ACOUSTICS AND AIR

ST JOSEPH'S COLLEGE PHYSICAL EDUCATION AND SPORTS PRECINCT PROJECT (PESPP) DEVELOPMENT APPLICATION

CONSTRUCTION & OPERATIONAL NOISE REPORT

REPORT NO. 16316
VERSION D

APRIL 2019

PREPARED FOR

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Version	Status	Date	Prepared By	Reviewed By
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D	Final	23 April 2019	Brian Clarke	John Wassermann

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GLOSSARY OF ACOUSTIC TERMS

Most environments are affected by environmental noise which continuously varies, largely as a result of road traffic. To describe the overall noise environment, a number of noise descriptors have been developed and these involve statistical and other analysis of the varying noise over sampling periods, typically taken as 15 minutes. These descriptors, which are demonstrated in the graph below, are here defined.

Maximum Noise Level (L_{Amax}) – The maximum noise level over a sample period is the maximum level, measured on fast response, during the sample period.

L_{A1} – The L_{A1} level is the noise level which is exceeded for 1% of the sample period. During the sample period, the noise level is below the L_{A1} level for 99% of the time.

L_{A10} – The L_{A10} level is the noise level which is exceeded for 10% of the sample period. During the sample period, the noise level is below the L_{A10} level for 90% of the time. The L_{A10} is a common noise descriptor for environmental noise and road traffic noise.

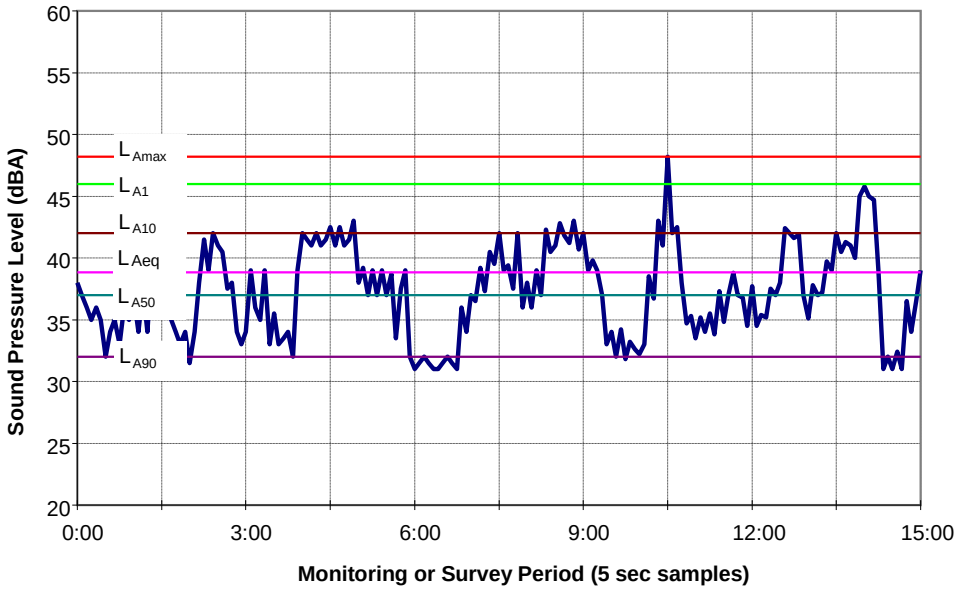
L_{A90} – The L_{A90} level is the noise level which is exceeded for 90% of the sample period. During the sample period, the noise level is below the L_{A90} level for 10% of the time. This measure is commonly referred to as the background noise level.

L_{Aeq} – The equivalent continuous sound level (L_{Aeq}) is the energy average of the varying noise over the sample period and is equivalent to the level of a constant noise which contains the same energy as the varying noise environment. This measure is also a common measure of environmental noise and road traffic noise.

ABL – The Assessment Background Level is the single figure background level representing each assessment period (daytime, evening, and night time) for each day. It is determined by calculating the 10th percentile (lowest 10th percent) background level (L_{A90}) for each period.

RBL – The Rating Background Level for each period is the median value of the ABL values for the period over all of the days measured. There is therefore an RBL value for each period – daytime, evening, and night time.

Typical Graph of Sound Pressure Level vs Time



1 INTRODUCTION

St Joseph's College (**SJC**) submitted a State Significant Development Application (SSD 17_897) to the NSW Department of Planning and Environment (**DPE**) in 2018 proposing the Physical Education and Sports Precinct Project (**PESPP**) building. Following exhibition and notification of SSD 17_897, the DPE issued a Response to Submissions (**RtS**) letter on 23 November 2018.

In response to the Key Issues identified by DPE, the PESPP building has been amended as follows:

1. **Luke Street Setback**: A 4.3m building setback to Luke Street is proposed (compared with 1.3m in the original SSD), providing for a new landscaped buffer including the planting of significant trees between the PESPP and stone wall. The increased setback also simplifies the required construction solution to protect the stone wall.

2. **Building height**: A 2.7m reduction in height (-19%) is proposed. This is achieved by increasing the excavation depth to lower the entire building and relocating the roof plant away from Luke Street. The amended *building height* is predominantly 11.4m compared with 14.1m in the original SSD (the amended height is 14m to 15m to the relocated plant room which is located well away from Luke Street).

This report is a revised Noise Impact Assessment (NIA) taking into account the above changes has been prepared on behalf of St Joseph's College Hunters Hill ("the Proponent"). It accompanies an Environmental Impact Statement (EIS) prepared in support of State Significant Development Application SSD 8970 for the development of the St Joseph's College Physical Education and Sports Precinct Project (PESPP).

1.1 Development Details

St Joseph's College Sports Courts Project ('SJC') development includes:

1. Demolition of the following existing buildings (which are not heritage significant) near the intersection of Luke Street and Gladesville Road:
    a) College Shop
    b) Healy Gym and Maintenance Workshop
    c) Outdoor Sports Courts
    d) Workshop/Storage and Shed.
2. Construction of the Physical Education and Sports Precinct Project (PESPP) comprising the following facilities:
    a) Lower Ground Floor: New car parking, maintenance workshops, storage, offices, amenities etc. A net increase of 55 car parking spaces is proposed (85 new spaces to be provided in the SCP basement less 30 at grade spaces to be removed)
    b) Ground floor: Three indoor sports courts, amenities, kitchen, and entry lobbies
    c) First Floor: Void over sports courts, bench seating (180 seats), staff facilities, two general learning areas and foyer

d) Driveway entry to the PESPP (no new vehicular cross overs)

e) Landscaping and tree removal/replacement.

3. Construction of a new single storey building to accommodate the relocated Healy Gym in the north-western corner of the site near the intersection of Mary Street and Mark Street.
4. New kiosk substation and landscaping in the north-eastern corner of the site
5. Use of the completed works as an educational establishment.
6. Staging which would facilitate completion of the PESPP in up to two stages (noting that the entire project may be completed in one stage).

The proposal does not include the following:

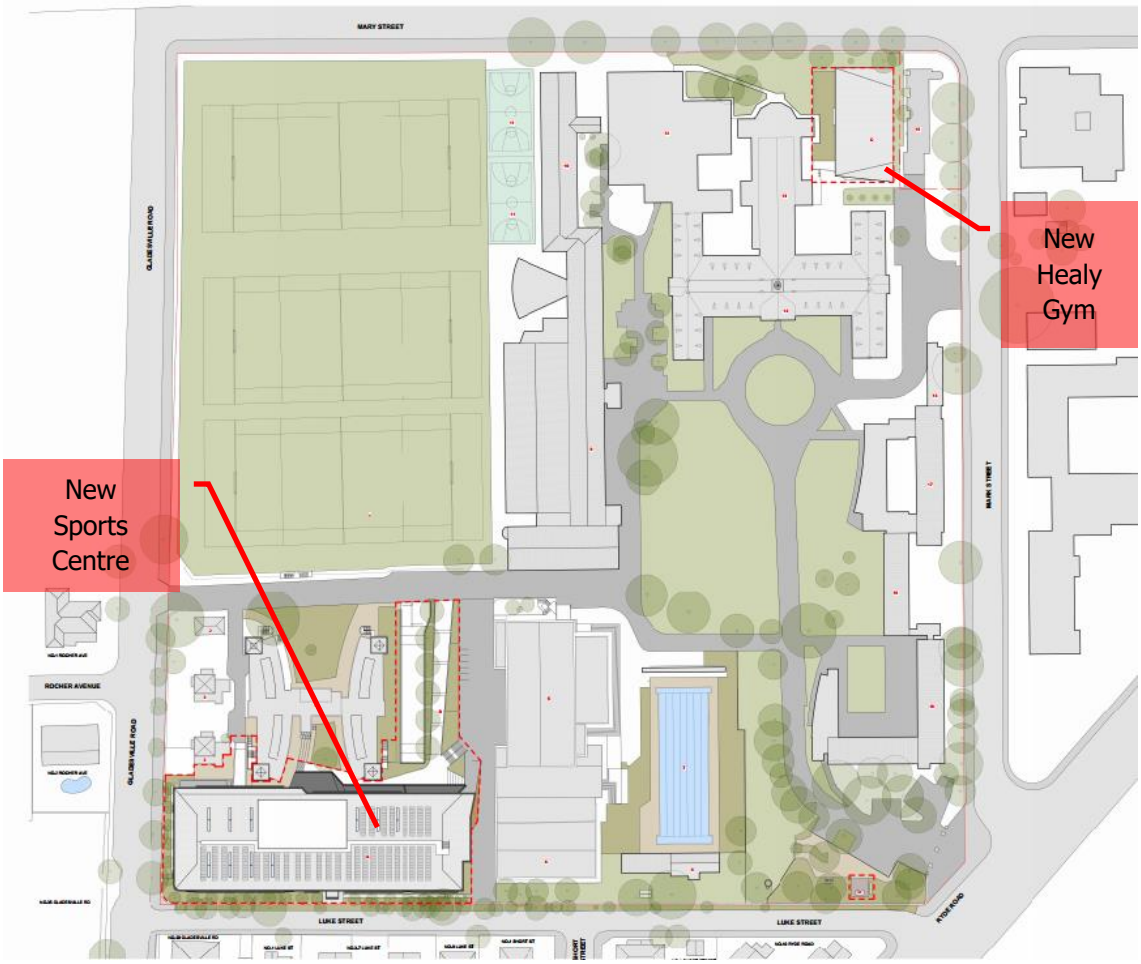
- An increase in the existing student or staff population
- New external use of the proposed facilities (noting that existing external uses which occur during school holidays only would continue in the proposed facilities).

The existing College and proposed development location is shown in Figure 1-1.

Figure 1-1 Existing Site Plan

The location of the new buildings on the site are shown in Figure 1-2. The site is bounded by residences on the all sides.

Figure 1-2 Proposed Site



Wilkinson Murray Pty Limited has reviewed and assessed the drawings and relevant documentation prepared in respect of this State Significant Development (SSD 8970) submission.

The NIA details established site-specific noise and vibration criteria in accordance with the following SEARs requirements:

9. Noise and Vibration

Identify and provide a quantitative assessment of the main noise and vibration generating sources during demolition, site preparation, bulk excavation, construction and operation, including consideration of any public address system, the design and location of waste storage facilities, mechanical services (e.g. air conditioning plant), and any out of hours community use of school facilities, and outline measures to minimise and mitigate the potential noise impacts on surrounding occupiers of land.

→ Relevant Policies and Guidelines:

- *Noise Policy for Industry 2017 (EPA)*
- *Interim Construction Noise Guideline (DECC)*
- *Assessing Vibration: A Technical Guideline 2006*

2 AMBIENT NOISE LEVELS AT SITE

Residential receivers surrounding the site that may be affected by construction and operational noise have been identified in two areas, are detailed in Table 2-1 and are shown in Figure 2-1.

Figure 2-1 Aerial showing St Joseph's College Hunters Hill and Proposed Layout

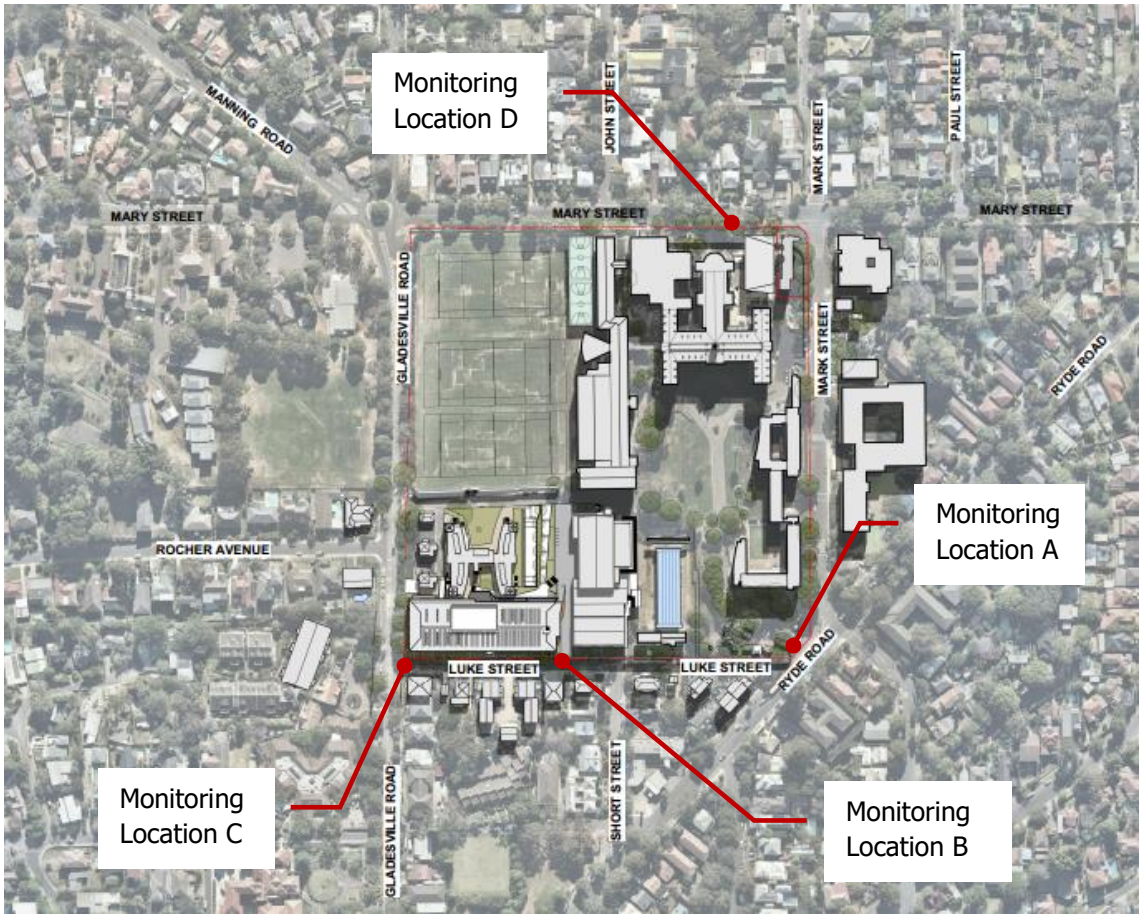


Table 2-1 Surrounding Receivers

Receivers	Comments
A – Mark Street	Multi-storey residential buildings.
B – Luke Street	Single and two storey residential buildings.
C – Gladesville Road	Single Residential buildings
D – Mary Street	Single Residential buildings

To quantify the existing noise environment, long-term ambient noise levels were monitored at four boundary (4) locations surrounding the site, selected to cover the range of environments in the potentially affected areas. Locations 1-3 where measured in January 2016 whilst location 4 was measured in January 2018.

The noise logger locations are presented in Table 2-2 and are shown in Figure 2-1.

Table 2-2 Long-Term Noise Monitoring Locations

Logger	Location	Monitoring Period
A	Mark Street	10 – 18 November 2016
B	Luke Street	10 – 18 November 2016
C	Gladesville Road	10 – 18 November 2016
D	Mary Street	9 – 16 January 2018

The noise monitoring equipment used for the Wilkinson Murray noise measurements consisted of ARL Type EL-215 environmental noise loggers set to A-weighted, fast response, continuously monitoring over 15-minute sampling periods. This equipment is capable of remotely monitoring and storing noise level descriptors for later detailed analysis. The equipment calibration was checked before and after the survey and no significant drift was noted.

The logger determines L_{A1}, L_{A10}, L_{A90} and L_{Aeq} levels of the ambient noise. L_{A1}, L_{A10} and L_{A90} are the levels exceeded for 1%, 10% and 90% of the sample time respectively (see Glossary for definitions). The L_{A1} is indicative of maximum noise levels due to individual noise events such as the occasional pass-by of a heavy vehicle. The L_{A90} level is normally taken as the background noise level during the relevant period.

Detailed results for each monitoring location are shown in graphical form in Appendix A. The graphs show measured values of L_{Aeq}, L_{A90}, L_{A10} and L_{A1} for each 15-minute monitoring period.

Table 2-3 summarises the noise results, for daytime, evening and night time periods as defined in the EPA's *Interim Construction Noise Guidelines (ICNG)* and the NSW *Industrial Noise Policy (INP)*.

