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ANNUAL NOISE MANAGEMENT REPORT FOR ANGASTON WORKS

COMPLIANCE DATE: 31/10/2024 – Annual Report - 2024 EPA Licence 35: Noise Prevention (S-265)

Licensed site: Adelaide Brighton Cement, Angaston Works

845 Stockwell Road, Angaston SA 5353

Date of Submission: 29 November 2024

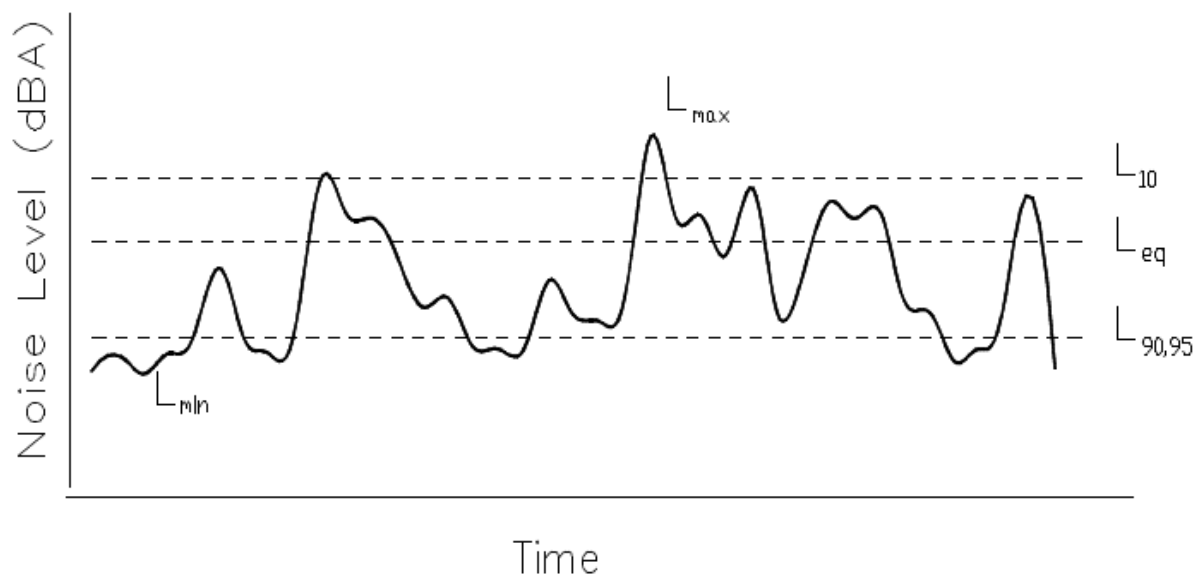
Version Number: 1



Report Submitted by: Business Partner Environment - C&L (SA/NSW/NT)

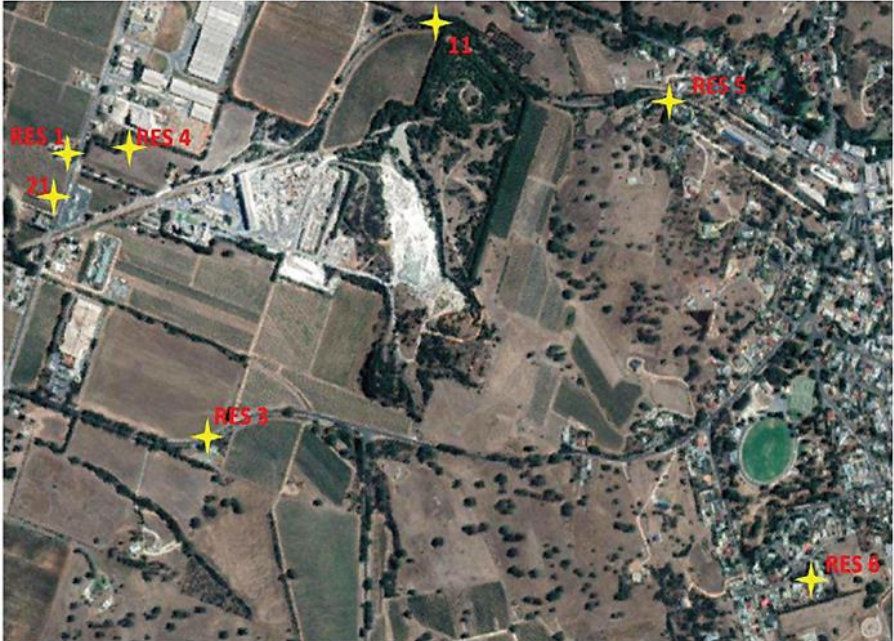
Glossary of acoustic terminology

dB(A)	A unit of measurement, decibels(A), of sound pressure level which has its frequency characteristics modified by a filter ("A-weighted") so as to more closely approximate the frequency response of the human ear.
L₁	The noise level which is equalled or exceeded for 1% of the measurement period. L ₁ is an indicator of the impulse noise level, and is used in Australia as the descriptor for intrusive noise (usually in dBA).
L₁₀	The noise level which is equalled or exceeded for 10% of the measurement period. L ₁₀ is an indicator of the mean maximum noise level, and is used in Australia as the descriptor for intrusive noise (usually in dBA).
L₉₀	The noise level which is equalled or exceeded for 90% of the measurement period. L ₉₀ is an indicator of the mean minimum noise level, and is used in Australia as the descriptor for background or ambient noise (usually in dBA).
L_{eq}	The equivalent continuous noise level for the measurement period. L _{eq} is an indicator of the average noise level (usually in dBA).
L_{max}	The maximum noise level for the measurement period (usually in dBA).



Note: *The subjective reaction or response to changes in noise levels can be summarised as follows:*

A 3 dB(A) increase in sound pressure level is required for the average human ear to notice a change; a 5 dB(A) increase is quite noticeable and a 10 dB(A) increase is typically perceived as a doubling in loudness

Monitoring Objective	<p>Annual reports will include where applicable:</p> <ul style="list-style-type: none"> • Details of noise complaints (excluding complainant name and identifying address details for reasons of confidentiality), received during the year, including outcomes of the complaint investigation and where applicable corrective actions implemented. • Details of noise attenuation projects including effectiveness • Details of noise monitoring reports • Details of other noise minimisation activities • Assessment of the effectiveness of this noise management plan 																								
Monitoring Plan	<p>This monitoring report complies with the Noise Management Plan approved on 25 October 2019 by the SA EPA.</p> <p>The Plan is available on the ABC Angaston Community Website: https://www.angastoncommunity.com.au/</p>																								
Community based noise monitoring & assessment	<p>Site Noise Criteria</p> <p>Noise from the activities undertaken at the ABC Angaston site is subject to the provisions of the Environment Protection (Noise) Policy 2023 (Noise Policy). The Noise Policy outlines Noise Goals which are based on the zoning of the noise source and the noise affected premises. The land use promoted by the zones are used to determine environmental noise criteria with indicative noise factors.</p> <p>ABC uses acoustic engineers, to undertake attended noise monitoring surveys in the community to gain an understanding of how noise from the site impacts the community. Attended measurements have been conducted during the day-time and night-time periods (as defined by the Noise Policy), and defined measurement positions have been established allowing for trends in noise levels at each location to be established over time.</p> <p style="text-align: center;">Location of attended noise measurements</p> <table border="1" data-bbox="316 936 1445 1402"> <thead> <tr> <th>Receiver ID</th> <th>Zone</th> <th>Survey Location</th> </tr> </thead> <tbody> <tr> <td>Resident 1 (location #20a)</td> <td>Rural zone</td> <td>830-846 Stockwell Road, opposite ABC main entrance</td> </tr> <tr> <td>Resident 3 (location #27a)</td> <td>Rural zone</td> <td>130 Crennis Mines Road, near the intersection of Long Gully Road</td> </tr> <tr> <td>Resident 4 (location #18)</td> <td>Strategic Employment</td> <td>Behind 835 Stockwell Road, at the ABC fence abutting the property</td> </tr> <tr> <td>Resident 5</td> <td>Rural Living zone</td> <td>53 Fife Street, Angaston</td> </tr> <tr> <td>Resident 6</td> <td>Neighbourhood zone</td> <td>3 Hague Street, Angaston</td> </tr> <tr> <td>Location #11</td> <td>Rural zone</td> <td>Location along the northern most boundary of the plant, alongside the old railway line</td> </tr> <tr> <td>Location #21</td> <td>Rural Zone</td> <td>860 Stockwell, opposite the Gas Distribution facility</td> </tr> </tbody> </table> 	Receiver ID	Zone	Survey Location	Resident 1 (location #20a)	Rural zone	830-846 Stockwell Road, opposite ABC main entrance	Resident 3 (location #27a)	Rural zone	130 Crennis Mines Road, near the intersection of Long Gully Road	Resident 4 (location #18)	Strategic Employment	Behind 835 Stockwell Road, at the ABC fence abutting the property	Resident 5	Rural Living zone	53 Fife Street, Angaston	Resident 6	Neighbourhood zone	3 Hague Street, Angaston	Location #11	Rural zone	Location along the northern most boundary of the plant, alongside the old railway line	Location #21	Rural Zone	860 Stockwell, opposite the Gas Distribution facility
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EPA has advised (in their letter to ABC dated 09 January 2015), the specific criterion at each location as detailed in the table below:

Indicative Noise Levels (INLs) that apply to ABC’s operations:

Receivers	Indicative Noise Levels (L _{eq} , dB(A))	
	Day-time (7am to 10pm)	Night-time (10pm to 7am)
Resident 1 (location #20a)	60	52
Resident 3 (location #27a)	64	55
Resident 4 (location #18)	60	52
Resident 5	60	52
Resident 6	62	54
Location #11	55	47
Location #21	52	45

Noise Monitoring Reports

Acoustic consultants, Resonate, conducted attended daytime and night-time noise monitoring in July 2023, the results of which are summarised in the tables below. The report “ABC Angaston Plant Environmental Noise Assessment”, SA230553RP1, November 2023, (attached in the appendix).

Day-time Noise survey results

Location	Measured noise level dB(A)		Day time criteria dB(A)	Notes/Comments
	L _{eq}	L ₉₀		
Resident 1 (location #20a)	65	49	60	1
Resident 3 (location #27a)	47	44	60	2
Resident 4 (location #18)	51	49	62	3
Resident 5	45	39	55	4
Resident 6	47	38	52	5
Location #11	45	41	64	6
Location #21	53	49	60	7

Day time survey notes/comments:

- Noise from the ABC plant was barely audible, with traffic noise and noise from the APA Compressor Station being the dominant source at this location. Due to extraneous noise influence, Resonate consider L₉₀ levels to be an appropriate descriptor of noise influence from the ABC plant.
- Noise from the ABC plant was slightly audible, with traffic noise and noise from Capral plant (characteristic fan noise) being the dominant source.
- Continuous audible noise from ABC plant (dominant source), with some traffic noise influence.
- ABC plant was inaudible at this location. The dominant source was traffic noise from nearby roads.
- ABC plant was inaudible at this location. The measured noise was dominated by traffic noise from nearby roads and intermittent dog barking at a nearby property.
- ABC plant was inaudible at this location. The dominant source was traffic noise from nearby roads.
- Noise from the ABC plant was barely audible, with traffic noise and noise from the APA Compressor Station being the dominant source at this location.

Note that Resonate consider L₉₀ levels as the appropriate noise descriptor for noise influence from the plant at Resident 1.

Overall, the measured levels show compliance against the day-time noise criteria at all locations.

These results are compared with recent surveys in the table below, which shows there is has been no significant change in off-site noise impacts, and compliance with noise criteria.

Day time Community noise survey results comparison

Location	2023 Measured levels dB(A)		2021 Measured levels dB(A)		2019 Measured levels dB(A)		Day time criteria dB(A)
	L _{eq}	L ₉₀	L _{eq}	L ₉₀	L _{eq}	L ₉₀	
Resident 1 (location #20a)	65	49 ⁽¹⁾	56	52 ⁽¹⁾	48	45	60
Resident 3 (location #27a)	47	44	71	42 ⁽¹⁾	68	48 ⁽¹⁾	60
Resident 4 (location #18)	51	49	53	49 ⁽¹⁾	48	42	62
Resident 5	45	39	46	38	42	38	55
Resident 6	47	38	42	37	41	33	52
Location #11	45	41	41	35	43	39	64
Location #21	53	49 ⁽¹⁾	65	47 ⁽¹⁾	58	49 ⁽¹⁾	60

(1) L₉₀ descriptor considered to be more representative of ABC plant noise emissions, due to dominant extraneous noise contamination.

Night-time Noise survey results

Location	Measured noise level dB(A)		Nighttime criteria dB(A)	Notes/Comments
	L _{eq}	L ₉₀		
Resident 1 (location #20a)	51	50	52	1
Resident 3 (location #27a)	43	42	52	2
Resident 4 (location #18)	50	49	54	3
Resident 5	39	35	47	4
Resident 6	36	29	45	5
Location #11	37	34	55	6
Location #21	52	51	52	7

Night-time Noise survey results

Night-time survey notes/comments:

- Noise from the ABC plant was audible, with noise from the APA Compressor Station being the dominant source at this location.
- Noise from the ABC plant was audible and dominant at this location. No discernible noise from Capral plant was noted.
- Continuous audible noise from ABC plant, however, noise from the APA Compressor Station was observed to be more dominant.
- ABC plant was inaudible at this location. The dominant source was traffic noise (truck movements) from nearby roads.
- ABC plant was inaudible at this location. Distant traffic noise (trucks) was observed.
- ABC plant was inaudible at this location. The dominant source was traffic noise from nearby roads.
- Noise from the ABC plant was inaudible, with noise from the APA Compressor Station being the dominant source at this location.

Overall, the measured levels show compliance against the night-time noise criteria at all locations.

These results are compared with recent night-time community surveys in the table below.

Night-time community noise survey results comparison

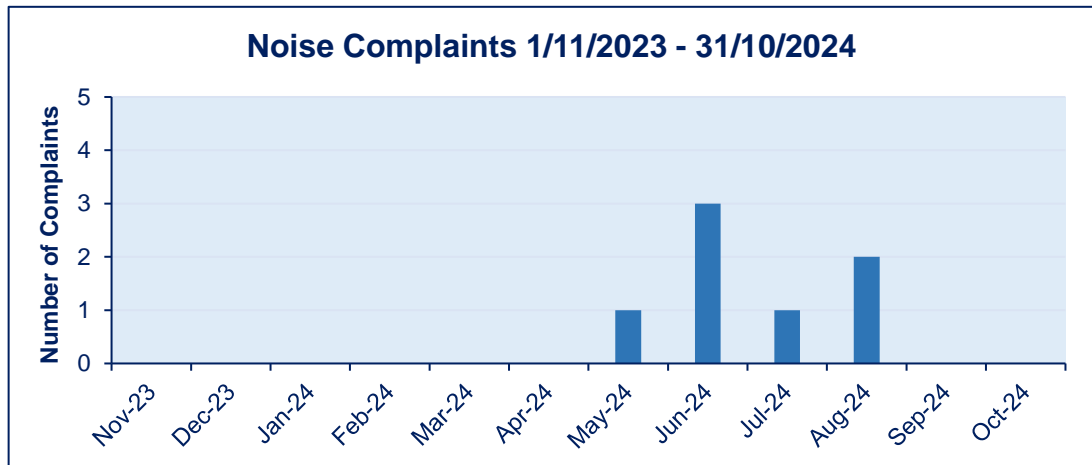
Location	2023 Measured levels dB(A)		2021 Measured levels dB(A)		2019 Measured levels dB(A)		Nighttime criteria dB(A)
	L _{eq}	L ₉₀	L _{eq}	L ₉₀	L _{eq}	L ₉₀	
Resident 1 (location #20a)	51	50	53	51 ⁽¹⁾	47	44	52
Resident 3 (location #27a)	43	42	39	36 ⁽¹⁾	45	42	52
Resident 4 (location #18)	50	49	49	47 ⁽¹⁾	47	45	54
Resident 5	39	35	42	29	37	31	47
Resident 6	36	29	40	36	38	35	45
Location #11	37	34	42	37	38	27	55
Location #21	52	51	45	43 ⁽¹⁾	48	44	52

(1) L₉₀ descriptor considered due to dominant extraneous noise contamination.

