ATTACHMENT 5

AMENDED ACOUSTIC REPORT

acousticworks

Proposed Warehouse/Industrial Development
60 Stapylton Jacobs Well Road
Stapylton

ACOUSTIC REPORT




Client:
Frasers Property

Reference:
2019338 R01C 60 Stapylton Jacobs Well Road Stapylton ENV.docx

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Document Information

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Report Register

Date	Revision	Author	Reviewer
18/12/19	R01B	Karen McMorrow	Greg Pearce
19/01/23	R01C	Matthew Bechara	Greg Pearce

Disclaimer

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1. Introduction

The following report is in response to a request by Frasers Property for an environmental noise assessment of a proposed warehouse/industrial development at 60 Stapytlon Jacobs Well Road, Stapylton. To facilitate the assessment, unattended noise monitoring was conducted in the vicinity of nearby residence to establish the criteria for onsite activities. Based on the data obtained, onsite activities were assessed to surrounding sensitive receivers with recommendations for acoustic treatments specified in this report.

2. Site Description

2.1 Site Location

The proposed site is described by the following:

60 Stapylton Jacobs Well Road, Stapylton
Lot 501 on SP295994

Refer to Figure 1 for site location.

Figure 1: Site Location (Not to Scale)

A comprehensive site survey was conducted on the 11th October 2019 and identified the following:

a) The site is currently vacant.
b) Industrial/commercial land uses are located to the north, east and southwest.
c) Single storey and highset dwellings are located adjacent the western site boundary.
d) Stapylton Jacobs Well Road bounds the site the northwest, separating the development from agricultural/rural residential land uses.
e) The Pacific Motorway is located approximately 430m southwest of the site.

2.2 Proposal

The proposal is to construct a warehouse/industrial development as follows:

- Total site area of 642,310m^2.
- Stage 1:
  - Area of Stage 1: 193,365m^2.
  - 22 warehouse/industrial lots comprised of warehouses and vacant lots for future development.
  - Access via Stapylton Jacobs Well Road to the northwest and Christensen Road to the southwest.
  - Proposed 24 hour operation, 7 days a week with the exception of Lots 101-108 which will operate 7am to 8pm, Monday to Friday.
- Stage 2:
  - Area of Stage 2: 329,666m^2.
  - 6 warehouse/industrial lots comprised of warehouses.
  - Access via Stapylton Jacobs Well Road to the northwest and Christensen Road to the southwest.
  - Proposed 24 hour operation, 7 days a week.
- Stage 3:
  - Area of Stage 3: 119,359m^2
  - 3 warehouse/industrial lots comprised of warehouses and 1 environmental lot.
  - Access via Christensen Road South to the southwest.
  - Proposed 24 hour operation, 7 days a week.

Refer to the Appendix for development plans.

2.3 Acoustic Environment

The surrounding area is primarily affected by existing industrial/commercial activities in the area and road traffic noise from Stapylton Jacobs Well Road and the Pacific Motorway.

3. Equipment

The following equipment was used to record noise levels:

- Rion NL42 Environmental Noise Monitor
- BSWA Technology Co. Ltd Sound Calibrator

The Environmental Noise Monitor holds current NATA Laboratory Certification and was field calibrated before and after the monitoring period, with no significant drift from the reference signal recorded.

4. Receivers and Noise Monitoring

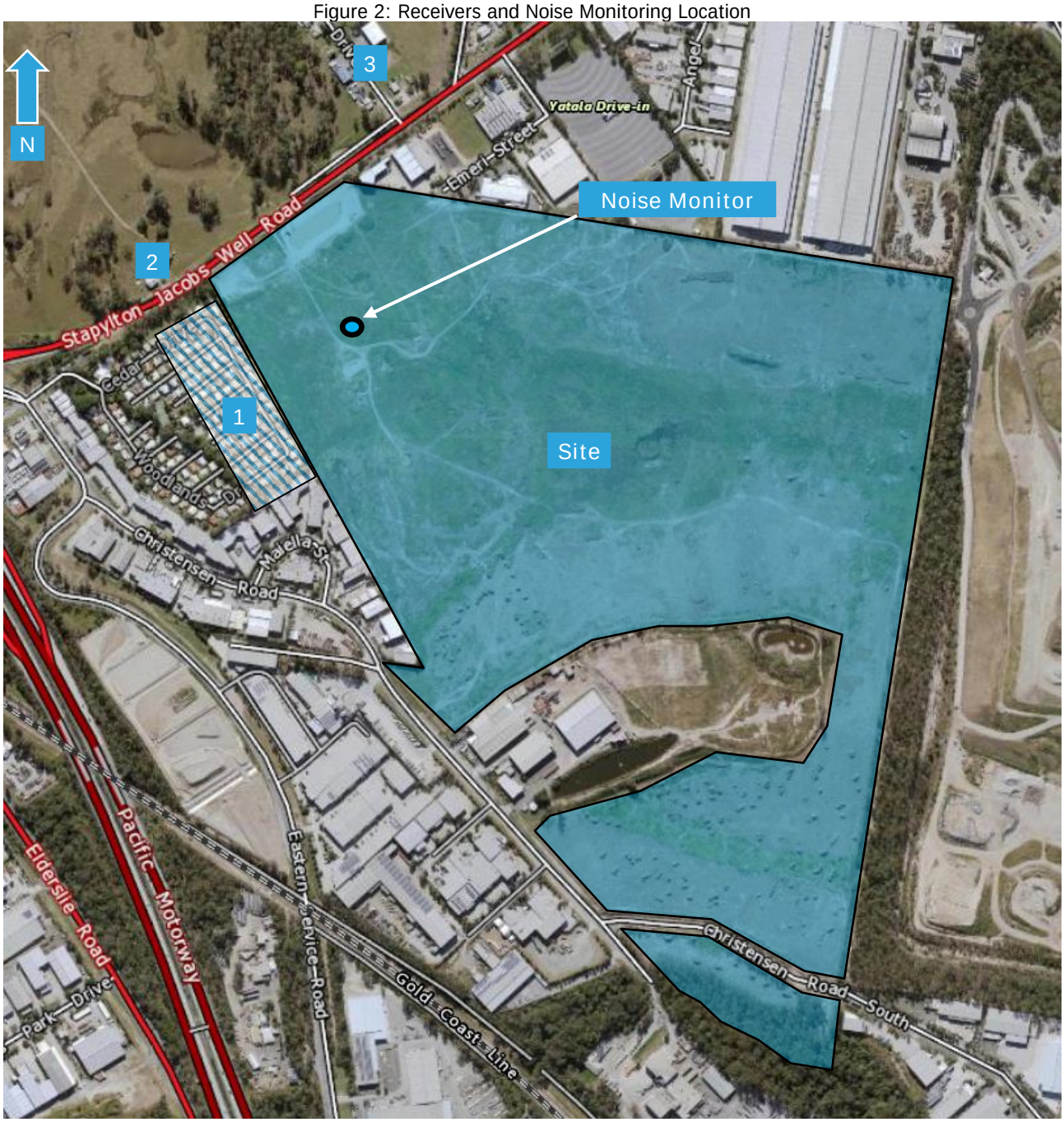
4.1 Receiver Locations

The nearest residential receiver locations were identified as follows;

1. Single storey and highset dwellings fronting Cedar Drive to the west.
2. Highset dwelling at 33 Stapylton Jacobs Well Road to the northwest.
3. Residential land uses at Hillside Drive to the north.

These locations were chosen as being representative of the nearest residential receivers to the proposed development. Refer to Figure 2 for receiver locations.

