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Noise Impact Assessment

43 Stamford Rd, Oakleigh

Reference 3119-NI-01-A

Project Details

Site Location
43 Stamford Rd, Oakleigh

Client
Jet Clean Carwash Pty Ltd

Project Description
Proposed carwash

Project Reference
3119-NI

Project Details

Site Location	43 Stamford Rd, Oakleigh
Client	Jet Clean Carwash Pty Ltd
Project Contact	Carl Dullard 0416 220 048 carl@parkingchoice.com.au Tracey Michaels - TMC Design 0416 114 573
Project Reference	3119-NI

Author Details

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Release Details

Date	Version	Description
11/09/2024	01-A	For release.

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Contents

1 INTRODUCTION

Soundscape Consulting Pty Ltd was commissioned by Jet Clean Carwash Pty Ltd to complete a noise impact assessment at 43 Stamford Rd, Oakleigh. The report is to be submitted to the certifying authority as part of the development application.

The existing site contains six self-serve bays, six vacuum bays and one dog wash station. The proposal is to convert the two self-serve bays at the western end of the building into auto-wash bays, remove two vacuum bays and add one dog wash station. A copy of the plan drawings are available in Appendix A.

The noise assessment follows the methodology of the *EPA VIC Publication 1826.4: Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues* for assessing impacts to surround sensitive receivers.

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 1826.4 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 VIC Environment Protection Act 2017

The Environment Protection Act 2017 states 'any person who is engaging in an activity that may give rise to risks of harm to human health or the environment from pollution or waste must minimise those risks, so far as reasonably practicable'. In addition, Section 166 of the Act makes it an offence for any individual to emit an unreasonable noise or permit an unreasonable noise to be emitted. Unreasonable Noise is defined in Section 3(1) of the Act as noise that is

(a) unreasonable having regard to the following –

- (i) its volume, intensity or duration;
- (ii) its character;
- (iii) the time, place or other circumstances in which it is emitted;
- (iv) how often it is emitted;
- (v) any prescribed factors; or

(b) is prescribed to be unreasonable noise.

2.2 VIC Environment Protection Regulations 2021

The Environment Protection Regulations 2021 (Regulations) support the objectives of the Act, that is to prevent or minimise risks of harm to human health or the environment from pollution or waste. The Regulations provide clarity and further detail for duty holders on how to fulfil their obligations and are used to deal with matters in detail and penalties for breaches. The objectives of the Regulations in relation to noise are to further the purposes of, and give effect to, the Act by specifying matters in relation to noise emissions.

The Environment Protection Regulations requires that the prediction, measurement, assessment, or analysis of noise within a noise sensitive area for the purposes of the Act or the Regulations is undertaken in accordance with the Noise Protocol. Noise is assessed at NSAs where the maximum effective noise level occurs or, for proposed premises, is predicted to occur.

The legislated noise limits are applicable to the combined level of noise associated with all commerce industry and trade. Regulation 117 excludes a number of types of noise from the assessment including noise from mobile farm machinery, aircraft, construction activity and non-commercial vehicles. Extraneous noise must also be excluded from any measured noise levels which includes any noise that is not part of the commercial, industrial or trade premises such as local traffic, insects, or bird chirping.

2.2.1 Cumulative Noise

The requirement to assess all sources of industrial and commercial noise cumulatively, is outlined in Regulation 119: "If 2 or more commercial, industrial and trade premises (whether existing or proposed) emit, or are likely to emit, noise that contributes to the effective noise level, a person in management or control of one or more of those premises must take all reasonable steps to ensure that the contribution from each of the premises, when combined, does not exceed the noise limit for the noise sensitive area."

Therefore, where there is more than one commercial, industrial or trade premises contributing to the noise received at a noise sensitive area, each premises would need to contribute a level lower than the applicable noise limit to avoid the cumulative noise level exceeding the noise limit. The definition of commercial, industrial and trade premises is included in the Regulations.

2.2.2 Time Periods

Different noise limits apply during the day, evening and night periods. The time periods are defined in Regulation 116 and are summarised as follows:

Table 2.1: Assessment time periods

Period	Day	Time
Day	Monday to Saturday	7 am – 6 pm
Evening	Monday to Saturday	6 pm – 10 pm
	Sunday and Public Holidays	7 am – 10 pm
Night	Monday to Sunday / Public Holidays	10 pm – 7 am

2.2.3 Base Noise Limit

As defined in the Regulation118 (2)(b) the lowest decibel values that may be set as the noise limit are outlined in Table 2.2 below:

Table 2.2 Base Noise Limit (dBA)

Period	Rural	Urban
Day	45	45
Evening	37	40
Night	32	35

Part (3) states "The noise limit for commercial, industrial and trade premises for the night period must not exceed 55dB(A)."

2.2.4 Effective Noise Limit

Effective noise levels The Noise Protocol defines an effective noise level which is determined for commercial, industrial and trade premises as a 30–minute equivalent sound pressure level LAeq,30 min adjusted where relevant for duration, noise character and measurement position. Noise character adjustments include factors such as duration, tonality, impulsivity and intermittency

2.3 VIC EPA Publication 1826.4: *Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues*

The EPA 1826.4 publication provides a protocol for determining noise limits for new and existing commercial, industrial and trade premises and entertainment venues (herein: the Noise Protocol). It also sets the methodology for assessing the effective noise level to determine unreasonable noise under the proposed Environment Protection Regulations.

2.3.1: Urban Zone Levels

The zoning level for urban areas is calculated based on the surrounding zones and corresponding influence factor. For the subject site, the influence factor was calculated to be 0.74.