- Measured noise levels at Resident 1, Resident 4, Resident 5, Resident 6 and location #11 are similar to or within +/- 3 dB(A) of the noise survey data from 2021 and 2019.
- At Resident 3, slightly higher change (more than 3 dB(A) increment) is observed in comparison to 2021 survey results. However, this is considered acceptable as the levels are similar to 2019 survey results.
- Changes in noise levels at locations where ABC plant noise is inaudible or not the dominant noise source, are more likely to due to changes in other noise sources in the surrounding environment, rather than any meaningful difference in ABC plant noise emissions.
- At location #21, significant change is observed in comparison to 2021 and 2019 survey results. However, this is considered acceptable as the measured levels were observed to be dominated by noise from APA Compressor Station.

Noise complaints

Noise complaints for reporting period (1/11/2023-30/10/2024) are shown in the graph below:



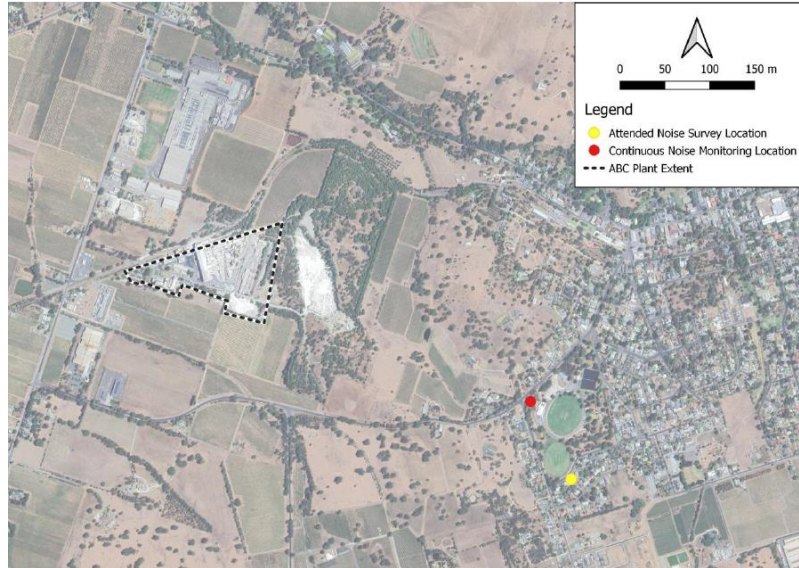
Note: A number of complaints received, referred to multiple occasions when concern about noise levels was expressed.

All noise complaints except for one were from a single resident, who was also complained complained about noise in the winter months of 2023.

Resident location	Number of complaints	General Description
Hauge Crescent Angaston	1	Rumbling noise may be coming from plant or other source? Investigation found the noise not to be related to ABC Angaston plant operation.
Smith Street Angaston	6	'Absolutely unbearable and totally unacceptable' and 'shockingly loud noise coming from the plant disturbing ability to sleep – Discussion below.

ABC has investigated these noise complaints 2023 and 2024, and can find no consistent correlation between, complaint details, weather conditions and operation of different plant equipment including the Hydrator and Raw Mill, which are known to be significant contributors to overall plant noise levels, along with other noise sources in the plant, including Cement Mill 4, Slurry mill, Kiln2 and Kiln 3 operation.

To assist with noise complaint source identification, ABC engaged acoustic consultants Resonate to undertake continuous noise monitoring in the local community near the location of the complainant/s for a two week period between 25 July 2023 and 8 August 2023 (the report “ABC Angaston Plant Environmental Noise Assessment”, SA230553RP1, November 2023, is attached in the appendix).



Some noise complaints were received during this monitoring period, and the noise data, equipment operation status has been summarised in the table below, against the complaint date.

Summary of continuous noise monitoring data for days where a noise complaint was logged

Date <i>nighttime</i>	Equipment Status		Measured Levels (15-minutes), dB(A)				Wind speed/ direction <i>(Nuriootpa station)</i>	Environmental Noise Criteria, dB(A) Nighttime
	Hydrator	Raw Mill	L _{eq}		L ₉₀			
			Minimum	Average	Minimum	Average		
25 July 2023	On 10.30pm	On	31	51	28	36	< 5m/s Dir: Mostly ENE, E	45
27 July 2023	Off 8.30pm	On 7:30am - 6:30pm	37	53	34	42	< 5m/s Dir: mostly WNW, NW, W	45
28 July 2023	On 9.30am	On	41	49	36	40	< 5m/s Dir: mostly WNW, W, SW	45
29 July 2023	On	On	43	49	40	43	≤ 5m/s Dir: mostly WNW, NW	45
8 August 2023	On	On 10:30am – 5:30pm	30	49	26	34	< 5m/s Dir: mostly NNE, NE	45

The L₉₀ noise descriptor is considered appropriate to assess noise from ABC plant, as noise from ABC is continuous in nature and the L_{eq} levels are expected to be contaminated by traffic noise and other extraneous sources.

The continuous noise monitoring results (including in the above table) indicate the L₉₀ levels are within the night-time criteria.

In summary, the noise survey indicates no evidence of noise from the plant being intrusive or significant enough to cause annoyance to the community area near Hague Crescent and Smith Street/Gramp Avenue. Previous noise surveys (conducted by Vipac) also provide no indication or evidence of excessive noise from the plant.

The lack of complaints from other residents suggests that noise concerns expressed by the resident are sui generis to the resident.

Noise Minimisation activities

Significant site noise sources over the last few years have been measured and compared with previous results to ensure they are maintained at acceptable levels. Results are summarised in the table below.

Plant noise survey results comparison

Plant/Equipment	Measurement location	Measured level, L_{eq} dB(A)			Notes/Comments
		2023 Survey	2021 Survey	2019 Survey	
Kiln 3 Blending Silo Fan	1.5 m from the fan (inside)	95	98	90	<ul style="list-style-type: none"> Internal noise levels were slightly higher than the 2019 survey Structure borne noise was observed from the fan mounting
	3 m from the exhaust location (outside on walkway)	84	79	76	<ul style="list-style-type: none"> Higher noise levels were noted at the exhaust point. However, the measurements were slightly contaminated with noise from other sources on ground level. We believe the higher noise levels may have been associated with the structure borne noise observed within the building, radiating out from the façade (openings/cutouts present around the exhaust point)
H17 Hydrator Scrubbing Fan	1 m from the fan motor	89	92	86	<ul style="list-style-type: none"> The noise levels were lower than 2021 survey and seemed typical to the fan
	1.5 m from the exhaust outlet	96	90	80	<ul style="list-style-type: none"> Higher noise levels were noted at the exhaust point Excessive noise radiating from the exhaust stack was noticed
Cement Mill 4 Fan	2 m from the fan outlet	76	75	74	<ul style="list-style-type: none"> Slight increase in noise levels was observed at this location, mainly due to extraneous noise influence from continuous truck movements on ground level
Raw Mill Filter Exhaust Fan R15	1 m from the fan casing (inside Building 17), reverberant levels	90	86	86	<ul style="list-style-type: none"> The noise levels were higher than the previous surveys. However the noise levels are acceptable.
D205 Dust Collector Fan – North Weighbridge	1 m from the fan	100	-	-	<ul style="list-style-type: none"> Noise from the fan was unusually high. This was indicative of fault in the fan. Tonal characteristic at 50Hz observed

- D205 Dust Collector Fan – North Weighbridge has been repaired – September 2023
- The Hydrator attenuator, duct and fan are cleaned on an ongoing 3 monthly basis to manage noise levels.

	<ul style="list-style-type: none"> • ABC replaced the acoustic attenuator on Kiln 3 Blending fan October 2023 – site measurements indicate 2 dBA reduction • Raw Mill dust collector attenuation shield applied around the stack – site measurements indicate a 6 dBA directional improvement. • Noise source reduction activities will be verified by acoustic consultants during the next site noise survey.
<p>Noise Plan</p>	<p>ABC developed a Noise Management Plan for the Angaston site, which was approved on 25 October 2019 by the SA EPA.</p> <p>The plan outlines how ABC assesses and manages the impacts of noise generated at the Angaston site, with the aim of ensuring that</p> <ul style="list-style-type: none"> • Noise impacts are considered as part of routine operations • Noise emissions are controlled at source by good operational practices, physical and management controls • Appropriate, reasonable and practicable measures are taken to reduce noise emissions from the site and the impact on nearby receptors in the local community <p>Ongoing daily management of operational activities to minimise the impact of noise emissions on sensitive receptors includes:</p> <ul style="list-style-type: none"> • Maintenance of plant and equipment to minimise unnecessary noise emissions • Employees and contractors are aware of site noise requirements and their responsibilities to take action to minimise and prevent noise complaints • Ensuring that potential noise impacts are assessed and mitigated when plant modification and equipment changes are made • Investigation of noise complaints and implementation of corrective/preventative action
<p>Plan Effectiveness</p>	<p>Measured noise levels from the site operations comply with the indicative noise levels for:</p> <ul style="list-style-type: none"> • Day-time periods for all sensitive noise receivers, noting that some locations are impacted by heavy traffic and APA compressor Station (Resident 1, location #20 A; and # 21 location) and traffic and CAPRAL plant (Resident 3) • Night-time periods for all noise sensitive receivers. • Measured levels are similar to the recent historical levels. <p>The continuous improvement approach to managing noise emissions embodied in the Noise Management Plan is effective.</p>
<p>Appendix</p>	<p>Resonate “ABC Angaston Plant Environmental Noise Assessment”, SA230553RP1, November 2023</p>

Resonate

ABC Angaston Plant

Environmental Noise Assessment

A230553RP1 Revision B

Tuesday, 28 November 2023



Document Information

Project	ABC Angaston Plant
Client	Adelaide Brighton Cement
Report title	Environmental Noise Assessment
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Revision Table

Report revision	Date	Description	Author	Reviewer
0	1 September 2023	First Issue	Saksham Garg	Nick Henrys
A	4 October 2023	Second Issue	Saksham Garg	Nick Henrys
B	28 November 2023	Third Issue	Saksham Garg	Nick Henrys

Glossary

A-weighting	A spectrum adaption that is applied to measured noise levels to represent human hearing. A-weighted levels are used as human hearing does not respond equally at all frequencies.
Characteristic	Associated with a noise source, means a tonal, impulsive, low frequency or modulating characteristic of the noise that is determined in accordance with the Guidelines for the use of the Environment Protection (Noise) Policy (Noise Policy) to be fundamental to the nature and impact of the noise.
Continuous noise level	A-weighted noise level of a continuous steady sound that, for the period over which the measurement is taken using fast time weighting, has the same mean square sound pressure as the noise level which varies over time when measured in relation to a noise source and noise-affected premises in accordance with the Noise Policy
Day	Between 7 am and 10 pm as defined in the Noise Policy
dB	Decibel—a unit of measurement used to express sound level. It is based on a logarithmic scale which means a sound that is 3 dB higher has twice as much energy. We typically perceive a 10 dB increase in sound as a doubling of loudness.
dB(A)	Units of the A-weighted sound level.
Frequency (Hz)	The number of times a vibrating object oscillates (moves back and forth) in one second. Fast movements produce high frequency sound (high pitch/tone), but slow movements mean the frequency (pitch/tone) is low. 1 Hz is equal to 1 cycle per second.
Indicative noise level	Indicative noise level determined under clause 5 of the Noise Policy.
L ₉₀	Noise level exceeded for 90 % of the measurement time. The L ₉₀ level is commonly referred to as the background noise level.
L _{eq}	Equivalent Noise Level—Energy averaged noise level over the measurement time.
L _{max}	The maximum instantaneous noise level.
Night	Between 10.00 p.m. on one day and 7.00 a.m. on the following day as defined in the Noise Policy
Noise source	Premises or a place at which an activity is undertaken, or a machine or device is operated, resulting in the emission of noise
Quiet locality	A locality is a quiet locality if the Planning & Design Code provisions that make land use rules for the locality principally promote land uses that all fall within either or both of the following land use categories: (a) Residential; (b) Rural Living;

Table of Contents

1	Introduction	2
2	Location details	3
2.1	Plant operation	3
2.2	Plant location	3
2.3	Noise sensitive receptors	4
3	Planning & Design Code	5
3.1	Zoning	5
3.1.1	Subject site	5
3.1.2	Noise sensitive receptors	6
3.2	Interface between land uses	7
4	Noise criteria	8
4.1	Environmental noise policy	8
5	Attended noise survey details	11
5.1	Location details	11
5.2	Instrumentation	11
5.3	Procedure	11
6	Noise survey results	12
6.1	Community noise survey	12
6.1.1	Results	12
6.1.2	Results comparison—Historical data	14
6.2	Plant noise survey	15
6.2.1	Results	15
6.2.2	Discussion	17
7	Noise complaints	18
7.1	Unattended continuous noise survey	18
7.1.1	Location details	18
7.1.2	Instrumentation	18
7.1.3	Procedure	19
7.1.4	Continuous noise survey results	19
7.2	Attended noise survey	19
7.3	Results	19
7.4	Discussion	20
8	Conclusion	21



1 Introduction

Resonate Consultants have been engaged by Adelaide Brighton Cement (ABC) to conduct an environmental noise survey at their Angaston plant as a part of their ongoing noise surveys every 2 years. The plant operates under the Environment Protection Authority (EPA) license number 35, most recently renewed in November 2019.

They survey included the following components:

- Attended noise measurements of critical plant equipment
- Attended noise survey in the community area (locations primarily identified by ABC and agreed upon by EPA).
The survey was conducted during both day time (7 am - 10 pm) and night time (10 pm - 7 am) periods
- Unattended and attended noise survey at one location within the community to address noise complaints.

This report summarises the results of the survey, compared against the applicable environmental noise criteria and the historical noise survey data for past 2 surveys, and treatment/mitigation recommendations where applicable.

2 Location details

2.1 Plant operation

The plant operates 24 hours, 7 days a week, with scheduled shut down for maintenance works when required.

2.2 Plant location

The subject site is located at 843 Stockwell Road, Angaston SA 5353. The sensitive residential receptors, as advised by EPA, are located within 1.5 km radius around the plant boundary.

Figure 1 shows an aerial image of the locality in relation to site location, sensitive receiver locations and applicable zoning.