Table 2-3 Summary of Measured Ambient Noise Levels

Noise Logging Site	RBL (dBA)				$L_{Aeq,period}$ (dBA)			
	Daytime 7am-6pm	Evening 6-10pm	Night Time 10pm-7am	Saturday 8am-1pm	Daytime 7am-6pm	Evening 6-10pm	Night Time 10pm-7am	Saturday 8am-1pm
A	55	49	37	55	66	65	60	65
B	47	45	37	46	60	57	51	61
C	46	42	38	46	63	61	53	60
D	41	37	34	42	61	57	52	65

Since it is proposed that some activities at the school would commence at 6.00am, it is also necessary to determine the RBL during the 6.00am-7.00am shoulder period. This is shown in Table 2-4.

Table 2-4 RBL during Morning Shoulder Period (6am-7am)

Noise Logging Site	RBL (dBA) 6am-7am
A - Mark Street	42
B - Luke Street	43
C - Gladesville Road	40
D - Mary Street	39

Background noise levels at all locations were free of the influence of extraneous noise sources, such as plant or construction activities. Noise data measured during inclement weather was reviewed and excluded in accordance with EPA procedures.

3 CONSTRUCTION NOISE & VIBRATION ASSESSMENT

This section of the assessment of potential construction impacts with respect to noise and vibration.

3.1 Construction Noise Criteria

The following sections detail the applicable site-specific noise and vibration criteria based on the EPA *Interim Construction Noise Guideline*.

3.1.1 Construction Noise Management Levels

The EPA released the "*Interim Construction Noise Guideline*" *(ICNG)* in July 2009. The guideline provides noise goals that assist in assessing the impact of construction noise.

For residences, the basic daytime construction noise goal is that the $L_{Aeq,\ 15min}$ noise management level should not exceed the background noise by more than 10dBA. This is for standard hours: Monday to Friday 7.00am-6.00pm, and Saturday 8.00am-1.00pm. Outside the standard hours, where construction is justified, the noise management level would be background + 5dBA. Table 3-1 details the *ICNG* noise management levels.

Table 3-1 Construction Noise Management Levels at Residences using Quantitative Assessment

Time of Day	Management Level $L_{Aeq,(15min)}$	How to Apply
Recommended Standard Hours: Monday to Friday 7am to 6pm Saturday 8am to 1pm No work on Sundays or Public Holidays	Noise affected RBL + 10dBA	The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured $L_{Aeq,(15min)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to minimise noise. The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly noise affected 75dBA	The highly noise affected level represents the point above which there may be strong community reaction to noise. Where noise is above this level, the proponent should consider very carefully if there is any other feasible and reasonable way to reduce noise to below this level. If no quieter work method is feasible and reasonable, and the works proceed, the proponent should communicate with the impacted residents by clearly explaining the duration and noise level of the works, and by describing any respite periods that will be provided.

Time of Day	Management Level $L_{Aeq,(15min)}$	How to Apply
Outside recommended standard hours	Noise affected RBL + 5dB	A strong justification would typically be required for works outside the recommended standard hours. The proponent should apply all feasible and reasonable work practices to meet the noise affected level. Where all feasible and reasonable practices have been applied and noise is more than 5dB(A) above the noise affected level, the proponent should negotiate with the community. For guidance on negotiating agreements see section 7.2.2.

In addition, the following construction noise management levels $L_{Aeq,15min}$ are recommended for other receivers and areas.

- Active recreation areas (such as parks): external $L_{Aeq,15min}$ 65dBA
- Industrial premises: external $L_{Aeq,15min}$ 75dBA
- Offices, retail outlets: external $L_{Aeq,15min}$ 70dBA
- Classrooms at schools and other educational institutions: internal $L_{Aeq,15min}$ 45dBA

Based on the above, Table 3-2 presents the applicable noise management levels for construction activities at surrounding receivers that have been adopted for all applications.

Table 3-2 Site-Specific Construction Noise Management Levels

Area	Construction Noise Management Level, L_{Aeq} – dBA				Highly noise affected Noise Level, L_{Aeq} dBA
	Day	Evening	Night	Saturday	
A - Mark Street	65	54	42	65	75
B - Luke Street	57	50	42	56	75
C - Gladesville Road	56	47	43	56	75
D - Mary Street	51	47	44	52	75

3.2 Hours of Construction

The proposed standard working hours, consistent with EPA standard hours, for this project are as follows:

- Monday to Friday 7.00am to 6.00pm
- Saturdays 8.00am to 1.00pm
- Sundays and Public Holidays No work

If required, after hours permits will be sought from the relevant authorities.

3.3 Vibration Criteria

Criteria for assessment of the effects of vibration on human comfort are set out in British Standard 6472-1992. Methods and criteria in that Standard are used to set "preferred" and "maximum" vibration levels in the document "*Assessing Vibration: A Technical Guideline*" (2006) produced by the NSW EPA.

Acceptable values of human exposure to continuous vibration, such as that associated with drilling, are dependent on the time of day and the activity taking place in the occupied space (e.g. workshop, office, residence, or a vibration-critical area). Guidance on preferred values for continuous vibration is set out in Table 3-3.

Table 3-3 Criteria for Exposure to Continuous Vibration

Place	Time	Peak Particle Velocity (mm/s)	
		Preferred	Maximum
Critical working areas (e.g. hospital operating theatres precision laboratories)	Day or night time	0.14	0.28
Residences	Daytime	0.28	0.56
	Night time	0.20	0.40
Offices	Day or night time	0.56	1.1
Workshops	Day or night time	1.1	2.2

In the case of intermittent vibration, which is caused by plant, such as rock breakers, the criteria are expressed as a Vibration Dose Value (VDV) and are presented in Table 3-4.

Table 3-4 Acceptable Vibration Dose Values for Intermittent Vibration ($m/s^{1.75}$)

Location	Daytime		Night Time	
	Preferred Value	Maximum Value	Preferred Value	Maximum Value
Critical areas	0.10	0.20	0.10	0.20
Residences	0.20	0.40	0.13	0.26
Offices, schools, educational institutions, and places of worship	0.40	0.80	0.40	0.80
Workshops	0.80	1.60	0.80	1.60

Calculation of VDV requires knowledge of the number of events, and their duration in the relevant time period.

3.3.1 Building Damage

In terms of the most recent relevant vibration damage objectives, Australian Standard AS 2187: Part 2-2006 *"Explosives – Storage and Use – Part 2: Use of Explosives"* recommends the frequency dependent guideline values and assessment methods given in BS 7385 Part 2-1993 *"Evaluation and measurement for vibration in buildings Part 2"*, as they "are applicable to Australian conditions".

The British Standard sets guide values for building vibration based on the lowest vibration levels above which damage has been credibly demonstrated. These levels are judged to give a minimum risk of vibration-induced damage, where minimal risk for a named effect is usually taken as a 95% probability of no effect.

The recommended limits (guide values) from BS7385 for transient vibration to ensure minimal risk of cosmetic damage to residential and industrial buildings are presented numerically in Table 3-5.

Table 3-5 Transient Vibration Guide Values – Minimal Risk of Cosmetic Damage

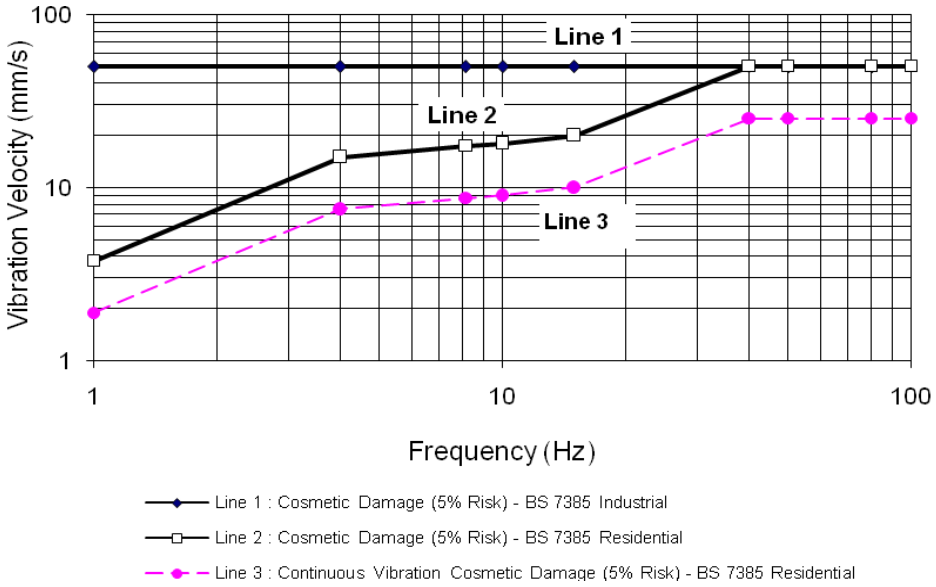
Type of Building	Peak Component Particle Velocity in Frequency Range of Predominant Pulse	
	4 Hz to 15 Hz	15 Hz and above
Reinforced or framed structures Industrial and heavy commercial buildings	50mm/s at 4 Hz and above	N/A
Un-reinforced or light framed structures Residential or light commercial type buildings	15mm/s at 4 Hz increasing to 20mm/s at 15 Hz	20mm/s at 15 Hz increasing to 50mm/s at 40 Hz and above

The Standard states that the guide values in Table 3-5 relate predominantly to transient vibration which does not give rise to resonant responses in structures, and to low-rise buildings.

Note that rock breaking / hammering and sheet piling activities are considered to have the potential to cause dynamic loading in some structures (e.g. residences) and it may therefore be appropriate to reduce the transient values by 50%.

The British Standard goes on to state that "*Some data suggests that the probability of damage tends towards zero at 12.5 mm/s peak component particle velocity*". In addition, a building of historical value should not (unless it is structurally unsound) be assumed to be more sensitive.

Figure 3-1 Graph of Transient Vibration Guide Values for Cosmetic Damage



In addition to the British Standard, for the case of nearby heritage buildings, guidance for structural damage is derived from the German Standard DIN 4150 -3 *"Structural Vibration Part 3 – Effects of Vibration on Structures"*. The following Table 3-6 details these recommendations for heritage buildings.

Table 3-6 DIN 4150 recommend PPV vibration level for Heritage Buildings

Guideline Values for Velocity – mm/s		
1 to 10 Hz	10 to 15 Hz	40 to 50 Hz
3	3 to 8	8-10

3.4 Construction Equipment & Noise Source Levels

Sound Power Levels (SWLs) for typical construction plant are identified in Table 3-7. These SWLs have been measured at other similar construction sites. The table gives both Sound Power Level and Sound Pressure Levels (SPL) at 7m for the equipment. Sound Power Level is independent of measurement position.

Table 3-7 Typical Construction Plant Sound Levels – dBA

Plant	Sound Power Level	Sound Pressure Level at 7m
Concrete Truck	109	84
Angle Grinder	109	84
Concrete Pump – 120 mm diameter / 50 bar	112	87
Concrete Saw	116	91
Mobile Crane	98	73
Dump Truck	108	83
Compressor	100	75
Bobcat	103	78
Hand Tools	90	65
Excavator	108	83
Crawler Cranes	98	73
Tower Crane	104	79
Front End Loader	112	87
Excavator	107	82
Hammer Hydraulic	122	97
Bored Pile Rig	112	87

3.5 Construction Noise Predictions

Assessment of possible construction noise at surrounding receivers has been undertaken for the proposed construction works.

Site-related noise emissions were modeled with the "Cadna A" noise prediction program, using the ISO 9613 noise prediction algorithms. Factors that are addressed in the noise modeling are:

- equipment sound level emissions and location;
- screening effects from buildings;
- receiver locations;
- ground topography;
- noise attenuation due to geometric spreading;
- ground absorption; and
- atmospheric absorption.

Construction Noise Modelling has been conducted for a number of construction scenarios for the Physical Education and Sports Precinct Project (PESPP) with plant located across the construction site. The four works scenarios considered are summarised in Table 3-8.

Table 3-8 Construction Scenarios for Sports Hall Construction Works

Scenario	Description	Works
A	Demolition	Demolition of the existing buildings. Equipment includes an excavator with rock-breaker and shears, trucks and a Concrete Crushing and Screening Plant.
B	Demolition / Bulk Excavation	Bulk Excavation in rock – excavation using rock saw, ripping using excavator mounted claws. Bulk Excavation other than rock (OTR) – mainly using excavators used to breakdown large rock elements. Truck Movements – loaded into trucks sent off site.
C	Building Construction	This scenario includes concreting and lifting. 1 concrete pump, 2 forklifts, 1 compressor, 1 crane, a boom truck and tower crane are assumed to operate in 15 minutes. Also concrete trucks and normal delivery trucks assumed to be two movements in 15 minutes.
D	Facade / Fitout	In the event that the construction of the facade occurs in isolation. Forklift, truck, tower crane and power tools assumed. Two truck movements in 15 minutes assumed.

In the case of the temporary Healey Gym the following construction scenarios, as detailed in Table 3-9 as follows:

Table 3-9 Construction Scenarios for Healy Gym Construction Works

Scenario	Description	Works
A	Building Construction	This scenario includes concreting and lifting. 1 Excavator, 1 concrete pump, 2 forklifts, 1 compressor, 1 crane, a boom truck are assumed to operate in 15 min and utes. Also concrete trucks and normal delivery trucks assumed to be two movements in 15 minutes.
B	Facade / Fitout	In the event that the construction of the facade occurs in isolation. Forklift, truck, tower crane and power tools assumed. Two truck movements in 15 minutes assumed.

The construction noise modelling assumes a "typical worst-case" scenario whereby all plant, is running continuously. As such, the modelling represents likely noise levels that would occur during intensive periods of construction. Therefore, the presented noise levels can be considered in the upper range of noise levels that can be expected at surrounding receivers when the various

construction scenarios occur.

Once noise sources have been applied to the model, the resultant noise levels at identified surrounding receivers are predicted. These results are then compared with established site-specific noise criteria.

3.6 Sports Hall Construction Noise

The results of construction noise modelling for each scenario are presented in Table 3-10.

Table 3-10 Predicted Sports Hall Construction Noise Levels at Residences – $L_{Aeq(15\ min)}$ – dBA

Residential Receiver	Predicted Noise Level	Weekday NML	Exceedance	Sat NML	Exceedance
Scenario A - Demolition					
A - Mark Street	40	65	0	65	0
B - Luke Street	66	57	9	56	10
C - Gladesville Road	62	56	6	56	6
D - Mary Street	40	51	0	52	0
Scenario B– Bulk Excavation (with Rock)					
A - Mark Street	31	65	0	65	0
B - Luke Street	65	57	8	56	9
C - Gladesville Road	60	56	4	56	4
D - Mary Street	31	51	0	52	0
***Scenario C* – Building Construction**					
A - Mark Street	30	65	0	65	0
B - Luke Street	61	57	4	56	5
C - Gladesville Road	55	56	0	56	0
D - Mary Street	30	51	0	52	0
Scenario D – Facade / Fitout					
A - Mark Street	24	65	0	65	0
B - Luke Street	43	57	0	56	0
C - Gladesville Road	44	56	0	56	0
D - Mary Street	25	51	0	52	0

A review of results of construction noise indicates that these levels may be above construction noise management levels at nearby residences particularly in Areas B and C (which are the residences closest to the construction site), during excavation and construction stages.

3.7 Healy Gym Construction Noise

The results of construction noise modelling for each scenario are presented in Table 3-11

Table 3-9 Predicted Healy Gym Construction Noise Levels at Residence – $L_{Aeq(15\ min)}$ – dBA

Residential Receiver	Predicted Noise Level	Weekday NML	Exceedance	Sat NML	Exceedance
***Scenario A* – Building Construction**					
A - Mark Street	59	65	0	65	0
B - Luke Street	30	57	0	56	0
C - Gladesville Road	39	56	0	56	0
D - Mary Street	64	51	13	52	12
Scenario B – Facade / Fitout					
A - Mark Street	59	65	0	65	0
B - Luke Street	17	57	0	56	0
C - Gladesville Road	20	56	0	56	0
D - Mary Street	53	51	2	52	1

A review of results of construction noise indicates that these levels will comply with the above construction noise management levels at nearby residences on weekdays with the exception of residences on Mary Street where significant exceedances are predicted during building construction. During the facade works lower more manageable marginal exceedances are predicted at Mary Street Residences.

It is noted that these levels assume that a 2.4 metre barrier is installed between the construction site and Mary Street residences

3.8 Discussion of Results

3.8.1 Sports Hall

Exceedances of noise management levels of up to 10 dBA at residences to the east (Luke Street) of the site may be expected during demolition / excavation period when major equipment is located on site. This magnitude of exceedance is consistent with similar sites where residences overlook development sites.

During the structure and fit out stages the magnitude of exceedance will reduce due to the nature of construction activities.

Based on these findings the adoption of reasonable and feasible noise management and mitigation will be required. These measures should be fully explored in detail when a contractor, with defined construction techniques, has been engaged on the project. However, "in-principle" mitigation measures are detailed in the following sections.

