JINDABYNE PRIMARY AND HIGH SCHOOLS

SSDA Acoustic Report

Prepared for:

NSW Department of Education - School Infrastructure
GPO Box 33
Sydney NSW 2001

SLR Ref: 610.30436-R01
Version No: -v0.3
December 2021

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BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with NSW Department of Education - School Infrastructure (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

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DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
610.30436-R01-v0.3	3 December 2021	Robbie Cain	Mark Irish	
610.30436-R01-v0.2	20 July 2021	Robbie Cain	Mark Irish	
610.30436-R01-v0.1	6 July 2021	Robbie Cain	Mark Irish	

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1 Introduction

SLR Consulting Australia Pty Ltd (SLR) has been engaged by the NSW Department of Education to prepare a Noise Impact Assessment (NIA) which will be submitted to the NSW Department of Planning, Industry and Environment as part of the State Significant Development Application (SSDA) for the proposed the new Jindabyne Primary and High Schools.

This acoustic report accompanies an Environmental Impact Statement (EIS) pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) in support of an application for a State Significant Development (SSD No 15788005). The SSDA is for a new education campus at Jindabyne, comprising of a new primary and high school, located at the Jindabyne Sport and Recreation Centre (JSRC).

This report presents the study methodology, noise criteria and design goals, and noise mitigation recommendations in relation to the following specific areas of acoustic significance:

- Noise emission to surrounding receivers from operational noise and use of relevant spaces
- Noise intrusion impacts from the following external sources:
    - Aircraft noise
    - Road traffic noise on surrounding roads
- Preliminary acoustical design requirements (i.e. sound insulation performance ratings, reverberation times)

A glossary of acoustic terminology used throughout this report is included as **Appendix A**.

Architectural drawings referenced in this report were made by DJRD architects (project no: 20415) issued on 11/06/21.

1.1 Proposal

The proposed development is for the construction of the Jindabyne Education Campus comprising a new primary school and a new high school at Jindabyne (the proposal). The proposal is located within the JSRC located at 207 Barry Way (the site) and will accommodate approximately 925 students with the capacity for expansion in the future.

The new primary school will be located generally in the northern portion of the site whilst the new high school will to the south of the site. While the schools are inherently separate identities, with separate student entries, opportunities for integration are provided in a central shared plaza with co-located school administration facilities, as identified in Figure 1 below. This outdoor learning space is activated by the school canteen (shared) and separate core facilities including the primary school hall and library, and the high school gym and library, and provides opportunities for shared community use.

The new primary school will provide for a Core 21 school. This will comprise of 20 home base units and 2 support learning units, administration and staff facilities, covered outdoor learning area (COLA), hall, staff and student amenities, out of school care facilities, library and special programs. Landscaped areas include active and passive open space play areas, and a games court.

The new high school will provide for a stream 2 high school. This is to comprise of 20 general/specialised learning spaces and support learning units, administration and staff facilities, covered outdoor learning area (COLA), hall, staff and student amenities, library, an agricultural learning unit. Landscaped areas include active and passive open space play areas, a sports field and multipurpose games courts.

A new access driveway is proposed off Barry way Road along the western boundary of the site and includes car parking, bus and private vehicle drop-off zones, and delivery zones.

1.2 Site Description

The site of the proposed new education campus at Jindabyne is located within the western extent of the existing JSRC at 207 Barry Way (101 DP1019527). The site is located within the Snowy Monaro Regional Council local government area and is approximately 2.2km south of the Jindabyne town Centre. A site aerial is provided in **Figure 2**.

The site is approximately 9.5 ha in size, containing a former golf course and three existing workers cottages which were occupied during the construction of the Snowy Hydro Scheme. The site is undeveloped and contains scattered trees. Much of the surrounding land comprises remnant grassland, woodland and agricultural land.

As identified above, the site is within the existing JSRC which is a high performance and community sport centre located directly east of the site. The JSRC has a range of sporting facilities including a synthetic running track, cycling track, netball and tennis courts, fitness and indoor sports centres, and sporting ovals, as well as other services and accommodation facilities. The newly constructed BMX track is located directly east of the site with the new ski jump currently under construction to the northeast.

The surrounding locality is generally rural in character with other land uses also including the Jindabyne Aero Club located to the west of the site on Tinworth Drive, an industrial area to the southwest and the Jindabyne Community recycling centre is located east of the JSRC. The site location, surrounding receivers and monitoring locations is shown in **Figure 1** and the proposed site layout is shown in **Figure 2**.

Figure 1 Site Location, Surrounding Receivers and Noise Monitoring Locations

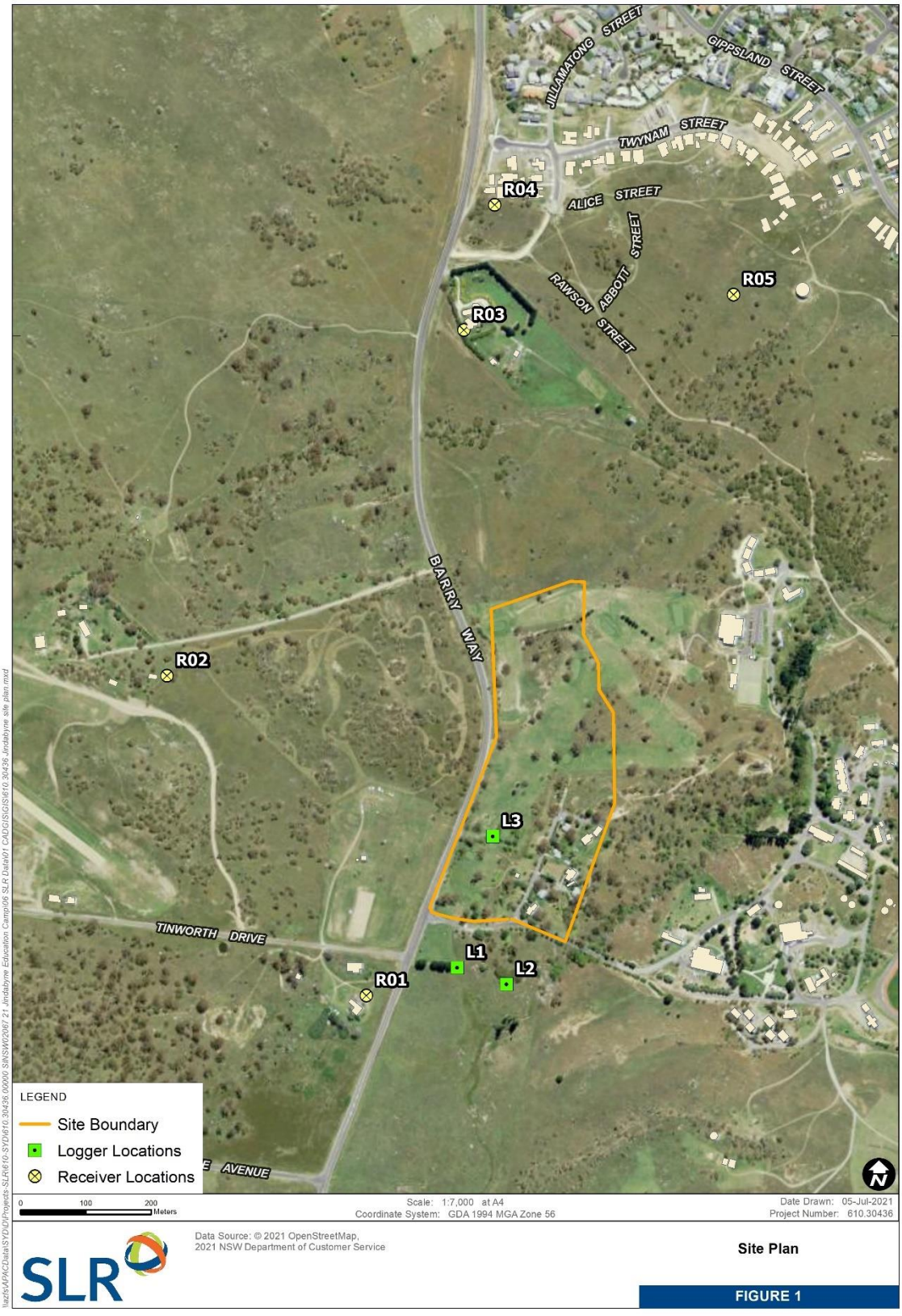
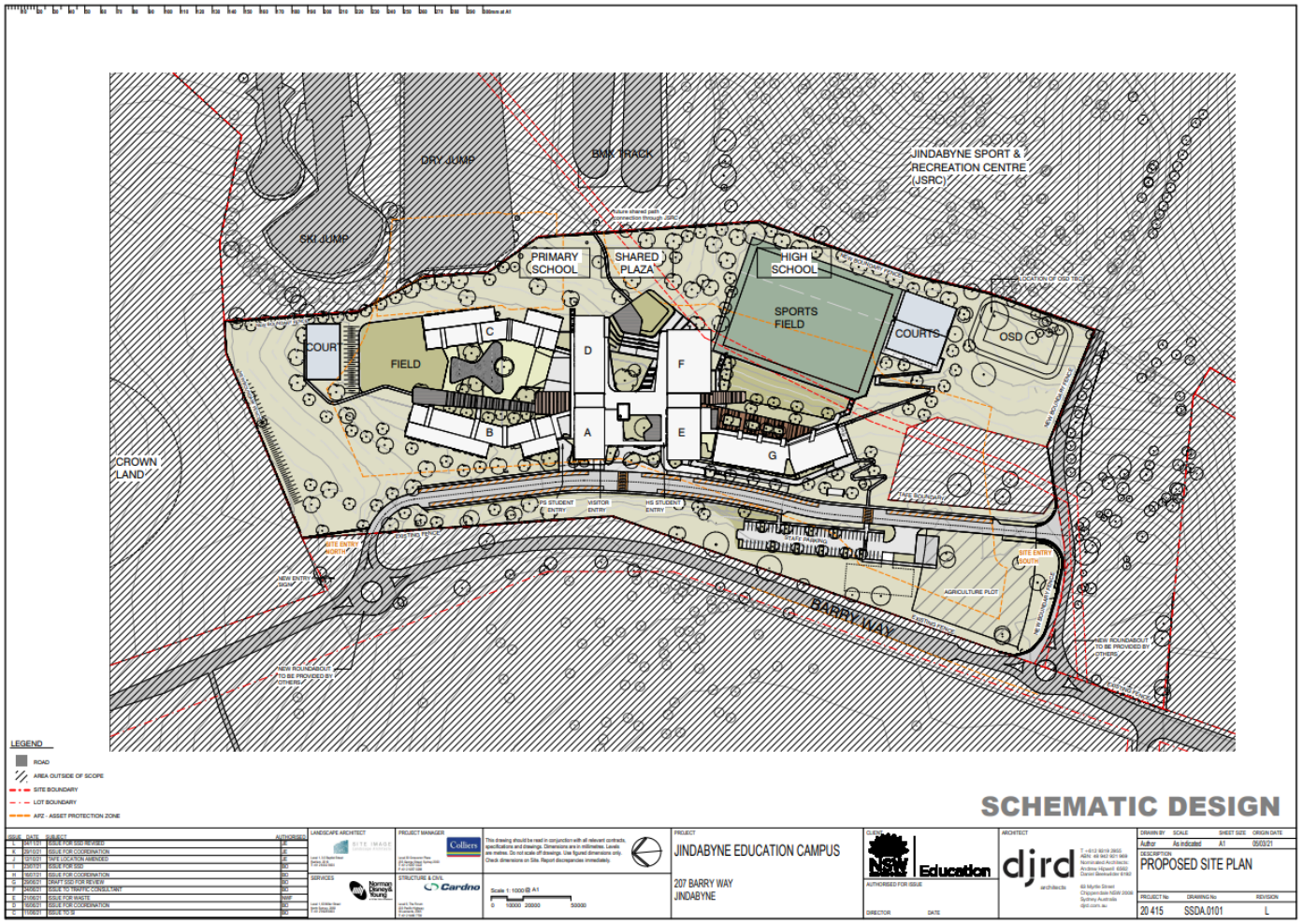


Figure 2 Proposed Development



1.3 Potential Noise Impacts

The primary aim of this noise impact assessment is to identify and assess the operational noise impacts that may affect the surrounding environment and noise-sensitive receivers as a result of the proposed development. The potential noise and vibration impacts which may arise as a result of the proposed works include:

- Operational noise emissions from regular student activities
- Operational noise emissions from out-of-school-hours events and public functions
- Operational noise emissions from onsite mechanical plant and equipment
- Potential noise and vibration emissions during the construction stage

1.4 Nearest Receivers

The nearest sensitive receivers are residential properties and a hotel located 150 m to the south, 500 m to the west and 400 m to the north. Jindabyne Sports and Recreation Centre is located to the east of the site. The area located to the west of the site is park land. The nearest receivers are shown in **Figure 1** and detailed in **Table 1**.

Table 1 Surrounding Sensitive Receivers

ID	Address	Type	Distance (m)	Direction
R01	218 Barry Way, Jindabyne	Residential	150	South
R02	150 Barry Way, Jindabyne (Touchdown Cottages)	Hotel	500	West
R03	103 Barry Way, Jindabyne	Residential	400	North
R04	31 Jillamatong Street, Jindabyne	Residential	600	North
R05	2 Tate Close, Jindabyne	Residential	500	North

2 Existing Noise Environment

The existing noise environment at the site is generally influenced by road traffic from the surrounding road network with the nearest major road being Barry Way, which is located directly adjacent to the site. Other existing noise sources include local flora and fauna. Aircraft noise occurs from the use of the Jindabyne Air Strip, which is approximately 600 metres east of the future project site. Use of the runway is occasional and rarely involves flight paths directly above the school.

2.1 Existing Noise Survey and Monitoring Locations

Unattended noise monitoring was completed in the study area during June 2021. The measured noise levels have been used to determine the existing noise environment and to set the criteria used to assess the potential impacts from the proposal.

The monitoring equipment was positioned to measure existing noise levels that are representative of receivers potentially most affected by the proposal, within constraints such as accessibility, security and landowner permission.

The noise monitoring equipment continuously measured existing noise levels in 15-minute periods during the daytime, evening and night-time. All equipment carried current National Association of Testing Authorities (NATA) or manufacturer calibration certificates and equipment calibration was confirmed before and after each measurement.

The measured data has been processed to exclude noise from extraneous events and periods affected by adverse weather conditions, such as strong wind or rain (measured at Perish Valley BOM Station) to establish representative existing noise levels the study area.

The noise monitoring locations are shown in **Figure 1** and the results are summarised in **Table 2**. Details of each monitoring location together with graphs of the measured daily noise levels are provided in **Appendix B**.

Table 2 Summary of Unattended Noise Logging Results

ID	Address	Measured Noise Levels (dBA)					
		Background Noise (RBL)			Average Noise (L_{Aeq})		
		Day	Evening	Night	Day	Evening	Night
L01	70 m east of Barry Way	37	30[2]	30[2]	55	53	51
L02	150 m east of Barry Way	36	30[2]	30[2]	41	35	35
L03	50 m east of Barry Way (Project Site)	38	30[2]	30[2]	56	54	49

Note 1: The assessment periods are the daytime which is 7 am to 6 pm Monday to Saturday and 8 am to 6 pm on Sundays and public holidays, the evening which is 6 pm to 10 pm, and the night-time which is 10 pm to 7 am on Monday to Saturday and 10 pm to 8 am on Sunday and public holidays. See the NSW EPA *Noise Policy for Industry*.

Note 2: RBL measurement for this period below 30 dBA. This noise level has been adjusted to the minimum 30 dBA RBL as per the NPfI.

It was observed that construction noise was influencing the noise logger at L03. For this reason, location L01 has been used to represent the background noise levels at receivers close to Barry Way and L02 has been used to represent receivers further set back from Barry Way.

2.2 Road Traffic Noise

In order to assess environmental noise impacts on the site, the data obtained from the noise logging has been processed in order to establish representative ambient noise levels during defined standard time periods. These time periods are defined in the EPA's *Road Noise Policy* (RNP). Results are presented in **Table 3**.

Table 3 Measured LAeq values during monitoring period

Logger Location	LAeq(15hour)	LAeq(9hour)
L01	55	49
L02	48	42
L03	55	47

The LAeq descriptor represents the logarithmic average noise energy during the measurement period. The '15-hour' represents the daytime period between 7:00am to 10:00pm, and '9-hour' represents the night time period between 10:00pm to 7:00am.

3 Noise Assessment Criteria

3.1 Secretary's Environmental Assessment Requirements (SEARs)

This NIA addresses relevant considerations contained in the SSD-15788005 SEARs dated 7 April 2021 as shown in **Table 4.**

Table 4 Project Related Noise and Vibration SEARs – SSD-15788005

Condition	Location Addressed in this Report
10. Noise and vibration	-
Includes a quantitative assessment of the main noise and vibration generating sources during demolition, site preparation, bulk excavation and construction.	**6**
Details the proposed construction hours and provide details of, and justification for, instances where it is expected that works would be carried out outside standard construction hours.	**6.1.1**
Includes a quantitative assessment of the main sources of operational noise, including consideration of any public-address system, school bell, mechanical services (e.g. air conditioning plant), use of any school hall for concerts etc. (both during and outside school hours) and any out of hours community use of school facilities.	**7**
Outlines measures to minimise and mitigate the potential noise impacts on nearby sensitive receivers.	**7**
Considers sources of external noise intrusion in proximity to the site (including, road rail and aviation operations) and identifies building performance requirements for the proposed development to achieve appropriate internal amenity standards.	**2.2, 3.6, 4**
Demonstrates that the assessment has been prepared in accordance with polices and guidelines relevant to the context of the site and the nature of the proposed development.	**3**

3.2 Interim Construction Noise Guideline

The NSW *Interim Construction Noise Guideline* (ICNG) is used to assess and manage impacts from construction noise at residences and 'other sensitive' land uses in NSW.