Table 2.3 Influencing Factor Areas

Zone type	Area in 140m diameter circle	Area in 400m diameter circle
1 - residential, rural and open spaces	16%	36%
2 - commercial, business, office and light industry	0%	0%
3 - general industry and major roads	84%	64%

Table 2.3 Zoning Levels (dBA)

Period	Zoning level dB(A)
Day	63
Evening	57
Night	52

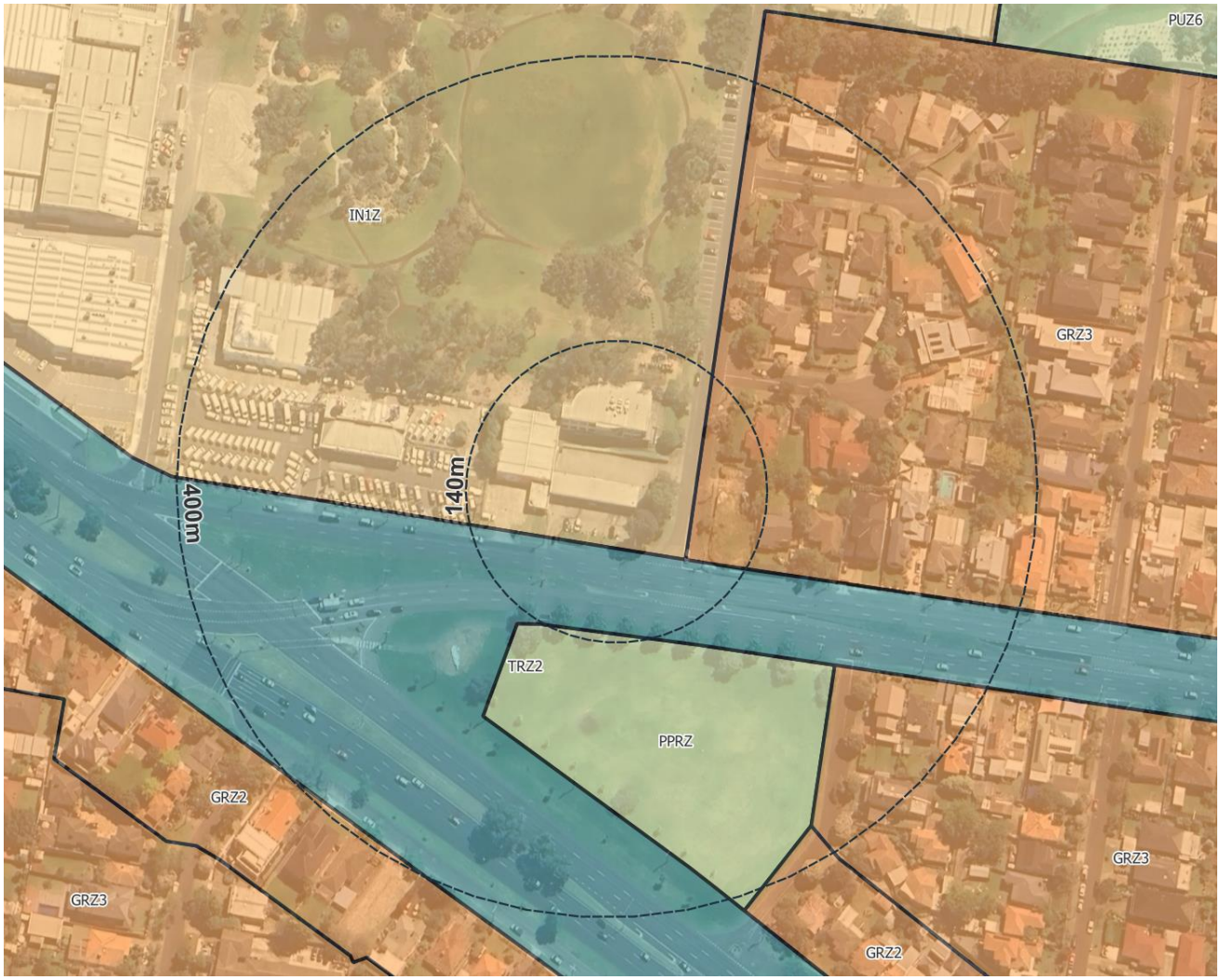


Figure 2.1: Land zoning and influencing factor circles. Note: TRZ2 was assessed as zone type 3 (major road).

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 microphone was placed in a foam windshield 1.5m above the ground away from reflective surfaces. The survey began on the 23/05/2024 and ran for seven days.

Table 3.1: Noise Survey Results (dBA)

Period	LAeq	LA90
Day	58	44
Evening	54	42
Night	50	31

3.1 Site Noise Limits

The results of the survey have been assessed based on the section 4 of the Noise Protocol and the base noise limits (section 4.2.3).

Table 3.2 Project Noise Limits (dBA)

Period	Zoning level	Background noise level	Background relative to zoning level	Noise limit, L_{eq}
Day	63	44	Low	58
Evening	57	42	Low	52
Night	52	31	Low	46

3.2 Sensitive Receivers

The sensitive receivers considered in this assessment are listed in Table 3.3 with locations shown in Figure 3.1.

Table 3.3: Sensitive receivers

ID	Description
C1	Commercial receiver – single storey dwelling, office space and workshop space share a wall with a proposed auto-wash bay
C2a	Commercial receiver – ground floor
C2b	Commercial receiver – upper floor
R1	Residential receiver – single storey dwelling
R2	Residential receiver – single storey dwelling
R3	Residential receiver – single storey dwelling
R4	Residential receiver – single storey dwelling

Figure 3.1: Sensitive receiver locations (white) logger location (red)

4 EXTERNAL NOISE EMISSION ASSESSMENT

Noise modelling has been conducted utilising 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.