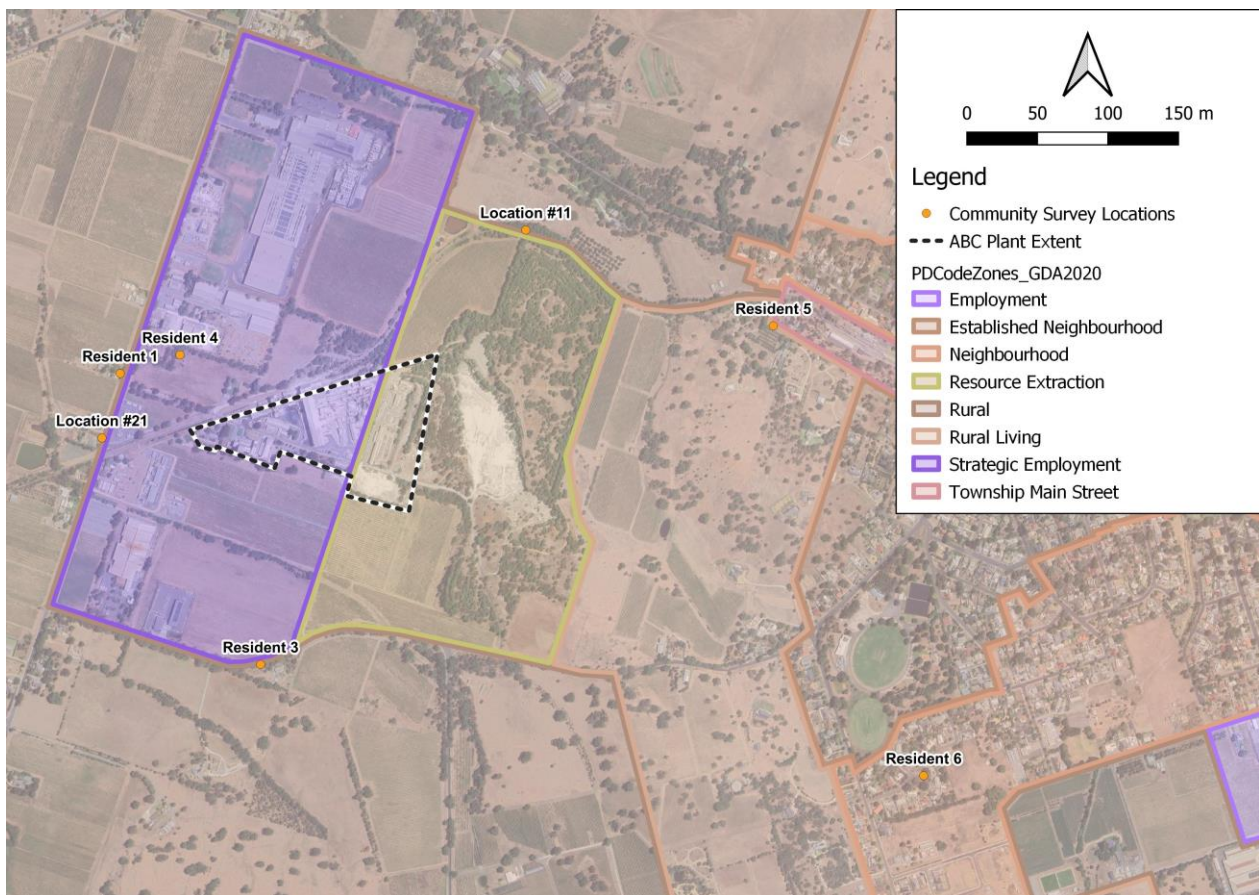


Figure 1 Aerial image of site, adjacent land, and zoning

2.3 Noise sensitive receptors

ABC, in agreement with EPA, have advised seven primary locations in the community for noise surveys. The locations and the applicable zones are provided in Table 1 below and Figure 1 above.

Table 1 Noise sensitive receiver locations

Receiver ID	Zone	Survey Location
Resident 1 (location #20a)	Rural zone	830-846 Stockwell Road, opposite ABC main entrance
Resident 3 (location #27a)	Rural zone	130 Crennis Mines Road, near the intersection of Crennis Mines Road and Long Gully Road
Resident 4 (location #18)	Strategic Employment zone	Behind 835 Stockwell Road, at the ABC fence abutting the property
Resident 5	Rural Living zone	53 Fife Street
Resident 6	Neighbourhood zone	3 Hague Street, Angaston
Location #11	Rural zone	Location along the northern most boundary of the plant, alongside the old railway line
Location #21	Rural Zone	860 Stockwell, opposite the Gas Distribution facility

3 Planning & Design Code

3.1 Zoning

3.1.1 Subject site

The subject site is located within Strategic Employment and Resource Extraction zone. The relevant Assessment Provisions / Desired Outcomes is / are outlined in Table 2.

Table 2 Relevant Desired Outcome—Strategic Employment and Resource Extraction zones

Desired Outcome	
Strategic Employment zone	
DO1	The provision and protection of land for the extraction, production or processing of a mineral, extractive or petroleum resource.
Rural Extraction zone	
DO 1	A range of industrial, logistical, warehousing, storage, research and training land uses together with compatible business activities generating wealth and employment for the state.
DO 2	Employment-generating uses are arranged to: <ul style="list-style-type: none"> (a) support the efficient movement of goods and materials on land in the vicinity of major transport infrastructure such as ports and intermodal freight facilities (b) maintain access to waterfront areas for uses that benefit from direct water access including harbour facilities, port related industry and warehousing, ship building and related support industries (c) create new and enhance existing business clusters (d) support opportunities for the convenient co-location of rural related industries and allied businesses that may detract from scenic rural landscapes (e) be compatible with its location and setting to manage adverse impacts on the amenity of land in adjacent zones.
DO 3	A pleasant visual amenity from adjacent arterial roads, adjoining zones and entrance ways to cities, towns and settlements.

3.1.2 Noise sensitive receptors

The noise affected premises are located in Rural, Rural Living, Strategic Employment and Neighbourhood zone. The location details of the receptors are provided in Table 1 and the relevant Desired Outcomes outlined in Table 3.

Table 3 Relevant Desired Outcome

Desired Outcome	
Rural Living	
DO1	A spacious and secluded residential lifestyle within semi-rural or semi-natural environments, providing opportunities for a range of low-intensity rural activities and home-based business activities that complement that lifestyle choice.
Rural zone	
DO1	A zone supporting the economic prosperity of South Australia primarily through the production, processing, storage and distribution of primary produce, forestry, and the generation of energy from renewable sources.
DO2	A zone supporting the economic prosperity of South Australia primarily through the production, processing, storage and distribution of primary produce, forestry and the generation of energy from renewable sources.
Neighbourhood zone	
DO1	Housing supports a range of needs and complements the existing local context. Services and community facilities contribute to making a convenient place to live without compromising the residential amenity and character of the neighbourhood.
Strategic Employment zone	
DO1	The provision and protection of land for the extraction, production or processing of a mineral, extractive or petroleum resource.

3.2 Interface between land uses

Interface between Land Uses is a General Development Policy that is relevant to the subject site. The relevant Assessment Provisions relating to noise are outlined in Table 4.

Table 4 Relevant Assessment Provisions—Activities generating noise or vibration

Relevant Assessment Provisions	
Desired Outcome	
DO1	Development is located and designed to mitigate adverse effects on or from neighbouring and proximate land uses.
Performance Outcome	Deemed-to-Satisfy Criteria / Designated Performance Feature
PO 4.1 Development that emits noise (other than music) does not unreasonably impact the amenity of sensitive receivers (or lawfully approved sensitive receivers).	DTS/DPF 4.1 Noise that affects sensitive receivers achieves the relevant Environment Protection (Noise) Policy criteria.
PO 4.2 Areas for the on-site manoeuvring of service and delivery vehicles, plant and equipment, outdoor work spaces (and the like) are designed and sited to not unreasonably impact the amenity of adjacent sensitive receivers (or lawfully approved sensitive receivers) and zones primarily intended to accommodate sensitive receivers due to noise and vibration by adopting techniques including: <ul style="list-style-type: none"> a) locating openings of buildings and associated services away from the interface with the adjacent sensitive receivers and zones primarily intended to accommodate sensitive receivers b) when sited outdoors, locating such areas as far as practicable from adjacent sensitive receivers and zones primarily intended to accommodate sensitive receivers c) housing plant and equipment within an enclosed structure or acoustic enclosure d) providing a suitable acoustic barrier between the plant and / or equipment and the adjacent sensitive receiver boundary or zone. 	DTS/DPF 4.2 None are applicable.

4 Noise criteria

4.1 Environmental noise policy

As noted in DTS/DPF 4.1, environmental noise emissions from the subject site should comply with the *Environment Protection (Noise) Policy 2007* (Noise Policy).

The noise goals in the Noise Policy are based on the zoning of the development and the closest noise affected premises. The land uses primarily promoted by the zones are used to determine the environmental noise criteria with the indicative noise factors shown in Table 5 and Table 6. Note that the indicative noise factors in Table 5 are used where the noise source and noise affected premises falls within the same land use category (being only General Industry and Special Industry). In all other cases the indicative noise factors in Table 6 are to be used.

Table 5 Excerpt from Noise Policy—Table 1(subclause(1)(a))

Land use category	Indicative noise factor dB(A)	
	Day (7 am to 10 pm)	Night (10 pm to 7 am)
General industry	65	65
Special industry	70	70

Table 6 Excerpt from Noise Policy—Table 2(subclause(1)(b))

Land use category	Indicative noise factor dB(A)	
	Day (7 am to 10 pm)	Night (10 pm to 7 am)
Rural living	47	40
Residential	52	45
Rural industry	57	50
Light industry	57	50
Commercial	62	55
General industry	65	55
Special industry	70	60

Based on the zoning and the relevant Desired Outcomes for the zones of the subject site and the adjacent receptors, the primarily promoted land uses and the relevant criteria for the receptors in each zone are outlined in Table 7.

Table 7 Summary of zones, land uses, and Noise Policy criteria

Location	Zone	Land use(s)	Criteria	
			Day (7 am to 10 pm)	Night (10 pm to 7 am)
ABC Plant	Strategic Employment & Resource Extraction zone	General Industry	N/A	N/A
Resident 1 (location #20a)	Rural zone	Rural Industry	61	53
Resident 3 (location #27a)	Rural zone	Rural Industry	61	53
Resident 4 (location #18)	Strategic Employment zone	General Industry	65	65
Resident 5	Rural Living zone	Rural Living	56	48
Resident 6	Neighbourhood zone	Residential	52	45
Location #11	Rural zone	Rural Industry	61	53
Location #21	Rural Zone	Rural Industry	61	53

Please note that the criteria provided in Table 7 has not been used in this assessment. EPA has advised (in their letter to ABC dated 09 January 2015), specific criterion at each location, as presented in Table 8 to meet the EPA license requirements.

Table 8 EPA recommended noise criteria

Location	Zone	Land use(s)	Criteria	
			Day (7 am to 10 pm)	Night (10 pm to 7 am)
ABC Plant	Strategic Employment & Resource Extraction zone	General Industry	N/A	N/A
Resident 1 (location #20a)	Rural zone	Rural Industry	60	52
Resident 3 (location #27a)	Rural zone	Rural Industry	60	52
Resident 4 (location #18)	Strategic Employment zone	General Industry	62	54
Resident 5	Rural Living zone	Rural Living	55	47
Resident 6	Neighbourhood zone	Residential	52	45
Location #11	Rural zone	Rural Industry	64	55
Location #21	Rural Zone	Rural Industry	60	52

Penalties can also be applied to a noise source for a variety of characteristics, such as impulsive, low frequency, modulating or tonal characters. For a characteristic penalty to be applied to a noise source it must be fundamental to the impact of the noise and dominate the overall noise impact. Application of the characteristic penalty is discussed in the noise emission assessment.

We note that under Part 5, Clause 20(6) of the Noise Policy, exceedance of the recommended criterion does not necessarily mean action is required under the Noise Policy. Some of the following matters should be considered when considering action:

- the amount by which the criterion is exceeded (in dB(A))
- the frequency and duration for which the criterion is exceeded
- the ambient noise that has a noise level similar to the predicted noise level
- the times of occurrence of the noise source
- the number of persons likely to be adversely affected by the noise source and whether there is any special need for quiet.

5 Attended noise survey details

5.1 Location details

The attended noise survey was conducted at receiver locations highlighted in Figure 1 and Table 1.

5.2 Instrumentation

Noise level measurements were conducted using a Brüel & Kjær Type 2250 sound level meter (B&K 2250 SLM) calibrated with a Brüel & Kjær Type 4231 calibrator. The B&K 2250 SLM is a National Association of Testing Authorities (NATA) calibrated Class 1 SLM in conformance with Australia Standard 1259 *Acoustics – Sound level meters* (AS 1259). Copies of the calibration certificates are available on request.

5.3 Procedure

Noise measurements were undertaken in accordance with the following:

- Noise measurements were undertaken for a period of up to 15 minutes.
- The microphone of the sound level meter was at a height of approximately 1.2 metres above the ground and at least 3.5 metres away from any wall or facade.
- The axis of maximum sensitivity of the microphone of the sound level meter was directed towards the noise source.
- A wind shield was used during all measurements, and the measurements were undertaken during a calm, still night (for which the wind velocity did not exceed 5 m/s).
- Care was taken to avoid any effect on the measurement of extraneous noise, acoustic vibration or electrical interference. To ensure this, where possible, the measurement was paused, and the 'back-erase' function of the B&K was used to remove any influence from extraneous noise sources during the measurements. Note that at locations with high traffic volumes (constant traffic movements), avoiding the influence of extraneous noise was not possible. In such cases, comments have been provided.

6 Noise survey results

6.1 Community noise survey

6.1.1 Results

The results of the community noise survey conducted at location indicated in Table 1, during day and night time periods, have been presented in Table 9 and Table 10 below.

A full set of survey noise data, including survey notes, is provided in Appendix B—Attended noise survey data & notes.

Table 9 Community noise survey results—Day time

Location	Measured noise level dB(A)		Day time criteria dB(A)	Notes/Comments
	L _{eq}	L ₉₀		
Resident 1 (location #20a)	65	49	60	1
Resident 3 (location #27a)	47	44	60	2
Resident 4 (location #18)	51	49	62	3
Resident 5	45	39	55	4
Resident 6	47	38	52	5
Location #11	45	41	64	6
Location #21	53	49	60	7

Day time survey notes/comments:

- Noise from the ABC plant was barely audible, with traffic noise and noise from the APA Compressor Station being the dominant source at this location. Due to extraneous noise influence, we consider L₉₀ levels to be an appropriate descriptor of noise influence from the ABC plant.
- Noise from the ABC plant was slightly audible, with traffic noise and noise from Capral plant (characteristic fan noise) being the dominant source.
- Continuous audible noise from ABC plant (dominant source), with some traffic noise influence.
- ABC plant was inaudible at this location. The dominant source was traffic noise from nearby roads.
- ABC plant was inaudible at this location. The measured noise was dominated by traffic noise from nearby roads and intermittent dog barking at a nearby property.
- ABC plant was inaudible at this location. The dominant source was traffic noise from nearby roads.
- Noise from the ABC plant was barely audible, with traffic noise and noise from the APA Compressor Station being the dominant source at this location.

Overall, the measured levels show compliance against the day time noise criteria at all locations. Note that we have considered L₉₀ levels as the appropriate noise descriptor for noise influence from the plant at Resident 1.

Table 10 Community noise survey results—night

Location	Measured noise level dB(A)		Nighttime criteria dB(A)	Notes/Comments
	L _{eq}	L ₉₀		
Resident 1 (location #20a)	51	50	52	1
Resident 3 (location #27a)	43	42	52	2
Resident 4 (location #18)	50	49	54	3
Resident 5	39	35	47	4
Resident 6	36	29	45	5
Location #11	37	34	55	6
Location #21	52	51	52	7

Nighttime survey notes/comments:

- Noise from the ABC plant was audible, with noise from the APA Compressor Station being the dominant source at this location.
- Noise from the ABC plant was audible and dominant at this location. No discernible noise from Capral plant was noted.
- Continuous audible noise from ABC plant, however, noise from the APA Compressor Station was observed to be more dominant.
- ABC plant was inaudible at this location. The dominant source was traffic noise (truck movements) from nearby roads.
- ABC plant was inaudible at this location. Distant traffic noise (trucks) was observed.
- ABC plant was inaudible at this location. The dominant source was traffic noise from nearby roads.
- Noise from the ABC plant was inaudible, with noise from the APA Compressor Station being the dominant source at this location.

Overall, the measured levels show compliance against the nighttime noise criteria at all locations.

