

Shell Cove, B2 Apartments

Noise Impact Assessment

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Attention To	Frasers Property Limited

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1 INTRODUCTION

Acoustic Logic Consultancy (ALC) has been engaged to conduct an acoustic assessment of potential noise impacts associated with the proposed residential apartment development at Shell Cove, B2 Apartments.

This document addresses noise impacts associated with the following:

- Noise intrusion to project site from adjacent roadways, marina and boat maintenance facility; and
- Noise emissions from mechanical plant to service the project site (in principle).

ALC have utilised the following documents and regulations in the noise assessment of the development;

- Shellharbour City Council DCP and LEP 2013;
- Australian and New Zealand AS/NZS 3671:1989 'Acoustics—Road traffic noise intrusion—Building siting and construction';
- Australian Standard AS2107:2016 – '*Recommended Design Sound Levels and Reverberation Times for Building Interiors*'; and
- NSW Department of Environment and Heritage, Environmental Protection Agency document – '*Noise Policy for Industry*' (NPI) 2017.

This assessment has been conducted using the Smart Design Studio architectural drawings for D.A Submission, see details below.

Table 1-1 – Architectural Sheet Information

Drawing Owner	Drawing No.	Drawing Title	Revision	Date
Smart Design Studio	DA100	GA PLAN – BASEMENT 2	P15	14 th August 2019
	DA101	GA PLAN – GROUND & BASEMENT 1	P19	
	DA103	GA PLAN – LEVEL 01	P18	
	DA104	GA PLAN – LEVEL 02	P16	
	DA105	GA PLAN – LEVEL 03 – TYPICAL	P15	
	DA106	GA PLAN – LEVEL 04		
	DA107	GA PLAN – LEVEL 5		
	DA108	GA PLAN – ROOF	P17	

2 SITE DESCRIPTION

The proposed residential apartment development comprises of six storeys of apartments and two storeys of basement carpark.

Investigation has been carried out by this office in regards to the existing properties and noise impacts surrounding the proposed development, which is detailed below:

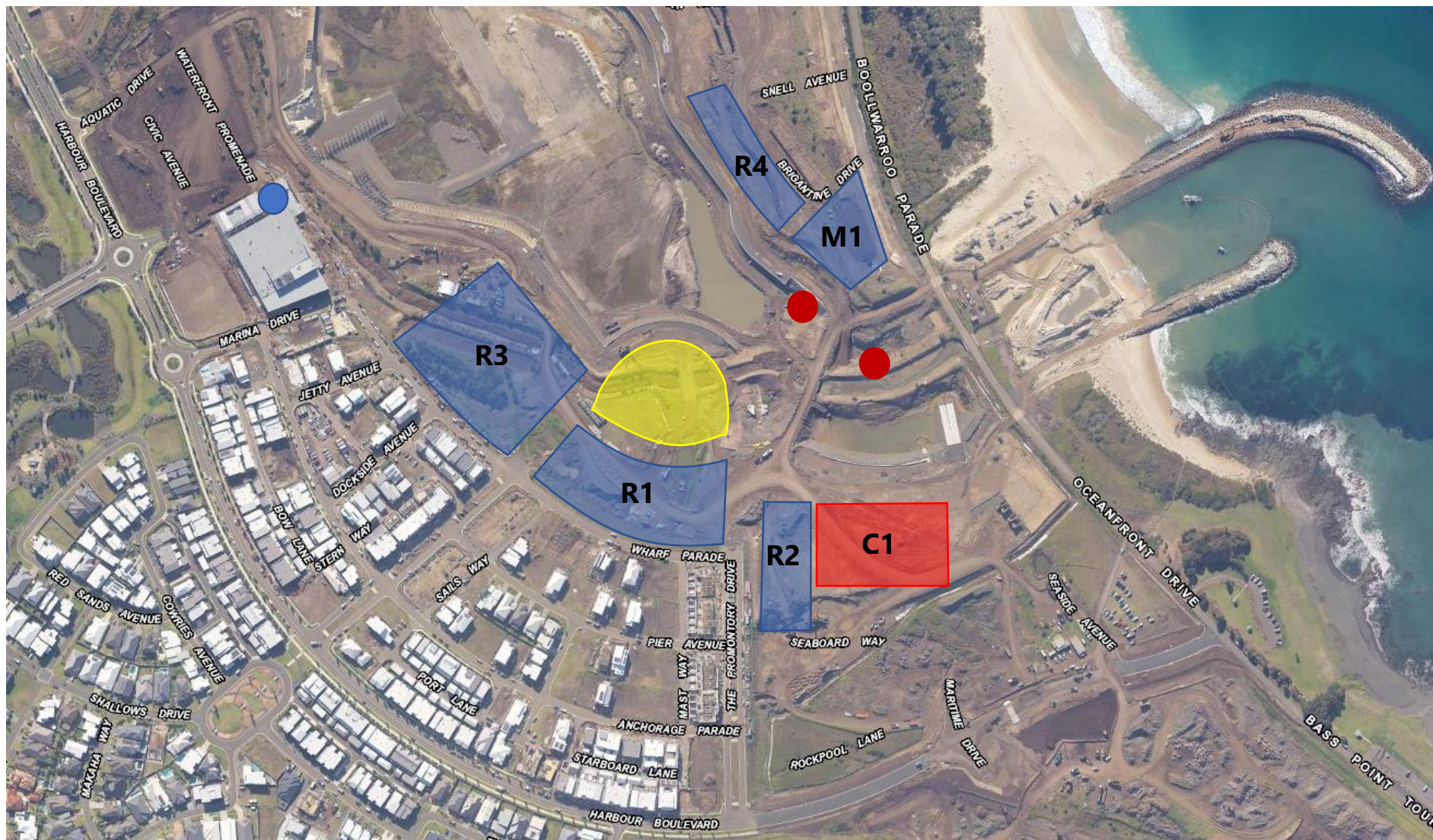
- Existing residential blocks to the far north and far west along Boolwarroo Parade and past Harbour Boulevard; and
- Proposed residential, mixed and commercial facilities surrounding the development.

As this development is part of the Shell Cove masterplan, assessment has been made to the nearest proposed developments.

The nearest noise receivers around the site include:

- **R1:** Residential Receiver 1 – Townhouse developments to the south encompassed within the B2 Precinct;
- **R2:** Residential Receiver 2 – Townhouse developments to the south east encompassed within the A2 Precinct;
- **R3:** Residential Receiver 3 – Apartment and townhouse developments to the west encompassed within the C2 Precinct;
- **R4:** Residential Receiver 4 – Townhouse and house developments to the north encompassed within the H Precinct;
- **M1:** Mixed-use Receiver 4 – Mixed-use development to the north encompassed within the H Precinct;
- **C1:** Commercial Receiver 1 – Boat house and maintenance facility to the east encompassed within the A2 Precinct;

A site map, measurement description and surrounding receivers are presented in Figure 1 below.



- Project Site
- Residential Receivers
- Commercial Receivers

Figure 1 – Project Site
Source: NSW Six Maps

- Unattended Noise Monitor
- Attended Measurements

3 NOISE DESCRIPTORS

Environmental noise constantly varies. Accordingly, it is not possible to accurately determine prevailing environmental noise conditions by measuring a single, instantaneous noise level.

To accurately determine the environmental noise a 15-20 minute measurement interval is utilised. Over this period, noise levels are monitored on a continuous basis and statistical and integrating techniques are used to determine noise description parameters.

In analysing environmental noise, three-principle measurement parameters are used, namely L_{10} , L_{90} and L_{eq} . The L_{10} and L_{90} measurement parameters are statistical levels that represent the average maximum and average minimum noise levels respectively, over the measurement intervals.

The L_{10} parameter is commonly used to measure noise produced by a particular intrusive noise source since it represents the average of the loudest noise levels produced by the source.

Conversely, the L_{90} level (which is commonly referred to as the background noise level) represents the noise level heard in the quieter periods during a measurement interval. The L_{90} parameter is used to set the allowable noise level for new, potentially intrusive noise sources since the disturbance caused by the new source will depend on how audible it is above the pre-existing noise environment, particularly during quiet periods, as represented by the L_{90} level.

The L_{eq} parameter represents the average noise energy during a measurement period. This parameter is derived by integrating the noise levels measured over the 15 minute period. L_{eq} is important in the assessment of environmental noise impact as it closely corresponds with human perception of a changing noise environment; such is the character of environmental noise.