Figure 2: Receivers and Noise Monitoring Location



4.2 Unattended Ambient Noise Monitoring

A Rion NL42 environmental noise monitor was placed onsite at 60 Stapylton Jacobs Well Road to measure existing ambient noise levels. The monitor was located in a free field position with the microphone approximately 1.4 metres above ground surface level. The noise monitor was set to record noise levels between the 11th and 24th October 2019.

The environmental noise monitor was set to record noise levels in "A" Weighting, Fast response using 15 minute statistical intervals. Ambient noise monitoring was conducted generally in accordance with Australian Standard AS1055:1997 *Acoustics – Description and measurement of environmental noise*. For the unattended noise monitoring location refer to Figure 2.

5. Measured Noise Levels

The following table presents the results from the unattended noise survey. Any periods of inclement weather or extraneous noise were omitted from the measurements prior to determining the results.

5.1 Ambient Noise Levels

The measured ambient noise levels measured at the monitoring location are as follows;

Table 1: Measured ambient noise levels – all time periods

Day	Date	L90 dB(A)		
		Day	Evening	Night
Saturday	12/10/19	53	50	45
Sunday	13/10/19	48	47	46
Monday	14/10/19	50	53	48
Tuesday	15/10/19	51	56	49
Wednesday	16/10/19	52	52	52
Thursday	17/10/19	53	55	52
Friday	18/10/19	48	50	50
Saturday	19/10/19	45	53	46
Sunday	20/10/19	49	47	46
Monday	21/10/19	49	48	46
Tuesday	22/10/19	48	49	49
Wednesday	23/10/19	47	47	49
Overall value		49	51	48

Refer to the appendix for graphical representation.

6. Noise Criteria

6.1 Environmental Noise Criteria

The noise criteria as applied by City of Gold Coast are as follows;

6.1.1 Acoustic Quality Objectives

Table 2 presents the acoustic quality objectives at noise sensitive receptors as detailed in Schedule 1 of the Environmental Protection Policy (Noise) 2008.

Table 2: Acoustic Quality Objectives at Noise Sensitive Properties

Sensitive Receptor	Time of Day	Acoustic Quality Objectives, dB(A)		
		$L_{Aeq,adj,1hr}$	$L_{A10,adj,1hr}$	$L_{A1,adj,1hr}$
Dwelling (outdoors)	Day and Evening (7am – 10pm)	50	55	65
Dwelling (Indoors)	Day and Evening (7am – 10pm)	35	40	45
	Night (10pm – 7am)	30	35	40

6.1.2 Background Creep

The Background Creep criteria are as follows;

Time-varying noise:

$$L_{Aeq,adj,T,} \leq \text{Ambient } L_{A90,T} + 5\text{dB(A)}$$

Steady-state noise:

$$L_{A90,T} \leq \text{Ambient } L_{A90,T}$$

The time period (T) is a time interval of at least 15 minutes, or if the noise continues for less than 15 minutes, the duration of the noise source.

Based on the results of ambient noise monitoring, the project specific background creep noise limits are shown in Table 3.

Table 3: Background creep noise limits

Time Period	Noise Level Limits SPL dBA	
	$L_{Aeq,adj,T}$	$L_{A90,T}$
Day 7am – 6pm	54	49
Evening 6pm – 10pm	56	51
Night 10pm – 7am	53	48

7. Onsite Activities

7.1 Methodology

Noise predictions were determined with SoundPLAN 7.3 noise modelling software, which applied CONCAWE methodology. The CONCAWE algorithm takes into account distance, intervening terrain and buildings, screening features and meteorological conditions. For the purposes of this assessment, neutral wind conditions were applied in the noise model.

7.2 Source Sound Power Levels

Source sound power levels associated with normal operation was assessed based on previous measurements of similar activities and are presented in Table 4.

Table 4: Source sound power levels

Activity	Sound Power Level, dB(A)
Truck passbys	104
Truck air brakes	112
Truck reverse alarm	105
Car passby's	77
Car door closure	85
Forklifts	92
Power Tools	102

All activities include corrections for tonality and impulsiveness as per AS1055:2018, where applicable.

7.3 Predicted Noise Levels

7.3.1 Background Creep Criteria

Predicted noise levels for the site, utilising the data in Table 4, is presented in Table 5 and compared to the Background Creep criteria. A noise contour map for the site is presented in Section 7.4.

Table 5: Predicted noise levels - Background Creep LAeq 15min

Receiver	Predicted Noise Level, dB(A) Leq, 15min	Leq Compliance		
		Day	Evening	Night
Criteria		54	56	53
1. Cedar Drive (west)	48	Yes	Yes	Yes
2. 33 Stapylton Jacobs Well Rd (northwest)	41	Yes	Yes	Yes
3. Hillside Drive (northeast)	41	Yes	Yes	Yes

Compliance is predicted with the Background Creep criteria for the 24 hour operation of the site on the condition the recommendations in Section 8 are implemented.

7.3.2 Acoustic Quality Objectives

Predicted noise levels for the modelled scenario, compared to the Acoustic Quality Objectives, are presented in Table 6. A noise contour map for the site is presented in Section 7.4.

Table 6: Predicted noise levels - Acoustic Quality Objectives 1 hour

Receiver	Predicted Noise Level, dB(A) Leq, 1 hour		Predicted Noise Level, dB(A) L10, 1 hour		Predicted Noise Level, dB(A) L01, 1 hour		Leq Compliance			LA10 Compliance			LA01 Compliance		
							Day/Eve		Night	Day/Eve		Night	Day/Eve		Night
	External	Internal	External	Internal	External	Internal	External	Internal	Internal	External	Internal	Internal	External	Internal	Internal
Criteria							50	35	30	55	40	35	65	45	40
1. Cedar Drive (west)	48	38	52	42	56	46	Yes	n/a	n/a	Yes	n/a	n/a	Yes	n/a	n/a
2. 33 Stapylton Jacobs Well Rd (northwest)	41	31	45	35	49	39	Yes	n/a	n/a	Yes	n/a	n/a	Yes	n/a	n/a
3. Hillside Drive (northeast)	41	31	45	35	49	39	Yes	n/a	n/a	Yes	n/a	n/a	Yes	n/a	n/a

