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NEW LEARNING CENTRE ST MARY'S COLLEGE, TOOWOOMBA NOISE IMPACT ASSESSMENT

Prepared for:

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24 August 2026

Job Number: 26049

Document ID: 26049-01-R01A-Noise Impact Assessment

EXECUTIVE SUMMARY

It is proposed to construct a new Learning Centre at St Mary's College, situated at 129 West Street, Toowoomba. The location of the new Learning Centre is on the corner of West and Hill Streets. The real property description is Lot 3 on RP905944.

The local authority is the Toowoomba Regional Council. In a Pre-Lodgement Meeting held on the 25th of March 2026, Council stated that any future application will be required to demonstrate that the development does not generate noise that causes environmental harm or nuisance to noise-sensitive uses as per PO₈ of the Environmental Standards Code.

SoundBASE Consulting Engineers have been commissioned by Aspect Architects & Project Managers to prepare a Noise Impact Assessment for the new Learning Centre and provide acoustic engineering design advice to limit noise emissions.

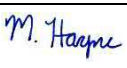
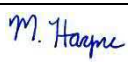
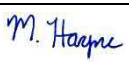
Based on the analysis presented within this report it has determined that:

- Noise breaking out of the Ground Floor Auditorium will not be an issue. As per the advice provided by St Mary's College, the Auditorium will not be used for performance. The Auditorium has minimal glazing facing nearby residences and the sound reduction performance of that glazing to control intruding road traffic noise will be more than adequate to mitigate noise from within the Auditorium.
- The mechanical plant and equipment located in the Ground Floor plant enclosure along the western side of the building and the Level 3 plant room located along the southern side of the building will need to be ameliorated to ensure that the following component limits are achieved at nearby residences:
 - Daytime: 38dBA L_{A90}
 - Evening: 34dBA L_{A90}
 - Night-time: 26dBA L_{A90}
- The acoustic barriers along the northern and southern sides of the Ground Level plant enclosure should be designed to achieve a minimum superficial density of minimum 12.5kg/m², a maximum aggregated leakage of 1.0% and have a sound absorptive finish on the side facing the mechanical plant
- During detailed design a qualified acoustic engineer will need to check the mechanical services installations and advise on any additional noise amelioration measures necessary to achieve compliance.
- Noise emissions associated with people in outdoor areas have the potential to exceed the derived noise emission limits. To minimise potential people noise emissions and achieve compliance with PO₈ of the Environmental Standards Code contained in the *Toowoomba Regional Planning Scheme*, noise amelioration measures must be incorporated into the design consisting of:

- Solid balustrades and/or planter boxes and raised garden beds as shown on the current architectural plans to minimise line-of-sight between the source and receiver.
- Closing off openings along the eastern, southern and western facades of Levels 1 and 2 using fixed or openable glazing systems that achieve minimum R_w 32.
- Installation of sound absorptive treatments to the soffits of the slabs and roofs above the outdoor areas. Those treatments will achieve an average Noise Reduction Coefficient of 0.7 over the surface areas of structures located above where people will congregate.
- Use of the new Learning Centre should be limited to St Mary's College activities only, with usage hours limited to between 7:00am and 10:00pm.

DOCUMENT CONTROL PAGE

Project Details	Client Details
Job number: 26049 New Learning Centre St Mary's College, Toowoomba Noise Impact Assessment	Kerry Martin Aspect Architects & Project Managers Level 1 469 Ruthven Street Toowoomba QLD 4350

Revision	Date	Document Quality Verification			
A	24/08/2026	Document ID	26049-01-R01A-Noise Impact Assessment		
		Comment	Original issue to Aspect Architects & Project Managers.		
			Author	Reviewed	Authorised
		Signature			
		Name	Michael Hayne	Michael Hayne	Michael Hayne
		Document ID			
		Comment			
			Author	Reviewed	Authorised
		Signature			
		Name			
		Document ID			
		Comment			
			Author	Reviewed	Authorised
		Signature			
		Name			

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The advice contained herein relates to acoustics only and no liability is accepted for design and construction issues falling outside of the area of acoustic engineering such as, but not limited to, structural engineering, fire engineering, thermal performance, buildability and waterproofing.

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1. INTRODUCTION

It is proposed to construct a new Learning Centre at St Mary's College, situated at 129 West Street, Toowoomba. The location of the new Learning Centre is on the corner of West and Hill Streets as indicated in Figure 1. The real property description is Lot 3 on RP905944.