4.1 Operational assumptions

Equipment

- Two auto-wash bays with acoustic roller doors (proposed)
- Four self-serve bays (4x existing to remain, 2x to be converted to auto-wash bays)
- Four vacuum bays (4x existing to remain, 2x to be removed)
- Two dog wash stations (1x existing, 1x proposed)

Waste Collection

No changes to the waste collection are proposed, with collection completed once per week. No further assessment is deemed necessary.

Car movements and patron noise

Regulation 117 of the Environment Protection Regulations 2021 omits these sources from assessment.

4.2 Equipment usage rates

Carwash usage fluctuations significantly between the day, evening and night periods. Carwash usage is highly correlated with traffic volume, with peak usage occurring during peak traffic volumes. Soundscape have assessed data from a variety of carwashes to develop usage statistics for use when predicting noise impacts.

The adopted usage rates for the carwash presented in Table 4.2 are based upon a busy 30-minute period.

Table 4.2: Usage rates for carwash equipment

	Usage (Events per 30 mins)			Usage (% time in 30 minutes)		
Source	Day	Evening	Night	Day	Evening	Night
Auto-wash[1]	7	4	2	82%	47%	23%
Self-wash[2]	12	8	1	80%	53%	27%
Dog wash[3]	4	2	-	66%	33%	-
Vacuum[4]	6	3	1	50%	25%	33%

1) Number of washes spread across 2 auto-wash bays. One premium cycle is seven minutes.
2) Number of washes spread across 4 self-serve bays, with an average wash duration of eight minutes. NOTE: at night time, only one self-serve bay is open.
3) Number of dog washes spread across 2 dog wash stations, with an average time of ten minutes.
4) Number of vacuum usages spread across four bays, with an average duration of ten minutes. NOTE: Only one vacuum bay is open during the night period.

4.3 Sound Power Levels

The following sound power levels in Table 4.2 have been adopted for the assessment.

Table 4.2: Sound Power Levels

Source	Octave Band Centre Frequency (hz) (dBA)								Total dBA
	63	125	250	500	1k	2k	4k	8k	
Auto-wash Bay (open door)	68	79	90	96	97	97	93	89	**103**
Auto-wash Bay (closed door)	65	73	80	85	86	82	77	72	**90**
Self-wash bay	81	82	83	84	86	84	84	79	**88**
Dog Wash	70	71	71	73	74	74	74	71	**82**
Vacuum	79	80	80	82	83	83	88	83	**92**

4.4 Noise Modelling

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.

Table 4.4.1: Project Noise Limits (from Section 3.1)

Day (Monday to Saturday)	Day (Sunday)	Evening	Night	Night limit with 5dBA reduction*
58	52	52	46	41

* A 5dBA penalty has been applied due the intermittent nature of the sources during the night period.

Table 4.4.2: Noise modelling results – day usage rates

Receiver	LAeq	Complies	Attenuation Required
C1	48	Yes	-
C2a	61	Yes*	-
C2b	62	Yes*	-
R1	49	Yes	-
R2	49	Yes	-
R3	51	Yes	-
R4	50	Yes	-

* Fixed glazing on this commercial premises is expected to attenuate 25-35dBA. AS2107:2016 recommends an internal noise level of 40-45dBA for office areas. It is noted that the development recommendations will reduce the overall noise level when compared with current operations.

Table 4.4.3: Noise modelling results – evening usage rates

Receiver	LAeq	Complies	Attenuation Required
C1	46	Yes	-
C2a	59	Yes*	-
C2b	60	Yes*	-
R1	47	Yes	-
R2	47	Yes	-
R3	49	Yes	-
R4	48	Yes	-

*As per table 4.4.2

Table 4.4.4: Noise modelling results – night usage rates

Receiver	LAeq	Complies	Attenuation Required
C1	40	Yes	-
C2a	53	Yes*	-
C2b	53	Yes*	-
R1	38	Yes	-
R2	37	Yes	-
R3	37	Yes	-
R4	41	Yes	-

* As per table 4.4.2.

5 Recommendations

5.1 Night Period Operations

To ensure compliance with the noise criteria at nearby residences during the night period (10pm until 7am), the following operational management practices shall be implemented:

- Wash Bays 2, 3 and 4 (self-serve) shall be closed. One self-serve bay (wash bay 1) can remain open during the night time.
- Vacuum bays 1, 2 and 3 shall be closed. One vacuum bay (vacuum bay 4) can remain open during the night time.
- The dog wash bays shall be closed.
- Where practical, equipment should be on automated timers with clear signs showing patrons what bays are open and closed.
- Waste collection completed by a private contractor shall occur during the day period only.

5.2 External Equipment

- Auto Wash Bays 1 and 2 must utilise acoustic roller doors on the front and rear of the wash bay as indicated in the plan drawings.

5.3 Mechanical Plant Room

- All pumps and plant must be placed in the mechanical plant room.
- The mechanical plant room walls shall consist of concrete tilt panels, Hebel blocks, or suitable material for attenuating 45dBA (RW + CTR)
- The roof shall consist of sheet metal with insulation tightly packed beneath. The insulation shall be a minimum of 50mm thick with a density not less than 32kg/m^3.
- If ventilation of the plant room is required, this must be checked and certified by an acoustic consultant prior to the issuing of the building approval to ensure appropriate noise attenuation.
- All equipment shall be secured using vibration reduction mounts/pads

6 CONCLUSION

Soundscape Consulting Pty Ltd was commissioned by Jet Clean Carwash Pty Ltd to complete a noise impact assessment at 43 Stamford Rd, Oakleigh. The report is to be submitted to the certifying authority as part of the planning application.