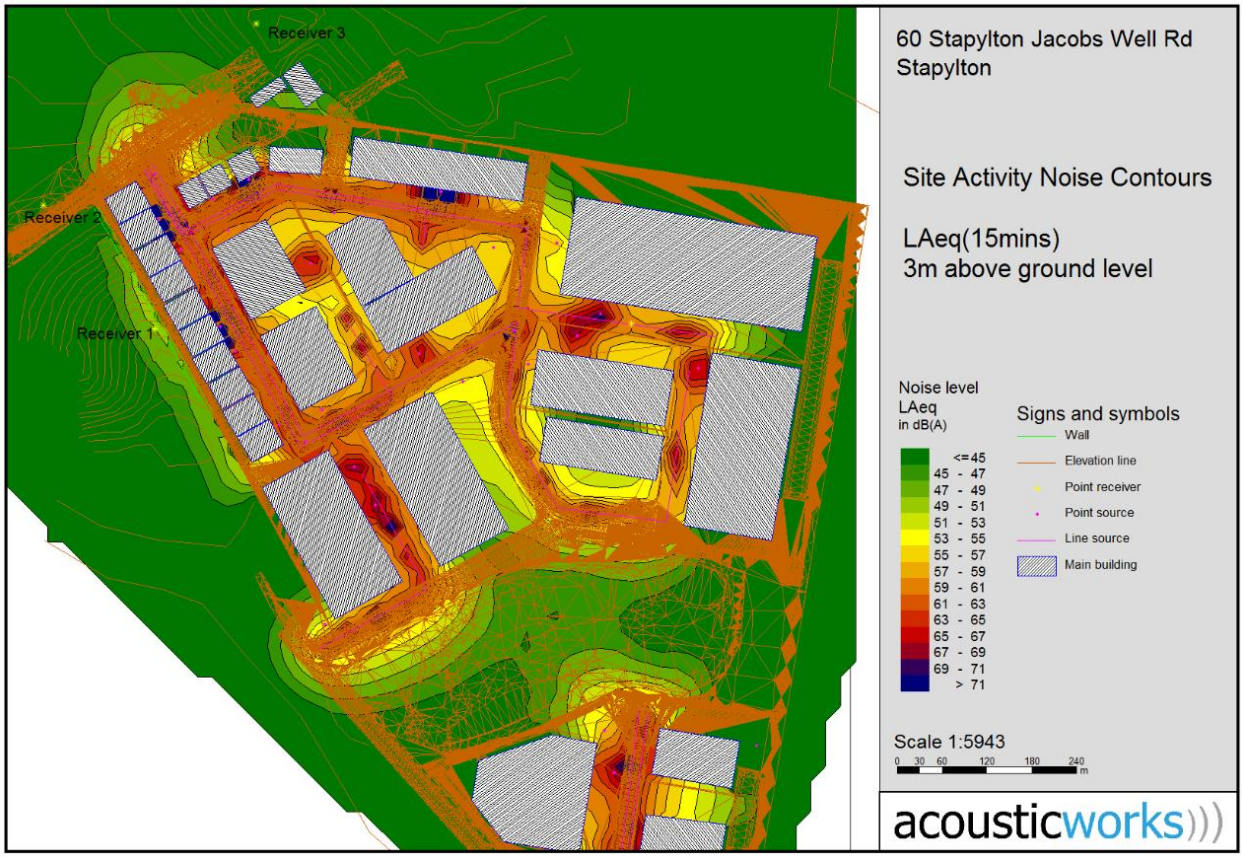
Compliance is predicted with the external Acoustic Quality Objectives for the 24 hour operation of the site on the condition the recommendations in Section 8 are implemented.

In regards to the internal Acoustic Quality Objectives, due to the surrounding environment (i.e. industry/local roads/Pacific Motorway) the existing background noise levels already exceed the internal Acoustic Quality Objectives for all time periods. Therefore, it is not possible to apply the internal Acoustic Quality Objectives for this development.

7.4 Noise Contour Maps

A noise contour map for the development, utilising the noise data in Table 4, is presented in Figure 3.

Figure 3: Predicted Noise Levels - LAeq, T



8. Recommendations

8.1 Acoustic Barriers

An acoustic barrier is recommended to be constructed along part of the western site boundary (adjacent the dwellings at Cedar Drive) as shown in Figure 4. The height of the barrier shall be 2.4m above the existing boundary level (i.e. on top of any proposed retaining walls/structures). The acoustic barrier shall be constructed using materials that achieve a minimum surface density of at least 12.5kg/m^2. Suitable materials may include lapped 25mm thick pine palings with 40% overlap, 9mm fibre cement sheet, masonry, aerated concrete, 6.38mm laminate glass or other materials which satisfy the minimum surface density requirement. The barrier shall be free of gaps and holes.

Figure 4: Recommended Acoustic Barrier

Acoustic barrier 2.4m high

8.2 Onsite Activities

Compliance is predicted for 24 hour operation of the site on the condition the following recommendations are implemented:

- Construction of acoustic barrier as detailed in Section 8.1.
- All buildings constructed on Lots 101-110 are recommended to be minimum 6m high and be constructed with minimal or no gaps between the buildings on each lot. We recommend that the western wall of the buildings is constructed using tilt concrete panels or masonry.
- No openings (other than emergency doors) on the western façade of Lots 101-110, except for fire exits. Any required doors on the western facade should be minimum 40mm thick solid core doors with full perimeter and base acoustic seals.
- All warehouses should incorporate a tilt concrete panel for all walls facing northwest, southwest and southeast to a minimum height of 3 metres.

8.2.1 Onsite Mechanical Plant

No information regarding any new mechanical services was available at the time of the assessment. We recommend that any new mechanical plant is designed to comply with the criteria stated in Section 6.1.2 with an assessment by qualified acoustic consultant to be conducted prior to installation.

9. Conclusion

An environmental noise assessment was conducted for the proposed warehouse/industrial development at 60 Stapylton Jacobs Well Road, Yatala. On the condition the recommendations detailed in Section 8 are implemented, compliance is predicted with City of Gold Coast assessment criteria.

If you should have any queries please do not hesitate to contact us.

