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Noise Impact Assessment

32 Cavalry Avenue, Rutherford

Reference 3342-NI-01-B

Project Details

Site Location
32 Cavalry Avenue, Rutherford

Client
Swing Factory

Project Description
Proposed alterations and additions to golf range

Project Reference
3342-NI

Project Details

Site Location	32 Cavalry Avenue, Rutherford
Client	Swing Factory
Project Contact	Erich Weber
Project Reference	3342-NI

Author Details

Author Details	Kurtis Ferry BEng (Civil) (Hons), AAS Member Director | Acoustic Engineer

Release Details

Date	Version	Description
08/04/2025	01-A	For submission to council.
11/06/2025	01-B	Revised operational details.

Contents

1 INTRODUCTION

Soundscape Consulting Pty Ltd was commissioned by Swing Factory to complete a noise impact assessment at 32 Cavalry Avenue, Rutherford. The report is to be submitted to the certifying authority as part of the development application.

The proposal is to construct a new clubhouse with a bar, kitchen and amenities; golf hitting bays; a mini golf course and carpark. A copy of the floorplans is available in appendix A.

The noise assessment follows the methodology of NSW EPA Noise Policy for Industry for assessing impacts to surround sensitive receivers. The criteria is based upon the conditions imposed by the Liquor and Gaming NSW (L&GNSW). Where relevant, other criteria for noise intrusion and transmission have been applied as outlined in section 3 of the report.

The proposed scope of works are as follows:

1. Review client data including correspondence, operation details, plan drawings, aerial photos and specific material.

2. Noise criteria relevant to the project is identified based on the proposed operations, surrounding sensitive receivers and noise sources.

3. Conduct noise measurements of the background noise levels for 7-10 business days in accordance with the EPA Noise Policy for Industry requirements.

4. Noise modelling of the site operations to predict the likely impact on surrounding receivers. The noise modelling will be broken into different scenarios where noise sources are unlikely to occur at the same time. The results from the noise modelling are summarised to verify compliance with the noise criteria or otherwise. Where compliance is not achieved, recommendations for mitigation are provided.

5. Recommendations are provided as required, and may include relocation of noisy equipment, sound walls, operational changes, or adjustments to the development.

2 NOISE CRITERIA

2.1 Forword

The legislative reforms made through the 24-Hour Economy Commissioner Act 2023 and the 24-Hour Economy Legislation Amendment (Vibrancy Reforms) Act 2023 as further amended October 2024 stipulate that Liquor and Gaming are responsible for assessing licensed venues.

The criteria provided by the Liquor and Gaming NSW (L&GNSW) is written for residential receivers, and does not apply to commercial receivers.

This noise assessment follows the methodology of NSW EPA Noise Policy for Industry when assessing impacts to the commercial receivers The NPI does not cover and is not intended for use for licensed venues. The NPI has been used for assessing mechanical noise after closure of the venue.

2.2 NSW EPA Noise Policy for Industry (2017)

The Noise Policy for Industry (herein: NPI) applies to industrial noise sources from activities listed in Schedule 1 of the POEO Act and regulated by the EPA. All scheduled activities require an environment protection licence issued under the POEO Act.

The NPI sets out the EPA's requirements for the assessment and management of noise from industry in NSW. It aims to ensure that noise is kept to acceptable levels in balance with the social and economic value of industry in NSW. When new industry is being proposed or existing industry is being upgraded, redeveloped, or needs review, attention needs to be paid to controlling noise from the industry. The NPI is designed to assist industry and authorities to ensure that potential noise impacts associated with industrial projects are managed effectively.[1]

The NPI recommends two noise criteria are considered, the Intrusive Noise Criteria and the Amenity Noise Criteria. The lowest value of the amenity and the intrusiveness noise level is adopted as the project noise trigger for the assessment.

The sensitive receivers consist of residential dwellings in a sub-urban environment.

[1] NSW EPA Noise Guide for Local Government (2023) – Section 9.2

Table 2.1.1: EPA NPI Noise Criteria

Time of Day	RBL[1]	Intrusiveness[2]	Amenity[3]	Project Specific Levels[3]
Residential dwellings (Suburban)				
Day (7:00–18:00)	42	47	53	47
Evening (18:00–22:00)	44	47	43	43
Night (22:00–7:00)	44	47	38	38
Commercial				
When in use	-	-	63	63

1) The Rating Background level (RBL) – see section B1.3 of the NPI.
2) Intrusiveness is equal to the RBL + 5.0 dBA.
3) Amenity noise levels are taken from table 2.2 of the NPI. Adjustment for 15-minute interval, road noise and existing industrial noise levels applied as appropriate.
4) Project specific levels are the lesser of the intrusiveness, amenity and minimum values recommended by the NPI.

2.3 Liquor and Gaming NSW

L&GNSW provides the following noise criteria:

- The LA10 noise level emitted from the licensed premises shall not exceed the background noise level in an Octave Band Centre Frequency (31.5Hz – 8kHz inclusive) by more than 5dB between 7:00am and 12:00 midnight at the boundary of any affected residence.
- The LA10 noise level emitted from the licensed premises shall not exceed the background noise level in an Octave Band Centre Frequency (31.5Hz – 8kHz inclusive) between 12:00 midnight and 7:00am at the boundary of any affected residence.
- the noise from the licensed premises shall not be audible[2] within any habitable room in any residential premises between the hours of 12:00 midnight and 7:00am.