The existing site contains six self-serve bays, six vacuum bays and one dog wash station. The proposal is to convert the two self-serve bays at the western end of the building into auto-wash bays, remove two vacuum bays and add one dog wash station.

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 relevant criteria (see sections 2 and 4).

Provided the recommendations as presented in section 5 of the report are implemented, it is our opinion that the proposed development will meet the requirements of the EPA Environment Protection (Commercial and Industrial Noise) Policy (2023).

Appendix A – Client Plan Drawings

STAMFORD ROAD

Site Boundary 41.04M, 91° 07'

Exist Grated STW Pit

Auto Height Bar

AUTO ENTRY

Directional arrows & text depicts traffic flow for vehicles moving around the site.

ENTRY

Existing Sewer IO's

Existing Concrete Driveway

Existing Concrete Driveway

Existing Concrete Driveway

Existing Grated STW Strip Drain

Existing Concrete Driveway

Existing Grassed Naturestrip

Existing Back of Kerb

Edge of Bitumen

Painted lines define extent of waiting car parks or traffic lane markings, typical.

Provide 1.2M high colorbond fence extension to front of existing brickwork wall.

Provide 2.1M high colorbond fence & gate as shown.

Existing Light Pole

Ex Sign

Ex Sewer Vent

Ex Triple Interceptor Pit

TBM Rivet RL 62.20

Existing Conc Footpath

Existing Gas Meter

BAY 2 AUTO

BAY 1 AUTO

1.

2.

3.

4.

5.

6.

Bollard

Auto Wash Pay btation.

Waiting Car Park 2.6m x 5.4m

Roller door to both Auto Bay entry openings as per Acoustic Report.

~32000- Existing O'All building length

9550

2440

5,000L Water Tank

5,000L Water Tank

5,000L Water Tank

Store Room

Bin Area

Building Extension

1550

Roof line over

2400

Waiting Car Park 2.6m x 5.4m

Bollard

Bollard

Bollard

Waiting Car Park 2.6m x 5.4m

Waiting Car Park 2.6m x 5.4m

Waiting Car Park 2.6m x 5.4m

Waiting Car Park 2.6m x 5.4m

Roof line over

Existing Silt Pit

Auto Bay 2

Auto Bay 1

Wash Bay 4

WC

Wash Bay 3

Wash Bay 2

Wash Bay 1

6050

Plant Room FFL 61.57

Vending

Roof line over

Roof line over

350

Bollard

Existing Car Wash main building roofed area shown as blue shading.

Building Extension

Roller door to both Auto Bay exit openings as per Acoustic Report.

Bollard

Dog Wash 1

Dog Wash 2

Dog Dog Wash unit

Roof line over

Bollard

Bollard

5300

Painted lines define extent of waiting car parks or traffic lane markings, typical.

Provide 1.0M MIN high pool fencing & gates around Dog Wash area.

3200

5200 MIN

Existing Concrete Driveway

EXIT

EXIT

ENTRY

Exist Grated STW Pit

Exist Grated STW Pit

New cantilevered roof canopy shown shaded.

STAFF PARKING

Staff Car Park 2.6m x 5.4m

Vac Bay 4

Ex. Vac Island

Vac Bay 3

Vac Bay 2

Ex. Vac Island

Vac Bay 1

Existing Bench

Existing Light Pole

-13000 Setback

New driveway internal site concrete widening.

7500 Driveway

Existing Water Meter

Place new "No Entry" signs both sides of driveway.

SIGN

NO ENTRY

SIGN

Site Boundary 36.49M, 271° 07'

Site Boundary 6.67M, 225° 44'

Site Boundary 34.47M, 0° 40' 30"

Site Boundary 23.72M, 130° 21'

