Acoustic assessment

26 - 50 Park Rd, 27 - 47 Berry Rd, 48 - 54 River Rd St Leonards NSW 2065 (Area 22 & 23)

Prepared for JQZ

June 2023

Acoustic assessment

26 - 50 Park Rd, 27 - 47 Berry Rd, 48 - 54 River Rd St Leonards NSW 2065 (Area 22 & 23)

JQZ

E220336 RP20221

June 2023

Version	Date	Prepared by	Approved by	Comments
5	06/06/23	Jared Blackburn	Najah Ishac	

Approved by

Najah Ishac
Director, National Acoustics Leader
06 June 2022

Ground floor 20 Chandos Street
St Leonards NSW 2065
PO Box 21
St Leonards NSW 1590

TABLE OF CONTENTS

Appendices

Tables

Figures

Photographs

Plates

1 Introduction

EMM Consulting Pty Limited (EMM) has been commissioned by JQZ Pty Limited (JQZ) to complete an acoustic assessment to support a development application (DA) for a proposed residential development at 26 - 50 Park Rd, 27 - 47 Berry Rd, 48 - 54 River Rd St Leonards, NSW, 2065. The proposed development will comprise of two residential buildings fronting River Road, two residential behind, common open communal space and basement parking. An overview of the proposed development is provided in Figure 1.1.

The report will be guided by the following relevant guidelines, policies, legislation and standards:

- Lane Cove Council 2010 Development Control Plan (DCP);
- Department of Planning 2008 '*Development Near Rail Corridors and Busy Roads - Interim Guidelines*';
- NSW Government Infrastructure State Environmental Planning Policy 2021;
- NSW Environmental Protection Authority (EPA) 2017, *Noise Policy for Industry* (NPI);
- NSW Department of Planning and Environment (DPE) 2015, *Apartment Design Guide*.
- Department of Environment and Climate Change (DECC) 2009 '*Interim Construction Noise Guideline'* (ICNG);
- Department of Conservation (DEC) 2006, *Environmental Noise Management – Assessing Vibration: a technical guideline;*
- Australian Standard AS 1055-1997 '*Acoustics – Description and measurement of environmental noise';*
- Australian Standard AS/NZS 2107-2016: '*Acoustics – Recommended design sound levels and reverberation times for building interiors*'; and
- Building Code of Australia / National Construction Code 2019, Volume One, Part F5.

In addition to establishing environmental noise criteria for the proposed development in accordance with the above standards, plans and guidelines, the acoustic assessment provides JQZ with:

- design criteria in accordance BCA/NCC to control internal noise transfer for noise sensitive areas of the development; and
- recommendations on facade upgrades to provide the appropriate internal noise levels in accordance with AS/NZS 2107-2016 and SEPP (Infrastructure) 2007 requirements.

This assessment references architectural drawings provided by DKO Architecture on 2 June 2023 as attached in Appendix A.

KEY

- Site boundary
- Cadastral boundary

Noise monitoring

- (A) Attended monitoring location
- (U) Unattended monitoring location

INSET KEY

- Major road
- NPWS reserve
- State forest

Source: EMM (2022); DFSI (2020, 2021); GA (2011); Metromap (2022)

0 20 40 m

GDA2020 MGA Zone 56

N

\\emmsvr1\EMM2\2022\E220336 - 26-34 Park Road St Leonards South\8 GIS\02 Maps\G001 AssessmentLocations 20221006 01.mxd 6/10/2022

Site location and assessment locations

26-34 Park Road St, Leonards South
Noise Impact Assessment
Figure 1.1

EMM
creating opportunities

1.1 Glossary of acoustic terms

A number of technical terms are required for the discussion of noise. These are explained in Table 1.1.

Table 1.1 Glossary of acoustic terms

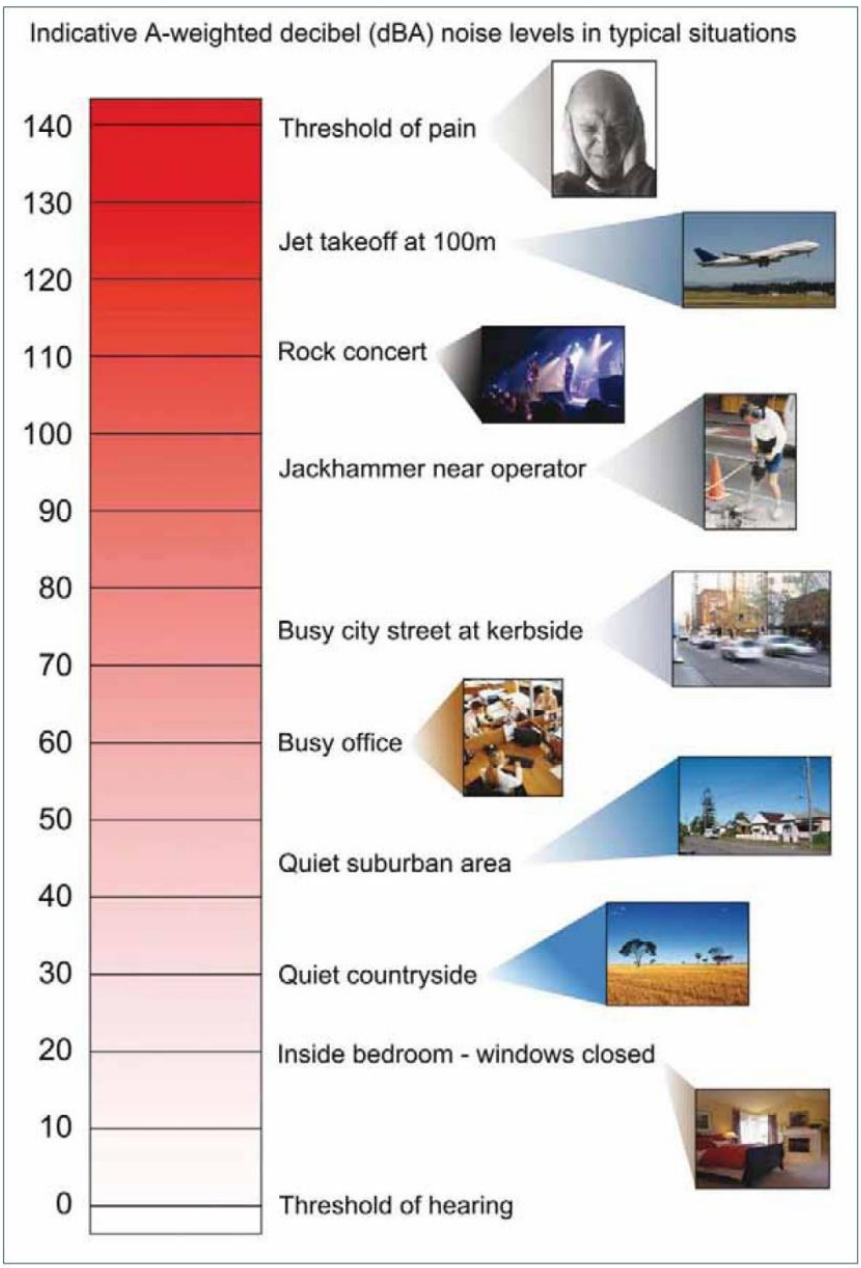
Term	Description
dB	Noise is measured in units called decibels (dB).
A-weighting	There are several scales for describing noise, the most common being the 'A-weighted' scale. This attempts to closely approximate the frequency response of the human ear.
AWS	Automatic weather station
L_{A1}	The A-weighted noise level exceeded for 1% of a measurement period.
L_{A10}	The A-weighted noise level which is exceeded 10% of the time. It is approximately equivalent to the average of maximum noise levels.
L_{A90}	Commonly referred to as the background noise, this is the A-weighted level exceeded 90% of the time.
L_{Aeq}	The A-weighted energy average noise from a source, and is the equivalent continuous sound pressure level over a given period. The $L_{eq,15min}$ descriptor refers to an Leq noise level measured over a 15-minute period.
L_{Amax}	The maximum root mean squared A-weighted sound pressure level received at the microphone during a measuring interval.
PNTL	Project noise trigger level
RBL	The Rating Background Level (RBL) is an overall single value background level representing each assessment period over the whole monitoring period.
Rw	Weighted Sound Reduction Index. Rw describes the airborne sound insulating power of a building element. It is a laboratory measured value. It can apply to walls, ceiling/floors, ceiling/roofs, doors, or windows.
Ctr	Spectrum adaptation term. An adjustment for low frequencies used when assessing sound insulation performance.
VDV	Vibration dose values

It is useful to have an understanding of decibels, the unit of noise measurement. Table 1.2 gives an indication as to what an average person perceives about changes in noise levels.

Table 1.2 Perceived change in noise levels

Change in sound level (dB)	Perceived change in noise level
1 to 2	typically indiscernible
3	just perceptible
5	noticeable difference
10	twice (or half) as loud
15	large change
20	four times as loud (or quarter) as loud

Examples of common noise levels are provided in Figure 1.2.



Source: *Road Noise Policy (Department of Environment, Climate Change and Water (DECCW) 2011).*

Figure 1.2 Common noise levels

2 Existing noise levels

2.1 Background and ambient noise monitoring

Noise monitoring was conducted to establish the existing prevailing noise environment at the proposed development site. An unattended noise logger was used at a point representing the site's south boundary, designated L1. Unattended measurements were also taken at a point representative of the site's west boundary, designated L2. The noise monitoring locations can be seen in Figure 1.1.

The location of L1 was selected to represent the southern site boundary's exposure to road traffic noise levels from River Road. It was positioned in a residential front yard in full view of all lanes of the River Road. An attended monitoring location (A1) was selected to record road noise levels representative of the proposed building's southern façade (ground floor). Similarly, attended monitoring location A2 was selected to define noise levels likely to be experienced by the proposed building's eastern façade. Both measurement locations were also used to represent background and ambient noise levels at residential neighbours.

The noise monitoring locations were selected after careful inspection of the proposed development site, giving due consideration to other noise sources which may influence the readings (e.g. mechanical plant near the site), the proximity of neighbouring sensitive locations to the proposed site, and security issues for the noise monitoring devices.

The unattended measurements were carried out using two Svantek 977 sound meters (serial numbers 97593, 98843). The loggers were left in place from Thursday 15 September to Tuesday 4 October (24 days). The period of school holidays has been excluded from the calculations for the purpose of establishing RBLs as recommended by the NSW EPA. The loggers were programmed to record statistical noise level indices continuously in 15 minute intervals in accordance with the requirements of the NPfI, including the LA_{max}, LA_{1}, LA_{10}, LA_{50}, LA_{90}, LA_{99}, LA_{min} and the LAeq. Calibration of all instrumentation was checked prior to and following measurements. All equipment carried appropriate and current NATA (or manufacturer) calibration certificates.

Weather data for the survey period was obtained from a Bureau of Meteorology automatic weather station (AWS) at Observatory Hill (AWS ID number 066062), approximately 4 km south-east of the site. The wind speed and the rainfall data were used to exclude noise data during periods of any rainfall and/or wind speed in excess of 5 m/s (approximately 9 knots) at the microphone height in accordance with NPfI methods.

A summary of the existing background and ambient noise levels is provided in Table 2.1. Daily results and charts from the noise logger are provided in Appendix B.

Table 2.1 Summary of existing background and ambient noise levels, dB

Monitoring location	Period[1]	Rating background level[2] (RBL), dB	$L_{Aeq,period}$ noise level, dB
L1 (47 River Road)	Day	50[4]	65 $L_{Aeq,15hour}$
	Evening	44[4]	n/a
	Night	36[4]	59 $L_{Aeq,9hour}$
L2 (15 Park Road)	Day	43[4]	60 $L_{Aeq,15hour}$
	Evening	39[4]	n/a
	Night	34	49 $L_{Aeq,9hour}$

Notes. *1. For RBL calculations, the daytime is 7 am to 6 pm; evening 6 pm to 10 pm; night-time 10 pm to 7 am. On Sundays and Public Holidays, the daytime is 8 am to 6 pm; evening 6 pm to 10 pm; night-time 10 pm to 8 am.*

2. The RBL is an NPfI term and is used represent the background noise level.

3. L_{Aeq} is the energy averaged noise level over the measurement period and representative of general ambient noise. It is used for day (7 am to 10 pm) and night (10 pm to 7 am) traffic noise analysis.

4. School holiday periods removed prior from determination of RBLs as recommended by NSW EPA

A summary of attended noise measurements is provided in Table 2.2. Attended measurement locations are found in Figure 1.1 and are compared with the unattended measurements in Table 2.2. Observations made during the measurement at A1 indicate that the primary element of the noise profile is constant road traffic from River Road, with highly variable birdsong. Aircraft pass-by occurred during the measurement. For the duration of the pass-by, road traffic noise was the dominant noise source. The unattended measurement at L1 provides the same L_{Aeq} and L_{A90} levels as the measurement at A1. Observations made during the measurement at A2 indicate the primary element of the noise environment included distant traffic from River Road, highly variable birdsong, constant distant construction noise, aircraft pass by and train pass by. The unattended measurement at L2 shows similar levels to the measurement at A2.

Table 2.2 Attended vs Unattended Measurements

Monitoring location	Sample start time	L_{Aeq}	L_{A90}	L_{Amax}
A1	12:15 pm	64	53	76
L1	12:15 pm	64	53	75
A2	12:45 pm	49	44	68
L2	12:45 pm	51	44	70

3 Assessment guidelines

3.1 Lane Cove Council 2010 DCP

3.1.1 Part B General Provisions

Section B.7 of Lane Cove Council 2010 DCP provides internal acoustic amenity provisions for residential developments near busy roads and rail corridors which are in direct accordance with SEPP Infrastructure 2021 requirements. The provisions are as follows:

> *For residential and the residential part of any mixed use development, appropriate measures must be taken to ensure that the following LAeq levels are not exceeded:*
>
> i) *in any bedroom in the building : 35dB(A) at any time 10pm–7am*
>
> ii) *anywhere else in the building (other than a garage, kitchen, bathroom or hallway): 40dB(A) at any time.*

SEPP Infrastructure 2007 assessment requirements are explained further in Section 3.3.1.

3.1.2 Part C Residential Development

For noise that could emanate from the proposed development, Section 1.8.2 of Part C provides noise limits for mechanical equipment associated with a residential development as follows.

> *d) The noise generated by mechanical equipment of any sort must not exceed the background noise level by more than 5dB (A) when measured in or on the lot adjacent to the equipment. Where sound levels are exceeded, sound proofing measures will be required.*

Section 2.9.1, Item h, also of relevance to the project, states:

> *h) Internal habitable rooms of dwellings affected by high levels of external noise are to be designed to achieve internal noise levels of no greater than 50dBA.*

3.2 Noise Policy for Industry (NPfI)

The NPfI provides noise assessment criteria to protect the community from excessive intrusive noise and preserve amenity for specific land uses. To ensure these objectives are met, the EPA provides two separate criteria: intrusiveness criteria and amenity criteria. The fundamental difference being intrusiveness criteria apply over 15 minutes in any period (day, evening or night), whereas the amenity criteria apply to the entire assessment period (day, evening or night).

3.2.1 Intrusiveness criteria

The intrusiveness criteria require that $L_{Aeq\ (15\ min)}$ noise levels from the proposed development do not exceed the RBL by more than 5 dB. Measured RBLs have been used to derive intrusiveness criteria at each noise monitoring location.

Table 3.1 presents the intrusive noise criteria determined for the site based on the adopted RBLs.

Table 3.1 Intrusive noise criteria

Location	Period[1]	Adopted RBL, dB[2]	Intrusive criteria dB, $L_{Aeq\ (15\ min)}$[3]
River Rd residences(based on L1)	Day	50	55
	Evening	43	48
	Night	36	41
	Day	40	45

Table 3.1 Intrusive noise criteria

Location	Period[1]	Adopted RBL, dB[2]	Intrusive criteria dB, $L_{Aeq\ (15\ min)}$[3]
Park & Berry Rds residences (based on L2 & A2)	Evening	39	44
	Night	33	38

Notes. *1.The daytime is 7.00 am to 6.00 pm; evening 6.00 pm to 10.00 pm; night-time 10.00 pm to 7.00 am. On Sundays and Public Holidays, the daytime is 8.00 am to 6.00 pm; evening 6.00 pm to 10.00 pm; night-time 10.00 pm to 8.00 am.*

2. The RBL is an NPfI term and is used to represent the background noise level.

3. L_{Aeq} is the energy averaged noise level over the measurement period and representative of general ambient noise.

3.2.2 Amenity criteria

The assessment of amenity is based on noise criteria specific to the land use. The amenity criteria are used to assess the cumulative impacts of industrial noise. Where the measured existing industrial noise approaches recommended amenity criteria, it needs to be demonstrated that noise levels from new industry will not contribute to existing industrial noise such that criteria are exceeded. Although the development is not industrial, the amenity approach can be useful in these situations and has therefore been considered.

In accordance with the NPfI (Section 2.2.1), residential assessment locations potentially affected by the proposed development have been categorised in the NPfI 'urban' and 'suburban' amenity category. 'Urban' meaning that the surrounding noise environment is an area that:

- is dominated by 'urban hum' or industrial source noise;
- has through traffic with characteristically heavy and continuous traffic flows during peak periods;
- is near commercial or industrial districts; or
- has any combination of the above.

'Suburban' meaning that the surrounding noise environment is an area that:

- that has local traffic with characteristically intermittent traffic flow;
- some limited commerce or industry; and
- evening ambient noise levels defined by natural environment and human activity.

The corresponding recommended amenity criteria for the proposed development are given in Table 3.2. To ensure that industrial noise levels (existing plus new) remain within the recommended amenity noise levels for an area, the project amenity noise level for a new industrial development is the recommended amenity noise level (outlined in Table 2.2 of the NPfI) minus 5 dB. It is noted that this approach is based on a receiver being impacted by three or four individual industrial sites (or noise sources). This approach has not been adopted for operational noise from the site given this is not an industrial development and there are no existing or likely future industrial noise sources with the potential to result in cumulative noise.

Table 3.2 Amenity criteria

Assessment Location	Receiver type	Indicative area	Period[1]	Recommended noise level dB, $L_{Aeq\ (period)}$
River Rd residences	Residential	Urban	Day	60
			Evening	50
			Night	45
Residences of Park, Berry Rd and similar environments	Residential	Suburban	Day	55
			Evening	45
			Night	40

Notes 1. The daytime is 7.00 am to 6.00 pm; evening 6.00 pm to 10.00 pm; night-time 10.00 pm to 7.00 am. On Sundays and Public Holidays, the daytime is 8.00 am to 6.00 pm; evening 6.00 pm to 10.00 pm; night-time 10.00 pm to 8.00 am.2. Project amenity noise levels have been set at 10 dB below existing industrial noise levels in accordance with NPfI Section 2.4.

3.2.3 Project noise trigger level

The project noise trigger level (PNTL) is the lower of the calculated intrusive or amenity criteria. Mechanical services and other general noise from the proposed development will have to satisfy PNTLs at surrounding existing residential properties, and at residential properties within the proposed development itself.

The PNTLs are provided in Table 3.3.

Table 3.3 NPfI background noise levels and PNTL, dB, $L_{Aeq(15min)}$

Assessment location	Period[1]	Intrusive criteria	Amenity criteria	Project noise trigger level (PNTL)
Area surrounding L1 (or similar acoustic environment)	Day	55	63	55 $L_{Aeq\ (15min)}$
	Evening	48	53	48 $L_{Aeq\ (15min)}$
	Night	41	48	41 $L_{Aeq\ (15min)}$
Area surrounding L2 (or similar acoustic environment)	Day	45	58	45 $L_{Aeq\ (15min)}$
	Evening	44	48	44 $L_{Aeq\ (15min)}$
	Night	38	43	38 $L_{Aeq\ (15min)}$

Notes. *1. The daytime is 7.00 am to 6.00 pm; evening 6.00 pm to 10.00 pm; night-time 10.00 pm to 7.00 am. On Sundays and Public Holidays, the daytime is 8.00 am to 6.00 pm; evening 6.00 pm to 10.00 pm; night-time 10.00 pm to 8.00 am.*

2. Project amenity $L_{Aeq,15\ minute}$ noise level is the recommended amenity noise level $L_{Aeq,period}$ +3 dB as per the NPfI.

3.3 Road traffic noise

3.3.1 Infrastructure SEPP 2021

The Infrastructure SEPP 2021 at Subdivision 2 Development in or adjacent to road corridors and reservations Section 2.120 Impact of road noise or vibration on non-road development states:

> (1) This section applies to development for any of the following purposes that is on land in or adjacent to the road corridor for a freeway, a tollway or a transitway or any other road with an annual average daily traffic volume of more than 20,000 vehicles (based on the traffic volume data published on the website of TfNSW) and that the consent authority considers is likely to be adversely affected by road noise or vibration—
>
> (a) residential accommodation,
>
> (b) a place of public worship,

(c) a hospital,

(d) an educational establishment or centre-based child care facility.

(2) Before determining a development application for development to which this section applies, the consent authority must take into consideration any guidelines that are issued by the Planning Secretary for the purposes of this section and published in the Gazette.

(3) If the development is for the purposes of residential accommodation, the consent authority must not grant consent to the development unless it is satisfied that appropriate measures will be taken to ensure that the following LAeq levels are not exceeded—

(a) in any bedroom in the residential accommodation—35 dB(A) at any time between 10 pm and 7 am,

(b) anywhere else in the residential accommodation (other than a garage, kitchen, bathroom or hallway)—40 dB(A) at any time.

3.3.2 Development near rail corridors and busy road – interim guidelines

The Department of Planning (DoP) document 'Development near Rail Corridors and Busy Roads - Interim Guideline' provides internal noise levels that should be achieved for developments near busy roads. These are consistent with the aforementioned Infrastructure SEPP. Importantly the guidelines state at Section 3.6.1 Airborne Noise:

> If internal noise levels with windows or doors open exceed the criteria by more than 10dBA, the design of the ventilation for these rooms should be such that occupants can leave windows closed, if they so desire, and also to meet the ventilation requirements of the Building Code of Australia.

3.3.3 AS/NZS 2107:2016

The Australian Standard AS/NZS 2107-2016: '*Acoustics – Recommended design sound levels and reverberation times for building interiors*' recommends design criteria for conditions affecting the acoustic environment within occupied spaces.

Table 3.4 provides a summary of recommended internal noise levels for houses, apartments, and retail buildings near 'major roads', shop and commercial buildings as per AS/NZS 2107-2016.

Table 3.4 AS/NZS 2107:2016 recommended design sound levels

Type of occupancy/activity	Recommended design sound level, dB, $L_{Aeq\ (15\ min)}$	
	Satisfactory	Maximum
Houses and apartments near major roads		
Living areas	35	45
Sleeping areas	30	40
Apartment common areas	45	55
Enclosed car parks	55	65
Shop buildings		
Department stores (main floor)	50	55

Table 3.4 AS/NZS 2107:2016 recommended design sound levels

Type of occupancy/activity	Recommended design sound level, dB, $L_{Aeq\ (15\ min)}$	
	Satisfactory	Maximum
Department stores (upper floor)	45	50
Small retail stores (general)	45	50
Supermarkets	50	55
Speciality shops (where detailed discussion in necessary in transactions)	40	45
Office Buildings		
Board and conference rooms	30	40
Corridors and lobbies	45	50
General office areas	40	45
Private offices	35	40

3.4 Building Code of Australia (BCA) sound insulation requirements (Part F5 BCA)

For sound transmission and insulation between sole occupancy units (SOU) within the proposed development, walls and floors are to be constructed in accordance with requirements of Part F5 of the Building Code of Australia (BCA) (and National Construction Code, NCC). Sound insulation requirements are summarised in Table 3.5.

Table 3.5 NCC Part F5 Requirements (Class 2 or 3)

Building Element	Minimum Part F4 Requirements
Sound insulation Rating of Walls (Class 2 or 3)	
Walls between separate sole occupancy units.	Rw+ Ctr 50 (airborne)
Walls between wet areas (bathrooms, sanitary compartment, laundry or kitchen) and a habitable room (other than kitchen) and adjoining apartments.	Rw + Ctr (airborne) & of discontinuous construction
Walls between sole occupancy unit and stairway, public corridors, public lobby or the like or parts of a different classification.	Rw 50 (airborne)
Walls between a plant room or lift shaft and a sole occupancy unit.	Rw 50 (airborne) & of discontinuous construction
Sound Insulation Rating of Floors (Class 2 or 3)	
Floors between sole occupancy units or between a sole occupancy unit and plant room, lift shaft, stairway, public corridor, public lobby or the like.	Rw + Ctr 50 (airborne) & Ln,w + Cl < 62 (impact)
Apartment Entry Doors (Class 2 or 3)	
A door incorporated in a wall that separates a sole-occupancy unit from a stairway, public corridor, public lobby or the like.	Rw 30 (airborne)
Services (Class 2, 3 or 9c)	
If a storm water pipe, a duct, soil, waste or water supply pipe including a duct or pipe that is located in a wall or floor cavity serves or passes through more than one sole occupancy unit must be separated:	
If the adjacent room is a habitable room (other than a kitchen); or	Rw + Ctr 40
If the room is a kitchen or non-habitable room	Rw + Ctr 25

3.4.1 Construction deemed to satisfy

The forms of construction must be installed as follows (as per the BCA):

(a) Masonry – Units must be laid with all joints filled solid, including those between the masonry and any adjoining construction.

(b) Concrete slabs – Joints between concrete slabs or panels and any adjoining construction must be filled solid.

(c) Sheeting materials –

(i) if one layer is required on both sides of a wall, it must be fastened to the studs with joints staggered on opposite sides;

(ii) if two layers are required, the second layer must be fastened over the first layer so that the joints do not coincide with those of the first layer; and

(iii) joints between sheets or between sheets and any adjoining construction must be taped and filled solid.

(d) Timber or steel-framed construction – perimeter framing members must be securely fixed to the adjoining structure and –

(i) bedded in resilient compound; or

(ii) the joints must be caulked so that there are no voids between the framing members and the adjoining structure.

(e) Services –

(i) Services must not be chased into concrete or masonry elements.

(ii) A door or panel required to have a certain Rw + Ctr that provides access to duct, pipe or other service must –

(A) not open onto any habitable room (other than a kitchen); and

(B) be firmly foxed so as to overlap the frame or rebate of the frame by not less than 10 mm, be fitted with sealing gasket along all edges and be constructed of –

(aa) wood, particleboard or blockboard not less than 33 mm thick; or

(bb) compressed fibre reinforced cement sheeting not less than 9Â mm thick; or

(cc) other suitable material with a mass per unit area not less than 24.4 kg/m^2

(iii) A water supply pip must –

(A) only be installed in the cavity of discontinuous construction; and

(B) in the case of a pipe that serves only one sole-occupancy unit, not be fixed to the wall leaf on the side adjoining any other sole-occupancy unit and have a clearance not less than 10 mm to the other wall leaf.

(iv) Electrical outlets must be offset from each other –

(A) in masonry walling, not less than 100 mm; and

(B) in timber or steel framed walling, not less than 300 mm

3.5 Construction noise

3.5.1 Interim Construction Noise Guideline ICNG

The current construction noise guidelines are provided in the Interim Construction Noise Guideline (ICNG) (DECC 2009). Table 3.6 is an extract from the ICNG and provides noise management levels for residential receivers during and outside standard construction hours.

Table 3.3 ICNG residential noise management levels

Time of day	Management level $L_{Aeq\ (15\ min)}$	How to apply
Recommended standard hours: Monday to Friday 7 am to 6pm Saturday 8 am to 1 pm No work on Sundays or public holidays.	Noise affected RBL + 10 dB.	The noise affected level represents the point above which there may be some community reaction to noise: • Where the predicted or measured $L_{Aeq\ (15\ min)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. • 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 75 dB(A).	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 relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: iii) times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences. iv) if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
Outside recommended standard hours.	Noise affected RBL + 5 dB.	• 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 5 dB(A) above the noise affected level, the proponent should negotiate with the community. • For guidance on negotiating agreements see section 7.2.2.

Source: ICNG (DECC, 2009).

Table 3.7 is an extract from the ICNG and provides noise management levels for commercial and industrial land uses for standard and out of hours periods.

Table 3.4 ICNG noise management levels at commercial and industrial land uses

Land use	Management level, $L_{Aeq\ (15\ min)}$
Industrial premises.	External noise level 75 dB(A) (when in use)
Offices, retail outlets.	External noise level 70 dB(A) (when in use)

Source: ICNG (DECC, 2009).

3.5.2 Noise management levels

The construction noise management levels (NMLs) for the proposed development have been developed using the unattended noise monitoring data collected at the two noise monitoring locations in accordance with the ICNG. These are provided in Table 3.8.

Table 3.5 Construction noise management levels

Assessment location	Period	Representative RBL[1], dB	NML, $L_{Aeq\ (15min)}$
	Day	50	60

Table 3.5 Construction noise management levels

Assessment location	Period	Representative RBL[1], dB	NML, $L_{Aeq\ (15min)}$
Area surrounding L1 (or similar acoustic environment)	Evening	42	47
	Night	34	39
Area surrounding L2 (or similar acoustic environment)	Day	41	51
	Evening	39	44
	Night	33	38
Neighbouring industrial premises	When in use	n/a	75
Offices, retail outlets.	When in use	n/a	70

Notes. 1. Based on measured noise levels provided in Table 2.2.

3.6 Construction vibration

3.6.1 Human comfort – Assessing vibration a technical guideline

Environmental Noise Management – Assessing Vibration: a technical guideline (DEC, 2006) is based on guidelines contained in BS 6472 – 2008, Evaluation of human exposure to vibration in buildings (1-80Hz).

The guideline presents preferred and maximum vibration values for use in assessing human responses to vibration and provides recommendations for measurement and evaluation techniques. At vibration values below the preferred values, there is a low probability of adverse comment or disturbance to building occupants. Where all feasible and reasonable mitigation measures have been applied and vibration values are still beyond the maximum value, it is recommended the operator negotiate directly with the affected community.

The guideline defines three vibration types and provides direction for assessing and evaluating the applicable criteria. Table 2.1 of the guideline provides examples of the three vibration types and has been reproduced in Table 3.9.

Table 3.6 Examples of types of vibration (from Table 2.1 of the guideline)

Continuous vibration	Impulsive vibration	Intermittent vibration
Machinery, steady road traffic, continuous construction activity (such as tunnel boring machinery).	Infrequent: Activities that create up to 3 distinct vibration events in an assessment period, e.g. occasional dropping of heavy equipment, occasional loading and unloading. Blasting is assessed using ANZECC (1990).	Trains, intermittent nearby construction activity, passing heavy vehicles, forging machines, impact pile driving, jack hammers. Where the number of vibration events in an assessment period is three or fewer these would be assessed against impulsive vibration criteria.

3.6.2 Continuous vibration

Appendix C of the guideline outlines acceptable criteria for human exposure to continuous vibration (1-80Hz). The criteria are dependent on both the time of activity and the occupied place being assessed. Table 3.10 reproduces the preferred and maximum criteria relating to measured peak velocity.

Table 3.7 Criteria for exposure to continuous vibration

Place	Time	Peak 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

Notes: *1. RMS velocity (mm/s) and vibration velocity value (dB re 10^{-9} mm/s).*

2. Values given for most critical frequency >8 Hz assuming sinusoidal motion.

3.6.3 Intermittent vibration

Intermittent vibration (as defined in Section 2.1 of the guideline) is assessed using the vibration dose concept which relates to vibration magnitude and exposure time.

Intermittent vibration is representative of activities such as impact hammering, rolling or general excavation work (such as an excavator tracking).

Section 2.4 of the Guideline provides acceptable values for intermittent vibration in terms of vibration dose values (VDV) which requires the measurement of the overall weighted RMS (root mean square) acceleration levels over the frequency range 1 Hz to 80 Hz. To calculate VDV the following formula (refer to Section 2.4.1 of the guideline) was used:

$$VDV = \left[\int_0^T a^4(t)dt\right]^{0.25}$$

Where VDV is the vibration dose value in $m/s^{1.75}$, *a (t)* is the frequency-weighted rms of acceleration in m/s^2 and *T* is the total period of the day (in seconds) during which vibration may occur.

The Acceptable Vibration Dose Values (VDV) for Intermittent Vibration are reproduced in Table 3.11.

Table 3.8 Acceptable vibration dose values (VDV) for intermittent vibration ($m/s^{1.75}$)

Location	Day[1]		Night[1]	
	Preferred value, $m/s^{1.75}$	Maximum value, $m/s^{1.75}$	Preferred value, $m/s^{1.75}$	Maximum value, $m/s^{1.75}$
Critical Areas	0.10	0.20	0.10	0.20
Residences	0.20	0.4	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

Notes: *1.The daytime is 7.00 am to 6.00 pm; evening 6.00 pm to 10.00 pm; night-time 10.00 pm to 7.00 am. On Sundays and Public Holidays, the daytime is 8.00 am to 6.00 pm; evening 6.00 pm to 10.00 pm; night-time 10.00 pm to 8.00 am.*

2. These criteria are indicative only, and there may be a need to assess intermittent values against continuous or impulsive criteria for critical areas.