6.1.2 Results comparison—Historical data

A comparison of the noise survey results with the historical data has been presented in Table 11 and Table 12 below. Note that the historical data has been sourced from Vipac’s Report 50B-21-0128-TRP-11983-2.

Table 11 Community noise survey results comparison—Day time

Location	2023 Measured levels dB(A)		2021 Measured levels dB(A)		2019 Measured levels dB(A)		Day time criteria dB(A)
	Leq	L90	Leq	L90	Leq	L90	
	Resident 1 (location #20a)	65	49 ⁽¹⁾	56	52 ⁽¹⁾	48	
Resident 3 (location #27a)	47	44	71	42 ⁽¹⁾	68	48 ⁽¹⁾	60
Resident 4 (location #18)	51	49	53	49 ⁽¹⁾	48	42	62
Resident 5	45	39	46	38	42	38	55
Resident 6	47	38	42	37	41	33	52
Location #11	45	41	41	35	43	39	64
Location #21	53	49 ⁽¹⁾	65	47 ⁽¹⁾	58	49 ⁽¹⁾	60

(1) L₉₀ descriptor considered to be more representative of ABC plant noise emissions, due to dominant extraneous noise contamination.

With reference to the results presented above, the following is noted:

- Measured noise levels at Resident 1, Resident 3, Resident 4, Resident 5 and location #21 are similar to or within +/- 3 dB(A).
- Changes in noise levels at locations where ABC plant noise is inaudible or not the dominant noise source (such as Resident 6), are more likely to due to changes in other noise sources in the surrounding environment, rather than any meaningful difference in ABC plant noise emissions.
- At location #11, slightly higher change (more than 3 dB(A) increment) is observed in comparison to 2021 survey results. However, this is considered acceptable as the levels are similar to 2019 survey results.
- Therefore, the noise from the plant does not show any significant change and complies with the noise criteria.

Table 12 Community noise survey results comparison—Night time

Location	2023 Measured levels dB(A)		2021 Measured levels dB(A)		2019 Measured levels dB(A)		Nighttime criteria dB(A)
	Leq	L90	Leq	L90	Leq	L90	
	Resident 1 (location #20a)	51	50	53	51 ⁽¹⁾	47	
Resident 3 (location #27a)	43	42	39	36 ⁽¹⁾	45	42	52
Resident 4 (location #18)	50	49	49	47 ⁽¹⁾	47	45	54
Resident 5	39	35	42	29	37	31	47
Resident 6	36	29	40	36	38	35	45
Location #11	37	34	42	37	38	27	55

Location	2023 Measured levels dB(A)		2021 Measured levels dB(A)		2019 Measured levels dB(A)		Nighttime criteria dB(A)
	L _{eq}	L ₉₀	L _{eq}	L ₉₀	L _{eq}	L ₉₀	
Location #21	52	51	45	43 ⁽¹⁾	48	44	52

(1) L₉₀ descriptor considered due to dominant extraneous noise contamination.

(2) Characteristic noise penalty considered.

With reference to the results presented above, the following is noted:

- Measured noise levels at Resident 1, Resident 4, Resident 5, Resident 6 and location #11 are similar to or within +/- 3 dB(A) of the noise survey data from 2021 and 2019.
- At Resident 3, slightly higher change (more than 3 dB(A) increment) is observed in comparison to 2021 survey results. However, this is considered acceptable as the levels are similar to 2019 survey results.
- Changes in noise levels at locations where ABC plant noise is inaudible or not the dominant noise source, are more likely to due to changes in other noise sources in the surrounding environment, rather than any meaningful difference in ABC plant noise emissions.
- At location #21, significant change is observed in comparison to 2021 and 2019 survey results. However, this is considered acceptable as the measured levels were observed to be dominated by noise from APA Compressor Station.
- Therefore, the noise from the plant is considered compliant with the noise criteria.

6.2 Plant noise survey

6.2.1 Results

In addition to the community noise survey, noise measurements were conducted for plant/equipment identified as major noise sources within the facility. The noise survey data, compared against the historical data, is presented in Table 13 below.

Note that the historical data has been sourced from Vipac's Report 50B-21-0128-TRP-11983-2.

Table 13 Plant noise survey results comparison

Plant/Equipment	Measurement location	Measured level, L _{eq} dB(A)			Notes/Comments
		2023 Survey	2021 Survey	2019 Survey	
Kiln 3 Blending Silo Fan	1.5 m from the fan (inside)	95	98	90	<ul style="list-style-type: none"> • Internal noise levels were slightly higher than the 2019 survey • Structure borne noise was observed from the fan mounting

Plant/Equipment	Measurement location	Measured level, L_{eq} dB(A)			Notes/Comments
		2023 Survey	2021 Survey	2019 Survey	
	3 m from the exhaust location (outside on walkway)	84	79	76	<ul style="list-style-type: none"> Higher noise levels were noted at the exhaust point. However, the measurements were slightly contaminated with noise from other sources on ground level. We believe the higher noise levels may have been associated with the structure borne noise observed within the building, radiating out from the façade (openings/cutouts present around the exhaust point)
H17 Hydrator Scrubbing Fan	1 m from the fan motor	89	92	86	<ul style="list-style-type: none"> The noise levels were lower than 2021 survey and seemed typical to the fan
	1.5 m from the exhaust outlet	96	90	80	<ul style="list-style-type: none"> Higher noise levels were noted at the exhaust point Excessive noise radiating from the exhaust stack was noticed
Cement Mill 4 Fan	2 m from the fan outlet	76	75	74	<ul style="list-style-type: none"> Slight increase in noise levels was observed at this location, mainly due to extraneous noise influence from continuous truck movements on ground level
Raw Mill Filter Exhaust Fan R15	1 m from the fan casing (inside Building 17), reverberant levels	90	86	86	<ul style="list-style-type: none"> The noise levels were higher than the previous surveys. However the noise levels are acceptable.
D205 Dust Collector Fan – North Weighbridge	1 m from the fan	100	-	-	<ul style="list-style-type: none"> Noise from the fan was unusually high. This was indicative of fault in the fan. Tonal characteristic at 50Hz observed

6.2.2 Discussion

Based on the results presented above, the following is noted:

- Kiln 3 blending Silo Fan—No significant change in casing radiated noise levels was noted during this survey. However, the noise levels from the exhaust point showed an increment of 6-8 dB(A) in comparison to previous two surveys. Also, a characteristic structure borne noise was noted inside and outside (near the exhaust point) the building, which is believed to have originated from the fan mounting location. With the following treatments in place, we believe the noise levels can be mitigated:
 - Ensure all openings on the facade near the exhaust point are properly sealed. An overlapping metal sheet layer can be used to seal the area around the exhaust point.
 - Conduct a maintenance program on the fan casing to fix the mounting (or completely replace the mounts).
 - The fan should be inspected for faults which may be resulting in excessive vibration through the casing.
- Hydrator fan & exhaust—as observed over the years, the noise from the Hydrator fan has been observed to be a major contributor to noise in the community. The noise has been observed to have increased in last few years and warrants a treatment to reduce the noise impact. Possible solutions for this may include:
 - Ensure the hydrator exhaust stack and the attenuator are regularly cleaned (maintenance) to remove any blockage. This may ensure the levels are maintained to lower than 90 dB(A), however, the hydrator may still be a dominant source at the community.
 - Reorient that stack towards northern end of Building/Area 24, exhausting at a lower level, so that the building acts as a barrier to the noise. The stack arrangement, length and attenuator specifications can be designed if required.
 - Further mitigation solutions can be considered based on ABC's requirements.
- Cement Mill 4 Fan—No significant change in noise levels were noted.
- Raw Mill Filter Exhaust R15—Slight change in noise levels were noted. However, since the fan is located inside the building, the change in levels is expected to have no impact to the community.
- D205 Dust Collector Fan North Weighbridge—ABC noted unusually high levels from the fan, which is evident from the survey results (L_{eq} 100 dB(A)). We believe the fan is faulty (possible fan blade damage) and requires a repair or replacement. Based on the levels measured for similar fans (by Vipac, Report 50B-22-0031-TRP-31463-1), the dust collector noise should be $L_{eq} < 80$ dB(A) at 2 m.

7 Noise complaints

As a part of their community engagement, ABC considers all community complaints, in relation to potential noise from the plant, as a priority. Recently noise complaints have been raised from a resident near Smith Street and Hague Crescent. To appropriately address the complaint, Resonate conducted unattended and attended noise survey in the locality.

7.1 Unattended continuous noise survey

7.1.1 Location details

The unattended continuous noise survey was conducted at location indicated in Figure 2, along the north-eastern boundary of the Angaston Football Club. Note that the logger was located along the northern end of the club oval due to higher elevation in comparison to surrounding area and unavailability of a secured location near Hague Crescent.

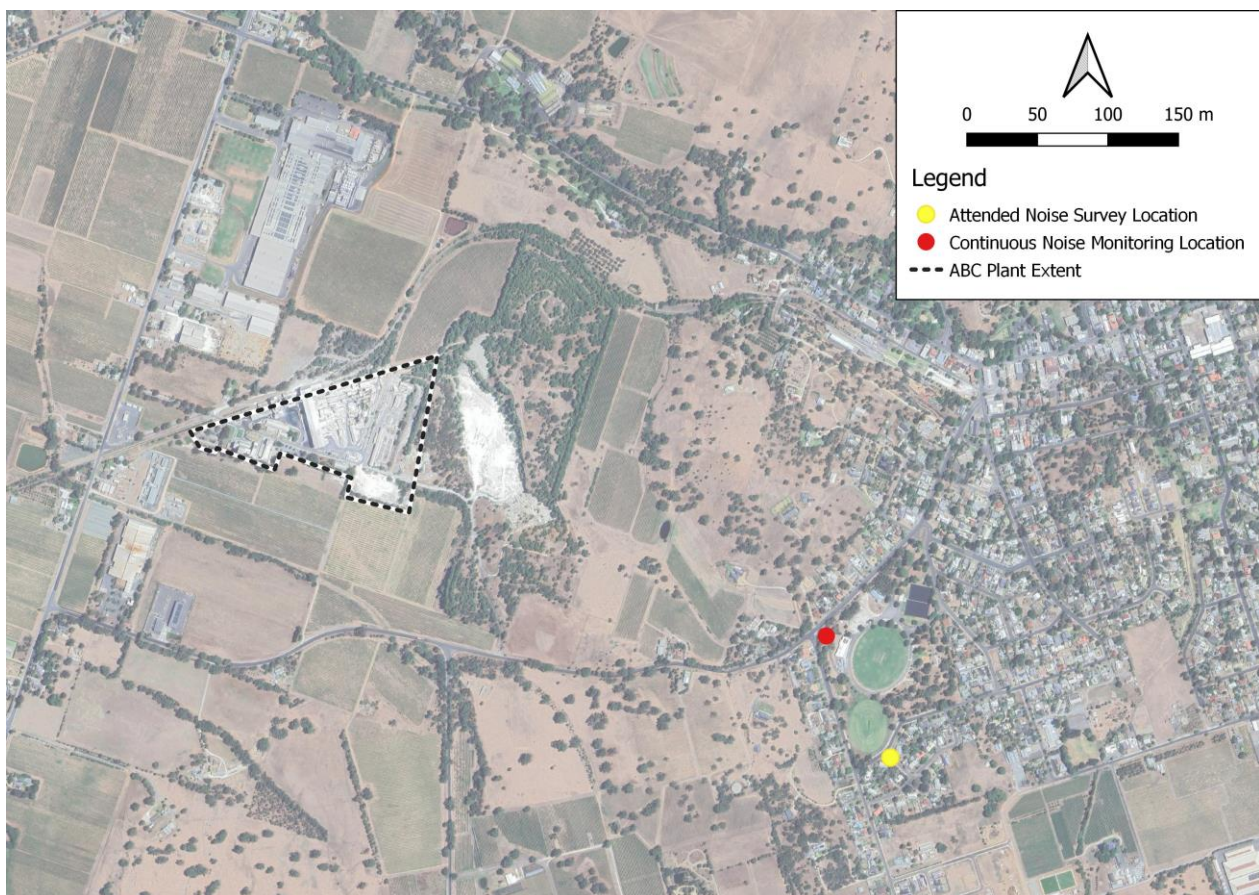


Figure 2 Continuous and attended noise survey location

7.1.2 Instrumentation

The noise measurements were taken with calibrated Rion NL-52 sound level meters, which are Type 1 instruments suitable for field and laboratory use. The sound level meters were calibrated both before and after the measurements using a Type 1 Brüel & Kjær 4231 sound level calibrator, and the calibration was found to have not drifted. Both the sound level meters and calibrator carry current calibration certificates from a NATA accredited laboratory. Copies of the calibration certificates are available on request.

7.1.3 Procedure

The monitoring was conducted for a period of 2 weeks between 25 July 2023 and 8 August 2023. The unit was set to record all noise descriptors (L_{Aeq} , L_{A90} , L_{A10} , L_{Amax}) and continuous audio for the period of monitoring.

7.1.4 Continuous noise survey results

The results relevant to the noise complaint period have been provided and discussed in Section 7.

7.2 Attended noise survey

In addition to above, an attended noise measurement (during nighttime period, 11:50 pm) along Hague Crescent was conducted on 25 July 2023 (location indicated in Figure 2). This location is in close proximity to Resident 6, abutting 59 Gramp Avenue.

The survey was conducted with equipment and procedure highlighted in Section 5.2 and Section 5.3 respectively.

7.3 Results

During the 2 week period, ABC noted the day/time of the complaints and the plant's operational conditions. Table 14 below shows the complaint day/time and the operational conditions, compared against the noise levels measured during the complaint period. The data presented below excludes noise levels for time period where wind speeds exceeded 5 m/s.

Complete results of the noise monitoring are graphically shown in Appendix A—Continuous noise monitoring results.

Table 14 Complaint and plant data compared against measured noise levels

Date <i>nighttime</i>	Equipment Status		Measured Levels (15-minutes), dB(A)				Wind speed/ direction (<i>Nuriootpa station</i>)	Environmental Noise Criteria, dB(A) Nighttime
	Hydrator	Raw Mill	L_{eq}		L_{90}			
			Minimum	Average	Minimum	Average		
25 July 2023	On 10.30pm	On	31	51	28	36	< 5m/s Dir: Mostly ENE, E	45
27 July 2023	Off 8.30pm	On 7:30am - 6:30pm	37	53	34	42	< 5m/s Dir: mostly WNW, NW, W	45
28 July 2023	On 9.30am	On	41	49	36	40	< 5m/s Dir: mostly WNW, W, SW	45
29 July 2023	On	On	43	49	40	43	≤ 5m/s Dir: mostly WNW, NW	45
8 August 2023	On	On 10:30am – 5:30pm	30	49	26	34	< 5m/s Dir: mostly NNE, NE	45

The results of the attended noise survey conducted on 25 July 2023 are presented in Table 15.

Table 15 Noise survey results—Nighttime

Location	Measured noise level dB(A)		Nighttime criteria dB(A)	Notes/Comments
	L _{eq}	L ₉₀		
On Hague Street, abutting 59 Gramp Avenue	34	30	45	Compliant with Noise EPP

7.4 Discussion

Based on the results presented above the following is noted:

- Attended noise survey—No plant noise was observed during the survey, with noise dominated by traffic noise from nearby roads. Intermittent truck noise was also observed, however, it was likely from nearby highways/roads.
- Continuous noise survey (logging)—L_{eq} levels are expected to be contaminated by traffic noise and other extraneous sources, whereas noise from the plant is continuous noise. Therefore, the L₉₀ noise descriptor is considered appropriate to assess noise from ABC plant. The results of the monitoring indicate the following:
 - The L₉₀ levels are within the nighttime criteria and show no exceedance
 - Resonate reviewed the audio files for the complaint nights and noticed no apparent noise from ABC plant. The noise was dominated by traffic noise on most nights.