4 AMBIENT NOISE SURVEY

NSW EPA's Rating Background Noise Level (RBL) assessment procedure requires determination of background noise level for each day (the ABL) then the median of the individual days as set out for the entire monitoring period.

Appendices in this report present results of unattended noise monitoring conducted at the project site. Weather affected data was excluded from the assessment. The processed RBL (lowest 10th percentile noise levels during operation time period) are presented in Table 4-1.

4.1.1 Measurement Position

One unattended noise monitor was located in Precinct D from previous assessment done for the area. Refer to Figure 1 for detailed location.

4.1.2 Measurement Period

Unattended noise monitoring was conducted from Monday 29th of May 2017 to Monday 5th of June 2017. Attended noise measurements were undertaken on the 29th of May 2017.

4.1.3 Measurement Equipment

Equipment used consisted of an Acoustic Research Laboratories Pty Ltd noise logger. The logger was set to A-weighted fast response and was programmed to store 15-minute statistical noise levels throughout the monitoring period. The monitor was calibrated at the start and end of the monitoring period using a Rion NC-73 calibrator. No significant drift was noted. Noise logger data is provided in Appendix One – Unattended Noise Monitoring.

4.1.4 Summarised Rating Background Noise Levels

Summarised rating background noise levels for the project site and immediate surroundings are presented below.

Table 4-1 – Measured Noise Levels

Time of day	Rating Background Noise Level dB(A)_{L90(Period)}
Day (7am – 6pm)	39
Evening (6pm – 10pm)	37
Night (10pm – 7am)	33

On review of the monitoring data, the measured L₉₀ noise levels during high wind speed days do not increase background noise levels significantly as periods with little to no wind. This demonstrates that even though wind speeds measured at Bellambi exceed EPA guidelines, either:

- The wind speed on site at this time was significantly lower than at Bellambi (which is likely given Bellambi is located in a very exposed area) and/or
- The wind on site was not sufficiently consistent to increase background noise levels compared to calm periods.

Nevertheless, periods of adverse weather have been eliminated when determining the rating background noise level at the site, which is presented above.

It is also noted that the noise monitor used for Precinct D is much more shielded from noise from wind and waves that the proposed development will be subject to.

Wilkinson Murray's previously completed acoustic assessment of the Shell Cove Boat Harbour & Marina (*Ref: 05135-M*) presented previous monitoring data done at 65 Boollwarroo Parade. It was noted that the noise monitoring data was mostly dominated by noise from the ocean.

Table 3-1 Measured background noise levels (2005, 65 Boollwarroo Pde)

Location	RBL (dBA)		
	Daytime (7am-6pm)	Evening (6pm-10pm)	Night Time (10pm-7am)
65 Boollwarroo Pde	42	46	44

As the Shell Cove masterplan area is still in early works, any noise data collected previously would only be indicative for future ambient background noise. Therefore, intrusiveness criterion from the NSW NPI will be assessed using the Wilkinson Murray noise monitoring data for façades facing the new harbour, and the ALC data will be used for façades facing away from the harbour. Further detail into the noise emissions criteria will be presented in Section 6.

5 EXTERNAL NOISE INTRUSION ASSESSMENT

Site investigation indicates that the major external noise sources around project site are from predicted traffic movements along Promontory Drive and usage of the boat harbour and maintenance facility, immediately adjacent to the western boundary of the site.

5.1 NOISE INTRUSION CRITERIA

A noise intrusion assessment has been conducted based on the requirements of the following acoustic noise criteria and standards;

- Shellharbour City Council DCP & LEP 2013;
- Australian and New Zealand AS/NZS 3671:1989 'Acoustics—Road traffic noise intrusion—Building siting and construction'; and
- Australian Standard AS2107:2016 – '*Recommended Design Sound Levels and Reverberation Times for Building Interiors.*'

5.1.1 Shellharbour City Council DCP & LEP 2013

31.2 Developments and subdivision fronting and within proximity to busy roads, rail corridors and other-noise generating land uses

31.2.1 *A noise assessment survey and a program of appropriate noise attenuation measures to reduce traffic or other noise that potentially will affect sensitive noise receivers must be prepared by a suitably qualified acoustic consultant in accordance with the NSW Road Noise Policy and/or Industrial Noise Policy issued by the NSW Governments'. The assessment shall predict noise levels for a ten year period and any noise attenuation measures shall address these noise levels.*

31.2.5 *Any noise barriers must be constructed as part of a subdivision where required by an acoustic study.*

31.2.7 *Architectural treatments are to be designed in accordance with AS3671 – Traffic Noise Intrusion Building Siting and Construction, the indoor sound criteria of AS2107 – Recommended Design Sound Levels and Reverberation Times for Building Interiors.*

5.1.2 Australian Standard AS3671:1989 '*Acoustics—Road traffic noise intrusion—Building siting and Construction*'

AS3671:1989 notes the following in relation to traffic noise:

- Internal noise levels should be determined in accordance with AS/NZS 2107:2016 '*Acoustics – Recommended design sound levels and reverberation times for building interiors.*'
- A suitable descriptor should be adopted relevant to the use of the development. As AS2107:2016 adopts the L_{eq} descriptor, ALC shall also use this descriptor.
- AS3671 does not specifically recommend a time interval. On this basis, ALC have adopted the interval used by the EPA Road Noise Policy for main/arterial roads, that being:
 - Day – 7am to 10pm (15 hour); and
 - Night – 10pm to 7am (9 hour).
- ALC have applied the daytime interval to the living areas of the apartment and the night time interval to the bedrooms of the apartment.

Internal noise levels have been selected in accordance with AS2107:2016.

5.1.3 Australian and New Zealand AS2107:2016 'Recommended design sound levels and reverberation times for building interiors'

AS2107:2016: Recommended design sound levels and reverberation times for building interiors specifies allowable internal noise levels for internal spaces within residential buildings. Table 1, in Section 5 of AS2107:2016, gives the following maximum internal noise levels for residential buildings near major roads.

Table 5-1 – Recommended Design Sound Levels

Space /Activity Type	Recommended Maximum Design Sound Level
Bedrooms	35-40 dB(A) $L_{eq}(10pm-7am)$
Living Rooms	35-45 dB(A) $L_{eq}(anytime)$

5.1.4 Summarised External Noise Intrusion Criteria

The internal noise criteria adopted for each internal space is therefore summarised below based on the relevant State, Council and Australian Standard requirements.

Table 5-2 – Adopted Internal Noise Levels

Space / Activity Type	Required Internal Noise Level
Residential Living Areas	40 dB(A) L_{eq} (15hr)
Residential Sleeping Areas (night time)	35 dB(A) L_{eq} (9hr) (night time)

5.2 PREDICTED NOISE LEVELS

This section of the report details predicted noise levels affecting the site to establish surrounding environmental noise levels impacting the development.

5.2.1 Traffic Noise

CoRTN road traffic model was used to calculate traffic noise levels resultant on the façades of the future development based on the traffic volumes provided by Maunsell and iterated by Christopher Hallam & Associates Pty Ltd.

Noise level predictions have been based off the following traffic projections:

- Promontory Drive having an estimated 5,700 traffic movements (vehicles per day); and
- Unlabelled road (3B classification in Maunsell traffic report) having an estimated 1,100 traffic movements (vehicles per day).

Based on previous consultation with Maunsell, a daytime split of 85% and night time split of 15% of the total vehicles per day predicted was advised, resulting in the following:

- A total of 4,845 movements during the daytime period (7am-10pm) and 855 movements during the night-time period (10pm-7am) for Promontory Drive; and
- A total of 935 movements during the daytime period (7am-10pm) and 165 movements during the night-time period (10pm-7am) for the unlabelled 3B classification road.

Predicted traffic noise levels at the worst affected façades of the proposed dwellings are detailed in the table below.

Table 5-3 – Predicted Traffic Noise Levels at the Façade – CoRTN Model

Location	Predicted Noise Level dB(A) L_{Aeq} (15 minute)	
	Daytime (7am-10pm)	Night time (10pm-7am)
Facing Promontory Drive	59	52
Facing rear lane (unlabelled 3B road)	51	44

5.2.2 Noise from Boat Harbour and Boat Maintenance Facility

Previous measurements by ALC and Wilkinson Murray have been used to predict possible noise from Boat Harbour and Boat Maintenance Facility usage.