The background noise levels have been adopted based upon attended octave band measurements calibrated to the noise survey results (see section 3) for the day and night periods.

Table 2.2.1: Ambient background octave band characteristics (SPL - dBA)

Period	32	63	125	250	500	1000	2000	4000	8000	Total
Day (7am - 12am)	15	30	34	36	38	31	38	34	27	44

[2] For the purposes of defining inaudible, this report adopts the background level minus 8dBA.

2.4 Australian Standard 2107 (2016) Recommended Design Sound Levels and Reverberation Times for Building Interiors

AS2107 provides targets for the noise levels and reverberation times of rooms for a variety of building types, occupations, and activities. These targets contribute to the specification of building methods to control noise transmission, privacy, and acoustic comfort. The relevant criteria for the project have been extracted and summarised below.

Table 2.3.1: Recommended design sound levels and reverberation times

Type of occupancy/activity	Design Sound Level (LAeq)	Design reverberation time (s)
Residential Buildings (suburban areas)		
Common Areas	45 - 50	-
Living Areas	30 – 40	-
Sleeping Areas	30 – 35	-
Work Areas	35 - 40	-
Municipal Buildings (Sports clubs or clubrooms)		
Bars	< 50	0.6 to 1.0
Function areas	40 – 45	Minimised as practical

In spaces where acoustic isolation and speech privacy are important and the sound levels are below the lower level of the recommended design range, there is an increased risk of inadequate acoustic masking. In these situations, acoustic masking can be introduced into the space to raise the sound level to within the recommended range.[3] Acoustic masking can be achieved using white noise from air conditioners, fans, speakers, the outside environment or other mechanisms.

[3] Extract of AS2107 2016 Section 5.3.

3 EXISTING NOISE ENVIRONMENT

As part of this assessment an acoustic logger was set up to conduct a noise survey of the existing acoustic environment. The logger location was selected to be representative of the nearest sensitive receiver. Consideration of reflections, biasing noise sources and security was given when selecting the positioning. The noise levels measured at this location are suitably representative of the nearest noise sensitive receiver locations to the proposed development.

Noise logging was undertaken using a Rion NL-43 logger with the serial number 00730475. Directly prior and following the noise survey calibration was checked using a 1000hz signal at 94dBA, with no significant drift measured. The NATA calibration certificate is available on request.

The logger was set up in accordance with the methodology provided in the NPI. The microphone was placed in a foam windshield 1.5m above the ground. The survey began on the 20/03/2025 and ran for eight days. The noise results show increases in noise level during the some night periods leading up to sunrise. This is indicative of insects which may be seasonal. The results have been excluded from the statistical calculations.

The data was validated to remove periods affected extraneous weather conditions and noise impacts in accordance with section A1 of the NPI. The most suitable weather station for monitoring weather data was a private weather station located at Rutherford.

Attended octave band measurements were conducted to characterise the noise environment for compliance against the L&GNSW criteria.

Table 3.1: Noise Survey Results (dBA)

Time of Day	LAeq,15min	RBL
Day (7:00–18:00)	54	42
Evening (18:00–22:00)	53	44
Night (22:00–7:00)	58	44

Figure 3.1: Logger location (red)

4 EXTERNAL NOISE EMISSION ASSESSMENT

4.1 Operational assumptions

- The hours of operation are from 8:00am to 11:00pm.
- Peak carpark movements of 40 vehicles per 15 minute period
- All activities in full operation, consisting of
    - Each golf range bay is in use with patrons engaged in conversation
    - Each golf range bay has a speaker playing background music
    - The main bar area has an event active, with 100 patrons and music playing
    - The outdoor tables have patrons engaged in conversation
    - Each mini-golf course has patrons engaged in conversation

- Mechanical noise
    - Air-conditioner,
    - Cool room compressor,
    - Bathroom exhaust and
    - Kitchen exhaust

4.2 Adopted Sound Power Levels

Table 4.2.1: Sound power levels (A-Weighted) for noise sources

Source	63	125	250	500	1000	2000	4000	8000	Total
Vehicle movement (Les)	72	74	73	71	70	63	60	53	80
Normal conversation	-	55	64	66	60	56	52	47	69
Normal conversation with speaker (mini-golf)	-	60	67	69	63	59	53	48	72
Club House Patrons (total dBA)	-	70	82	92	92	86	83	75	96
Club Speaker	50	64	68	74	76	73	66	66	80
Range Bay Speaker	35	49	53	59	61	58	51	51	65
Cool Room	45	54	59	64	63	61	59	56	70
Air Condenser (24KW Commercial)	54	63	68	73	72	70	68	65	79
Kitchen Exhaust (PUD564DD)	53	66	69	70	72	73	71	64	79
Bathroom Exhaust (Fantech TD800-200SL)	37	45	54	53	55	54	50	42	61

4.3 L&G Noise Criteria

Table 4.3.1: L&G Noise Criteria summary:

Period	32	63	125	250	500	1000	2000	4000	8000	Total
Day (7am - 12am): Background + 5dBA	15	30	34	36	38	31	38	34	27	44

4.4 Noise modelling results

Noise modelling has been conducted using software validated against the ISO-9613 (2024) calculation methodology. The model is three dimensional, and includes the effects of reflections, ground absorption, meteorological conditions, and barriers. Noise modelling requires a simplification of real-world conditions into basic components. The layout, noise nodes, barriers, structures, and results from the noise modelling can be viewed in Appendix C.