There is a low probability of adverse comment or disturbance to building occupants at vibration values below the preferred values. Adverse comment or complaints may be expected if vibration values approach the maximum values. The Guideline states that activities should be designed to meet the preferred values where an area is not already exposed to vibration.

Impulsive vibration is typically not characteristic of construction activity and for assessment purposes continuous and intermittent vibration criteria should primarily be applied.

3.6.4 Structural vibration criteria

Most commonly specified "safe" structural vibration limits are designed to minimise the risk of threshold or cosmetic surface cracks and are set well below the levels that have potential to cause damage to the main structure.

In terms of the most recent relevant vibration damage criteria, Australian Standard AS 2187.2 - 2006 "*Explosives - Storage and Use - 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*" be used as they are "applicable to Australian conditions".

The 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.

Sources of vibration that are considered in the standard include demolition, blasting (carried out during mineral extraction or construction excavation), piling, ground treatments (eg compaction), construction equipment, tunnelling, road and rail traffic and industrial machinery.

The recommended limits (guide values) for transient vibration to ensure minimal risk of cosmetic damage to residential and industrial buildings are presented numerically in Table 3.12 and graphically in Figure 3.1.

Table 3.9 Transient vibration guide values - minimal risk of cosmetic damage

Line	Type of building	Peak component particle velocity in frequency range of predominant pulse	
		4 Hz to 15 Hz	15 Hz and above
1	Reinforced or framed structures Industrial and heavy commercial buildings	50 mm/s at 4 Hz and above	
2	Unreinforced or light framed structures Residential or light commercial type buildings	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

The standard states that the guide values in Table 3.13 relate predominantly to transient vibration which does not give rise to resonant responses in structures and low-rise buildings.

Where the dynamic loading caused by continuous vibration is such as to give rise to dynamic magnification due to resonance, especially at the lower frequencies where lower guide values apply, then the guide values in Table 3.13 may need to be reduced by up to 50%.

Sheet piling activities (for example) are considered to have the potential to cause dynamic loading in some structures (eg residences) and it may therefore be appropriate to reduce the transient values by 50%.

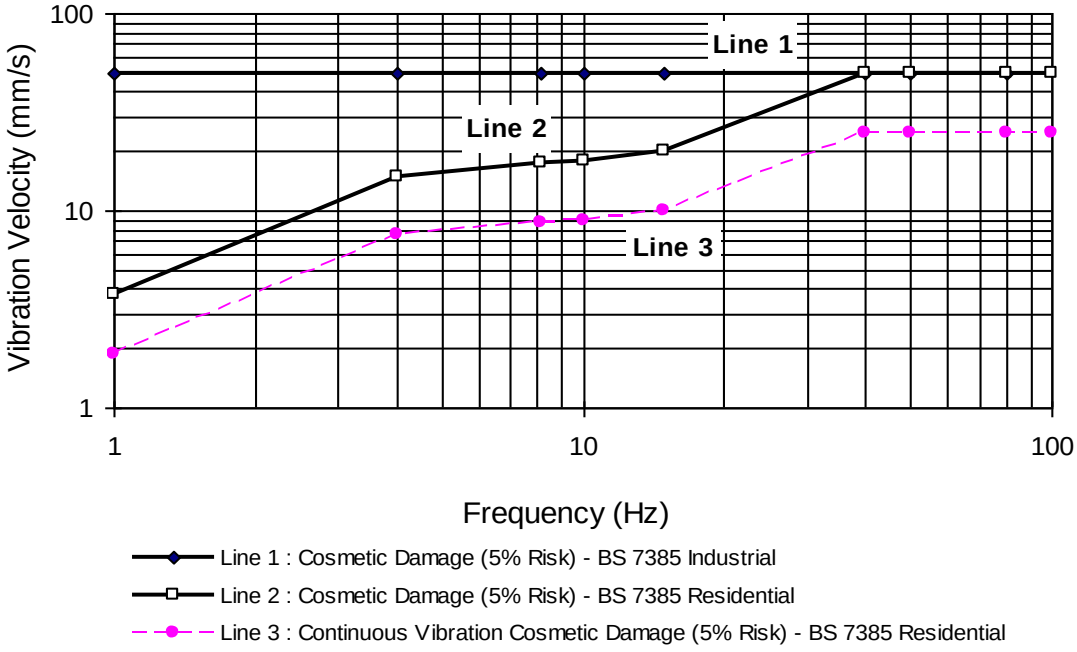


Figure 3.1 Graph of transient vibration guide values for cosmetic damage

In the lower frequency region where strains associated with a given vibration velocity magnitude are higher, the guide values for building types corresponding to Line 2 are reduced. Below a frequency of 4 Hz where a high displacement is associated with the relatively low peak component particle velocity value, a maximum displacement of 0.6 mm (zero to peak) is recommended. This displacement is equivalent to a vibration velocity of 3.7 mm/s at 1 Hz.

The standard goes on to state that minor damage is possible at vibration magnitudes which are greater than twice those given in Table 3.12, and major damage to a building structure may occur at values greater than four (4) times the tabulated values.

Fatigue considerations are also addressed in the standard and it is concluded that unless calculation indicates that the magnitude and number of load reversals is significant (in respect of the fatigue life of building materials) then the guide values in Table 3.13 should not be reduced for fatigue considerations.

In order to assess the likelihood of cosmetic damage due to vibration, AS2187 specifies that vibration measured should be undertaken at the base of the building and the highest of the orthogonal vibration components (transverse, longitudinal and vertical directions) should be compared with the criteria curves presented in Table 3.12.

It is noteworthy that extra to the guide values nominated in Table 3.13, the standard states that:

“Some data suggests that the probability of damage tends towards zero at 12.5 mm/s peak component particle velocity. This is not inconsistent with an extensive review of the case history information available in the UK.”

Also that:

“A building of historical value should not (unless it is structurally unsound) be assumed to be more sensitive.”

3.7 Ground-borne noise

Ground-borne noise is noise generated by vibration transmitted through the ground into a structure. The ICNG provides guidance on the assessment of ground-borne noise and relevant internal noise levels for the evening and night-time periods above which management actions should be implemented.

It is understood that vibration-generating events, such as vibratory rolling and compacting, would occur during the daytime only. As such, ground-borne noise impacts are not expected at the nearest residences.

4 Assessment

4.1 Mechanical plant noise

The precise plant selections are unknown at this stage, however most plant areas will likely either be on a basement or roof level. Assuming the use of conventional plant equipment and noise mitigation methods such as the selection of equipment on the basis of quiet operation and appropriate use of enclosures, localised barriers, acoustic attenuators and acoustically treated ductwork, it is expected that criteria defined in Section 3.1 will be met.

During the detailed design stage an assessment of external mechanical plant and equipment will be conducted to assess against noise criteria defined in Section 3.1.

4.2 Acoustic performance of building elements

If internal noise limits cannot be met by standard construction, building upgrades may be required. The DoP's *"Development near rail corridors and busy roads - interim guideline"* (2008) – Appendix C – "*Acoustic Treatment of Residences"* provides categories of building upgrades and the associated Weighted Sound Reduction Index (Rw) of each building element. This is reproduced in Table 4.1.

Table 4.1 Acoustic performance of building elements

Category of Noise Control Treatment	R_w of Building Elements (minimum assumed)				
	Windows/Sliding Doors	Frontage Facade	Roof	Entry Door	Floor
Category 1	24	38	40	28	29
Category 2	27	45	43	30	29
Category 3	32	52	48	33	50
Category 4	35	55	52	33	50
Category 5	43	55	55	40	50

Source: Development near rail corridors and busy roads - interim guideline (2008) – Appendix C – "Acoustic Treatment of Residences" (DoP).

4.3 Residential construction recommendations

Recommendations for the external building fabric are provided below based on criteria in Section 3.2. Calculations will have to be revisited in the construction certificate stage when floor plans, building elevations and glazing schedules are finalised. Recommendations are based on external noise levels calculated using measured data and the ISO9613 algorithm in Brüel & Kjær Predictor noise mapping and modelling software.

i Glazing (windows and doors)

For specific residential rooms towards the south façade of the proposed development which front River Road, certain glazing will be required to satisfy the relevant noise criteria. The development has been divided into Area 22 and Area 23 sections as per the elevations and section plans provided to EMM by DKO architecture on the 2 June 2023, distinguishing between rooms that are closer to and farther from River Road respectively. In general Area 23 rooms require higher category upgrades than Area 22 rooms. Table 4.2 specifies the glazing categories for the relevant rooms.

As described earlier, Section 3.6.1 of 'Development near Rail Corridors and Busy Roads - Interim Guideline' (2007) provides allowance for open and closed windows.

Internal noise levels with open windows exceed internal noise criteria by more than 10 dB for some Area 23 sleeping and living areas which front River Road where a window is positioned at the façade (ie without a winter garden balcony). As River Road is classified as a busy road with a 20,000 average 24 hour traffic volume, mechanical ventilation is recommended to these rooms to meet the ventilation requirements of the Building Code of Australia. The rooms that require mechanical ventilation are specified in Table 4.2. Living and sleeping areas facing River Road on Basement level 1, 2 and 3 will require mechanical ventilation to allow windows to be closed to meet internal noise targets should occupants wish. These have been detailed in Appendix C. However, units facing River Road that include winter gardens buffer corresponding rooms from road traffic noise, eg living and sleeping areas facing River Road on levels 1 to 8. The proposed design of winter gardens is such that glazing openings in the adjacent rooms can be offset from that in the winter garden. In this configuration, the noise reduction achievable will mean internal noise levels for these rooms will not exceed the noise criteria by more than 10 dB while windows are partially opened for acceptable ventilation purposes (eg 5% of floor area). Therefore the Department's guideline (refer to Section 3.3.2) is satisfied with windows/doors partially open and the need for ventilation requirements are not triggered for these floors.

Glazing recommendations have been provided for the residential buildings within Area 23 in Table 4.2. Figures in Appendix C detail the glazing requirements.

Table 4.2 Residential glazing requirement summary

Area (See Appendix C)	**Level**	**Internal criteria, $L_{Aeq\ (15\ min)}$, dB**	**Glazing requirement (minimum)**				**Mechanical ventilation recommended?**
			Category (DoP 2008)	**Rw**	**Glass**	**Seal**	**Where windows open at external facade**
Area 23 Living areas Fronting River Road (All front and side windows)	Level 1 -8	40	3	32	6.38 mm laminated	Full perimeter acoustic seals	No

Table 4.2 Residential glazing requirement summary

Area (See Appendix C)	Level	Internal criteria, $L_{Aeq\ (15\ min)}$, dB	Glazing requirement (minimum)				Mechanical ventilation recommended?
			Category (DoP 2008)	Rw	Glass	Seal	Where windows open at external facade
Area 23 Living areas Fronting River Road (All front and side windows)	Basement 1 -3	40	3	32	6.38 mm laminated	Full perimeter acoustic seals	Yes
Area 23 Sleeping areas fronting River Road (All Front and side windows)	Level 1 - 8	35	3	32	6.38 mm laminated	Full perimeter acoustic seals	No
Area 23 Sleeping areas fronting River Road (All Front and side windows)	Basement 1 -3	35	3	32	6.38 mm laminated	Full perimeter acoustic seals	Yes
Area 23 sleeping areas to the side of south façade (See Appendix C)	Basement 2 & Basement 1	35	2	27	6 mm monolithic	Full perimeter acoustic seals	Yes
Area 23 living areas to the side of south façade (See Appendix C)	Basement 2 & Basement 1	40	2	27	6 mm monolithic	Full perimeter acoustic seals	Yes

4.4 Internal walls

All intertenancy partition walls, floors/ceilings and entry doors will be constructed in accordance with the BCA requirements specified in Section 3.4. A review of all proposed wall types is to be completed during the construction certificate stage to ensure that the relevant BCA criteria is met.

4.5 Construction noise and vibration management

4.5.1 Noise and vibration management plan

It is recommended that a construction noise management plan be prepared which should as a minimum include:

- identification of nearby residences and sensitive land uses;
- description of approved hours of work and what work will be undertaken;
- description of what work practices will be applied to minimise noise;
- description of the complaints handling process;
- description of monitoring that is required; and

- notification process for nearby properties.

4.5.2 Adoption of general noise management practices (AS 2436-2016)

AS 2436-2016 *"Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites"* sets out numerous practical recommendations to assist in mitigating construction noise emissions. Examples of strategies that could be implemented on the subject project are listed below.

i Universal work practices

These include:

- regular reinforcement (such as toolbox talks) of the need to minimise noise and vibration;
- regular identification of noisy activities and adoption of improvement techniques;
- avoiding the use of portable radios, public address systems or other methods of site communication that may unnecessarily impact upon nearby residents;
- developing routes for the delivery of materials and parking of vehicles to minimise noise;
- where possible, avoiding the use of equipment that generates impulsive noise;
- minimising the movement of materials and plant and unnecessary metal-on-metal contact;
- minimising truck movements; and
- scheduling respite periods for intensive works.

ii Plant and equipment

Additional measures for plant and equipment include;

- choosing quieter plant and equipment based on the optimal power and size to most efficiently perform the required tasks;
- operating plan and equipment in the quietest and most efficient manner; and
- regularly inspecting and maintaining plant and equipment to minimise noise and vibration level increases, to ensure that all noise and vibration reduction devices are operating effectively.

iii Onsite noise mitigation

These include:

- Maximising the distance between noisy activities and noise sensitive land uses;
- Using temporary site building and material stockpiles as noise barriers. These can often be created using site earthworks and may be included as part of final landscape design; and
- Installing purpose built noise barriers, acoustic sheds and enclosures as described earlier.

iv Work scheduling

These include:

- scheduling activities to minimise impacts by undertaking all possible work during hours that will least adversely affect sensitive receivers and by avoiding conflicts with other scheduled events;
- scheduling work to coincide with non-sensitive periods;
- scheduling noisy activities to coincide with high levels of neighbourhood noise so that noise from the activities is partially masked and not as intrusive;
- planning deliveries and access to the site to occur quietly and efficiently and organising parking only within designated areas located away from the sensitive receivers;
- optimising the number of deliveries to the site by amalgamating loads were possible and scheduling arrivals within designated hours;
- designating, designing and maintaining access routes to the site to minimise impacts; and
- including contracts conditions that include penalties for non-compliance with reasonable instructions by the principal to minimise noise or arrange suitable scheduling.

v Source noise control strategies

Ways of controlling noise at the source include:

- where reasonably practical, noisy plant or processes should be replaced by less noisy alternatives;
- locating noisy equipment behind structures that act as barriers, or at the greatest distance from the noise-sensitive area; or orientating the equipment so that noise emissions are directed away from any sensitive areas, to achieve the maximum attenuation of noise; and
- regular and effective maintenance.

5 Conclusion

EMM has completed an acoustic assessment of the proposed development at 26 - 50 Park Rd, 27 - 47 Berry Rd, 48 - 54 River Rd St Leonards NSW 2065 (Area 22 & 23)..

Existing background and ambient noise levels were measured, and noise criteria were set for emissions from the development during operation and construction; in Sections 3.2 and 3.6 respectively.

Although the precise mechanical plant selections are unknown at this stage, mechanical plant noise emissions from the proposed development are expected to satisfy relevant criteria if conventional plant and noise mitigation methods are used (Section 4.1).

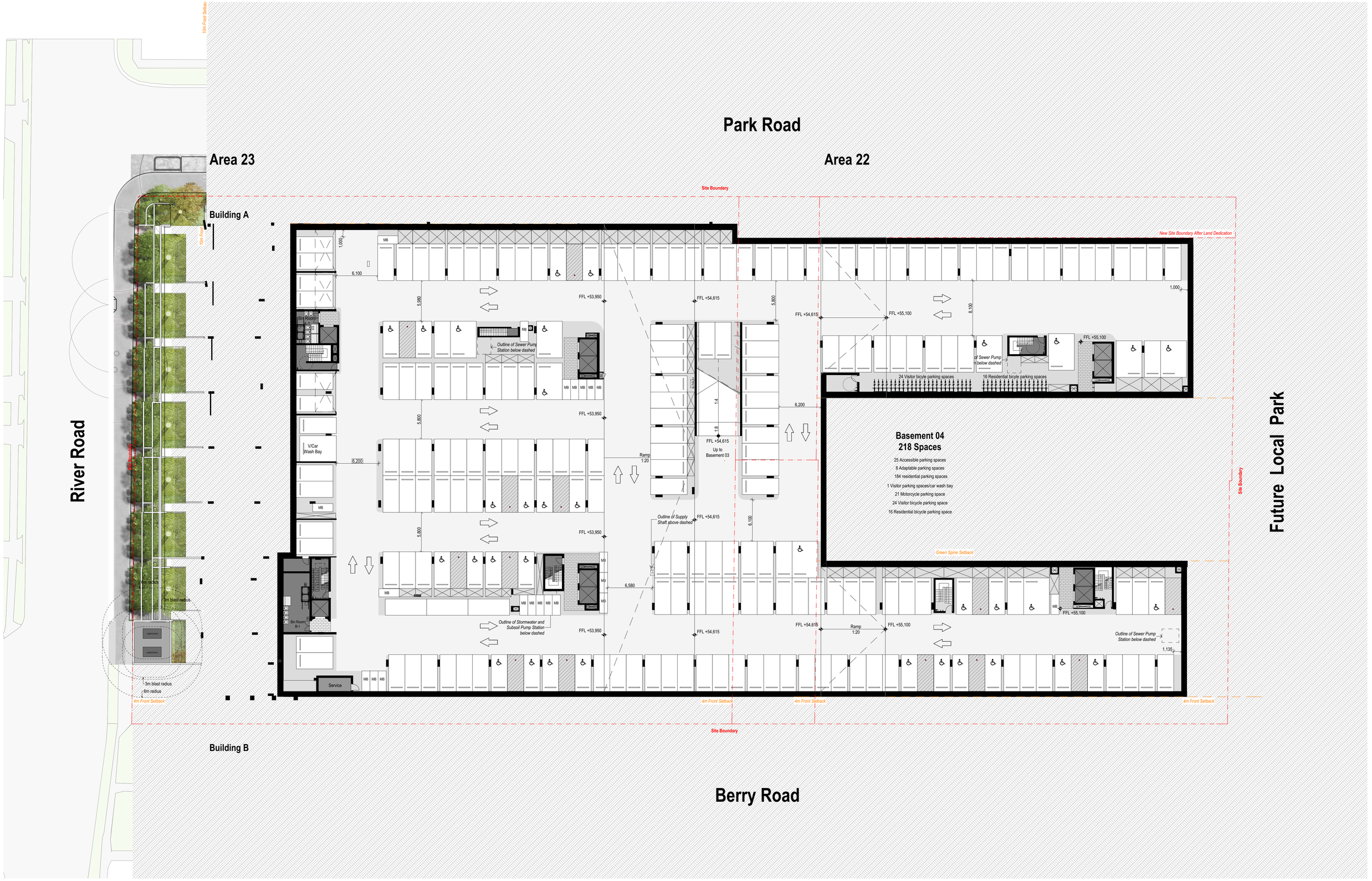
Computational modelling indicates that the development is impacted by road traffic noise from River Road. In order to achieve appropriate internal noise levels, minimum glazing requirements have been established for certain rooms and these are consistent with what is being proposed by JQZ. Construction details are specified in Sections 4.3 and Appendix C.

.

Appendix A

Architectural drawing set

EMM
creating opportunities



Builder/Contractor shall verify job dimensions before any job commences. Figured dimensions take precedence over drawings and job dimensions. All shop drawings shall be submitted to the Architect/Consultant, and manufacture shall not commence prior to return of inspected shop drawings by the Architect/Consultant

Notes
ALL WORKS TO BE IN ACCORDANCE WITH AUTHORITY & STATUTORY APPROVALS.

REFER TO SITE SURVEY FOR ALL INFORMATION RELATING TO EXISTING SITE CONDITIONS.
ALL BOUNDARY INFORMATION TO BE CONFIRMED BY REGISTERED SURVEYOR BEFORE COMMENCING WORKS ON SITE.

REFER TO LANDSCAPE ARCHITECT'S DOCUMENTATION & ARBORIST REPORTS FOR ALL INFORMATION RELATING TO TREES AND THEIR RETENTION/REMOVAL AND NEW LANDSCAPE WORKS.

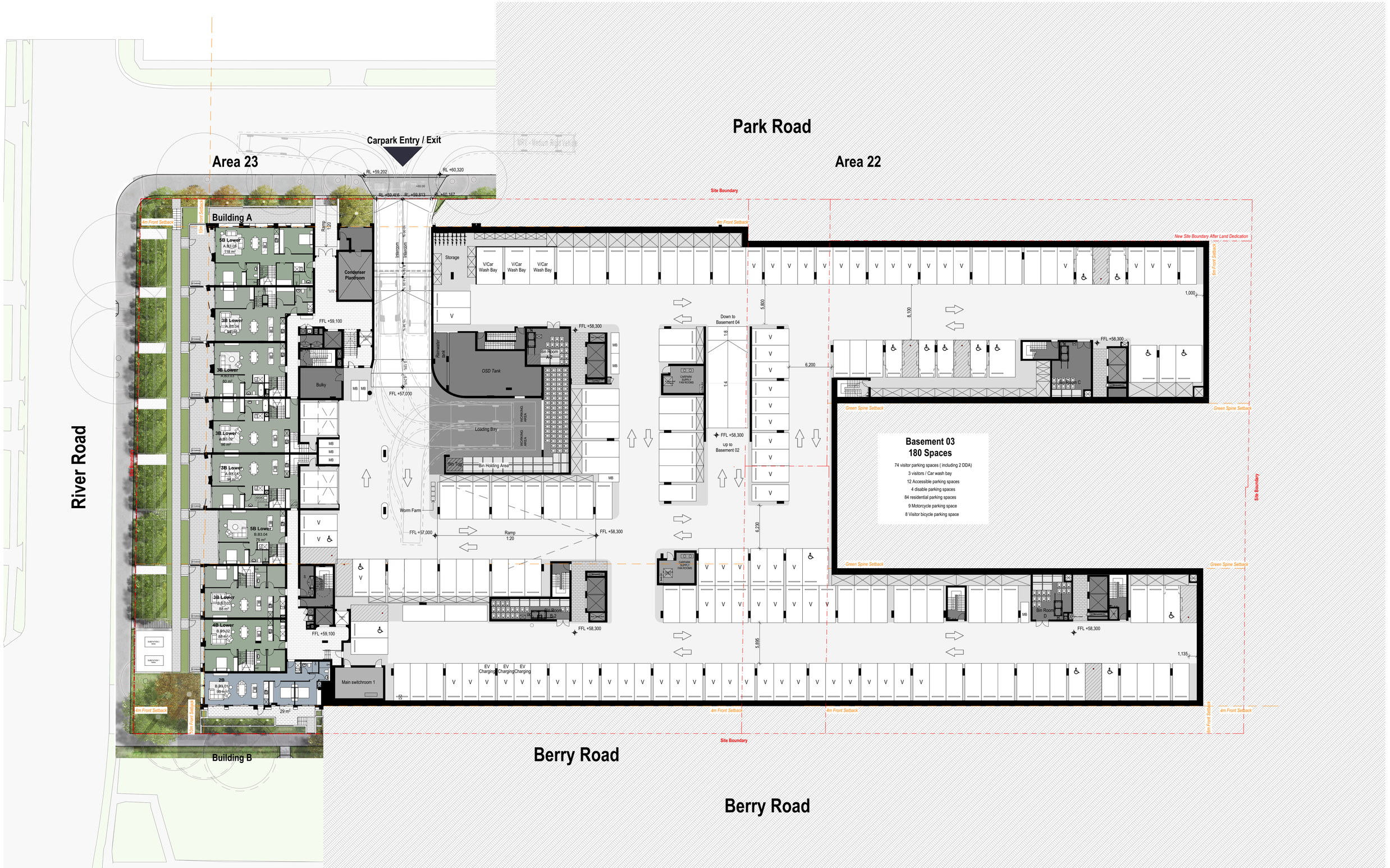
ALL DRAWINGS TO BE READ IN CONJUCTION WITH:
- ALL SPECIFICATIONS & SCHEDULES
- ALL SPECIALIST CONSULTANTS DOCUMENTATION
- BASIX, NATHERS & SECTION J CERTIFICATES

MINOR CHANGES TO FORM & CONFIGURATION MAY BE REQUIRED AFTER DEVELOPMENT CONSENT WHEN DRAWINGS ARE PREPARED FOR CONSTRUCTION PURPOSES.

Rev	Date	By	Chk	Description
A	24/11/2022	AC, MJ, XD	XD, MR	Issued for DA
B	11/05/2023	AC	XD	DA Amendment
C	5/06/2023	AC, IR	XD	DA Amendment

DKO Architecture (NSW) Pty Ltd
42 Davies Street
Surry Hills, NSW 2010
T +61 2 8346 4500
info@DKO.com.au
www.DKO.com.au
ABN: 81956706590
NSW: Nominated Architects
Koos de Keijzer 5767
David Randerson 8542

Project Name	Park Road
Project Address	26-50 Park Rd, 27-47 Berry Rd, 48-54 River Rd , (Area 22 & 23), NSW 2065
Client	Berry Road Development Pty Ltd.
Project Number	12883
Drawing Name	Basement 4
Scale	1:250@A1
Date	June 2023
Drawing Number	DA200
Revision	C



Builder/Contractor shall verify job dimensions before any job commences. Figured dimensions take precedence over drawings and job dimensions. All shop drawings shall be submitted to the Architect/Consultant, and manufacture shall not commence prior to return of inspected shop drawings by the Architect/Consultant

Notes
ALL WORKS TO BE IN ACCORDANCE WITH AUTHORITY & STATUTORY APPROVALS.

REFER TO SITE SURVEY FOR ALL INFORMATION RELATING TO EXISTING SITE CONDITIONS.
ALL BOUNDARY INFORMATION TO BE CONFIRMED BY REGISTERED SURVEYOR BEFORE COMMENCING WORKS ON SITE.

REFER TO LANDSCAPE ARCHITECT'S DOCUMENTATION & ARBORIST REPORTS FOR ALL INFORMATION RELATING TO TREES AND THEIR RETENTION/REMOVAL AND NEW LANDSCAPE WORKS.

ALL DRAWINGS TO BE READ IN CONJUCTION WITH:
- ALL SPECIFICATIONS & SCHEDULES
- ALL SPECIALIST CONSULTANTS DOCUMENTATION
- BASIX, NATHERS & SECTION J CERTIFICATES

MINOR CHANGES TO FORM & CONFIGURATION MAY BE REQUIRED AFTER DEVELOPMENT CONSENT WHEN DRAWINGS ARE PREPARED FOR CONSTRUCTION PURPOSES.

Rev	Date	By	Chk	Description
A	24/11/2022	AC, MJ, XD	XD, MR	Issued for DA
B	11/05/2023	AC	XD	DA Amendment
C	5/06/2023	AC, IR	XD	DA Amendment

DKO Architecture (NSW) Pty Ltd
42 Davies Street
Surry Hills, NSW 2010
T +61 2 8346 4500
info@DKO.com.au
www.DKO.com.au
ABN: 81956706590
NSW: Nominated Architects
Koos de Keijzer 5767
David Randerson 8542

DKO

Project Name	Park Road
Project Address	26-50 Park Rd, 27-47 Berry Rd, 48-54 River Rd , (Area 22 & 23), NSW 2065
Client	Berry Road Development Pty Ltd.
Project Number	12883
Drawing Name	Basement 3
Scale	1:250@A1
Date	June 2023
Drawing Number	DA201
Revision	C

© DKO Architecture (NSW) Pty Ltd
Except as allowed under copyright act, no part of this drawing may be reproduced or otherwise dealt with without written permission of DKO Architecture.

Builder/Contractor shall verify job dimensions before any job commences. Figured dimensions take precedence over drawings and job dimensions. All shop drawings shall be submitted to the Architect/Consultant, and manufacture shall not commence prior to return of inspected shop drawings by the Architect/Consultant

Notes
ALL WORKS TO BE IN ACCORDANCE WITH AUTHORITY & STATUTORY APPROVALS.

REFER TO SITE SURVEY FOR ALL INFORMATION RELATING TO EXISTING SITE CONDITIONS.
ALL BOUNDARY INFORMATION TO BE CONFIRMED BY REGISTERED SURVEYOR BEFORE COMMENCING WORKS ON SITE.

REFER TO LANDSCAPE ARCHITECT'S DOCUMENTATION & ARBORIST REPORTS FOR ALL INFORMATION RELATING TO TREES AND THEIR RETENTION/REMOVAL AND NEW LANDSCAPE WORKS.

ALL DRAWINGS TO BE READ IN CONJUCTION WITH:
- ALL SPECIFICATIONS & SCHEDULES
- ALL SPECIALIST CONSULTANTS DOCUMENTATION
- BASIX, NATHERS & SECTION J CERTIFICATES

MINOR CHANGES TO FORM & CONFIGURATION MAY BE REQUIRED AFTER DEVELOPMENT CONSENT WHEN DRAWINGS ARE PREPARED FOR CONSTRUCTION PURPOSES.

Rev	Date	By	Chk	Description
A	24/11/2022	AC, MJ, XD	XD, MR	Issued for DA
B	11/05/2023	AC	XD	DA Amendment
C	5/06/2023	AC, IR	XD	DA Amendment

DKO Architecture (NSW) Pty Ltd
42 Davies Street
Surry Hills, NSW 2010
T +61 2 8346 4500
info@DKO.com.au
www.DKO.com.au
ABN: 81956706590
NSW: Nominated Architects
Koos de Keijzer 5767
David Randerson 8542

DKO

Project Name	Park Road
Project Address	26-50 Park Rd, 27-47 Berry Rd, 48-54 River Rd , (Area 22 & 23), NSW 2065
Client	Berry Road Development Pty Ltd.
Project Number	12883
Drawing Name	Basement 2
Scale	1:250@A1
Date	June 2023
Drawing Number	DA202
Revision	C

Builder/Contractor shall verify job dimensions before any job commences. Figured dimensions take precedence over drawings and job dimensions. All shop drawings shall be submitted to the Architect/Consultant, and manufacture shall not commence prior to return of inspected shop drawings by the Architect/Consultant

Notes
ALL WORKS TO BE IN ACCORDANCE WITH AUTHORITY & STATUTORY APPROVALS.

REFER TO SITE SURVEY FOR ALL INFORMATION RELATING TO EXISTING SITE CONDITIONS.
ALL BOUNDARY INFORMATION TO BE CONFIRMED BY REGISTERED SURVEYOR BEFORE COMMENCING WORKS ON SITE.

REFER TO LANDSCAPE ARCHITECT'S DOCUMENTATION & ARBORIST REPORTS FOR ALL INFORMATION RELATING TO TREES AND THEIR RETENTION/REMOVAL AND NEW LANDSCAPE WORKS.

ALL DRAWINGS TO BE READ IN CONJUCTION WITH:
- ALL SPECIFICATIONS & SCHEDULES
- ALL SPECIALIST CONSULTANTS DOCUMENTATION
- BASIX, NATHERS & SECTION J CERTIFICATES

MINOR CHANGES TO FORM & CONFIGURATION MAY BE REQUIRED AFTER DEVELOPMENT CONSENT WHEN DRAWINGS ARE PREPARED FOR CONSTRUCTION PURPOSES.

Rev	Date	By	Chk	Description
A	24/11/2022	AC, MJ, XD	XD, MR	Issued for DA
B	11/05/2023	AC	XD	DA Amendment
C	5/06/2023	AC, IR	XD	DA Amendment

DKO Architecture (NSW) Pty Ltd
42 Davies Street
Surry Hills, NSW 2010
T +61 2 8346 4500
info@DKO.com.au
www.DKO.com.au
ABN: 81956706590
NSW: Nominated Architects
Koos de Keijzer 5767
David Randerson 8542

DKO

Project Name	Park Road
Project Address	26-50 Park Rd, 27-47 Berry Rd, 48-54 River Rd , (Area 22 & 23), NSW 2065
Client	Berry Road Development Pty Ltd.
Project Number	12883
Drawing Name	Basement 1
Scale	1:250@A1
Date	June 2023
Drawing Number	DA203
Revision	C

33 Park Road | 31 & 31A Park Road | 29 Park Road | 27 Park Road | 23 & 25 Park Road | 21 Park Road | 19 Park Road | 17 Park Road | 15 Park Road

Park Road

Area 23

Building A

Area 22

Building C

Building D

Building B

River Road

DCP Proposed New Road

DCP PROPOSED NEW RD

Berry Road

Site Boundary

17m Front Setback

7m Front Setback

4m Front Setback

4m Side Setback

Green Spine Setback

New Site Boundary After Land Dedication

10m Front Setback

NTR

Residential bicycle parking space

SERVICES / STORAGE

FFL+68,200

Service

Services

Fan RM

Services / Storage

23 Residential bicycle parking space

OPEN LAWN

BLEACHER SEATING

CANOPY STRUCTURE

SUBSTATIONS

Notes
ALL WORKS TO BE IN ACCORDANCE WITH AUTHORITY & STATUTORY APPROVALS.