3.8.2 Healy Gym

Compliance with Noise Management Levels can be expected during normal weekday construction hours with the exception of residences on Mary Street. Exceedance of up to 13 dBA are predicted at these residences, therefore a site barrier in the order of 2.4 metres located between the Gym site and Mary Street residences is recommended to be installed prior to commencement of works on this site.

3.9 Construction Vibration Assessment

Operation of rock breakers and the like generate ground vibration that has the potential to transmit to nearby buildings. Table 3-10 sets out the typical ground vibration levels at various distances for safe working distances.

Table 3-10 Recommended Safe Working Distances for Vibration-Intensive Plant

Item	Description	Safe Working Distance	
		Cosmetic Damage	Human Response
Small Hydraulic Hammer	(300 kg – 5 to 12t excavator)	2m	7m
Medium Hydraulic Hammer	(900 kg – 12 to 18t excavator)	7m	23m
Large Hydraulic Hammer	(1600 kg – 18 to 34t excavator)	22m	73m
Vibratory Pile Driver	Sheet piles	2m to 20m	20m
Pile Boring	≤ 800 mm	2m (nominal)	N/A
Jackhammer	Hand held	1m (nominal)	Avoid contact with structure

· Construction Noise Strategy, 2012, Transportation Construction Authority.

The highest vibration levels will occur when construction equipment is located on the eastern side of the site near residences on the eastern boundary.

A review of the site plant and surrounding receivers indicates that the minimum distance between the vibration generating activities and surrounding buildings will be in the order of 20 m. Therefore, the use of large rock breakers should be permissible however these should be reviewed on site when near the eastern boundary of the site. If alternative methods such as ripping are used that no action is required.

It is recommended that trial testing of vibration levels be conducted where identified equipment having the potential to exceed the human comfort criteria is proposed.

Structural damage vibration criteria in residential buildings are much higher than human comfort criteria and predicted vibration levels are within these criteria under most circumstances. The exception, should heavy rock breakers be used, is for areas near residences on Luke Street. Therefore, the uses of alternative excavation measures, such as rock saws on excavators are recommended. If hammers are required, test vibration monitoring is recommended to ensure that vibration levels at residences are not excessive.

3.10 Construction Noise & Vibration Mitigation Measures

Without mitigation, noise levels from construction activities have been predicted to exceed the noise management levels nominated in the guidelines at some surrounding receivers. Therefore, noise control measures are recommended to ensure that noise is reduced where feasible.

The following project-specific mitigation measures are recommended:

- Installation of a 2.4m plywood hoarding around the construction site;
- In the case of the Healy Gym the barrier should be installed between the site and residences to the West on Mary Street;
- Selection of quietest feasible construction equipment;
- Use of rock saws and ripping, where feasible, in preference to rock breakers;
- Localised treatment, such as barriers, shrouds, and the like around fixed plant, such as pumps, generators, and concrete pumps; and
- Trial testing of vibration levels is conducted where equipment is identified as having the potential to exceed the human comfort criteria.

In addition, the following measures should be included in a Noise & Vibration Management Plan.

- *Plant Noise Audit* – Noise emission levels of all critical items of mobile plant and equipment should be checked for compliance with noise limits appropriate to those items prior to the equipment going into regular service. To this end, testing should be established with the contractor.
- *Operator Instruction* – Operators should be trained in order to raise their awareness of potential noise problems and to increase their use of techniques to minimise noise emission.
- *Equipment Selection* – All fixed plant at the work sites should be appropriately selected, and where necessary, fitted with silencers, acoustical enclosures, and other noise attenuation measures in order to ensure that the total noise emission from each work site complies with EPA guidelines.
- *Site Noise Planning* – Where practical, the layout and positioning of noise-producing plant and activities on each work site should be optimised to minimise noise emission levels.

The adoption of the above measures is aimed at working towards achieving the noise management levels established at surrounding receivers.

3.11 Community Liaison & General Approaches to Mitigation

An effective community relations programme should be put in place to keep the community that has been identified as being potentially affected appraised of progress of the works, and to forewarn potentially affected groups (e.g. by letterbox drop, meetings with surrounding owners / tenants, etc.) of any anticipated changes in noise and vibration emissions prior to critical stages of the works, and to explain complaint procedures and response mechanisms. This programme should include a *Community and Stakeholder Engagement Strategy* developed specifically for the Project which will be managed by the Principal Contractor.

Close liaison should be maintained between the communities overlooking work sites and the parties associated with the construction works to provide effective feedback regarding perceived emissions. In this manner, equipment selections and work activities can be coordinated where necessary to minimise disturbance to neighbouring communities, and to ensure prompt response to complaints, should they occur.

3.12 Noise & Vibration Management Plan

A construction Noise & Vibration Management Plan for the site is recommended which should be prepared by the successful contractor. The plan should reference the findings of this assessment. Areas that should be addressed in plan include:

- noise and vibration mitigation measures;
- noise and vibration monitoring;
- response to complaints;
- responsibilities;
- monitoring of noise emissions from plant items;
- reporting and record keeping;
- non-compliance and corrective action; and
- community consultation and complaint handling.

3.13 Management of Construction Noise and Vibration to the School

Noise and Vibration Levels from construction are likely to be similar to the levels predicted for Luke and Mary Street receivers for the Sports Centre and Healy Gym respectively. Accordingly measures that will be adopted to manage the school are detailed in the "Preliminary Construction Management Plan" dated 6 August 2018.

Section 4 "College Operations During Construction" details how the school will be managed during construction of these facilities. Any measures that need to be adopted to manage noise and vibration impacts at the school will be managed between the school and the successful contractor and could include:

- Closing of classroom windows
- Relocating classes during busy construction periods.
- Scheduling works during school holidays

4 OPERATIONAL NOISE & VIBRATION

Operational noise from the proposed facilities will be generated by activities within the new buildings and mechanical plant located predominantly in the basement or on the roof plantroom.

4.1 Operational Noise Criteria

The NSW NPfI provides a framework and process for deriving noise criteria for consents and licences that enable the EPA and others to regulate premises that are scheduled under the Protection of the Environment Operations Act 1997. Whilst specifically aimed at assessment and control of noise from industrial premises regulated by the EPA, the policy is also appropriate for use by the DP&E when assessing major development proposals. Therefore whilst there is no industrial noise associated the proposal the refence to "industrial" noise is included for consistency with the Policy.

Having been designed for large industrial and agricultural sources, the monitoring and assessment procedures may not be applicable to the smaller developments and noise sources regulated by local government. It is recognised however, that Councils may find the policy to be of assistance in noise assessment and land-use planning.

The NPfI documents a procedure for assessment and management of industrial noise which involves the following steps:

- Determining the project noise trigger levels for a development. The project noise trigger level is a benchmark level above which noise management measured are required to be considered. They are derived by considering short-term intrusiveness due to changes in the existing noise environment (applicable to residential receivers only) and maintaining noise level amenity for particular land uses for residents and other sensitive receivers;
- Predicting or measuring noise produced by the development (having regard to any associated annoying characteristics and prevailing meteorological effects);
- Comparing the predicted or measured noise level with the project noise trigger level and assessing impacts and the need for noise mitigation and management measures;
- Considering any residual noise impacts following the application of feasible and reasonable noise mitigation measures;
- Setting statutory compliance levels that reflect the best achievable and agreed noise limits for development; and
- Monitoring and reporting environmental noise levels from the development.

The project noise trigger level represents the level that, if exceeded, may indicate a potential noise impact upon a community. It is a benchmark or objective and is not intended for use as a mandatory requirement.

Intrusiveness Noise Level

For assessing intrusiveness, the background noise level (L_{A90}) is measured and the Rating Background Level (RBL) determined. The intrusiveness of an industrial noise source may generally be considered acceptable if the equivalent continuous noise level (L_{Aeq}) of the source

(measured over a 15-minute period) does not exceed the background noise level (RBL) by more than 5dBA.

The intrusiveness criteria for each surrounding residential receiver area are presented in Table 4-1. This was calculated by adding 5dB to the RBL of the nearest long-term monitoring.

Table 4-1 Intrusive Noise Criteria

Location	Intrusiveness Criterion $L_{Aeq,15min}$ (dBA)			
	Daytime 7am-6pm	Evening 6pm-10pm	Night Time 10pm-7am	Morning Shoulder 6am-7am
A - Mark Street	60	54	42	47
B - Luke Street	52	50	42	48
C - Gladesville Road	51	47	43	45
D - Mary Street	46	42	39	44

Amenity Noise Level

The amenity assessment is based on noise criteria specific to land use and associated activities. The criteria relate only to industrial-type noise (i.e. mechanical plant and equipment for this project) and do not include transportation noise (when on public transport corridors), noise from motor sport, construction noise, community noise, blasting, shooting ranges, occupational workplace noise, wind farms, amplified music/patron noise.

The amenity noise level aims to limit continuing increases in noise levels which may occur if the intrusiveness level alone is applied to successive development within an area.

The recommended amenity noise level represents the objective for total industrial noise at a receiver location. The project amenity noise level represents the objective for noise from a single industrial development at a receiver location.

To prevent increases in industrial noise due to the cumulative effect of several developments, the project amenity noise level for each new source of industrial noise is set at 5dBA below the recommended amenity nose level.

The following exceptions apply to determining the project amenity noise level:

- For high-traffic areas the amenity criterion for industrial noise becomes the $L_{Aeq,period(traffic)}$ minus 15dBA.
- In proposed developments in major industrial clusters.
- If the resulting project amenity noise level is 10dB or lower than the existing industrial noise level, the project amenity noise level can be set at 10dB below existing industrial noise levels if it can be demonstrated that existing industrial noise levels are unlikely to reduce over time.
- Where cumulative industrial noise is not a consideration because no other industries are

present in, or likely to be introduced into the area, the relevant amenity noise level is assigned as the project amenity noise level for the development.

Amenity noise levels are not used directly as regulatory limits. They are used in combination with the project intrusiveness noise level to assess the potential impact of noise, assess mitigation options and determine achievable noise requirements.

An extract from the NSW NPfI that relates to the amenity noise levels for surrounding receivers is given in **Table 4-2**.

Table 4-2 Amenity Noise Levels

Receiver	Noise Amenity Area	Time of Day[1]	Recommended Amenity Noise Level L_{Aeq} period (dBA)	Recommended Amenity Noise Level[2] $L_{Aeq\ (15\ minutes)}$ (dBA)
Residence	Suburban	Day	55	58
		Evening	45	48
		Night	40	43

Note 1: Daytime 7.00am–6.00pm; Evening 6.00pm–10.00pm; Night 10.00pm-7.00am.
Note 2: Project amenity noise level (ANL) is suburban ANL plus 3dBA to convert from a period level to a 15-minute level.

Maximum Noise Level Events

Noise sources of short duration and high level that may cause disturbance to sleep if occurring during the night time need to be considered.

The approach recommended by the NPfI is to apply the following initial screening noise levels:

- $L_{Aeq,15min}$ 40dBA or the prevailing RBL + 5dB, whichever is the greater; and/or
- L_{AFmax} 52dBA or the prevailing RBL + 15dB, whichever is the greater.

The sleep disturbance screening noise levels apply outside bedroom windows during the night time period.

Where the screening noise levels cannot be met, a detailed maximum noise level event assessment should be undertaken. It may also be appropriate to consider other guidelines including the *NSW Road Noise Policy* (RNP) which contains additional guidance relating to potential sleep disturbance impacts.

A review of research on sleep disturbance in the RNP indicates that in some circumstances, higher noise levels may occur without significant sleep disturbance. Based on currently available research results, the *RNP* concludes that:

- "Maximum internal noise levels below 50 dBA to 55 dBA are unlikely to cause awakening reactions."
- "One or two noise events per night, with maximum internal noise levels of 65 dBA to 70 dBA, are not likely to affect health and wellbeing significantly."

Project Noise Trigger Levels

The amenity and intrusiveness noise levels and resulting project trigger levels applicable to sources of continuous operational noise associated with the project (i.e. mechanical plant and equipment) are shown in Table 4-3.

Table 4-3 Project Noise Trigger Levels

Location	$L_{Aeq,15min}$ (dBA)			
	Daytime 7am-6pm	Evening 6pm-10pm	Night Time 10pm-7am	Morning Shoulder 6am-7am
A - Mark Street	58	48	42	47
B - Luke Street	52	48	42	48
C - Gladesville Road	51	47	43	45
D - Mary Street	46	42	39	44

Note 1: Intrusiveness noise level is $L_{Aeq,15min} \leq$ RBL +5. Minumum background is 35 dBA in the day period whilst the minimum background in the evening and night is 30 dBA.

For maximum noise level events (night-time period only) the following screening noise levels apply:

Table 4-4 Sleep Disturbance Trigger Levels

	$L_{Aeq,15min}$	L_{AFmax}
A - Mark Street	47	57
B - Luke Street	48	58
C - Gladesville Road	45	55
D - Mary Street	44	54

4.2 Operational Mechanical Noise Assessment

The major mechanical noise sources associated with the development will be carpark exhaust fans and plant that will be located on the roof of the new buildings. These will consist of roof mounted condensers or cooling towers.

Noise from most major plant, such fan coil units and pumps will be contained by the building structure. Therefore, it is the roof condensers and air handling units that may require noise mitigation to achieve the established site-specific noise criteria at surrounding receivers.

Detailed specifications of mechanical services equipment that would otherwise allow an acoustic assessment of noise emissions from the site are not available at this stage of the project as selection and design is conducted after project approval.

In line with the approvals for other developments, detailed assessment of operational noise emission should form a conditional requirement of the development, to be satisfied to the PCA, prior to the issue of the construction certificate.

To mitigate noise from mechanical plant, it is likely the some or all of the following noise control

measures may need to be adopted at the design stage to meet noise objectives:

- Silencers on carpark and other fans,
- Acoustic louvres,
- Noise barriers, and;
- Variable speed controls on condenser fans.

The mechanical plant will be designed to meet the criteria presented in Table 4-3 at the identified nearby receivers.

A schedule of proposed activities to be conducted in the Sports Hall and Healy Gym are presented in Appendix B.

4.3 Sporting Activities & Hall Events

In terms of operational noise, the highest noise-generating area will be the level basketball courts. Maximum reverberant sound pressure levels of around 95dBA can be expected to be reached during large scale competitions (including whistles, PA, and hooter). An L_{Aeq} over 15 minutes of around 83dBA (reverberant sound pressure level) is typical during college basketball games.

It is noted that the design of the sports hall consist of high level glass louvres and roof ventilator along with a metal roof and composite wall panels. A preliminary assessment has been conducted based on these constructions and typically proposed events being normal daytime sports, major events events involving amplified music or a sound/announcement system which may occur in the evening and potential amplified music that may be associated with school dances that are proposed to operate up to midnight.

Table 4-5 presents likely noise levels at Luke Street residences, being the most potentially affected residences. The assumptions adopted are that walls and ceilings have an acoustic rating in the order of Rw45 and the louvres are at least 10.38 mm laminated glass.

Table 4-5 Predicted Operational Noise – Sports Hall – $L_{Aeq(15\ minutes)}$ dBA – Luke Street

Activity	Internal Noise Level	Ventilation Louvres and Roof Vents		Noise Criteria
		Open	Closed	
Normal Sports	75	51	23	52 Day
Major Events	95	72	42	48 Evening
School Dance	98	74	50	44 Early Night*

* Derived from a 10pm to Midnight RBL of 39 dBA at Luke Street.

A review of the results reveals that noise from normal school operations during day hours (which occur for the majority of the time) will meet site specific noise criteria. In the case of events involving amplified music or a sound/announcement system the louvres may need to be closed at all times and will result in noise levels at residences that are lower than currently experienced from sports activities on the existing courts.

When music events, such as school dances are proposed up until midnight the louvres will need to closed. In addition it is likely that the louvres on the eastern facade will need to be upgraded to high performance acoustic glass or double glazing, noting that these events are likley to occur infrequently between 4 - 8 times a year. (plus any community use that includes the use of amplified music or a sound/announcement system).

The louvre system will be mechanically operated and their operation will be the responsibility of college staff. It is worth noting that the air conditioning system will need to be switched to full air conditioning mode when such events occur. In such a mode louvres will be automatically closed.

As a way of interpreting the predicted noise levels of up to 50 dBA at residences one can reference the level of speech from a normal person at 1 metres distance being 68 dBA. As such it can be seen that whilst the predicted level can be audible at times it can not be considered loud. Further the predicted noise levels are external levels whereby indoor noise levels will be at least 10 dBA lower (open windows scenario).

The above measures will be refined at the detailed design stage to ensure that compliance at surrounding receivers is achieved. In addition the control of louvres and vents will need to be included in the Hall plan of management.

4.4 Healy Gym Activities

In the case of the New Healy Gym, the activities that occured in the exsiting gym are proposed in the new gym. These include weights training and PE classes with weights. These activites are not consdiered acoutsically significant whereby the noise from activities in this area will be contained by the building fabric.

5 SUMMARY OF RECOMMENDATIONS

Based on Wilkinson Murray's acoustic assessment of the project, the following findings have been determined.