The ICNG contains procedures for determining project specific Noise Management Levels (NMLs) based on the existing background noise in the area. Representative 'worst-case' noise levels from construction of a project are predicted and then compared to the NMLs in a 15-minute assessment period to determine the likely impact.

The NMLs are not mandatory limits, however, where construction noise levels are predicted or measured to be above the NMLs, feasible and reasonable work practices to minimise noise emissions are to be investigated.

3.2.1 Residential Receivers

The ICNG approach for determining NMLs at residential receivers is shown in **Table 5**.

Table 5 Determination of NMLs for Residential Receivers

Time of Day	NML (dBA) $L_{Aeq(15minute)}$	How to Apply
Standard Construction Hours: Monday to Friday 7 am to 6 pm Saturday 8 am to 1 pm No work on Sundays or public holidays	Noise affected RBL[1] + 10 dB	The noise affected level represents the point above which there may be some community reaction to noise. • Where the predicted or measured $L_{Aeq(15minute)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practises 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 dBA
		The Highly Noise Affected (HNA) 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 restructuring the hours that the very noisy activities can occur, taking into account:
		  • 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
		  • If the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.

Outside Standard Construction 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 practises have been applied and noise is more than 5 dB above the noise affected level, the proponent should negotiate with the community.

Note 1: The RBL is the Rating Background Level and the ICNG refers to the calculation procedures in the NSW *Industrial Noise Policy* (INP). The INP has been superseded by the NSW EPA *Noise Policy for Industry* (NPfI).

3.2.2 Other Sensitive Land Uses

The ICNG provides criteria for a number of non-residential 'other sensitive' land uses, such as educational institutes, hospitals, medical facilities, commercial premises and outdoor recreational areas. The ICNG references AS 2107 for criteria for other sensitive receivers which are not listed in the guideline.

The ICNG NMLs for other sensitive receivers are shown in **Table 6**.

Table 6 NMLs for Project Specific Other Sensitive Receivers

Land Use	NML $L_{Aeq(15minute)}$
Hotel[1]	Internal noise level 45 dBA

Note 1: Derived from ICNG criteria for educational institutions, hospitals and places of worship

3.2.3 Summary of NMLs

The NMLs for the proposal are determined using the background noise monitoring and are shown in **Table 7**. The works are proposed to occur during Standard Construction Hours so only the daytime NMLs are shown.

Table 7 Construction Noise Management Levels

Receiver Type	Noise Management Level ($L_{Aeq(15minute)}$ – dBA)				Sleep Disturbance Screening Criteria
	Standard Construction Hours	Out of Hours			
	Daytime	Daytime[1]	Evening	Night-time	
Residential (R01/R04)	47	n/a	n/a	n/a	n/a
Residential (R03/R05)	46	n/a	n/a	n/a	n/a
Hotel[2]	65	n/a	n/a	n/a	n/a

Note 1: This refers to the period on Saturday between 7am – 8am and 1pm – 6pm, on Sunday and public holidays between 8am – 6pm.

Note 2: 45 dBA internal criteria – assuming 20 dB reduction with closed windows.

3.2.4 Construction Road Traffic Noise

The potential impacts from construction traffic on public roads are assessed under the NSW EPA *Road Noise Policy* (RNP)).

An initial screening test is first used to evaluate if existing road traffic noise levels are expected to increase by more than 2.0 dB as a result of project related construction traffic. Where this is considered likely, further assessment is required using the RNP base criteria shown in **Table 8**.

Table 8 RNP Criteria for Assessing Construction Traffic on Public Roads

Road Category	Type of Project/Land Use	Assessment Criteria (dBA)	
		Daytime (7 am - 10 pm)	**Night-time (10 pm - 7 am)**
Freeway/ arterial/ sub-arterial roads	Existing residences affected by additional traffic on existing freeways/arterial/sub-arterial roads generated by land use developments	$L_{Aeq(15hour)}$ 60 (external)	$L_{Aeq(9hour)}$ 55 (external)
Local roads	Existing residences affected by additional traffic on existing local roads generated by land use developments	$L_{Aeq(1hour)}$ 55 (external)	$L_{Aeq(1hour)}$ 50 (external)

3.3 Construction Vibration

Minimum working distances for typical vibration intensive construction equipment are provided in the Roads and Maritime *Construction Noise and Vibration Guideline* (CNVG) and are shown in **Table 9**.

The minimum working distances are for both cosmetic damage (from *BS 7385 Part 2-1993 Evaluation and measurement for vibration in buildings Part 2*, BSI, 1993) and human comfort (from the NSW DEC *Assessing Vibration: A Technical Guideline*, 2006). Works that occur further from receivers than the minimum distances are unlikely to result in vibration impacts.

Table 9 CNVG Recommended Minimum Working Distances from Vibration Intensive Equipment

Plant Item	Rating/Description	Minimum Distance	
		Cosmetic Damage (BS 7385)	**Human Response (NSW EPA Guideline)**
Vibratory Roller	1-2 tonne	5 m	15 m to 20 m
	2-4 tonne	6 m	20 m
	4-6 tonne	12 m	40 m
	7-13 tonne	15 m	100 m
	13-18 tonne	20 m	100 m
	>18 tonne	25 m	100 m
Small Hydraulic Hammer	300 kg (5 to 12 t excavator)	2 m	7 m
Medium Hydraulic Hammer	900 kg (12 to 18 t excavator)	7 m	23 m
Large Hydraulic Hammer	1,600 kg (18 to 34 t excavator)	22 m	73 m
Piling Rig – Bored	≤ 800 mm	2 m (nominal)	4 m
Jackhammer	Hand held	1 m (nominal)	2 m

Note 1: More stringent conditions may apply to heritage or other sensitive structures.

The minimum working distances are indicative and will vary depending on the particular item of equipment and local geotechnical conditions. The distances apply to human response and/or cosmetic damage of typical buildings under typical geotechnical conditions.

3.4 NSW Department of Education EFSG Guidelines

The *Educational Facilities Standards & Guidelines* (EFSG) are intended to assist those responsible for the planning, design and construction of new and refurbished school facilities. It states recommendations for performance levels of the following parameters:

- Internal noise levels
- Room acoustics (reverberation time)
- Noise emission (to the environment)
- Room to room noise control

The EFSG is the most relevant guidance for Public Schools, and will be used as the primary reference document rather than the *AAAC Guideline for Educational Facilities v2.0*.

3.4.1 Internal Noise Levels

Road Noise for general learning areas, music, drama, movement studios and halls shall be assessed consistent with the requirements of State Environmental Planning Policy (Infrastructure) 2007 – Regulation 102. An assessment should be undertaken where directed for any site impacted by traffic noise. Generally it is recommended for all sites impacted by noise from roads with greater than 20,000 vehicles AADT and required for sites impacted by noise from roads with greater than 40,000 vehicles AADT. The internal noise levels reproduced below are to be used in this assessment.

Aircraft noise for general learning areas, music, drama, movement studios and halls is to be assessed where the school site lies within Australian Noise Exposure Forecast (ANEF) 25 (or higher) as shown on airport planning instruments. The procedures in AS 2021 are to be followed in the assessment.

Industrial noise for general learning areas, music, drama, movement studios and halls is to be assessed consistent with the requirements of the NSW Noise Policy for Industry. The guideline internal noise levels presented below are to be used in the assessment.

Suitable internal noise levels are presented in the EFSG Guideline and are based on both the AS/NZS 2107:2016 standard, and the AAAC Education Guideline v2.0. These recommended levels are shown below in **Table 10**.

Table 10 EFSG Guidelines on internal noise levels and reverberation times

Room	Design level range for internal ambient noise level, L_{Aeq} (dB)[1]	Reverberation time, s, RT60 (average 500Hz and 1000Hz)
Art/craft studios	40	<0.8
Assembly halls up to 250 seats	35	See Note 1
Assembly halls over 250 seats	35	See Note 1
Audio-visual areas	35	<0.8
Computer rooms – Teaching	40	<0.6
Computer rooms – Laboratories	45	<0.6
Conference room	35	<0.7

Room	Design level range for internal ambient noise level, L_{Aeq} (dB)[1]	Reverberation time, s, RT60 (average 500Hz and 1000Hz)
Corridors and Lobbies	45	Minimise
Dance studios	40	<1.2
Dining rooms	45	<1.0
Duplicating rooms/stores	50	-
Gymnasiums	40	<1.5
Interview/counselling rooms	35	<0.6
Kitchens	50	-
Laboratories – Teaching	40	<0.7
Libraries – general areas	40	<0.6
Libraries – reading reas	35	<0.6
Libraries – stack areas	45	<0.6
Manual arts workshops	40	Minimise
Medical rooms (First Aid)	40	<0.8
Music practice rooms	35	See Note 1
Music studios	30	See Note 1
Office areas	40	<0.8
Open plan teaching areas	40	<0.8
Professional and Administrative offices	35	<0.8
Staff common rooms	40	<0.6
Teaching spaces – Hearing impaired	30	<0.4
Teaching spaces – Primary schools	35	<0.5
Toilet/change/showers	50	-
Store rooms[2]	50 – 60	-
Plant rooms[2]	≤ 60	-

Note 1: The appropriate reverberation time shall be influenced by the internal volume and intended use of the space. Appropriate values shall be determined when further details on the space types and usage is available.

Note 2: In cases where the EFSG/AAAC Guidelines do not include room types relevant to the proposed development, the recommended internal levels are derived directly from Australian/New Zealand Standard *"AS/NZS 2107:2016 Acoustics - Recommended design sound levels and reverberation times for building interiors"*

3.4.2 EFSG Reverberation criteria

Table 10 above presents criteria requirements for the control of reverberation within occupied spaces. The reverberation time defines the time taken for sound to decay within a space and thus affects the degree of speech intelligibility. Reverberation times within the building are to be in accordance with ESFG Guidelines.

3.4.3 EFSG Noise Emission criteria

Generally noise emission to the environment from mechanical services noise sources (such as air conditioners) are the subject of development consent conditions. In NSW the development consent conditions will refer to the Noise Policy for Industry (NPfI) or Local Council requirement.

Where no condition regarding noise sources exists for a school development, noise emission from such sources should be designed, in-principle, to satisfy the requirements of the Noise Policy for Industry.

The NPfI criteria have been established and are outlined in the following Section.

3.5 Noise Emission Criteria – Noise Policy for Industry

The *Noise Policy for Industry* (NPfI) was released in 2017 and sets out the NSW *Environment Protection Authority's* (EPA's) requirements for the assessment and management of noise from industry in NSW.

3.5.1 Trigger Levels

The NPfI describes 'trigger levels' which indicate the noise level at which feasible and reasonable noise management measures should be considered. Two forms of noise criteria are provided – one to account for 'intrusive' noise impacts and one to protect the 'amenity' of particular land uses.

- The **intrusiveness** of an industrial noise source is generally considered acceptable if the L_{Aeq} noise level of the source, measured over a period of 15 minutes, does not exceed the background noise level by more than 5 dB. Intrusive noise levels are only applied to residential receivers. For other receiver types, only the amenity levels apply.
- To limit continual increases in noise levels from the use of the intrusiveness level alone, the ambient noise level within an area from all industrial sources should remain below the recommended **amenity** levels specified in the NPfI for that particular land use.

For this assessment, the area surrounding the proposal is considered to be 'rural'.

3.5.1.1 Project Noise Trigger Levels

The noise emission trigger levels for industrial noise generated by the proposal are provided in Table 11. The Project Noise Trigger Level is the lowest value of the intrusiveness or amenity noise level for each period and these are shown in the table in bold.

Table 11 Project Noise Trigger Levels for Surrounding Receivers

Receiver Type	Time of Day	Recommended Amenity Noise Level (dBA)	Measured Noise Level (dBA)		Project Noise Trigger Levels L_{Aeq}(15minute) (dBA)	
			RBL[1]	**L_{Aeq}(period)**	**Intrusiveness**	**Amenity[2,3]**
Residential 1 – R01/R04	Day	50	37	55	**42**	48
	Evening	45	30	53	**35**	43
	Night	40	30	51	**35**	38

Receiver Type	Time of Day	Recommended Amenity Noise Level (dBA)	Measured Noise Level (dBA)		Project Noise Trigger Levels L_{Aeq}(15minute) (dBA)	
			RBL[1]	**L_{Aeq}(period)**	**Intrusiveness**	**Amenity[2,3]**
Residential 2 – R03/R05	Day	50	36	41	**41**	48
	Evening	45	30	35	**35**	43
	Night	40	30	35	**35**	38

Note 1: RBL = Rating Background Level.

Note 2: The recommended amenity noise levels have been used as the project amenity noise levels as there are no other industries present or likely to be introduced.

Note 3: The project amenity noise levels have been converted to a 15-minute level by adding 3 dB.

Two sets of project specific criteria (Residential 1 and Residential 2) were derived individually from noise loggers L01 and L02 (shown in **Table 11**) to ensure that each affected residential receiver's existing ambient noise level was represented accurately.

The "Residential 1" group refers to the houses that exist along Barry Way, whereas receivers that are further set back from Barry Way are designated as "Residential 2".

3.6 External Noise Intrusion from Aircraft Noise

As per information provided by Jindabyne Aero Club, the primary source of aircraft noise likely to impact the future school site is helicopter fly overs. Soundplan 8.0 has been used to predict noise levels for these fly overs.

As defined in AS2021, the design sound level is the maximum level (dBA) from aircraft flyovers which, when heard inside a building by the average listener while carrying out the specified activity, will be judged as not intrusive or annoying by that listener while carrying out the specified activity.

Table 12 Indoor design aircraft sound levels from AS 2021

Building Type and activity	Indoor design sound level, dBA
Schools, universities	
Teaching Areas, Assembly areas	55
Libraries, Study Areas	50
Workshops, Gymnasia	75

The noise levels indicated in **Table 12** shall inform the sound insulation performance criteria for the external envelope building construction elements such as external walls, facades and roofs etc.

3.7 Operational Noise Criteria

At the current time there is no standard process or guideline in NSW to derive noise criteria for the assessment of potential noise impacts from proposed educational facilities (excluding the NPfI for the industrial noise source component). As such, different criteria have been nominated to assess potential operational noise impacts from the proposed Project accompanied by a discussion of their suitability.

3.7.1 Operational Noise – Outdoor Play Areas

Given the similarities between educational facilities and Child Care Centres in terms of land use, business hours and general operations (ie playtime hours etc), the duration of exposure to potential noise impacts at nearby noise-sensitive receivers is predicted to be similar. For this reason, the AAAC's *"Guideline for Child Care Centre Acoustic Assessment"* has been adopted to assess potential noise impacts from the Project's proposed outdoor play areas. The following points shall be considered:

- As the duration of time that children are allowed to play outside is reduced, the overall noise impact reduces. Therefore, it is reasonable to allow a higher level of noise impact for a shorter duration of outdoor play.
- A total time limit of approximately 2 hours outdoor play per day is regarded as reasonable grounds for the allowance of an additional 5 dB emergence above the background level.

The criteria is summarised in **Table 13** below.

Table 13 Operational Noise Criteria – Outdoor Play Areas

Assessment Location	Duration	Time of Day	Measured RBL L_{A90}	Criteria ($L_{Aeq(15minute)}$)	Comments
Nearest noise-sensitive receiver[1]	Up to 2 hours (total) per day	Daytime	42	52	The LAeq noise level emitted from the outdoor play area shall not exceed the background noise level by more than 10 dB.
	More than 2 hours per day	Daytime	42	47	The LAeq noise level emitted from the outdoor play area shall not exceed the background noise level by more than 5 dB.

Note 1: The assessment location is defined as the most affected point on or within any residential receiver property boundary.

3.7.2 Operational Noise – Noise Impacts from OOSH Events

After a comprehensive review of criteria historically used to characterise and assess potential noise impacts from events outside of business hours, in conjunction with past experience in educational facility acoustic assessments, SLR recommends the following criteria be used:

Table 14 Operational Noise Criteria – OOSH Events

Day	Time Period	Recommended Criteria	Residential Criteria (dBA)
Monday to Sunday	07:00 – 23:00	$L_{Aeq(15min)}$ must not exceed RBL + 5 dB	47
	23:00 – 07:00	$L_{Aeq(15min)}$ must not exceed RBL	30

This is based upon noise goals outlined in the EPA "*Noise Guide for Local Government"* and other known similar assessments that have been approved within the Sydney Metropolitan area.

5 Operational Noise Impacts

Potential noise impacts from the following operational scenarios have been assessed at the nearest sensitive receiver:

- Noise impacts from standard operations (ie noise from outdoor play areas during school hours).
- Noise impacts from OOSH indoor operations (ie noise from out-of-school-hours events located within the school hall).
- Noise impacts from mechanical plant and school related equipment (ie school bells and public address (PA) systems).

5.1 Noise Impact Assessment – Outdoor Play

SLR has undertaken an assessment in accordance with the criteria in Section 3.7.1 for the outdoor areas, based on the expected future occupancy of the outdoor areas. For the purpose of the calculation, a typical usage of the outdoor play area (east of the school gym) has been assumed for lunch time and after school sporting activities. Based on the proposed site layout it has been assumed that partial screening of outdoor play areas is likely to be provided by school buildings. The predicted noise level has been presented in **Table 15**.