Report Prepared By

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Senior Acoustic Consultant

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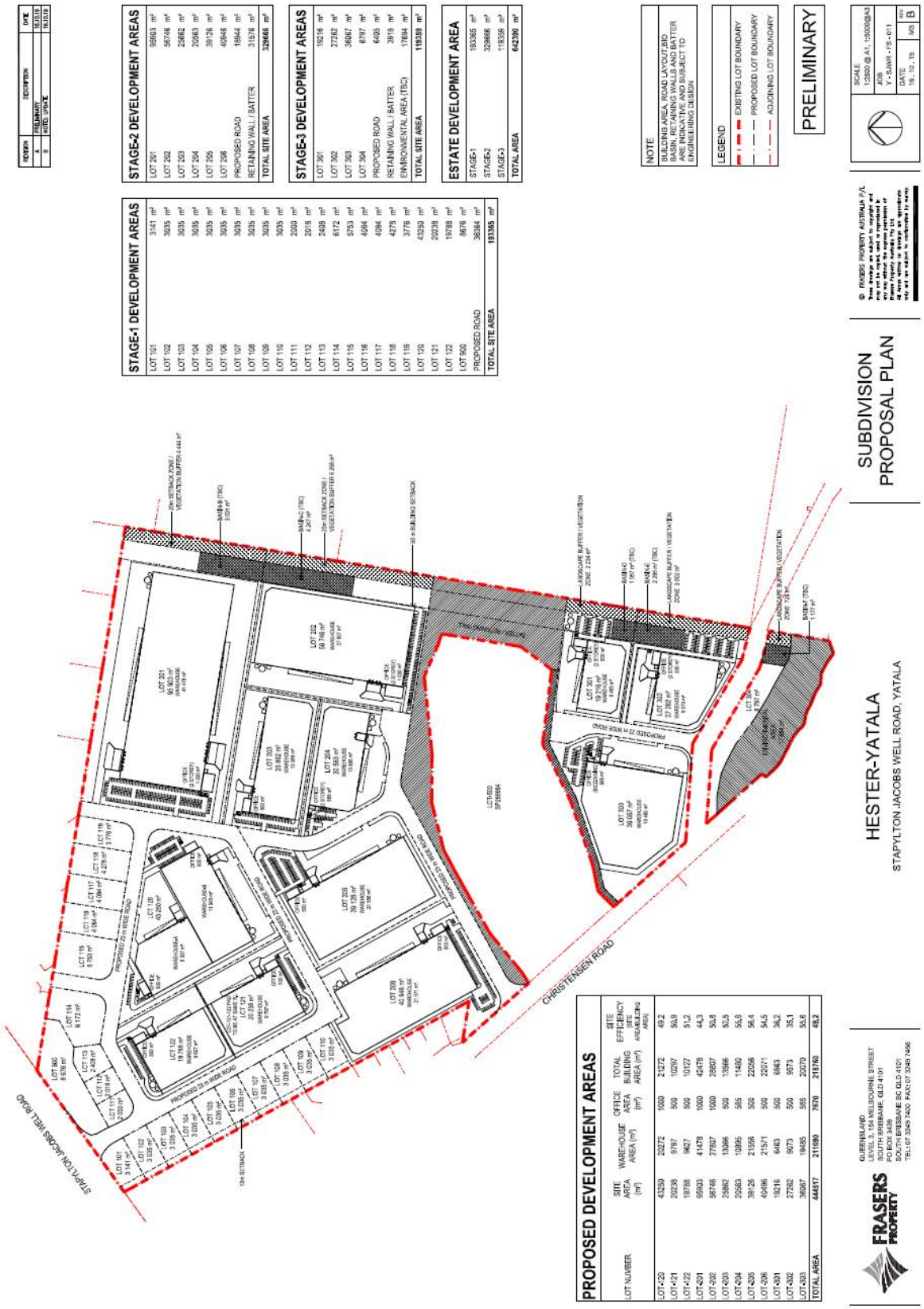
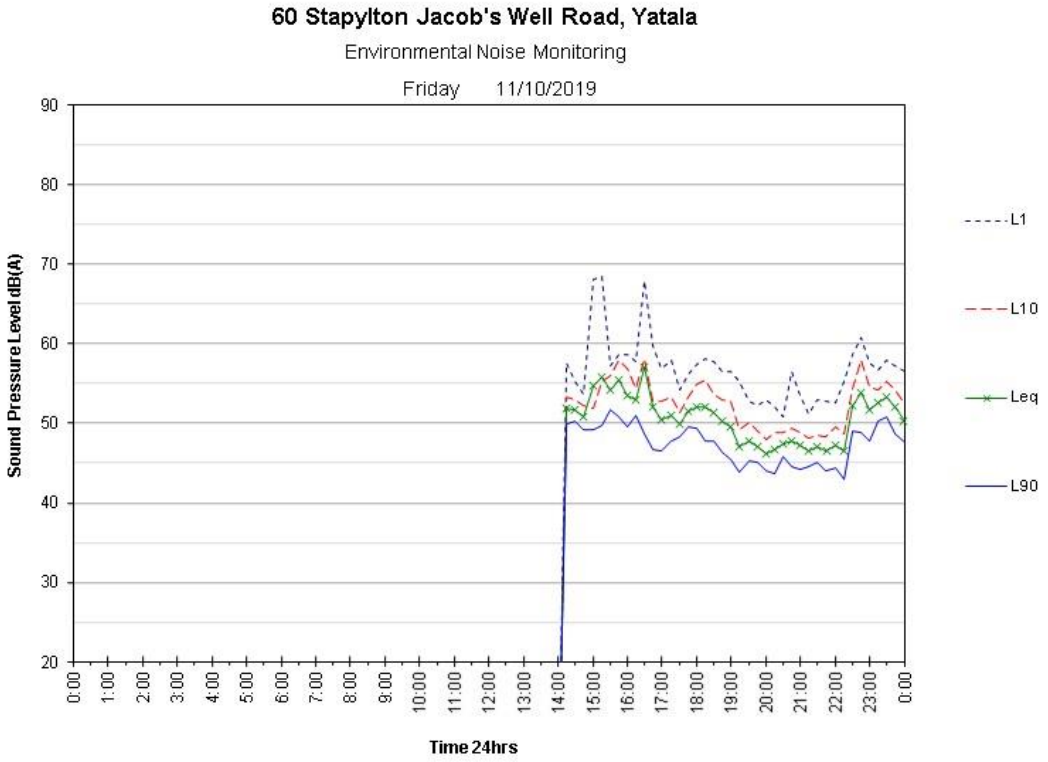
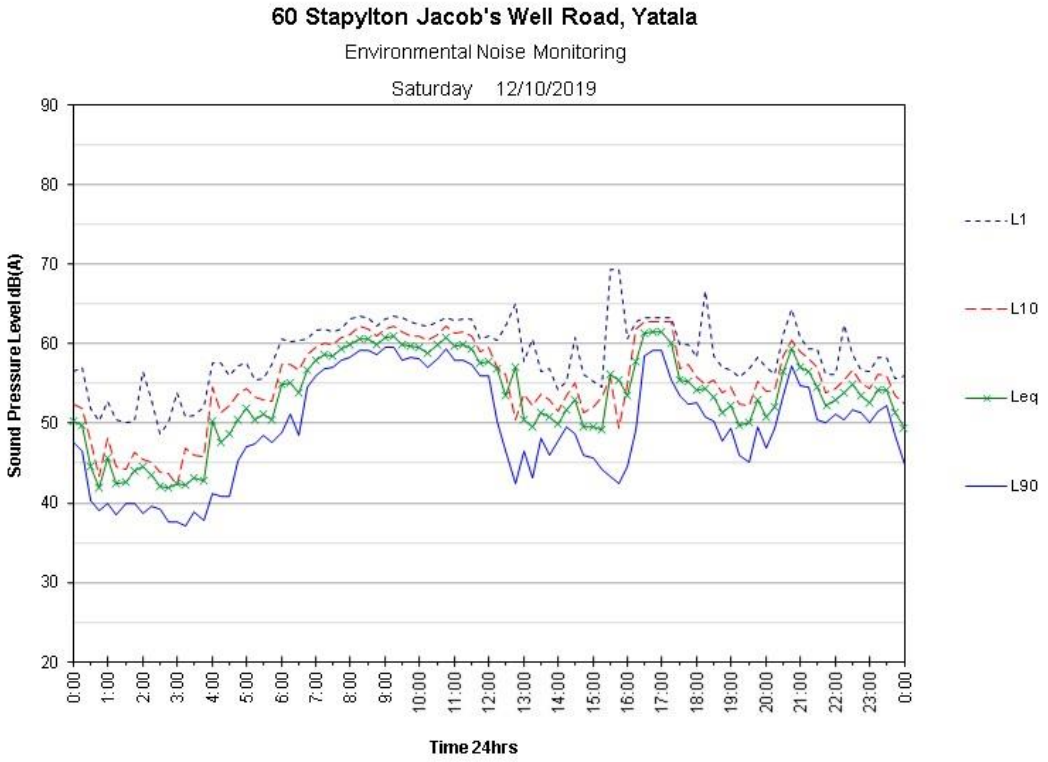
10. Appendices