REFER TO SITE SURVEY FOR ALL INFORMATION RELATING TO EXISTING SITE CONDITIONS.
ALL BOUNDARY INFORMATION TO BE CONFIRMED BY REGISTERED SURVEYOR BEFORE COMMENCING WORKS ON SITE.

REFER TO LANDSCAPE ARCHITECT'S DOCUMENTATION & ARBORIST REPORTS FOR ALL INFORMATION RELATING TO TREES AND THEIR RETENTION/REMOVAL AND NEW LANDSCAPE WORKS.

ALL DRAWINGS TO BE READ IN CONJUCTION WITH:
- ALL SPECIFICATIONS & SCHEDULES
- ALL SPECIALIST CONSULTANTS DOCUMENTATION
- BASIX, NATHERS & SECTION J CERTIFICATES

MINOR CHANGES TO FORM & CONFIGURATION MAY BE REQUIRED AFTER DEVELOPMENT CONSENT WHEN DRAWINGS ARE PREPARED FOR CONSTRUCTION PURPOSES.

Rev	Date	By	Chk	Description
A	24/11/2022	AC, MJ, XD	XD, MR	Issued for DA
B	11/05/2023	AC	XD	DA Amendment
C	5/06/2023	AC, IR	XD	DA Amendment

DKO Architecture (NSW) Pty Ltd
42 Davies Street
Surry Hills, NSW 2010
T +61 2 8346 4500
info@DKO.com.au
www.DKO.com.au
ABN: 81956706590
NSW: Nominated Architects
Koos de Keijzer 5767
David Randerson 8542

DKO

Project Name	Park Road
Project Address	26-50 Park Rd, 27-47 Berry Rd, 48-54 River Rd , (Area 22 & 23), NSW 2065
Client	Berry Road Development Pty Ltd.
Project Number	12883
Drawing Name	Ground Floor Plan
Scale	1:2500@A1
Date	June 2023
Drawing Number	DA204
Revision	C

Builder/Contractor shall verify job dimensions before any job commences. Figured dimensions take precedence over drawings and job dimensions. All shop drawings shall be submitted to the Architect/Consultant, and manufacture shall not commence prior to return of inspected shop drawings by the Architect/Consultant

Builder/Contractor shall verify job dimensions before any job commences. Figured dimensions take precedence over drawings and job dimensions. All shop drawings shall be submitted to the Architect/Consultant, and manufacture shall not commence prior to return of inspected shop drawings by the Architect/Consultant

Notes
ALL WORKS TO BE IN ACCORDANCE WITH AUTHORITY & STATUTORY APPROVALS.

REFER TO SITE SURVEY FOR ALL INFORMATION RELATING TO EXISTING SITE CONDITIONS.
ALL BOUNDARY INFORMATION TO BE CONFIRMED BY REGISTERED SURVEYOR BEFORE COMMENCING WORKS ON SITE.

REFER TO LANDSCAPE ARCHITECT'S DOCUMENTATION & ARBORIST REPORTS FOR ALL INFORMATION RELATING TO TREES AND THEIR RETENTION/REMOVAL AND NEW LANDSCAPE WORKS.

ALL DRAWINGS TO BE READ IN CONJUCTION WITH:
- ALL SPECIFICATIONS & SCHEDULES
- ALL SPECIALIST CONSULTANTS DOCUMENTATION
- BASIX, NATHERS & SECTION J CERTIFICATES

MINOR CHANGES TO FORM & CONFIGURATION MAY BE REQUIRED AFTER DEVELOPMENT CONSENT WHEN DRAWINGS ARE PREPARED FOR CONSTRUCTION PURPOSES.

Rev	Date	By	Chk	Description
A	24/11/2022	AC, MJ, XD	XD, MR	Issued for DA
B	11/05/2023	AC	XD	DA Amendment
C	5/06/2023	AC, IR	XD	DA Amendment

DKO Architecture (NSW) Pty Ltd
42 Davies Street
Surry Hills, NSW 2010
T +61 2 8346 4500
info@DKO.com.au
www.DKO.com.au
ABN: 81956706590
NSW: Nominated Architects
Koos de Keijzer 5767
David Randerson 8542

DKO

Project Name	Park Road
Project Address	26-50 Park Rd, 27-47 Berry Rd, 48-54 River Rd , (Area 22 & 23), NSW 2065
Client	Berry Road Development Pty Ltd.
Project Number	12883
Drawing Name	Level 1
Scale	1:250@A1
Date	June 2023
Drawing Number	DA205
Revision	C

Park Road

River Road

Future Local Park

Berry Road

Berry Road Entry

Building B

Site Boundary

7m Front Setback

24m Front Setback

7m Side Setback

6m Side Setback

10m Front Setback

13m Front Setback

Green Spine Setback

4m Front Setback

17m Front Setback

4m Side Setback

FFL+75.100

FFL+73.800

DCP PROPOSED NEW RD

OPEN LAWN

BLEACHER SEATING

CANOPY STRUCTURE

SUBSTATIONS

Notes
ALL WORKS TO BE IN ACCORDANCE WITH AUTHORITY & STATUTORY APPROVALS.

REFER TO SITE SURVEY FOR ALL INFORMATION RELATING TO EXISTING SITE CONDITIONS.
ALL BOUNDARY INFORMATION TO BE CONFIRMED BY REGISTERED SURVEYOR BEFORE COMMENCING WORKS ON SITE.

REFER TO LANDSCAPE ARCHITECT'S DOCUMENTATION & ARBORIST REPORTS FOR ALL INFORMATION RELATING TO TREES AND THEIR RETENTION/REMOVAL AND NEW LANDSCAPE WORKS.

ALL DRAWINGS TO BE READ IN CONJUCTION WITH:
- ALL SPECIFICATIONS & SCHEDULES
- ALL SPECIALIST CONSULTANTS DOCUMENTATION
- BASIX, NATHERS & SECTION J CERTIFICATES

MINOR CHANGES TO FORM & CONFIGURATION MAY BE REQUIRED AFTER DEVELOPMENT CONSENT WHEN DRAWINGS ARE PREPARED FOR CONSTRUCTION PURPOSES.

Rev	Date	By	Chk	Description
A	24/11/2022	AC, MJ, XD	XD, MR	Issued for DA
B	11/05/2023	AC	XD	DA Amendment
C	5/06/2023	AC, IR	XD	DA Amendment

DKO Architecture (NSW) Pty Ltd
42 Davies Street
Surry Hills, NSW 2010
T +61 2 8346 4500
info@DKO.com.au
www.DKO.com.au
ABN: 81956706590
NSW: Nominated Architects
Koos de Keijzer 5767
David Randerson 8542

Builder/Contractor shall verify job dimensions before any job commences. Figured dimensions take precedence over drawings and job dimensions. All shop drawings shall be submitted to the Architect/Consultant, and manufacture shall not commence prior to return of inspected shop drawings by the Architect/Consultant

Project Name	Park Road
Project Address	26-50 Park Rd, 27-47 Berry Rd, 48-54 River Rd , (Area 22 & 23), NSW 2065
Client	Berry Road Development Pty Ltd.
Project Number	12883
Drawing Name	Level 2
Scale	1:250@A1
Date	June 2023
Drawing Number	DA206
Revision	C

Park Road

River Road

Area 23

Area 22

Site Boundary

Building A

24m Front Setback

7m Front Setback

7m Front Setback

7m Side Setback

Green Spine Setback

Green Spine Setback

Site Boundary

Building C

7m Side Setback

9m Side Setback

New Site Boundary After Land Dedication

Green Spine Setback

Green Spine Setback

Proposed New Road

DCP Proposed

Future Local Park

Building B

Green Spine Setback

Green Spine Setback

4m Front Setback

24m Front Setback

4m Side Setback

4m Front Setback

Site Boundary

Building D

Green Spine Setback

Green Spine Setback

4m Front Setback

7m Side Setback

6m Side Setback

4m Front Setback

Berry Road

Builder/Contractor shall verify job dimensions before any job commences. Figured dimensions take precedence over drawings and job dimensions. All shop drawings shall be submitted to the Architect/Consultant, and manufacture shall not commence prior to return of inspected shop drawings by the Architect/Consultant

Notes
ALL WORKS TO BE IN ACCORDANCE WITH AUTHORITY & STATUTORY APPROVALS.

REFER TO SITE SURVEY FOR ALL INFORMATION RELATING TO EXISTING SITE CONDITIONS.
ALL BOUNDARY INFORMATION TO BE CONFIRMED BY REGISTERED SURVEYOR BEFORE COMMENCING WORKS ON SITE.

REFER TO LANDSCAPE ARCHITECT'S DOCUMENTATION & ARBORIST REPORTS FOR ALL INFORMATION RELATING TO TREES AND THEIR RETENTION/REMOVAL AND NEW LANDSCAPE WORKS.

ALL DRAWINGS TO BE READ IN CONJUCTION WITH:
- ALL SPECIFICATIONS & SCHEDULES
- ALL SPECIALIST CONSULTANTS DOCUMENTATION
- BASIX, NATHERS & SECTION J CERTIFICATES

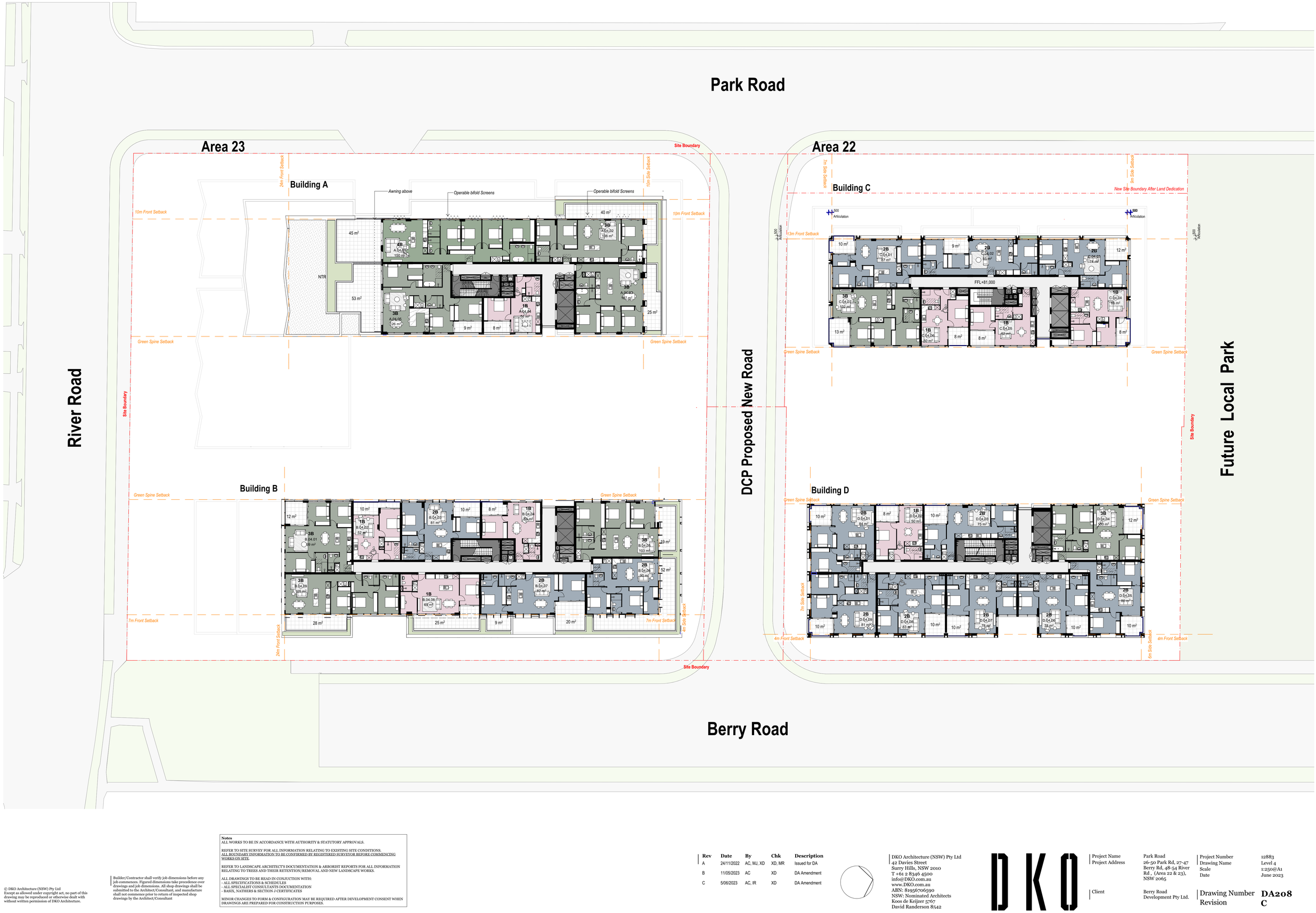
MINOR CHANGES TO FORM & CONFIGURATION MAY BE REQUIRED AFTER DEVELOPMENT CONSENT WHEN DRAWINGS ARE PREPARED FOR CONSTRUCTION PURPOSES.

Rev	Date	By	Chk	Description
A	24/11/2022	AC, MJ, XD	XD, MR	Issued for DA
B	11/05/2023	AC	XD	DA Amendment
C	5/06/2023	AC, IR	XD	DA Amendment

DKO Architecture (NSW) Pty Ltd
42 Davies Street
Surry Hills, NSW 2010
T +61 2 8346 4500
info@DKO.com.au
www.DKO.com.au
ABN: 81956706590
NSW: Nominated Architects
Koos de Keijzer 5767
David Randerson 8542

DKO

Project Name	Park Road
Project Address	26-50 Park Rd, 27-47 Berry Rd, 48-54 River Rd , (Area 22 & 23), NSW 2065
Client	Berry Road Development Pty Ltd.
Project Number	12883
Drawing Name	Level 3
Scale	1:250@A1
Date	June 2023
Drawing Number	DA207
Revision	C



Builder/Contractor shall verify job dimensions before any job commences. Figured dimensions take precedence over drawings and job dimensions. All shop drawings shall be submitted to the Architect/Consultant, and manufacture shall not commence prior to return of inspected shop drawings by the Architect/Consultant

Notes
ALL WORKS TO BE IN ACCORDANCE WITH AUTHORITY & STATUTORY APPROVALS.

REFER TO SITE SURVEY FOR ALL INFORMATION RELATING TO EXISTING SITE CONDITIONS.
ALL BOUNDARY INFORMATION TO BE CONFIRMED BY REGISTERED SURVEYOR BEFORE COMMENCING WORKS ON SITE.

REFER TO LANDSCAPE ARCHITECT'S DOCUMENTATION & ARBORIST REPORTS FOR ALL INFORMATION RELATING TO TREES AND THEIR RETENTION/REMOVAL AND NEW LANDSCAPE WORKS.

ALL DRAWINGS TO BE READ IN CONJUCTION WITH:
- ALL SPECIFICATIONS & SCHEDULES
- ALL SPECIALIST CONSULTANTS DOCUMENTATION
- BASIX, NATHERS & SECTION J CERTIFICATES

MINOR CHANGES TO FORM & CONFIGURATION MAY BE REQUIRED AFTER DEVELOPMENT CONSENT WHEN DRAWINGS ARE PREPARED FOR CONSTRUCTION PURPOSES.

Rev	Date	By	Chk	Description
A	24/11/2022	AC, MJ, XD	XD, MR	Issued for DA
B	11/05/2023	AC	XD	DA Amendment
C	5/06/2023	AC, IR	XD	DA Amendment

DKO Architecture (NSW) Pty Ltd
42 Davies Street
Surry Hills, NSW 2010
T +61 2 8346 4500
info@DKO.com.au
www.DKO.com.au
ABN: 81956706590
NSW: Nominated Architects
Koos de Keijzer 5767
David Randerson 8542

Project Name	Park Road
Project Address	26-50 Park Rd, 27-47 Berry Rd, 48-54 River Rd , (Area 22 & 23), NSW 2065
Client	Berry Road Development Pty Ltd.
Project Number	12883
Drawing Name	Level 4
Scale	1:250@A1
Date	June 2023
Drawing Number	DA208
Revision	C

Builder/Contractor shall verify job dimensions before any job commences. Figured dimensions take precedence over drawings and job dimensions. All shop drawings shall be submitted to the Architect/Consultant, and manufacture shall not commence prior to return of inspected shop drawings by the Architect/Consultant

Notes

ALL WORKS TO BE IN ACCORDANCE WITH AUTHORITY & STATUTORY APPROVALS.

REFER TO SITE SURVEY FOR ALL INFORMATION RELATING TO EXISTING SITE CONDITIONS.
ALL BOUNDARY INFORMATION TO BE CONFIRMED BY REGISTERED SURVEYOR BEFORE COMMENCING WORKS ON SITE.

REFER TO LANDSCAPE ARCHITECT'S DOCUMENTATION & ARBORIST REPORTS FOR ALL INFORMATION RELATING TO TREES AND THEIR RETENTION/REMOVAL AND NEW LANDSCAPE WORKS.

ALL DRAWINGS TO BE READ IN CONJUCTION WITH:
- ALL SPECIFICATIONS & SCHEDULES
- ALL SPECIALIST CONSULTANTS DOCUMENTATION
- BASIX, NATHERS & SECTION J CERTIFICATES

MINOR CHANGES TO FORM & CONFIGURATION MAY BE REQUIRED AFTER DEVELOPMENT CONSENT WHEN DRAWINGS ARE PREPARED FOR CONSTRUCTION PURPOSES.

Rev	Date	By	Chk	Description
A	24/11/2022	AC, MJ, XD	XD, MR	Issued for DA
B	11/05/2023	AC	XD	DA Amendment
C	5/06/2023	AC, IR	XD	DA Amendment

DKO Architecture (NSW) Pty Ltd
42 Davies Street
Surry Hills, NSW 2010
T +61 2 8346 4500
info@DKO.com.au
www.DKO.com.au
ABN: 81956706590
NSW: Nominated Architects
Koos de Keijzer 5767
David Randerson 8542

Project Name	Park Road	Project Number	12883
Project Address	26-50 Park Rd, 27-47 Berry Rd, 48-54 River Rd , (Area 22 & 23), NSW 2065	Drawing Name	Level 5
		Scale	1:250@A1
		Date	June 2023
Client	Berry Road Development Pty Ltd.	Drawing Number	DA209
		Revision	C

Park Road

River Road

Area 23

Site Boundary

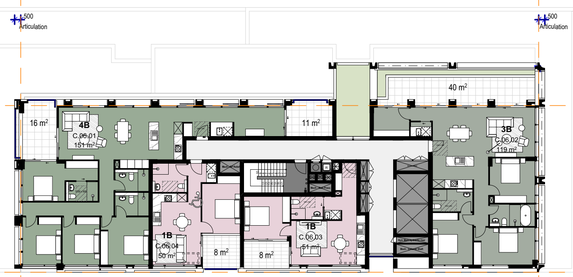
Area 22

Proposed New Road

DCP Proposed Future Local Park

Site Boundary

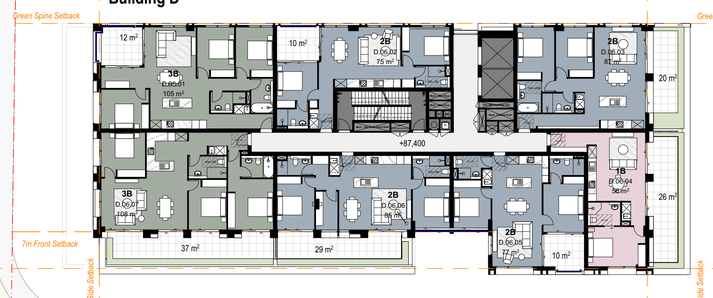
Building C



Building B

Site Boundary

Building D



Berry Road

Builder/Contractor shall verify job dimensions before any job commences. Figured dimensions take precedence over drawings and job dimensions. All shop drawings shall be submitted to the Architect/Consultant, and manufacture shall not commence prior to return of inspected shop drawings by the Architect/Consultant

Notes
ALL WORKS TO BE IN ACCORDANCE WITH AUTHORITY & STATUTORY APPROVALS.

REFER TO SITE SURVEY FOR ALL INFORMATION RELATING TO EXISTING SITE CONDITIONS.
ALL BOUNDARY INFORMATION TO BE CONFIRMED BY REGISTERED SURVEYOR BEFORE COMMENCING WORKS ON SITE.

REFER TO LANDSCAPE ARCHITECT'S DOCUMENTATION & ARBORIST REPORTS FOR ALL INFORMATION RELATING TO TREES AND THEIR RETENTION/REMOVAL AND NEW LANDSCAPE WORKS.

ALL DRAWINGS TO BE READ IN CONJUCTION WITH:
- ALL SPECIFICATIONS & SCHEDULES
- ALL SPECIALIST CONSULTANTS DOCUMENTATION
- BASIX, NATHERS & SECTION J CERTIFICATES

MINOR CHANGES TO FORM & CONFIGURATION MAY BE REQUIRED AFTER DEVELOPMENT CONSENT WHEN DRAWINGS ARE PREPARED FOR CONSTRUCTION PURPOSES.

Rev	Date	By	Chk	Description
A	24/11/2022	AC, MJ, XD	XD, MR	Issued for DA
B	11/05/2023	AC	XD	DA Amendment
C	5/06/2023	AC, IR	XD	DA Amendment

DKO Architecture (NSW) Pty Ltd
42 Davies Street
Surry Hills, NSW 2010
T +61 2 8346 4500
info@DKO.com.au
www.DKO.com.au
ABN: 81956706590
NSW: Nominated Architects
Koos de Keijzer 5767
David Randerson 8542

DKO

Project Name: Park Road
Project Address: 26-50 Park Rd, 27-47 Berry Rd, 48-54 River Rd , (Area 22 & 23), NSW 2065

Client: Berry Road Development Pty Ltd.

Project Number: 12883
Drawing Name: Level 6
Scale: 1:250@A1
Date: June 2023

Drawing Number / Revision: DA210 C

Park Road

River Road

Area 23

Site Boundary

Area 22

Proposed New Road

DCP Proposed

Future Local Park

Site Boundary

Building C

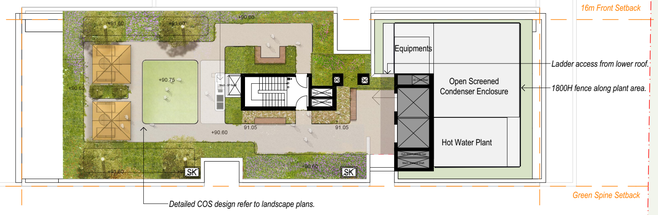
10m Side Setback

2m Side Setback

New Site Boundary After Land Dedication

16m Front Setback

16m Front Setback



Detailed COS design refer to landscape plans.

Green Spine Setback

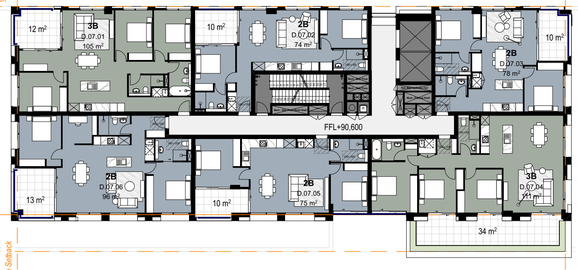
Green Spine Setback

Building B

Green Spine Setback

Green Spine Setback

Building D



7m Front Setback

7m Front Setback

7m Front Setback

7m Front Setback

24m Front Setback

7m Side Setback

7m Side Setback

3m Side Setback

Site Boundary

Berry Road

Builder/Contractor shall verify job dimensions before any job commences. Figured dimensions take precedence over drawings and job dimensions. All shop drawings shall be submitted to the Architect/Consultant, and manufacture shall not commence prior to return of inspected shop drawings by the Architect/Consultant

Notes
ALL WORKS TO BE IN ACCORDANCE WITH AUTHORITY & STATUTORY APPROVALS.

REFER TO SITE SURVEY FOR ALL INFORMATION RELATING TO EXISTING SITE CONDITIONS.
ALL BOUNDARY INFORMATION TO BE CONFIRMED BY REGISTERED SURVEYOR BEFORE COMMENCING WORKS ON SITE.

REFER TO LANDSCAPE ARCHITECT'S DOCUMENTATION & ARBORIST REPORTS FOR ALL INFORMATION RELATING TO TREES AND THEIR RETENTION/REMOVAL AND NEW LANDSCAPE WORKS.

ALL DRAWINGS TO BE READ IN CONJUCTION WITH:
- ALL SPECIFICATIONS & SCHEDULES
- ALL SPECIALIST CONSULTANTS DOCUMENTATION
- BASIX, NATHERS & SECTION J CERTIFICATES

MINOR CHANGES TO FORM & CONFIGURATION MAY BE REQUIRED AFTER DEVELOPMENT CONSENT WHEN DRAWINGS ARE PREPARED FOR CONSTRUCTION PURPOSES.

Rev	Date	By	Chk	Description
A	24/11/2022	AC, MJ, XD	XD, MR	Issued for DA
B	11/05/2023	AC	XD	DA Amendment
C	5/06/2023	AC, IR	XD	DA Amendment

DKO Architecture (NSW) Pty Ltd
42 Davies Street
Surry Hills, NSW 2010
T +61 2 8346 4500
info@DKO.com.au
www.DKO.com.au
ABN: 81956706590
NSW: Nominated Architects
Koos de Keijzer 5767
David Randerson 8542

DKO

Project Name: Park Road
Project Address: 26-50 Park Rd, 27-47 Berry Rd, 48-54 River Rd , (Area 22 & 23), NSW 2065

Client: Berry Road Development Pty Ltd.

Project Number: 12883
Drawing Name: Level 7
Scale: 1:250@A1
Date: June 2023

Drawing Number: DA211
Revision: C

Park Road

River Road

Area 23

Site Boundary

Area 22

Building C

3m Side Setback

New Site Boundary After Land Dedication

16m Front Setback

16m Front Setback

Plant Below

C.O.S Below

Green Spine Setback

Green Spine Setback

Site Boundary

Proposed New Road

DCP Proposed

Future Local Park

Building B

Green Spine Setback

Green Spine Setback

10 m²

2B
B.08.02
75 m²

18 m²

4B
B.08.01
120 m²

10 m²

2B
B.08.03
95 m²

FFL+94.300

2B
B.08.04
81 m²

2B
B.08.05
87 m²

3B
B.08.06
116 m²

18 m²

8 m²

10 m²

10 m²

7m Front Setback

7m Front Setback

24m Front Setback

7m Side Setback

Building D

Green Spine Setback

Green Spine Setback

12 m²

3B
D.08.01
105 m²

10 m²

2B
D.08.02
75 m²

2B
D.08.03
78 m²

10 m²

FFL+93.800

2B
D.08.04
90 m²

2B
D.08.05
75 m²

3B
D.08.06
103 m²

13 m²

10 m²

12 m²

7m Front Setback

7m Front Setback

7m Side Setback

9m Side Setback

Site Boundary

Berry Road

Notes
ALL WORKS TO BE IN ACCORDANCE WITH AUTHORITY & STATUTORY APPROVALS.

REFER TO SITE SURVEY FOR ALL INFORMATION RELATING TO EXISTING SITE CONDITIONS.
ALL BOUNDARY INFORMATION TO BE CONFIRMED BY REGISTERED SURVEYOR BEFORE COMMENCING WORKS ON SITE.

REFER TO LANDSCAPE ARCHITECT'S DOCUMENTATION & ARBORIST REPORTS FOR ALL INFORMATION RELATING TO TREES AND THEIR RETENTION/REMOVAL AND NEW LANDSCAPE WORKS.

ALL DRAWINGS TO BE READ IN CONJUCTION WITH:
- ALL SPECIFICATIONS & SCHEDULES
- ALL SPECIALIST CONSULTANTS DOCUMENTATION
- BASIX, NATHERS & SECTION J CERTIFICATES

MINOR CHANGES TO FORM & CONFIGURATION MAY BE REQUIRED AFTER DEVELOPMENT CONSENT WHEN DRAWINGS ARE PREPARED FOR CONSTRUCTION PURPOSES.

Builder/Contractor shall verify job dimensions before any job commences. Figured dimensions take precedence over drawings and job dimensions. All shop drawings shall be submitted to the Architect/Consultant, and manufacture shall not commence prior to return of inspected shop drawings by the Architect/Consultant

Rev	Date	By	Chk	Description
A	24/11/2022	AC, MJ, XD	XD, MR	Issued for DA
B	11/05/2023	AC	XD	DA Amendment
C	5/06/2023	AC, IR	XD	DA Amendment

DKO Architecture (NSW) Pty Ltd
42 Davies Street
Surry Hills, NSW 2010
T +61 2 8346 4500
info@DKO.com.au
www.DKO.com.au
ABN: 81956706590
NSW: Nominated Architects
Koos de Keijzer 5767
David Randerson 8542

DKO

Project Name	Park Road
Project Address	26-50 Park Rd, 27-47 Berry Rd, 48-54 River Rd , (Area 22 & 23), NSW 2065
Client	Berry Road Development Pty Ltd.
Project Number	12883
Drawing Name	Level 8
Scale	1:250@A1
Date	June 2023
Drawing Number	DA212
Revision	C

Park Road

Area 23

Site Boundary

Area 22

River Road

Site Boundary

Proposed New Road

Site Boundary

Future Local Park

Building B

Green Spine Setback

Green Spine Setback

NTR

Stair Press, Relief, Carb Exh and Lobby Supply Plant Area

Hot Water Plant

Lift Overrun RL +99.100

Plant

7m Front Setback

24m Front Setback

7m Side Setback

7m Front Setback

Building D

Green Spine Setback

Green Spine Setback

12 m²

3B D.09.01 105 m²

10 m²

2B D.09.04 75 m²

2B D.09.03 78 m²

10 m²

FFL+97.000

3B D.09.04 100 m²

2B D.09.06 80 m²

13 m²

10 m²

2B D.09.05 75 m²

12 m²

7m Front Setback

7m Front Setback

7m Side Setback

9m Side Setback

Site Boundary

Berry Road

Builder/Contractor shall verify job dimensions before any job commences. Figured dimensions take precedence over drawings and job dimensions. All shop drawings shall be submitted to the Architect/Consultant, and manufacture shall not commence prior to return of inspected shop drawings by the Architect/Consultant

Notes
ALL WORKS TO BE IN ACCORDANCE WITH AUTHORITY & STATUTORY APPROVALS.

REFER TO SITE SURVEY FOR ALL INFORMATION RELATING TO EXISTING SITE CONDITIONS.
ALL BOUNDARY INFORMATION TO BE CONFIRMED BY REGISTERED SURVEYOR BEFORE COMMENCING WORKS ON SITE.

REFER TO LANDSCAPE ARCHITECT'S DOCUMENTATION & ARBORIST REPORTS FOR ALL INFORMATION RELATING TO TREES AND THEIR RETENTION/REMOVAL AND NEW LANDSCAPE WORKS.

ALL DRAWINGS TO BE READ IN CONJUCTION WITH:
- ALL SPECIFICATIONS & SCHEDULES
- ALL SPECIALIST CONSULTANTS DOCUMENTATION
- BASIX, NATHERS & SECTION J CERTIFICATES

MINOR CHANGES TO FORM & CONFIGURATION MAY BE REQUIRED AFTER DEVELOPMENT CONSENT WHEN DRAWINGS ARE PREPARED FOR CONSTRUCTION PURPOSES.

Rev	Date	By	Chk	Description
A	24/11/2022	AC, MJ, XD	XD, MR	Issued for DA
B	11/05/2023	AC	XD	DA Amendment
C	5/06/2023	AC, IR	XD	DA Amendment

DKO Architecture (NSW) Pty Ltd
42 Davies Street
Surry Hills, NSW 2010
T +61 2 8346 4500
info@DKO.com.au
www.DKO.com.au
ABN: 81956706590
NSW: Nominated Architects
Koos de Keijzer 5767
David Randerson 8542

DKO

Project Name	Park Road
Project Address	26-50 Park Rd, 27-47 Berry Rd, 48-54 River Rd , (Area 22 & 23), NSW 2065
Client	Berry Road Development Pty Ltd.
Project Number	12883
Drawing Name	Level 9
Scale	1:250@A1
Date	June 2023
Drawing Number	DA213
Revision	C

Park Road

River Road

Area 23

Site Boundary

Site Boundary

Area 22

Proposed New Road

DCP Proposed

Site Boundary

Future Local Park

Building D

Green Spine Setback

Green Spine Setback

FFL+100.200

7m Front Setback

7m Front Setback

7m Side Setback

9m Side Setback

Site Boundary

Berry Road

Builder/Contractor shall verify job dimensions before any job commences. Figured dimensions take precedence over drawings and job dimensions. All shop drawings shall be submitted to the Architect/Consultant, and manufacture shall not commence prior to return of inspected shop drawings by the Architect/Consultant

Notes
ALL WORKS TO BE IN ACCORDANCE WITH AUTHORITY & STATUTORY APPROVALS.