Existing Concrete Panels

16600

7820- Existing Concrete Panels

3000

1475

1325

2980

60.74FL

60.72FL

60.84FL

Exist Grated STW Strip Drain

Existing Concrete Driveway & footpath to remain

Existing Conc Footpath

Existing Power Pole

TBM Rivet RL 61.13

Existing Conc Footpath

Existing Grassed Naturestrip

Existing Power & Light Pole

Ex Hydrant

Ex Sign

Exist STW Side Entry Pit

Tel

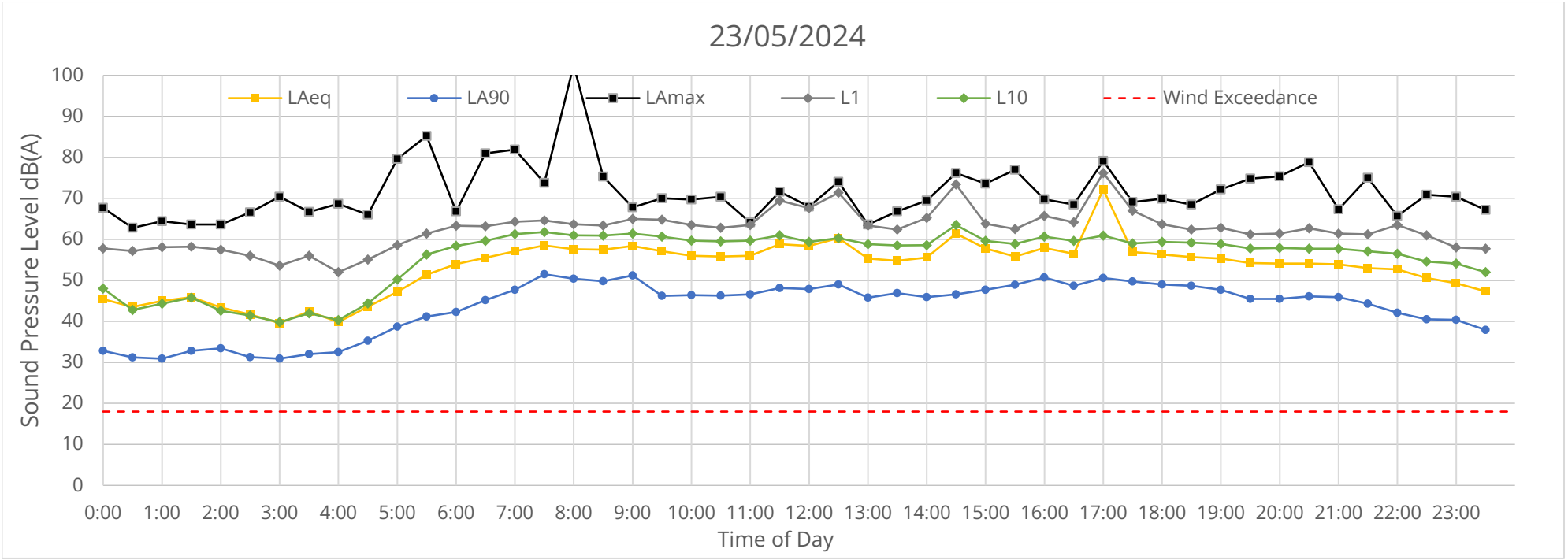