Overall, the noise survey indicates no evidence of noise from the plant being intrusive or significant enough to cause annoyance to the community area near Hague Crescent and Gramp Avenue. The previous noise surveys (conducted by Vipac) also provide no indication or evidence of excessive noise from the plant. Therefore, we believe the noise experienced by the complainant may be associated with a different localised source in the vicinity of the property.

Additionally, Adelaide Brighton Cement has been consistently working on improving the noise conditions by implementing regular maintenance works, 2 yearly noise surveys and frequent mitigation works on faulty equipment to reduce/minimise noise emissions from the plant. As such, while complying with the noise criteria at all receiver locations, all practicable and reasonable measures have been adopted by ABC to further address the noise emissions from Angaston plant.

8 Conclusion

An environmental noise survey was conducted at Adelaide Brighton Cement's Angaston plant as a part of their ongoing noise surveys every 2 years. The plant operates under the Environment Protection Authority (EPA) license number 35, most recently renewed in November 2019.

The survey included the following components:

- Attended noise measurements of critical plant equipment
- Attended noise survey in the community area (locations primarily identified by ABC and agreed upon by EPA). The survey was conducted during both day time (7 am - 10 pm) and nighttime (10 pm - 7 am) periods
- Unattended and attended noise survey at one location within the community to address noise complaints.

The survey results have demonstrated the following:

- the noise emissions from the plant comply with the relevant environmental noise criteria
- the measured levels are similar to the levels historically experienced in the locality
- the receivers along Stockwell Road are dominated by noise emissions from APA facility
- the noise survey indicates no evidence of noise from the plant being intrusive or significant enough to cause annoyance to the community area near Hague Crescent and Gramp Avenue
- plant equipment such as Hydrator Scrubbing Fan and D205 Dust Collector Fan require maintenance works to ensure the noise emissions are kept to the minimum.

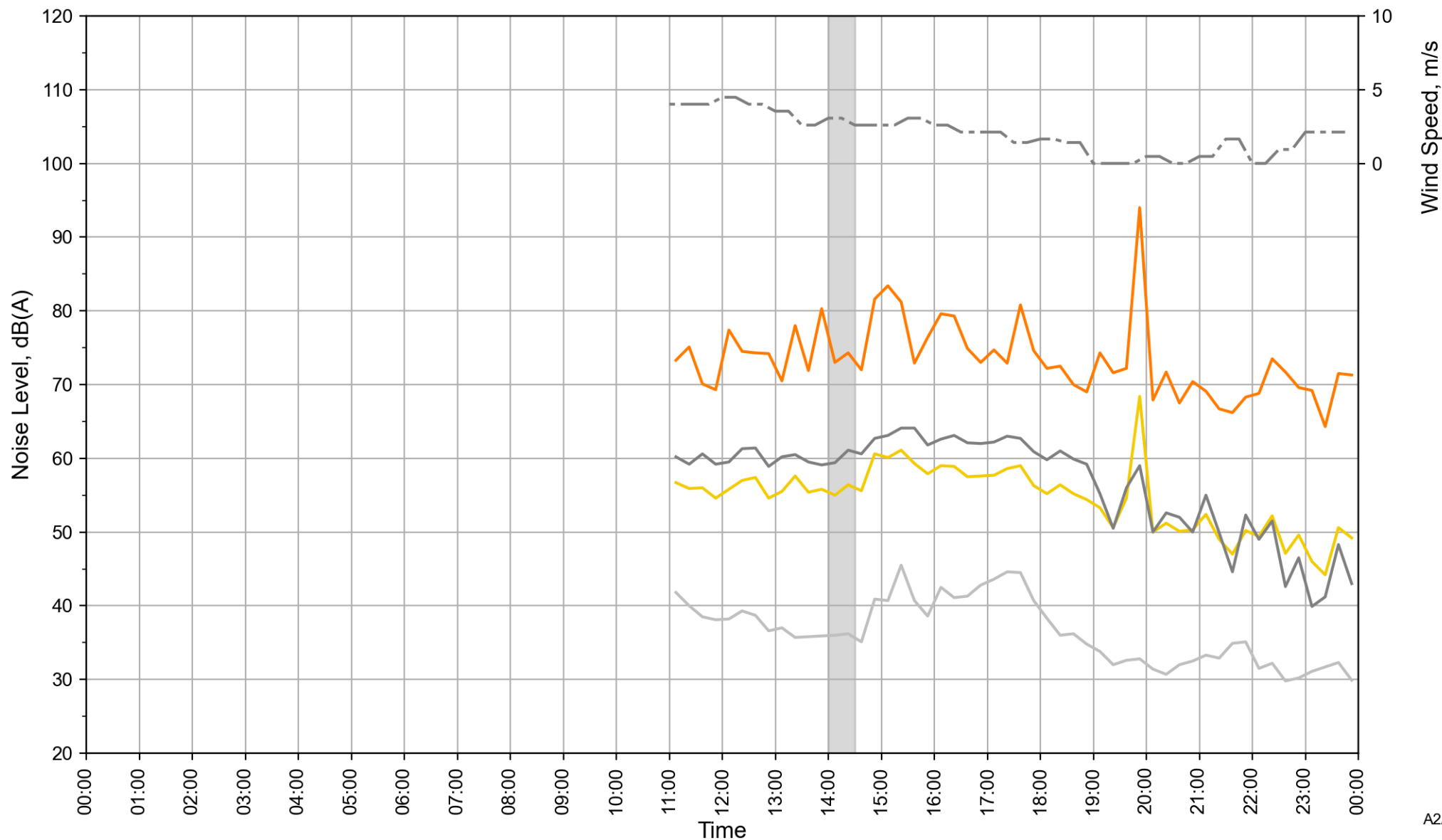
Overall, Adelaide Brighton Cements operations at their Angaston Plant meet the requirements of the Noise Policy by ensuring compliance with environmental noise criteria and by their continuous commitment to further reduce noise emissions from the plant by implementing all practical and reasonable measures.

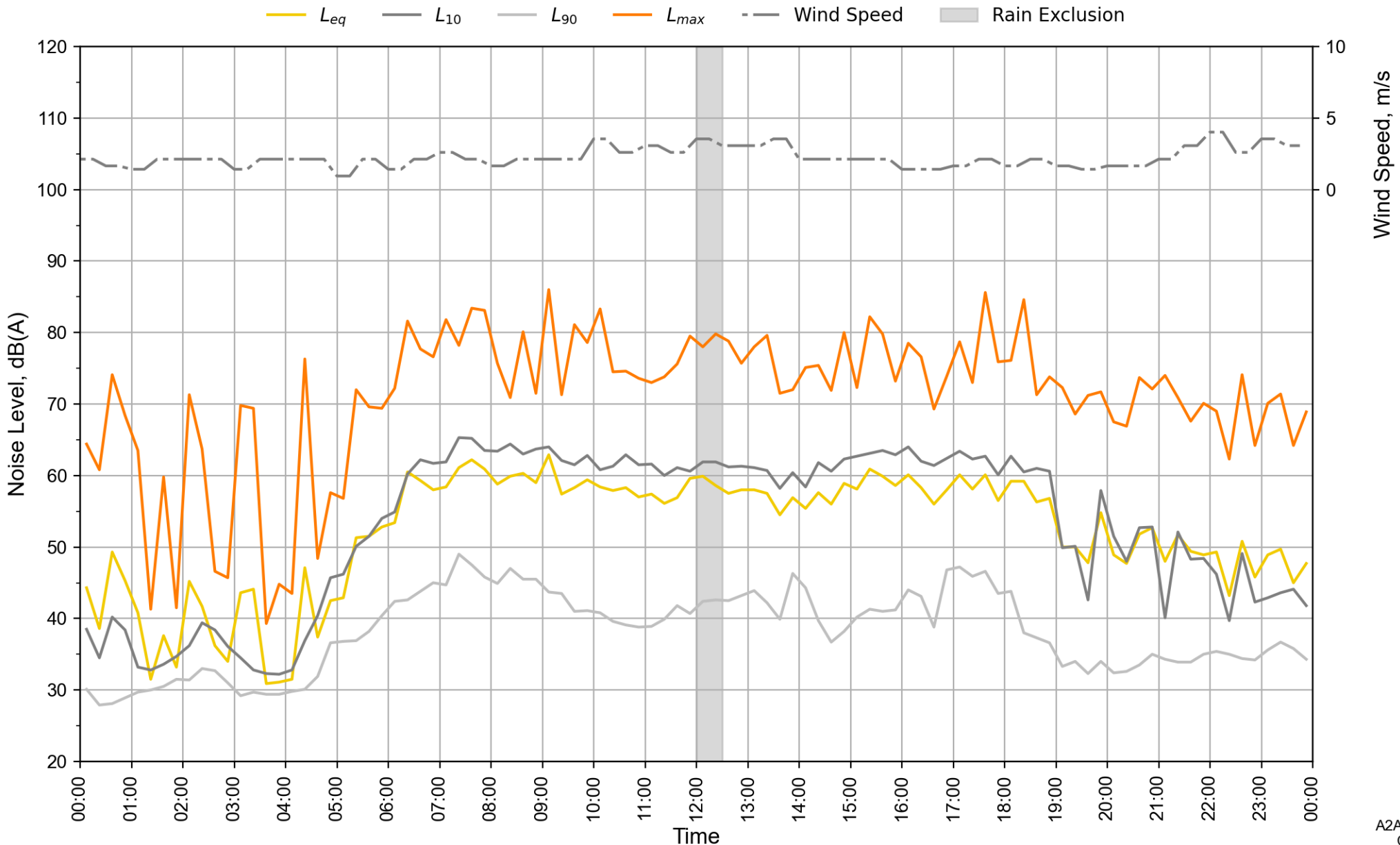


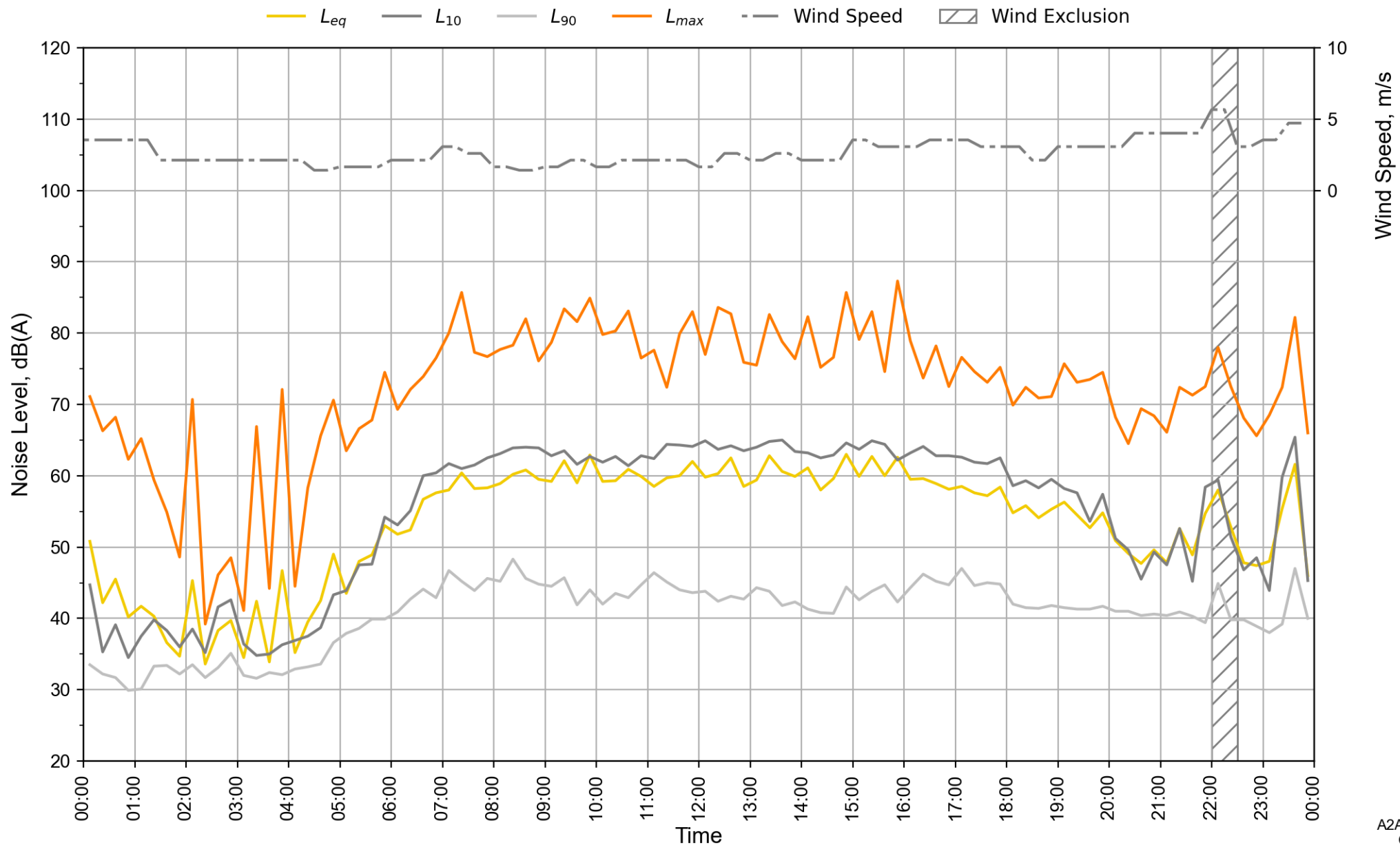
Appendix A—Continuous noise monitoring results

Adelaide Brighton Cement - Angaston - Tuesday, 25 July 2023

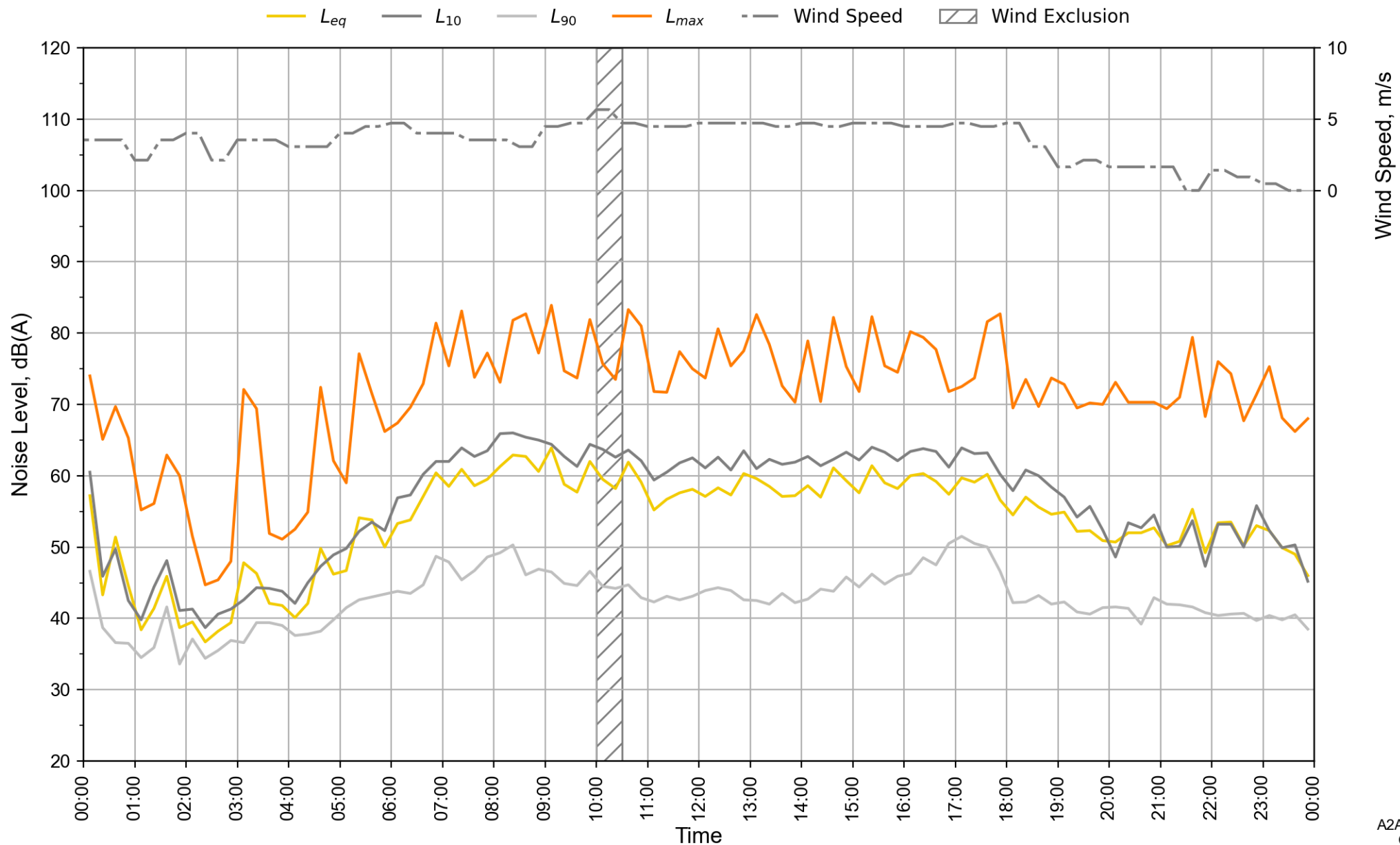
— L_{eq}
 — L_{10}
 — L_{90}
 — L_{max}
 - - - Wind Speed
 Rain Exclusion