It is anticipated that operations and activities will operate below full capacity during the evening and night periods, with historical data from other centres indicating that peak capacity is reached only on rare occasions. The noise model is correspondingly conservative.

4.4.1 Residential Receivers – Day Period – Liquor and Gaming

The residential receivers have been assessed against the Liquor and Gaming NSW criteria for peak time usage, as tabulated in table 4.5.1 below.

Table 4.4.1: Noise modelling results – L&G Day (07:00 to 12:00)

	Octave Band Centre Frequency (hz)									Total
	32	63	125	250	500	1000	2000	4000	8000	dBA
R1										
Noise level	0	30	28	20	30	35	31	25	11	39
Exceedance	0	0	0	0	0	0	0	0	0	0
Compliance	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R2										
Noise level	0	30	28	22	32	36	31	26	14	40
Exceedance	0	0	0	0	0	0	0	0	0	0
Compliance	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

4.4.2 Residential Receivers – Mechanical Equipment - Night Period

After closure, the EPA Noise Policy for Industry is the most appropriated policy for assessing any residual impacts from mechanical plant on surrounding receptors during the night period.

Table 4.4.2: Commercial Noise modelling results (NSW EPA NPI)

Receiver	LAeq	Criteria	Complies
R1	17	38	Yes
R2	17	38	Yes

4.4.3 Commercial Receivers

Commercial receivers are assessed based on a single criteria for when they are in use. The results for peak usage are tabulated below:

Table 4.4.3: Commercial Noise modelling results (NSW EPA NPI)

Receiver	LAeq	Criteria	Complies
C1	38	63	Yes
C2	38	63	Yes
C3	37	63	Yes

Based on the results, and provided the recommendations in section 5 are followed, no noise exceedance against the NSW Liquor and Gaming criteria is predicted for the surrounding sensitive receivers.

5 RECOMMENDATIONS

Based on the predicted noise levels, the proposed development has a low risk of impacting nearby receptors on the condition the following recommendations are implemented:

5.1 Mechanical Plant

i. Mechanical plant has been modelled as part of the assessment to show compliance is achievable if equipment selected with a maximum sound power level as those listed in table 4.2.1.

ii. Typically the exact equipment model and location of mechanical plant is not known until construction drawings are completed. It is recommended that an acoustic assessment is conducted of the mechanical plant prior to the construction certificate being issued to verify compliance. Soundscape can provide an assessment of future mechanical plant when required.

5.2 Speaker System

The speakers shall be calibrated with a maximum volume limits set prior to use:

- Speakers within the club shall be set to a maximum equivalent SWL of 80dBA
- Speakers within the bays (if used) shall be set to a maximum equivalent SWL of 65dBA
- Speakers within the mini golf course shall be set to a maximum equivalent SWL of 65dBA

Subwoofers are not suitable for installation.

A letter of certification shall be provided to the certifier prior to issuing of the occupancy certificate, providing details of the system, the noise measurements and how the limits have been implemented. The letter shall be completed by an acoustic consultant or a suitably qualified and experienced professional.

5.3 Club House Construction

The club house shall be constructed to attenuate Rw+CTR 30dBA. Prior to the issue of the construction certificate, an acoustic consultant shall be engaged to review the proposed construction materials and verify compliance with this requirement.

5.4 Operational Plan

- Hours of operation are limited to 08:00am – 11:00pm.
- During the night period (i.e 10:00pm to 07:00am) we recommend:
    - that all doors on the eastern and southern side of the club house are closed after 10:00pm.
    - As a priority, the western half of the bays should be used during the night period (between 10:00pm and 07:00am), with the remaining bays used as overflow.

6 CONCLUSION

Soundscape Consulting Pty Ltd was commissioned by Swing Factory to complete a noise impact assessment at 32 Cavalry Avenue, Rutherford. The report is to be submitted to the certifying authority as part of the development application.

The proposal is to construct a new clubhouse with a bar, kitchen and amenities; golf hitting bays; a mini golf course and carpark.

A noise survey was conducted for 7 days to obtain statistical noise data at the critical location (see section 3). Noise modelling was employed to predict the noise levels at surrounding sensitive receivers for assessment against the EPA Noise Policy for Industry criteria (see sections 2 and 4).

Provided the recommendations as presented in section 6 of the report are implemented, it is our opinion that the proposed development is capable of meeting the requirements of the EPA Noise Policy for Industry, NSW SEPP and Liquor and Gaming NSW.

