our reporting to date has detailed the measured noise levels at the site boundary due the operation of the carpark exhaust fans associated with the adjoining shopping centre. Further site measurements and acoustic modelling has subsequently been completed to further inform the design of the development. The purpose of this note is to provide the most up to date information in relation to the expected noise levels at the facade and the acoustic controls likely to be required.

We provide the following summary:

- The southern and eastern facades of the proposed development are subject to noise from carpark exhaust fan(s) associated with the adjacent shopping centre.
- A detailed noise assessment, including attended and unattended measurements (noise logging) was completed at the site to establish environmental noise limits and assess the noise levels of the fans at the site. The assessment indicated that if the EPA *Noise Policy for Industry* noise limits had been applied to the Shopping Centre (for example by a consent condition) they would be significantly exceeded at the site boundary and the proposed apartment building.
- The outcome of the assessment was detailed in Marshall Day Acoustics report No.001 R04, 20230173, *Residential Development, 481-487 Swift Street, Albury, Acoustic Report for Planning Response*, dated 18 November 2024.
- The design of the apartment building was subsequently reconfigured to minimise noise impacts on the facade of the apartment building. This included the following:
 - Increased distance between the building facade and boundary (in the order of 10m)
 - Inclusion of localised parapet walls adjacent to fans to provide screening
 - Inclusion of solid facade elements to the southern elevation of the building
 - Inclusion of curved screening elements to apartment balconies/terraces
 - Changes to apartment layouts to prioritise non-noise sensitive spaces such as bathrooms to the southern portion of apartments
- Additional noise level measurements were carried out at the site to determine the resultant noise level at the proposed building line, both at ground and at elevation. Further modelling also indicated that the fans only operate during the day and evening periods.
- The additional noise measurements at the building line, at ground and at elevation, were used to calibrate a SoundPlanNoise model, to establish the noise levels at each facade location, with the inclusion

of the screening measures detailed above. The noise levels calculated from the model are shown in Figure 1 and Figure 2 attached.

- The SoundPlanNoise model showed that noise from the fans will increase with elevation up the apartment building façade. This is due to the diminishing screening offered by the proposed eastern boundary wall.
- Table 1 provides the expected maximum façade (external) noise levels due to the shopping centre plant. Other locations will also be exposed however these represent the highest of the modelled façade noise levels

Table 1: maximum modelled facade noise levels (shopping centre plant)

Location	Modelled Fan Noise level L_{Aeq}	Comment
Outside dining room eastern window (level 5 and 6)	63 dB	No balcony screening at this location
Outside bedroom, on balcony southeastern window (level 7)	61 dB	Partial screening from curved building element

- As shown in Table 1, the calculated noise levels at the proposed building facade are significantly lower than the boundary noise level previously reported.

The following sections detail the expected noise impact on the proposed apartment building and measures to address the noise impact.

Proposed Room Noise Criteria

Australian/New Zealand Standard AS/NZS 2107:2016 *Acoustics – Recommended design sound levels and reverberation times for building interiors* provides criteria for acceptable internal noise levels for residential dwellings with different recommendations, depending on the location of the building and type of rooms.

Allowing for the classification “Houses and Apartments in inner city areas or entertainment districts” or near major roads AS2107 recommends the following noise criteria for relevant internal spaces.

- Living areas 35 – 45dB L_{Aeq}
- Sleeping areas (night-time) 35 – 40dB L_{Aeq}
- Work areas 35 - 45dB L_{Aeq}

Based on the above, it is recommended that noise from the shopping centre plant not exceed the following levels inside the apartments:

- Living, dining and study areas 40 dB L_{Aeq}
- Sleeping areas (night-time 10pm to 7am) 35 dB L_{Aeq}
- Sleeping areas (7am to 10pm) 40 dB L_{Aeq}

Calculated Internal Noise levels

Based on the worst case examples set out in Table 1 above, Table 2 describes the expected maximum internal noise levels in the event that windows and doors were open as necessary to achieve natural ventilation. Other less exposed locations will be subject to lower noise levels. An allowance of 10 dB is typically made for the reduction of sound levels from outside to inside a habitable room via a window opened to achieve sufficient ventilation to satisfy the Building Code of Australia.

Table 2: Internal noise levels, windows open

Façade Noise (External) L _{Aeq}	Internal Noise level (via open window) L _{Aeq}	Recommended Criteria L _{Aeq}	Exceedance
63 dB (Dining Room example)	53 dB	40 dB	13 dB
61 dB (Bedroom example)	51 dB	35 ¹ dB	16 dB

¹ Assumes fans operate during the night-time hours (our measurements indicate that the fans only operate during day and evening periods)

As noted in the DA report, internal noise levels within the most exposed habitable spaces adjacent the eastern elevation of the building would exceed the noise criteria with the windows open.

In order to achieve the recommended internal noise level criteria, external windows and doors that are exposed to noise from the shopping centre plant would need to be closed. On this basis, it would be necessary to provide alternative means of ventilation to enable occupants to elect to close the windows and doors that are exposed to noise from the shopping centre plant, when required to achieve acceptable internal noise levels.

Acoustic rating for windows

As detailed above, external windows and doors would need to be closed to achieve the noise level criteria within the most exposed habitable spaces. On this basis, the external windows and doors must be selected with appropriate acoustic performance to limit sound transmission.

Based on the calculated external noise levels, window and door systems would be required to achieve a noise reduction in the order of 23-26dB. To achieve this windows and door systems would be required to achieve an acoustic rating in excess of R_w 30. This would be achievable with conventional acoustic rated window and door systems such as the following:

- 10.38mm laminated glass or 6.38/12/6.38 laminated double glazing: R_w 35
- Sliding door suite with 10.38mm laminated glass or 6.38/12/6.38 laminated double glazing: R_w 35

Such systems are readily available, comprising acoustically tested, rated and certified systems by the suppliers. Accordingly, Increased performance can be readily achieved where necessary using conventional and readily available systems.

The above R_w ratings are indicative maxima only and can be reduced in specification in areas not subject to the same level of noise exposure. As the above R_w ratings are only to demonstrate the feasibility of proposed façade controls, they should not be directly incorporated into a future consent condition.

Such systems are readily available, comprising acoustically tested, rated and certified systems by the suppliers. Increased performance can also be readily achieved where necessary using conventional and readily available systems.

Conclusion

It will be necessary to develop an alternative means of ventilation for the affected rooms on the eastern elevation, such that occupants can elect to close windows as required.

It will be necessary to prepare an acoustic specification during the detailed design stage to include with the window and door schedule. Each window and door will require a specific acoustic rating in order to align with the expected noise exposure and the use of the adjacent room. Appropriate acoustic rated systems are however commercially available.

Provided these requirements are incorporated within the building design it is expected that the proposed internal noise criteria can be achieved.

Notwithstanding the above, it is understood that noise control treatment works are proposed to the shopping centre fans. At this stage the expected improvement in noise levels has not been considered our review. As detailed above, a reduction in fan noise levels in the order of 13-16dB would eliminate the need for apartment windows to be closed to achieve the internal noise level criteria.

Yours faithfully

MARSHALL DAY ACOUSTICS PTY LTD



Simon Connolly

Associate

Figure 1: Southern and Western façades



Figure 2: Southern and eastern façades