5.1 Construction Noise

Noise objectives for construction have been established based on EPA guidelines. The noise management levels should be adopted as objectives to work toward in minimising any noise impact at surrounding residences.

Table 5-1 presents applicable noise management levels at residential receivers in the vicinity of the site.

Table 5-1 Site Specific Construction Noise Management Levels – Dba

Area	Construction Noise Management Level, L_{Aeq} – dBA				Highly noise affected Noise Level, L_{Aeq} dBA
	Day	Evening	Night	Saturday*	
A - Mark Street	65	54	42	65	75
B - Luke Street	57	50	42	56	75
C - Gladesville Road	56	47	43	56	75
D - Mary Street	51	47	44	52	75

* 8am to 1pm.

It has been determined that noise from construction activities during the day period will potentially exceed established construction noise management levels. Therefore, the planning and management of construction activities must consider the sensitivities of surrounding residents so as to minimise the impact of construction activities at these receivers.

The control of construction noise and vibration should be addressed in a Noise & Vibration Management Plan developed when the successful contractor has been appointed for the project.

The following project-specific mitigation measures are recommended:

- Selection of quietest feasible construction equipment;
- A 2.4m plywood hoarding around the construction site and between the Healy Gym site and western residences;
- Use of rock saws and ripping in preference to rock breakers;
- Localised treatment, such as barriers, shrouds, and the like around fixed plant, such as pumps, generators, and concrete pumps; and
- Provision of respite periods, particularly on Saturdays.

In the case of potential vibration, the following measures are recommended:

- Use rock saws in lieu of rock breaker or alternatively use smaller rock breakers in the eastern side of the site;
- Conduct trial vibration testing prior to use of rock breakers when near the eastern site boundary; and

5.2 Operational Noise

Site-specific noise criteria for the development have been established based on the lower of intrusive and amenity noise criteria.

The applicable operational noise levels at residential and commercial receivers in the vicinity of the site are presented in Table 5-2.

Table 5-2 Project Noise Trigger Levels -dBA

Location	$L_{Aeq,15min}$ (dBA)			
	Daytime 7am-6pm	Evening 6pm-10pm	Night Time 10pm-7am	Morning Shoulder 6am-7am
A - Mark Street	58	48	42	47
B - Luke Street	52	48	42	48
C - Gladesville Road	51	47	43	45
D - Mary Street	46	42	39	44

Note 1: Intrusiveness noise level is $L_{Aeq,15min} \leq$ RBL +5. Minumum background is 35 dBA in the day period whilst the minimum background in the evening and night is 30 dBA.

Mechanical plant, such as carpark exhaust fans, rooftop exhausts, and cooling towers associated with the development should be assessed at the time of detailed design and selection, having regard to nearby residential and commercial properties surrounding the development, and to future uses in the school area.

To mitigate noise from mechanical plant, silencers could be incorporated in the outlets of the exhaust fans. Silencers can be installed to the fans if required. The mechanical plant noise emission would be designed to meet the criteria present in Table 6-2 at the closest receivers.

Noise emissions from the proposed Sports Hall will achieve the site-specific assessment criteria under normal operation. During major events or late-night music events the louvres and roof vents will need to be closed. Further improved glazing may be required on the eastern façade of the Hall to ensure that acoustic amenity of nearby residences is protected.

Noise from the new Healey Gym is expected to be contained within the building facade based on the fact that no acoustically significant activities are proposed in this area.

6 CONCLUSION

A construction and operational noise and vibration assessment of St Joseph's College Physical Education and Sports Precinct Project (PESPP) has been conducted. Site-specific noise criteria that are applicable to this project have been presented.

A noise assessment has been conducted for the proposed construction activities associated with the development to determine the potential for noise and vibration impact at surrounding receivers. Exceedances of noise management levels are expected at many surrounding receivers adjacent to the main construction site.

Vibration associated with on-site construction activities has the potential to impact on residences to the east of the site should large equipment, such as rock breakers be used. Trial monitoring and selection of less vibration intensive equipment is recommended.

Accordingly, management of noise from construction activities will be required to be included in the Site Construction Environmental Management Plan.

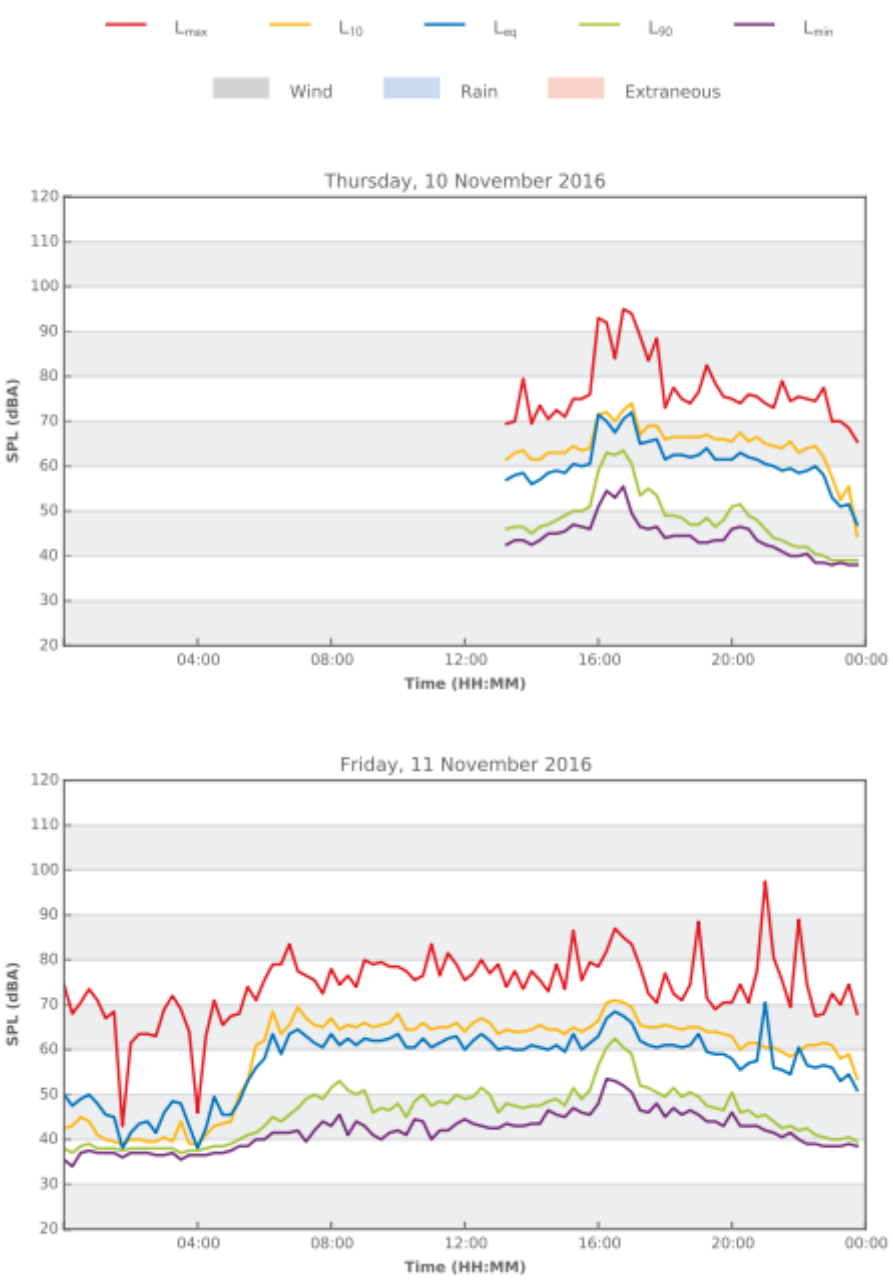
Site-specific operational noise criteria have been determined for the project based on ambient noise monitoring. A review of major plant indicates that noise levels will comply with established noise criteria during proposed operation with the inclusion of acoustic treatment. A review of all plant with respect to site specific noise criteria is required at detailed design stage.

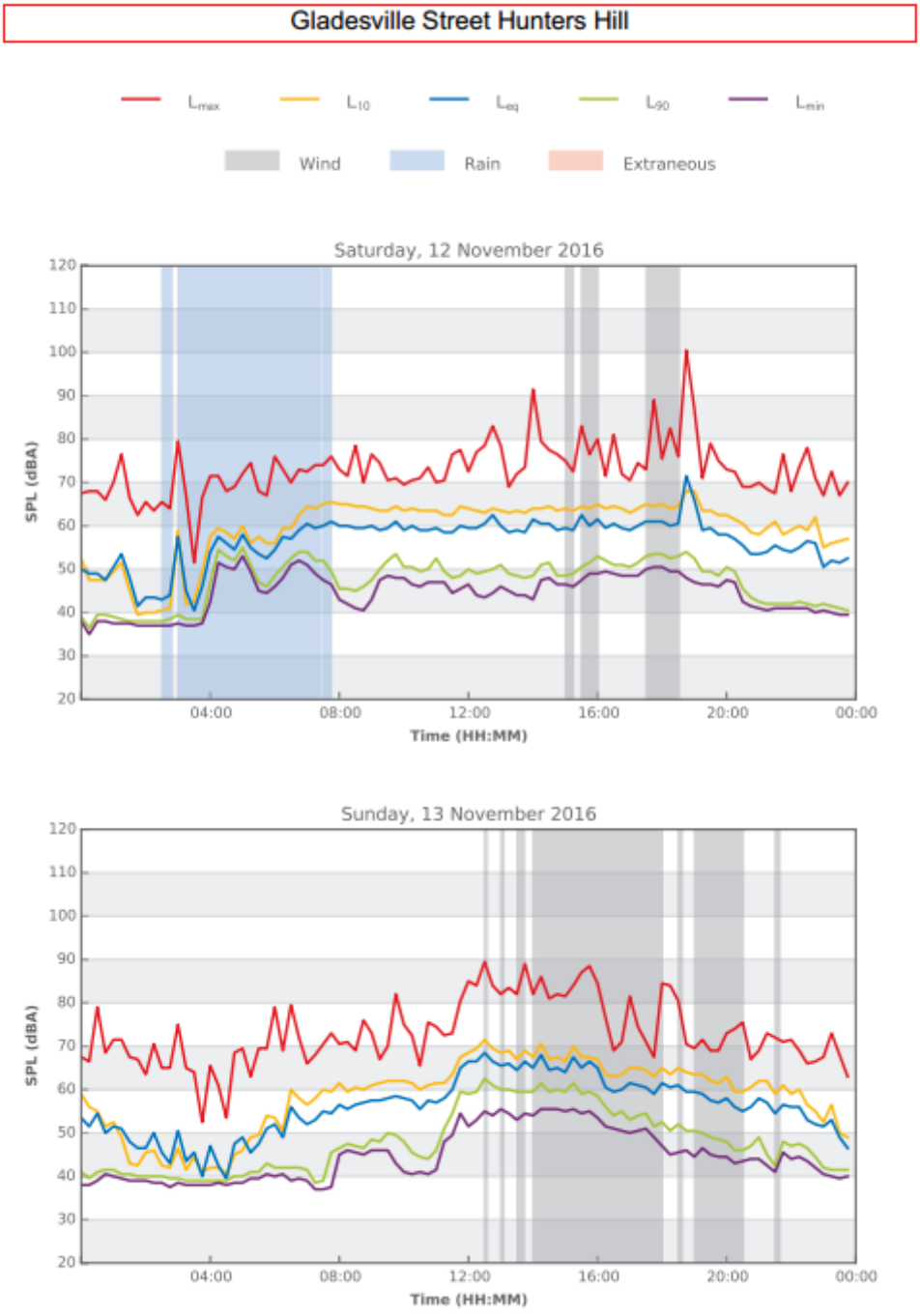
Noise emissions from the proposed revised Sports Hall will achieve the site-specific assessment criteria under normal operation. During major events or late-night music events the louvres and roof vents will need to be closed. Further improved glazing will be required on the eastern façade of the Hall to ensure that acoustic amenity of nearby residences is protected.

APPENDIX A

NOISE MEASUREMENT RESULTS

Gladesville Street Hunters Hill

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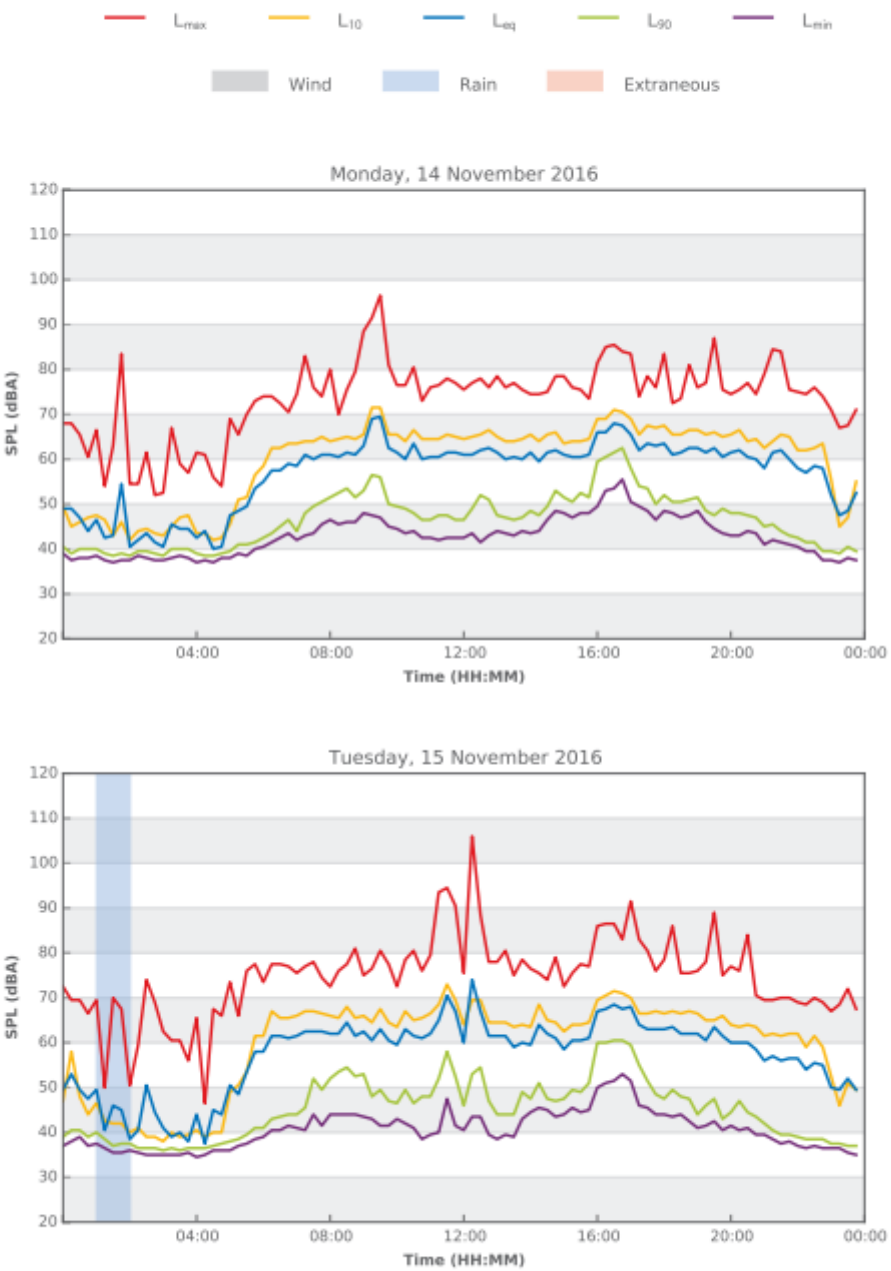
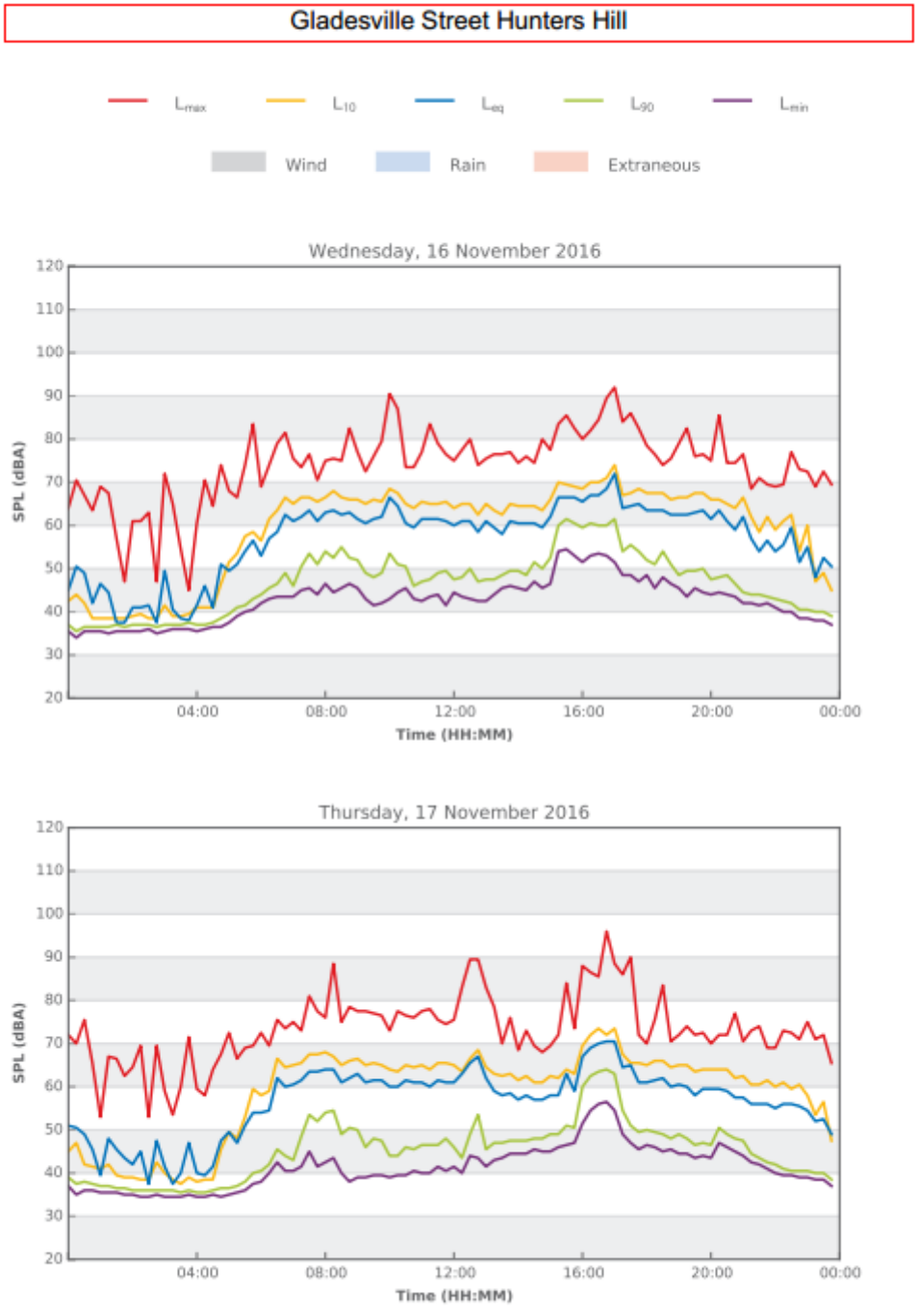
Gladesville Street Hunters Hill