Table 15 Operational Noise Sources –Outdoor Play

Nearest Sensitive Receiver	Duration	Time of Day	Measured RBL, **dBA**	Criteria dBA($L_{Aeq(15minute)}$)	**Predicted Noise Level dBA** ($L_{Aeq15minute}$)
R01 - 218 Barry Way, Jindabyne	Up to 2 hours (total) per day	Daytime	37	47	41
	More than 2 hours per day	Daytime	37	42	

5.2 Noise Impact Assessment – School Hall Operations

5.2.1 Noise Sources – OOSH Indoor Operations

The operational noise sources presented below in **Table 16** were used to predict potential noise impacts at the surrounding noise-sensitive receivers from Out-of-School-Hours (OOSH) indoor operations.

Table 16 Operational Noise Sources –Indoor Operations

Source Name	Source Type	Predicted Sound Power Level, dBA (L_{Aeq} per source)	Noise Model Prediction Description
School Hal Hire – Weekend/Evening Events	Reverberant sound pressure within hall.	Live band/music	Operational noise prediction – Weekend/Evening Events.

5.2.2 Assessment – Multi-Purpose Hall Operations

Noise breakout from the new Multi-Purpose Hall has been assessed to the nearest receiver. The highest noise impact is considered likely to occur during community hire of the school hall with live music., which may occur outside of normal school hours.

Previously measured source noise levels for a comparable environment have been taken from the SLR database. The following assumptions have been made for the purpose of this breakout assessment:

- Reverberant sound pressure level (band/live music): LAeq 100 dBA
- Windows/glazed doors (closed): 6mm single float glazing (Rw 28 dB)
- Walls: External cladding (minimum 15 kg/m2) on 9mm fiber cement, cavity insulation and internal lining (minimum 10 kg/m2) with plasterboard interior (Rw 30 dB)
- Roof: Metal deck with thermal insulation and open/perforated ceiling (Rw 32 dB)

The most affected noise-sensitive receiver, their corresponding project noise criteria, achieved operational noise levels and require sound insulation value from indoor operations are presented in **Table 15**.

Table 17 Predicted Operational Noise Levels – OOSH Indoor Operations

Nearest Sensitive Receiver	Distance	Criteria (dBA)[1]		Predicted Noise Levels at Receiver Façade (L_{Aeq} dBA)
		07:00 – 23:00 $L_{Aeq(15min)}$ must not exceed RBL + 5 dB	23:00 – 07:00 $L_{Aeq(15min)}$ must not exceed RBL[2]	
R01 - 218 Barry Way, Jindabyne	450 m	42 dBA	37 dBA	25

Note 1: Operational noise goals, assessment methodology and criteria are discussed in **Section 3.7.22**.

From information provided by the project drawings it is indicated that there will be glazed doors/overhead windows within the school hall that cover approximately 30% of the façade facing Barry Way. Results presented in **Table 17** indicate that no specific upgrade to the proposed construction of the hall is required. Noise level predictions presented in **Table 17** may be further reduced depending on the impact of noise screening created by the surrounding buildings.

3.7.3 Mechanical Plant/ Equipment

A review of the current architectural drawings indicates that typical sources of industrial noise associated with the project may include:

- Noise from mechanical equipment including HVAC, corridor ventilation systems and fire pump and fire control equipment, school bells and PA systems.

At this stage, the technical specifications of the proposed mechanical plant and other equipment that may result in potential noise impacts from the project are unavailable and should be assessed in greater depth (in accordance with the noise criteria outlined in **Section 4.2.1.2)** during the detailed design stage of the Project.

3.7.3.1 In-Principle Acoustic Treatment Recommendations

It is envisaged that the industrial noise sources outlined in **Section 3.7.3** will achieve compliance with the nominated criteria through common engineering methods that may consist of:

- Selection of low-noise mechanical plant and other noise generating equipment.
- Judicious location of mechanical plant and equipment with respect to nearby noise-sensitive receivers.
- Barriers/enclosures (eg plant rooms).
- Silencers and acoustically lined ductwork.

6 External Noise Intrusion

This section summarises the required performance of external building constructions (façade and roof) to control external noise ingress within the criteria established in **Section 3.6.** External sound isolation is required such that noise from external road and air traffic as well as on-site external mechanical plant be controlled to acceptable levels within the occupied spaces of the building. A slightly higher acoustic performance is specified for the solid wall elements to offset and permit a lower performance for the vision (glass) elements. SLR has applied this design approach as the solid wall elements by default typically perform better than the vision elements.

6.1 Aircraft Noise Assessment

It is required that the aircraft noise level at the site be determined. After corresponding with Rolfe Theile from Jindabyne Aero Club on June 28 2021 via phone and email, SLR understands that the worst-case noise emissions from the use of the Jindabyne Air Strip would be a Navy style “Squirrel” helicopter.

According to the feedback received from the Jindabyne Aero Club (interview with Secretary, Mr Martin Hughes):

- Helicopter operations at Jindabyne Airstrip overwhelmingly involve landings and take-offs close to the WESTERN end of Runway 09/27.

It has also been noted that:

- Helicopters are not constrained by prevailing wind directions in the same way that aircraft are, ie landings and take-offs generally into the wind.
- Helicopters have much greater flexibility in terms of landing glide paths and take-off routes.
- Helicopter landings and take-offs are able to utilise flight paths which would not be located anywhere close to the site of the proposed New Education Campus.

Therefore, only a typical helicopter take off/landing scenario has been considered.

Noise emissions from this helicopter type were modelled using Soundplan 8.0 and are presented in **Table 18**.

Table 18 Highest noise levels from helicopter flights

Flight Path	Plane Type and operation mode	Predicted Maximum Noise Level, dB(A)
Jindabyne Air Strip (east to west) – typical flight path	Squirrel take off/landing	58

Based on the information shown in **Table 18** the maximum noise level expected at the site due to aircraft would be **58 dBA**.

6.1.1 Aircraft Noise Reduction

The aircraft noise reduction (ANR), ie the level of sound attenuation required by the building envelope, is determined for the future school based on the identified external aircraft noise level at the site and the indoor design sound levels for aircraft noise presented in **Table 12**.

The aircraft noise reduction (ANR) to be obtained by the building construction for each of the occupancies has been described in **Table 19**.

Table 19 Required Aircraft Noise Reduction (ANR)

Area of Occupancy	Maximum External Aircraft Noise Level, dBA (Worst Case/Typical)	Indoor Design Sound Level, dBA	Aircraft Noise Reduction (ANR), dBA
Teaching Areas, assembly areas	58	55	3
Libraries, Study Areas	58	50	8
Workshops, Gymnasia	58	75	-

The internal design sound levels where the ANR is greater than 10 dBA assume that windows and external entry doors are to remain closed to comply with AS 2021. Therefore, natural ventilation could be adopted based on these maximum aircraft noise levels.

Aircraft noise intrusion through the building facades will be required to be controlled such that the design internal sound levels listed in AS 2021 can be achieved. As outlined in **Table 12** the internal criteria will be specific to the room use. This is likely to be:

- Teaching Areas: 55dBA L_{Amax} for aircraft noise
- Library, study areas: 50dBA L_{Amax} for aircraft noise

Based upon the aircraft levels listed in **Table 19** and considering the internal targets above, the minimum recommended facade acoustic ratings are as follows.

Table 20 Minimum Required Performance of Facade Elements

Scenario	Element	Weighted Sound Reduction (R_W+C_{tr}), dB	Minimum sound reduction (R), at 1/1 Octave Band Centre Frequencies							
			63 Hz	**125 Hz**	**250 Hz**	**500 Hz**	**1 kHz**	**2 kHz**	**4 kHz**	**8 kHz**
Typical flight path	Solid façade	19	13	15	32	43	50	54	47	47
	Glazing	25	14	15	19	24	29	33	35	35
	Roof	21	11	15	20	25	29	26	26	9

The listed R_W+C_{tr} (weighted sound reduction index plus low frequency offset) performance ratings can be taken as preliminary and are subject to refinement. General construction examples to achieve the above R_W+C_{tr} ratings are discussed below.

6.2 Road Traffic Noise Assessment

Based on the unattended measured road traffic noise levels at the proposed building façade and the internal noise criteria, the most exposed facade is required to achieve an overall outdoor-to-indoor noise reduction of at least 20 dBA for the first row of classrooms located directly along Barry Way.

The calculated indoor levels for the most affected western facades are presented in **Table 21**.

Table 21 Calculated Average Indoor Noise Levels

Floor	Space	Criteria, L_{Aeq} dB	Minimum Transmission Loss (Rw) dB		Calculated Internal Level, L_{Aeq} dB
			Solid Wall	**Glazing**	
Ground	Classroom	35	35	32	32

It is expected that the required Rw ratings of windows and doors would be achieved using conventional proprietary systems. There are numerous manufacturers/suppliers of window or door systems that produce proprietary systems capable of achieving the nominated Rw ratings.

Any significant changes to the surface area of each element will also need to be considered in determining the required Rw rating.

The supplier/manufacturer would be responsible for providing test data or similar confirming satisfactory performance of window/glazing systems, including alternatives to those in Table 21.

To achieve this reduction the minimum sound insulation performances required of glazing and solid walls are presented in **Section 6.3**.

6.3 Typical Construction Requirements

6.3.1 Walls

Sensitive spaces such as Offices, Quiet areas, Open Plan teaching areas, and Class rooms:

Typical Scenario – Aircraft Noise

In order to achieve internal noise goals for the typical fight path scenario, regular 3mm Colorbond (or similar) sheet external cladding could be used with any internal lining.

Road Traffic Noise

For the first row of classrooms located directly along Barry Way, solid external wall elements are to be designed to achieve a minimum acoustic performance of R_W 35 dB. As an example, this could comprise:

- 3mm colorbond with internal lining

6.3.2 Roof

Typical Scenario – Aircraft Noise

In order to achieve internal noise goals for the typical fight path scenario, regular 4mm Colorbond sheet roofing with any ceiling could be used.

Road Traffic Noise

No upgrade to proposed roof construction is required for road traffic noise.

6.3.3 Glazing

Sensitive spaces such as Office, Quiet areas, Open Plan teaching areas, Class rooms:

Typical Scenario – Aircraft Noise

In order to achieve internal noise goals for the typical fight path scenario, standard 4mm float or laminated glazing could be used.

Road Traffic Noise

For the first row of classrooms located directly along Barry Way, overall acoustic performance of window and frame is to be designed to achieve a minimum acoustic rating R_W 32 dB. This is expected to be achieved by using standard 6mm glazing.

7 Construction Noise and Vibration Assessment

7.1 Construction Activities

The activities likely required to build the proposal involve conventional construction equipment such as ground excavation equipment, mobile cranes, delivery trucks and trade equipment.

Construction noise levels have only been predicted with works associated with the construction of the school. No ancillary works such as the ski jump or BMX track have been considered.

The representative construction scenarios developed to assess potential impacts during construction are detailed in **Table 22.**

Table 22 Construction Activities

Works ID	Scenario	Working Hours			
		Standard Daytime	Day OOH[1]	Evening	Night-time
W.001	Site establishment	✓	-	-	-
W.002	Demolition of existing structures and pavement	✓	-	-	-
W.003	Earth works	✓	-	-	-
W.004	Concrete works	✓	-	-	-
W.005	Structure works	✓	-	-	-
W.006	Finishing works	✓	-	-	-

Note 1: OOH = Out of hours. During the daytime this refers to the period on Saturday between 7am – 8am and 1pm – 6pm, on Sunday and public holidays between 8am – 6pm.

7.1.1 Working Hours

The works are expected to be undertaken during Standard Construction Hours, which are:

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

It is not expected that there would be any requirement for works during evening or night-time periods.

7.1.2 Construction Activity Source Noise Levels

The assessment uses 'realistic worst-case' scenarios to determine the impacts from the noisiest 15-minute period that is likely to occur for each work scenario, as required by the ICNG. Sound power levels for the construction equipment used in the modelling are listed in **Table 23**.

Table 23 Construction Works and Sound Power Levels for Construction Equipment

Works ID	Scenario	Sound Power Level (LAeq dBA)												
		Concrete Mixer Truck	Concrete Pump	Concrete Vibrator	Elevated Working Platform	Excavator – Breaker	Excavator 22 T	Front End Loader	Generator	Hammer Drill	Hand Tools	Mobile Crane Franna	Mobile Crane 100 T	Roller – Vibratory	Truck
		103	106	102	97	121	99	104	102	108	94	98	100	109	107
W.01	Site establishment								X		X				X
W.02	Demolition					X	X	X	X						X
W.03	Earth works						X		X					X	X
W.04	Concrete works	X	X	X					X						X
W.05	Structure works				X				X	X			X		X
W.06	Finishing works				X				X		X	X			X

Note 1: The ICNG requires that activities identified as particularly annoying (such as jackhammering, rock breaking and power saw operation) have a 5 dB 'penalty' added to predicted noise levels when using the quantitative method.

Note 2: Sound Power Levels have been taken from DEFRA, RMS *Construction Noise and Vibration Guideline* and TfNSW *Construction Noise and Vibration Strategy*.

7.2 Construction Noise Assessment

The following overview is based on the predicted impacts at the most affected receivers and is representative of the realistic worst-case noise levels (without additional mitigation) that are likely to occur during construction. Receivers which are further away from the works and/or shielded from view would have substantially lower impacts. The assessment is generally considered conservative as the calculations assume several items of construction equipment are in use at the same time within individual scenarios.

The noise levels are also shown as a range, which represents the likely noise levels when works are 'near' to 'far' from a particular receiver.

Noise predictions from the construction works have been predicted to the nearest receivers during the daytime and are summarised in **Table 24**. Exceedances of day time NMLs have been highlighted in **bold**.

Table 24 Predicted Daytime Construction Noise Levels

Receiver	Day NML	Predicted Worst-case LAeq(15minute) Noise Level (dBA)											
		W.01		W.02		W.03		W.04		W.05		W.06	
		Far	Near	Far	Near	Far	Near	Far	Near	Far	Near	Far	Near
R01 (Residential)	47	35	46	45	**54**	41	**51**	40	45	41	46	36	46
R02 (Hotel)	65	31	36	43	45	37	43	39	40	40	41	31	37
R03 (Residential)	46	31	39	44	44	37	44	37	41	38	42	32	40

Receiver	Day NML	Predicted Worst-case LAeq(15minute) Noise Level (dBA)											
		W.01		W.02		W.03		W.04		W.05		W.06	
		Far	Near	Far	Near	Far	Near	Far	Near	Far	Near	Far	Near
R04 (Residential)	47	29	36	42	43	35	41	35	38	36	39	30	37
R05 (Residential)	46	30	37	43	44	37	42	36	40	37	41	32	37

The above shows that compliance is predicted at all surrounding receptors for works during standard hours, except for R01 during demolition and earth works.

Best practice construction noise mitigation and management measures are discussed in **Section 7.5**.

7.2.1.1 Works Outside Standard Construction Hours

No works outside of standard construction hours are expected to be required for the development.

Should the need for out of hours works arise, the works will be conducted in accordance with an approved Out of Hours protocol to be prepared, submitted and approved as part of the Construction Environmental Management Plan (CEMP) prior to commencement of the works.

7.3 Construction Vibration Assessment

The major potential sources of vibration from the proposed construction activities would likely be during demolition and earthworks when rock breakers and vibratory rollers are being used.

Vibration offset distances have been determined from the CNVG minimum working distances for cosmetic damage and human response in **Table 9**. Buildings within the minimum working distances are summarized below.

Consideration of vibration offset distances should also be given to existing buildings on site that will be occupied during construction works.

Cosmetic Damage Assessment

All receivers are outside of the safe work distances for cosmetic damage.

Human Comfort Vibration Assessment

All receivers are outside of the safe work distances for human comfort.

7.4 Construction Traffic

Construction traffic would generally access the site from Barry Way via Kosciusko Road to the north or The Snowy River Way to the south The construction traffic route could travel through an commercial/residential area with some adjacent residential sensitive receivers.

The requirements for construction traffic movements have not been provided at this stage and should be assessed when this information is available.

7.5 Construction Noise and Vibration Mitigation

Although only minor exceedances of the NMLs are expected, noise or vibration impacts may be apparent at the nearest receivers at certain times during construction of the proposal. The project should apply all feasible and reasonable mitigation measures to minimise the impacts, particularly during noise intensive works, such as demolition.

The following best-practice measures shown in **Table 25** should be implemented to minimise the potential impacts from the works.