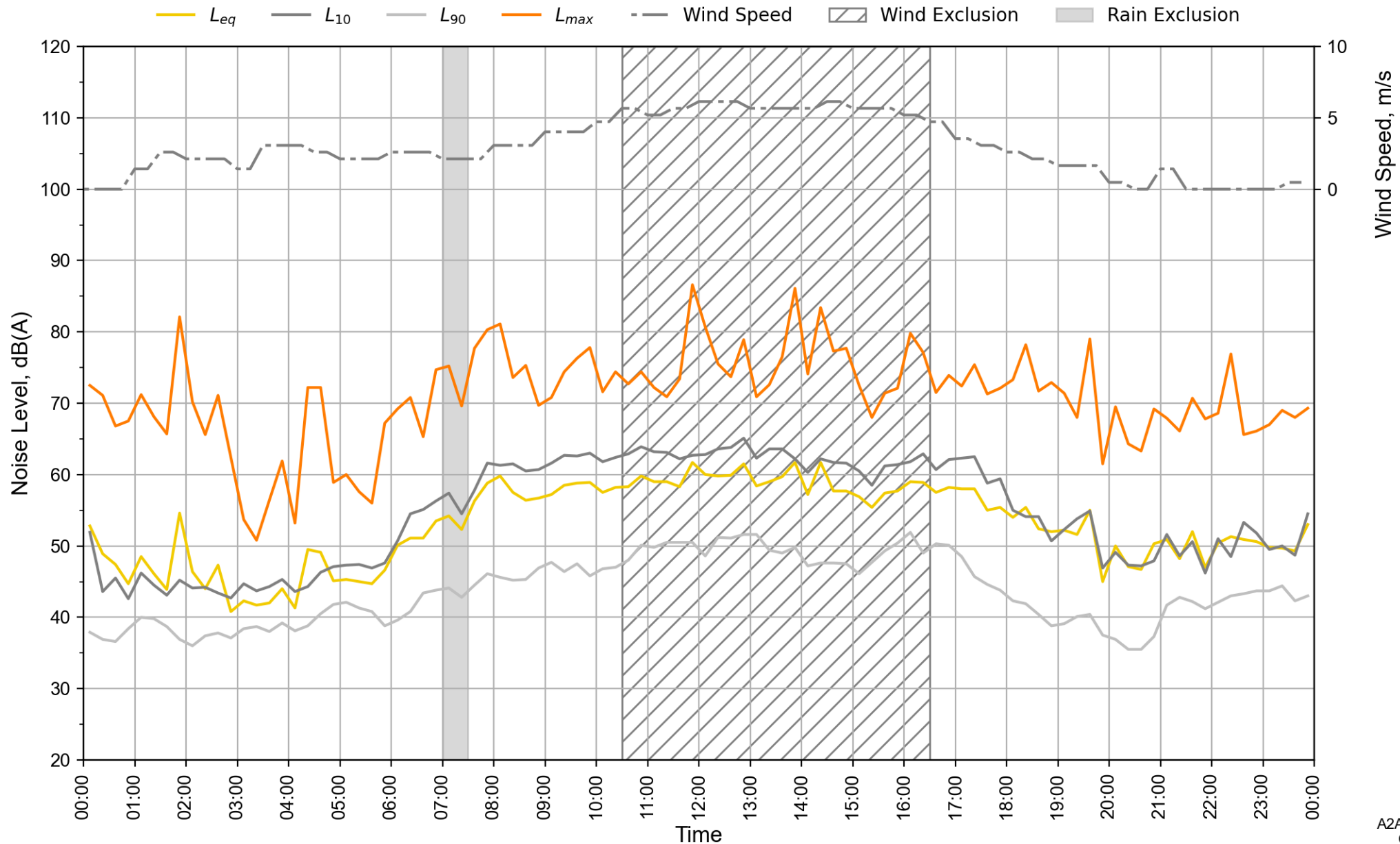




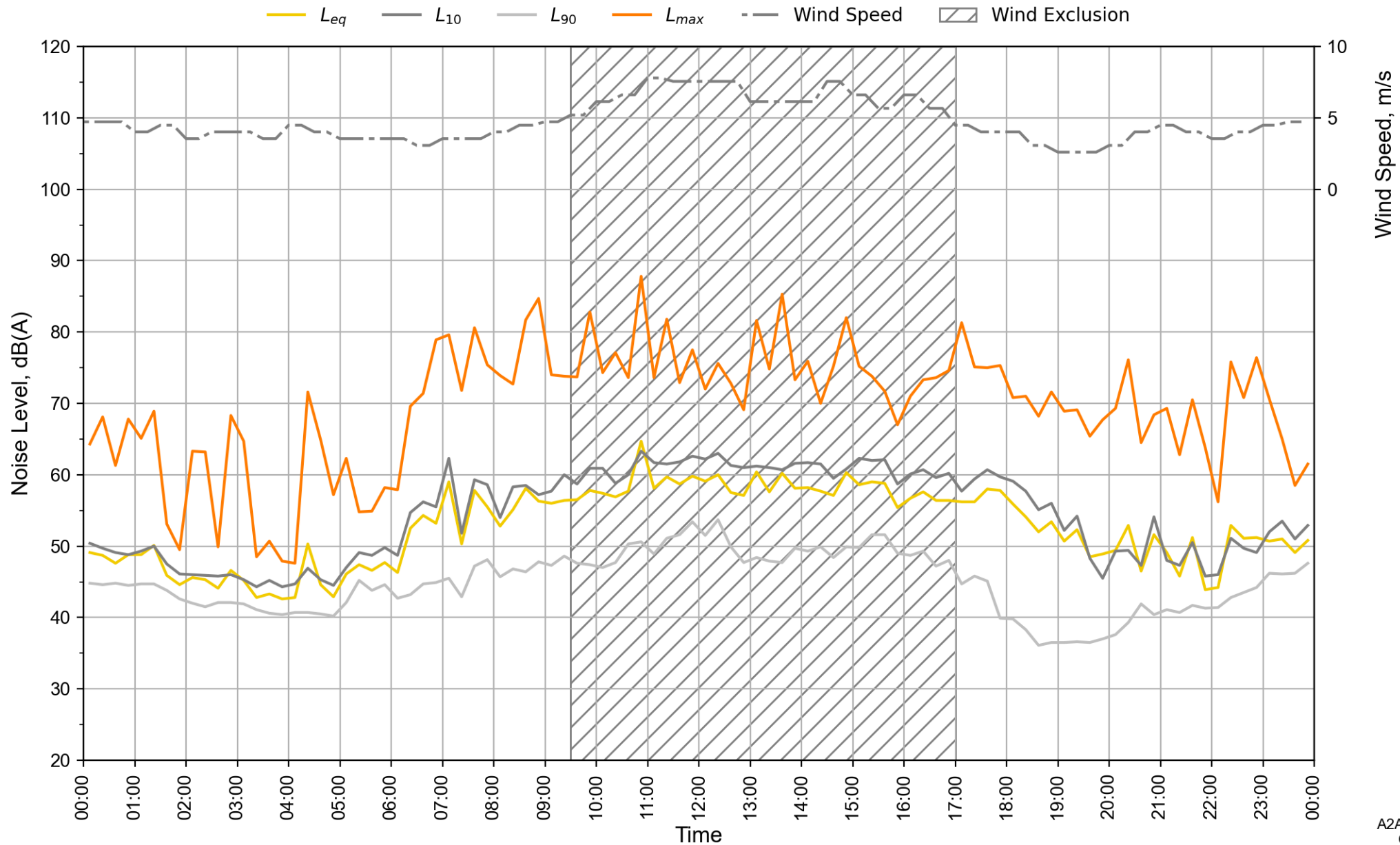


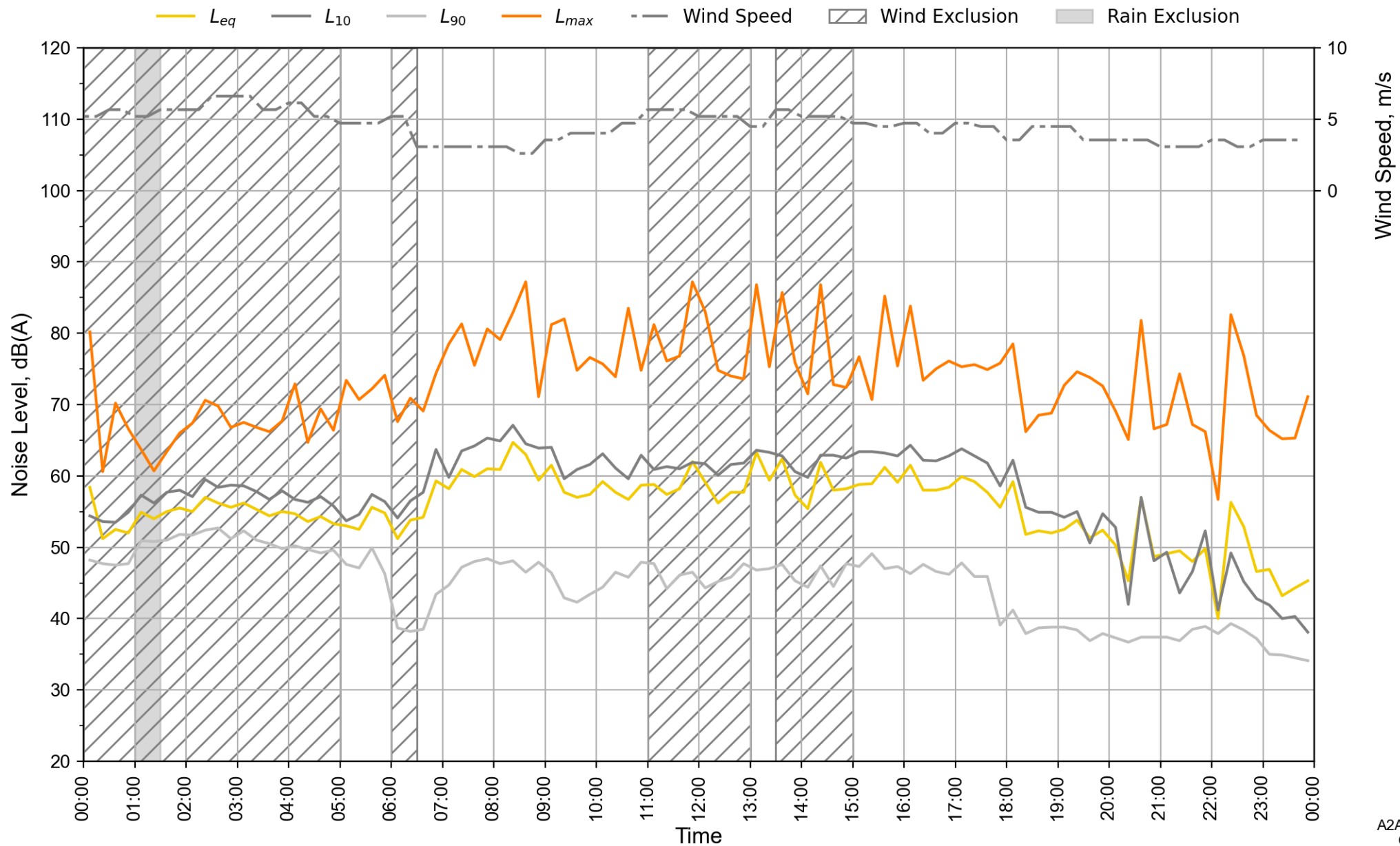
Adelaide Brighton Cement - Angaston - Friday, 28 July 2023