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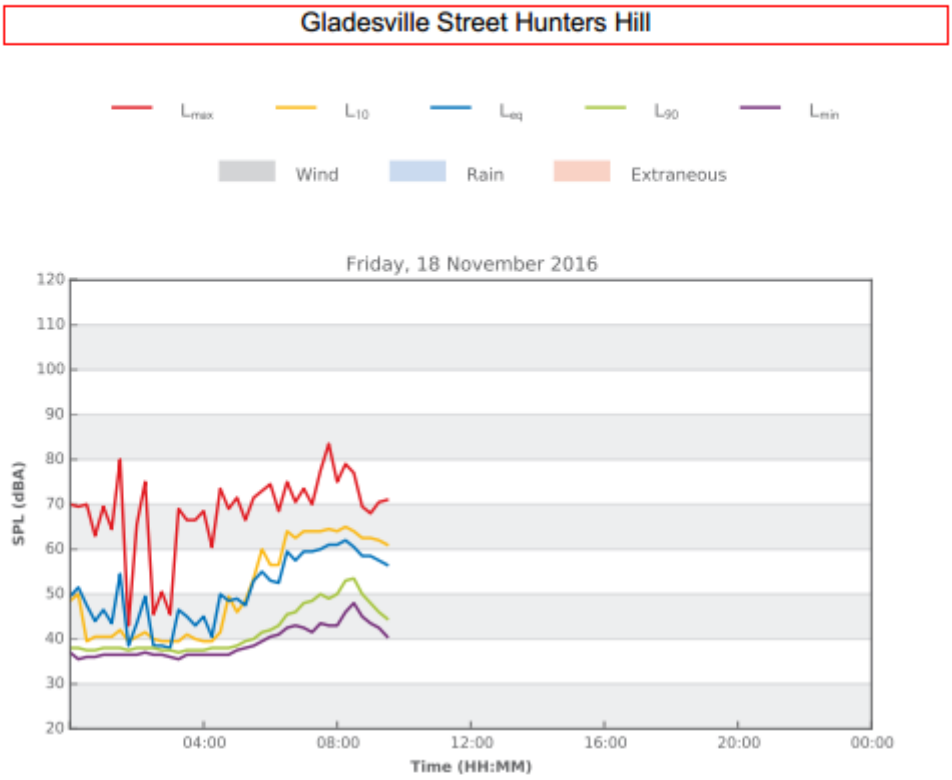
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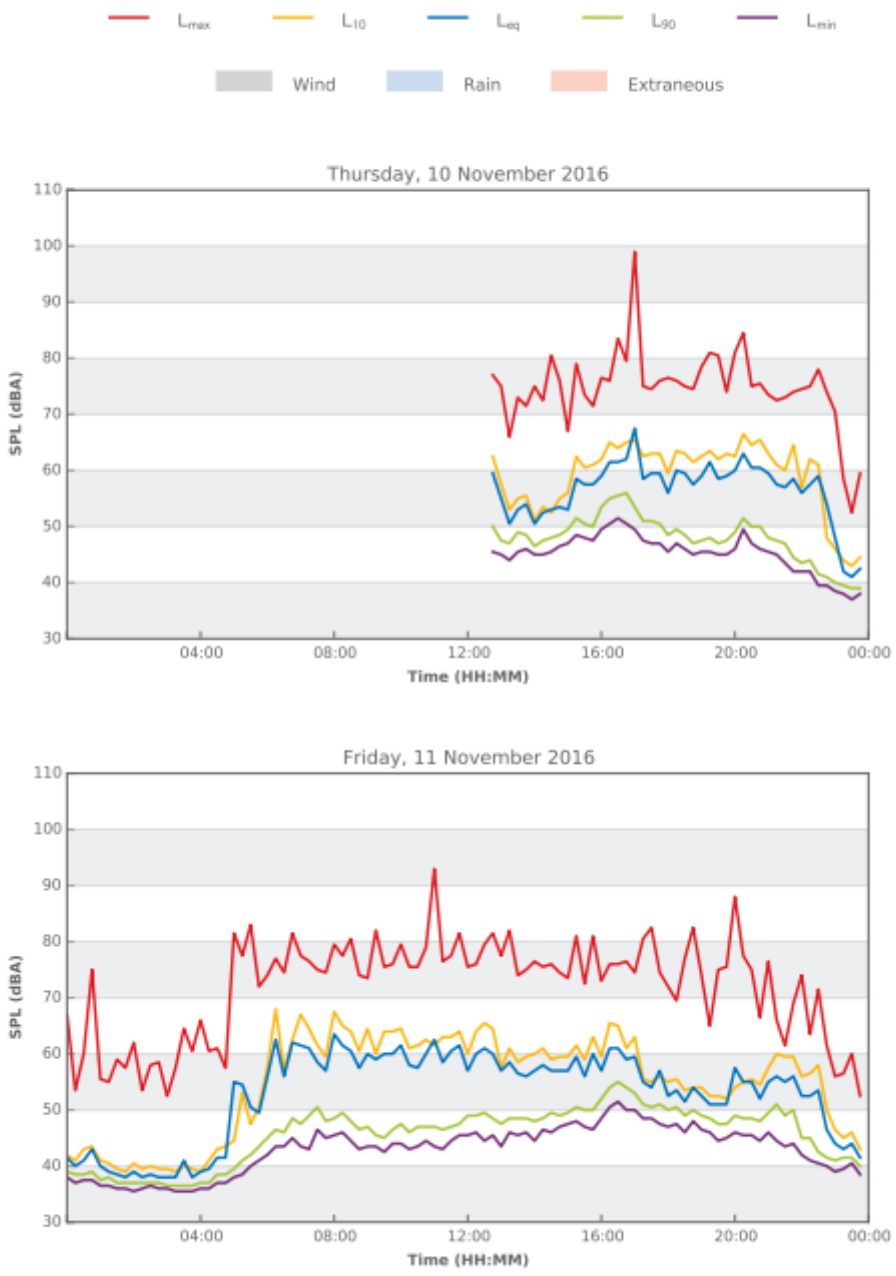


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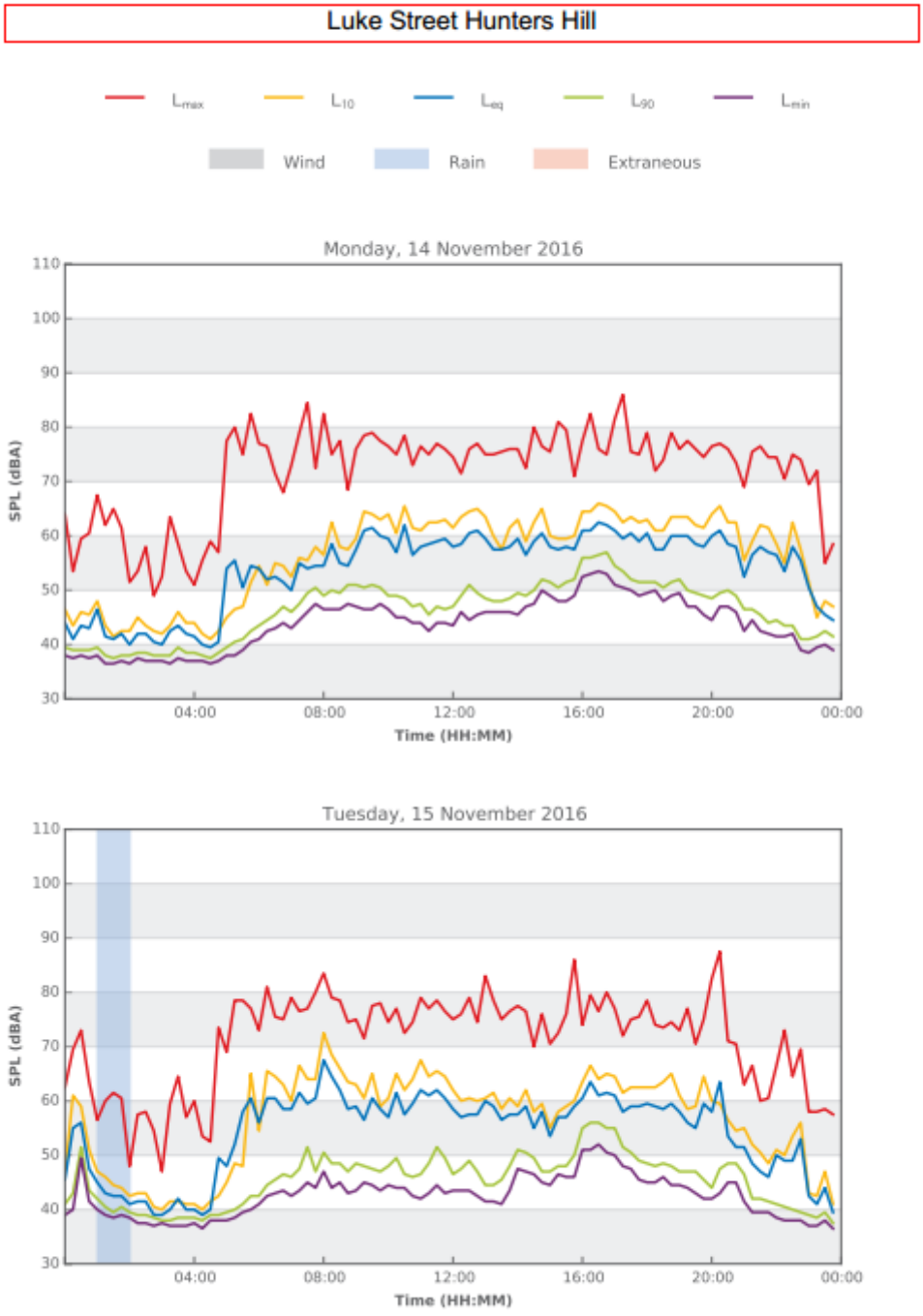
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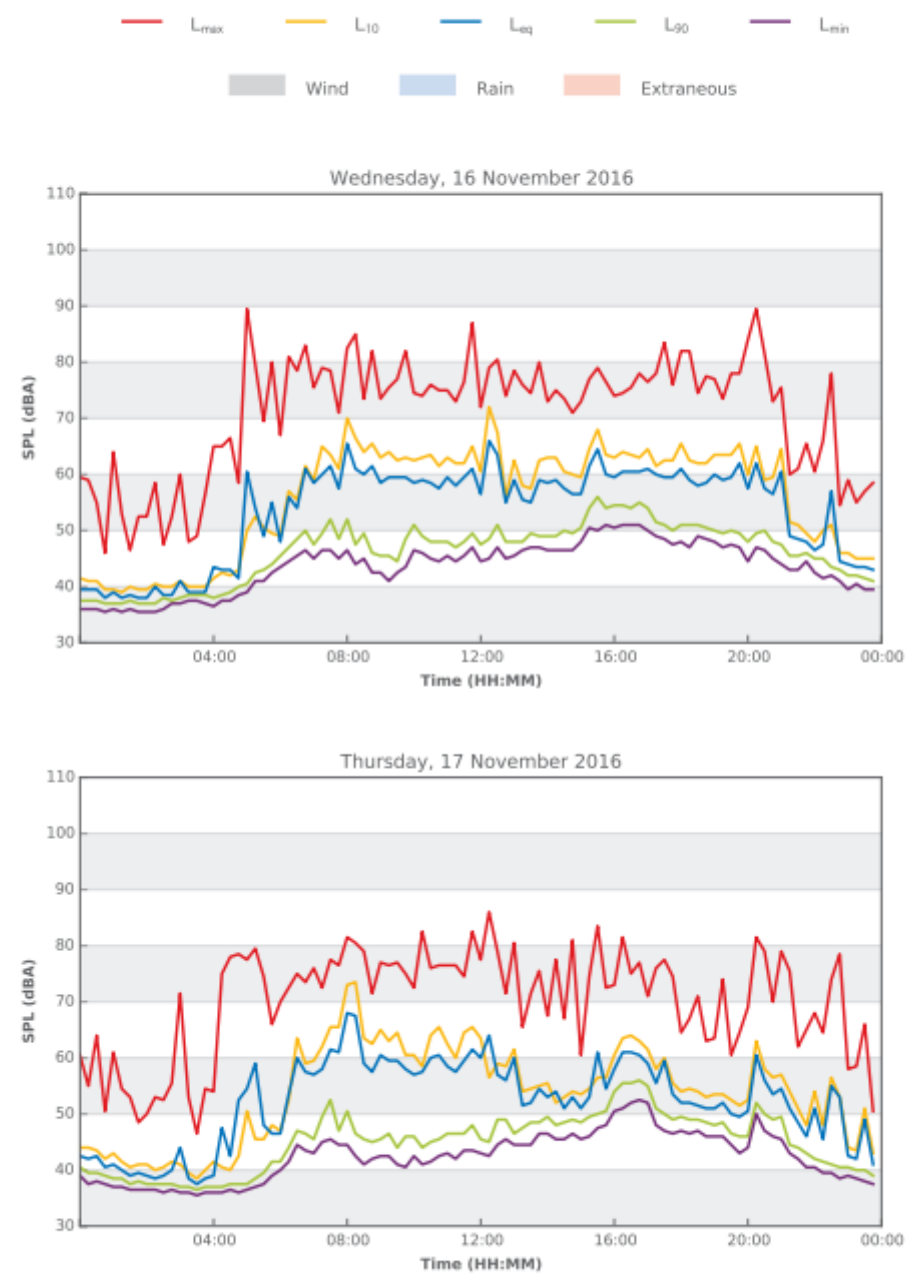
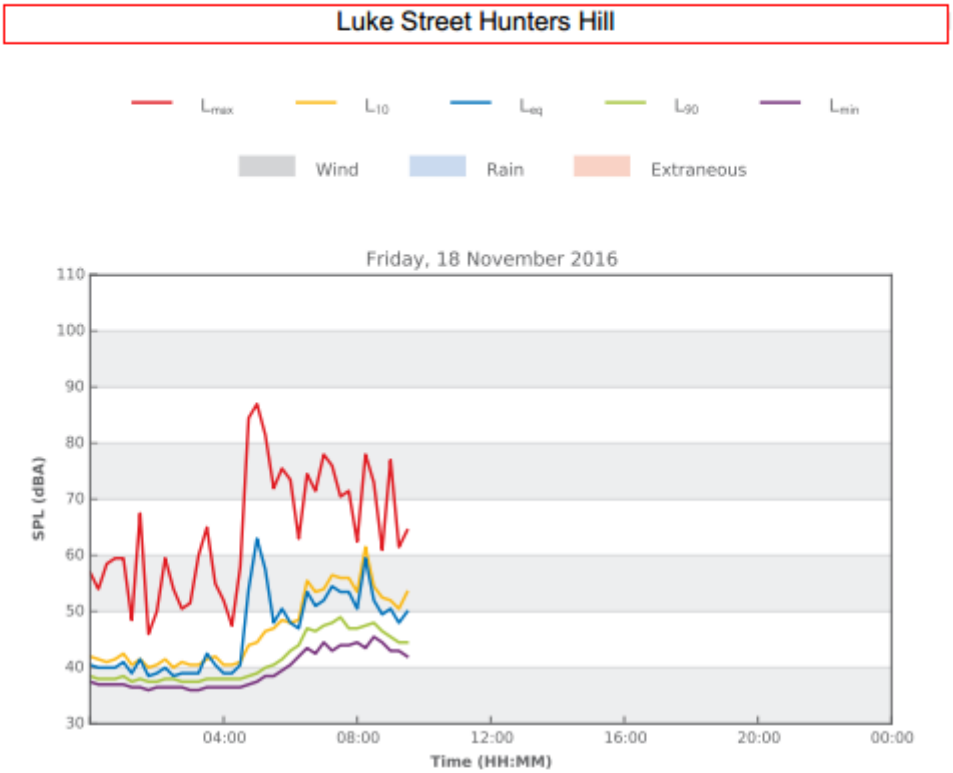
Luke Street Hunters Hill