Appendix A – Client Plan Drawings

1 **SITE PLAN - PROPOSED**
Scale: 1 : 500

DEVELOPMENT APPLICATION

ISSUE	DATE	DESCRIPTION
A	26/02/2025	FOR INFORMATION
B	07/03/2025	FOR INFORMATION
C	14/03/2025	FOR INFORMATION
D	19/03/2025	FOR INFORMATION
E	09/04/2025	CO-ORDINATION ISSUE
F	12/05/2025	CO-ORDINATION ISSUE
G	02/06/2025	ISSUED FOR DEVELOPMENT APPLICATION

LEGEND:

- EXISTING BUILDING FABRIC TO BE DEMOLISHED
- NEW BUILDING FABRIC WHEN CUT IN PLAN OR SECTION
- EXTENT OF CLUB CARPARK (REFER TO CIVIL ENG'S DRAWINGS FOR DETAILS & RLs)
- EXTENT OF NEW BUILDING WORKS
- EXTENT OF MINI GOLF & DRIVING RANGE WORKS
- LANDSCAPE AREAS (REFER TO LANDSCAPE ARCHITECTS DRAWINGS FOR EXTENTS & DETAILS)
- PROPOSED TREES

CLIENT: SWING FACTORY

PROJECT: SWING FACTORY - RUTHERFORD

ARCHITECT: ALTIS ARCHITECTURE

DRAWING TITLE: PROPOSED SITE PLAN

NOTES:
Nominated architect: Andrew O'Connell: 9018

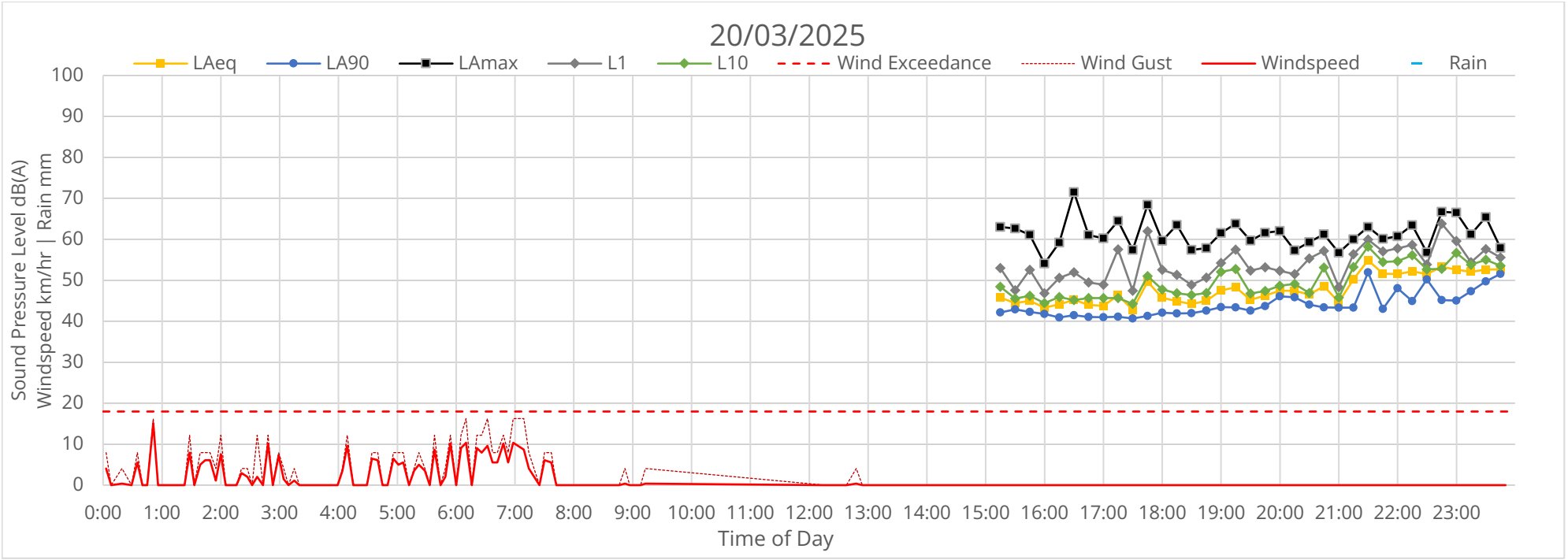
Use only figured dimensions.
All discrepancies to be referred to Altis Design Pty Ltd prior to construction.
Ensure compliance with the Building Code of Australia and all relevant Australian Standards and Authority requirements.