Outer harbour use comprises of:

- A multipurpose pontoon, to be used as a boat pick-up point;
- Fuel and pump-out pontoon, to be used for boat refuelling and pumping out of boat sewerage;
- On-water maintenance berths for minor repairs and holding area for boats;
- A travel lift for hauling vessels from the water;
- A heavy-duty platform used to place and remove dry stored boats by forklift; and
- Holding areas.

Wilkinson Murray assessed the impacts of Harbour and Maintenance Facility usage (*Ref: 05135-M*) with recommendations for attenuation measures. It is noted that the recommendations were made to address noise impact to neighbouring two-storey residences, not to the proposed apartments. As such, the predicted noise levels without recommendations will be used to determine conservative noise levels for the area, adjusting for distance correction towards the development area.

Further on to this, ALC have predicted L_{max} levels that may occur due to idling from boats docked close to the development. Using previously collected data from this office, a measured L_{max} of 80 dB(A) was measured at 10m. A L_{max} of 63 dB(A) is predicted at any façade closest to docked boats. This has been based off the assumption that boats will only be operating for 10 out of every 15 minutes. For conservative calculation, it is assumed that the boat harbour is available for use during all times of day. Calculations for sleep disturbance per the NSW NPI have been predicted for glazing recommendations presented in Section 5.3 below.

Predicted noise measurements have been summarised below for each location. Plans for the boat maintenance facility are shown in Appendix Two – Boat Maintenance Facility Plans.

Table 5-4 – Predicted Boat Harbour and Maintenance Facility Noise Levels at the Façade

Location	Predicted Noise Level
Combined Boat Maintenance Facility Usage on Promontory Drive façade	58 dB(A) $L_{eq(15min)}$
Combined Boat Harbour Usage on Promontory Drive façade	66 dB(A) L_{max}

5.2.3 Summarised External Noise Levels

The following noise levels for the site have been established based on the predictions above.

Table 5-5 – Measured Traffic Noise Levels

Location	Time of Day	Noise Level – L _{eq}
Façade facing Promontory Drive	Daytime 7am – 10pm	62 dB(A) L _{eq} (15hr)
	Night Time 10pm – 7am	59 dB(A) L _{eq} (9hr)
Façade facing rear lane (unlabelled 3B road)	Daytime 7am – 10pm	51 dB(A) L _{eq} (15hr)
	Night Time 10pm – 7am	44 dB(A) L _{eq} (9hr)

5.3 RECOMMENDED CONSTRUCTIONS

Assessment of façade requirements to achieve required indoor noise levels has been undertaken. Dimensions of rooms, setbacks from roadways, window openings and floor areas have been used.

5.3.1 Glazed Windows and Doors

The following constructions are recommended to comply with the project noise objectives. Aluminium framed/sliding glass doors and windows will be satisfactory provided they meet the following criteria. All external windows and doors listed are required to be fitted with Q-Ion type acoustic seals. **(Mohair Seals are unacceptable).**

Thicker glazing may be required for structural, safety or other purposes. Where it is required to use thicker glazing than scheduled, this will also be acoustically acceptable. The recommended constructions are detailed in Table 5-6.

Table 5-6 - Recommended Glazing Construction

Room	Glazing Thickness	Acoustic Seals
Sleeping Areas on external façades (including NE side façade opening – bedroom facing private roof garden)	10.38mm Laminated	Yes
Sleeping Areas on internal façades	6.38mm Laminated	Yes
Living Rooms		Yes

It is recommended that only window systems having test results indicating compliance with the required ratings obtained in a certified laboratory be used where windows with acoustic seals have been recommended.

In addition to complying with the minimum scheduled glazing thickness, the R_w rating of the glazing fitted into open-able frames and fixed into the building opening should not be lower than the values listed in Table 5-7 for all areas. Where nominated, this will require the use of acoustic seals around the full perimeter of open-able frames and the frame will need to be sealed into the building opening using a flexible sealant.

Table 5-7 - Minimum R_w of Glazing Assembly (with Acoustic Seals)

Glazing Assembly	Minimum R_w of Installed Window
6.38mm Laminated	31
10.38mm Laminated	35

Note: Façade constructions to be reviewed at CC stage based on construction drawings. The glazing types listed above are indicative and for authority approvals purposes only

5.3.2 External Roof/Ceiling Construction

External roof construction will be constructed from concrete elements, therefore; acoustic upgrading is not required. In the event that any penetrations are required thru the external skin, an acoustic sealant should be used to minimise all gaps.

5.3.3 External Wall Construction

External wall construction will be constructed from concrete/ masonry elements. For external wall systems which are constructed with concrete/masonry no further acoustic upgrading is required. There should not be vents on the internal skin of external walls. In the event that any penetrations are required thru the external skin, an acoustic sealant should be used to minimise all gaps.

5.3.4 Plasterboard Corner Details

The recommended plasterboard ceiling/wall corner construction options over the rooms are shown in Figure 5-1 below.

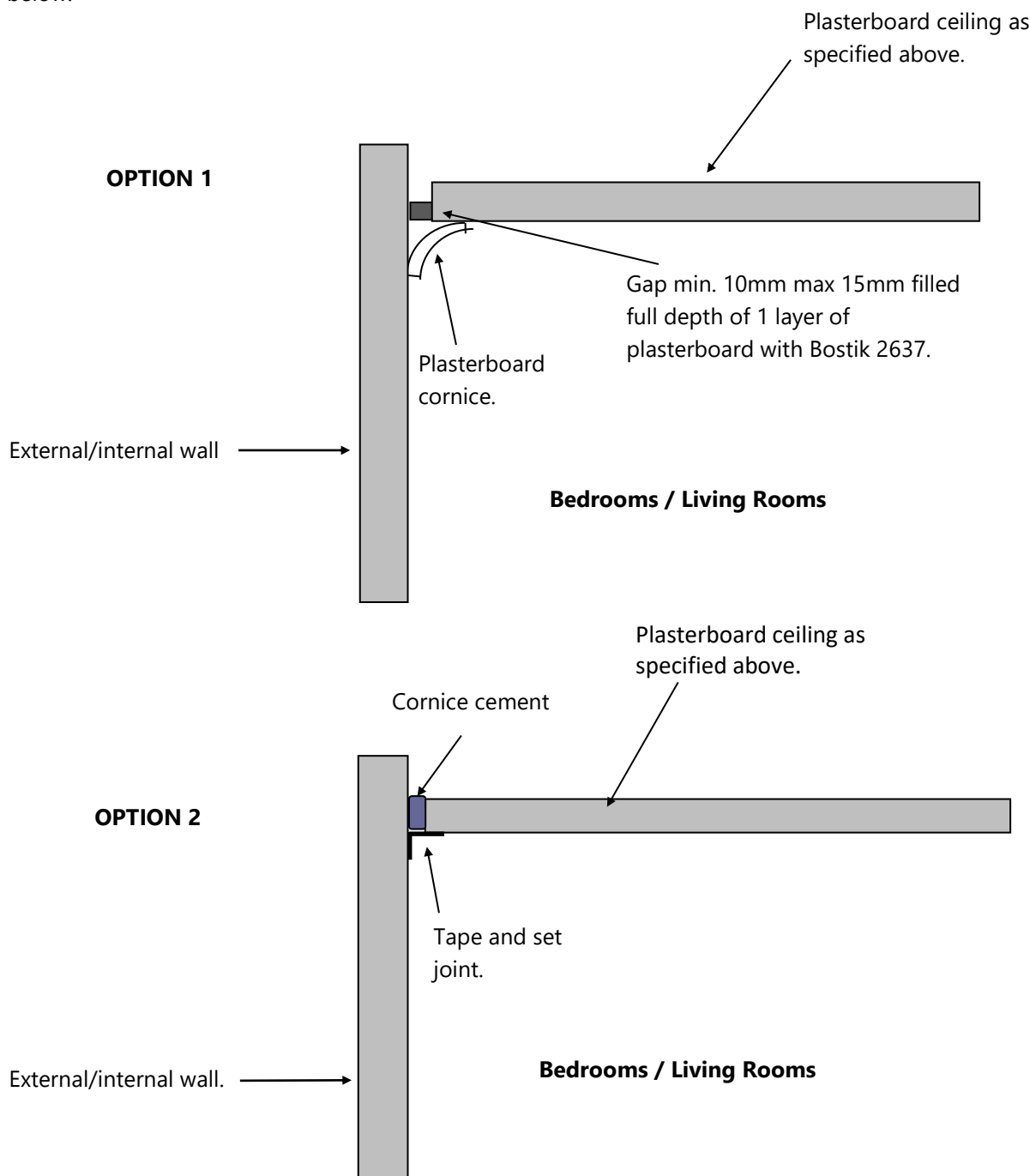


Figure 5-1 – Plasterboard Corner Options

6 NOISE EMISSION CRITERIA

The noise emission from the project site shall comply with the requirements of the following documents;

- Shellharbour City Council DCP and LEP 2013; and
- NSW Department of Environment and Heritage, Environmental Protection Agency document – Noise Policy for Industry (NPI) 2017.