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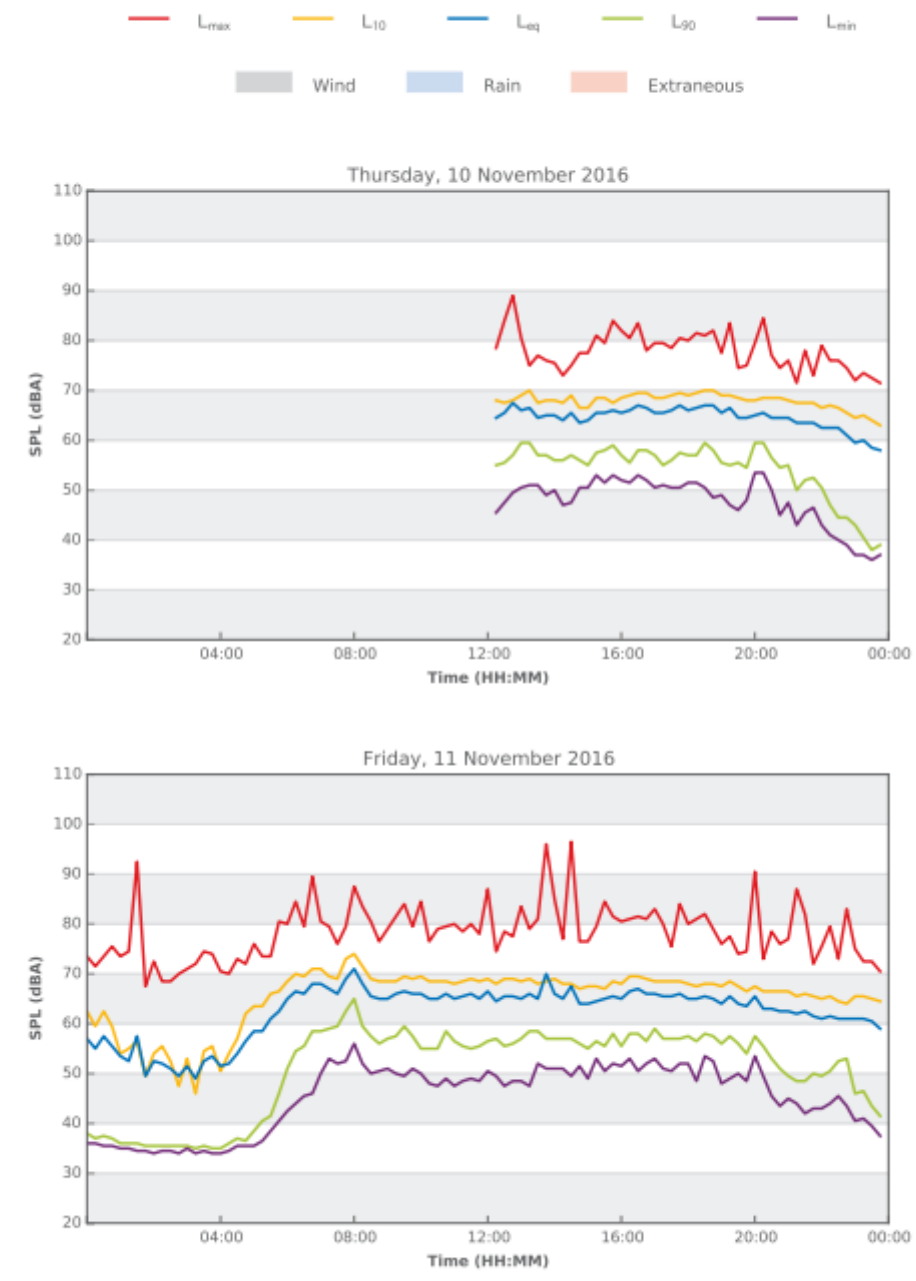
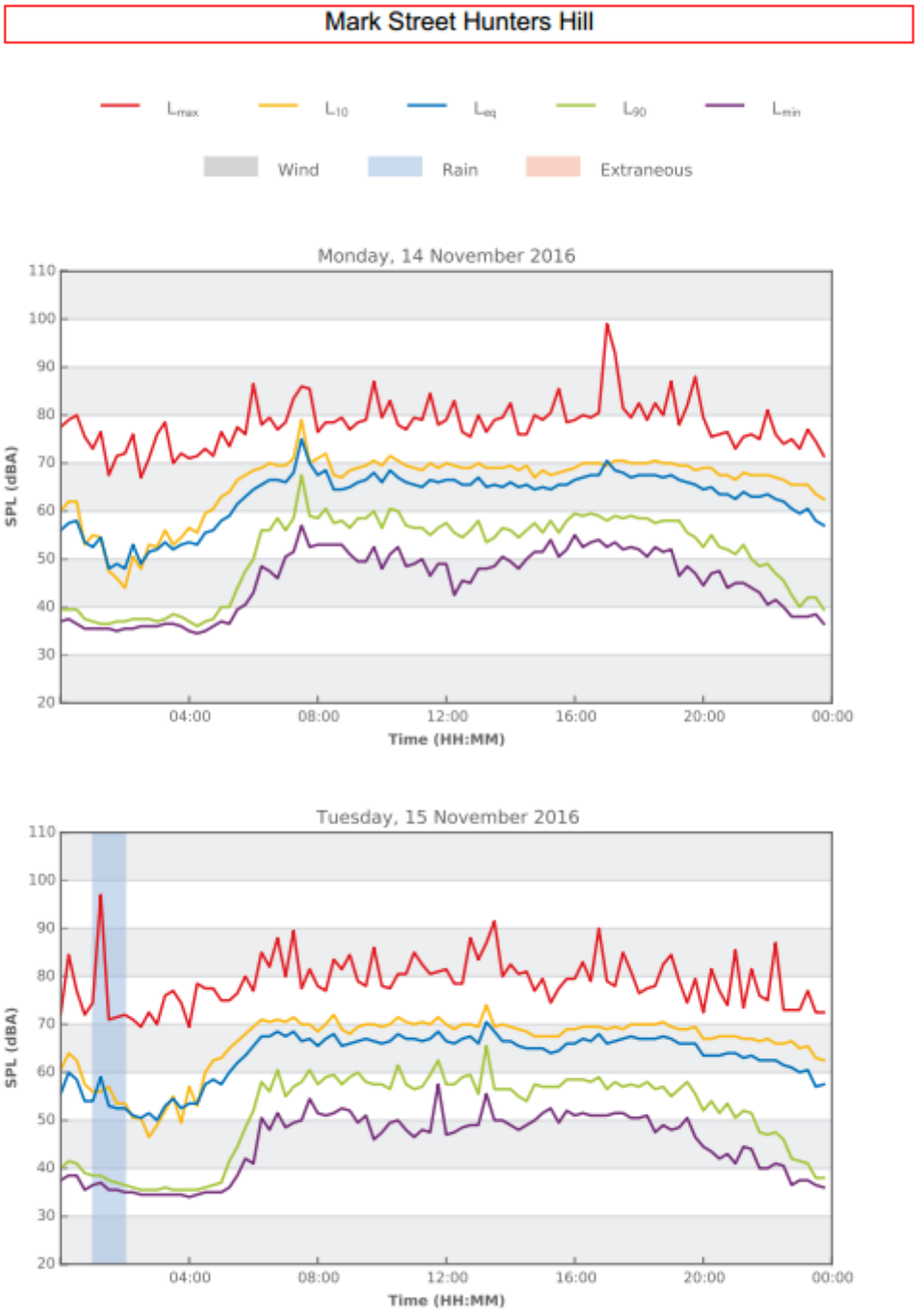