Tel

Tel

Tel

EW

Appendix B: Noise Survey Graphs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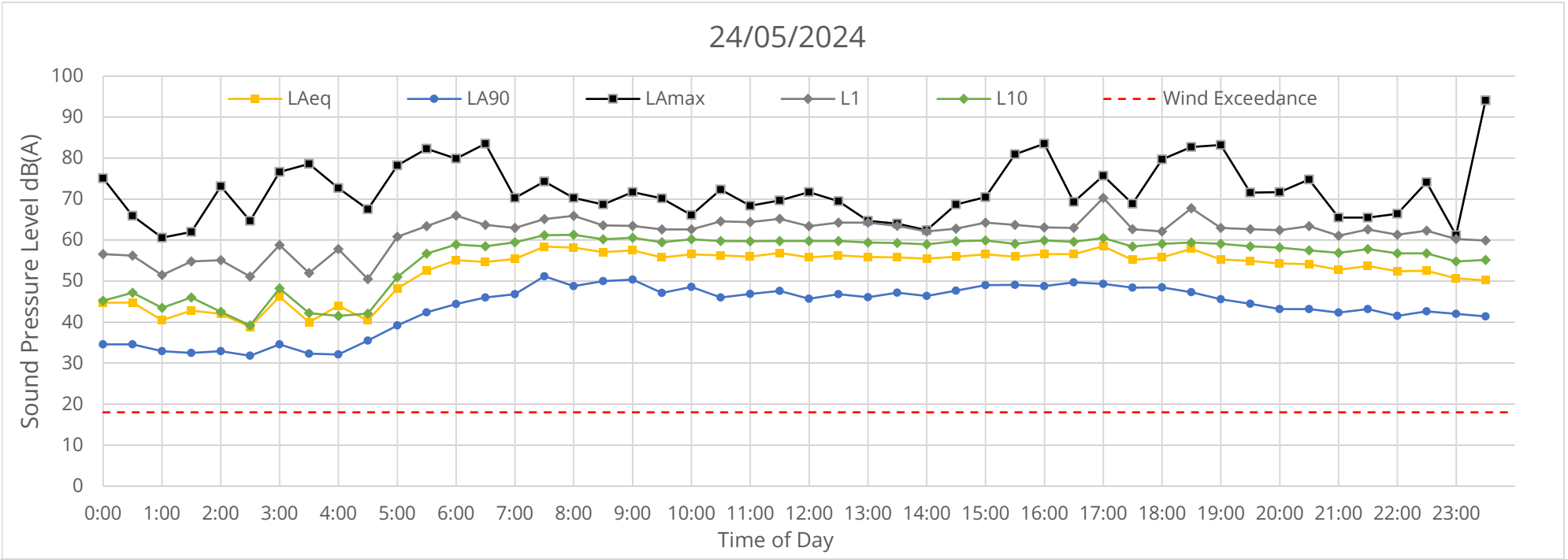
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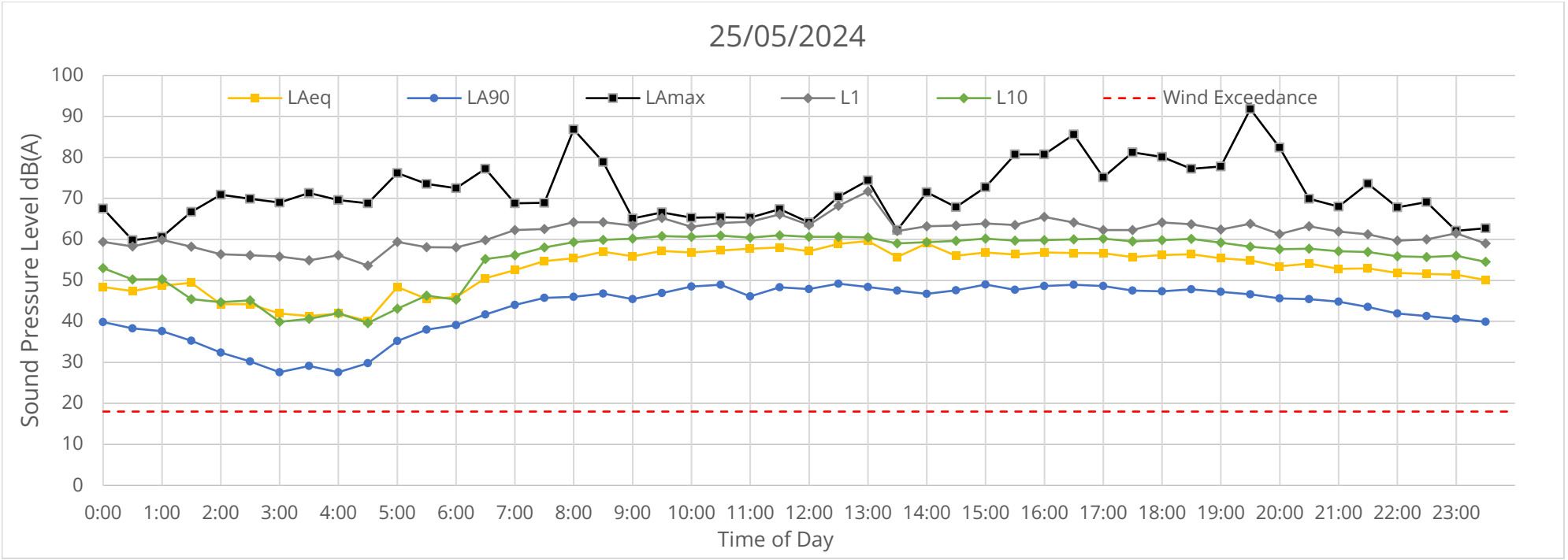
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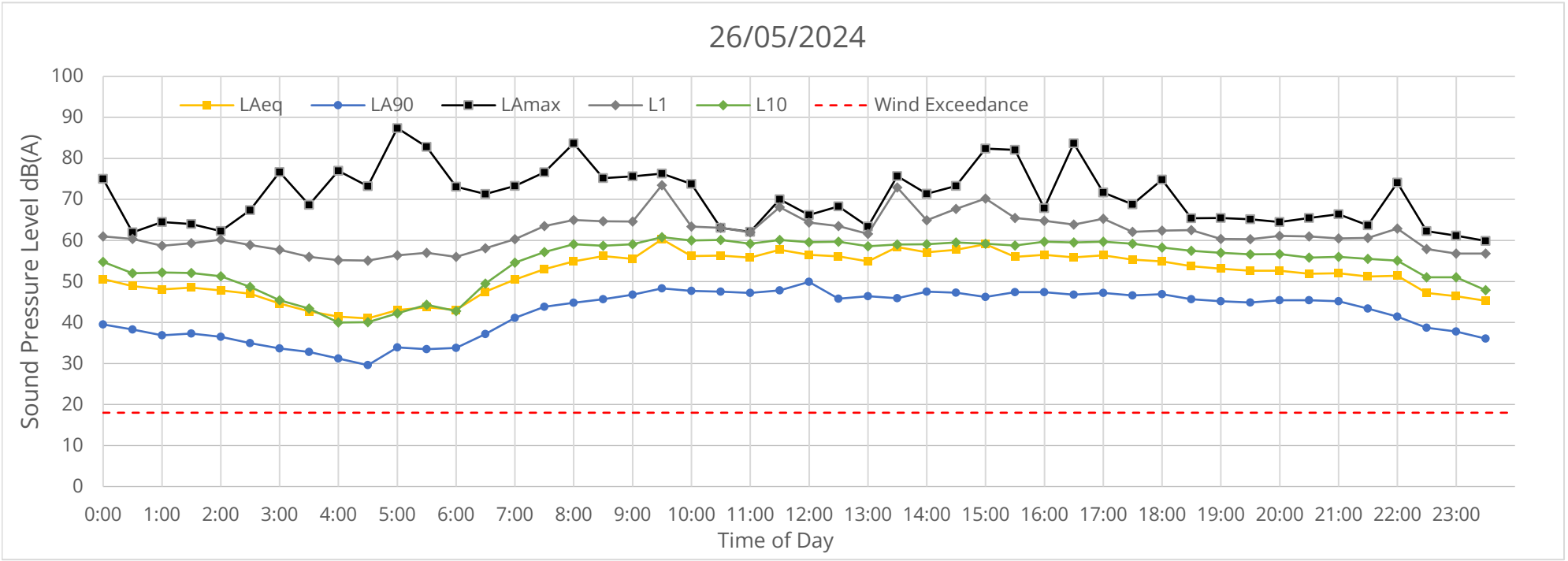
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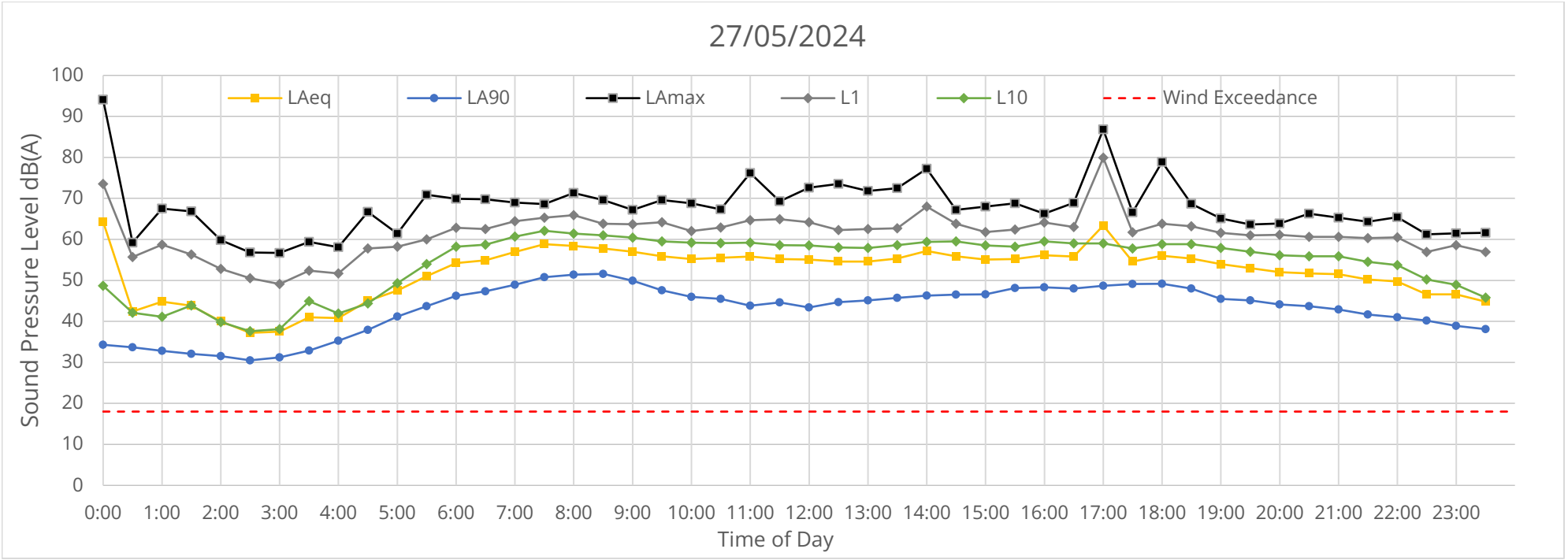