REFER TO SITE SURVEY FOR ALL INFORMATION RELATING TO EXISTING SITE CONDITIONS.
ALL BOUNDARY INFORMATION TO BE CONFIRMED BY REGISTERED SURVEYOR BEFORE COMMENCING WORKS ON SITE.

REFER TO LANDSCAPE ARCHITECT'S DOCUMENTATION & ARBORIST REPORTS FOR ALL INFORMATION RELATING TO TREES AND THEIR RETENTION/REMOVAL AND NEW LANDSCAPE WORKS.

ALL DRAWINGS TO BE READ IN CONJUCTION WITH:
- ALL SPECIFICATIONS & SCHEDULES
- ALL SPECIALIST CONSULTANTS DOCUMENTATION
- BASIX, NATHERS & SECTION J CERTIFICATES

MINOR CHANGES TO FORM & CONFIGURATION MAY BE REQUIRED AFTER DEVELOPMENT CONSENT WHEN DRAWINGS ARE PREPARED FOR CONSTRUCTION PURPOSES.

Rev	Date	By	Chk	Description
A	24/11/2022	AC, MJ, XD	XD, MR	Issued for DA
B	11/05/2023	AC	XD	DA Amendment
C	5/06/2023	AC, IR	XD	DA Amendment

DKO Architecture (NSW) Pty Ltd
42 Davies Street
Surry Hills, NSW 2010
T +61 2 8346 4500
info@DKO.com.au
www.DKO.com.au
ABN: 81956706590
NSW: Nominated Architects
Koos de Keijzer 5767
David Randerson 8542

DKO

Project Name: Park Road
Project Address: 26-50 Park Rd, 27-47 Berry Rd, 48-54 River Rd , (Area 22 & 23), NSW 2065

Client: Berry Road Development Pty Ltd.

Project Number: 12883
Drawing Name: Level 10
Scale: 1:250@A1
Date: June 2023

Drawing Number Revision: DA214 C

Park Road

River Road

Area 23

Site Boundary

Site Boundary

Area 22

Proposed New Road

DCP Proposed

Site Boundary

Future Local Park

Building D

Green Spine Setback

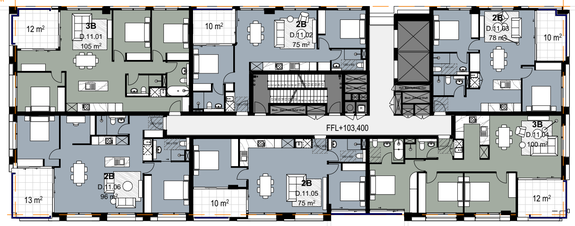
Green Spine Setback

7m Front Setback

7m Front Setback

7m Side Setback

9m Side Setback



Site Boundary

Berry Road

Builder/Contractor shall verify job dimensions before any job commences. Figured dimensions take precedence over drawings and job dimensions. All shop drawings shall be submitted to the Architect/Consultant, and manufacture shall not commence prior to return of inspected shop drawings by the Architect/Consultant

Notes
ALL WORKS TO BE IN ACCORDANCE WITH AUTHORITY & STATUTORY APPROVALS.

REFER TO SITE SURVEY FOR ALL INFORMATION RELATING TO EXISTING SITE CONDITIONS.
ALL BOUNDARY INFORMATION TO BE CONFIRMED BY REGISTERED SURVEYOR BEFORE COMMENCING WORKS ON SITE.

REFER TO LANDSCAPE ARCHITECT'S DOCUMENTATION & ARBORIST REPORTS FOR ALL INFORMATION RELATING TO TREES AND THEIR RETENTION/REMOVAL AND NEW LANDSCAPE WORKS.

ALL DRAWINGS TO BE READ IN CONJUCTION WITH:
- ALL SPECIFICATIONS & SCHEDULES
- ALL SPECIALIST CONSULTANTS DOCUMENTATION
- BASIX, NATHERS & SECTION J CERTIFICATES

MINOR CHANGES TO FORM & CONFIGURATION MAY BE REQUIRED AFTER DEVELOPMENT CONSENT WHEN DRAWINGS ARE PREPARED FOR CONSTRUCTION PURPOSES.

Rev	Date	By	Chk	Description
A	24/11/2022	AC, MJ, XD	XD, MR	Issued for DA
B	11/05/2023	AC	XD	DA Amendment
C	5/06/2023	AC, IR	XD	DA Amendment

DKO Architecture (NSW) Pty Ltd
42 Davies Street
Surry Hills, NSW 2010
T +61 2 8346 4500
info@DKO.com.au
www.DKO.com.au
ABN: 81956706590
NSW: Nominated Architects
Koos de Keijzer 5767
David Randerson 8542

DKO

Project Name	Park Road
Project Address	26-50 Park Rd, 27-47 Berry Rd, 48-54 River Rd , (Area 22 & 23), NSW 2065
Client	Berry Road Development Pty Ltd.
Project Number	12883
Drawing Name	Level 11
Scale	1:250@A1
Date	June 2023
Drawing Number	DA215
Revision	C

Park Road

River Road

Area 23

Site Boundary

Site Boundary

Area 22

Proposed New Road

DCP Proposed

Level 12

Site Boundary

Future Local Park

Building D

Detailed COS design refer to landscape plans.

Green Spine Setback

Green Spine Setback

8m @ 1:20

A/C Condensers

BBQ & DINING UNDER CANOPY STRUCTURE

+106.70

+106.70

+106.85

1800H fence along plant area.

Ladder access from lower roof.

H/W Plant

7m Front Setback

7m Front Setback

7m Side Setback

9m Side Setback

Site Boundary

Berry Road

Builder/Contractor shall verify job dimensions before any job commences. Figured dimensions take precedence over drawings and job dimensions. All shop drawings shall be submitted to the Architect/Consultant, and manufacture shall not commence prior to return of inspected shop drawings by the Architect/Consultant

Notes
ALL WORKS TO BE IN ACCORDANCE WITH AUTHORITY & STATUTORY APPROVALS.

REFER TO SITE SURVEY FOR ALL INFORMATION RELATING TO EXISTING SITE CONDITIONS.
ALL BOUNDARY INFORMATION TO BE CONFIRMED BY REGISTERED SURVEYOR BEFORE COMMENCING WORKS ON SITE.

REFER TO LANDSCAPE ARCHITECT'S DOCUMENTATION & ARBORIST REPORTS FOR ALL INFORMATION RELATING TO TREES AND THEIR RETENTION/REMOVAL AND NEW LANDSCAPE WORKS.

ALL DRAWINGS TO BE READ IN CONJUCTION WITH:
- ALL SPECIFICATIONS & SCHEDULES
- ALL SPECIALIST CONSULTANTS DOCUMENTATION
- BASIX, NATHERS & SECTION J CERTIFICATES

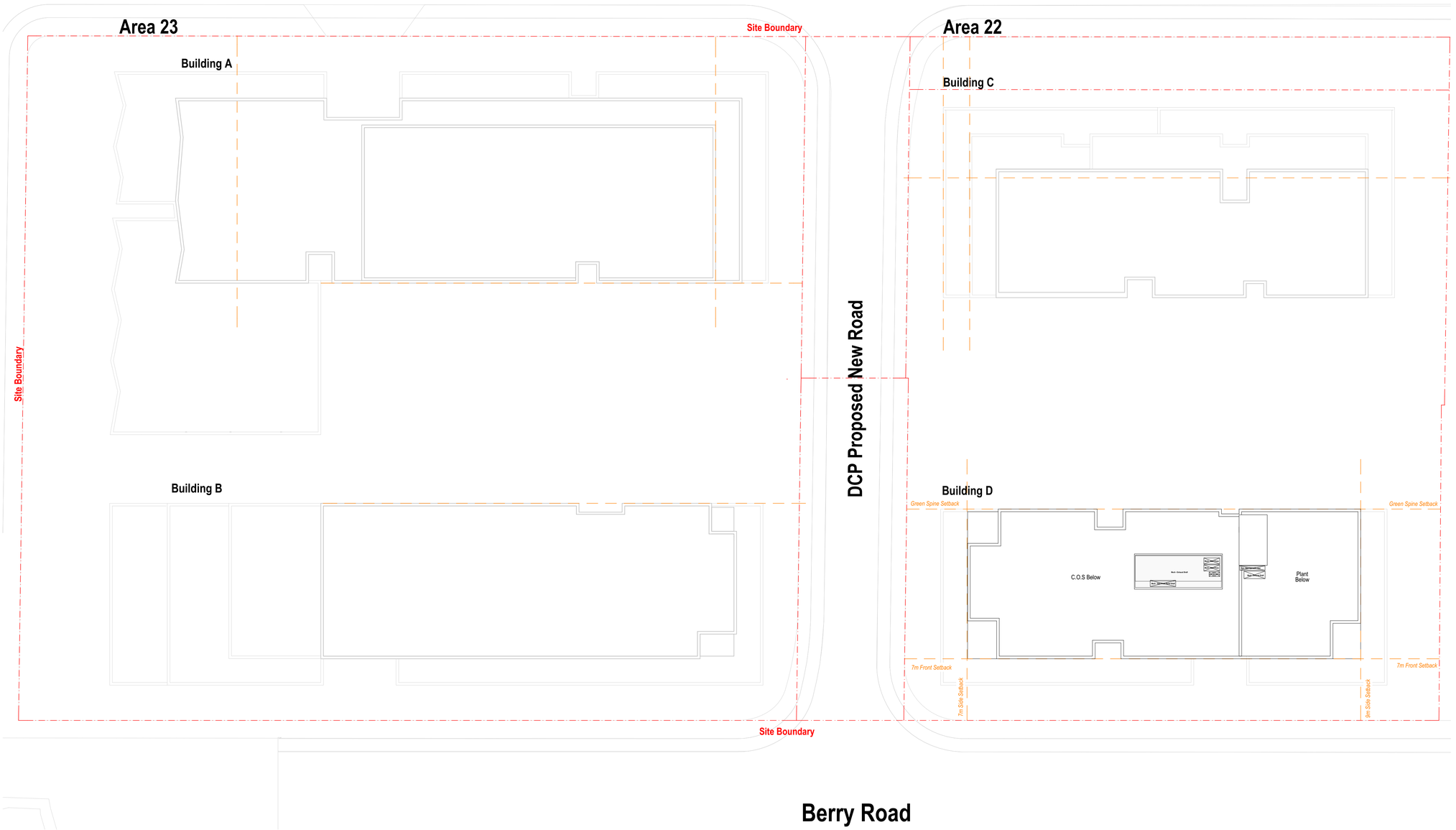
MINOR CHANGES TO FORM & CONFIGURATION MAY BE REQUIRED AFTER DEVELOPMENT CONSENT WHEN DRAWINGS ARE PREPARED FOR CONSTRUCTION PURPOSES.

Rev	Date	By	Chk	Description
A	24/11/2022	AC, MJ, XD	XD, MR	Issued for DA
B	28/04/2023	AC	XD	DA Amendment
C	5/06/2023	AC, IR	XD	DA Amendment

DKO Architecture (NSW) Pty Ltd
42 Davies Street
Surry Hills, NSW 2010
T +61 2 8346 4500
info@DKO.com.au
www.DKO.com.au
ABN: 81956706590
NSW: Nominated Architects
Koos de Keijzer 5767
David Randerson 8542

DKO

Project Name	Park Road
Project Address	26-50 Park Rd, 27-47 Berry Rd, 48-54 River Rd , (Area 22 & 23), NSW 2065
Client	Berry Road Development Pty Ltd.
Project Number	12883
Drawing Name	Level 12
Scale	1:250@A1
Date	June 2023
Drawing Number Revision	DA216 C



Builder/Contractor shall verify job dimensions before any job commences. Figured dimensions take precedence over drawings and job dimensions. All shop drawings shall be submitted to the Architect/Consultant, and manufacture shall not commence prior to return of inspected shop drawings by the Architect/Consultant

Notes
ALL WORKS TO BE IN ACCORDANCE WITH AUTHORITY & STATUTORY APPROVALS.

REFER TO SITE SURVEY FOR ALL INFORMATION RELATING TO EXISTING SITE CONDITIONS.
ALL BOUNDARY INFORMATION TO BE CONFIRMED BY REGISTERED SURVEYOR BEFORE COMMENCING WORKS ON SITE.

REFER TO LANDSCAPE ARCHITECT'S DOCUMENTATION & ARBORIST REPORTS FOR ALL INFORMATION RELATING TO TREES AND THEIR RETENTION/REMOVAL AND NEW LANDSCAPE WORKS.

ALL DRAWINGS TO BE READ IN CONJUCTION WITH:
- ALL SPECIFICATIONS & SCHEDULES
- ALL SPECIALIST CONSULTANTS DOCUMENTATION
- BASIX, NATHERS & SECTION J CERTIFICATES

MINOR CHANGES TO FORM & CONFIGURATION MAY BE REQUIRED AFTER DEVELOPMENT CONSENT WHEN DRAWINGS ARE PREPARED FOR CONSTRUCTION PURPOSES.

Rev	Date	By	Chk	Description
A	24/11/2022	AC, MJ, XD	XD, MR	Issued for DA
B	28/04/2023	AC	XD	DA Amendment
C	5/06/2023	AC, IR	XD	DA Amendment

DKO Architecture (NSW) Pty Ltd
42 Davies Street
Surry Hills, NSW 2010
T +61 2 8346 4500
info@DKO.com.au
www.DKO.com.au
ABN: 81956706590
NSW: Nominated Architects
Koos de Keijzer 5767
David Randerson 8542

DKO

Project Name	Park Road
Project Address	26-50 Park Rd, 27-47 Berry Rd, 48-54 River Rd , (Area 22 & 23), NSW 2065
Client	Berry Road Development Pty Ltd.
Project Number	12883
Drawing Name	Roof Plan
Scale	1:250@A1
Date	June 2023
Drawing Number	DA217
Revision	C

Appendix B

Daily noise logging results and charts

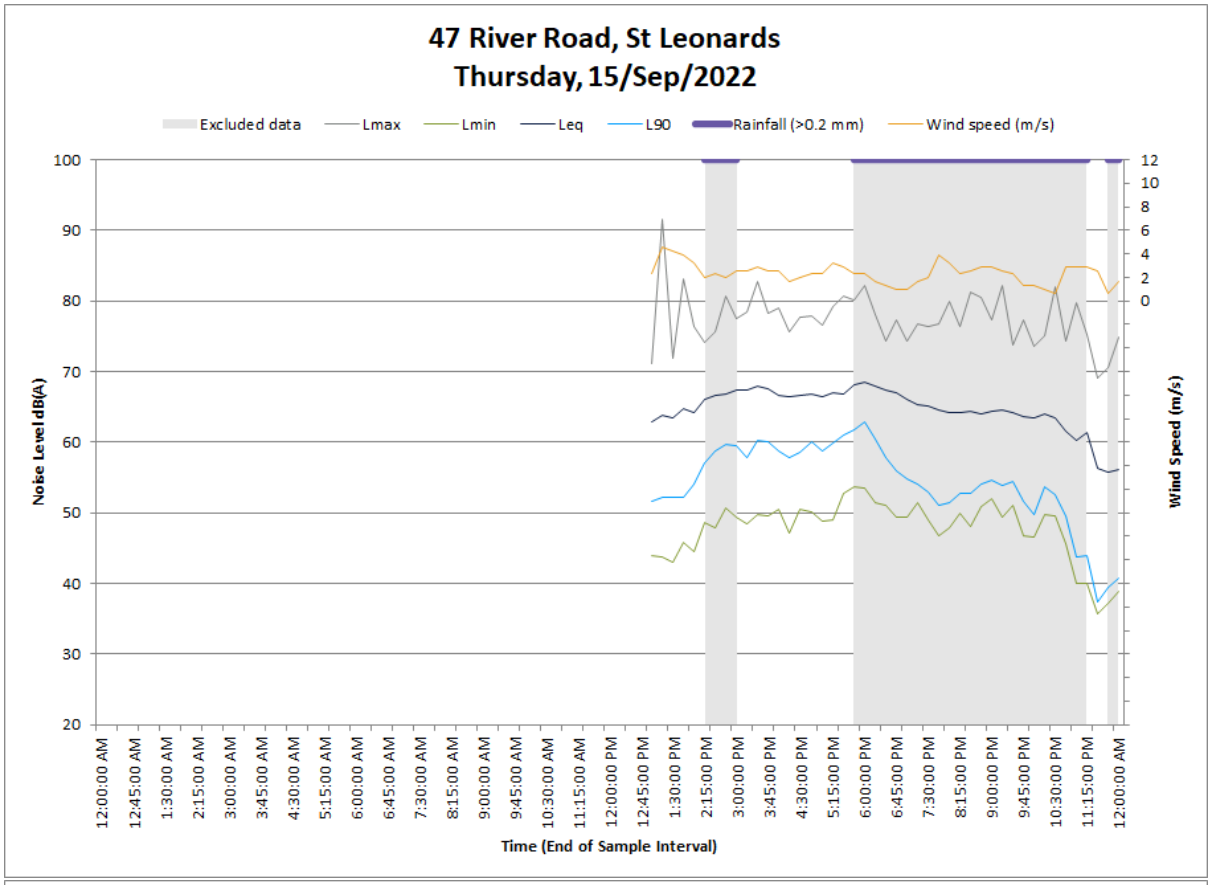
EMM
creating opportunities

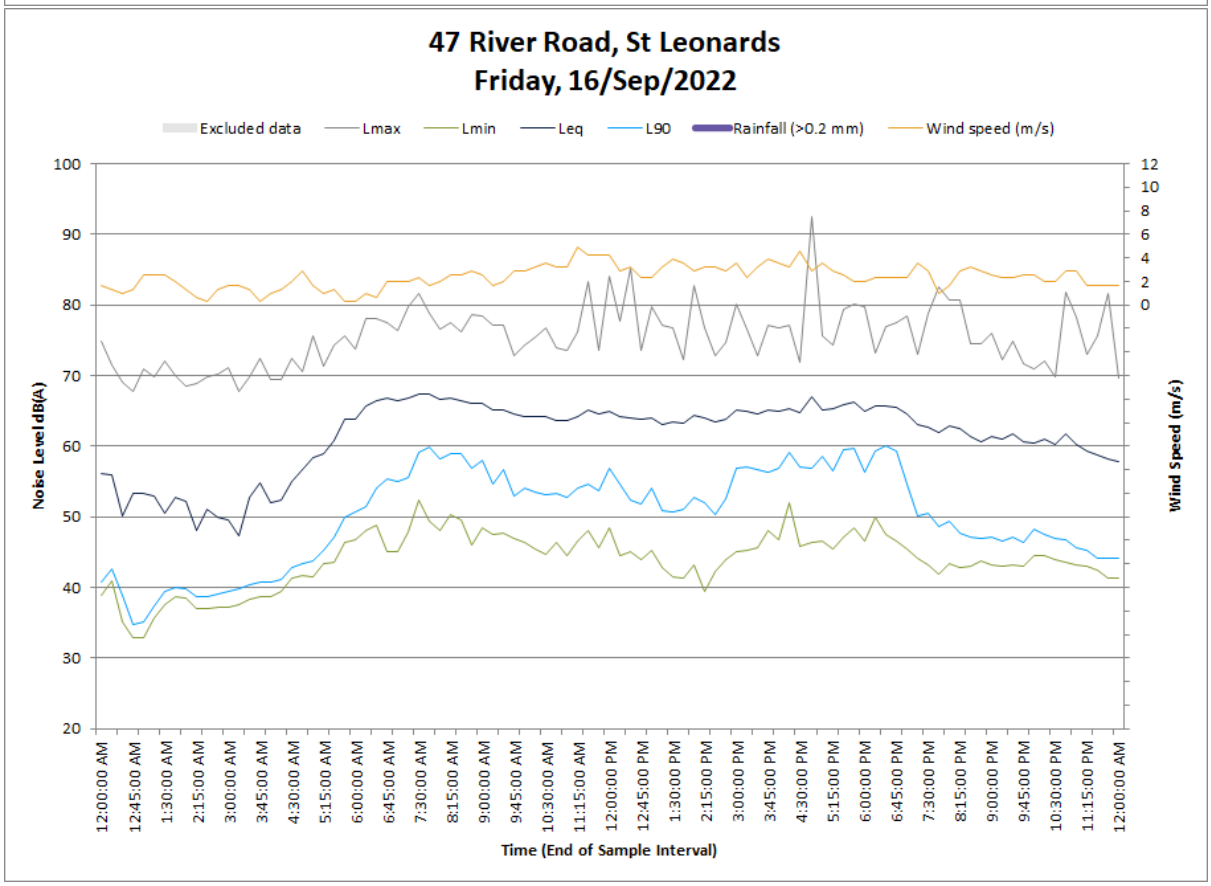
B.1 Daily noise logging results and charts

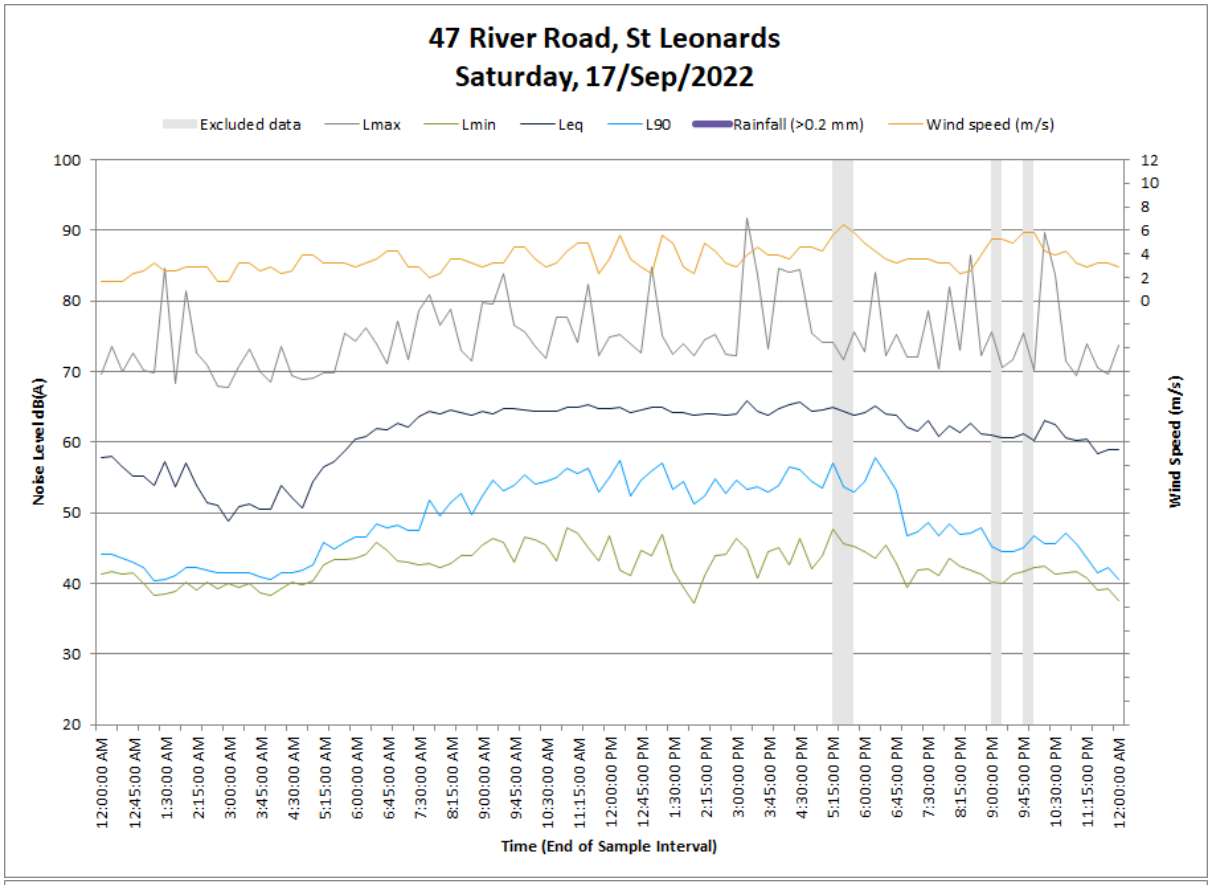
Table B.1 L1 unattended noise monitoring data

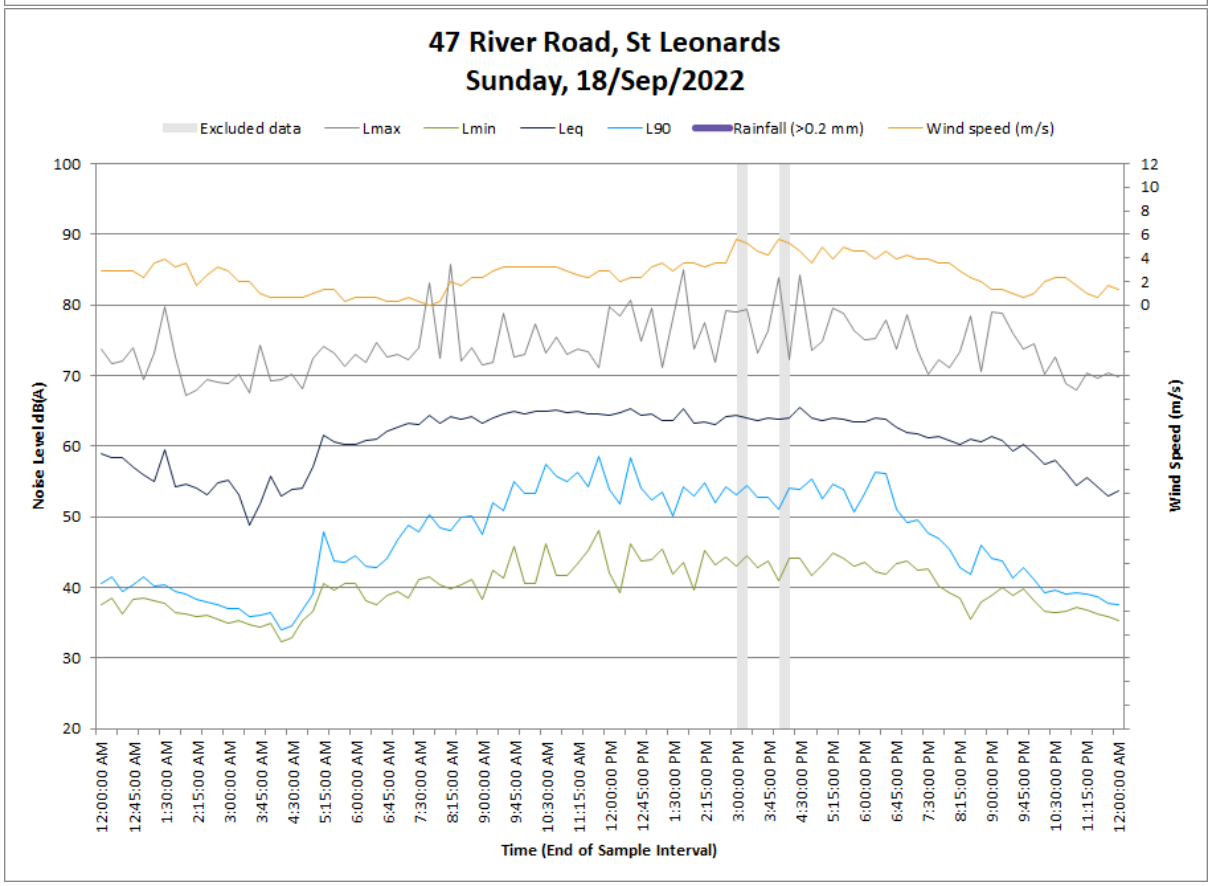
Date	ABL Day	ABL Evening	ABL Night	L_{Aeq} 15hr day	L_{Aeq} 4hr evening	L_{Aeq} 9hr night
Monday, 19/09/22	49	41	33	64	62	59
Tuesday, 20/09/22	50	46	36	69	62	58
Wednesday, 21/09/22	51	45	0	68	63	0
Thursday, 22/09/22	50	0	34	64	0	62
Friday, 23/09/22	53	44	36	65	62	58
Saturday, 24/09/22	48	42	32	64	62	57
Sunday, 25/09/22	45	41	33	63	61	58
Overall	50	44	36	65	62	59

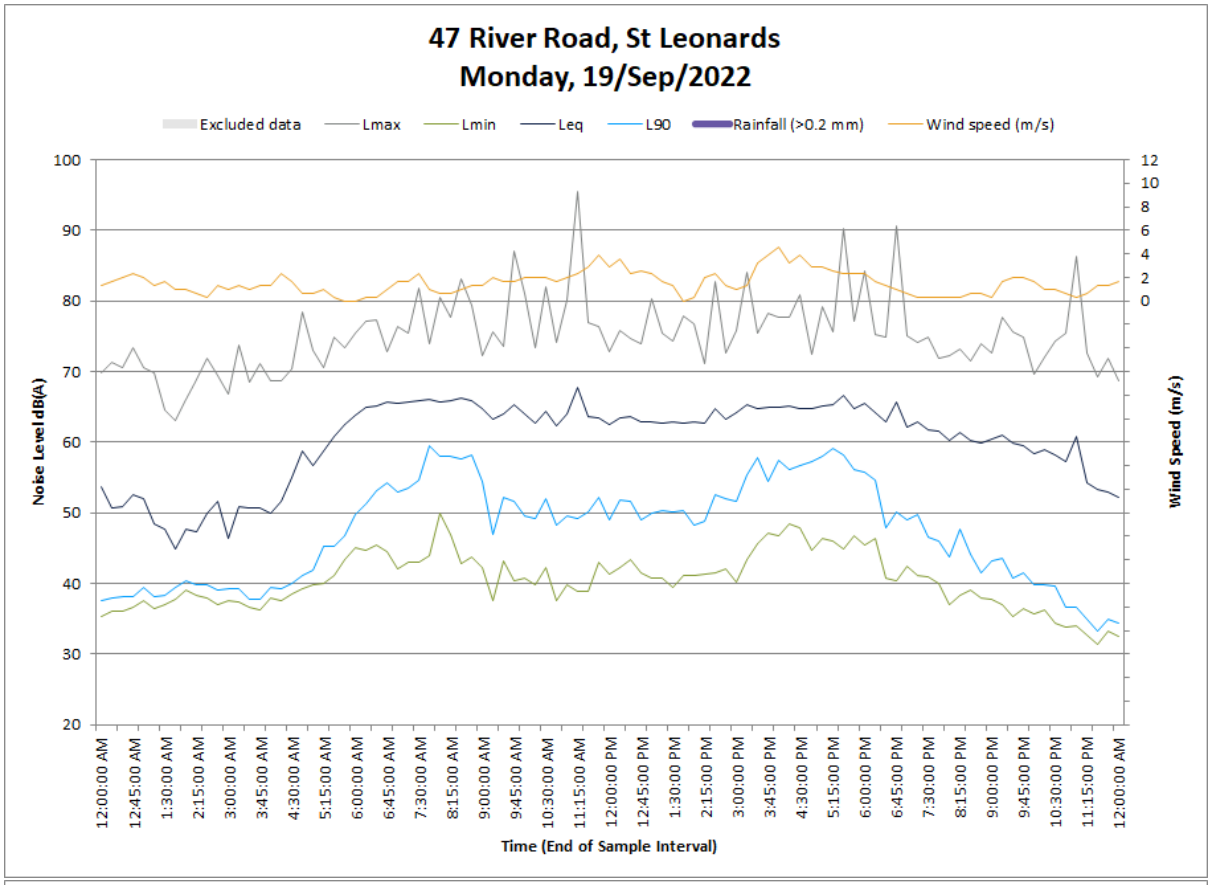
Notes: 1. 0 indicates periods with too few valid samples due to weather or logger operation.