Mark Street Hunters Hill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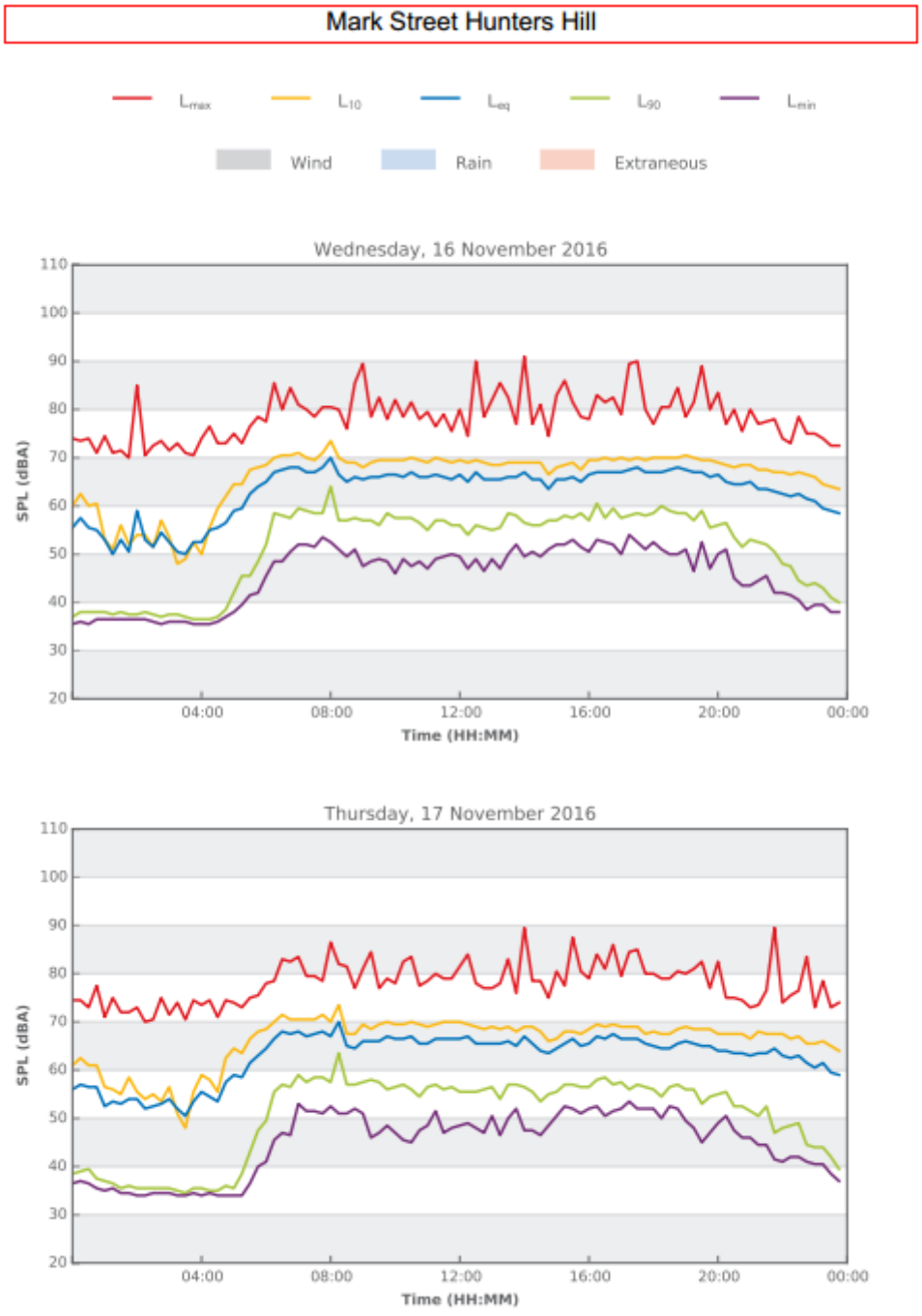
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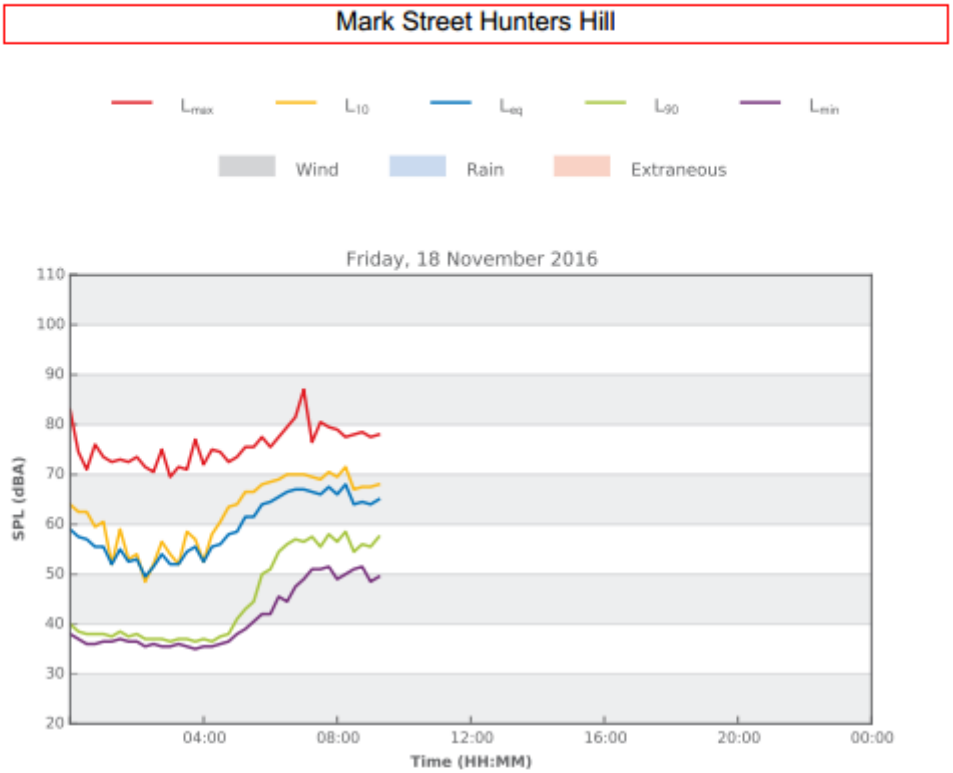
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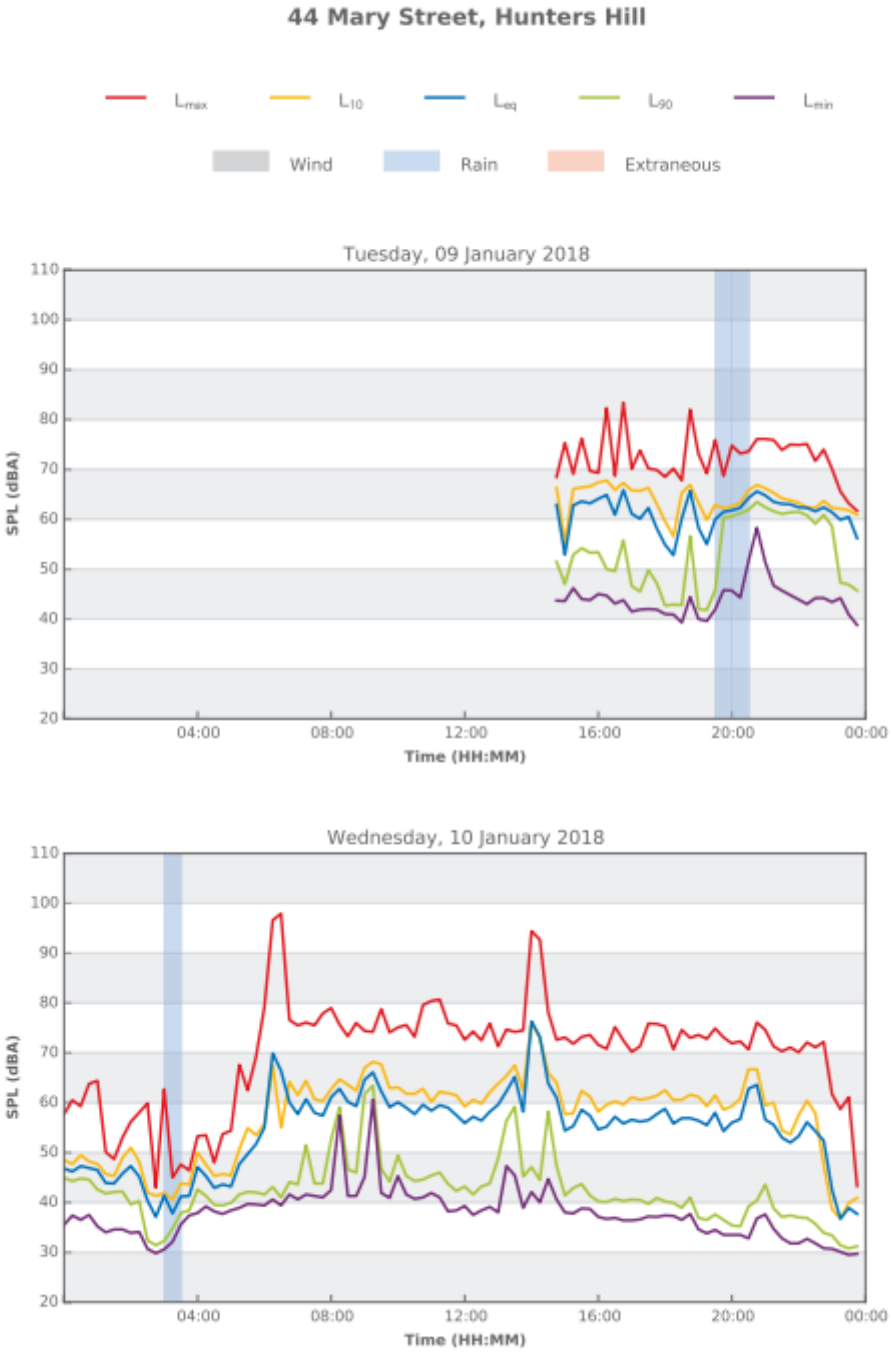
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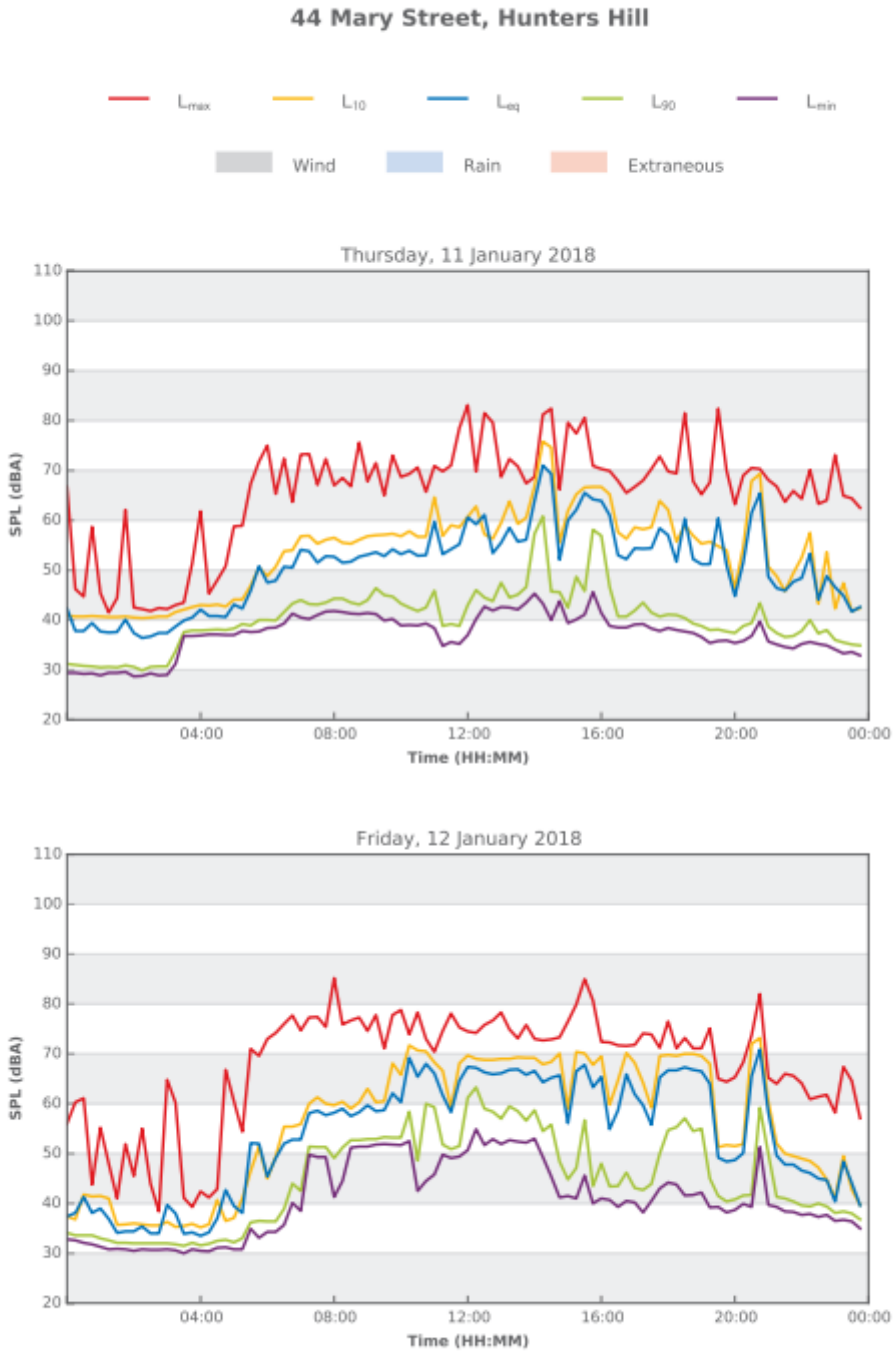
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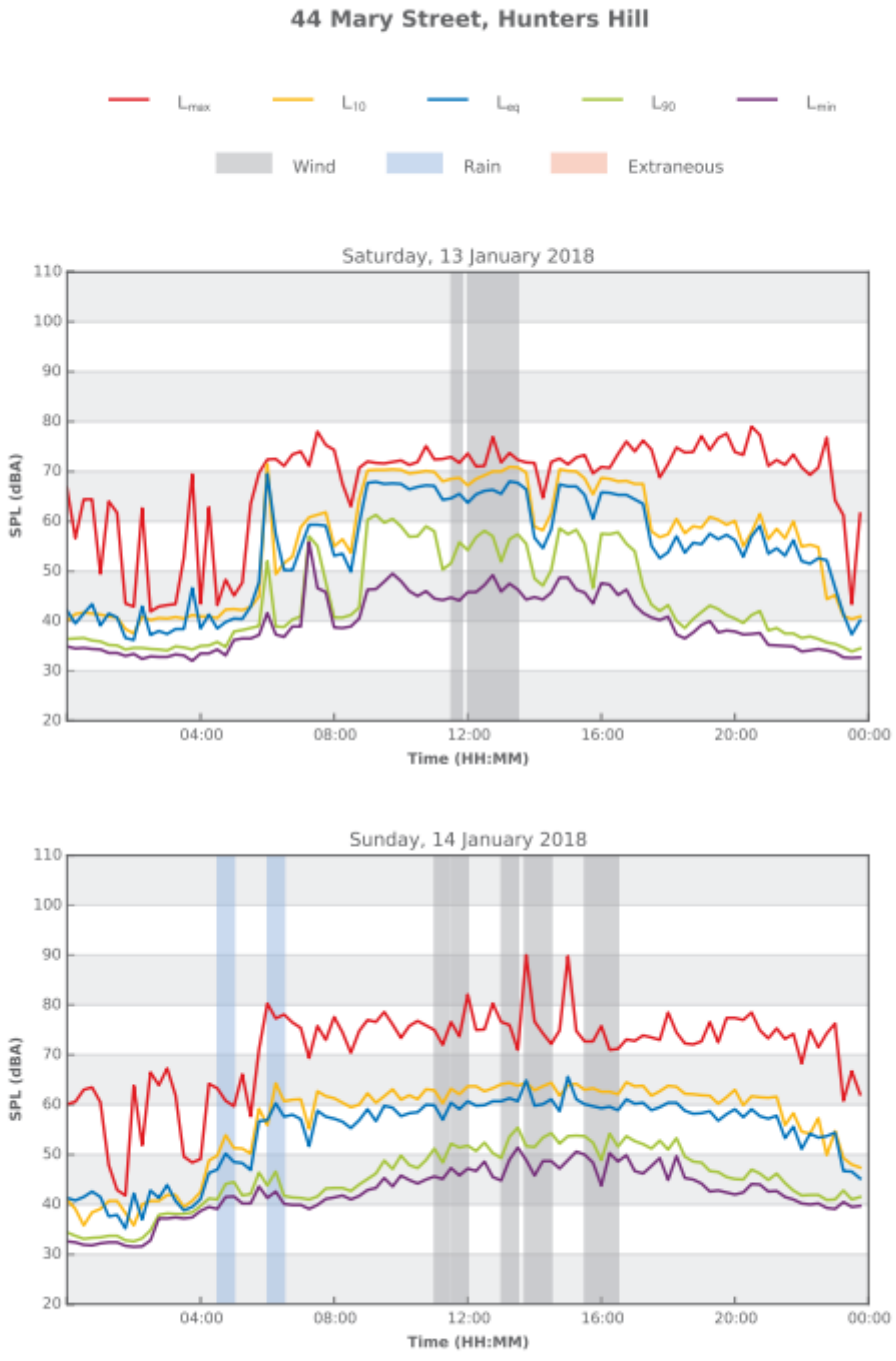
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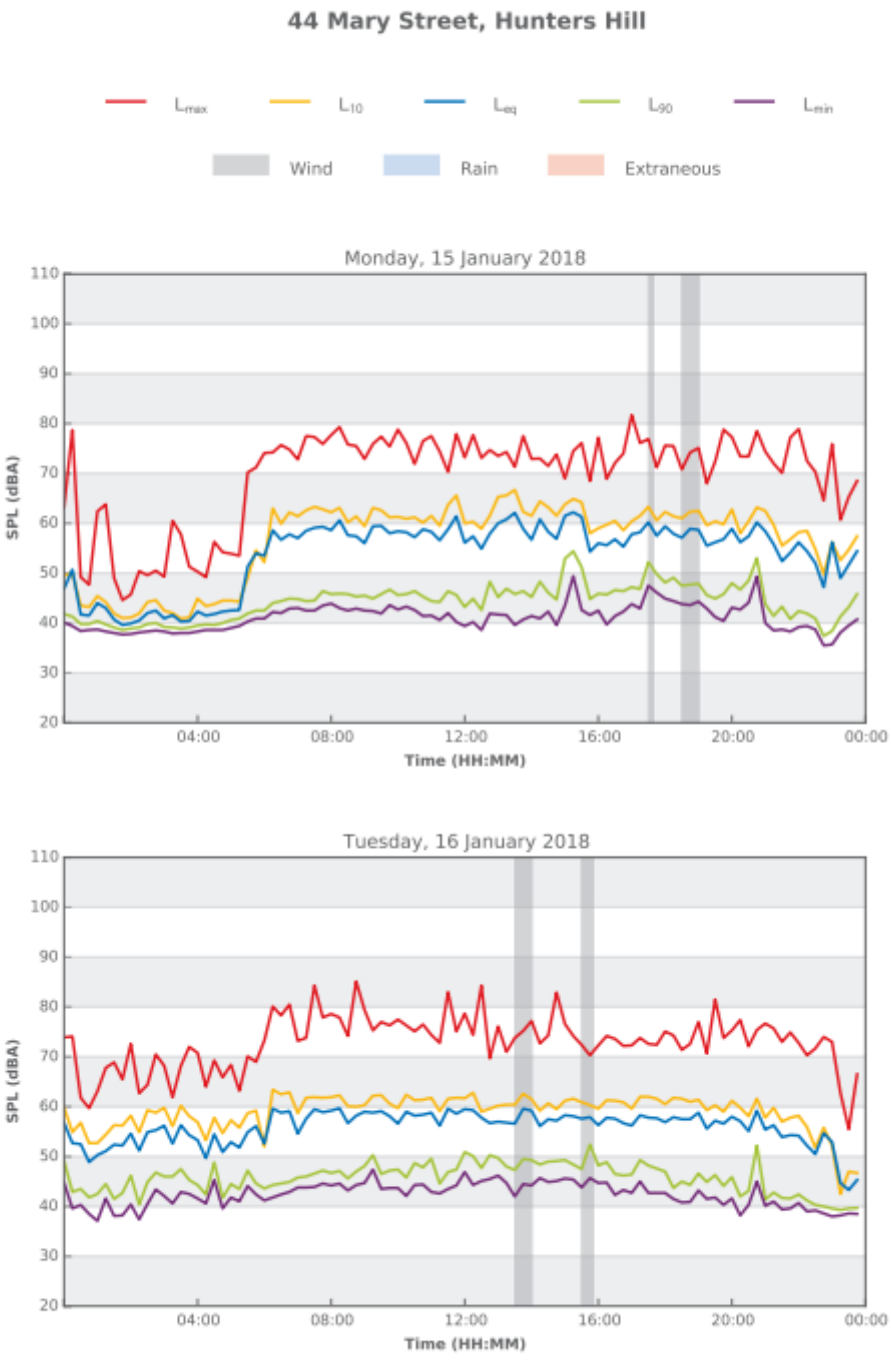
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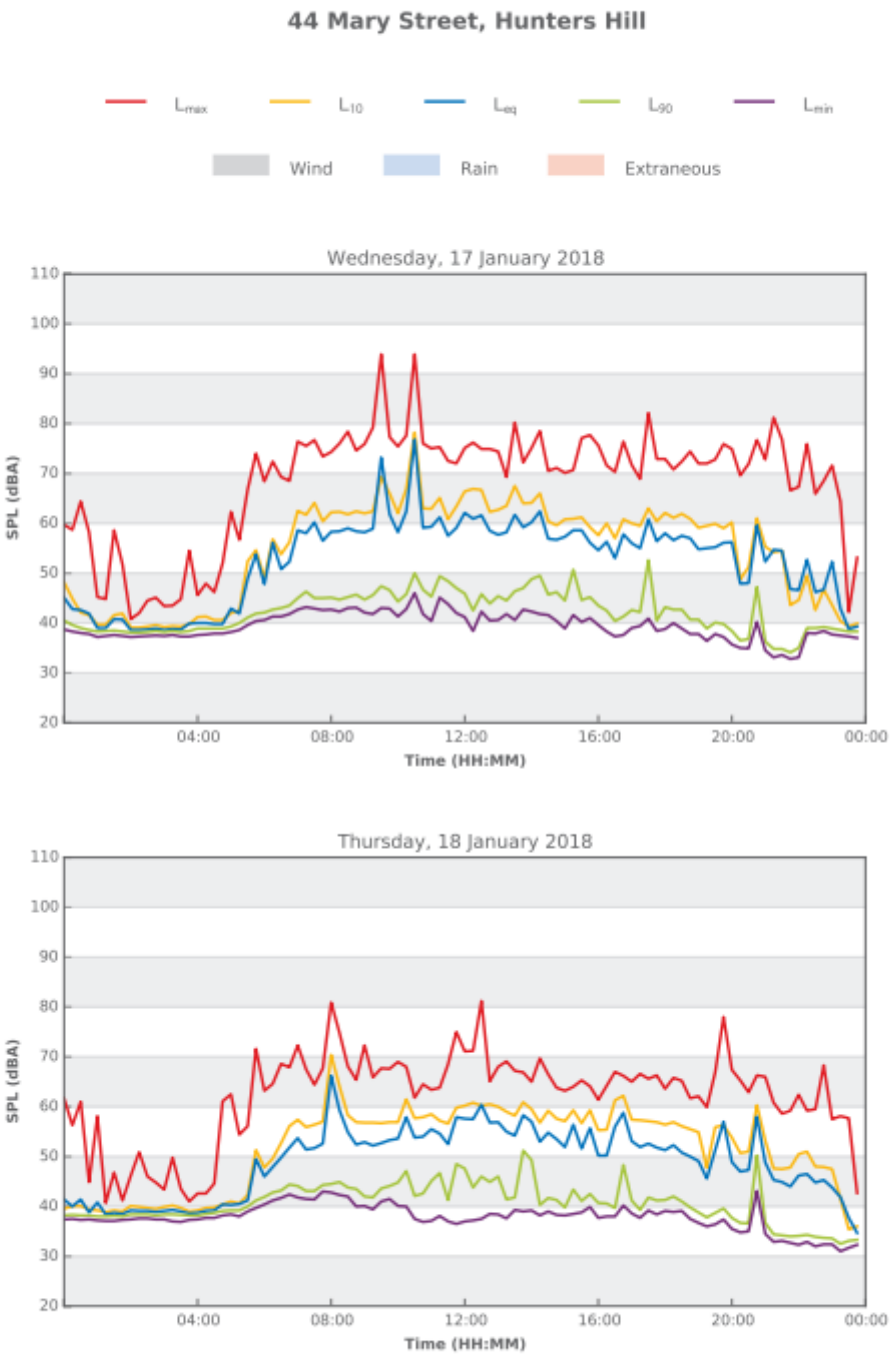
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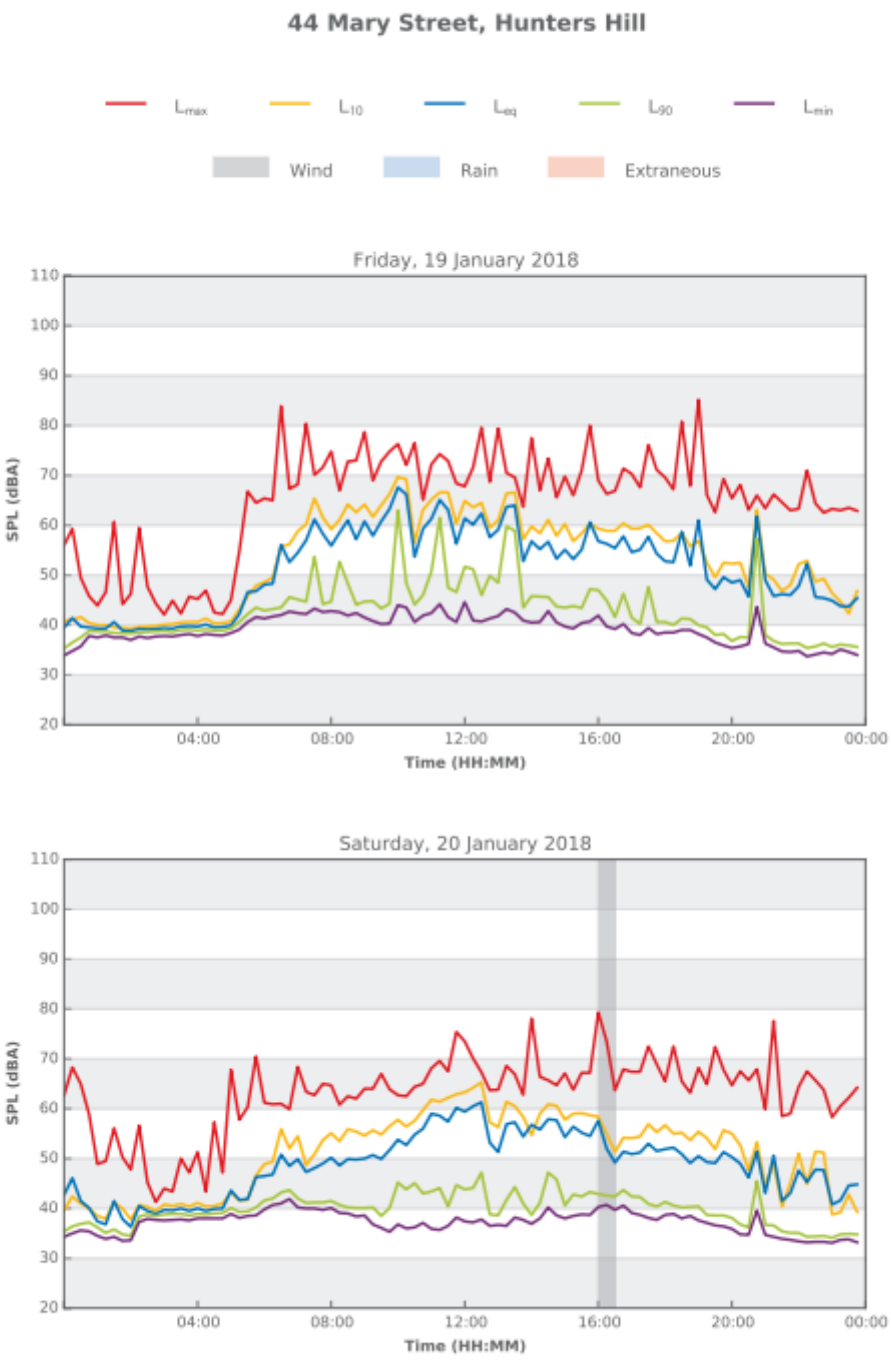
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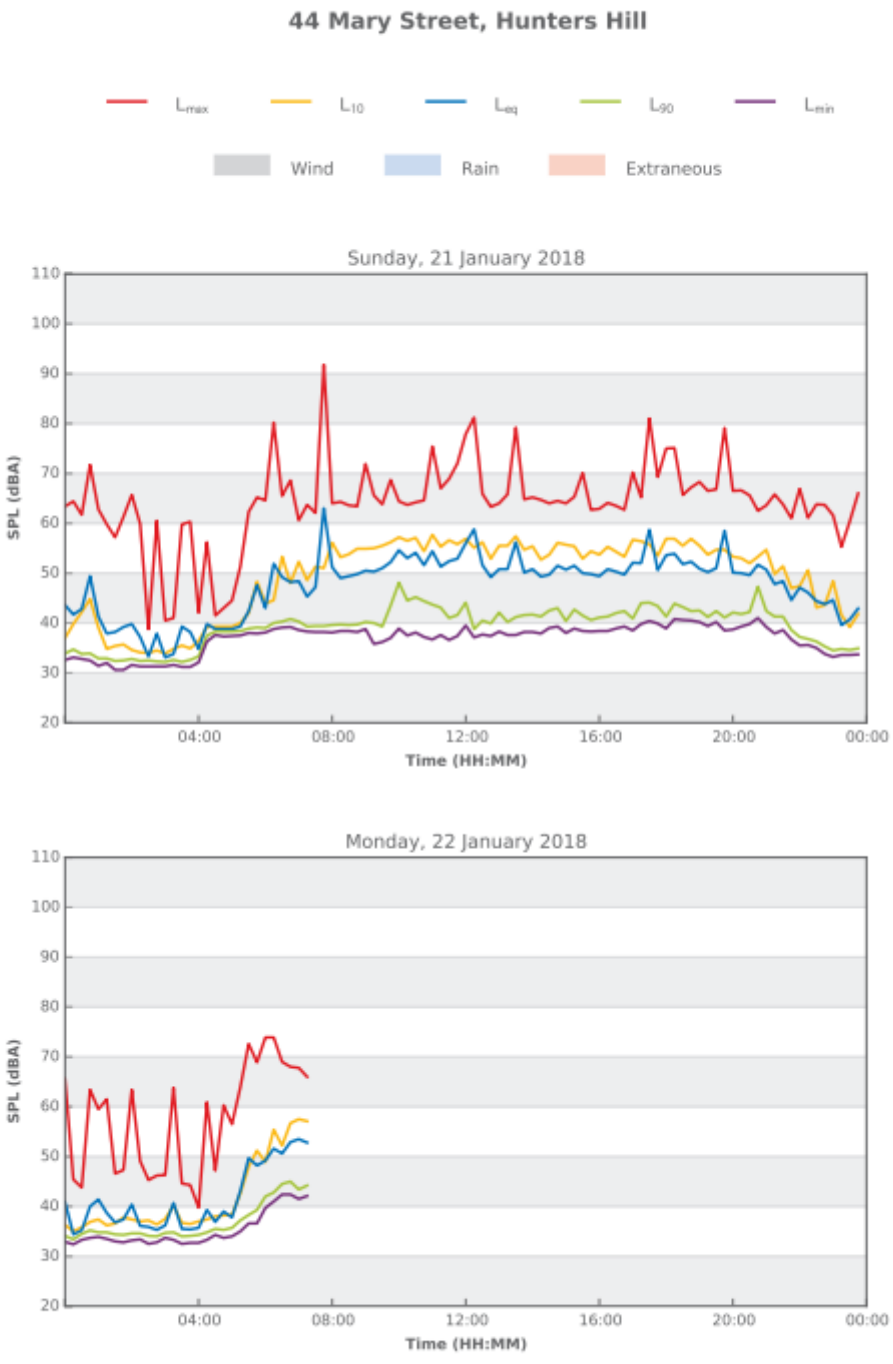
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APPENDIX B