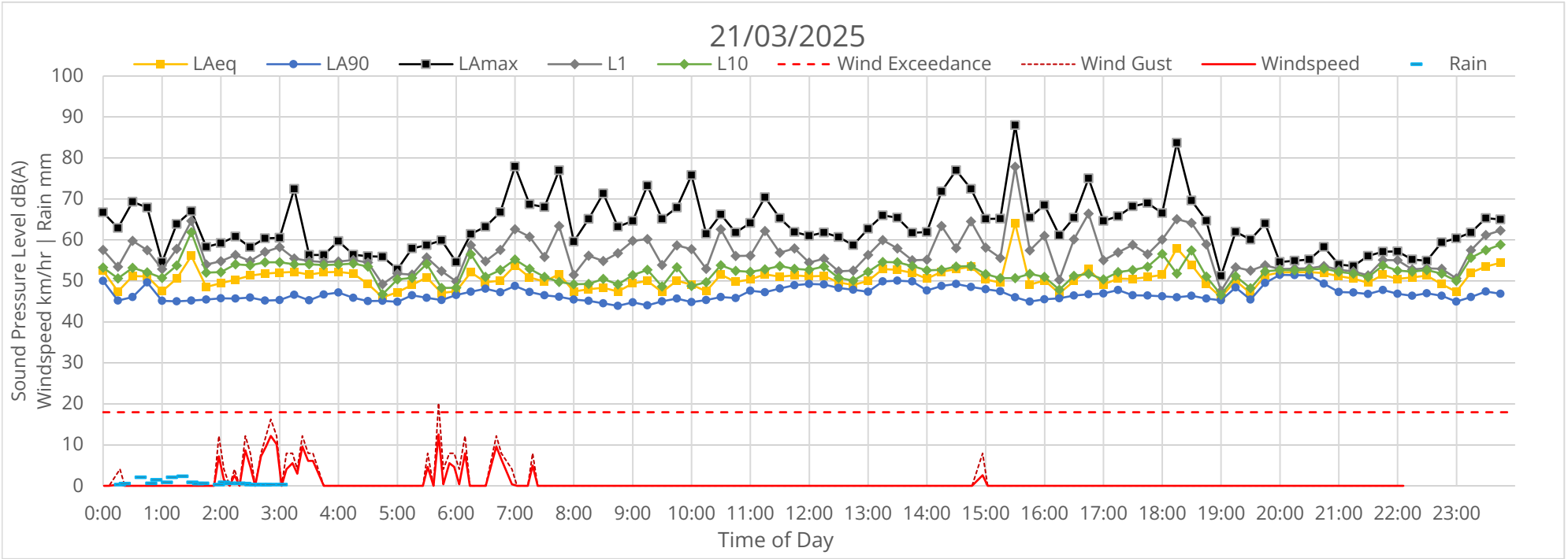
NORTH

SCALE: As indicated @ A1
DATE: 14/03/2025
DRAWN BY: HG
CHECKED BY: DF
PROJECT NO: 3406.01
DRAWING NO: DA0003
ISSUE: G
CAD FILE: 3406.01 Swing Factory Rutherford-RD_R24.rvt