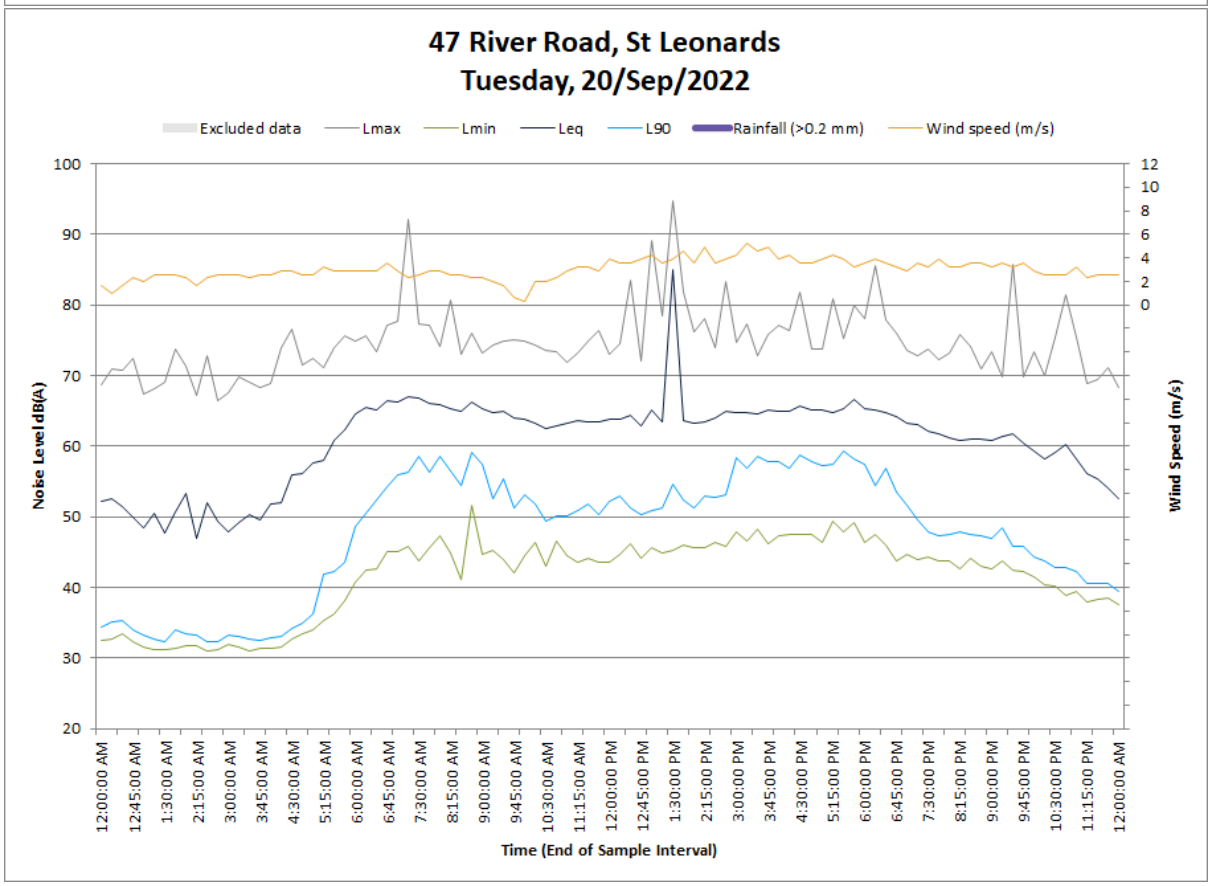

47 River Road, St Leonards
Thursday, 15/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

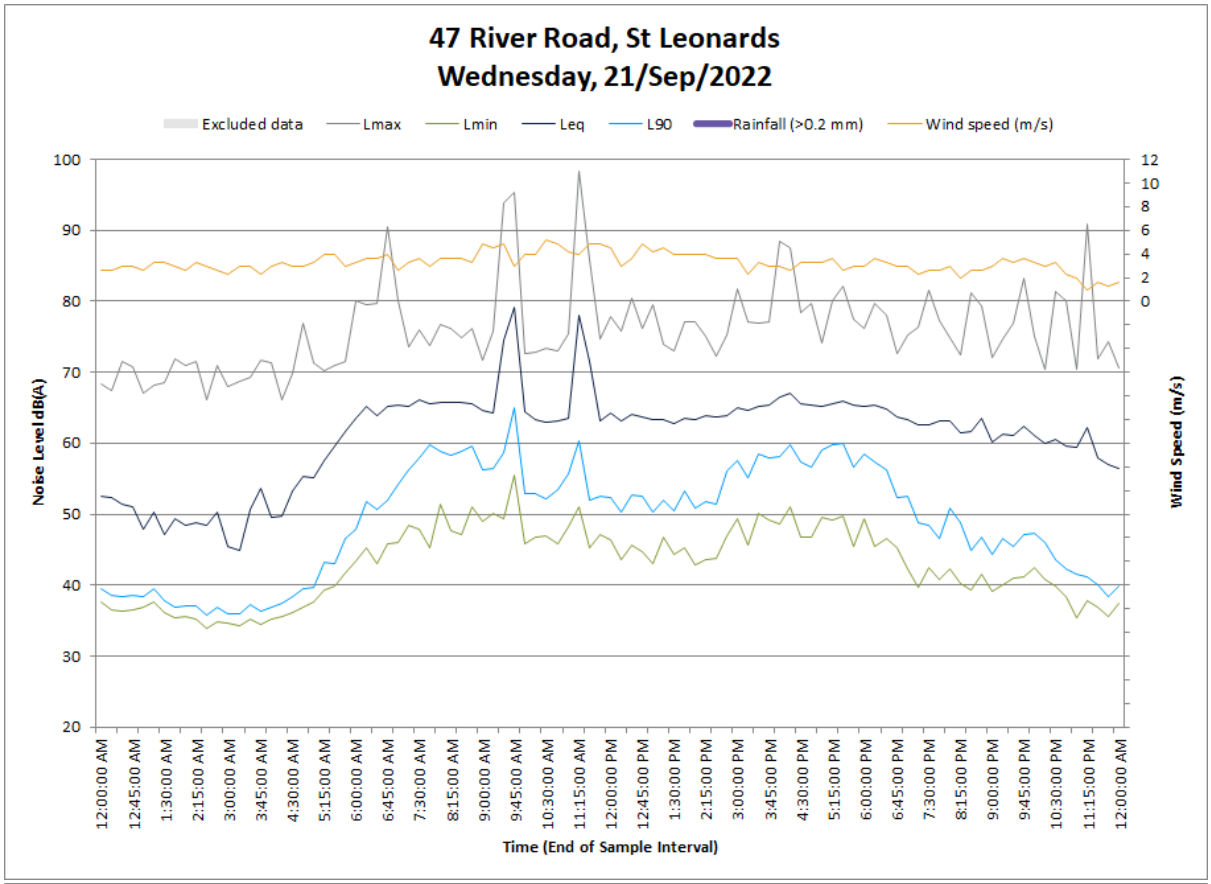

47 River Road, St Leonards
Friday, 16/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

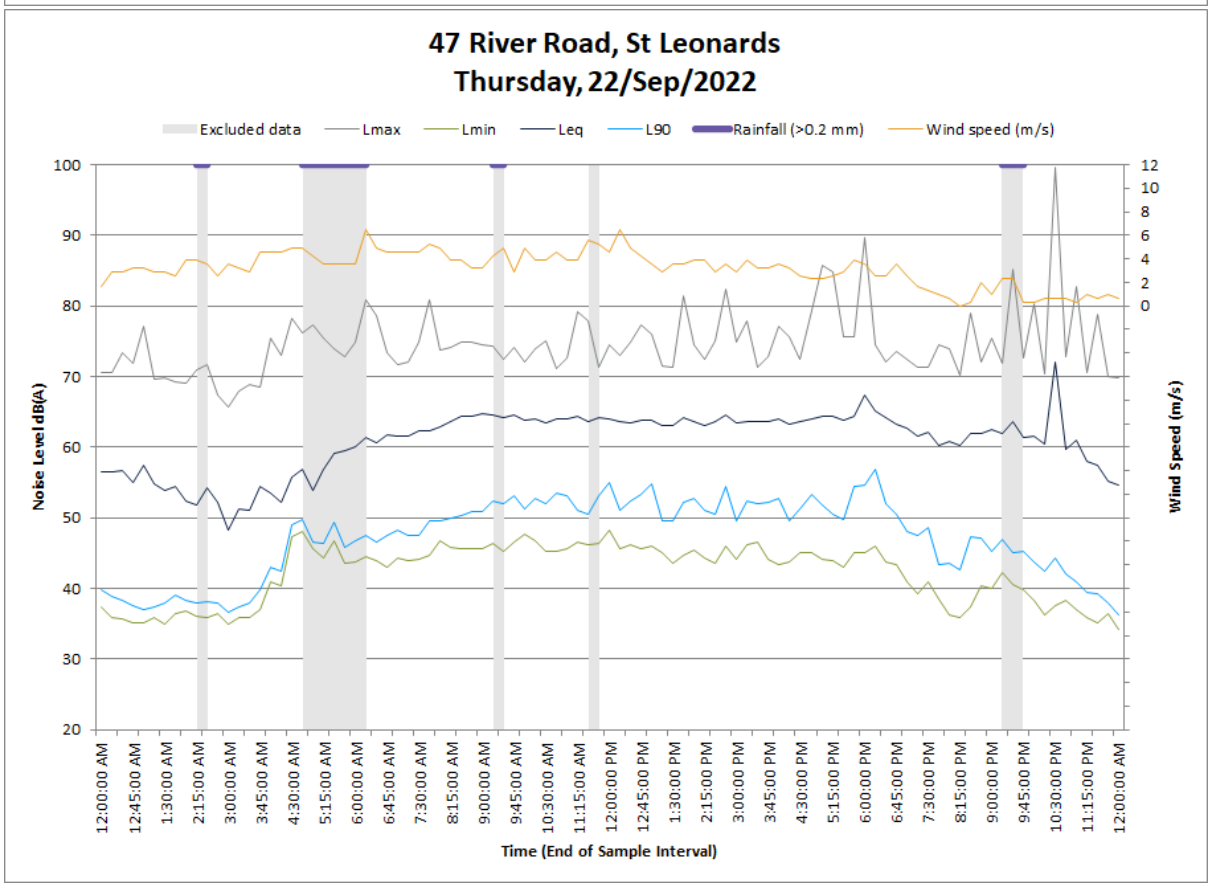

47 River Road, St Leonards
Saturday, 17/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

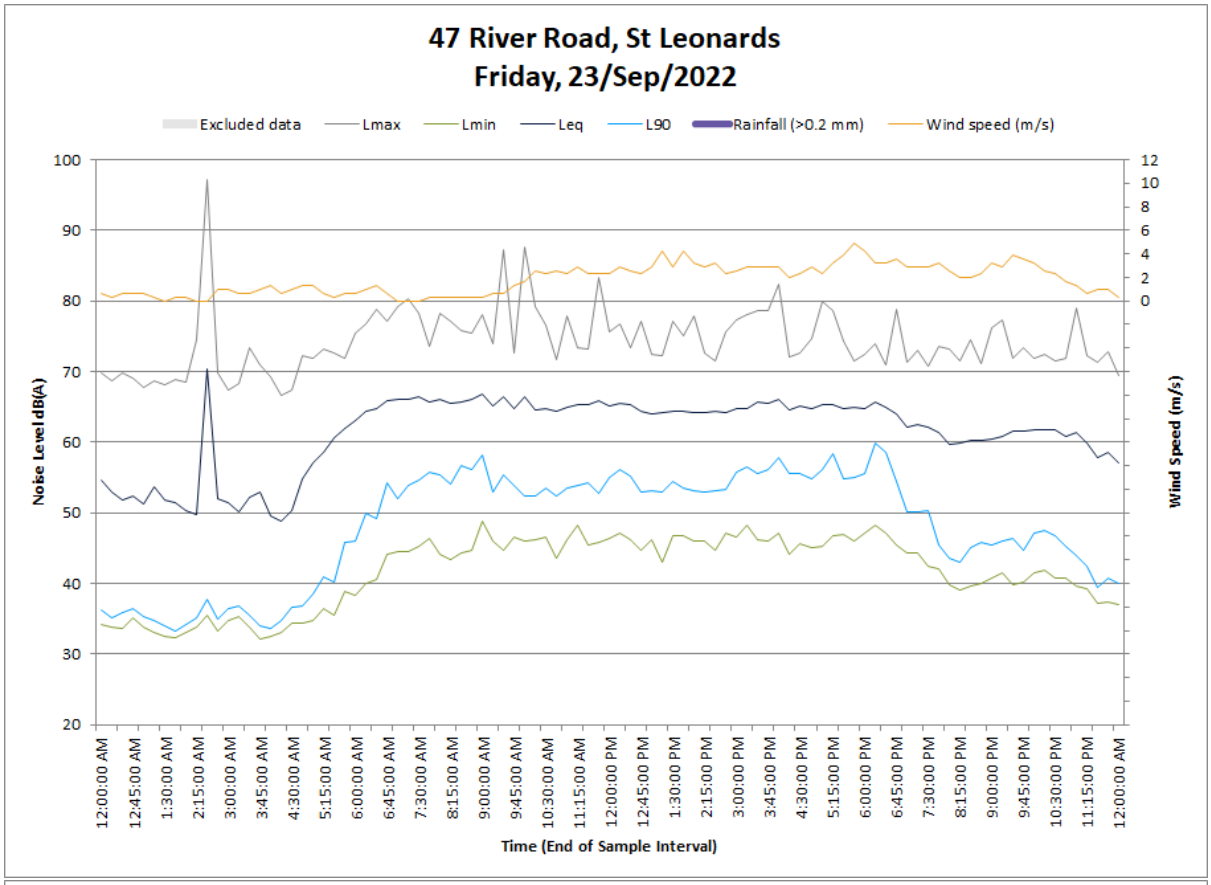

47 River Road, St Leonards
Sunday, 18/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

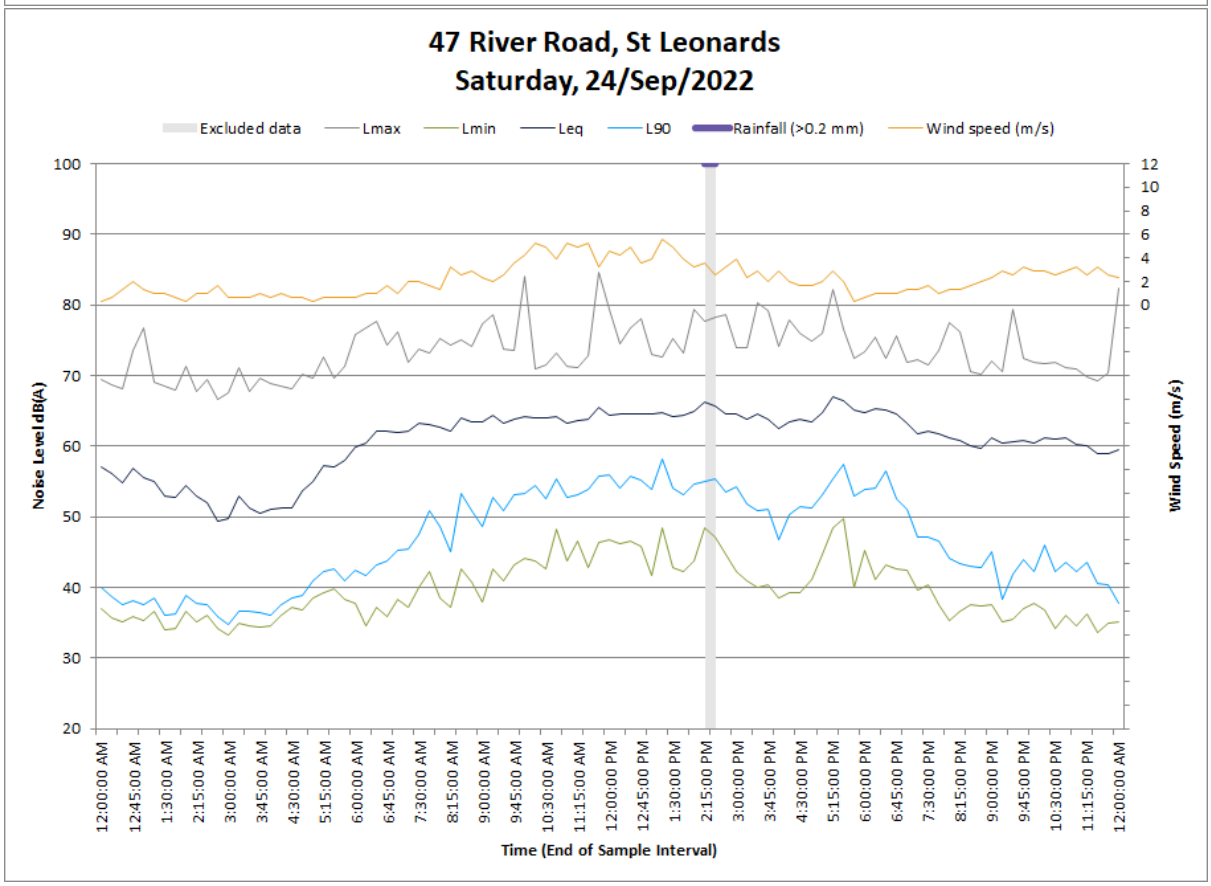

47 River Road, St Leonards
Monday, 19/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

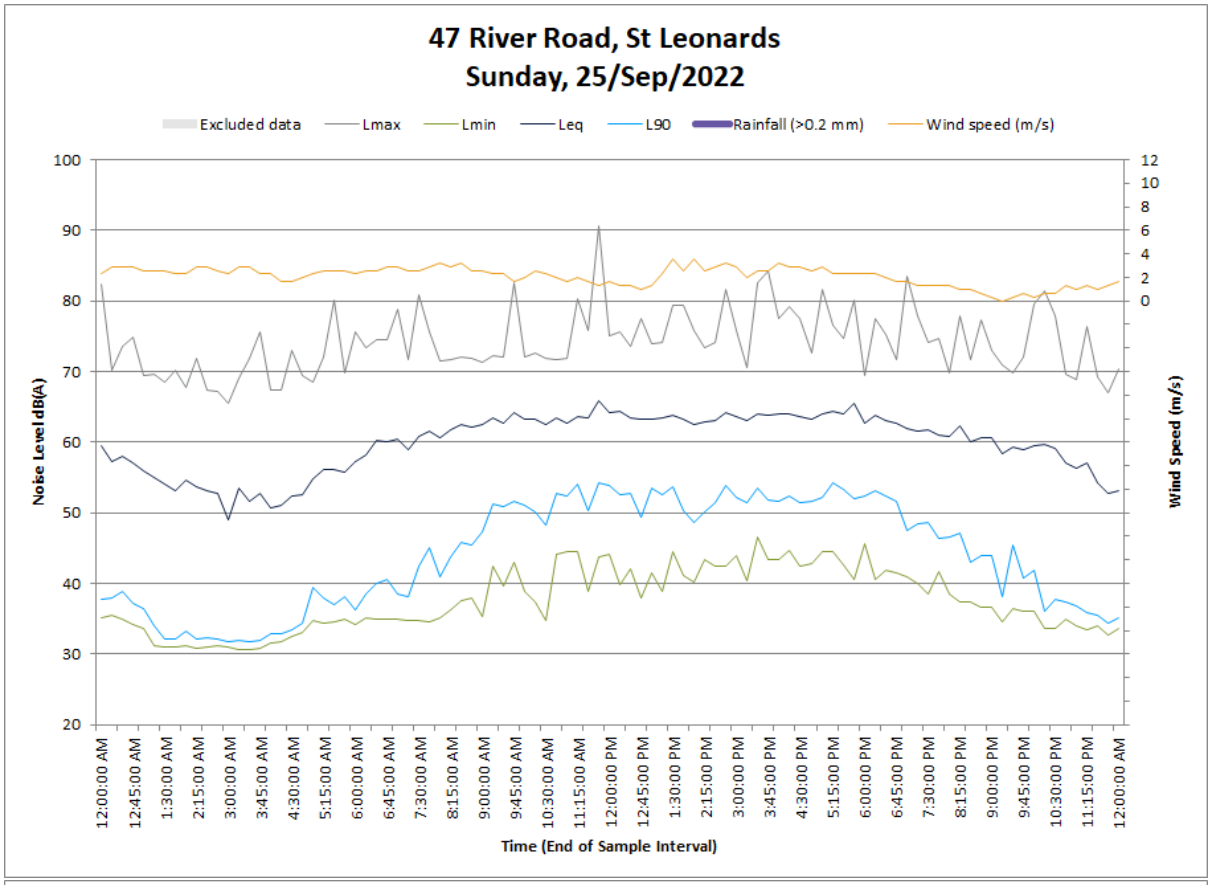

47 River Road, St Leonards
Tuesday, 20/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

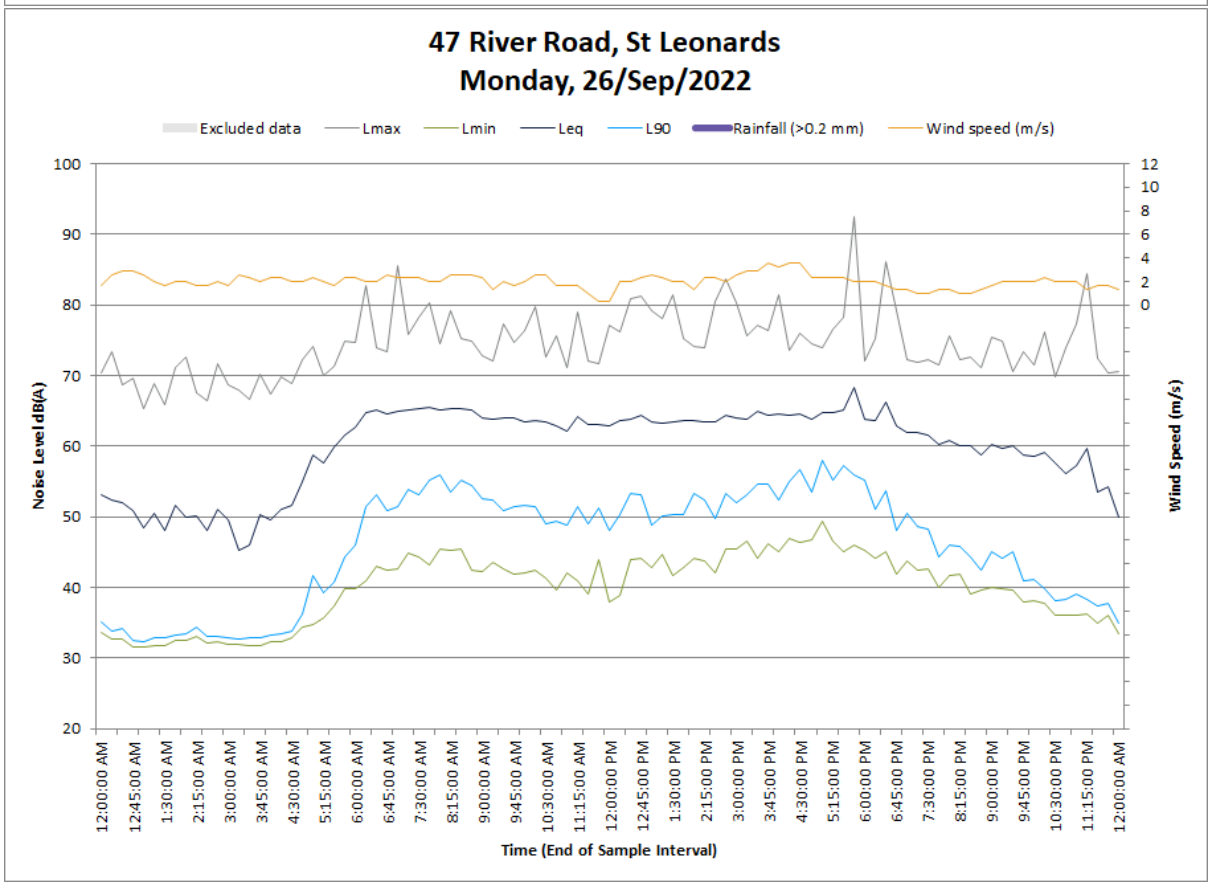

47 River Road, St Leonards
Wednesday, 21/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

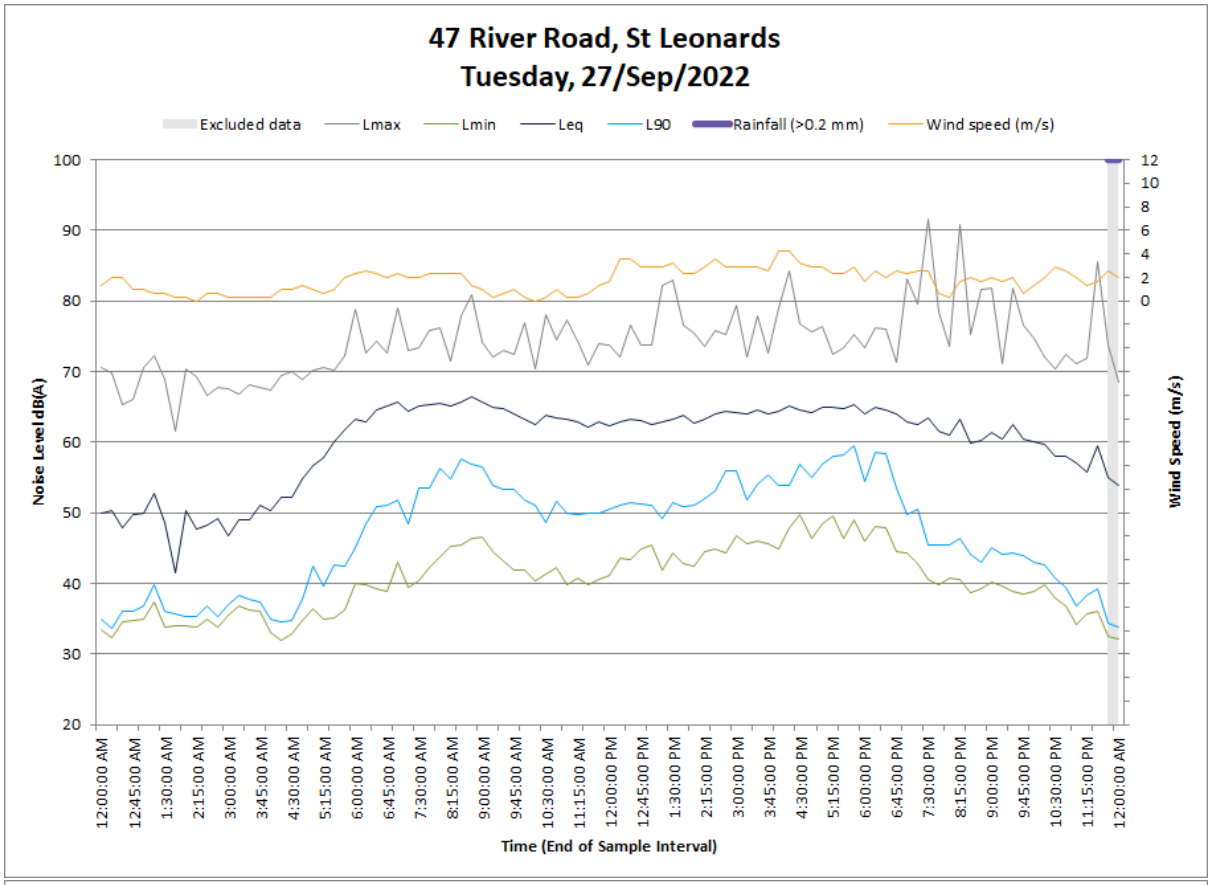

47 River Road, St Leonards
Thursday, 22/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

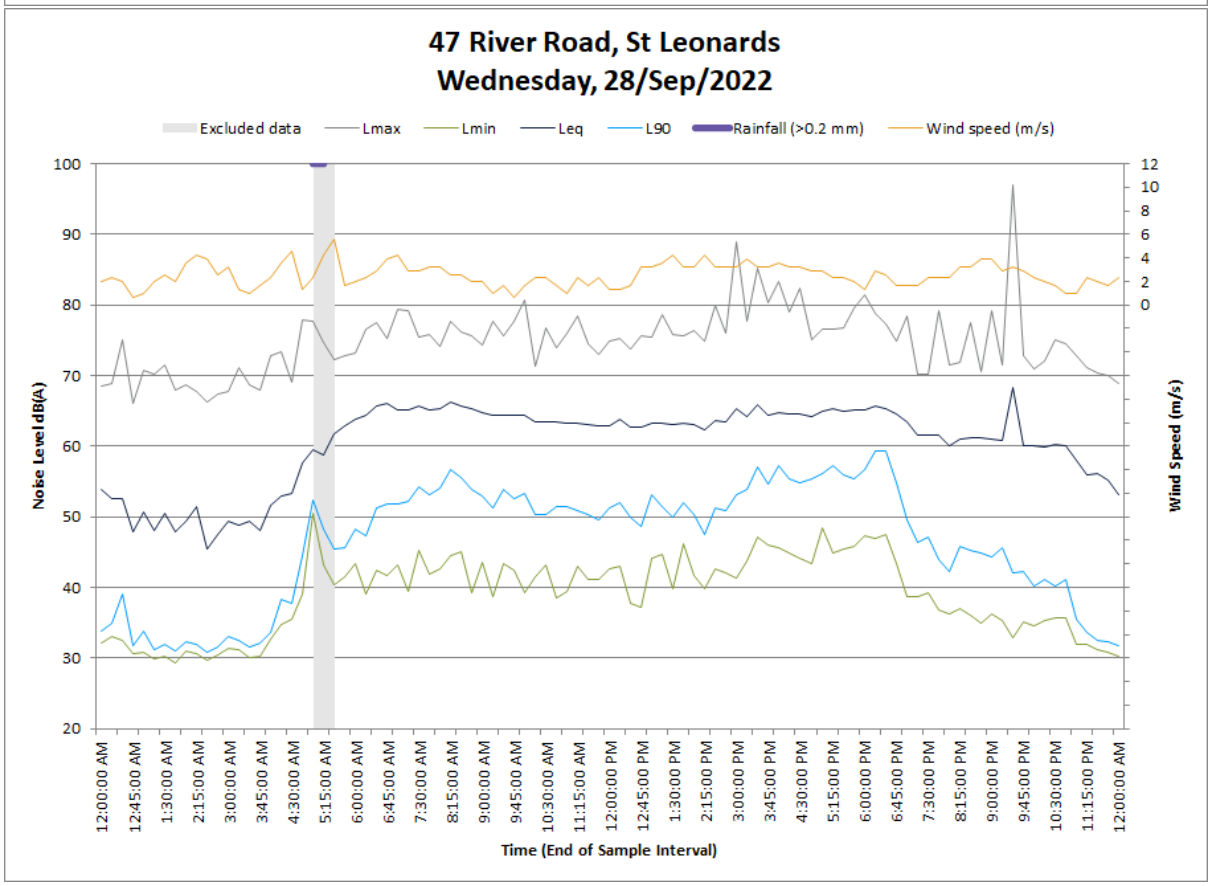

47 River Road, St Leonards
Friday, 23/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

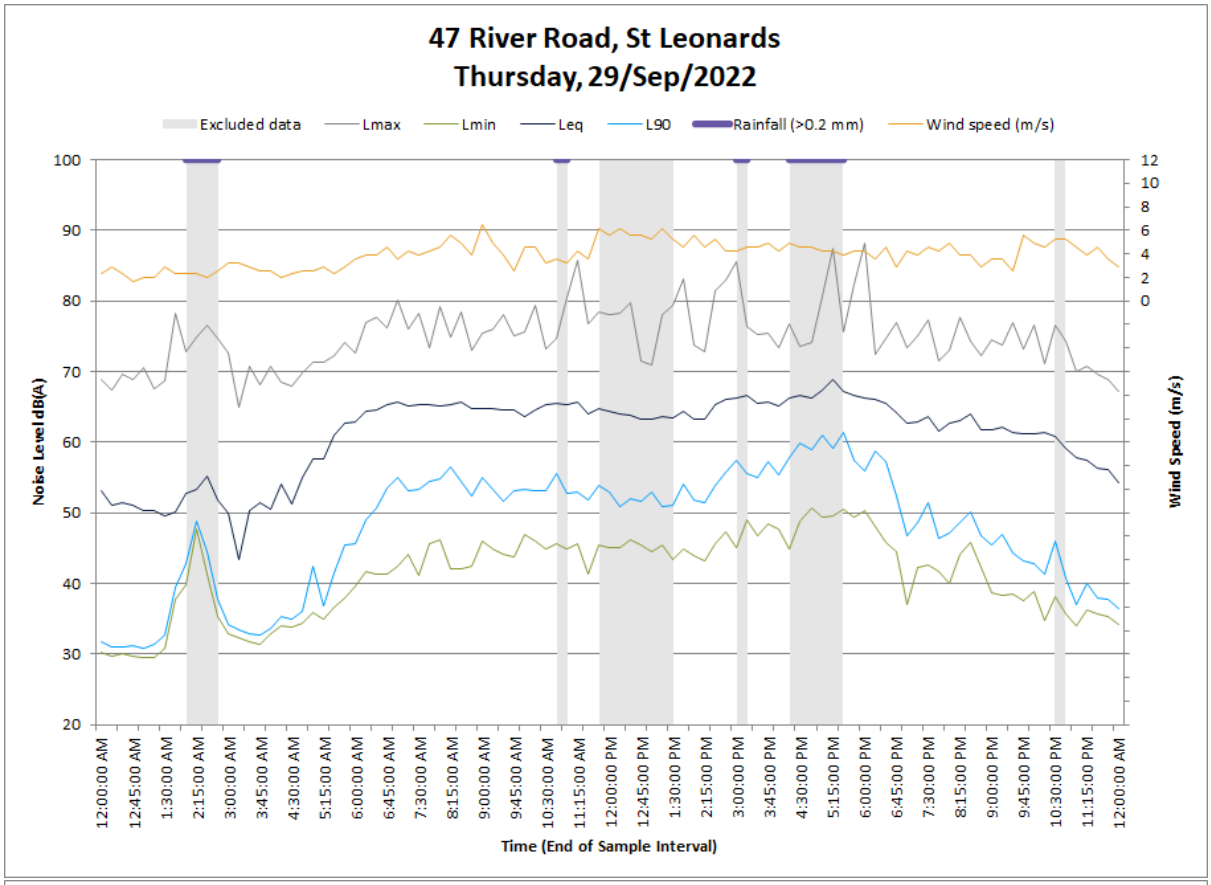

47 River Road, St Leonards
Saturday, 24/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