Table 25 Standard Construction Recommended Mitigation and Management Measures

Project stage	Measure
Scheduling	Highly noisy intensive works should only be undertaken during the following Standard Construction Hours, unless otherwise assessed and justified: - 7 am to 6 pm Mondays to Fridays, inclusive; and - 8 am to 1 pm Saturdays; and - at no time on Sundays or public holidays.
	Provide appropriate respite periods as per the CNVG when noise intensive works are undertaken or during periods of high noise impacts.
	Carry out community consultation to determine the need and frequency of respite periods, if necessary.
	Avoid loading and unloading of materials / deliveries outside of daytime hours.
Site Layout	Site entry and exit points should be located as far as possible from sensitive receivers.
	Compounds and work areas should be one-way to minimise the need for vehicles to reverse.
	Work compounds, parking areas, equipment and stockpiles should be positioned away from noise-sensitive locations and/or in shielded locations.
	Trucks should not idle near to residential receivers.
	Stationary sources of noise, such as generators, should be located away from sensitive receivers.
Contractor management	Training should be provided to project personnel, including relevant sub-contractors, on noise and vibration requirements and the location of sensitive receivers during inductions and toolbox talks.
	Delivery vehicles should be fitted with straps rather than chains for unloading, wherever possible.
	Truck drivers should avoid compression braking as far as practicable.
	Where night-time works are required, trucks should use broadband reversing alarms.
Noise source mitigation	Use the minimum sized equipment necessary to complete the work and where possible, use alternative, low-impact construction techniques.
	Power tools should use mains power where possible rather than generators.
	Shut down machinery, including generators, when not in operation.
	Avoid dropping materials from a height and dampen or line metal trays, as necessary.
	Ensure equipment is operated in the correct manner.
	All equipment should be appropriately maintained and fitted with noise control devices, where practicable, including acoustic lining of engine bays and air intake / discharge silencers, etc.
Community consultation	Provide appropriate notice to the affected sensitive receivers prior to starting works and before any noisy periods of works.
	Provide signage with a 24 hour contact number.
	Where there are complaints regarding noise, review and implement additional control measures, where feasible and reasonable.
Monitoring	Conduct noise and/or vibration monitoring in response to any valid complaints received.
	Conduct vibration monitoring whenever vibration intensive works are undertaken within the minimum working distances of sensitive receivers or structures.

8 Conclusion

SLR Consulting Australia Pty Ltd has conducted a noise impact assessment associated with regards to proposed new school facility in Jindabyne. This assessment has been carried out in accordance with NSW regulatory requirements and will form part of the State Significant Development (SSD No 15788005) application to the NSW Department of Planning and Environment in support of the development.

The scope of the assessment involved a survey of the existing noise environment; derivation and establishment of project specific noise criteria through consultation with various NSW and Australian guidelines; a noise impact assessment with respect to the appropriate criteria; and, where required, recommendations for noise control measures.

As a result of the operational noise impact assessment, compliance with the established criteria is expected from the proposal, subject to the typical constructions and control measures identified in this report.

The construction noise assessment indicates that only minor (2 dB) exceedances of criteria at the nearest sensitive receiver will only be expected during demolition and earth works. These impacts are only short term in nature. During construction works, all feasible and reasonable noise mitigation and management strategies should be adhered to.

APPENDIX A

Daily Noise Logger Graphs

Statistical Ambient Noise Levels

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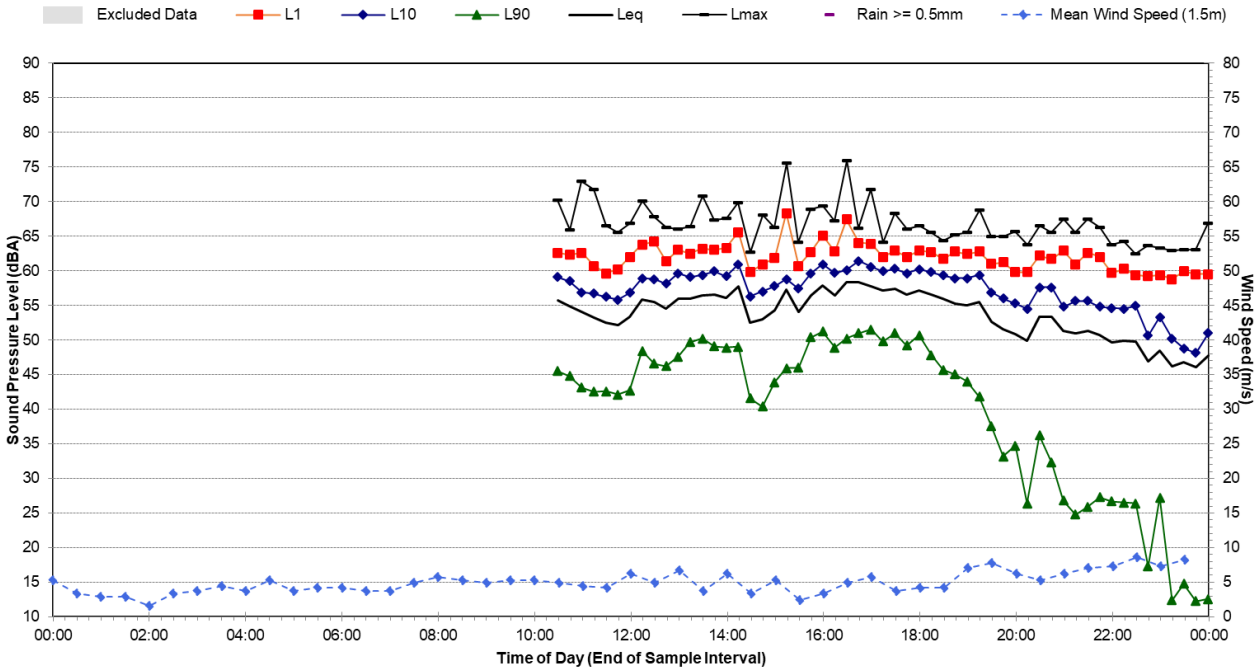
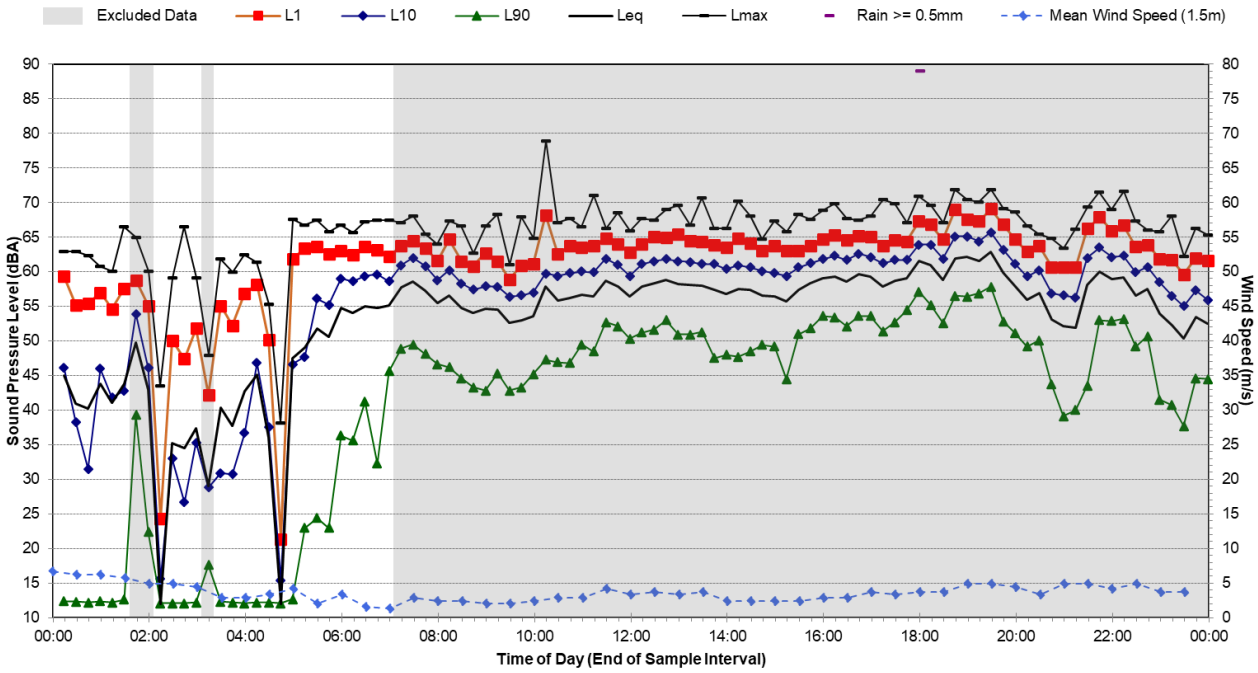