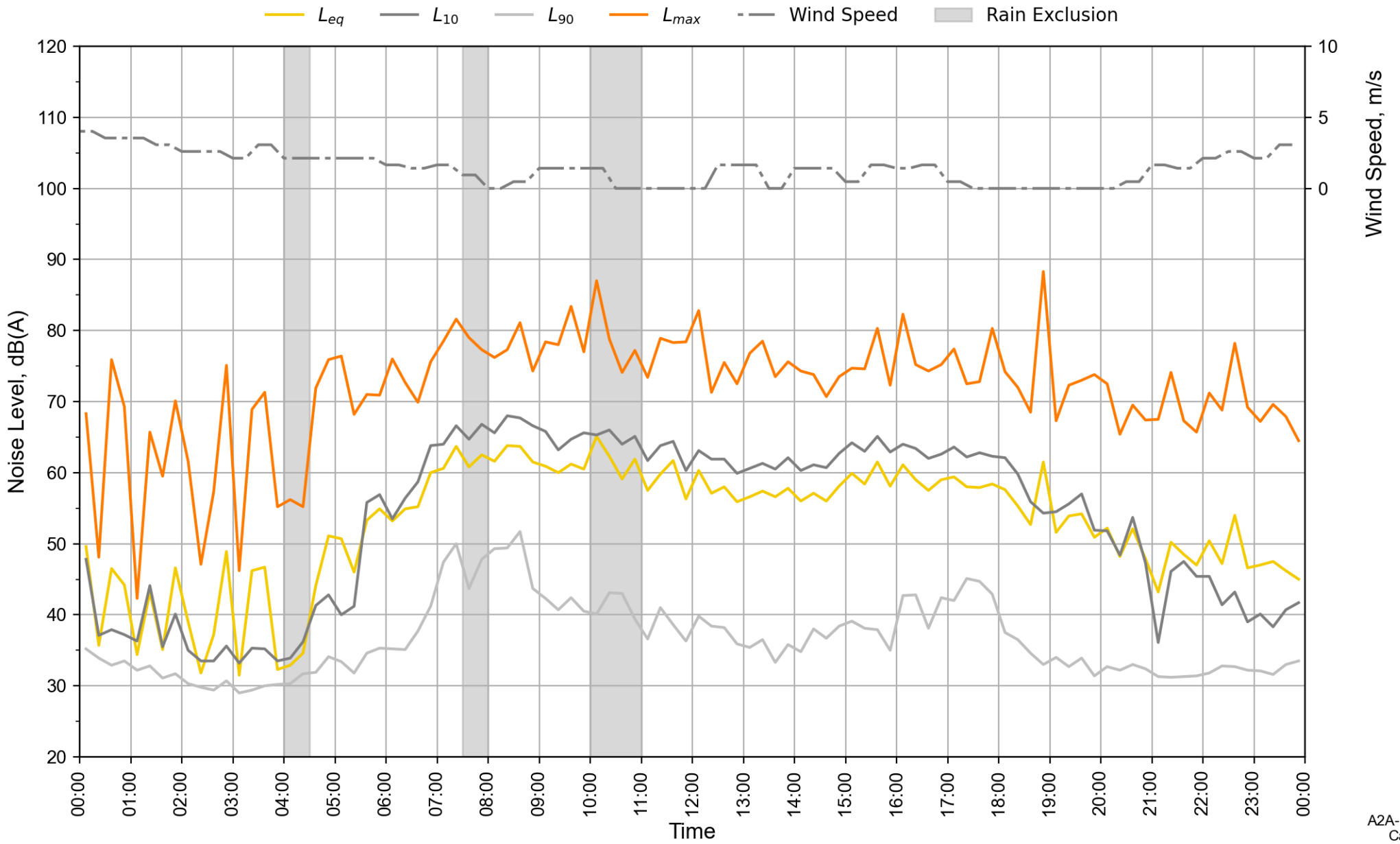




Adelaide Brighton Cement - Angaston - Sunday, 30 July 2023

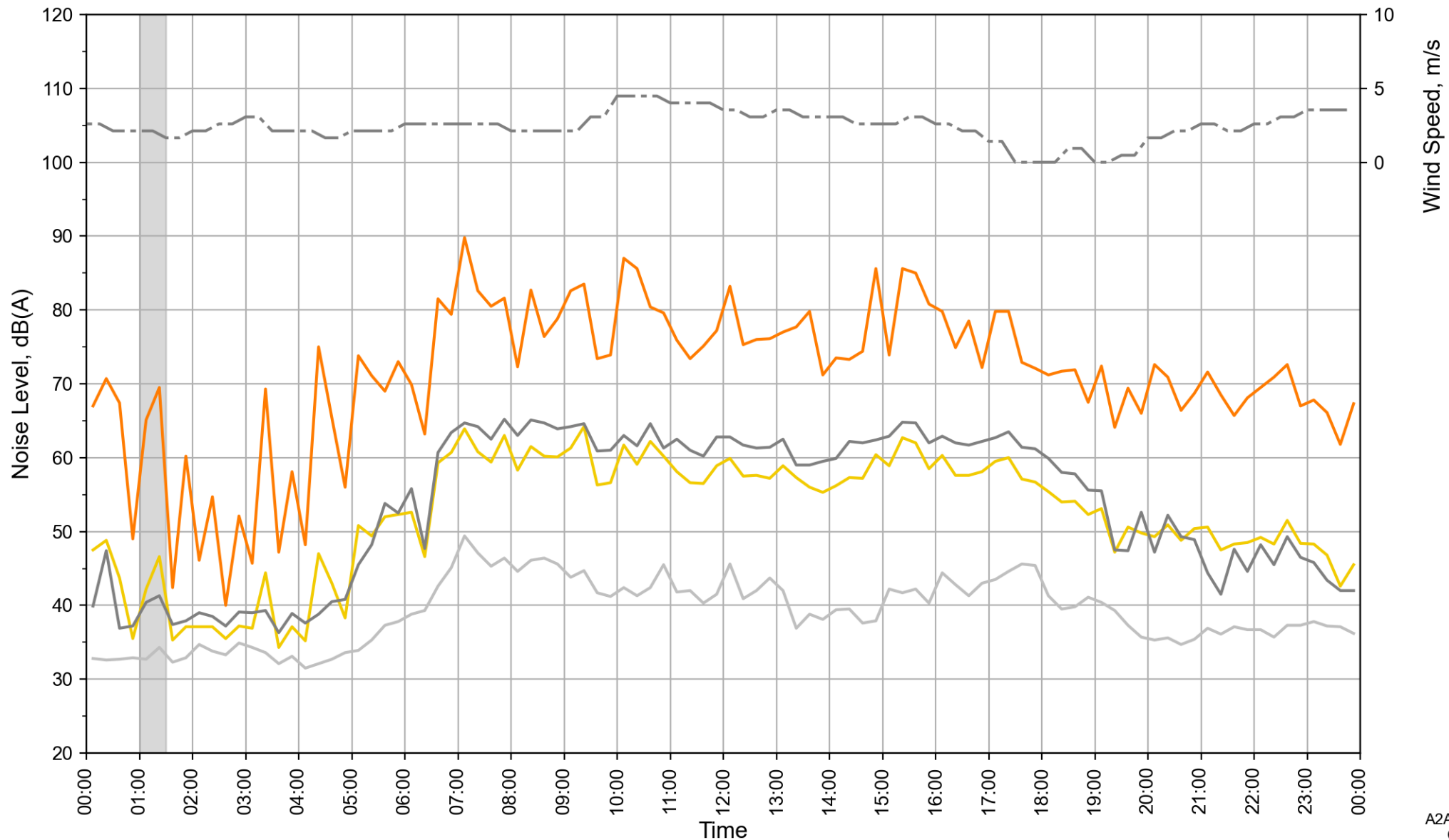




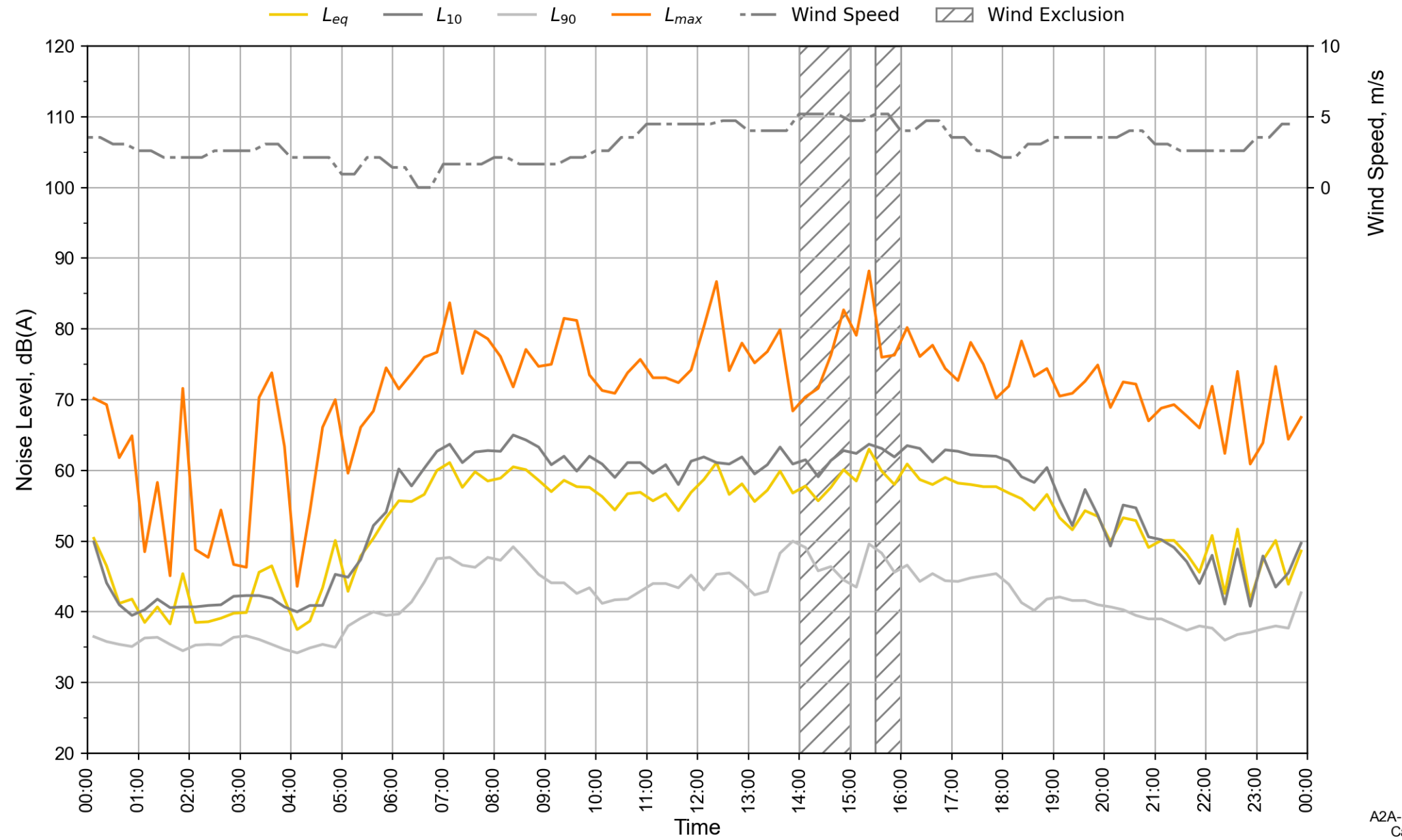


Adelaide Brighton Cement - Angaston - Wednesday, 2 August 2023

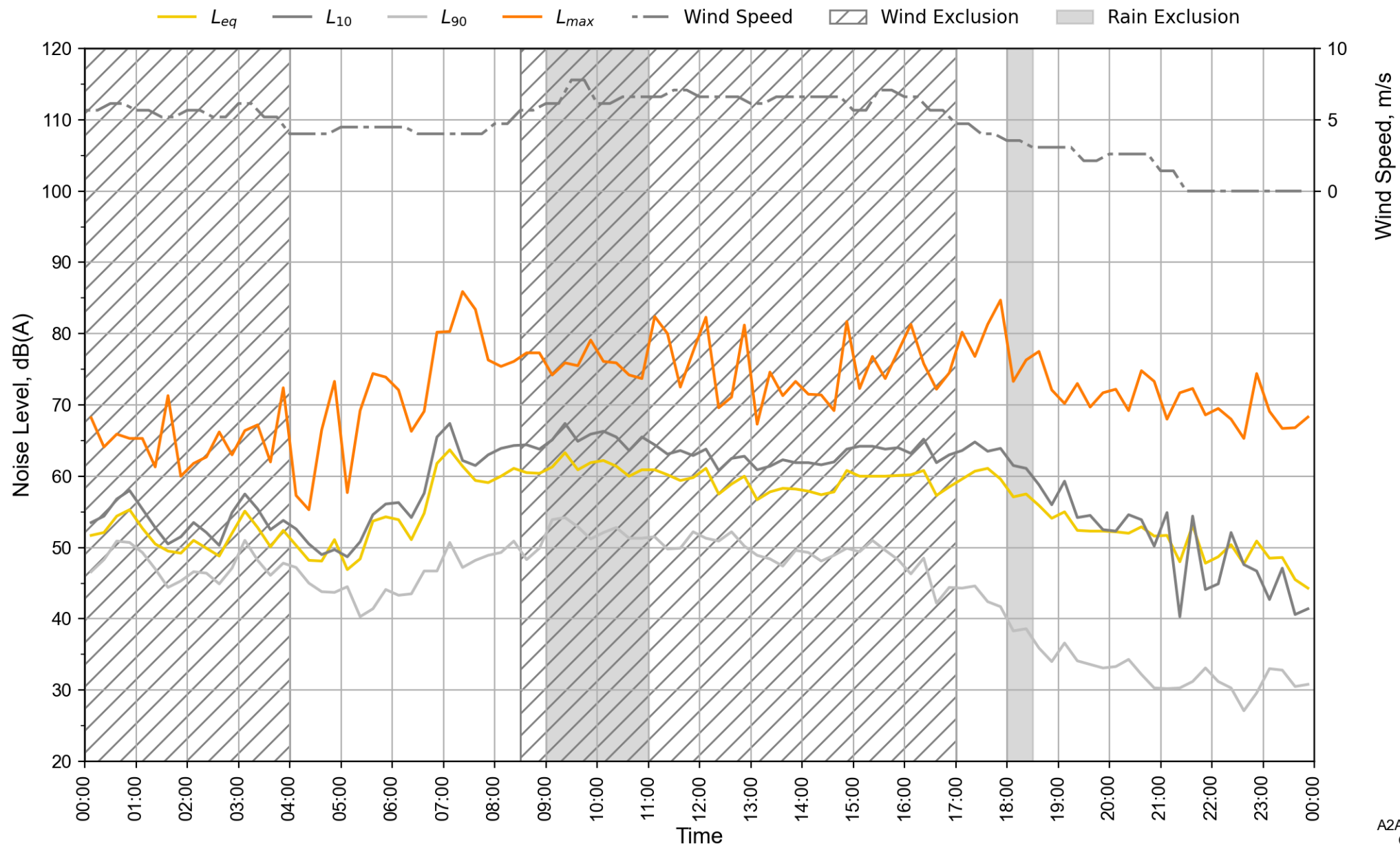
— L_{eq}
 — L_{10}
 — L_{90}
 — L_{max}
 - - Wind Speed
 Rain Exclusion



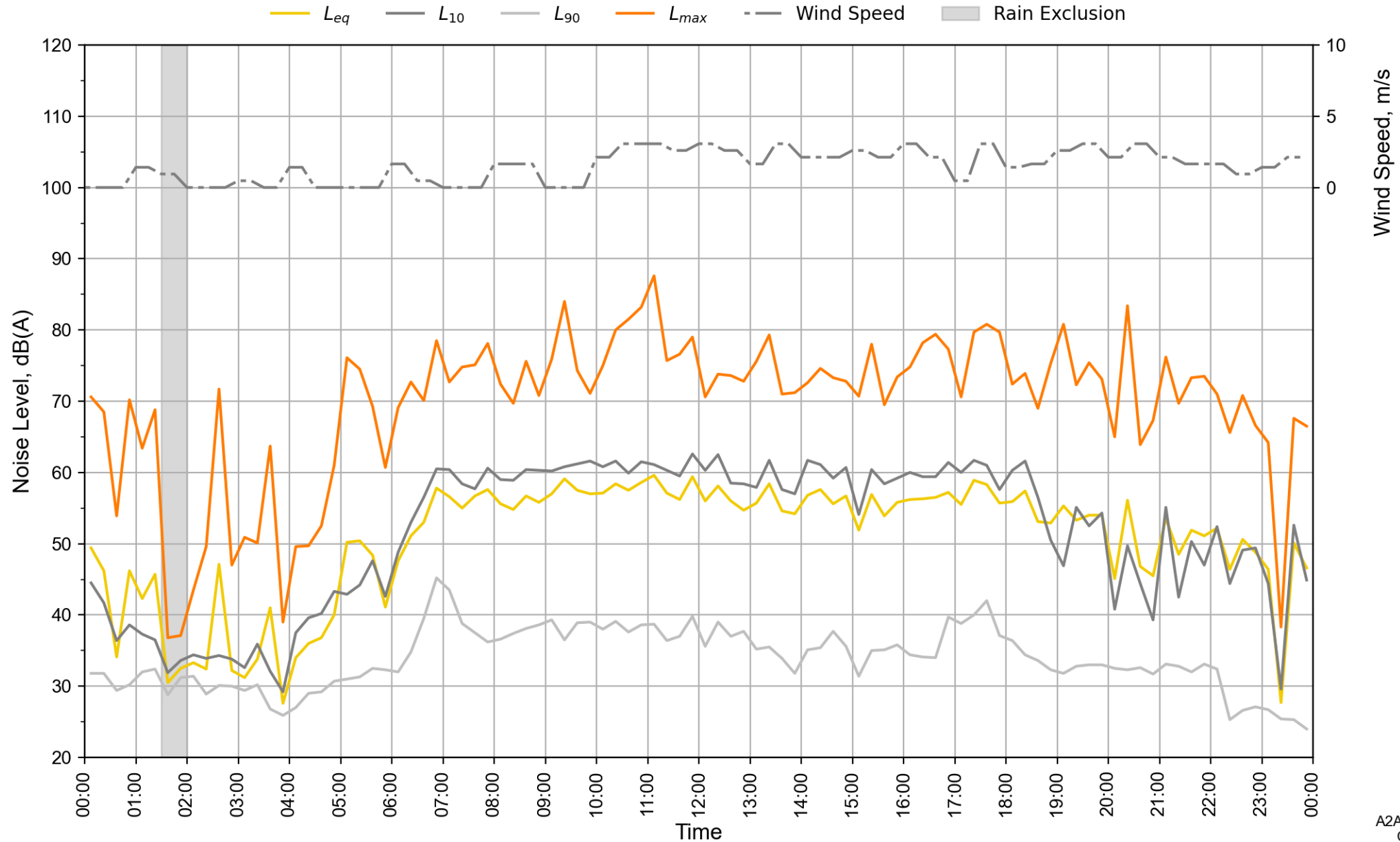
Adelaide Brighton Cement - Angaston - Thursday, 3 August 2023