INDICATIVE USAGE PROFILE

The following profile presents the movement of activities from current facilities to future facilities upon the completion of the PESPP and Healy Gym.
St Joseph's College acknowledges that there is no substantive changes from current use to proposed use, however any changes have been highlighted below in red.

Event	Current indicative usage profile						Forecast indicative usage profile					
	Day of Week	Frequency (days per year)	Hours	Existing facility where event is currently held	Duration of each session	Est current attendance at event (people)	Day of Week	Frequency (days p/yr)	Expected Hours	New facility where event is proposed	Duration of each session	Est current attendance at event (people)
Weights Room (Currently Healy Fitness Centre) and Cardio Room (Currently Br Emilian Hall)												
Healy Gymnasium Opening Hours	All	February - December	6 AM - 9 PM	Healy Gym	15 Hours	100	All	February - December	6 AM - 9 PM	New Healy Gymnasium	15 hours	100
Before School - Weights training	Weekdays	Term Time Only	6.15 AM - 7.15 AM	Healy Gym	1 hour	20	Weekdays	Term Time Only	6.30 AM - 7.30 AM	New Healy Gymnasium	1 hour	20
PE Classes - Weights	Weekdays	Term Time Only	8 AM - 3 PM	Healy Gym	50 mins - six sessions p/day	20	Weekdays	Term Time Only	8 AM - 3 PM	New Healy Gymnasium	50 mins - six sessions p/day	20
Holiday Sports Camps	Weekdays	Term Holidays	6:15 AM - 9.15 PM	Healy Gym	3 hours	50	Weekdays	Term Holidays	6:15 AM - 9.15 PM	New Healy Gymnasium	3 hours	50
After School - Weights training	Weekdays	Term Time Only	3:30 PM - 9.15 PM	Healy Gym	1 hour	50	Weekdays	Term Time Only	3:30 PM - 9 PM	New Healy Gymnasium	1 hour	50
Weights Free Time - Boarders	Weekends	February - December	9 AM - 6 PM	Healy Gym	Flexible	100	Weekends	February - December	9 AM - 6 PM	New Healy Gymnasium	Flexible	100
Basketball (New Sports Centre & Existing Internal Basketball Court in Br Emilian Hall)												
Basketball Warm Up Area	Saturday	Terms 1, 3 and 4 - Saturday	7:30 AM - 3 PM	Cardio Room	7 hours 30 mins	70	Saturday	Terms 1, 3 and 4 - Saturday	7:30 AM - 3 PM	New Sports Centre	7 hours 30 mins	70
Basketball Training	Weekdays	Terms 1, 3 and 4 - Monday - Friday	3:30 PM - 5.15 PM	Outdoor Basketball 1 - 4 Courts	1 hour 30 mins	80	Weekdays	Terms 1, 3, 4 - Monday - Friday	3:30 PM - 5.15 PM	New Sports Centre	1 hour 30 mins	80
Weekend Basketball Games	Saturday	Terms 1, 3 and 4 - Saturday	7:30 AM - 3:30 PM	Outdoor Basketball 1 - 4 Courts	5 hours 30 mins	160	Saturday	Terms 1, 3 and 4 - Saturday	7:30 AM - 1 PM	New Sports Centre	5 hours 30 mins	160
Weekend Extra Curricular Activities	Saturday	February - December	3 PM - 6 PM	Outdoor Basketball 1 - 4 Courts	3 hours	100	Saturday	February - December	3 PM - 6 PM	New Sports Centre	3 hours	100
Weekend Extra Curricular Activities	Sunday	February - December	9 AM - 6 PM	Outdoor Basketball 1 - 4 Courts	9 hours	100	Sunday	February - December	9 AM - 6 PM	New Sports Centre	9 hours	100
Basketball Training	Weekdays	Terms 1, 3 and 4 - Monday - Friday	3:30 PM - 5.15 PM	Internal Basketbal Court - Br Emilian Hall	1 hour 30 mins	20	Weekdays	Terms 1, 3 and 4 - Monday - Friday	3:30 PM - 5 PM	Internal Basketbal Court - Br Emilian Hall	1 hour 30 mins	20
Wheelchair Basketball Practice	Weekdays	Term Time Only	3:30 PM - 5:30 PM	Internal Basketbal Court - Br Emilian Hall	1 hour 30 mins	20	Weekdays	Term Time Only	3:30 PM - 5.30 PM	Internal Basketbal Court - Br Emilian Hall	1 hour 30 mins	20
Weekend Extra Curricular Activities	Saturday & Sunday	February - December	9 AM - 6 PM	Internal Basketbal Court - Br Emilian Hall	Flexible	100	Saturday	February - December	9 AM - 6 PM	Internal Basketbal Court - Br Emilian Hall	Flexible	100
Basketball Free Time - Boarders	All	February - December	When available	Internal Basketbal Court - Br Emilian Hall	Flexible	100	All	February - December	When available	Internal Basketbal Court - Br Emilian Hall	Flexible	100
Holiday Sports Camps	Weekdays	Term Holidays	6:15 AM - 9.15 PM	Outdoor Basketball 1 - 4 Courts	3 hours	100	Weekdays	Term Holidays	6:15 AM - 9.15 PM	New Sports Centre	3 hours	100
Staff Areas												
Property Office	Weekdays	Term Time Only	6 AM - 6 PM	Property Office (Beneath Healy Fitness Centre)	12 hours	11	Weekdays	Term Time Only	6 AM - 6 PM	Maintenance Area - New Sports Centre	12 hours	11
PE Staff Room	Weekdays	Term Time Only	7 AM - 5 PM	PE Staff Room, Br Emilian Hall	10 hours	5	Weekdays	Term Time Only	7 AM - 5 PM	PE Staff Room, New Sports Centre	10 hours	5
PE Staff Room	Extended School Days / Boarders	February - December	7 AM - 10 PM	PE Staff Room, Br Emilian Hall	15 hours	5	Extended School Days / Boarders	Term Time Only	7 AM - 10 PM	PE Staff Room, New Sports Centre	15 hours	5
Other Events & Functions												
Banquets / School Dances	N/A	15-20	5 PM - 12 AM	Br Emilian Hall	7 hours	150	As needed	10	5 PM - 12 Midnight	New Sports Centre	7 hours	150
Banquets / School Dances (PESPP louvres closed allowing for amplified music or a sound/announcement system)	N/A	N/A	5 PM - 12 AM	Br Emilian Hall	7 hours	150	As needed	0-4	5 PM - 12 Midnight	New Sports Centre	7 hours	150
Assemblies	N/A	As directed by SJC	8 AM - 3 PM	Br Emilian Hall	As needed	1000	As needed	As directed by SJC	8 AM - 3 PM	New Sports Centre	As needed	1000
School Examinations	N/A	Proposed to subsidise current examination locations when necessary	6 AM - 9 PM	Br Emilian Hall	As needed	1000	Weekdays	Proposed to subsidise current examination locations when necessary	6 AM - 9 PM	New Sports Centre	As needed	1000
Family Masses (PESPP louvres closed allowing for amplified music or a sound/announcement system)	Weekends	4	6 AM - 9 PM	Br Emilian Hall	As needed	1000 - 2000	As needed	4	7 AM - 9 PM	New Sports Centre	As needed	1000 - 2000
Community Use*												
CLDS Youth Conference	Sunday to Saturday	Every 2nd Year 2 weeks in January	8am to 11pm	Br Emilian Hall	14 Hours	1000	Sunday to Saturday	Every 2nd Year 2 weeks in January	8am to 11pm	New Sports Centre	14 Hours	1000
Marist Brother Jubilee	Saturday	Annual	12pm to 4pm	Br Emilian Hall	4 Hours	300	Saturday	Annual	12pm to 4pm	New Sports Centre	4 Hours	300
St Partick's Dundas Grad Dinner	Tuseday	Annual	5pm to 11.30pm	Br Emilian Hall	6 Hours	450	Tuseday	Annual	5pm to 11.30pm	New Sports Centre	6 Hours	450
Marist School Aust Dinner	Friday	Annual	6pm to 11pm	Br Emilian Hall	5 Hours	300	Friday	Annual	6pm to 11pm	New Sports Centre	5 Hours	300
Mamas Charity Concert	Sunday	Annual	3pm to 5pm	Br Emilian Hall	2 Hours	300	Sunday	Annual	3pm to 5pm	New Sports Centre	2 Hours	300
Marist Sisters Woolwich Foundress Day	Thursday	Annual	9am to 11am	Br Emilian Hall	2 Hours	1000	Thursday	Annual	9am to 11am	New Sports Centre	2 Hours	1000
Galdesville Public School Concert	Tuesday	Once Only	5.30pm to 7.30pm	Br Emilian Hall	2 Hours	350	Tuesday	Once Only	5.30pm to 7.30pm	New Sports Centre	2 Hours	350
Missionaries of The Sacred Heart	Tuesday to Thursday	Every 5 Years For 9 days	8am to 10pm	Br Emilian Hall	13 Hours	95	Tuesday to Thursday	Every 5 Years For 9 days	8am to 10pm	New Sports Centre	13 Hours	95
Marist Youth Festival	Friday to Tuesday	Once Only	9am to 11pm	Br Emilian Hall	14 Hours	215	Friday to Tuesday	Once Only	9am to 11pm	New Sports Centre	14 Hours	215

*** Note:** PESPP louvres will be in closed position during any community use involving amplified music or a sound/announcement system.