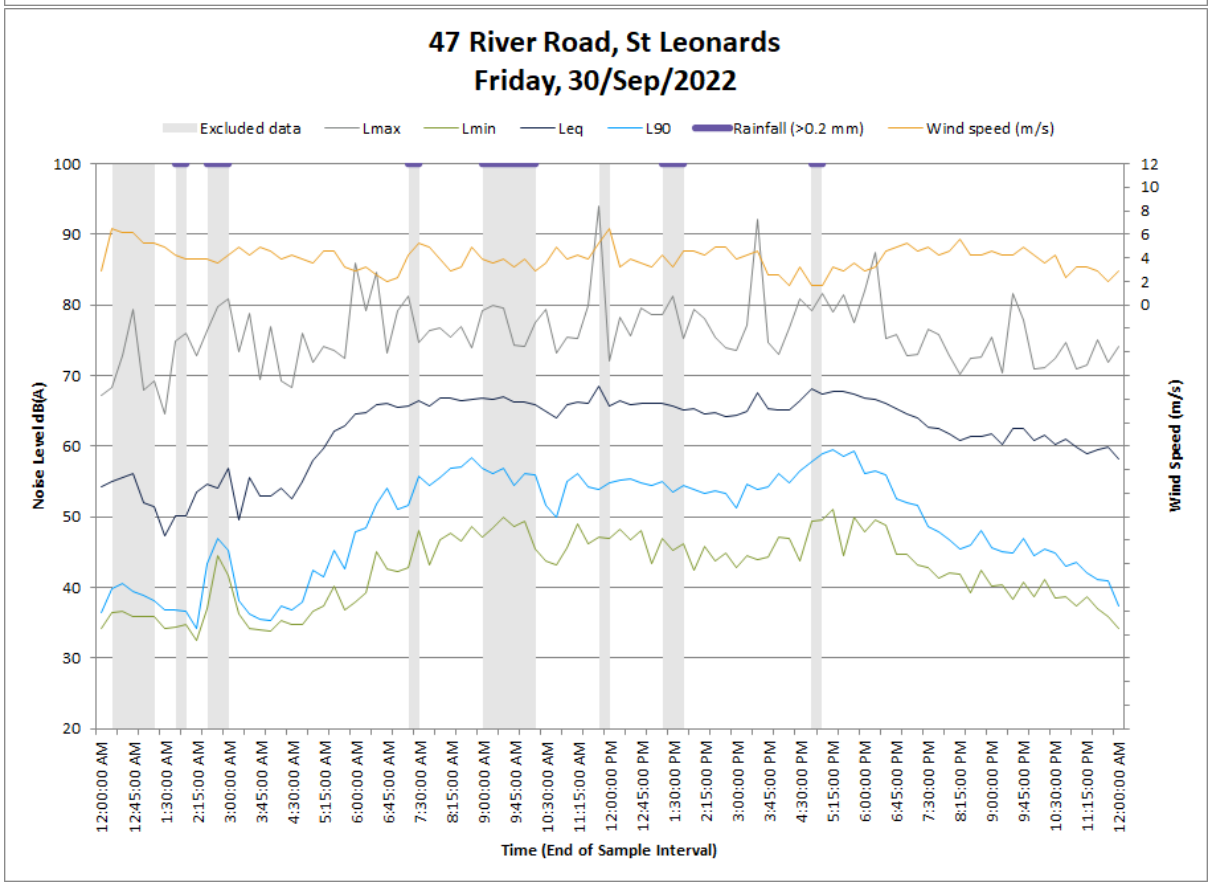

47 River Road, St Leonards
Sunday, 25/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

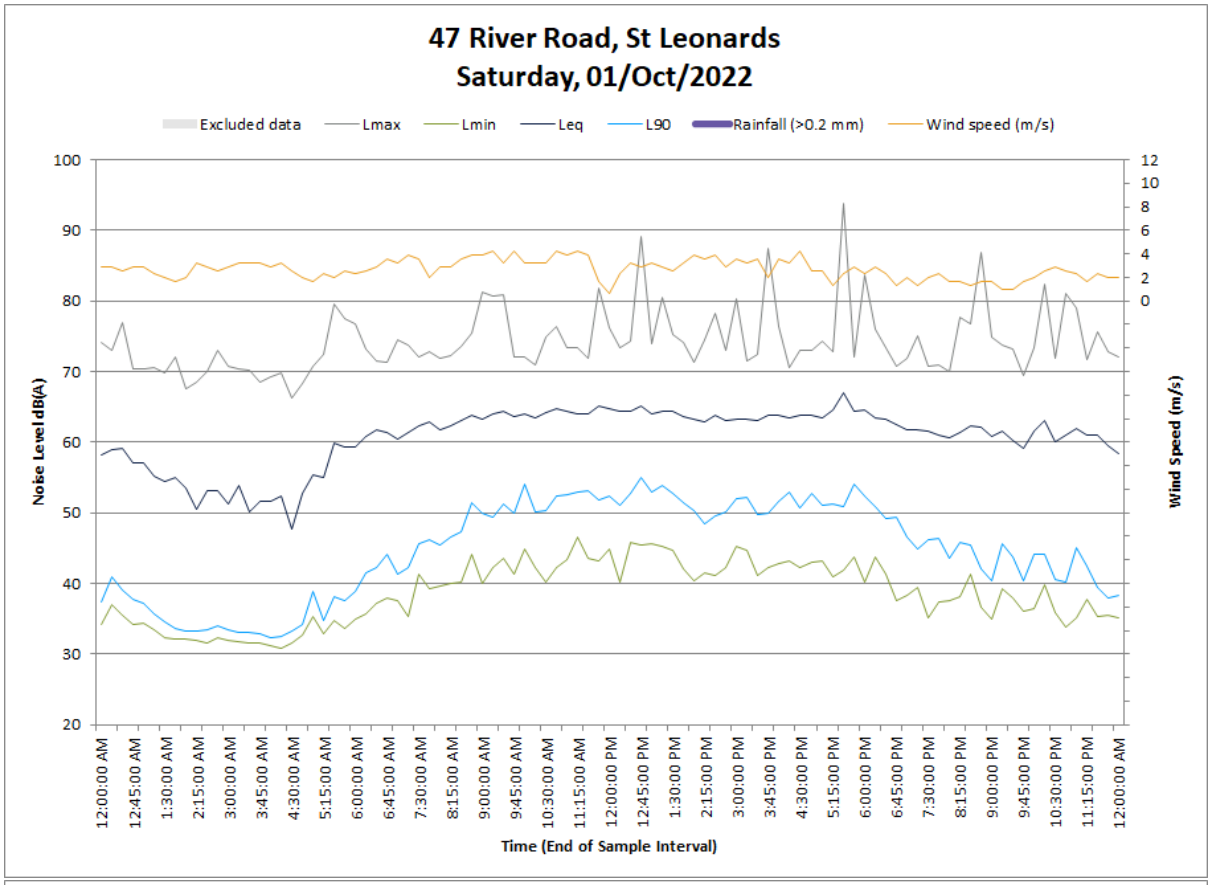

47 River Road, St Leonards
Monday, 26/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

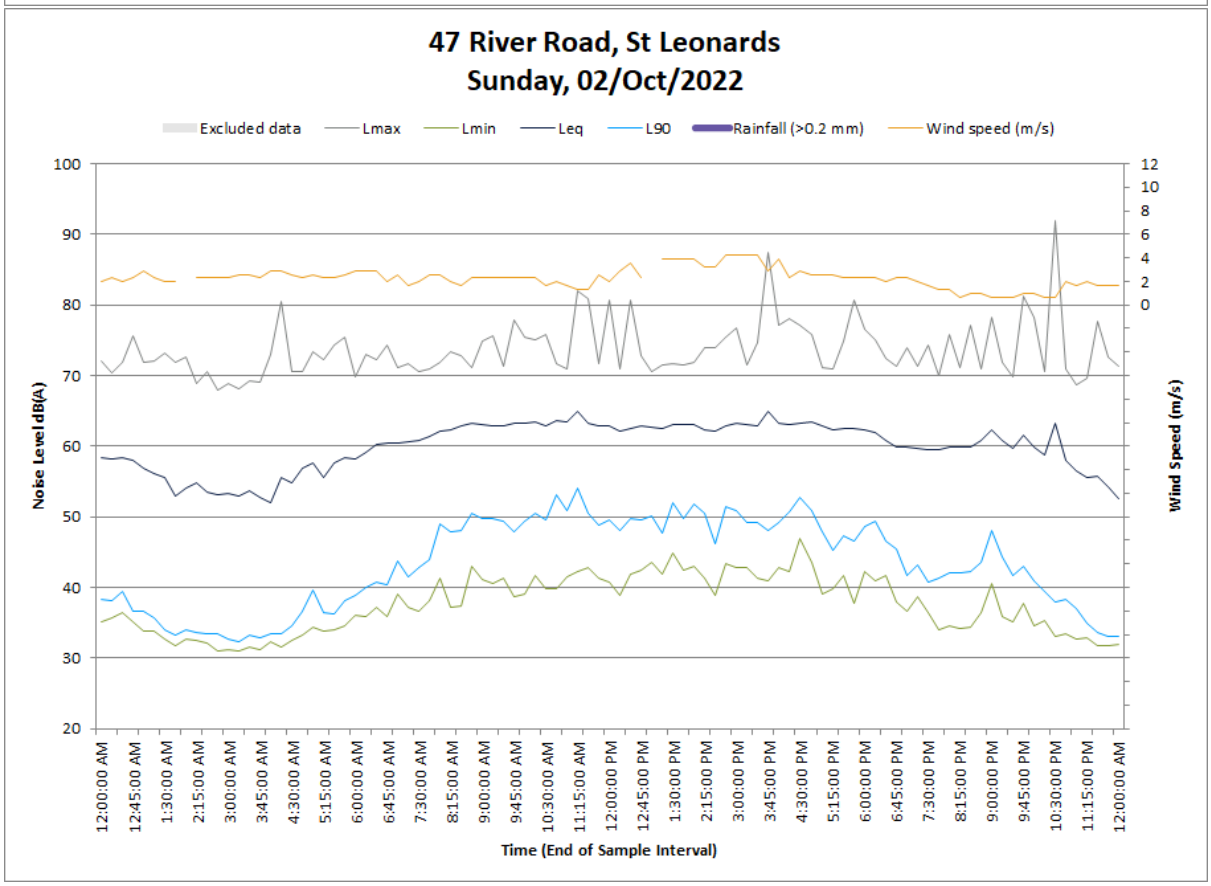

47 River Road, St Leonards
Tuesday, 27/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

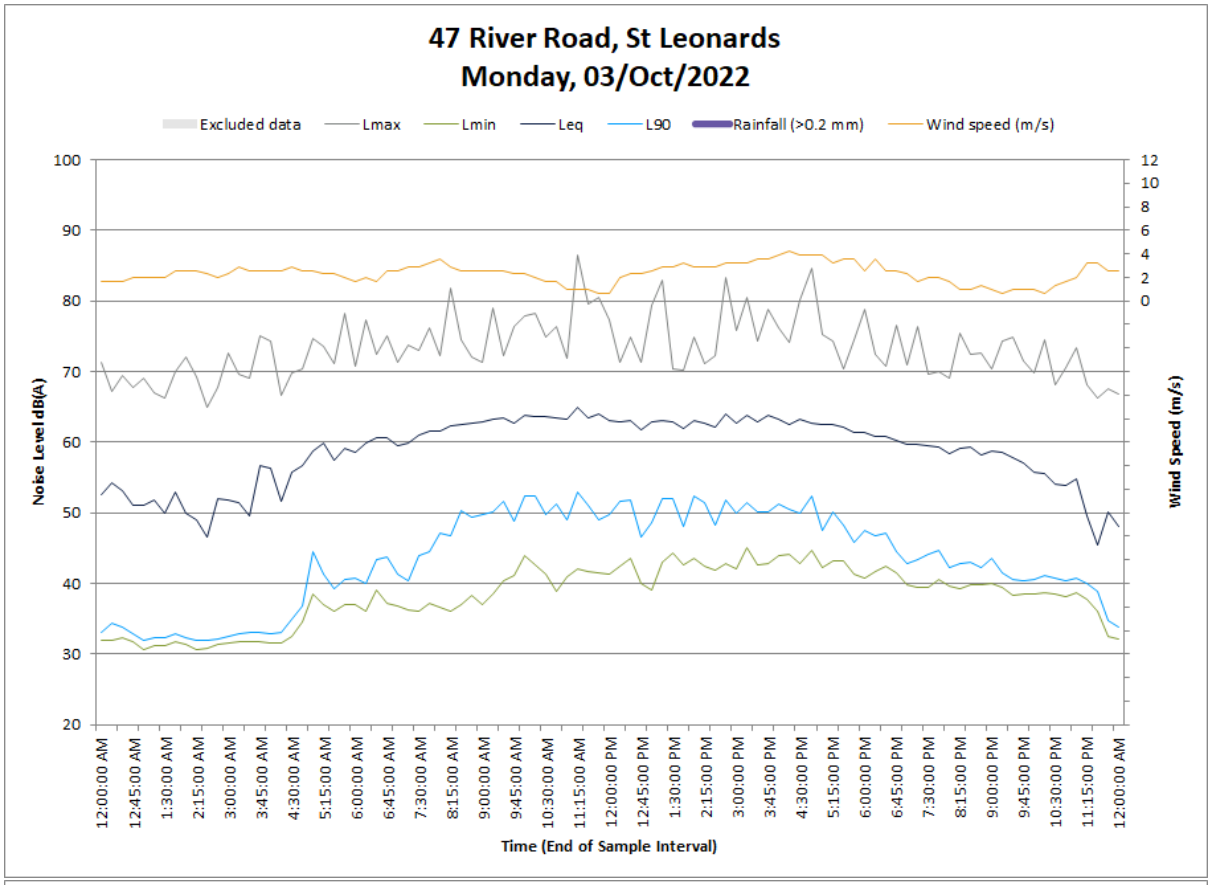

47 River Road, St Leonards
Wednesday, 28/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)


47 River Road, St Leonards
Thursday, 29/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)


47 River Road, St Leonards
Friday, 30/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)


47 River Road, St Leonards
Saturday, 01/Oct/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)


47 River Road, St Leonards
Sunday, 02/Oct/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)


47 River Road, St Leonards
Monday, 03/Oct/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

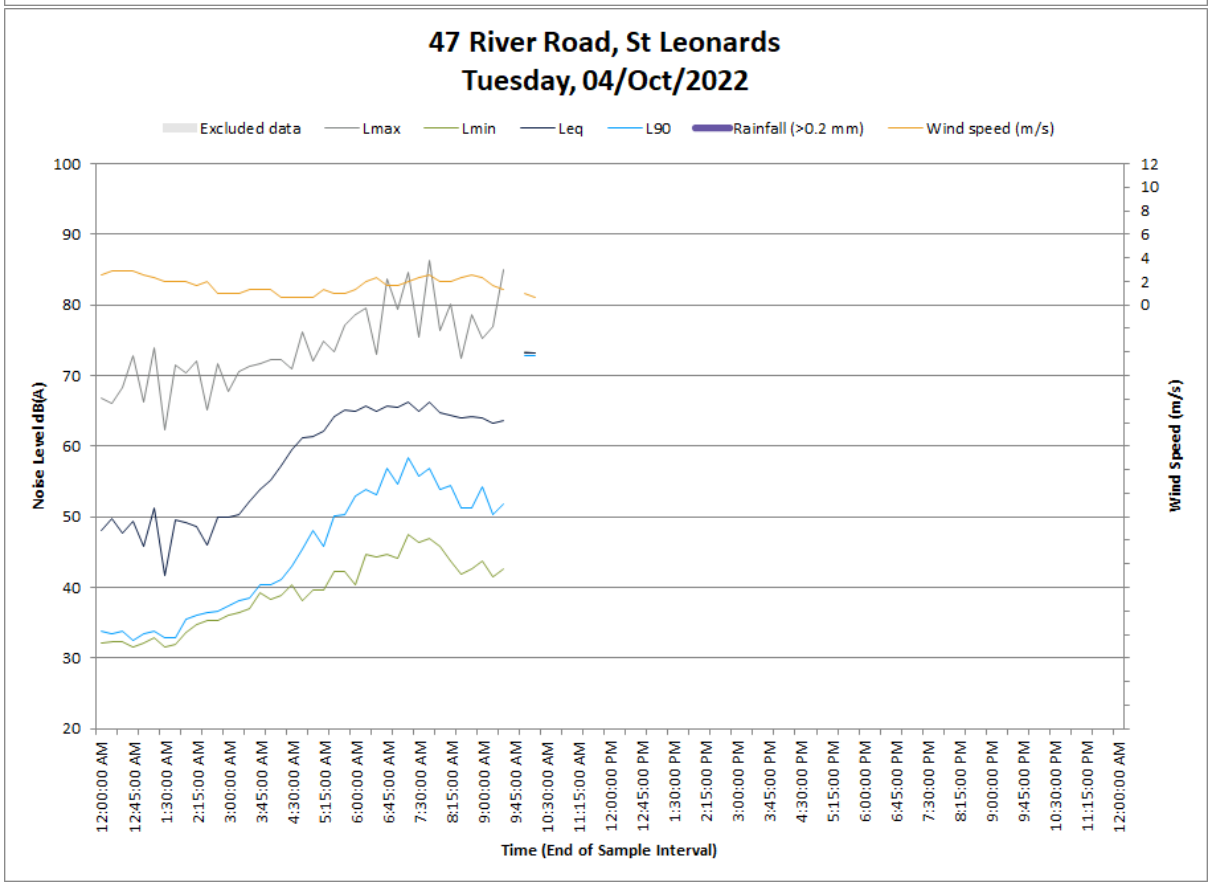
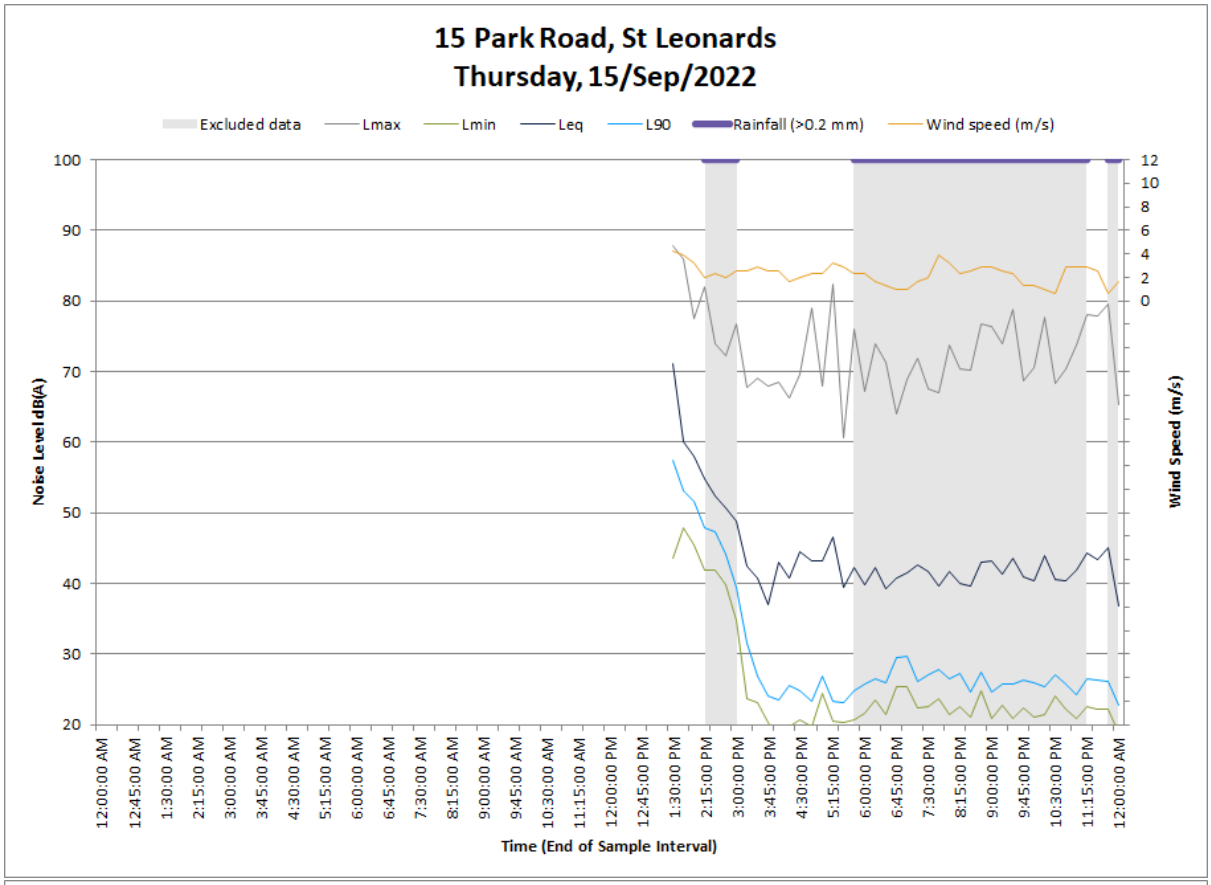
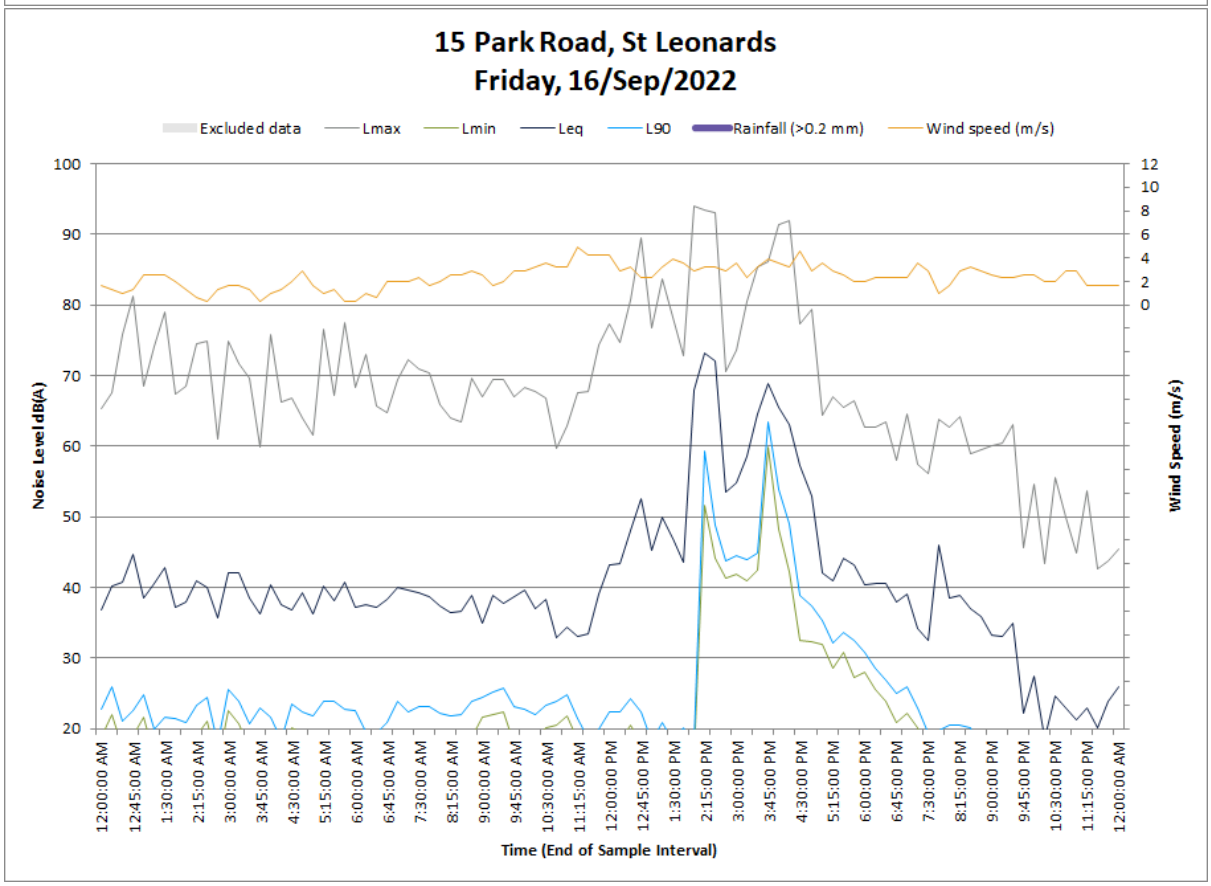
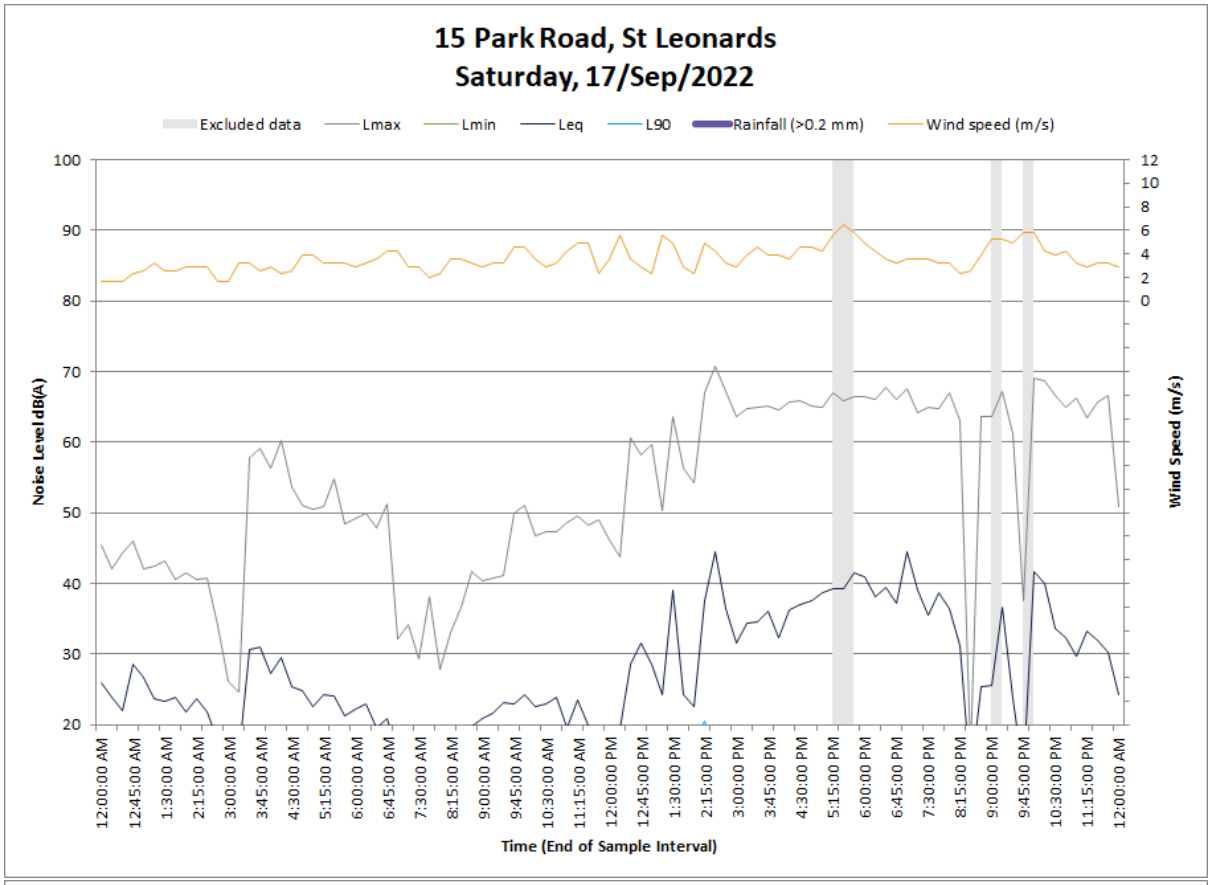

47 River Road, St Leonards
Tuesday, 04/Oct/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

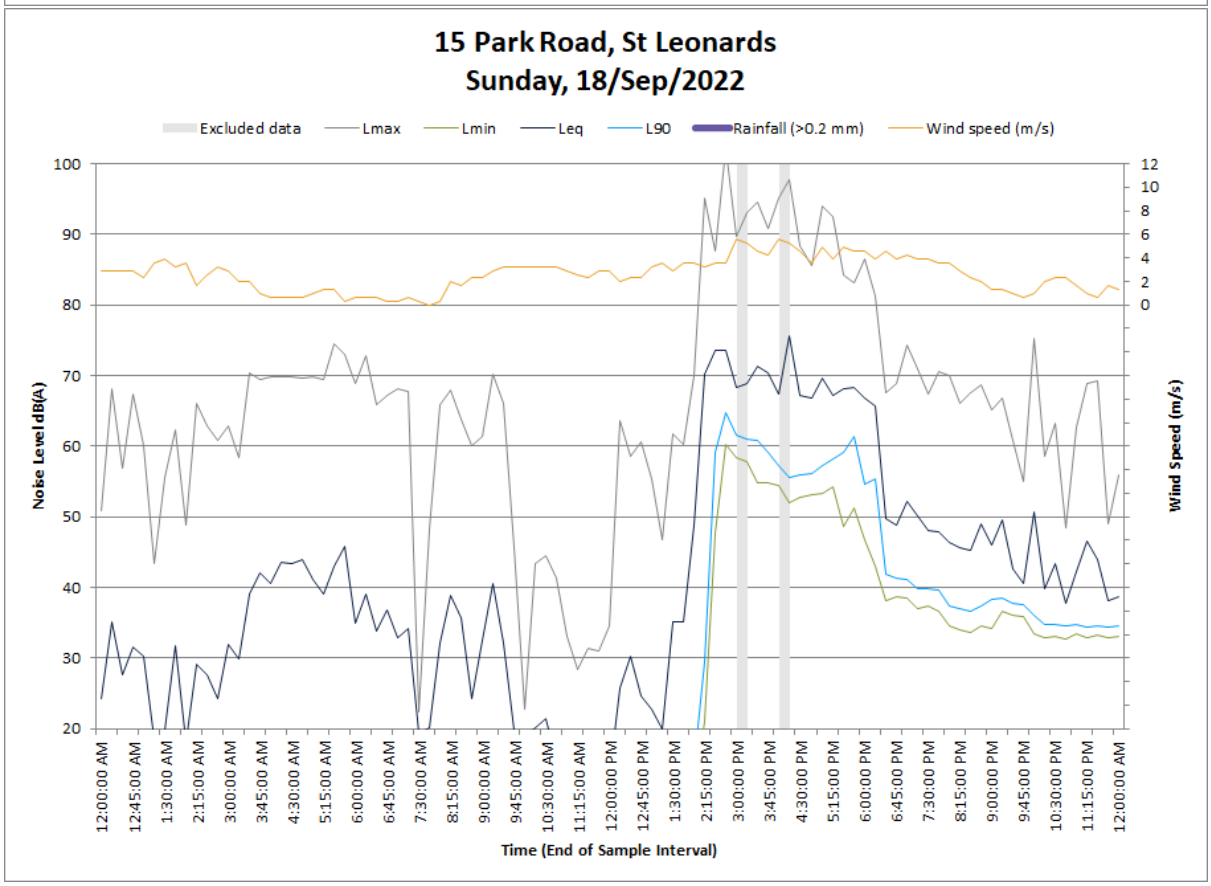
Table B.2 L2 unattended noise monitoring data