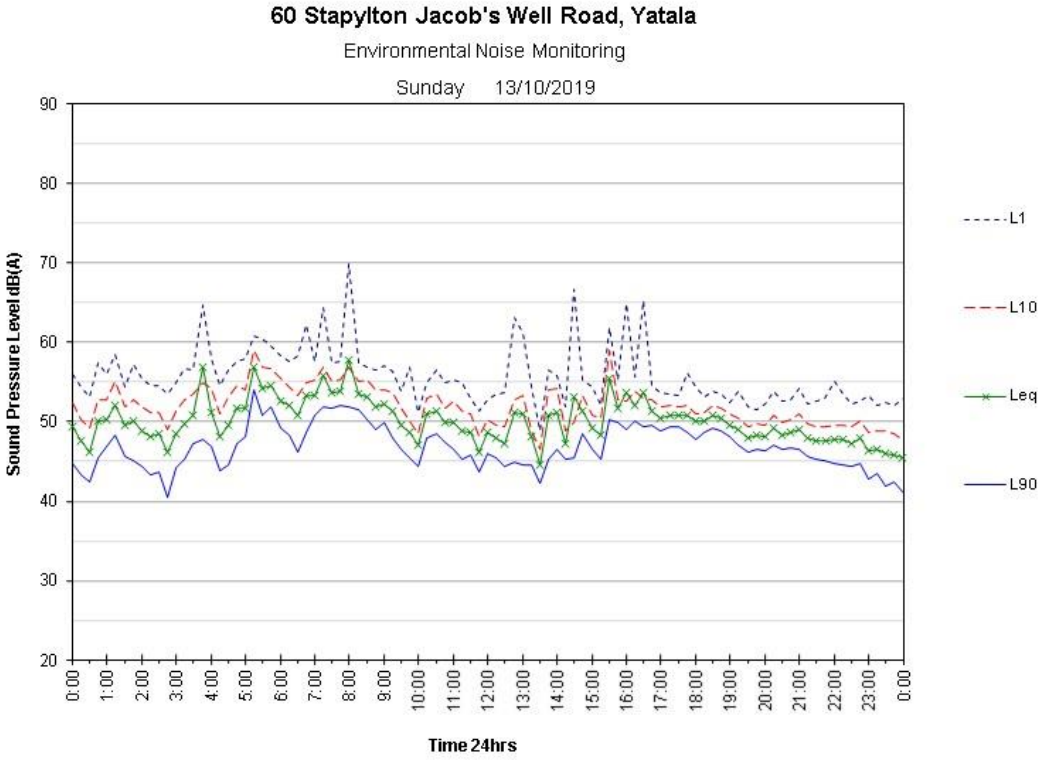
10.1 Development Plans



10.2 Noise Monitoring Charts



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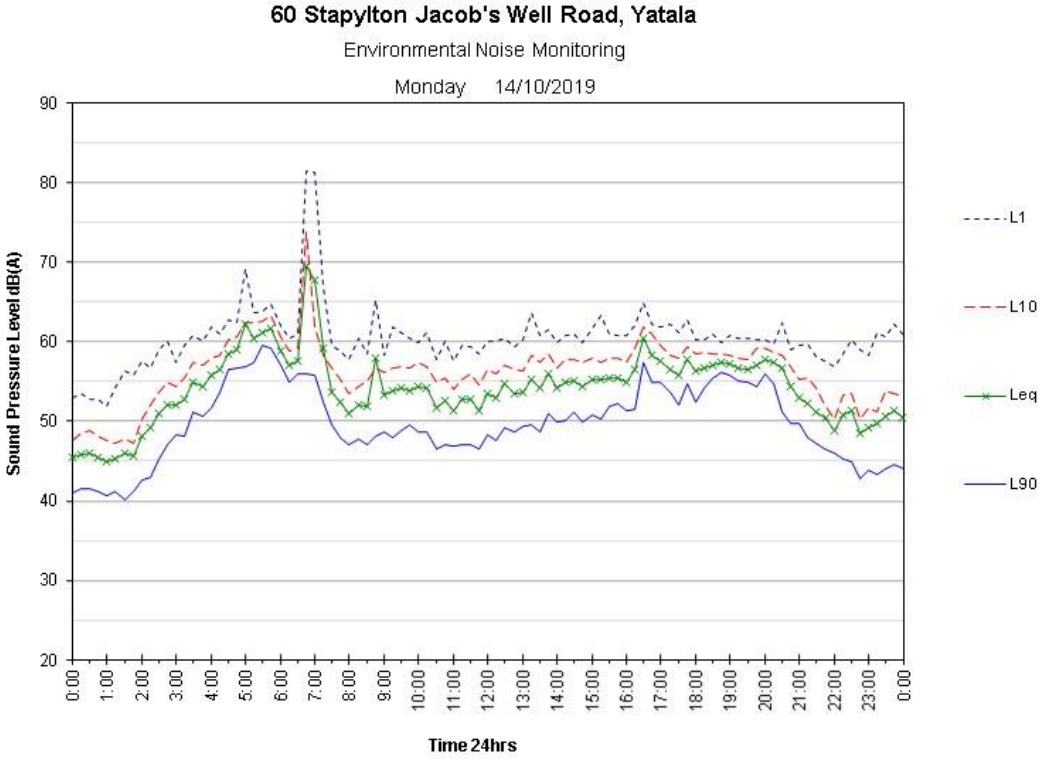
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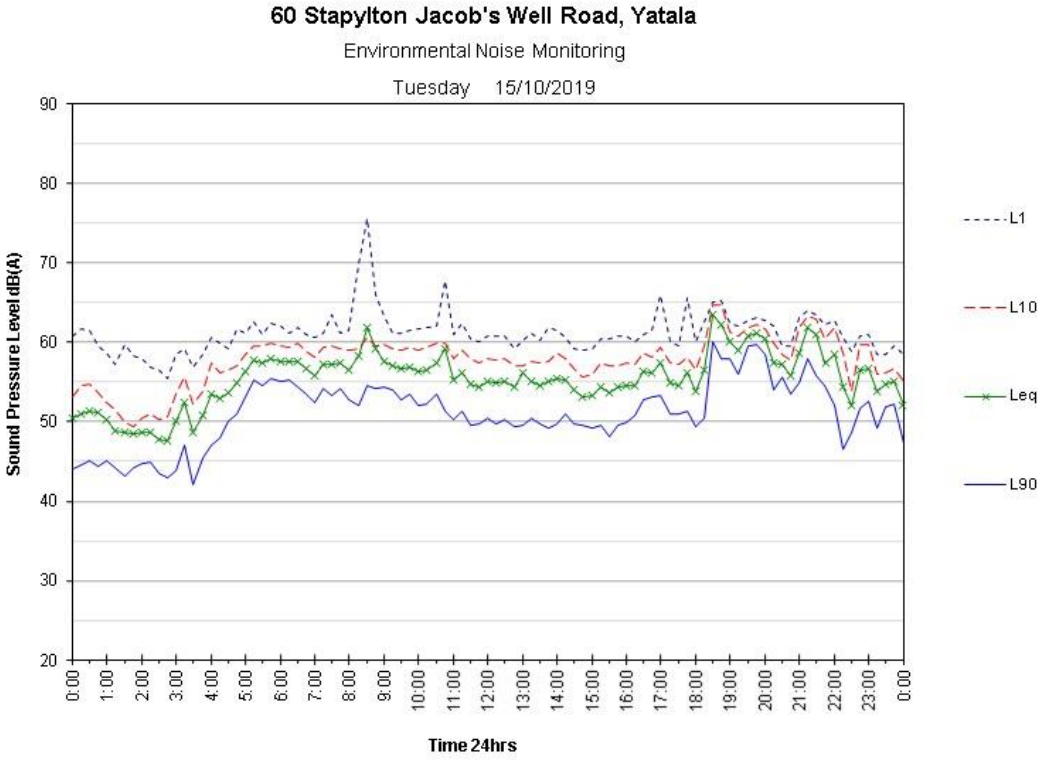