2/06/2025 9:06:46 AM

Appendix B: Noise Survey Graphs


20/03/2025
LAeq
LA90
LAmax
L1
L10
Wind Exceedance
Wind Gust
Windspeed
Rain
Sound Pressure Level dB(A)
Windspeed km/hr | Rain mm
100
90
80
70
60
50
40
30
20
10
0
0:00 1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00 9:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00
Time of Day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LAeq
LA90
LAmax
L1
L10
Wind Exceedance
Wind Gust
Windspeed
Rain
Sound Pressure Level dB(A)
Windspeed km/hr | Rain mm
100
90
80
70
60
50
40
30
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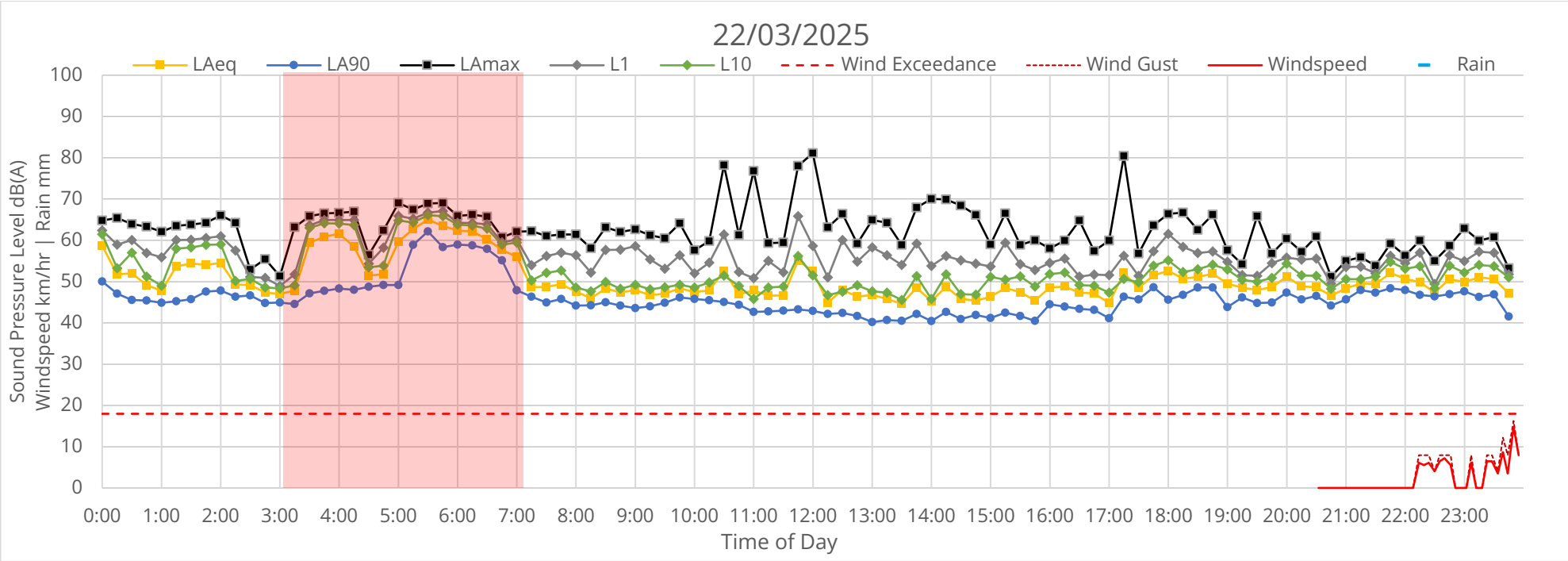
0:00 1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00 9:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00
Time of Day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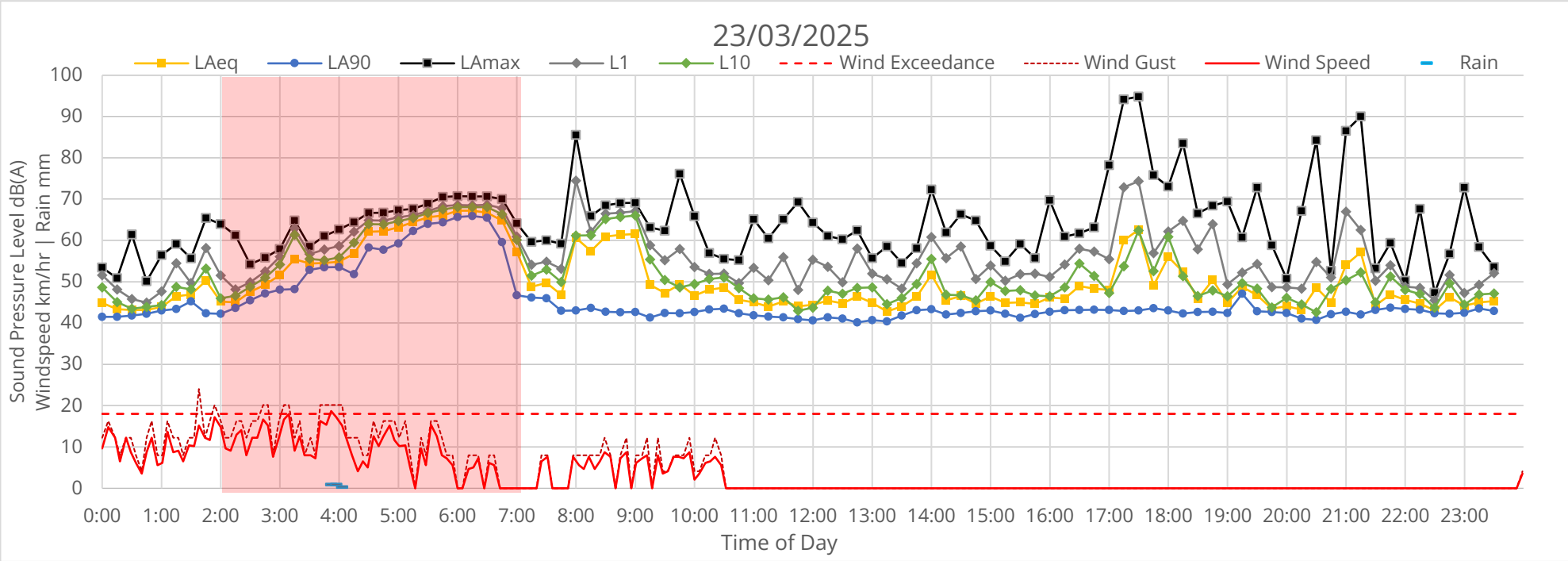
LAeq