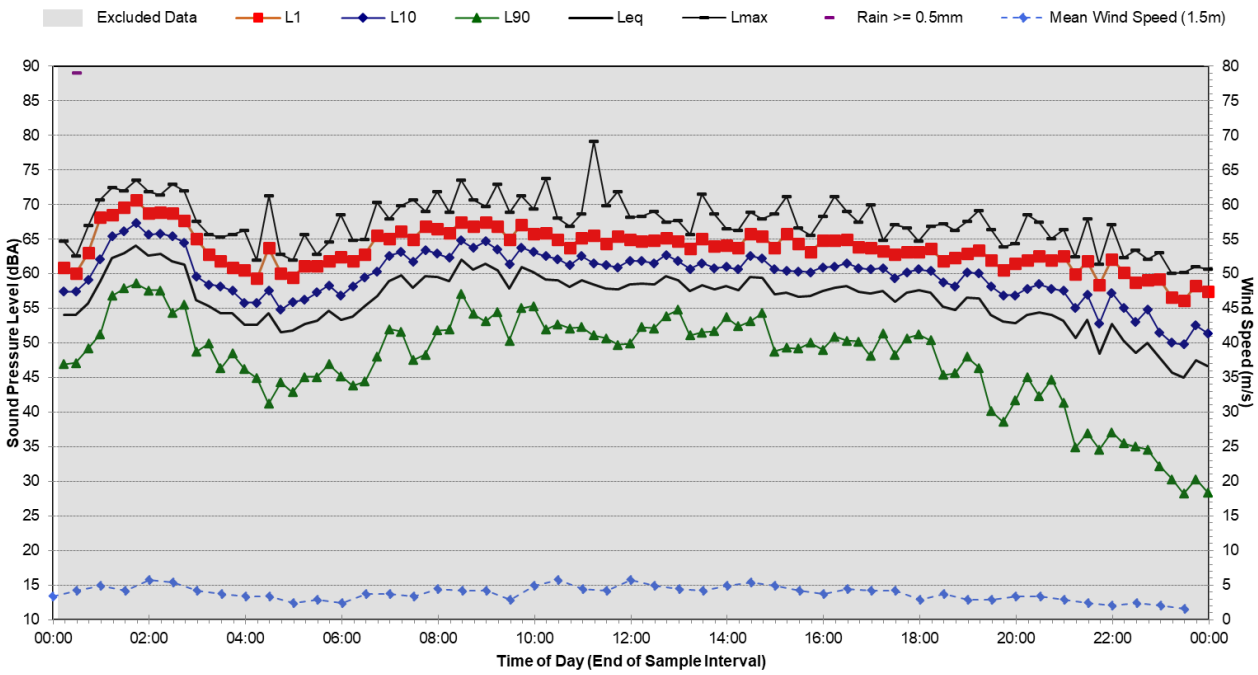
Statistical Ambient Noise Levels

L01 - Friday, 18 June 2021



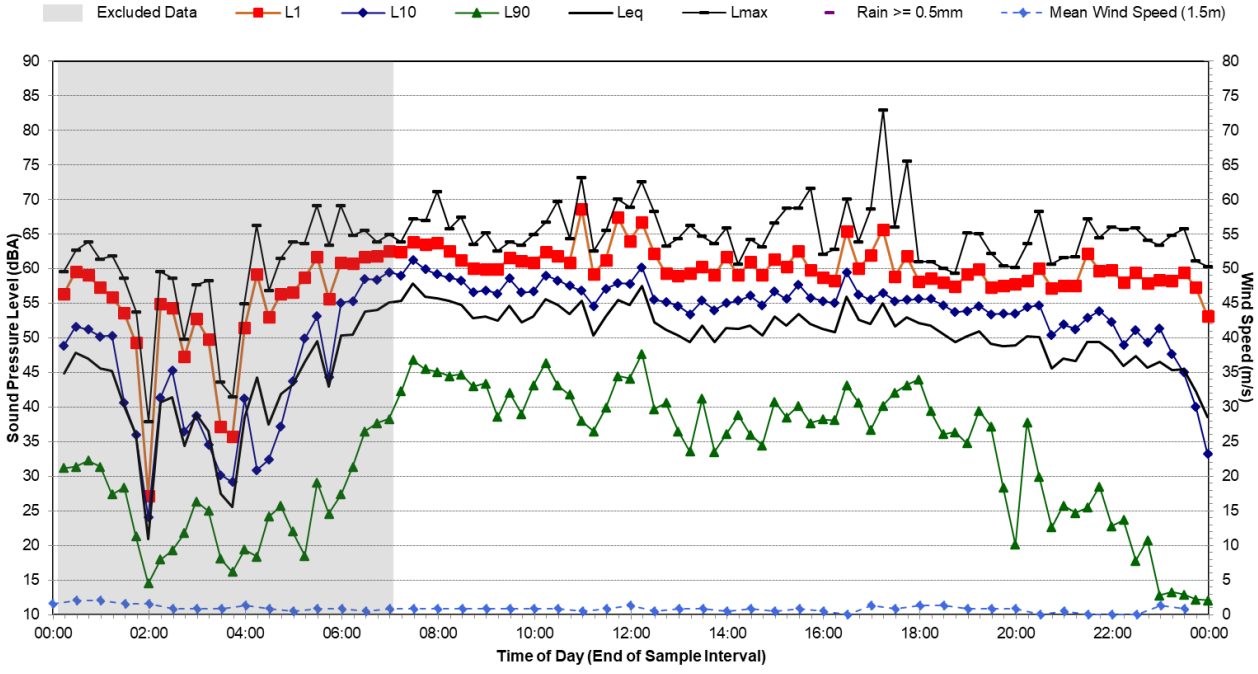
Statistical Ambient Noise Levels

L01 - Saturday, 19 June 2021



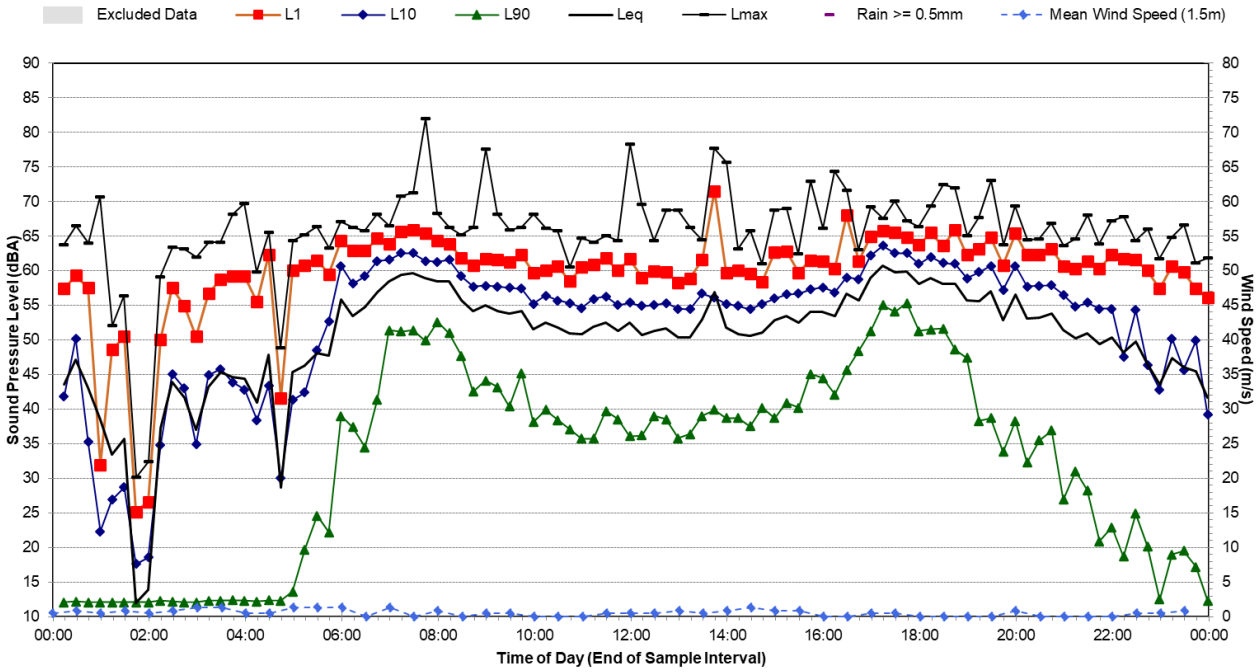
Statistical Ambient Noise Levels

L01 - Sunday, 20 June 2021



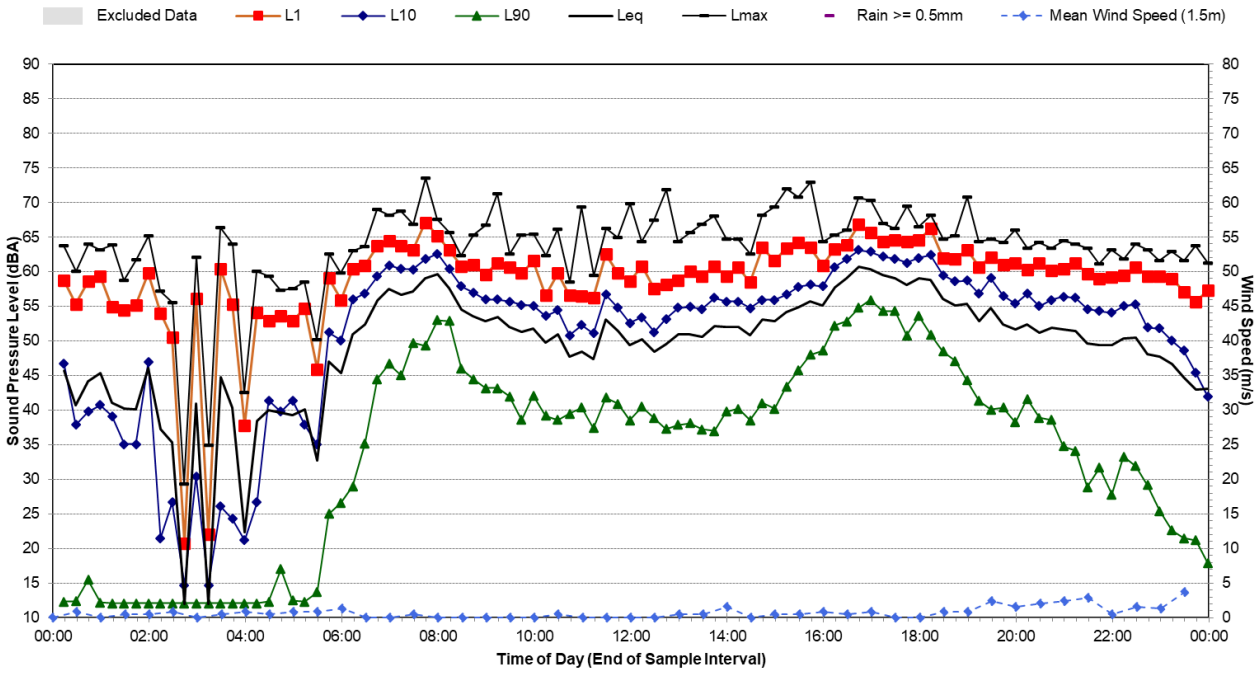
Statistical Ambient Noise Levels

L01 - Monday, 21 June 2021



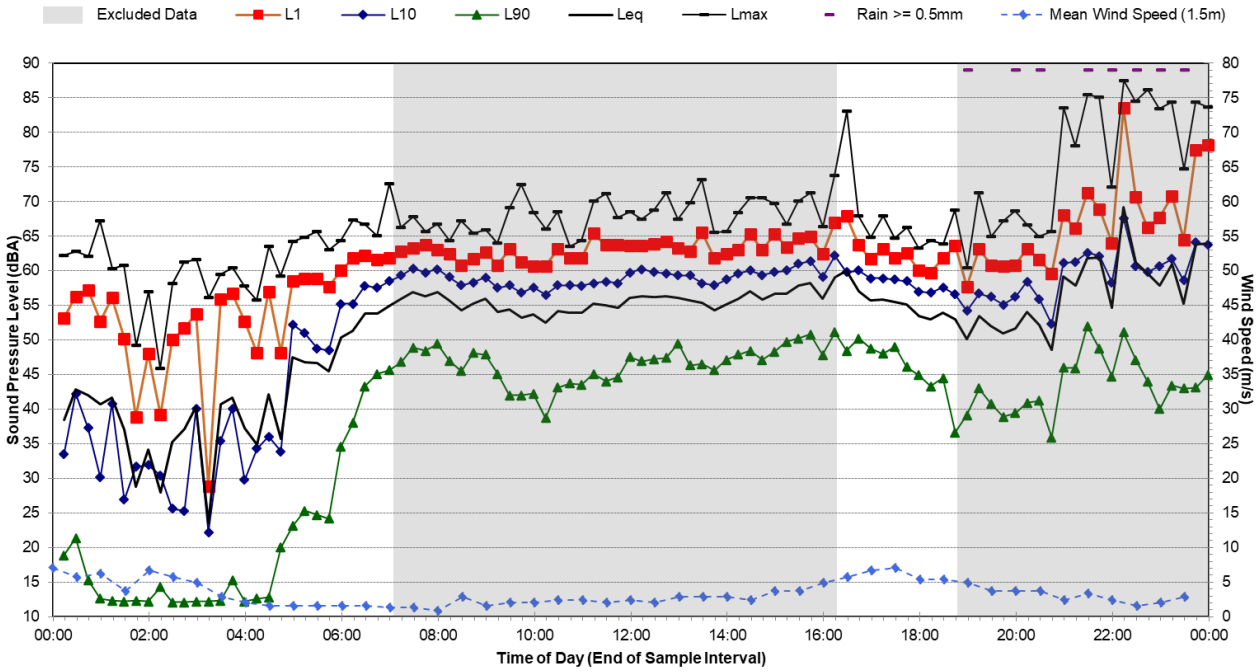
Statistical Ambient Noise Levels

L01 - Tuesday, 22 June 2021



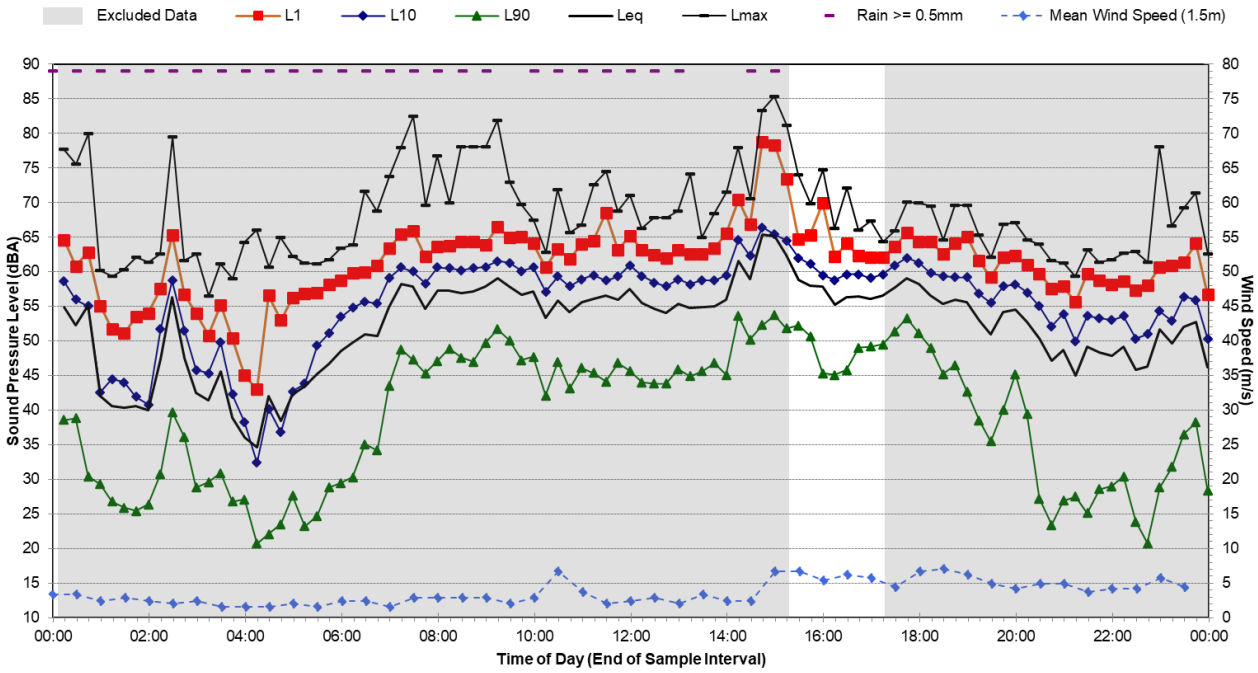
Statistical Ambient Noise Levels

L01 - Wednesday, 23 June 2021



Statistical Ambient Noise Levels

L01 - Thursday, 24 June 2021



Statistical Ambient Noise Levels

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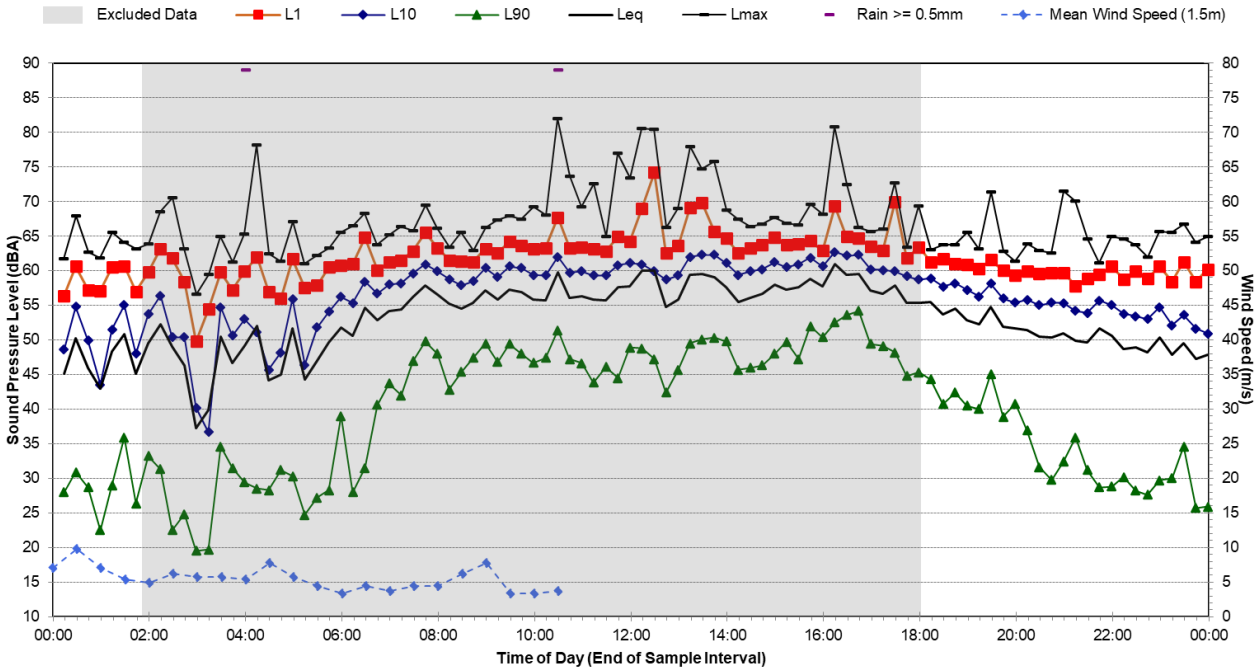
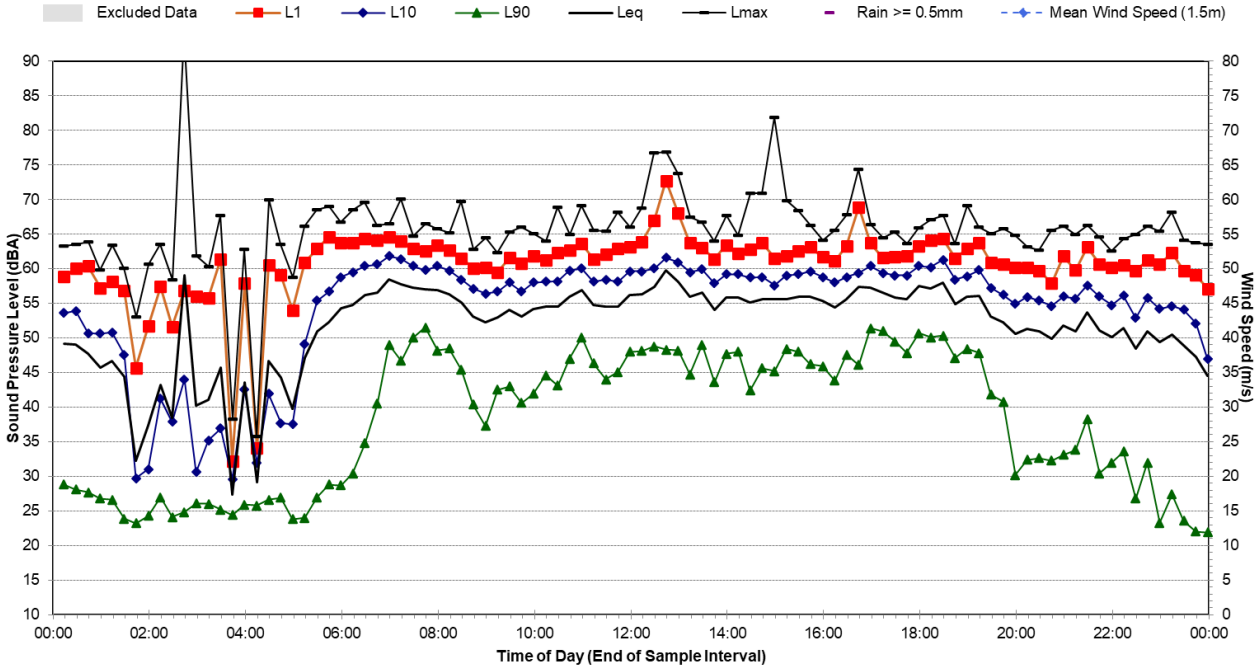