6.1 SHELLHARBOUR CITY COUNCIL DCP AND LEP 2012

As there are no other specific criteria for noise emissions in the Shellharbour City Council DCP 2013 relating to the site, the NSW EPA Noise Policy for Industry (2017) will be adopted.

6.2 NSW EPA NOISE POLICY FOR INDUSTRY (NPI) 2017

The EPA NPI has two criteria which both are required to be satisfied, namely Intrusiveness and amenity. The NPI sets out acceptable noise levels for various localities. The policy indicates four categories to assess the appropriate noise level at a site. They are rural, suburban, urban and urban/industrial interface. Under the policy the nearest residential receivers would be assessed against the suburban criteria.

Noise levels are to be assessed at the property boundary or nearby dwelling, or at the balcony or façade of an apartment.

6.2.1 Intrusiveness Criterion

The guideline is intended to limit the audibility of noise emissions at residential receivers and requires that noise emissions measured using the L_{eq} descriptor not exceed the background noise level by more than 5dB(A). Where applicable, the intrusive noise level should be penalised (increased) to account for any annoying characteristics such as tonality.

Background noise levels adopted are presented in Section 4.1.4. Noise emissions from the site should comply with the noise levels presented below when measured at nearby property boundary.

6.2.2 Project Amenity Criterion

The guideline is intended to limit the absolute noise level from all noise sources to a level that is consistent with the general environment.

The EPA's NPI sets out acceptable noise levels for various localities. The recommended noise amenity area is based upon the measured background noise levels at the sensitive receiver. Based on the measured background noise levels detailed in Section 4.1.4, the Noise Policy for Industry suggests the adoption of the 'urban' categorisation.

The NPI requires project amenity noise levels to be calculated in the following manner;

$$L_{Aeq,15min} = \text{Recommended Amenity Noise Level} - 5 \text{ dB(A)} + 3 \text{ dB(A)}$$

The amenity levels appropriate for the receivers surrounding the site are presented in Table 6-1.

Table 6-1 – EPA Amenity Noise Levels

Type of Receiver	Time of day	Recommended Noise Level dB(A) $L_{eq}(\text{period})$	Project Amenity Noise Level dB(A) $L_{eq}(15 \text{ minute})$
Residential – Suburban	Day	55	53
	Evening	45	43
	Night	40	38

The NSW EPA Noise Policy for Industry (2017) defines;

- Day as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sundays and Public Holidays;
- Evening as the period from 6pm to 10pm.
- Night as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sundays and Public Holidays

6.2.3 Sleep Arousal Criteria

The Noise Policy for Industry recommends the following noise limits to mitigate sleeping disturbance:

Where the subject development / premises night -time noise levels at a residential location exceed:

- $L_{eq,15min}$ 40 dB(A) or the prevailing RBL plus 5 dB, whichever is the greater, and/or
- L_{Fmax} 52 dB(A) or the prevailing RBL plus 15 dB, whichever is the greater,

a detailed maximum noise level even assessment should be undertaken.

Table 6-2 – Sleep Arousal Criteria for Residential Receivers

Receiver	Rating Background Noise Level (Night) dB(A) L_{90}	Emergence Level
Residences Surrounding Site Night (10pm – 7am)	33 dB(A) L_{90}	40 dB(A) $L_{eq, 15min}$; 52 dB(A) L_{Fmax}
Residences Along Boat Harbour	44 dB(A) L_{90}	49 dB(A) $L_{eq, 15min}$; 59 dB(A) L_{Fmax}

6.3 SUMMARISED NOISE EMISSION CRITERIA

Table 6-3 – EPA NPI Noise Emission Criteria (Residents Surrounding Project Site)

Time Period	Assessment Background Noise Level dB(A) L_{90}	Project Amenity Criteria dB(A) L_{eq}	Intrusiveness Criteria $L_{eq}(15min)$	NPI Criteria for Sleep Disturbance
Day	39	53	44	N/A
Evening	37	43	42	N/A
Night	33	38	38	40 dB(A) $L_{eq, 15min}$; 52 dB(A) L_{Fmax}

The project noise trigger levels are indicated by the bolded values in the table above.

Table 6-4 – EPA NPI Noise Emission Criteria (Towards the Boat Harbour)

Time Period	Assessment Background Noise Level dB(A) L_{90}	Project Amenity Criteria dB(A) L_{eq}	Intrusiveness Criteria $L_{eq}(15min)$	NPI Criteria for Sleep Disturbance
Day	42	53	47	N/A
Evening	46	43	51	N/A
Night	44	38	49	49 dB(A) $L_{eq, 15min}$; 59 dB(A) L_{Fmax}

The project noise trigger levels are indicated by the bolded values in the table above.

7 NOISE EMISSION ASSESSMENT

7.1 NOISE FROM MECHANICAL PLANT WITHIN PROPOSED SITE GENERALLY

Detailed plant selection and location has not been undertaken at this stage. Satisfactory levels will be achievable through appropriate plant selection, location and if necessary, standard acoustic treatments such as duct lining, acoustic silencers and enclosures.

Noise emissions from all mechanical services to the closest residential receiver should comply with the requirements of Section 0.

Detailed acoustic review should be undertaken at CC stage to determine acoustic treatments to control noise emissions to satisfactory levels.

8 CONCLUSION

This report presents an acoustic assessment of noise impacts associated with the development to be located at Shell Cove, B2 Apartments.

Provided that the recommendations presented in Section 5.3 are adopted, internal noise levels for the residential apartment development will comply with the acoustic requirements of the following documents:

- Shellharbour City Council DCP and LEP 2013;
- Australian and New Zealand AS/NZS 3671:1989 'Acoustics—Road traffic noise intrusion—Building siting and construction'; and
- Australian Standard AS2107:2016 – '*Recommended Design Sound Levels and Reverberation Times for Building Interiors.*'

External noise emissions criteria have been established in this report to satisfy the requirements from the following documents;

- Shellharbour City Council DCP and LEP 2013; and
- NSW Department of Environment and Heritage, Environmental Protection Agency document – '*Noise Policy for Industry*' (NPI) 2017.

We trust this information is satisfactory. Please contact us should you have any further queries.