LA90
LAmax
L1
L10
Wind Exceedance
Wind Gust
Windspeed
Rain
Sound Pressure Level dB(A)
Windspeed km/hr | Rain mm
Time of Day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LAeq
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LAmax
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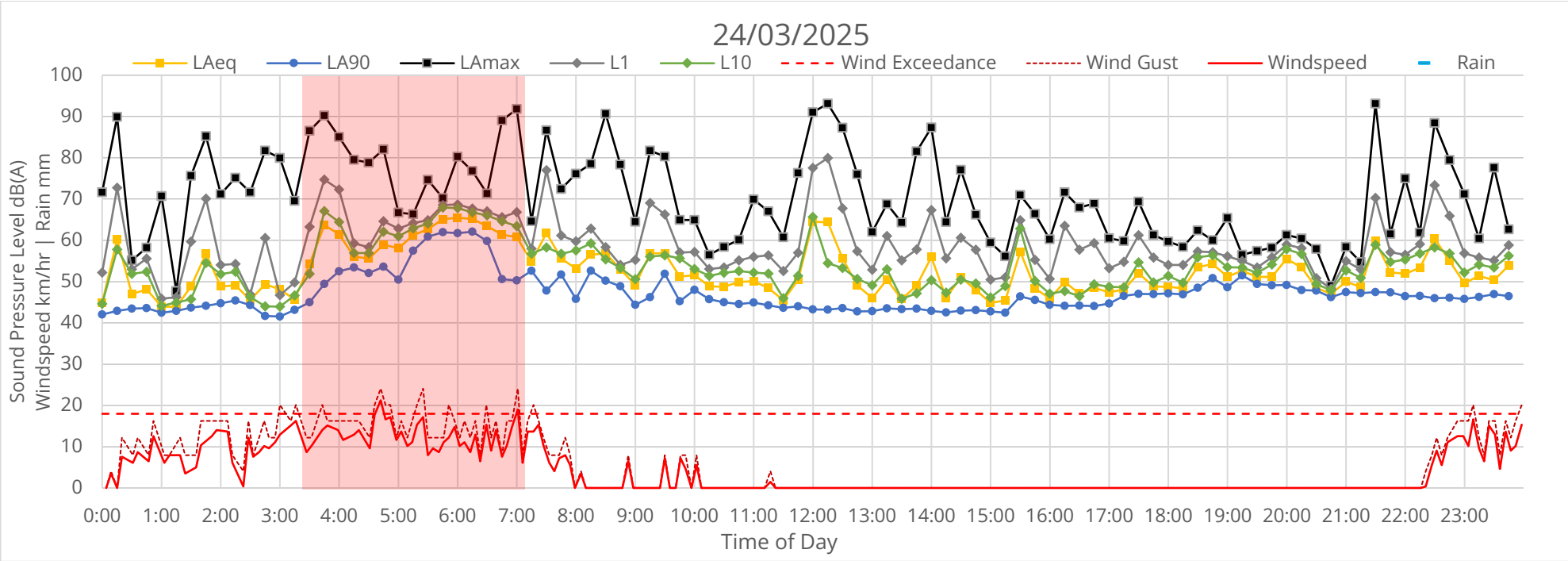
L10
Wind Exceedance
Wind Gust
Wind Speed
Rain
Sound Pressure Level dB(A)
Windspeed km/hr | Rain mm
Time of Day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L10
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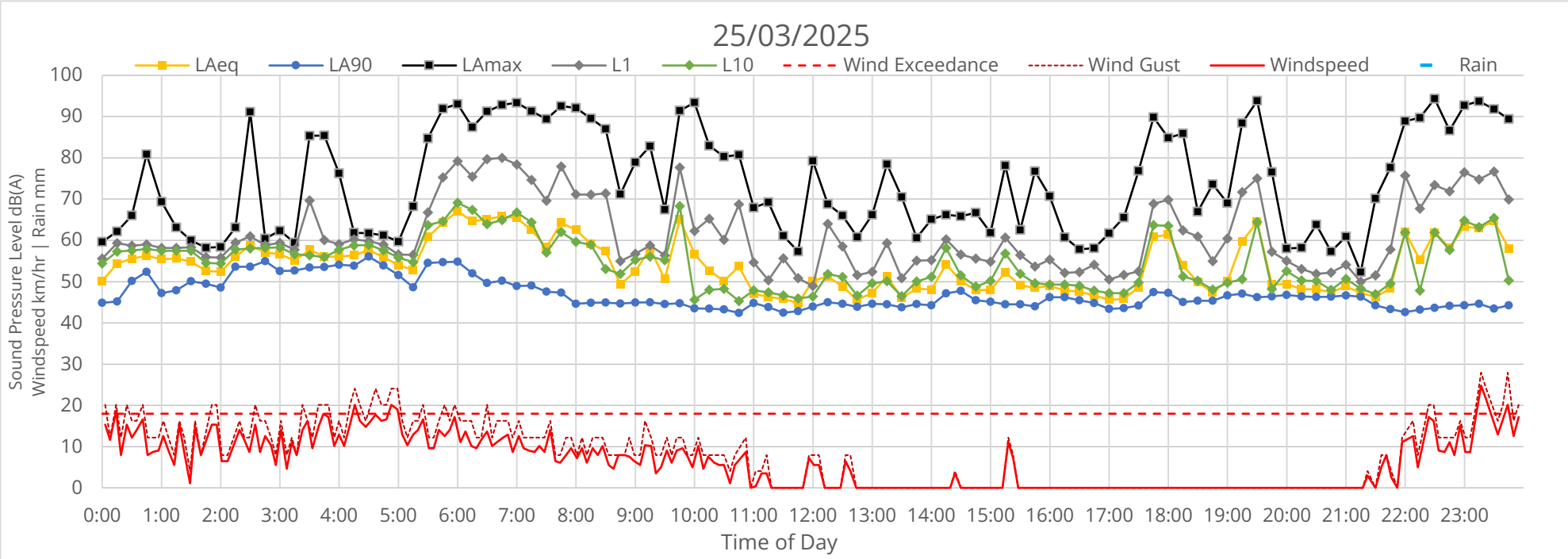
Wind Gust
Windspeed
Rain
Sound Pressure Level dB(A)
Windspeed km/hr | Rain mm
Time of Day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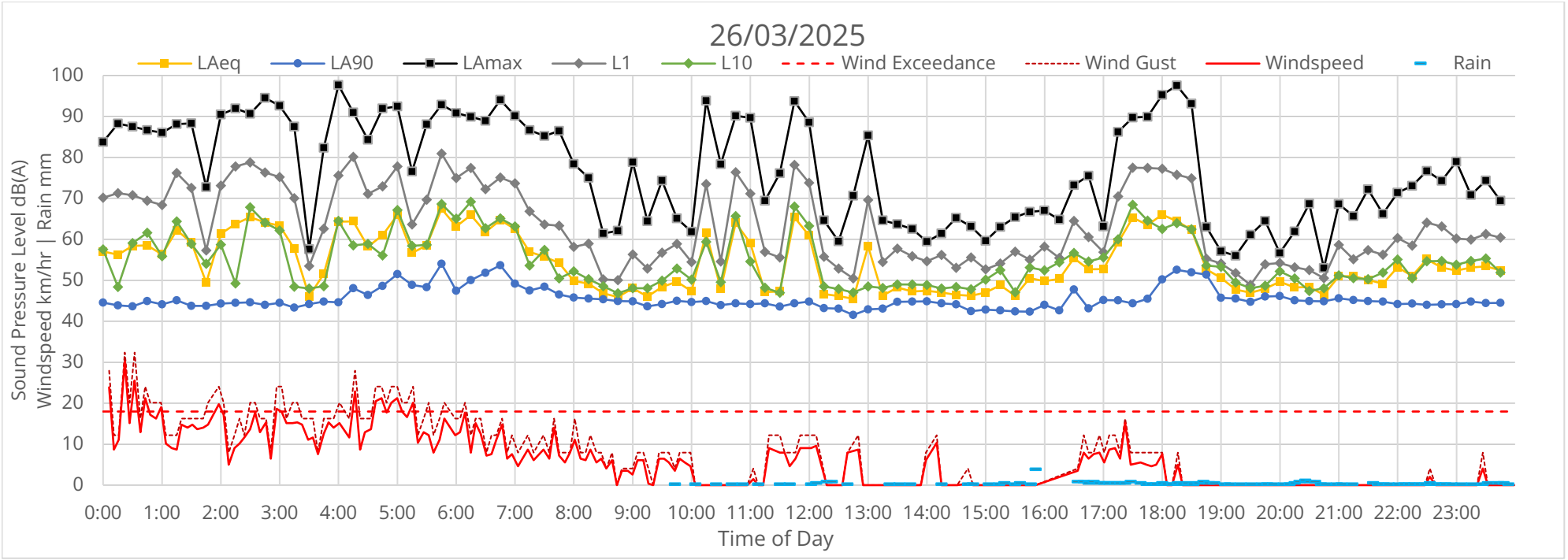
Wind Gust
Windspeed
Rain
Sound Pressure Level dB(A)
Windspeed km/hr | Rain mm