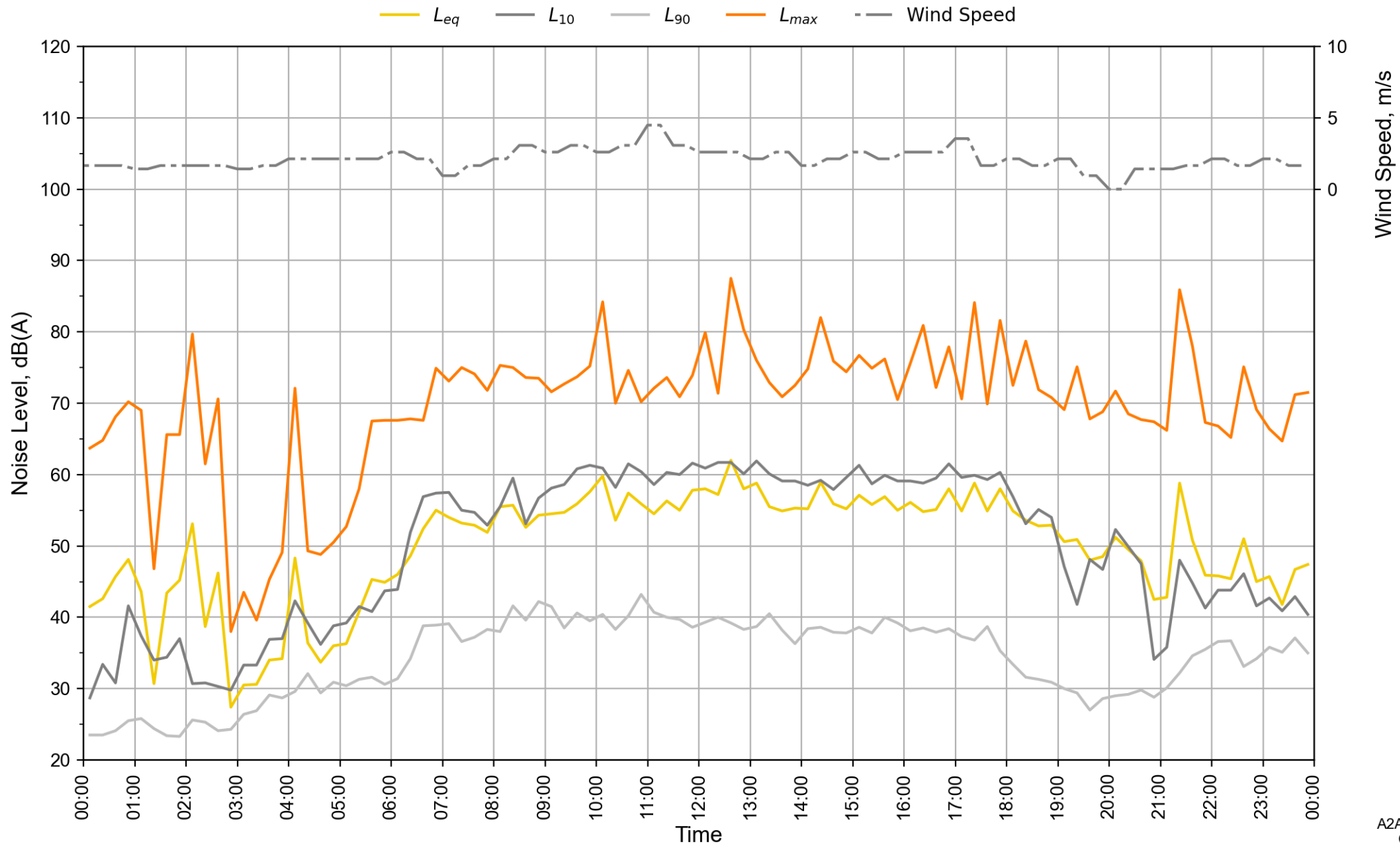


Adelaide Brighton Cement - Angaston - Friday, 4 August 2023

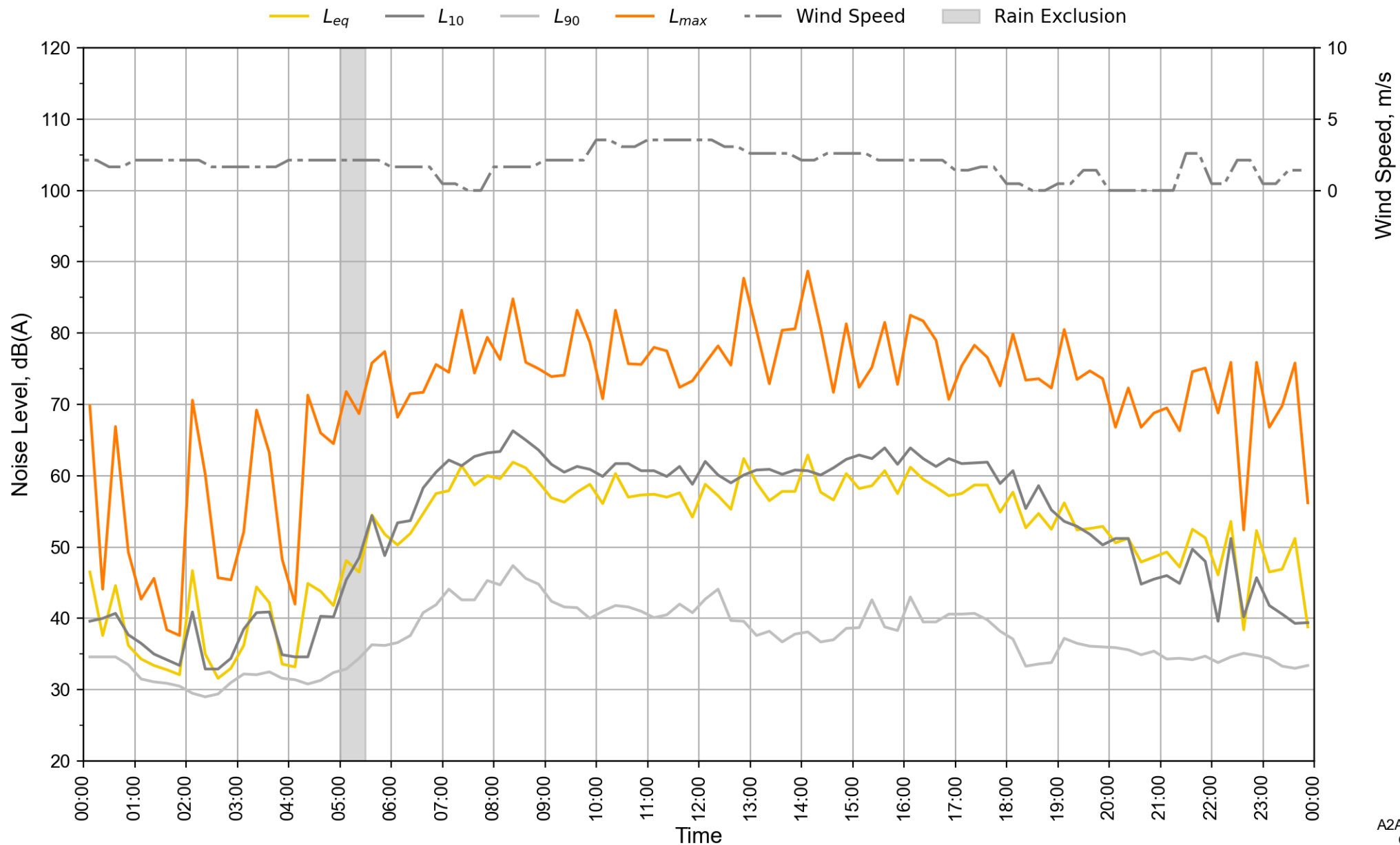


Adelaide Brighton Cement - Angaston - Saturday, 5 August 2023

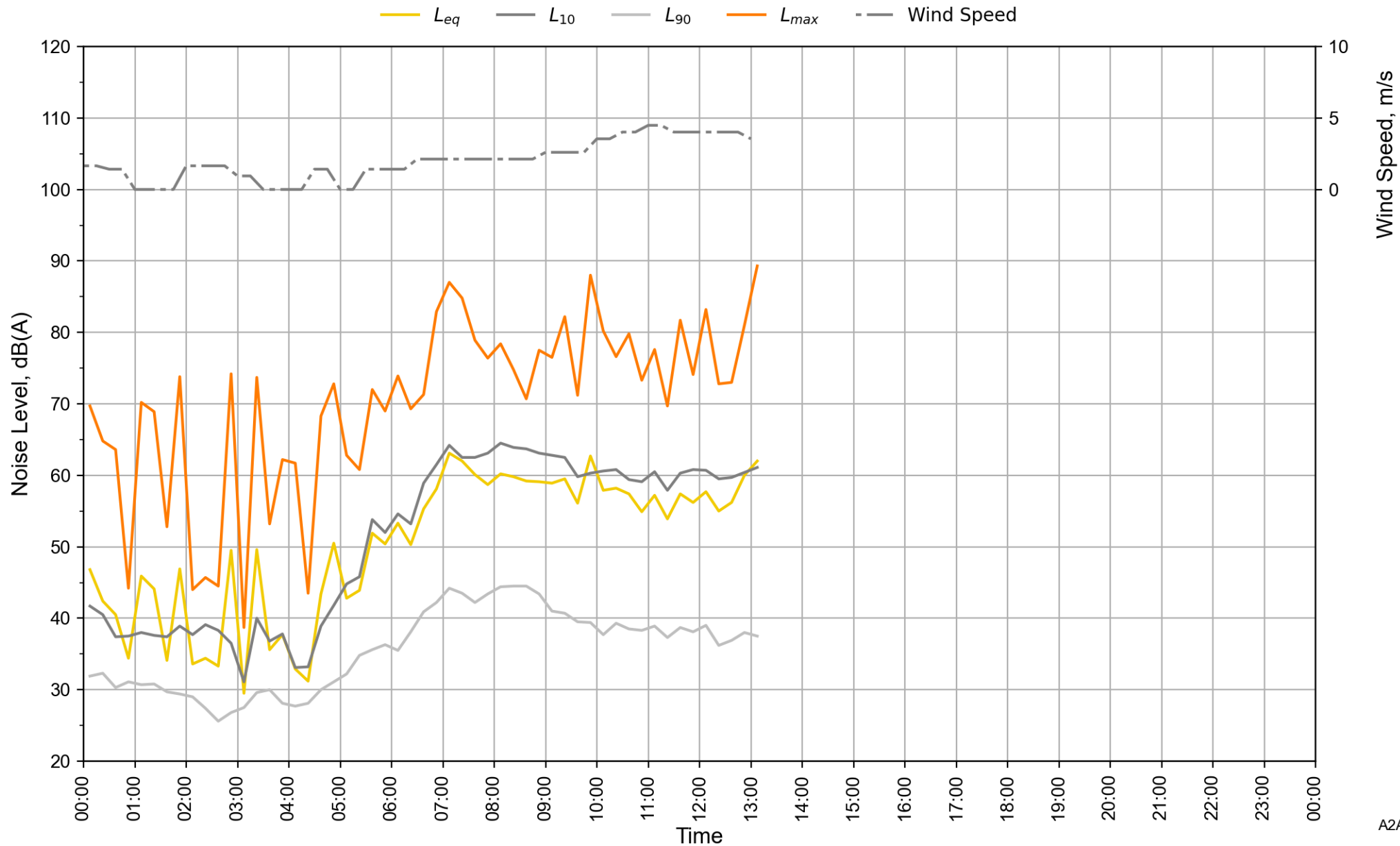




Adelaide Brighton Cement - Angaston - Monday, 7 August 2023



Adelaide Brighton Cement - Angaston - Tuesday, 8 August 2023





Appendix B—Attended noise survey data & notes

Table 16 Day time noise survey results and notes

Location	Day/Time	L _{eq} dB(A)	L _{max} dB(A)	L ₉₀ dB(A)	L ₁₀ dB(A)	Survey Notes
Resident 1 (location #20a)	25/07/2023 14:40	65	84	49	65	Noise from the ABC plant was barely audible, with traffic noise and noise from the APA Compressor Station being the dominant source at this location. Due to extraneous noise influence, we consider L ₉₀ levels to be an appropriate descriptor of noise influence from the ABC plant.
Resident 3 (location #27a)	25/07/2023 13:05	47	66	44	49	Noise from the ABC plant was slightly audible, with traffic noise and noise from Capral plant (characteristic fan noise) being the dominant source.
Resident 4 (location #18)	25/07/2023 12:43	51	71	49	53	Continuous audible noise from ABC plant (dominant source), with some traffic noise influence.
Resident 5	25/07/2023 13:53	45	73	39	44	ABC plant was inaudible at this location. The dominant source was traffic noise from nearby roads.
Resident 6	25/07/2023 13:27	47	67	38	50	ABC plant was inaudible at this location. The measured noise was dominated by traffic noise from nearby roads and intermittent dog barking at a nearby property.
Location #11	25/07/2023 11:40	45	61	41	47	ABC plant was inaudible at this location. The dominant source was traffic noise from nearby roads.
Location #21	25/07/2023 14:20	53	70	49	57	Noise from the ABC plant was barely audible, with traffic noise and noise from the APA Compressor Station being the dominant source at this location.

Table 17 Night time noise survey results and notes

Location	Day/Time	L _{eq} dB(A)	L _{max} dB(A)	L ₉₀ dB(A)	L ₁₀ dB(A)	Survey Notes
Resident 1 (location #20a)	26/07/2023 0:17	51	54	50	51	Noise from the ABC plant was audible, with noise from the APA Compressor Station being the dominant source at this location.
Resident 3 (location #27a)	25/07/2023 23:14	43	51	42	45	Noise from the ABC plant was audible and dominant at this location. No discernible noise from Capral plant was noted.
Resident 4 (location #18)	25/07/2023 22:17	50	56	49	51	Continuous audible noise from ABC plant, however, noise from the APA Compressor Station was observed to be more dominant.
Resident 5	25/07/2023 22:35	39	49	35	41	ABC plant was inaudible at this location. The dominant source was traffic noise (truck movements) from nearby roads.
Resident 6	25/07/2023 23:33	36	63	29	37	ABC plant was inaudible at this location. Distant traffic noise (trucks) was observed.
Location #11	25/07/2023 21:57	37	54	34	40	ABC plant was inaudible at this location. The dominant source was traffic noise from nearby roads.
Location #21	26/07/2023 0:00	52	56	51	52	Noise from the ABC plant was inaudible, with noise from the APA Compressor Station being the dominant source at this location.