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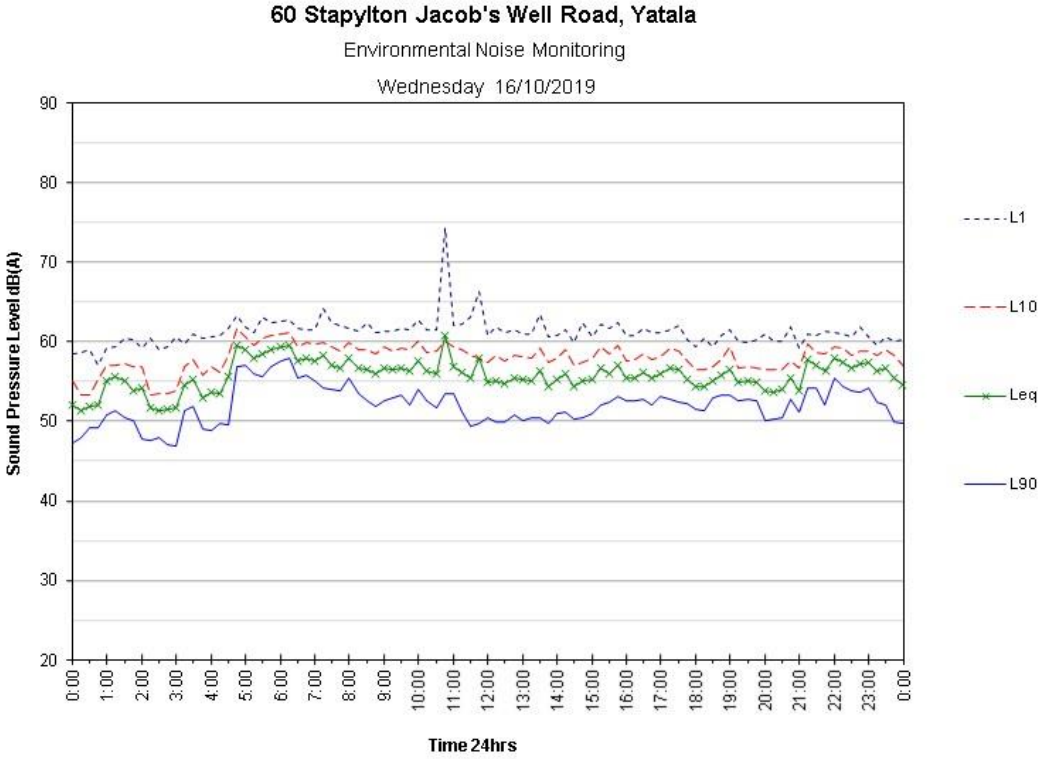
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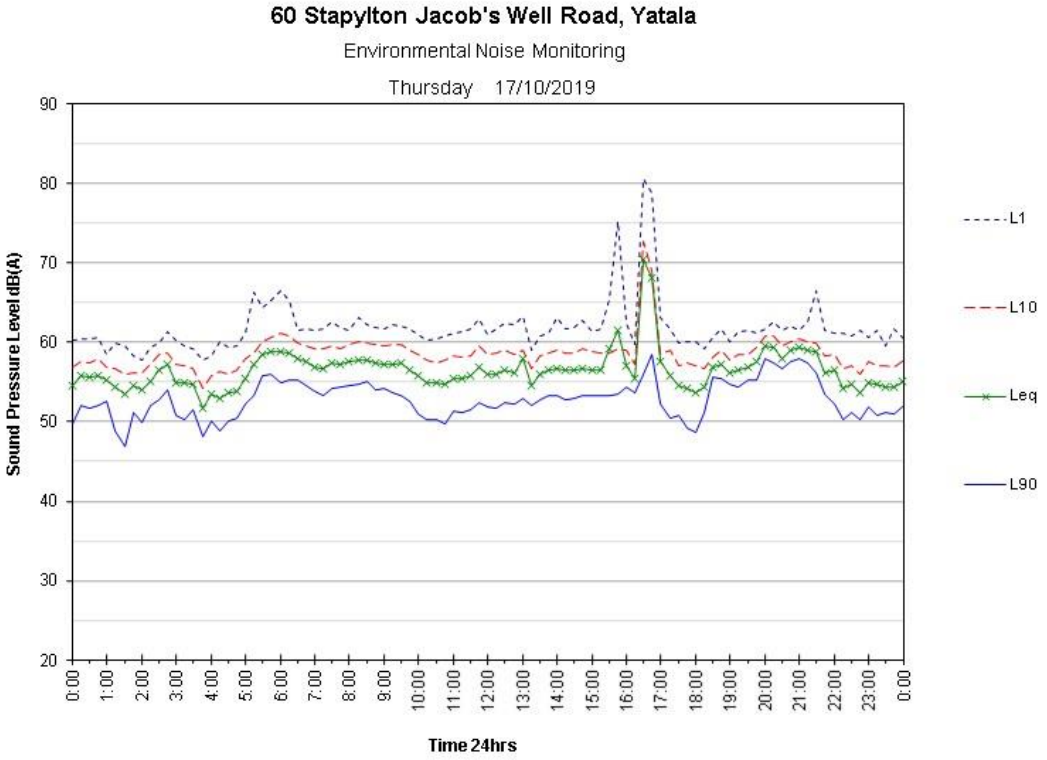
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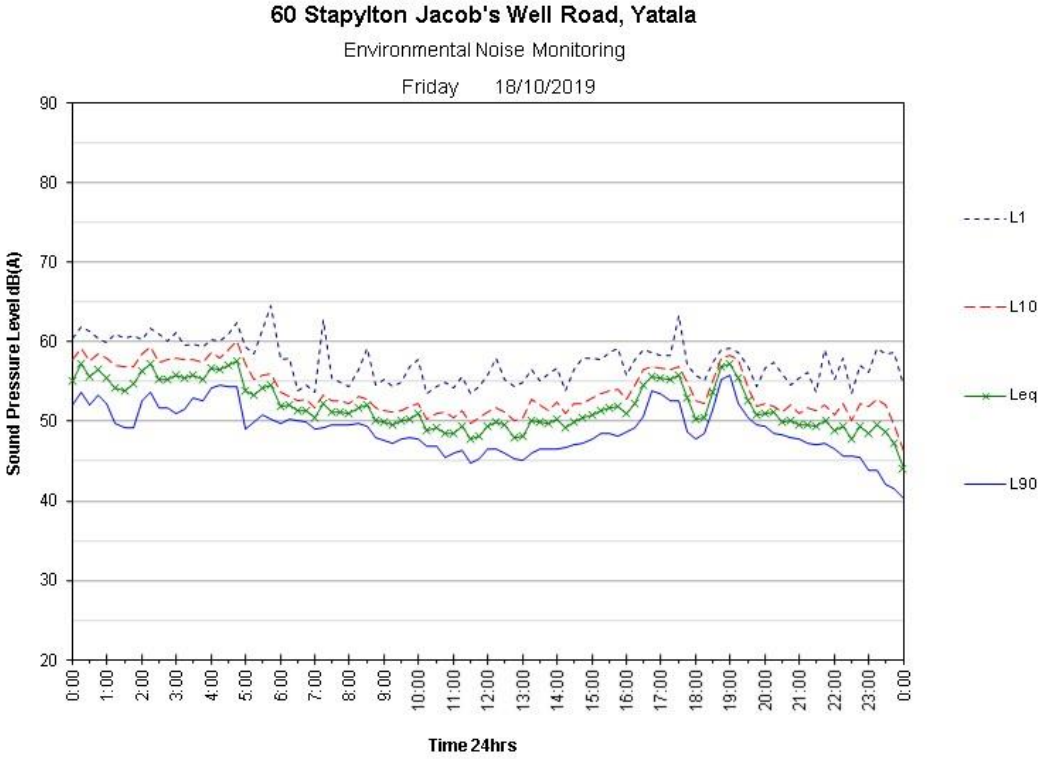