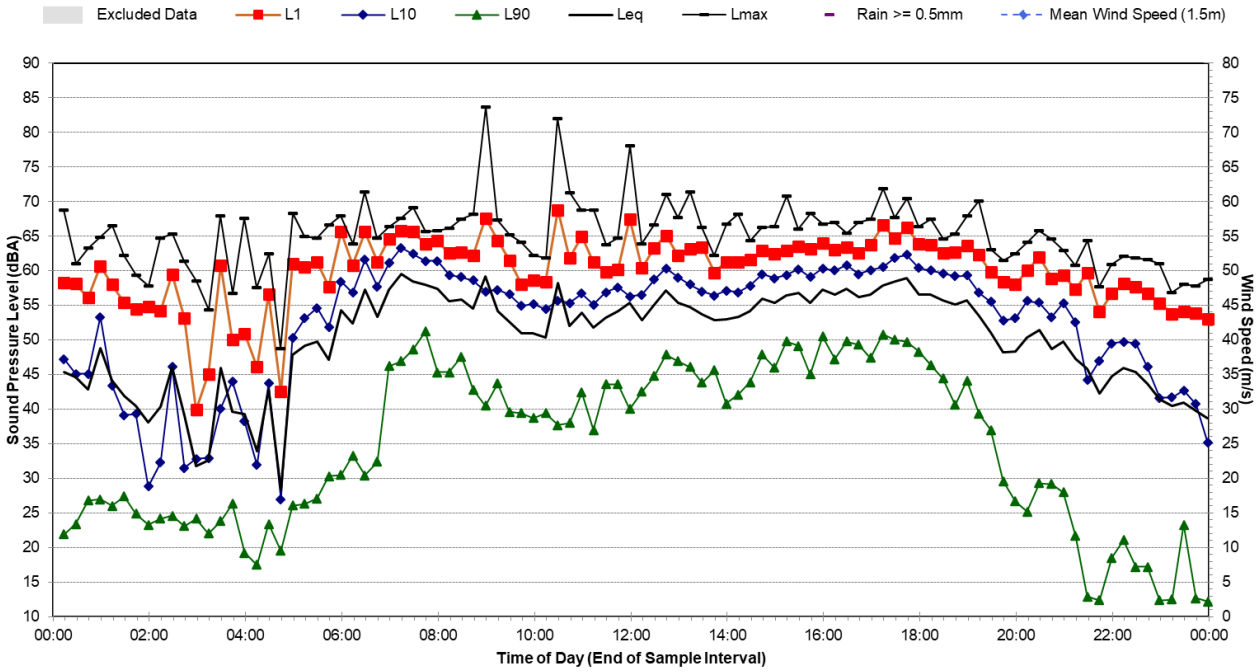
Statistical Ambient Noise Levels

L01 - Saturday, 26 June 2021



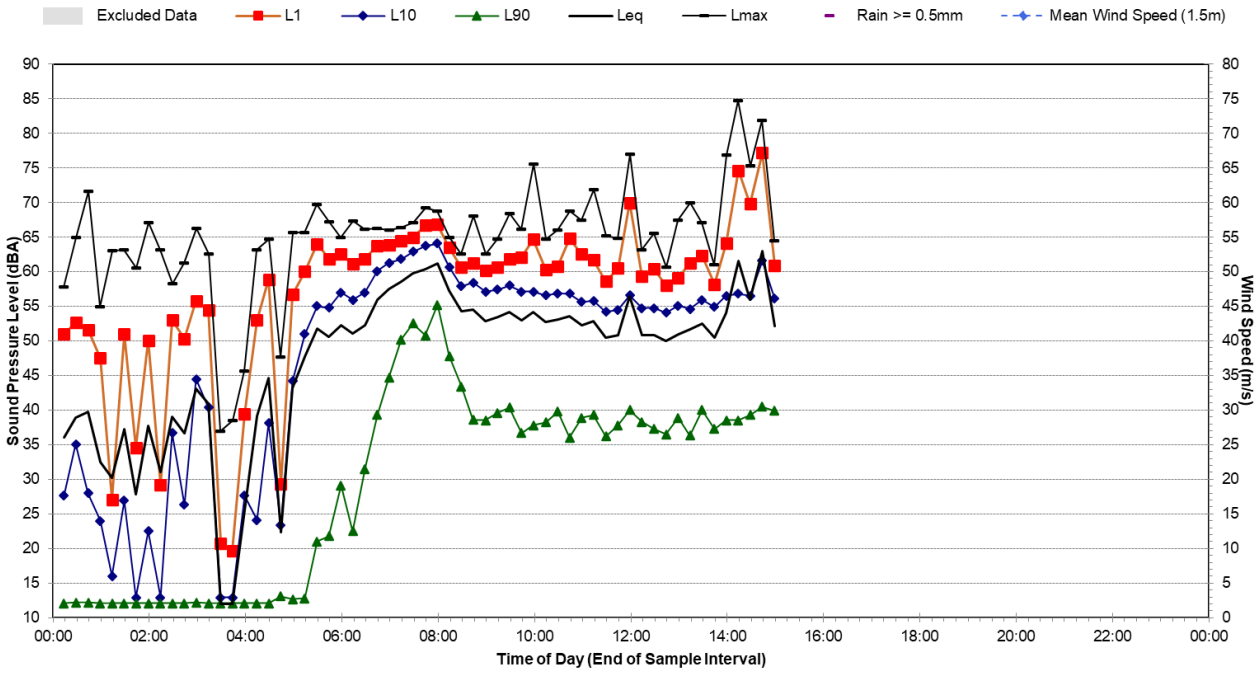
Statistical Ambient Noise Levels

L01 - Sunday, 27 June 2021



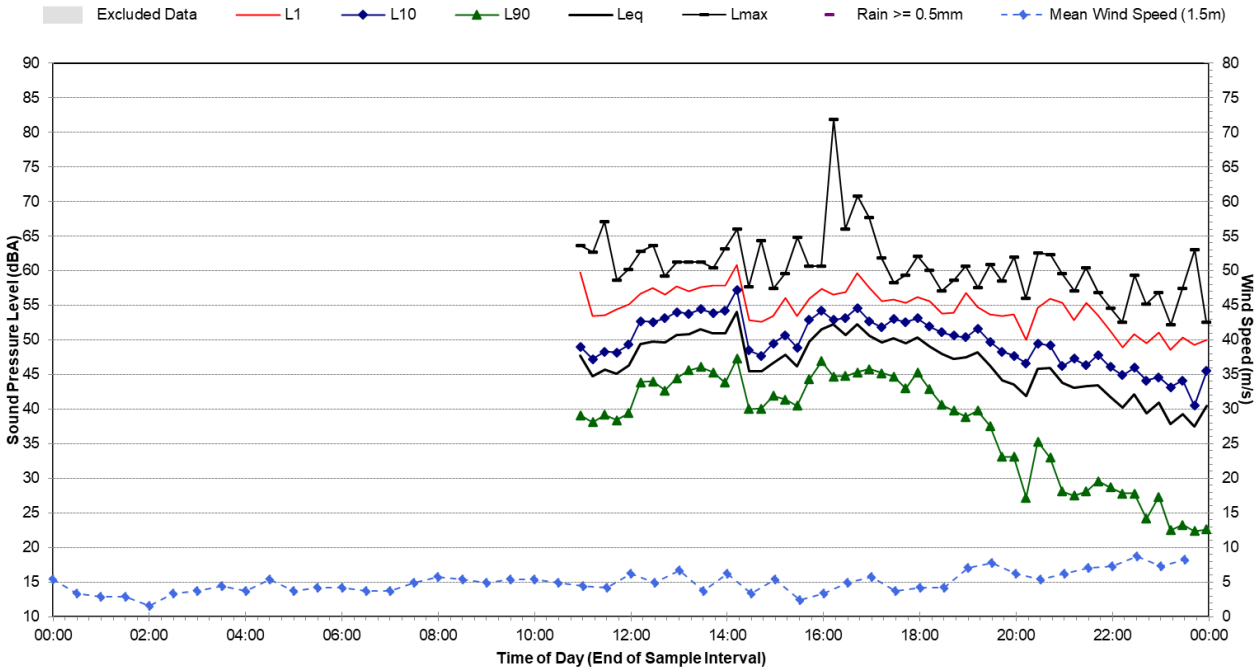
Statistical Ambient Noise Levels

L01 - Monday, 28 June 2021



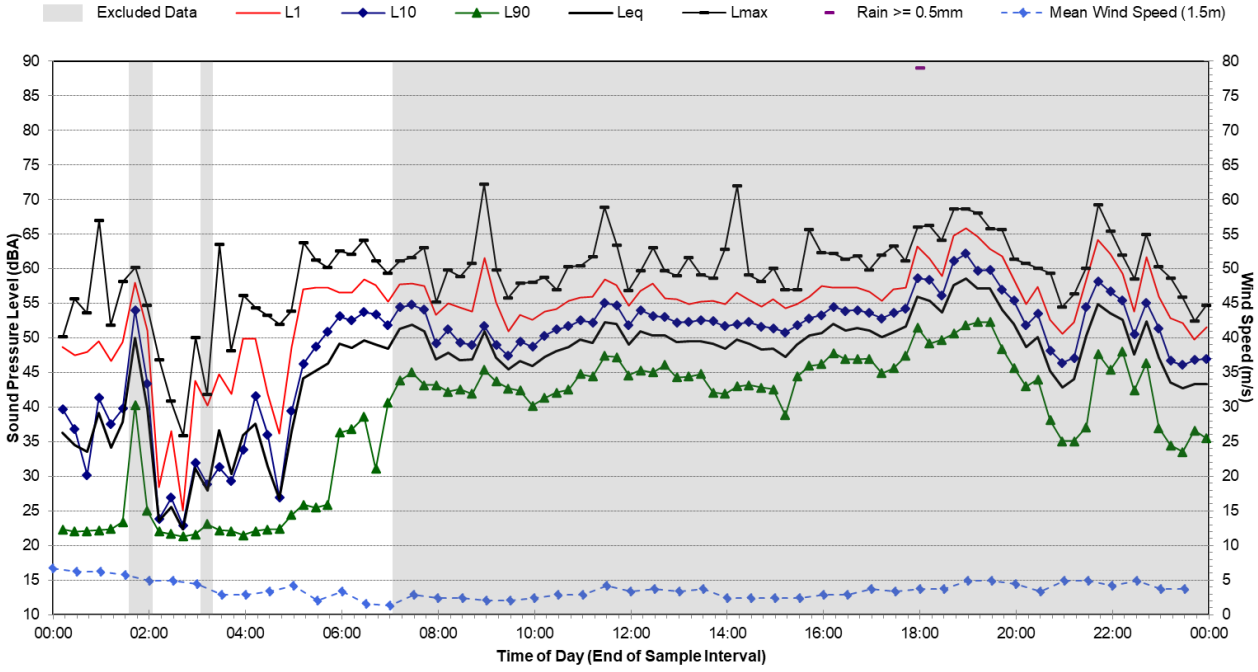
Statistical Ambient Noise Levels

L02 - Thursday, 17 June 2021



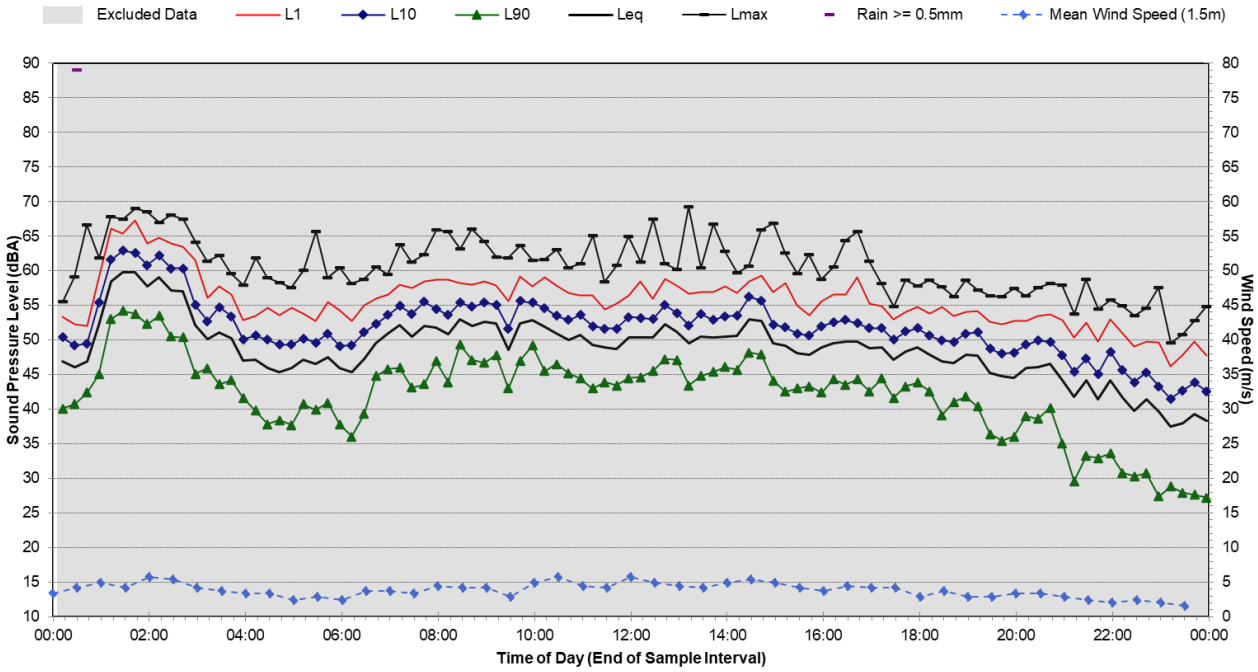
Statistical Ambient Noise Levels

L02 - Friday, 18 June 2021



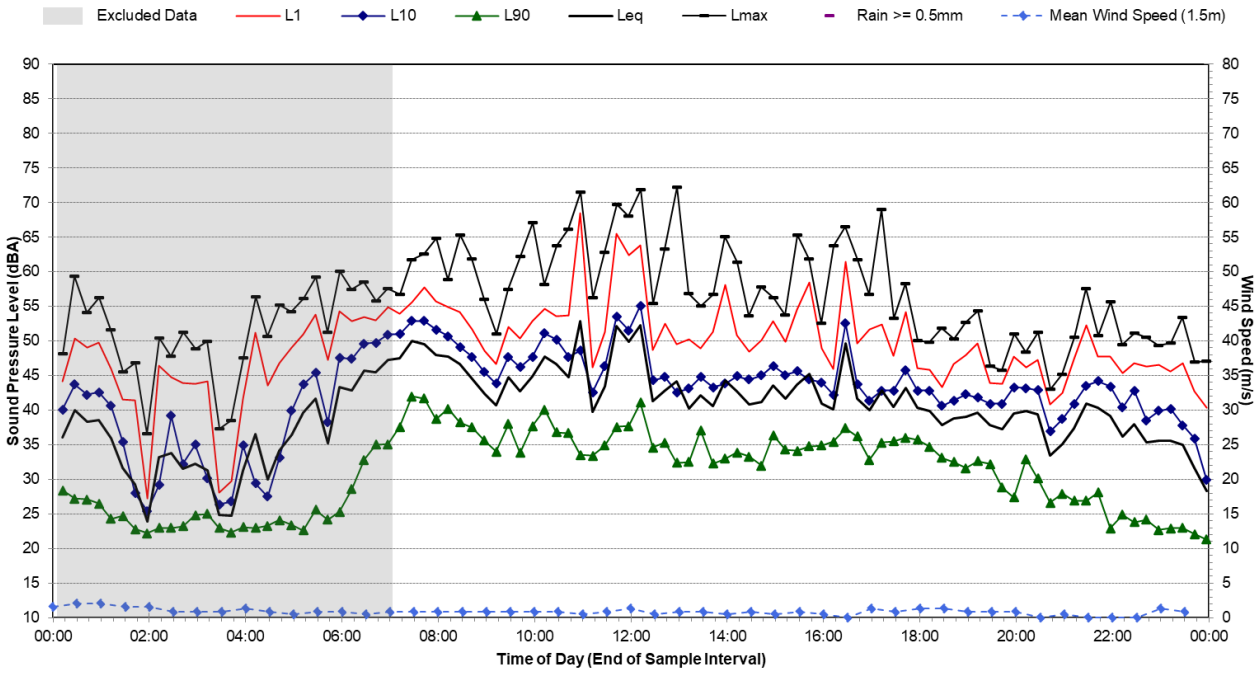
Statistical Ambient Noise Levels

L02 - Saturday, 19 June 2021



Statistical Ambient Noise Levels

L02 - Sunday, 20 June 2021



Statistical Ambient Noise Levels

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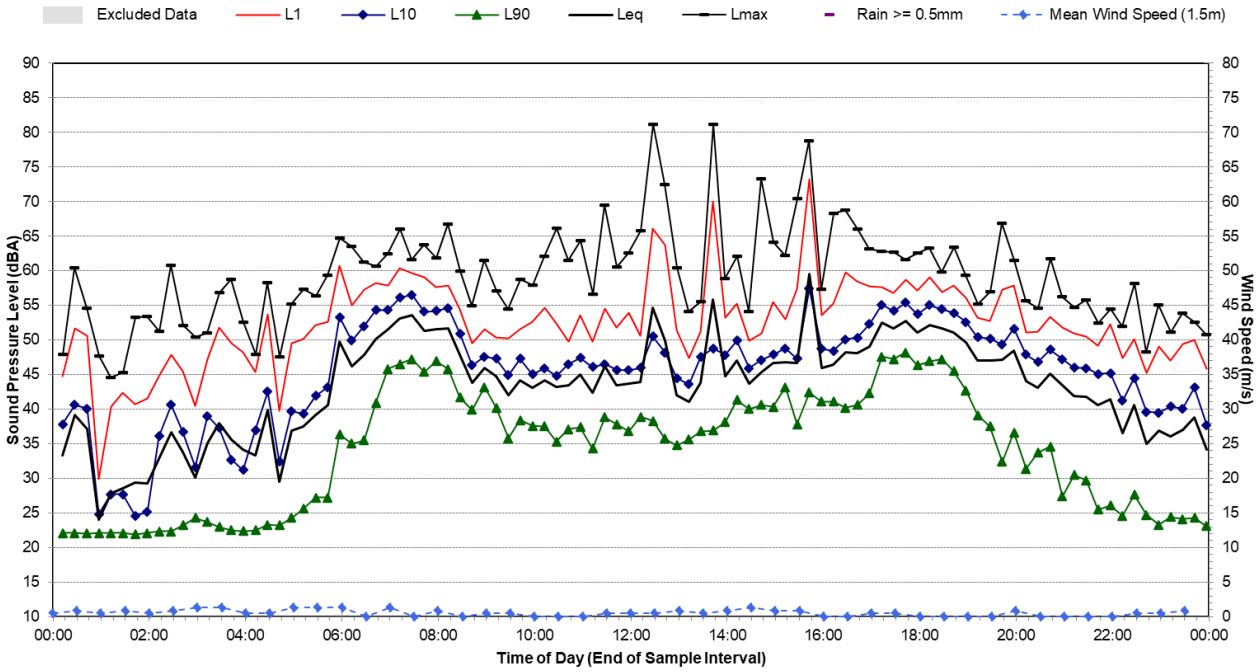
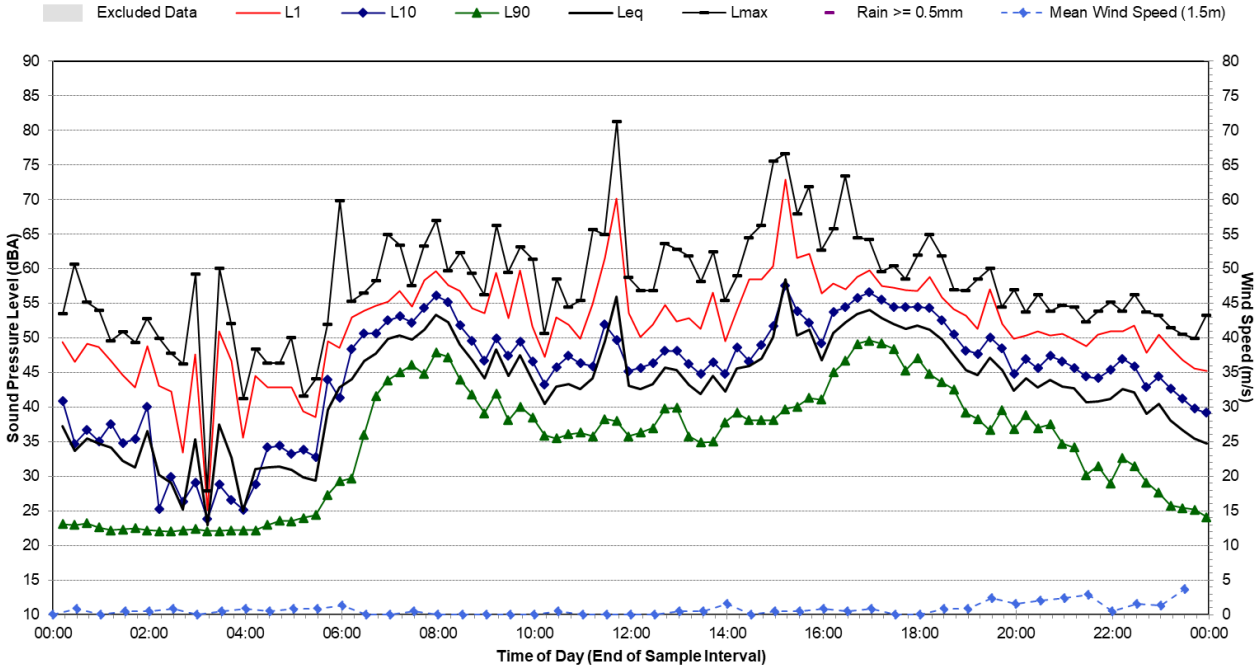