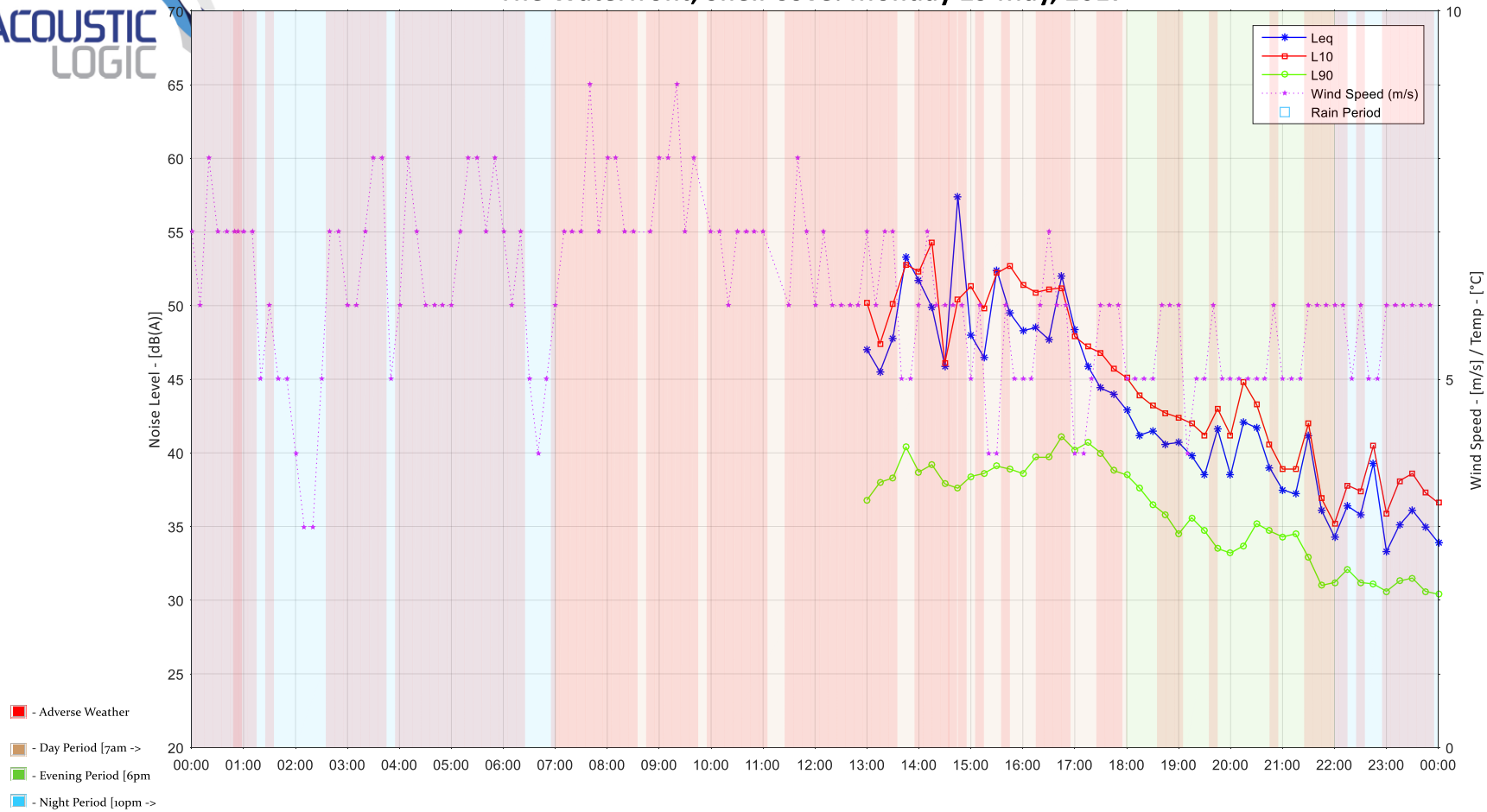
Yours faithfully,



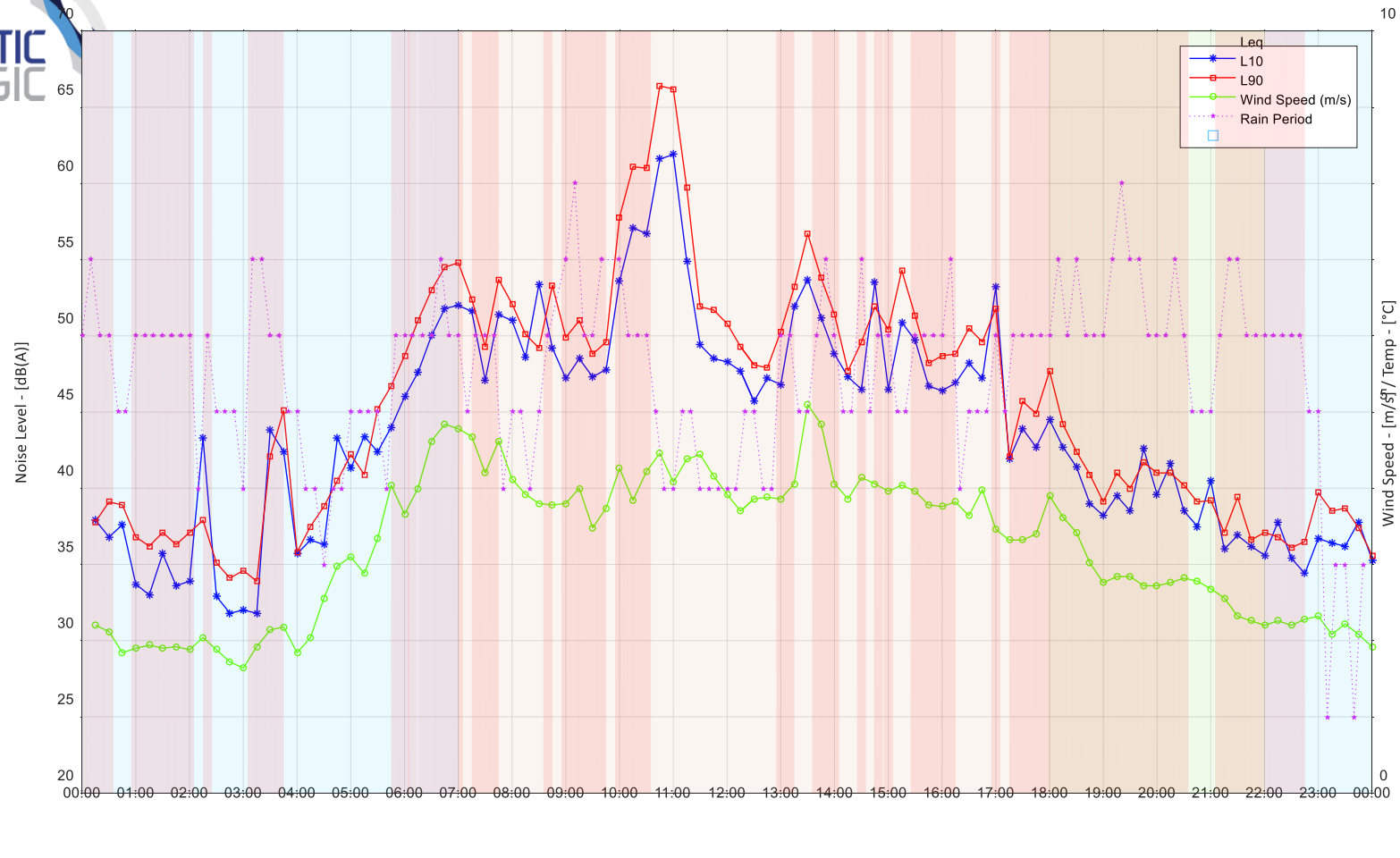
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APPENDIX ONE – UNATTENDED NOISE MONITORING

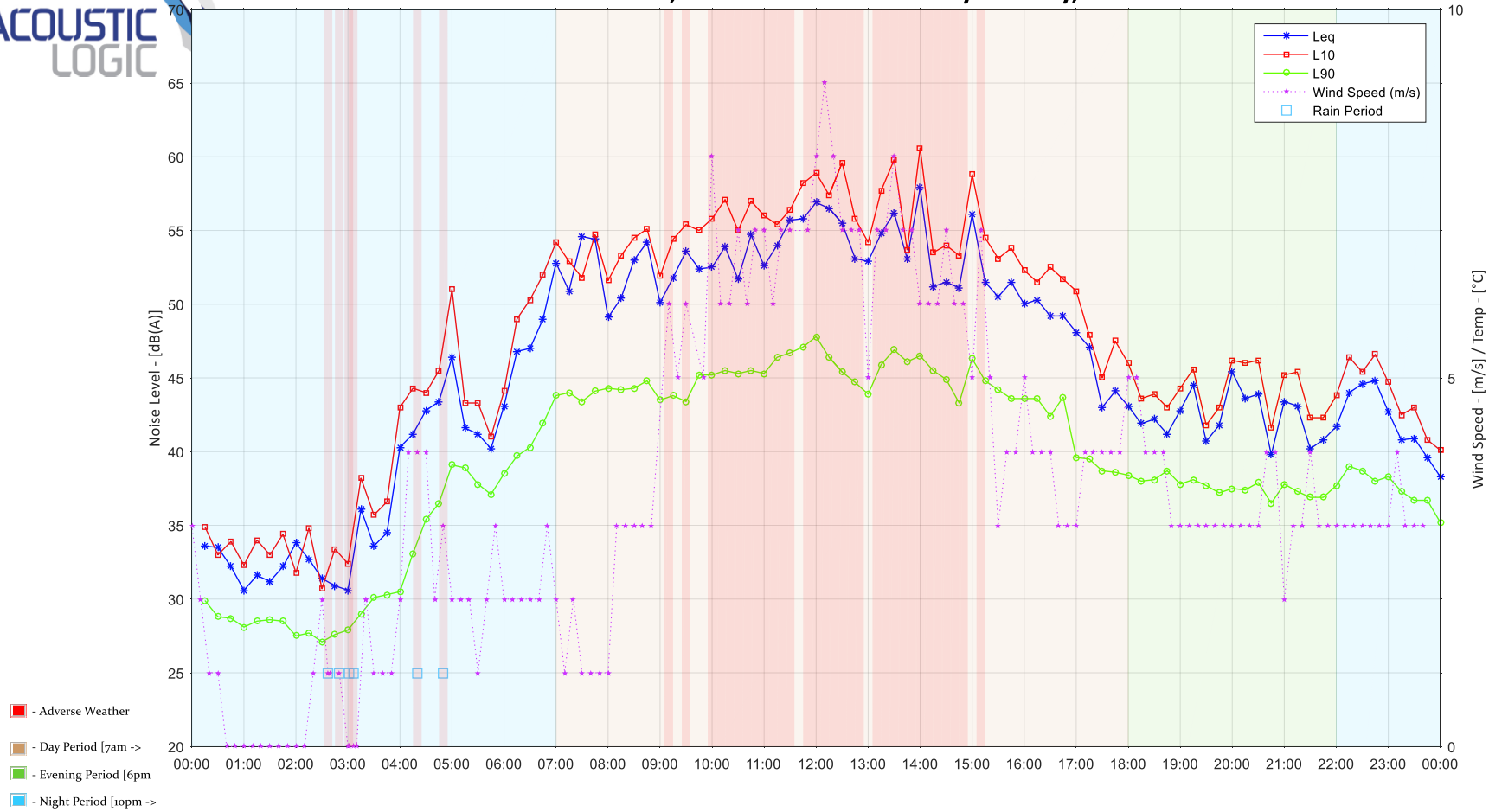
The Waterfront, Shell Cove: Monday 29 May, 2017