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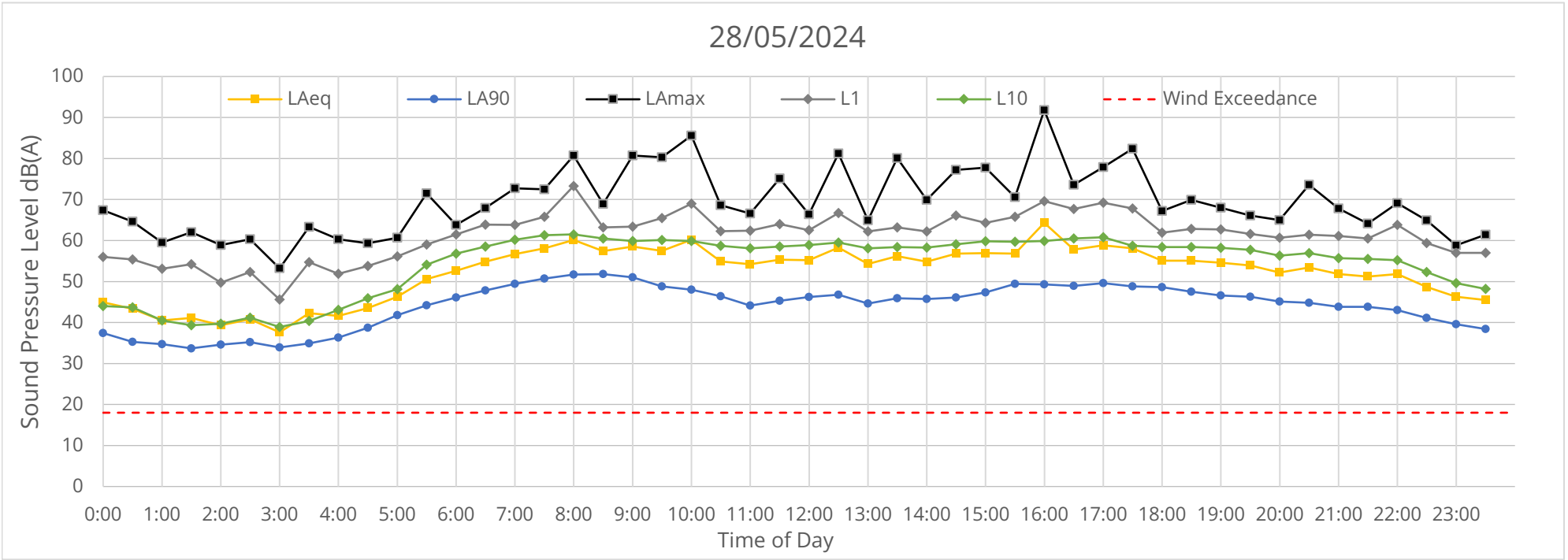
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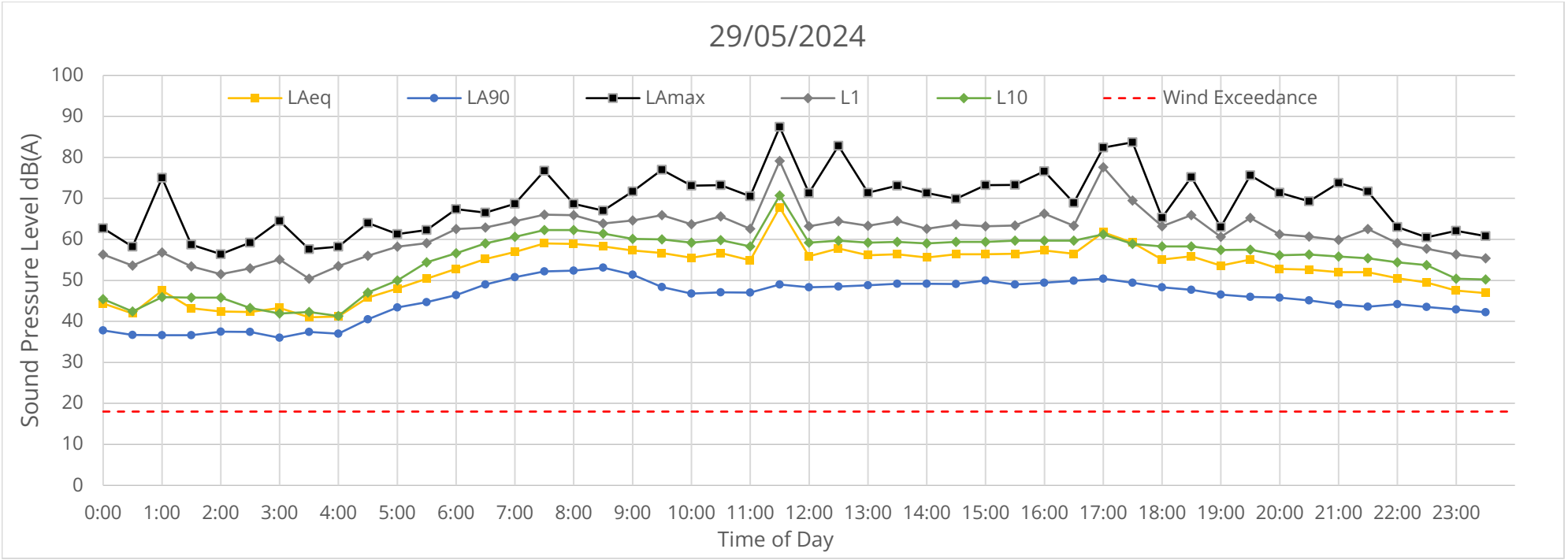
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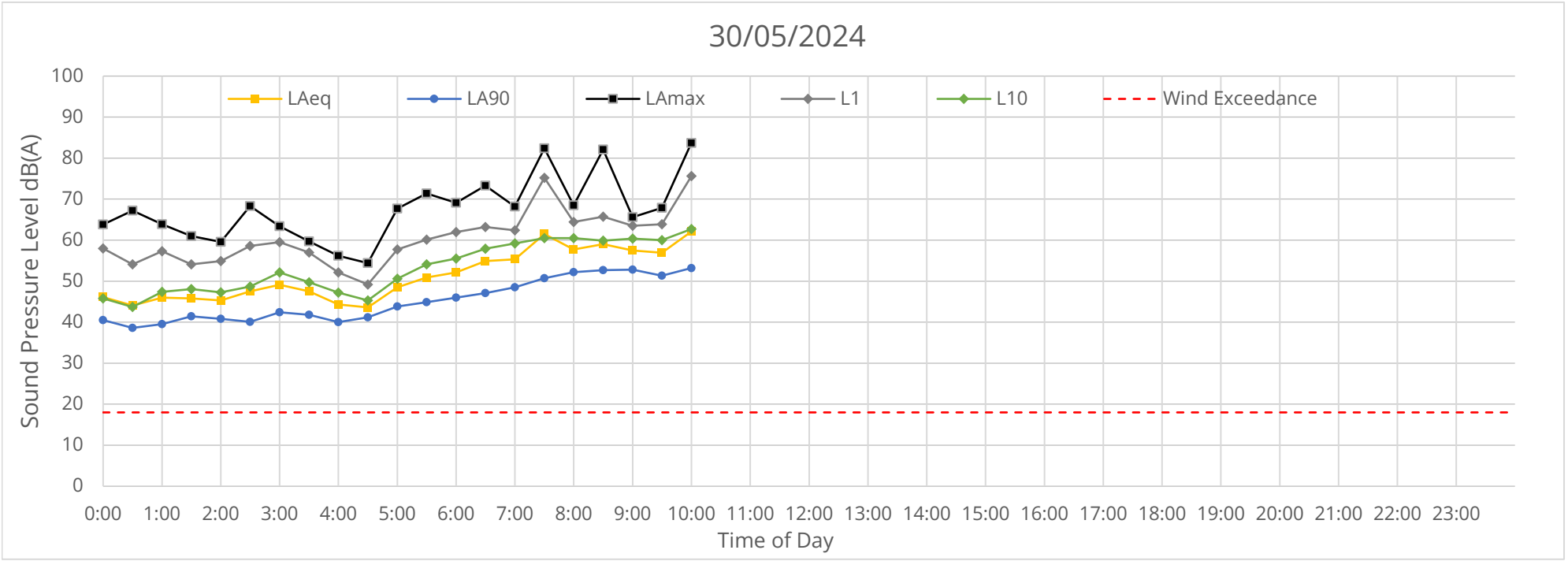
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Appendix C – Noise Modelling


Noise map height 1.5m (A-weighted)
R1
49
R2
49
R3
51
R4
50
C2a
61
C2b
62
C1
48
STAMFORD ROAD
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
25m
25m
50m
75m
100m
125m


Noise map height 1.5m (A-weighted)
R1
47
R2
47
R3
49
R4
48
C1
46
C2a
59
C2b
60
STAMFORD ROAD
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
25m
25m
50m
75m
100m
125m


Noise map height 1.5m (A-weighted)
R1
38
R2
37
R3
37
R4
41
C1
40
C2a
53
C2b
53
STAMFORD ROAD
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
25m
25m
50m
75m
100m
125m