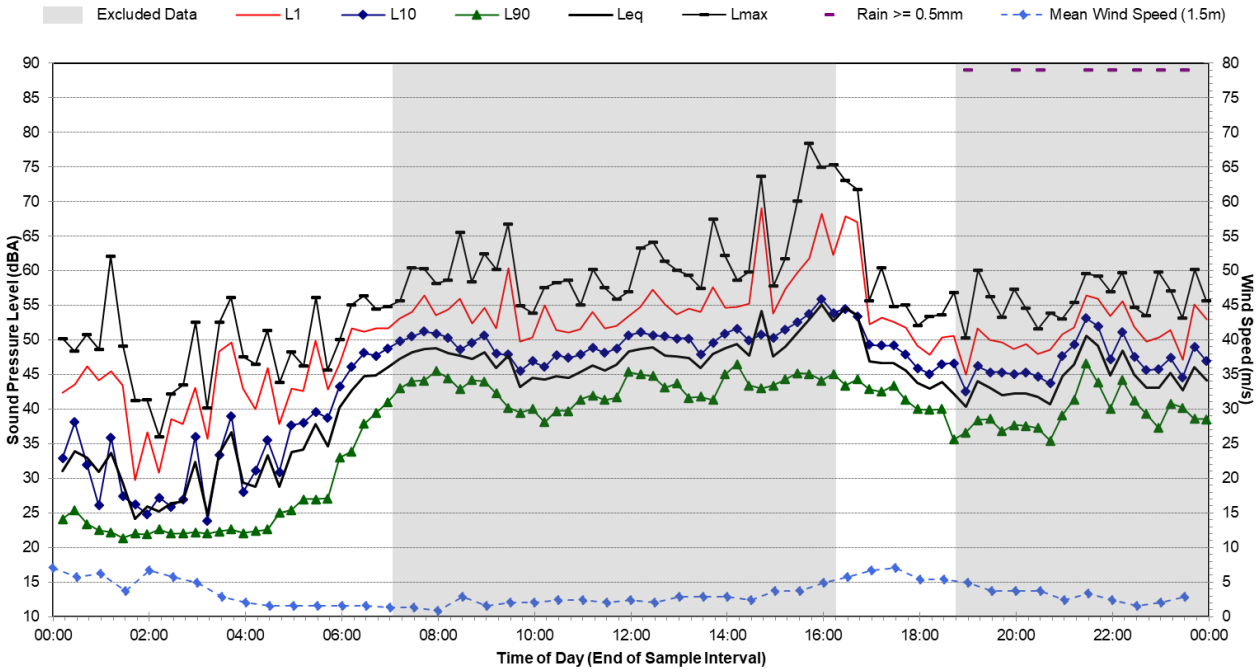
Statistical Ambient Noise Levels

L02 - Tuesday, 22 June 2021



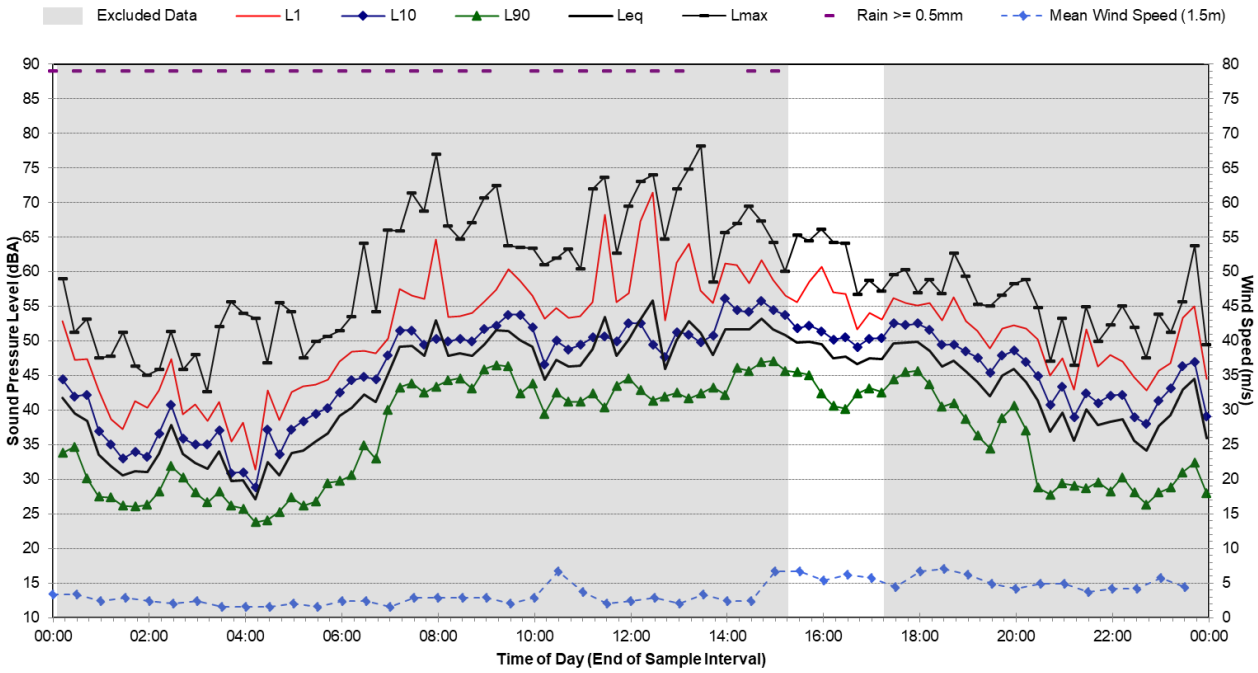
Statistical Ambient Noise Levels

L02 - Wednesday, 23 June 2021



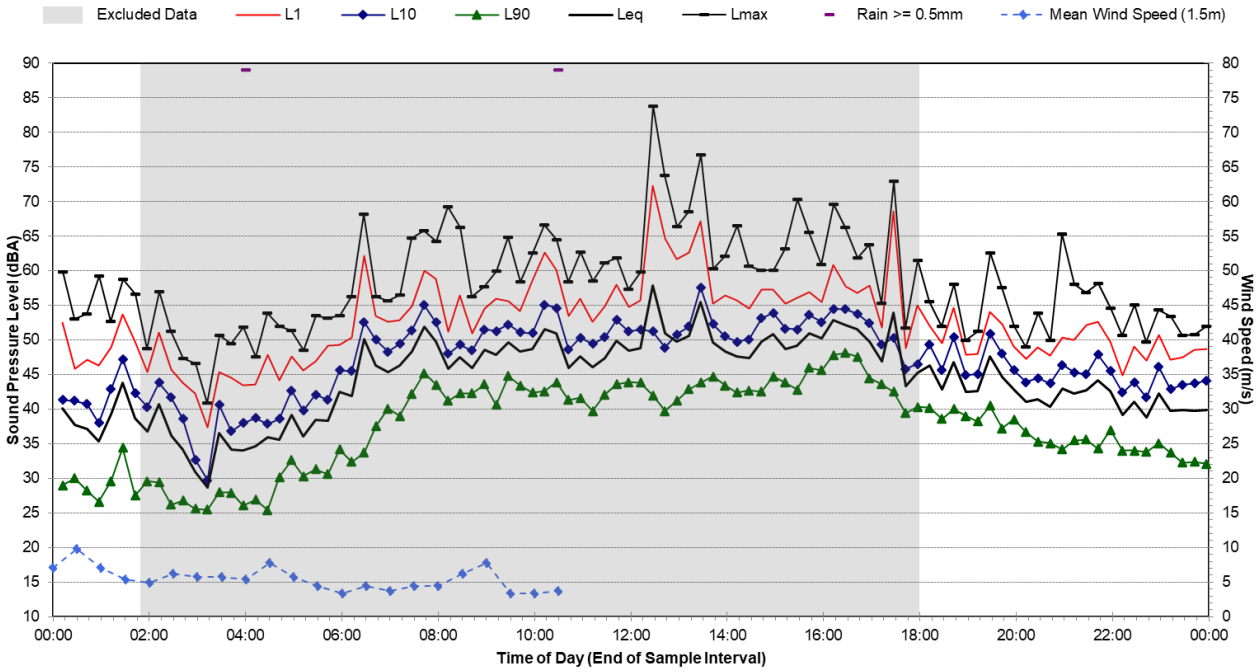
Statistical Ambient Noise Levels

L02 - Thursday, 24 June 2021



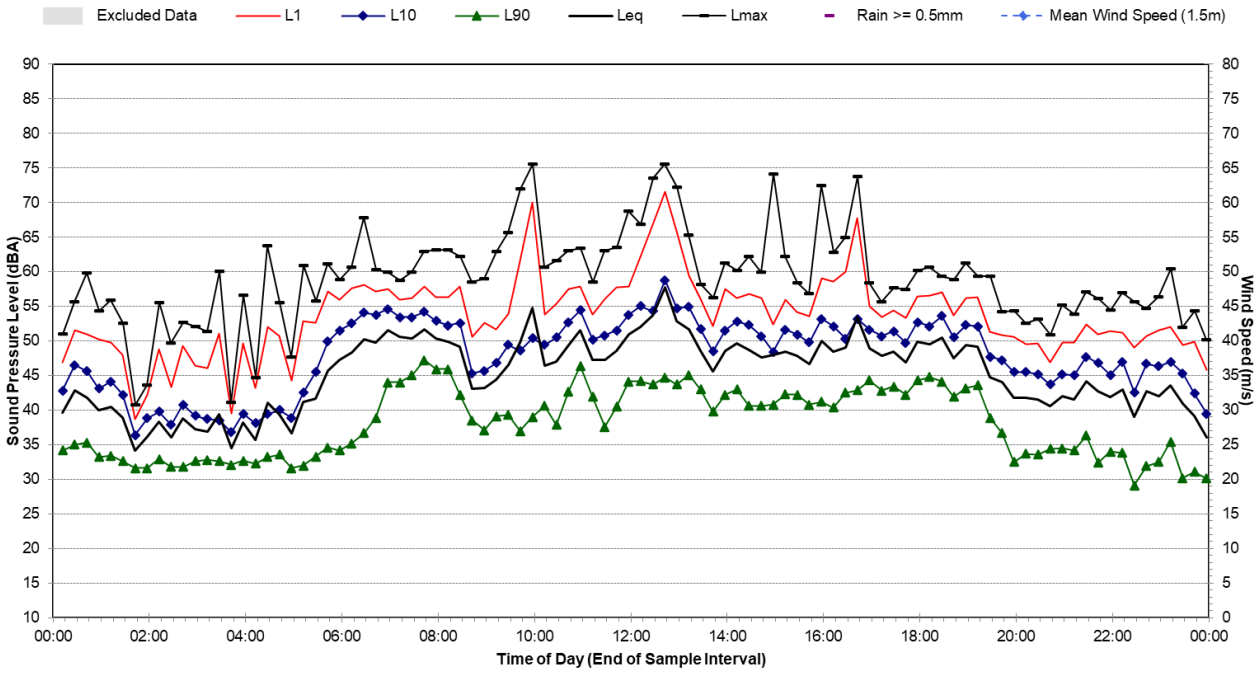
Statistical Ambient Noise Levels

L02 - Friday, 25 June 2021



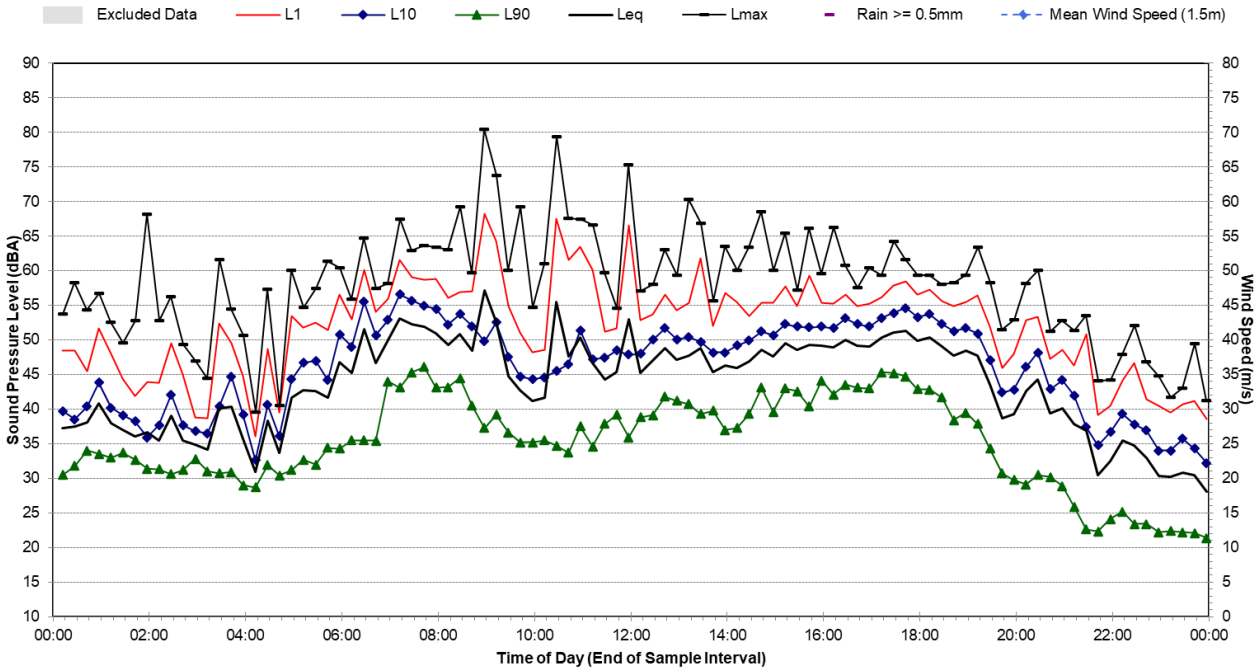
Statistical Ambient Noise Levels

L02 - Saturday, 26 June 2021



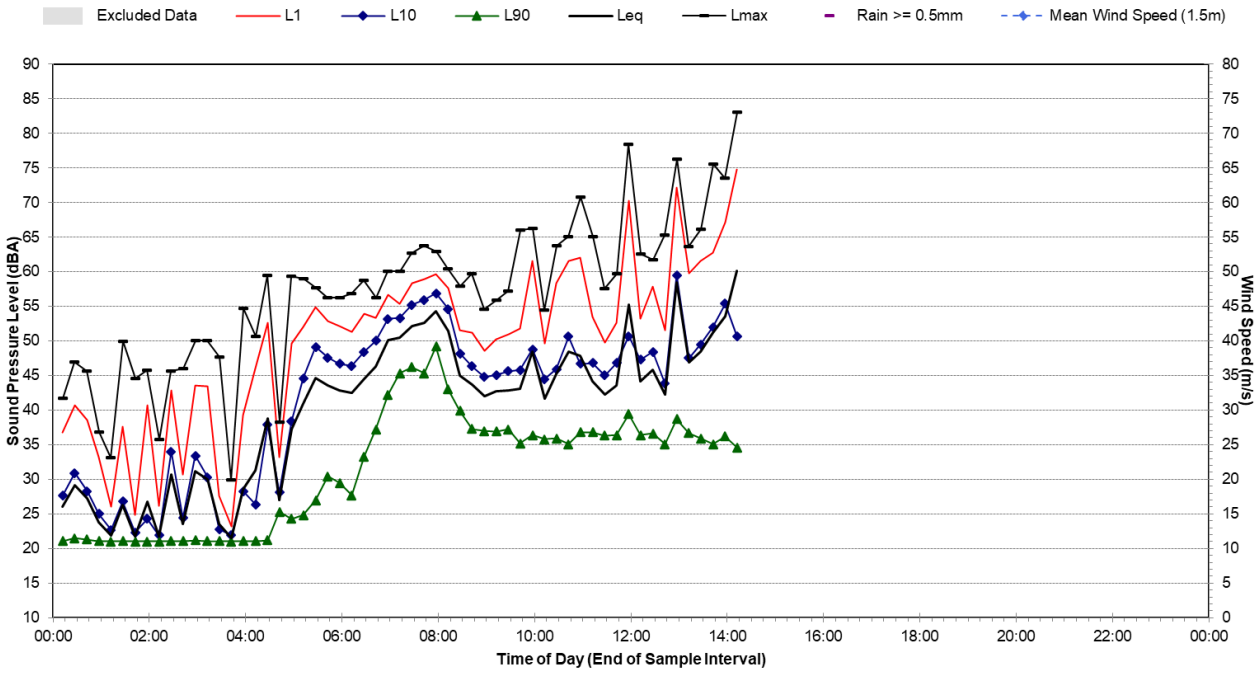
Statistical Ambient Noise Levels

L02 - Sunday, 27 June 2021



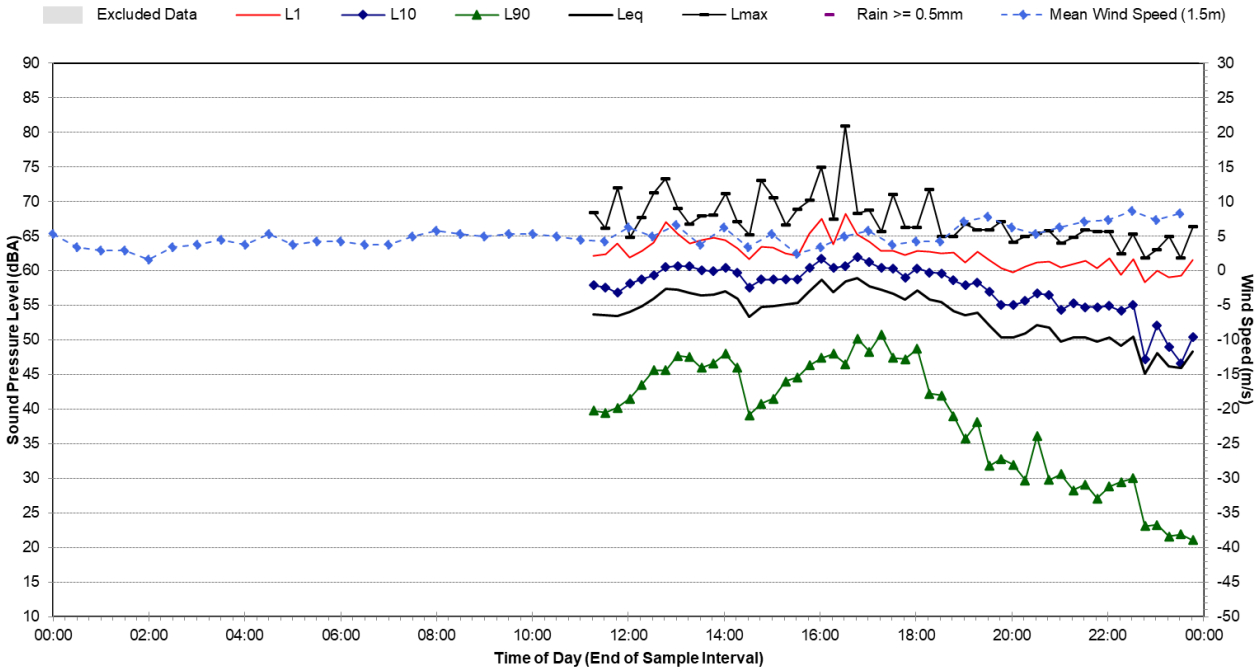
Statistical Ambient Noise Levels

L02 - Monday, 28 June 2021