Time of Day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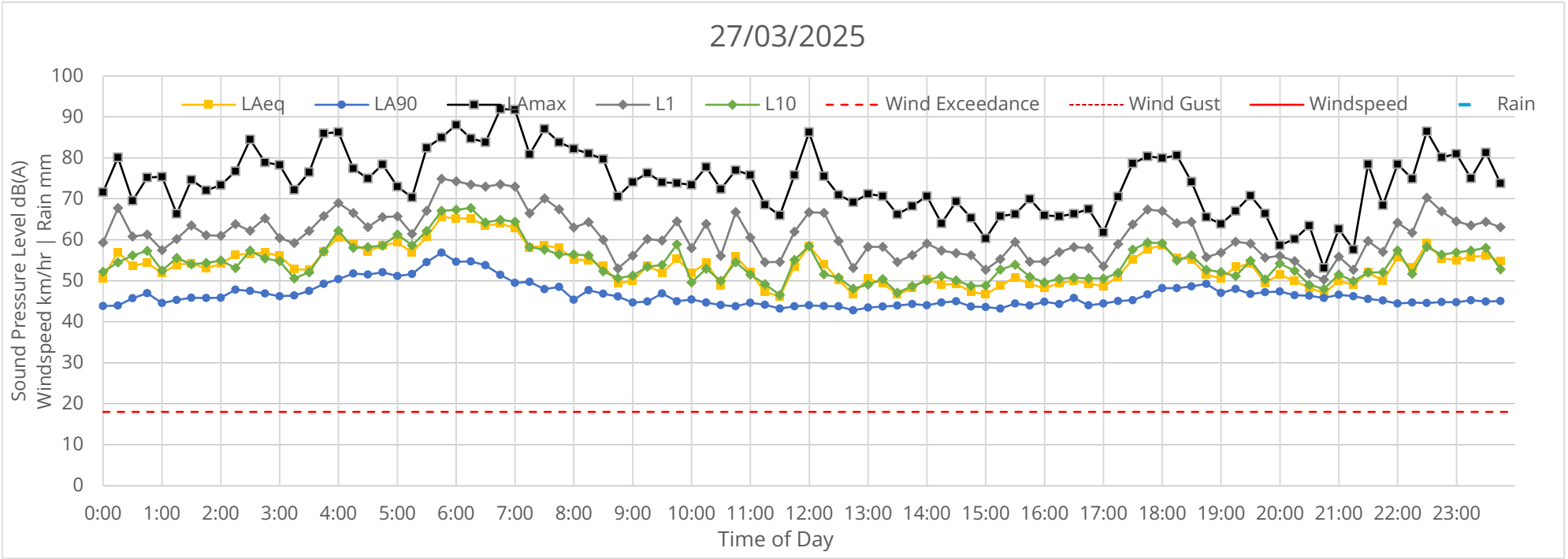
Windspeed
Rain
Sound Pressure Level dB(A)
Windspeed km/hr | Rain mm
Time of Day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LAeq
LA90
LAmax
L1
L10
Wind Exceedance
Wind Gust
Windspeed
Rain
Sound Pressure Level dB(A)
Windspeed km/hr | Rain mm
Time of Day

Appendix C – Noise Modelling


Noise map height 1.5m (A-weighted)
38
38
37
40
39
BE
KE
Patron
Speaker
10x patrons-2
20x patrons
10x patrons
30 dB(A)
35 dB(A)
40 dB(A)
45 dB(A)
50 dB(A)
55 dB(A)
60 dB(A)
65 dB(A)
70 dB(A)
75 dB(A)
80+ dB(A)
0m
50m
50m
100m
150m
200m
250m
300m
350m
400m


Noise map height 1.5m (A-weighted)
21
19
17
17
17
BE
CR
KE
30 dB(A)
35 dB(A)
40 dB(A)
45 dB(A)
50 dB(A)
55 dB(A)
60 dB(A)
65 dB(A)
70 dB(A)
75 dB(A)
80+ dB(A)
0m
50m
50m
100m
150m
200m
250m
300m
350m
400m
50m
100m
150m
200m
250m