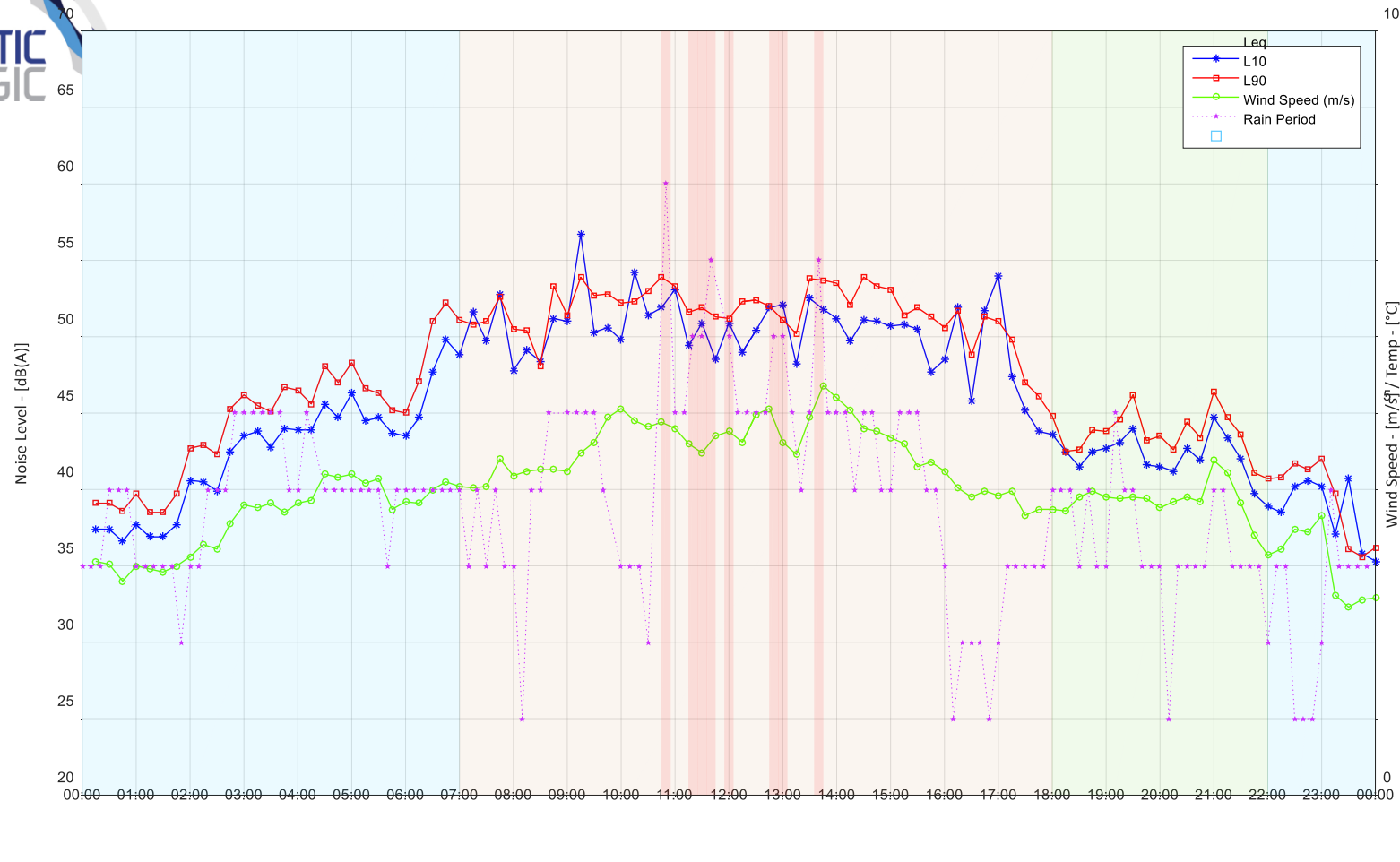
The Waterfront, Shell Cove: Tuesday 30 May, 2017



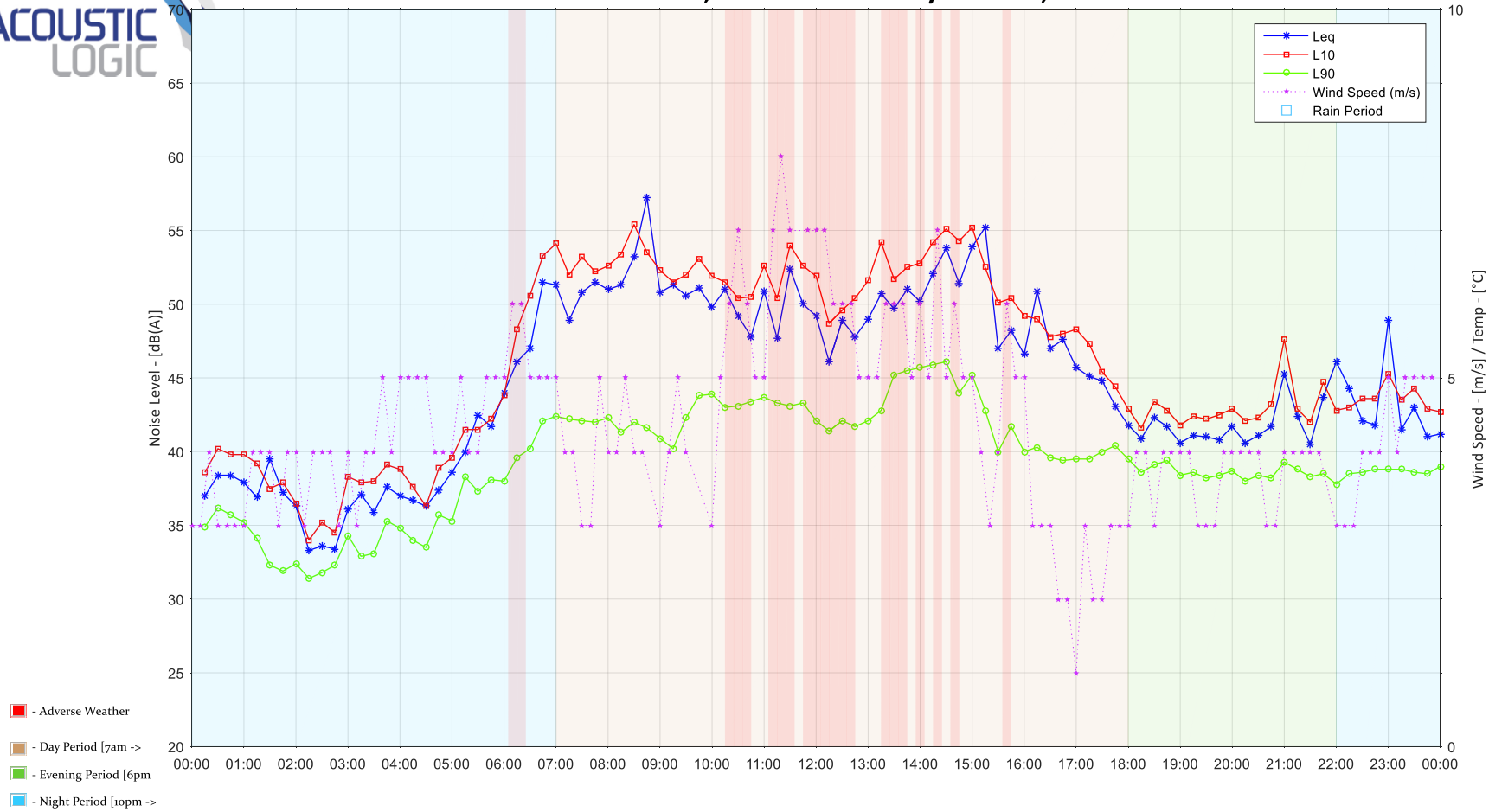
The Waterfront, Shell Cove: Wednesday 31 May, 2017