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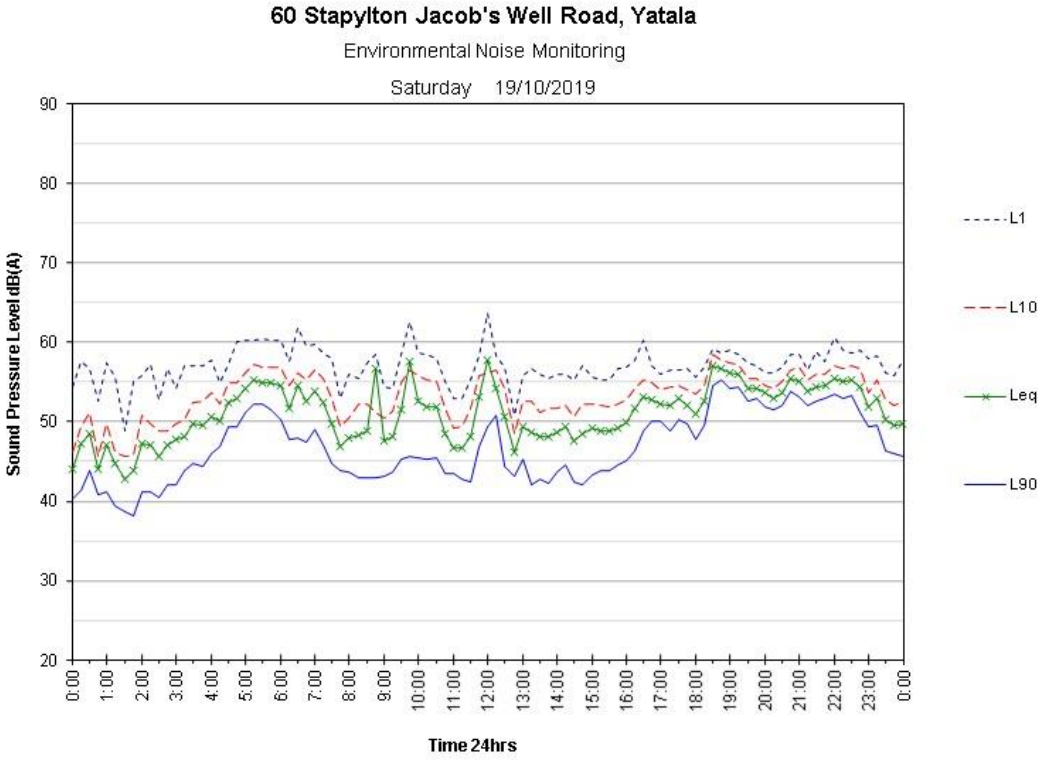
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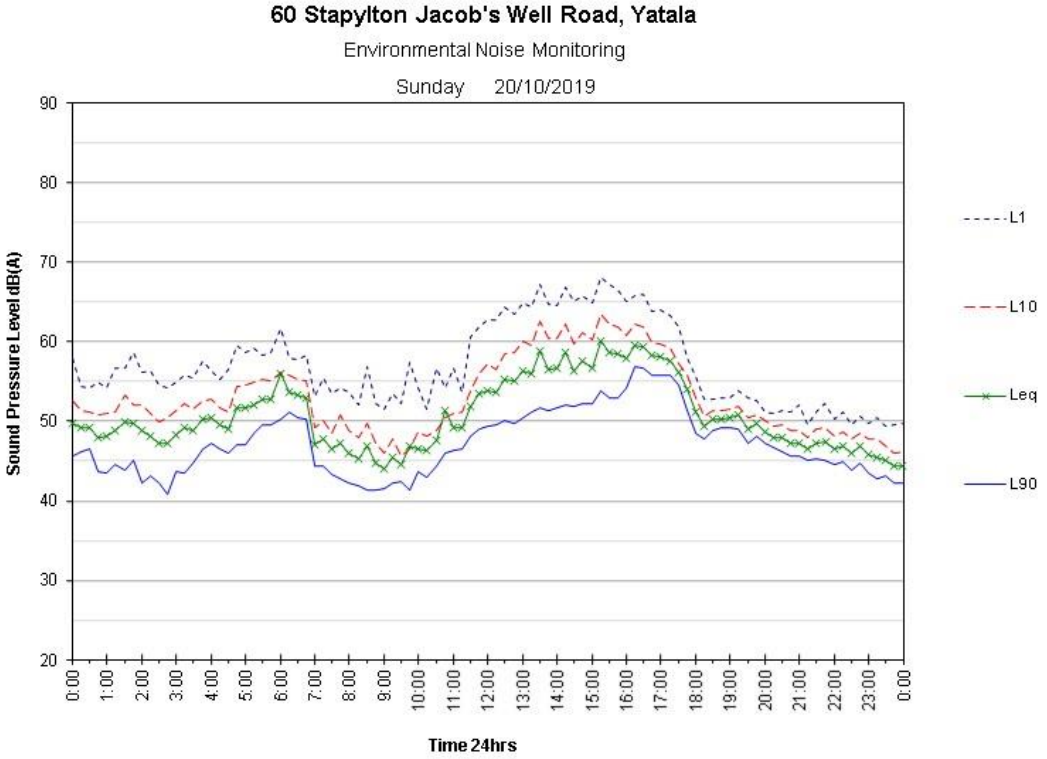
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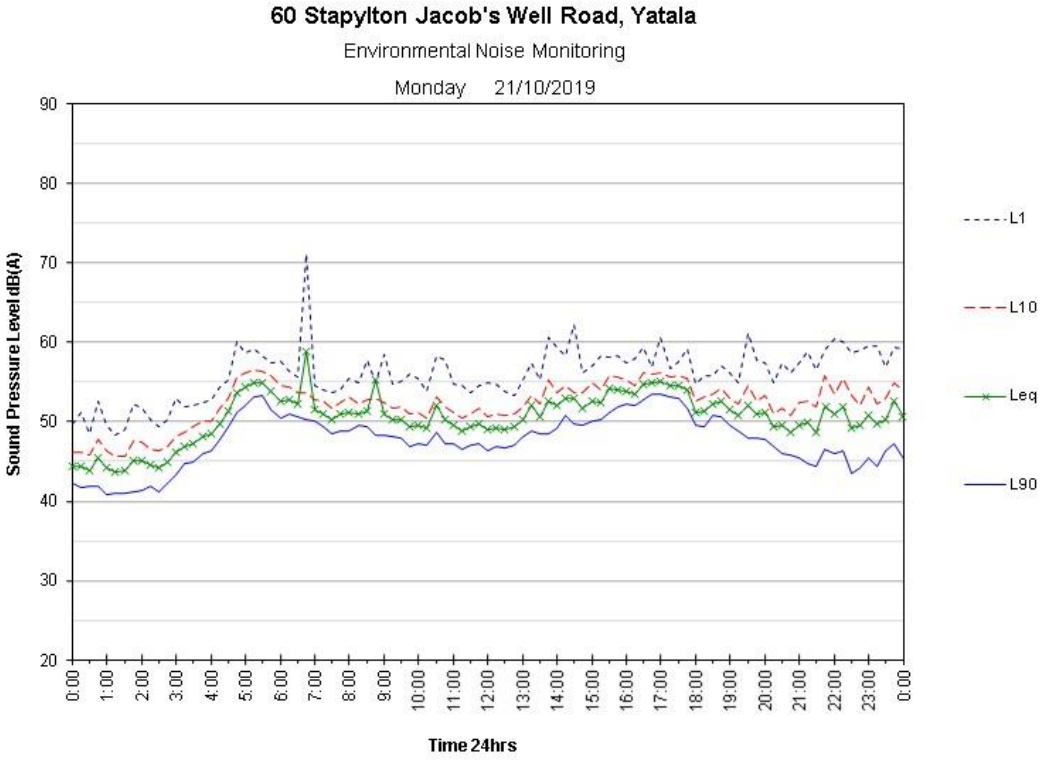
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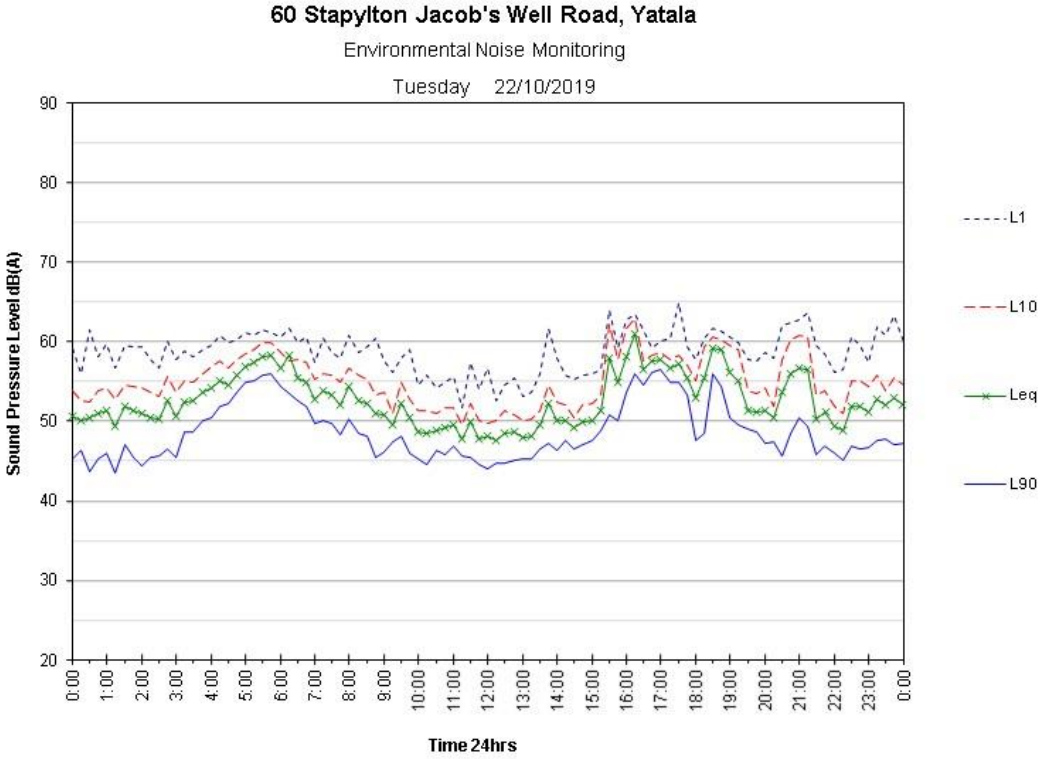