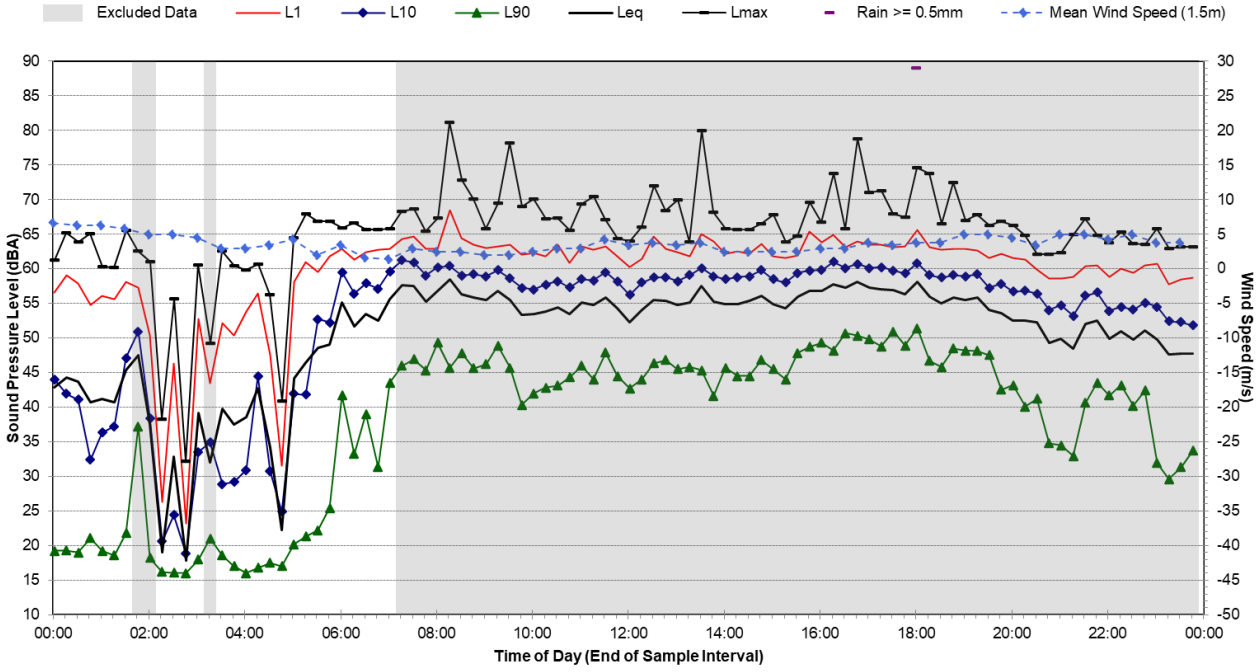
Statistical Ambient Noise Levels

L03 - Thursday, 17 June 2021



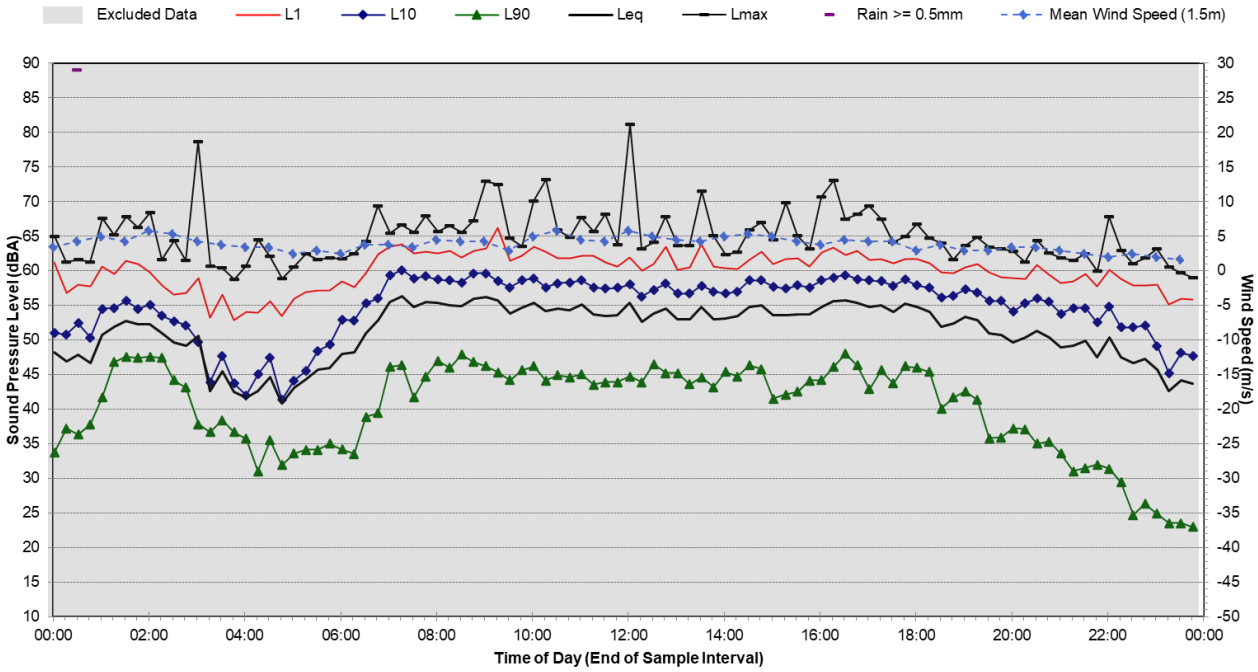
Statistical Ambient Noise Levels

L03 - Friday, 18 June 2021



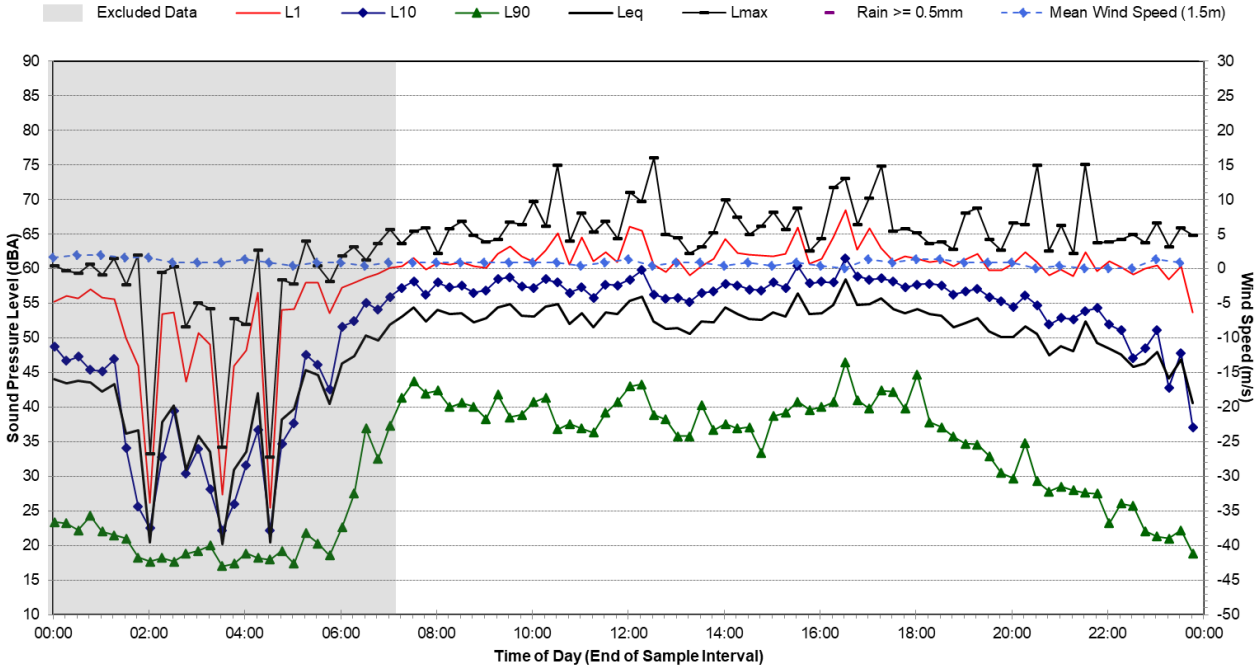
Statistical Ambient Noise Levels

L03 - Saturday, 19 June 2021



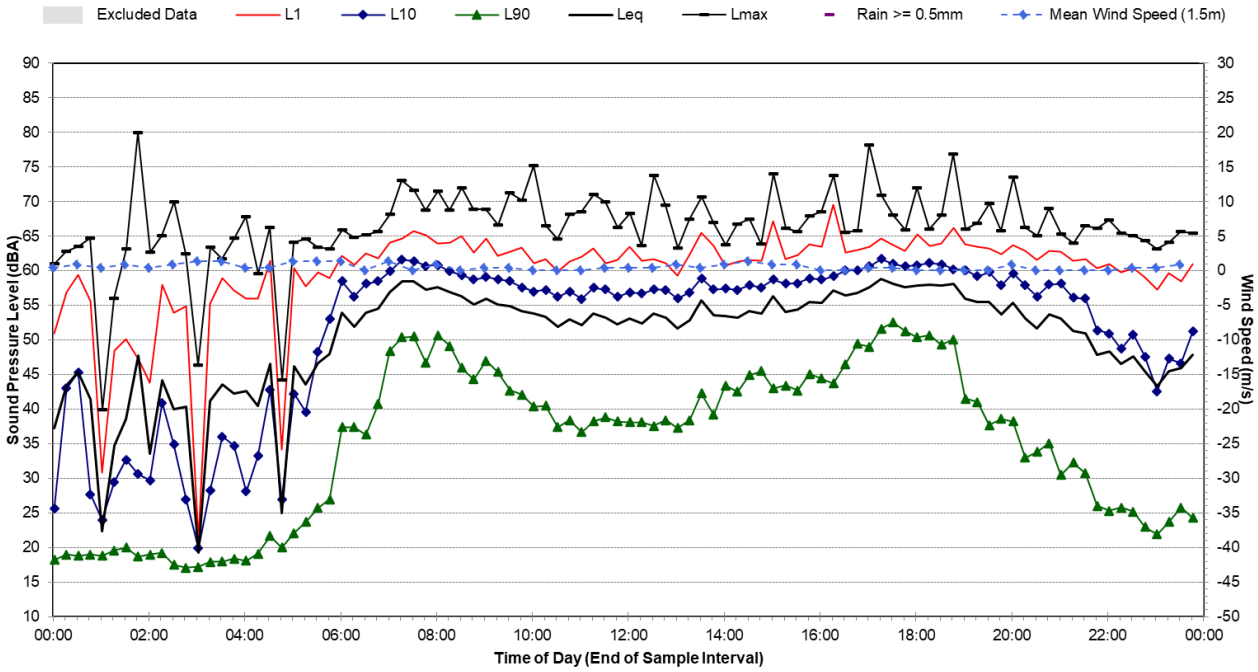
Statistical Ambient Noise Levels

L03 - Sunday, 20 June 2021



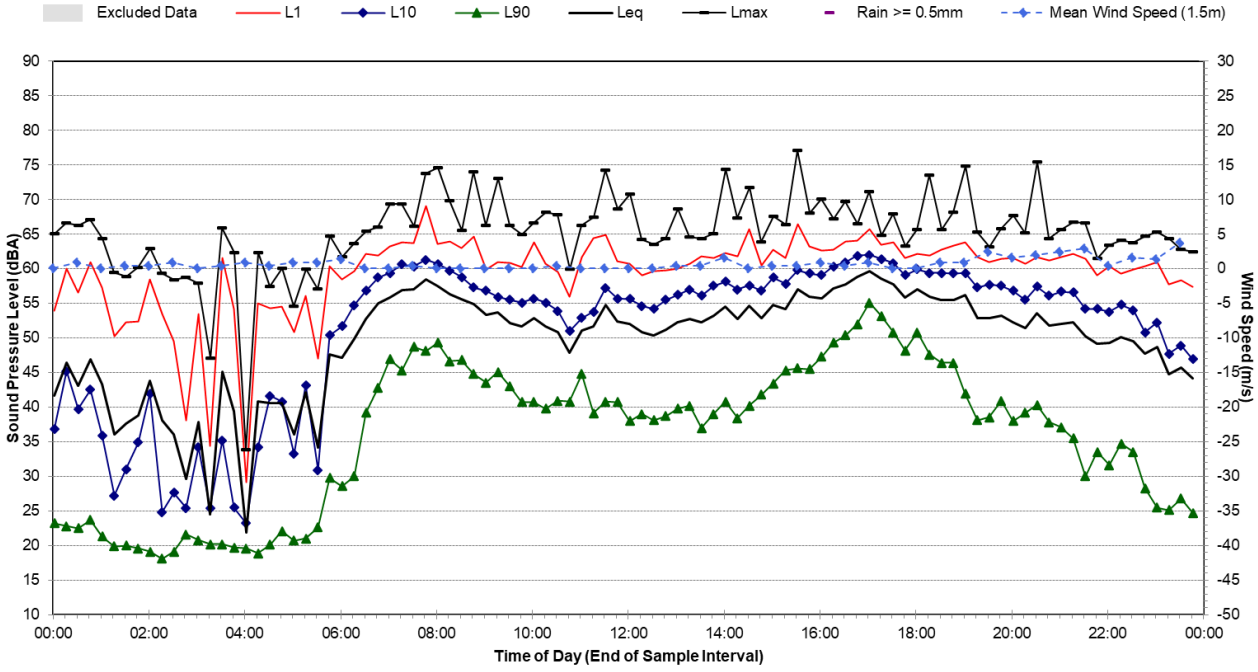
Statistical Ambient Noise Levels

L03 - Monday, 21 June 2021



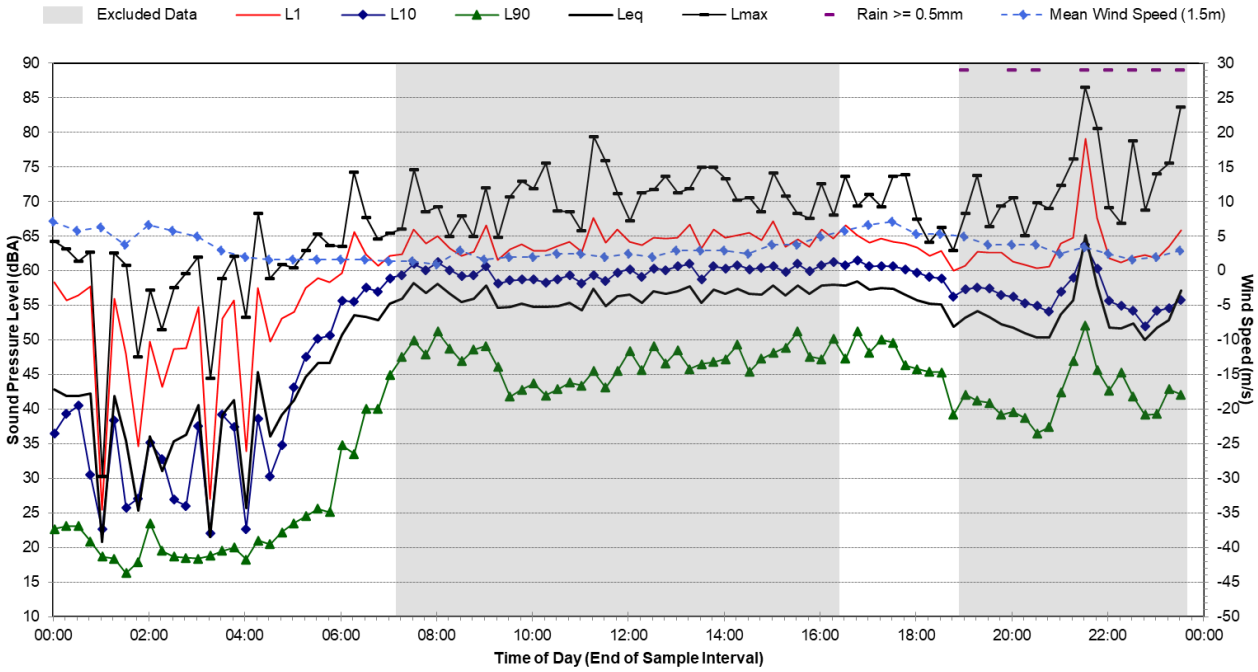
Statistical Ambient Noise Levels

L03 - Tuesday, 22 June 2021



Statistical Ambient Noise Levels

L03 - Wednesday, 23 June 2021



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