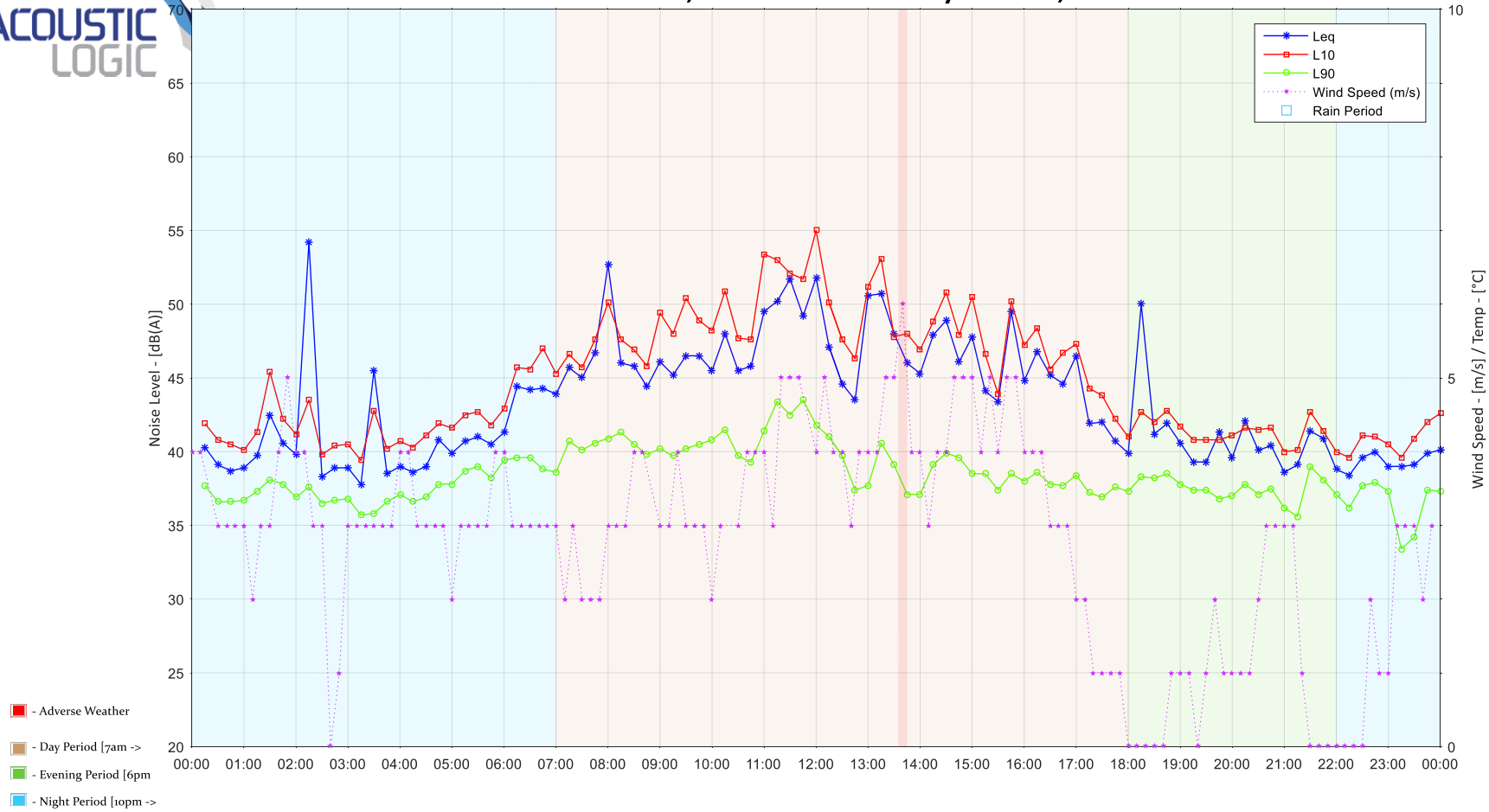
The Waterfront, Shell Cove: Thursday 01 June, 2017



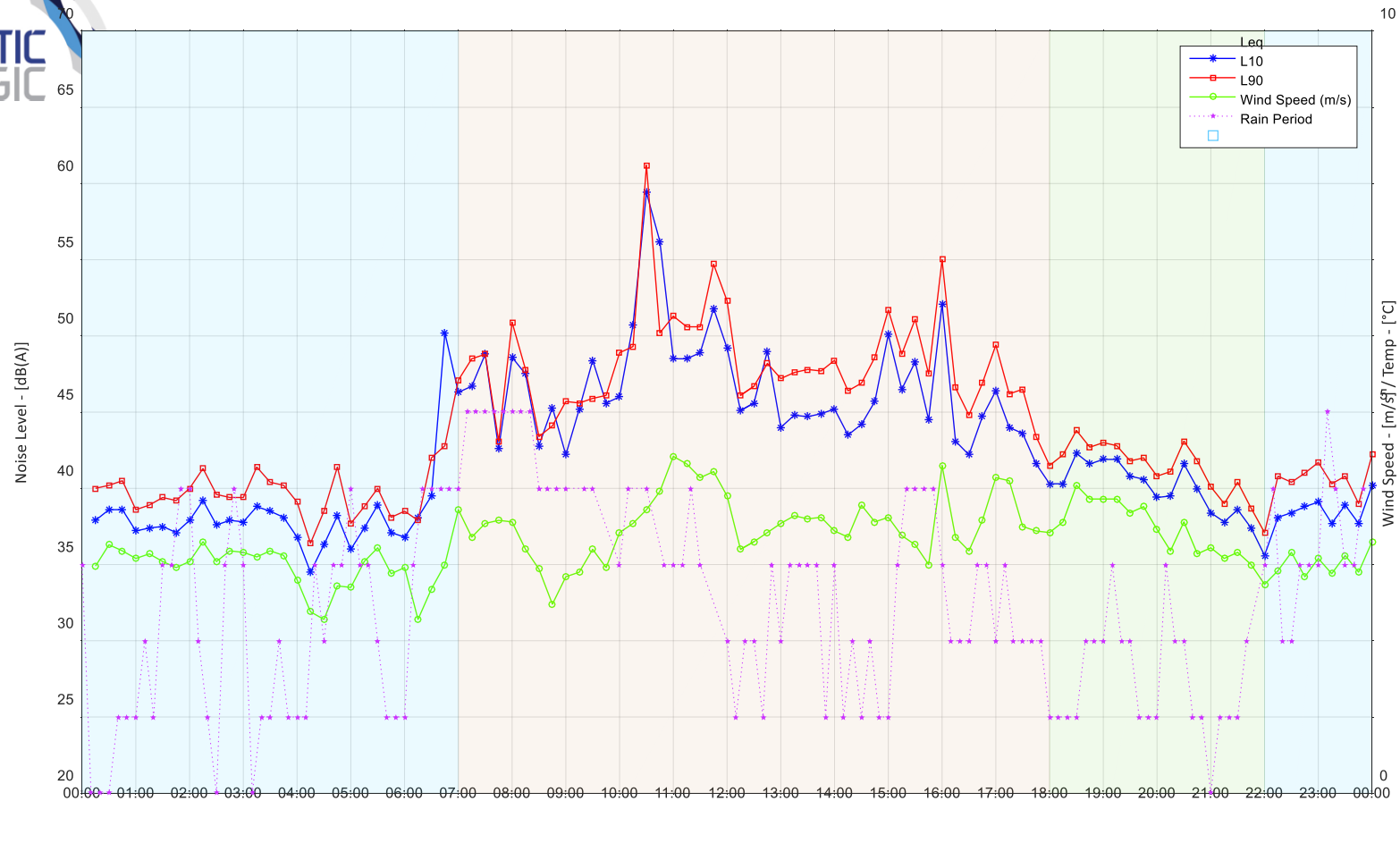
The Waterfront, Shell Cove: Friday 02 June, 2017