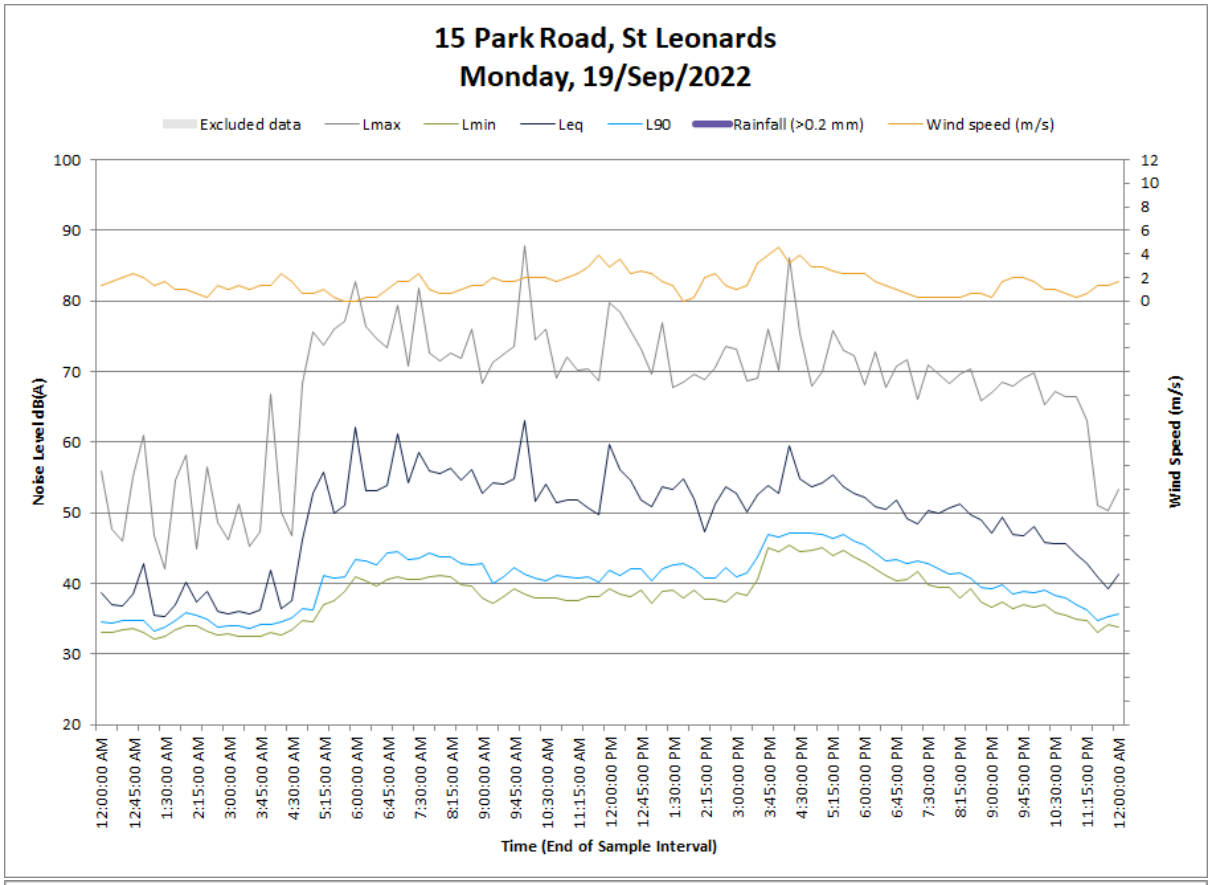
Date	ABL Day	ABL Evening	ABL Night	L_{Aeq} 15hr day	L_{Aeq} 4hr evening	L_{Aeq} 9hr night
Monday, 19/09/22	41	39	34	54	51	50
Tuesday, 20/09/22	44	41	35	53	50	51
Wednesday, 21/09/22	45	39	0	55	47	55
Thursday, 22/09/22	43	0	33	53	49	52
Friday, 23/09/22	44	40	34	54	48	50
Saturday, 24/09/22	40	39	32	54	47	50
Sunday, 25/09/22	38	40	34	53	51	51
Overall	43	39	34	60	52	49