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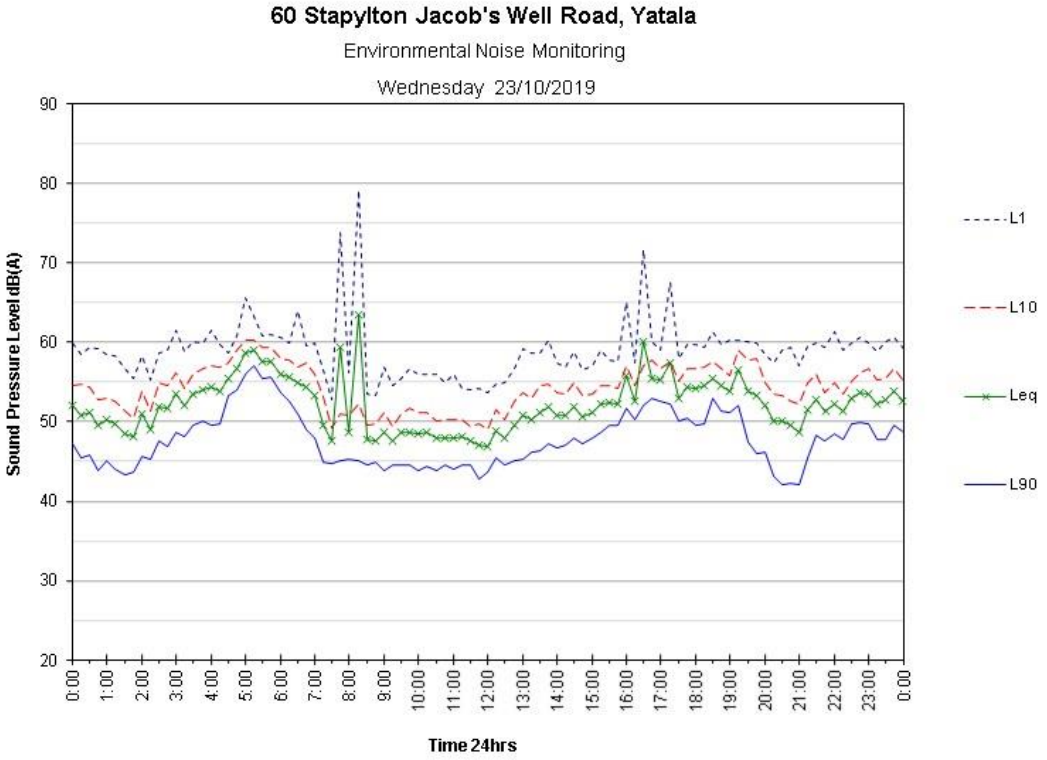
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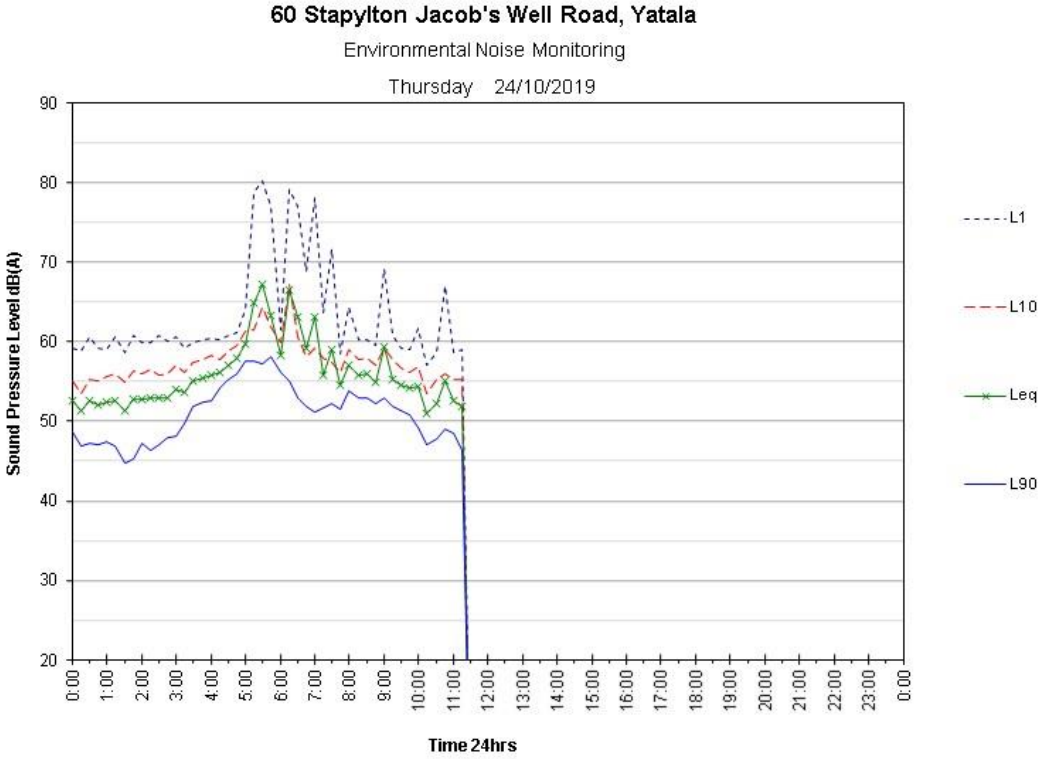
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Time 24hrs
L1
L10
Leq
L90