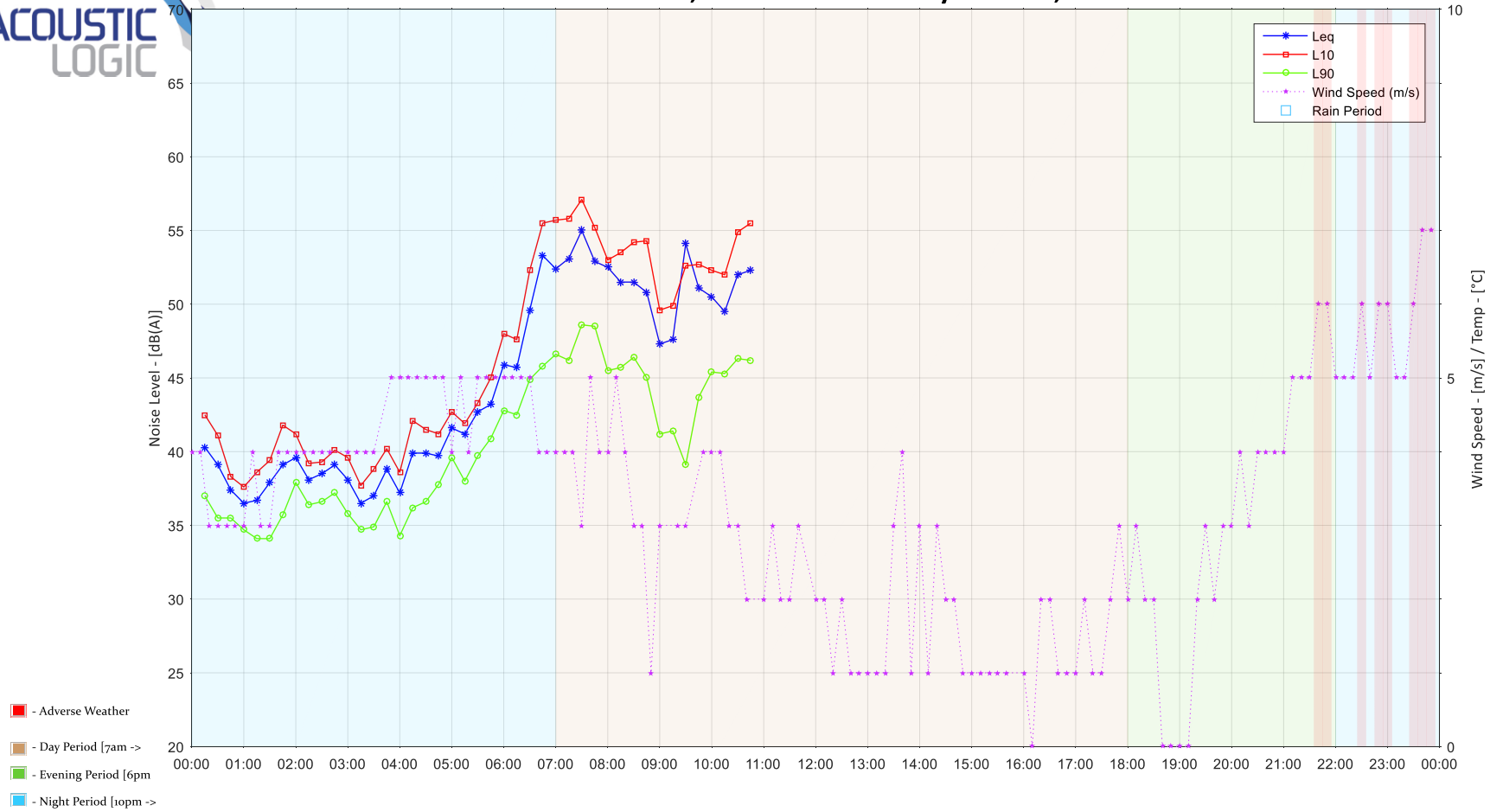
The Waterfront, Shell Cove: Saturday 03 June, 2017



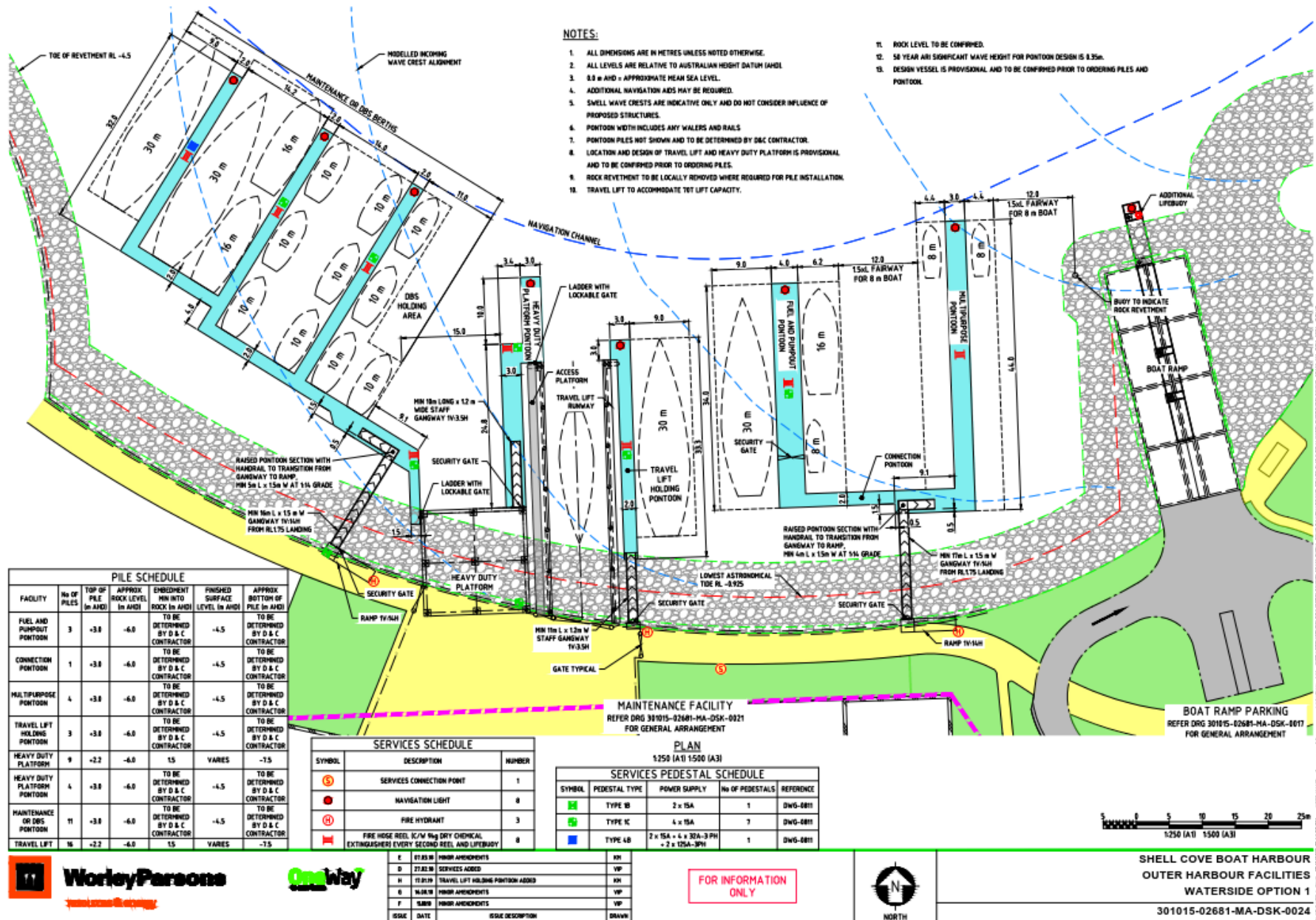
The Waterfront, Shell Cove: Sunday 04 June, 2017



The Waterfront, Shell Cove: Monday 05 June, 2017



APPENDIX TWO – BOAT MAINTENANCE FACILITY PLANS





PLANT DATE & TIME: 10/1/2019 2:55:21 PM
PLANT DATE & TIME: 10/1/2019 2:55:38 PM