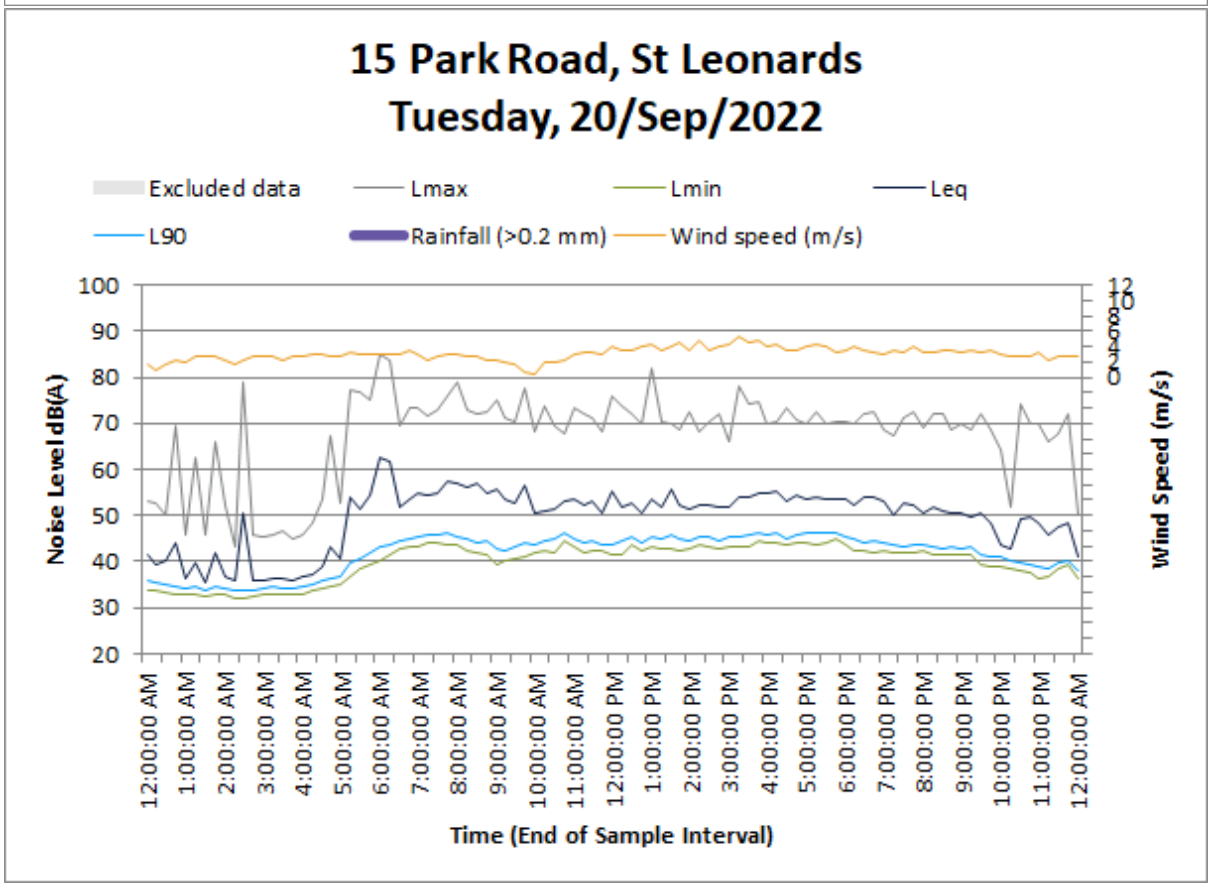

15 Park Road, St Leonards
Thursday, 15/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

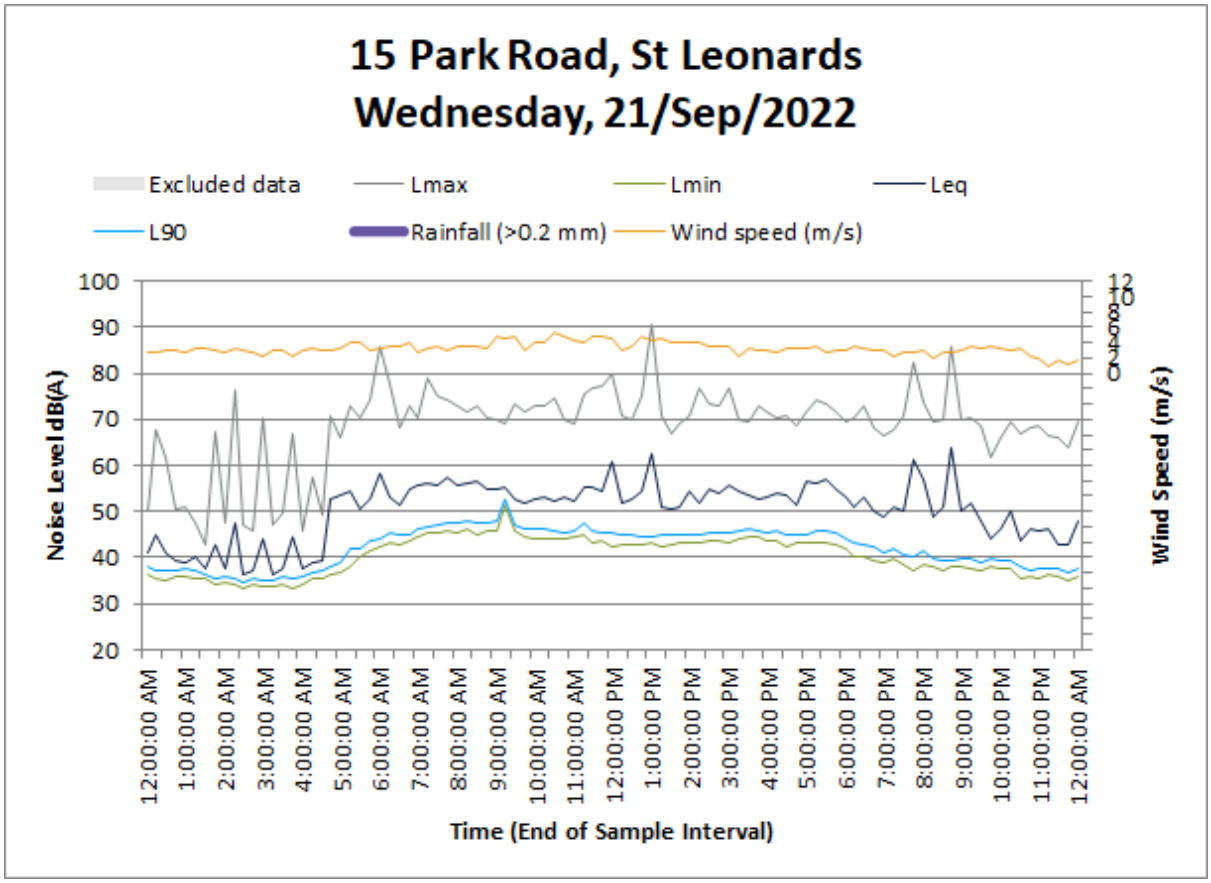

15 Park Road, St Leonards
Friday, 16/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

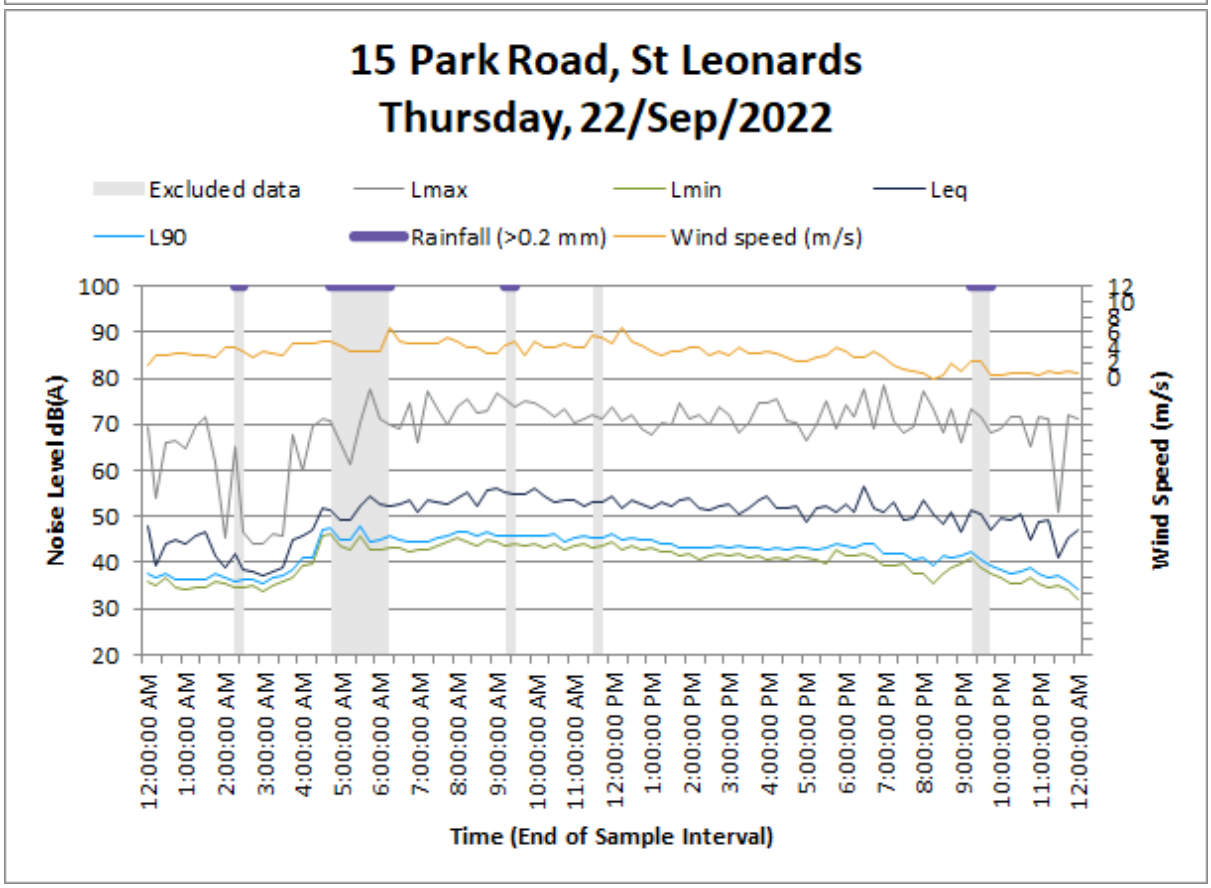

15 Park Road, St Leonards
Saturday, 17/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

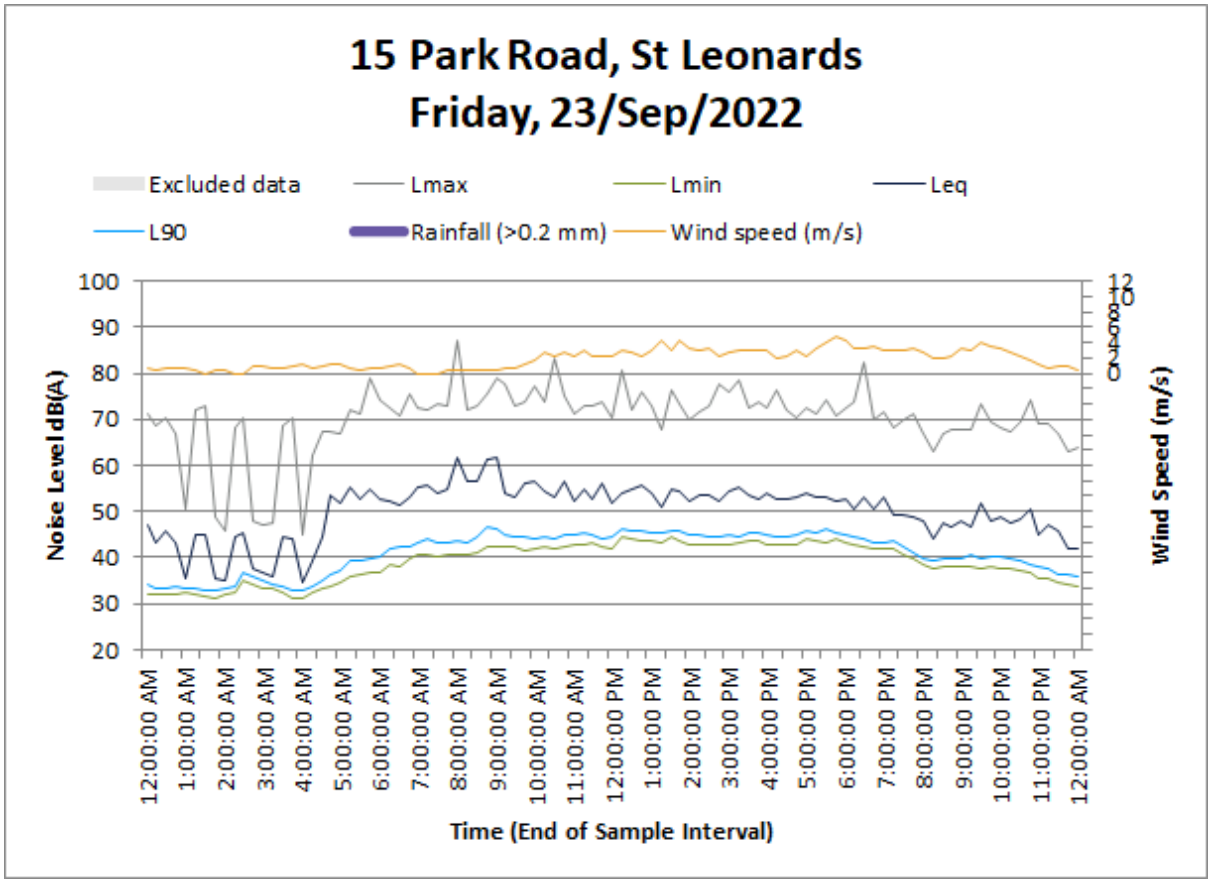

15 Park Road, St Leonards
Sunday, 18/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

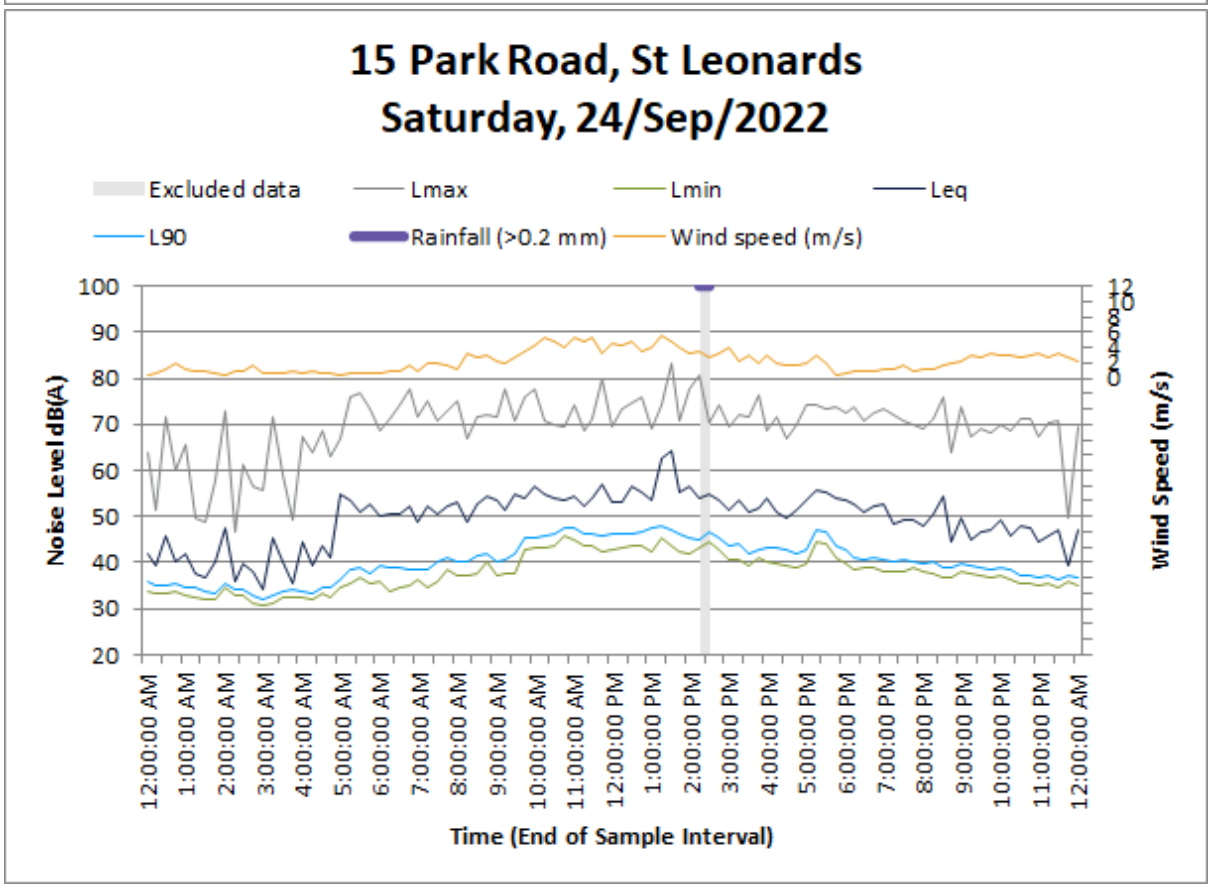

15 Park Road, St Leonards
Monday, 19/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

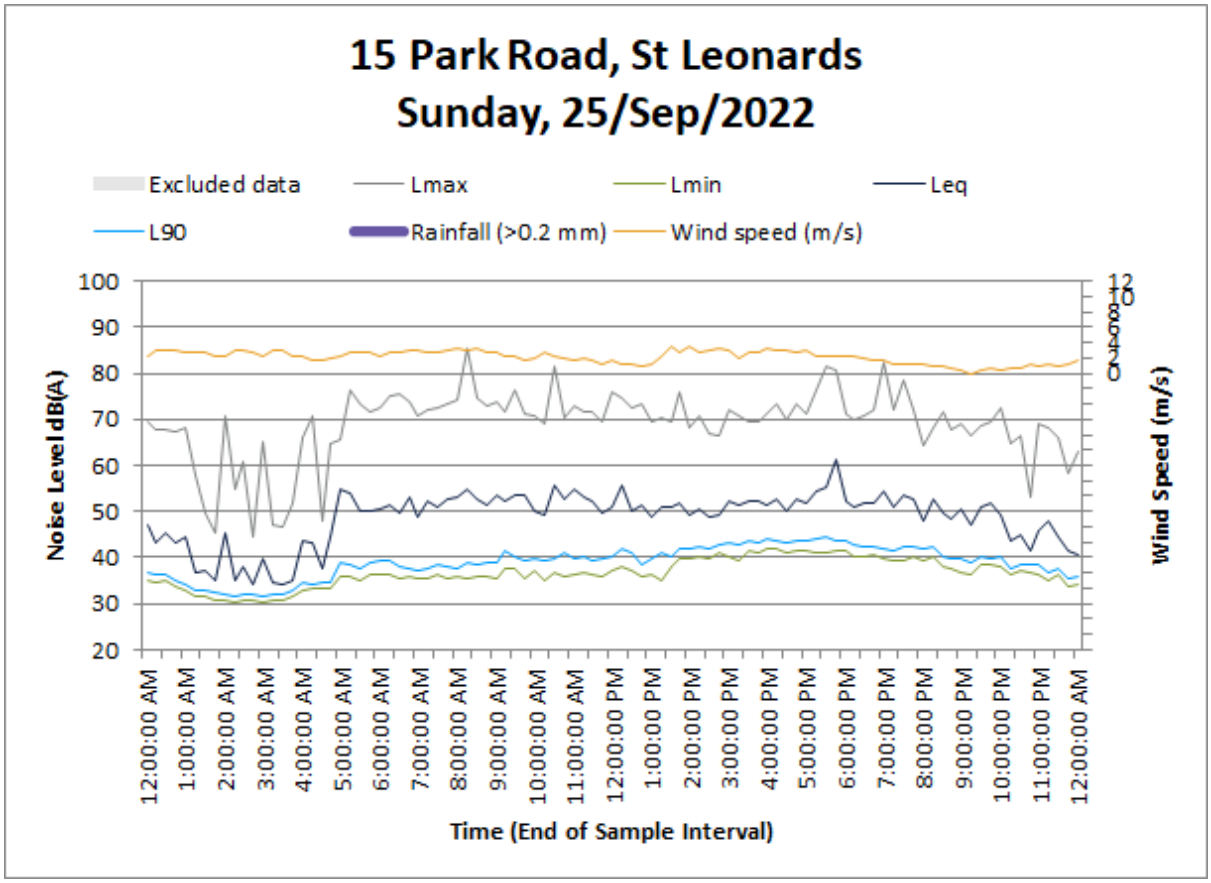

15 Park Road, St Leonards
Tuesday, 20/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

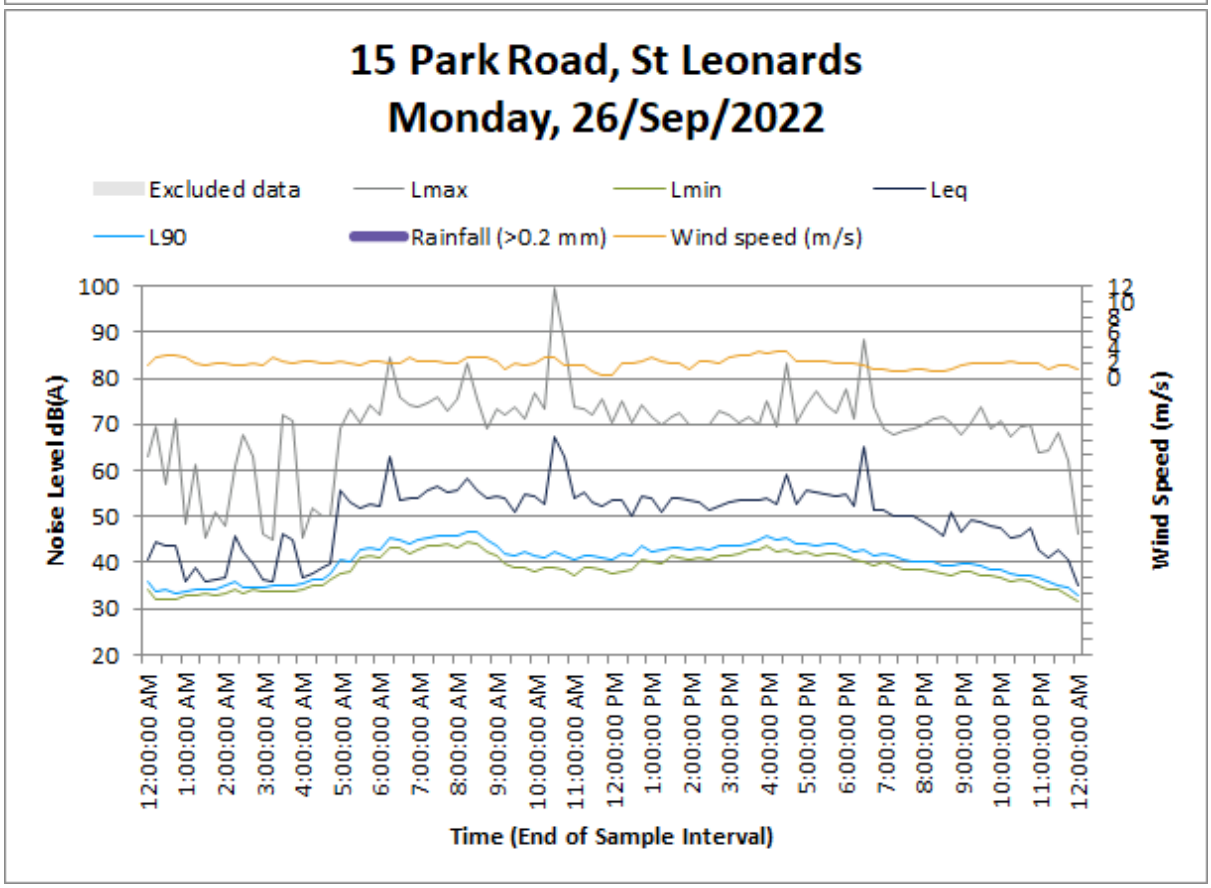

15 Park Road, St Leonards
Wednesday, 21/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

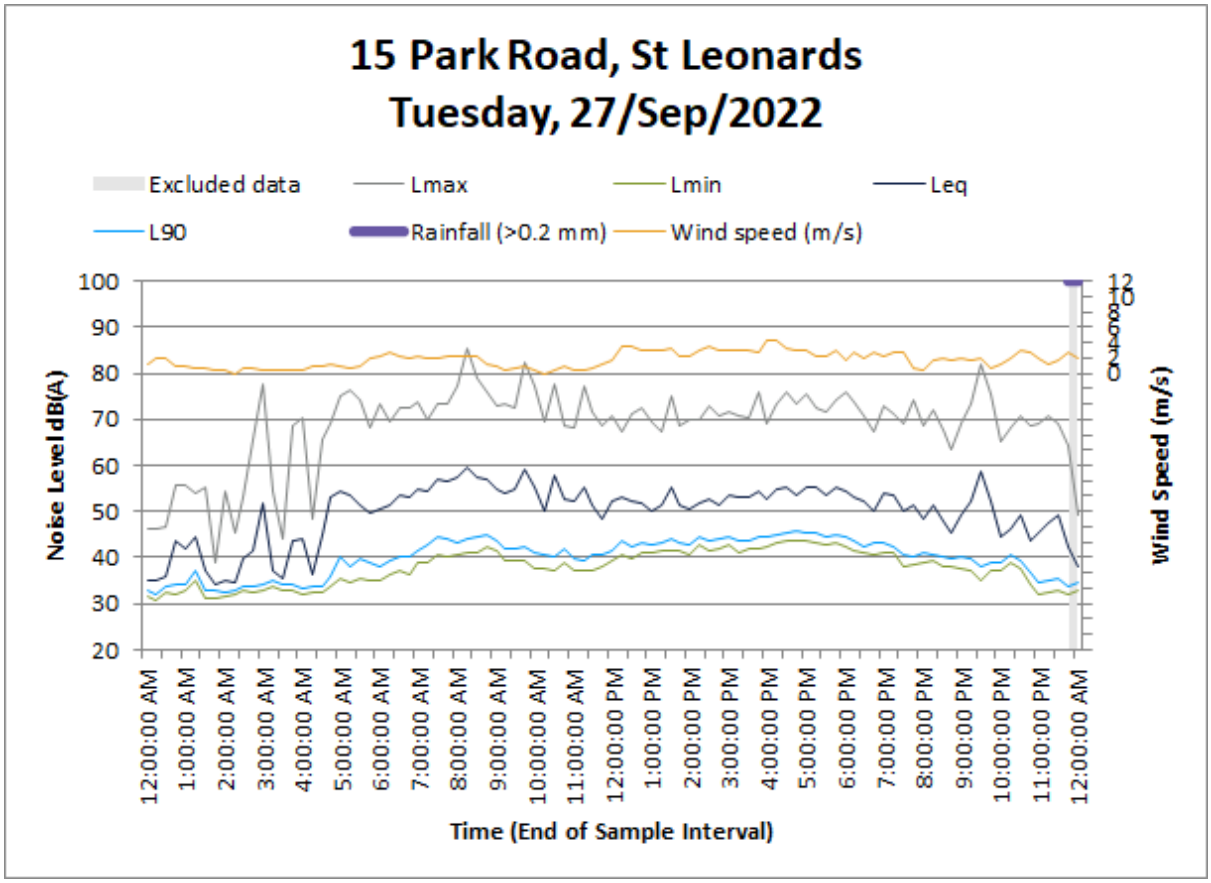

15 Park Road, St Leonards
Thursday, 22/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

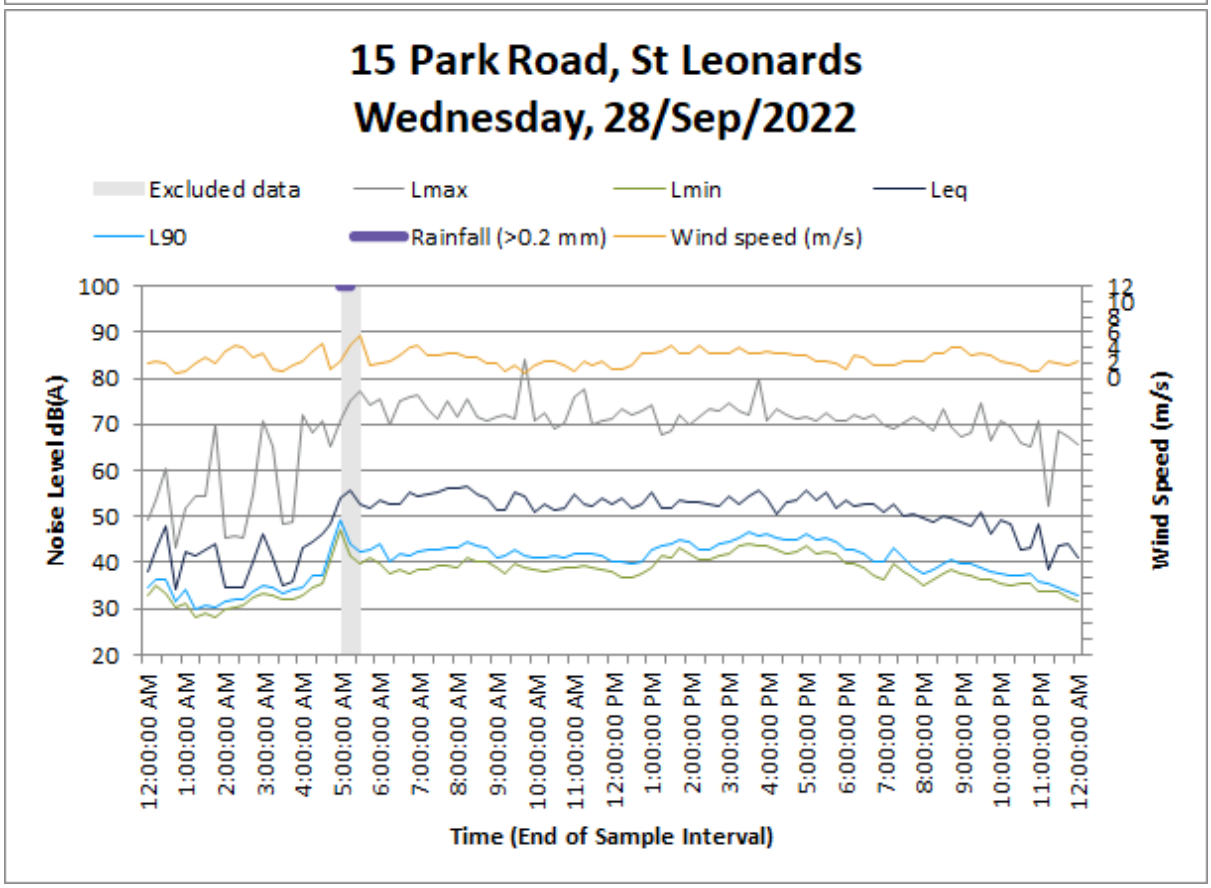

15 Park Road, St Leonards
Friday, 23/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

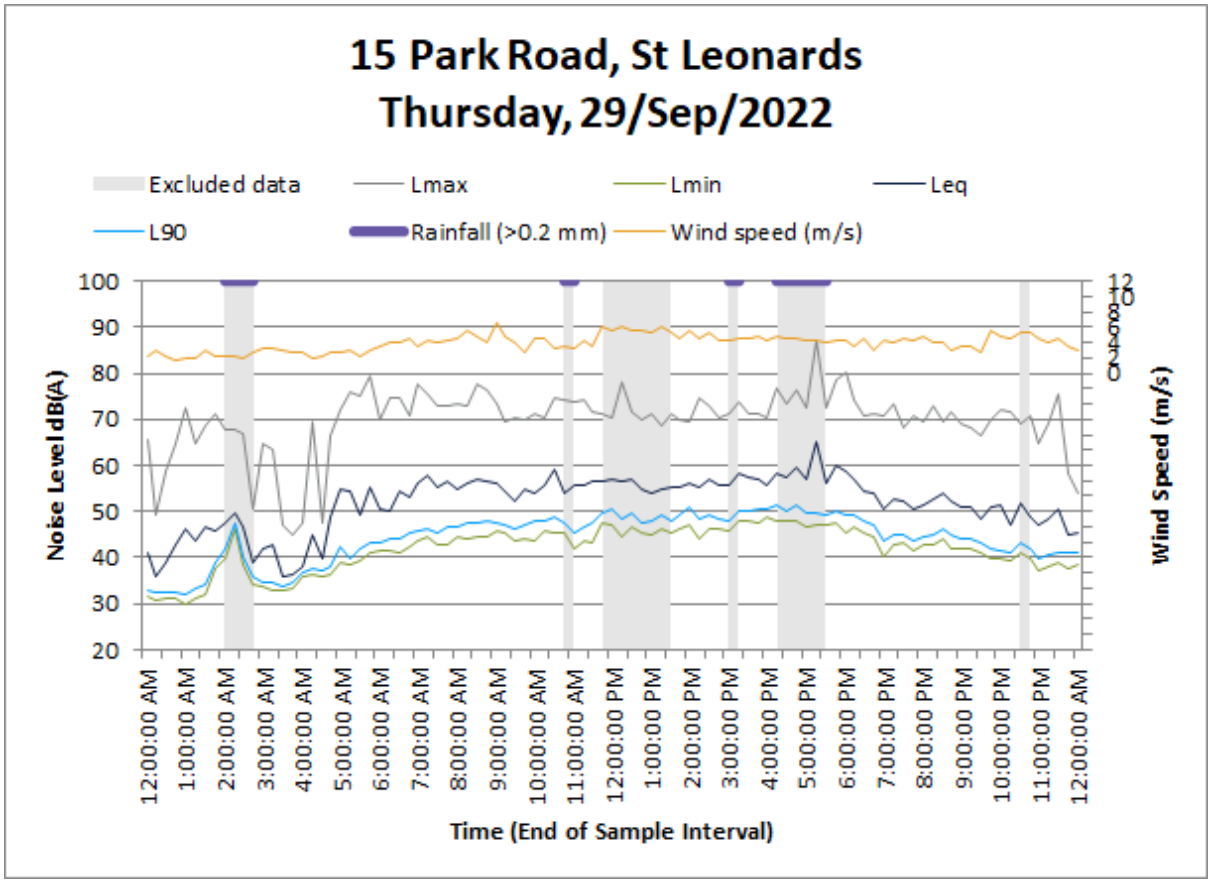

15 Park Road, St Leonards
Saturday, 24/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

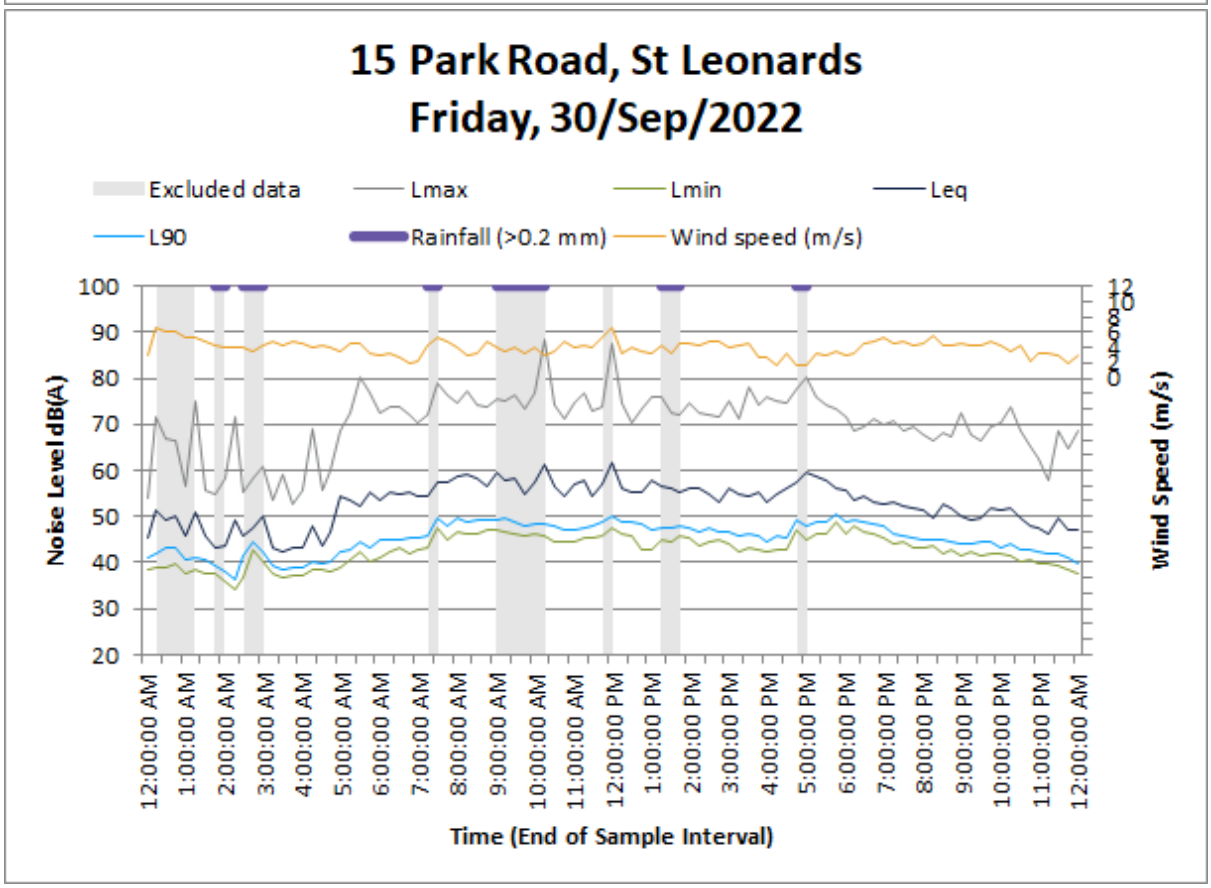

15 Park Road, St Leonards
Sunday, 25/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

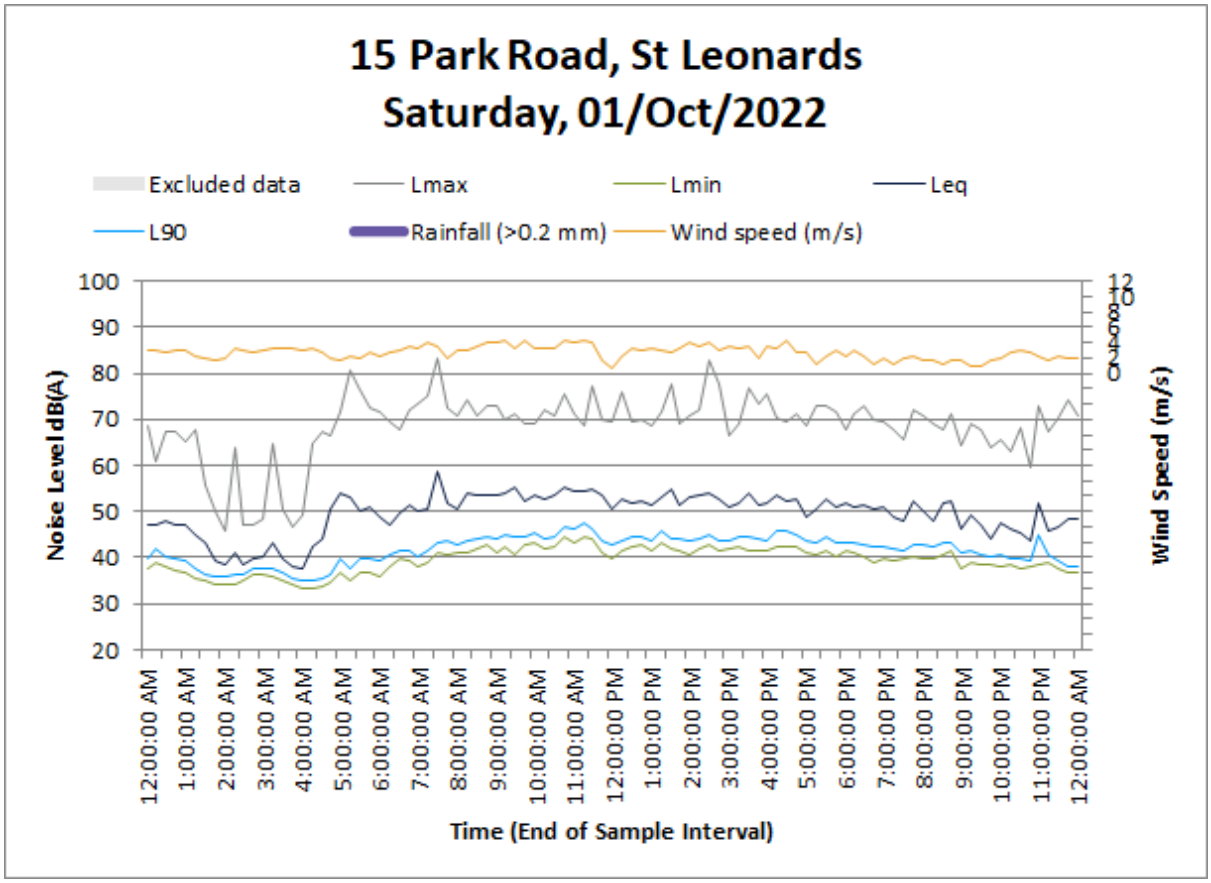

15 Park Road, St Leonards
Monday, 26/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

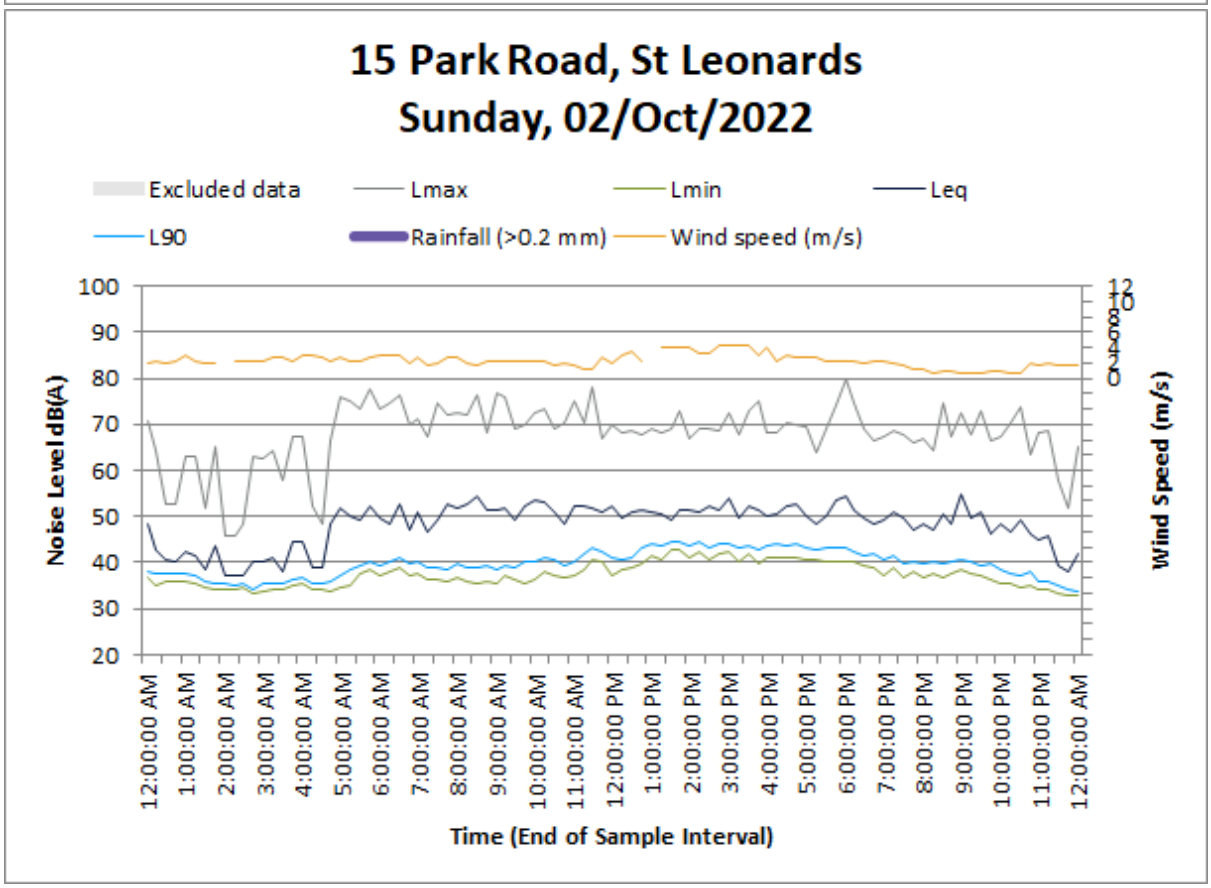

15 Park Road, St Leonards
Tuesday, 27/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

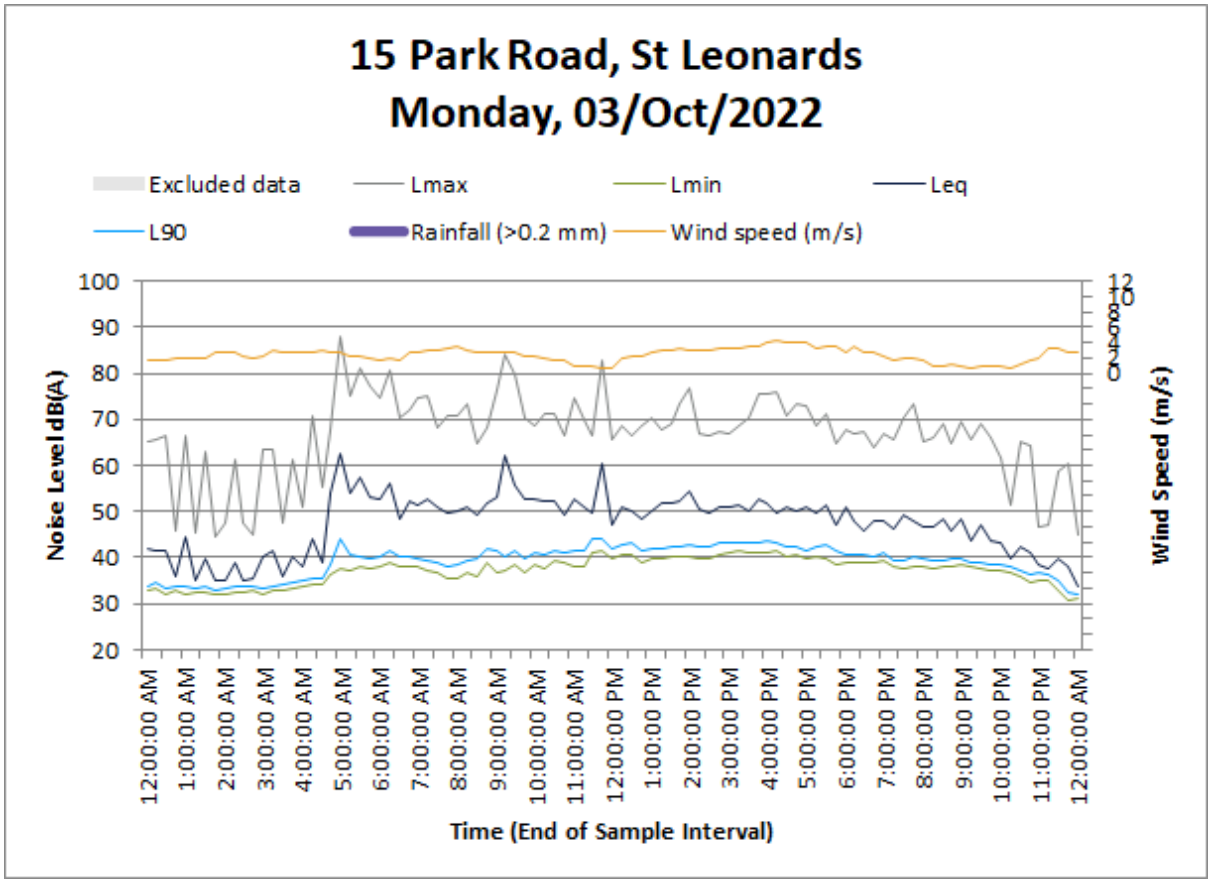

15 Park Road, St Leonards
Wednesday, 28/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

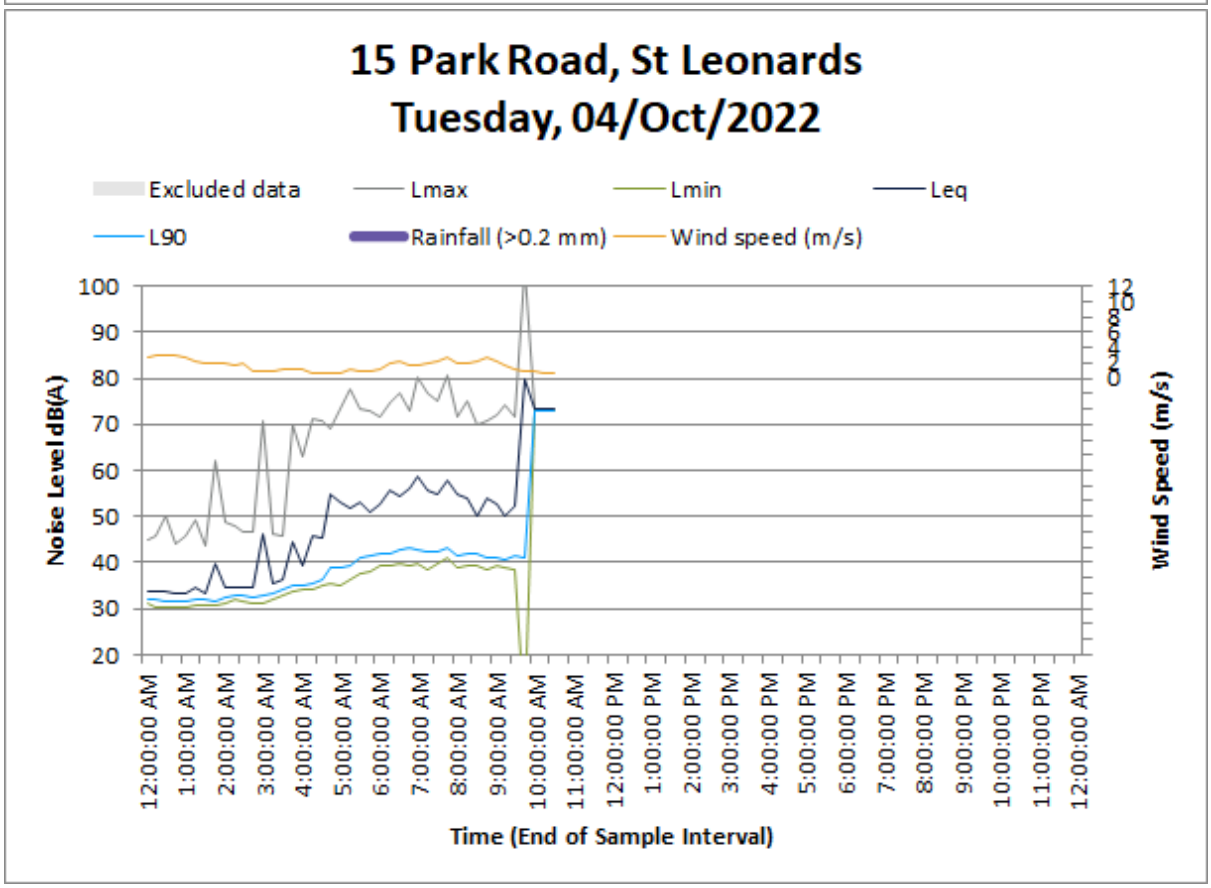

15 Park Road, St Leonards
Thursday, 29/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)


15 Park Road, St Leonards
Friday, 30/Sep/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)


15 Park Road, St Leonards
Saturday, 01/Oct/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)


15 Park Road, St Leonards
Sunday, 02/Oct/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)


15 Park Road, St Leonards
Monday, 03/Oct/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)


15 Park Road, St Leonards
Tuesday, 04/Oct/2022
Excluded data
Lmax
Lmin
Leq
L90
Rainfall (>0.2 mm)
Wind speed (m/s)
Noise Level dB(A)
Wind Speed (m/s)
Time (End of Sample Interval)

Appendix C

Glazing Requirements Floor Plans

EMM
creating opportunities

Table A.5.2 Glazing and ventilation requirements

Facade	Room type	Requirement
		Nominal system in well sealed/insulated frame, single glazed
	Living areas	6.38 mm laminated
	Sleeping areas	6.38 mm laminated
	Living areas	Mechanical ventilation required
	Sleeping areas	Mechanical ventilation required

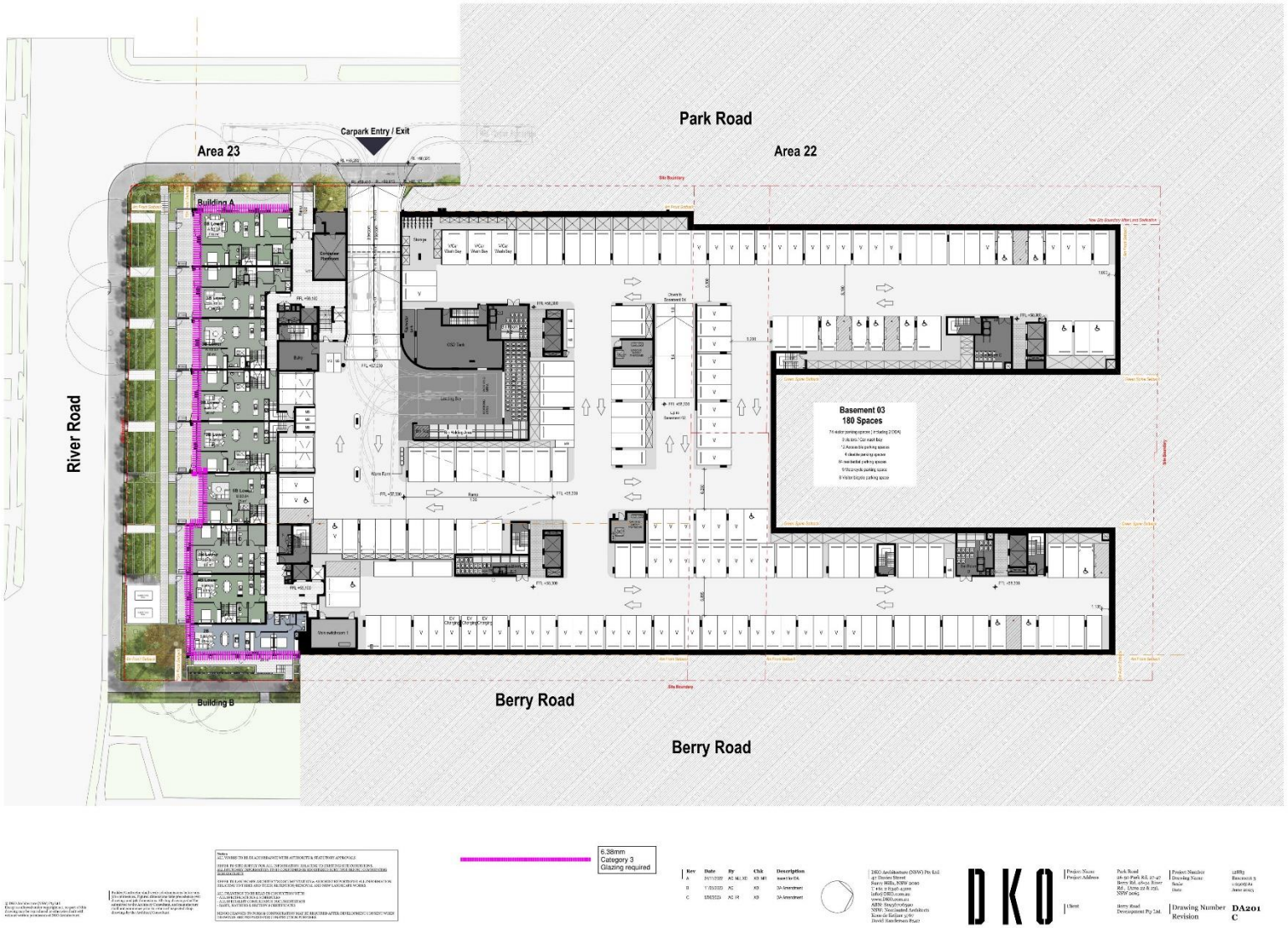


Figure A.1 Requirements for living area and sleeping area facades – Basement 3

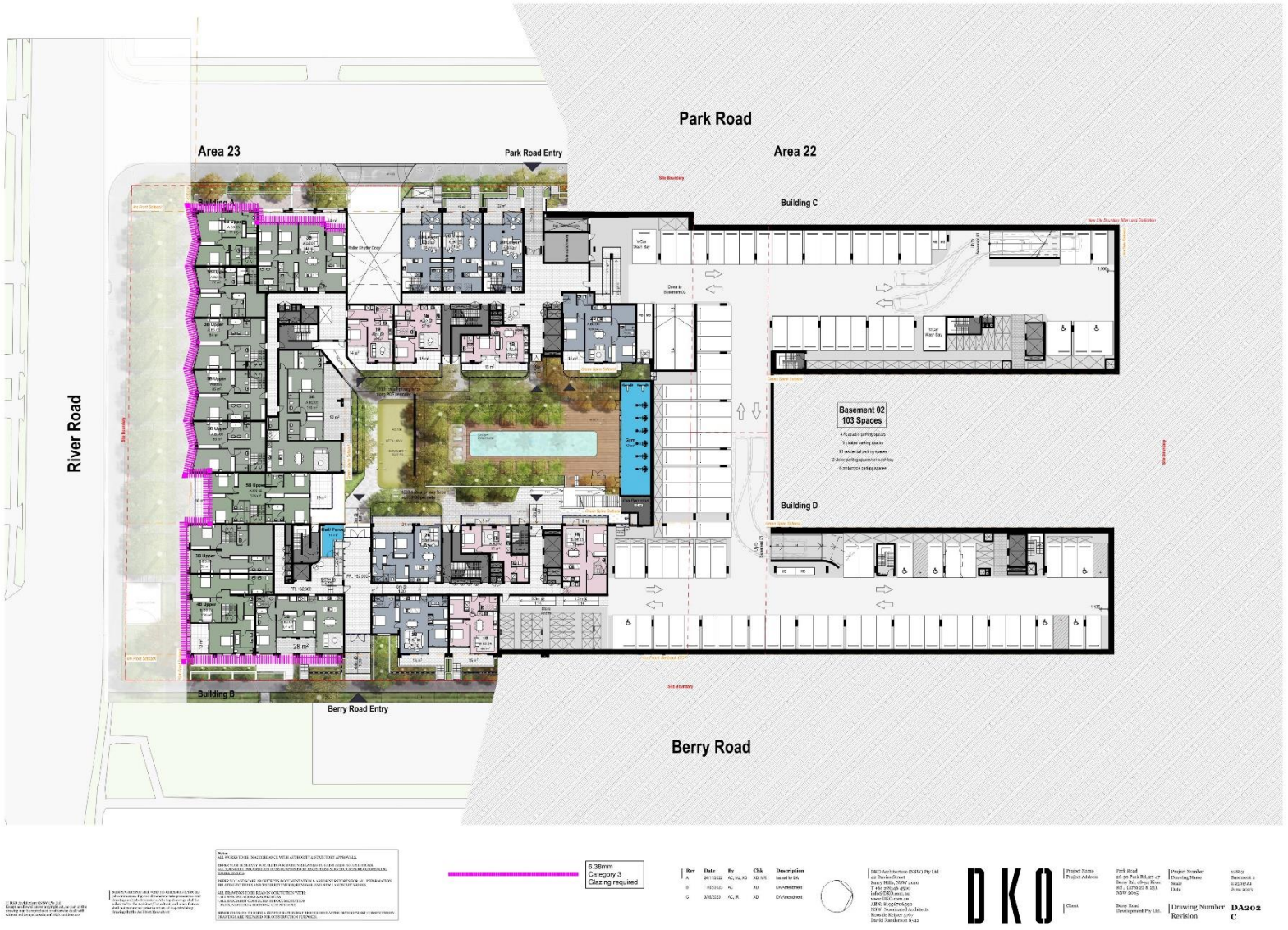


Figure A.2 Requirements for living area and sleeping area facades – Basement 2

Figure A.3 Requirements for living area and sleeping area facades – Basement 1

Figure A.4 Requirements for living area and sleeping area facades – Ground Floor

Figure A.4 Requirements for living area and sleeping area facades – Levels 1 - 8

Australia

SYDNEY
Ground floor 20 Chandos Street
St Leonards NSW 2065
T 02 9493 9500

NEWCASTLE
Level 3 175 Scott Street
Newcastle NSW 2300
T 02 4907 4800

BRISBANE
Level 1 87 Wickham Terrace
Spring Hill QLD 4000
T 07 3648 1200

CANBERRA
Level 2 Suite 2.04
15 London Circuit
Canberra City ACT 2601

ADELAIDE
Level 4 74 Pirie Street
Adelaide SA 5000
T 08 8232 2253

MELBOURNE
Suite 8.03 Level 8 454 Collins Street
Melbourne VIC 3000
T 03 9993 1900

PERTH
Suite 9.02 Level 9 109 St Georges Terrace
Perth WA 6000

Canada

TORONTO
2345 Younge Street Suite 300
Toronto ON M4P 2E5

VANCOUVER
60 W 6th Ave Suite 200
Vancouver BC V5Y 1K1

linkedin.com/company/emm-consulting-pty-limited

emmconsulting.com.au