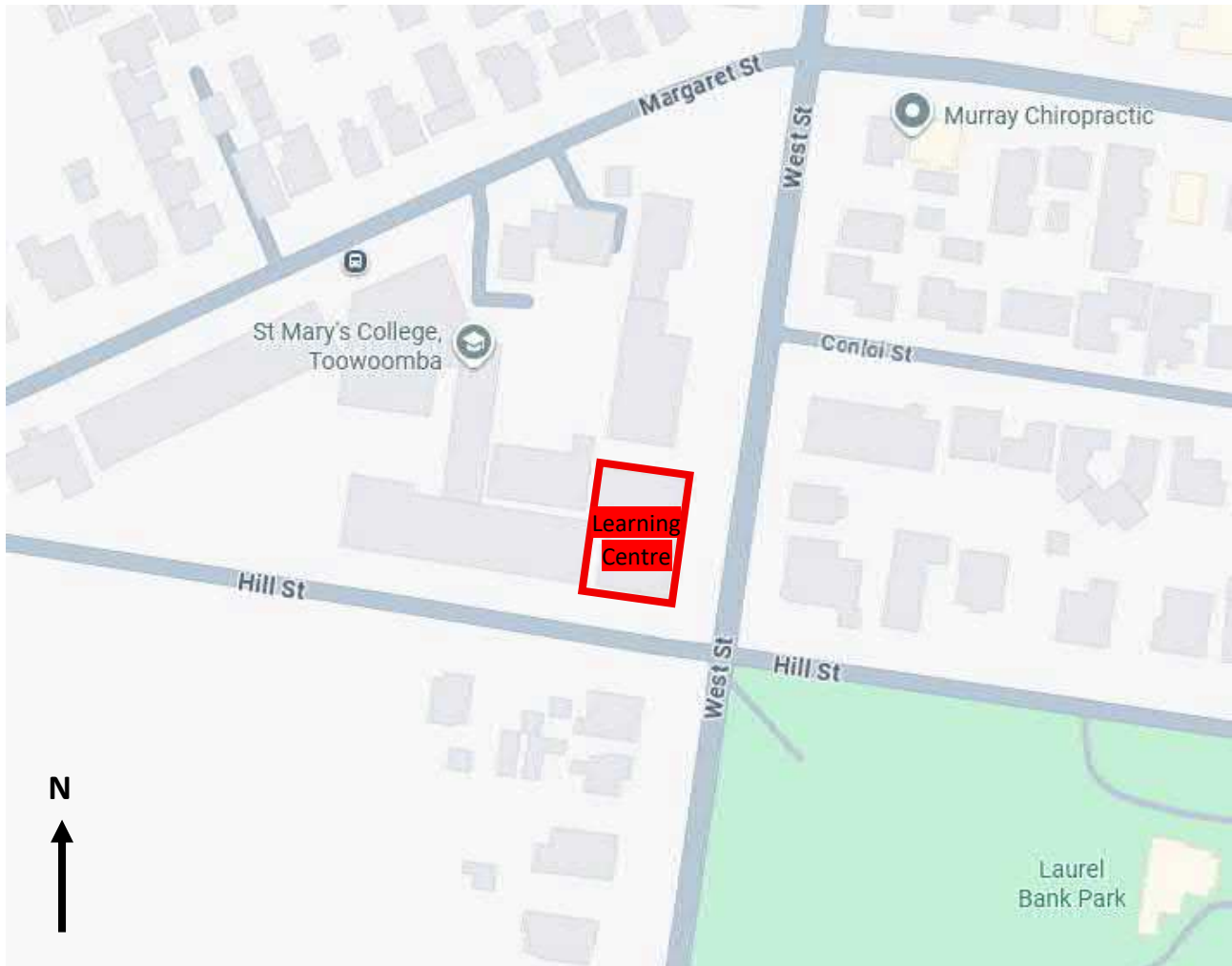


Figure 1: Location of the new Learning Centre (source: Google Maps)

The local authority is the Toowoomba Regional Council (TRC). In a Pre-Lodgement Meeting held on the 25th of March 2026, Council stated that any future application will be required to demonstrate that the development does not generate noise that causes environmental harm or nuisance to noise-sensitive uses as per PO₈ of the Environmental Standards Code.

SoundBASE Consulting Engineers have been commissioned by Aspect Architects & Project Managers to prepare a Noise Impact Assessment for the new Learning Centre and provide acoustic engineering design advice to limit noise emissions as per TRC requirements.

2. SITE AND SURROUNDING AREA

An aerial photograph of the site and surrounding area is presented in Figure 2. The site is currently occupied by the T.P. O'Brien Library, which will be demolished to make way for the new Learning Centre.



Figure 2: Site and surrounding area (source: QLD Globe)

St Mary's College consist of two sections as indicated in Figure 2, with Hill Street dividing the two sections. West Street adjoins the eastern boundary of the site. To the east and south of the site on the opposite side of West and Hill Streets respectively are residential uses with the exception of RSM Australia on the corner of Hill and West Streets. To the southeast is Laurel Bank Park.

The zoning of the site and surrounding area as defined in the *Toowoomba Regional Planning Scheme* is presented in Figure 3. St Mary's College is located in a Community Facilities zone, while the nearby residential and commercial uses are located within a Low-Medium Density Residential zone.



Figure 3: Zoning of site and surrounding area (source: Toowoomba Regional Planning Scheme)

3. PROPOSED DEVELOPMENT

3.1. Layout

A site plan of the proposed new Learning Centre is presented in Figure 4. Architectural plans comprising the site plan, location plan, demolition plan, floorplans and elevations are presented in Appendix A.

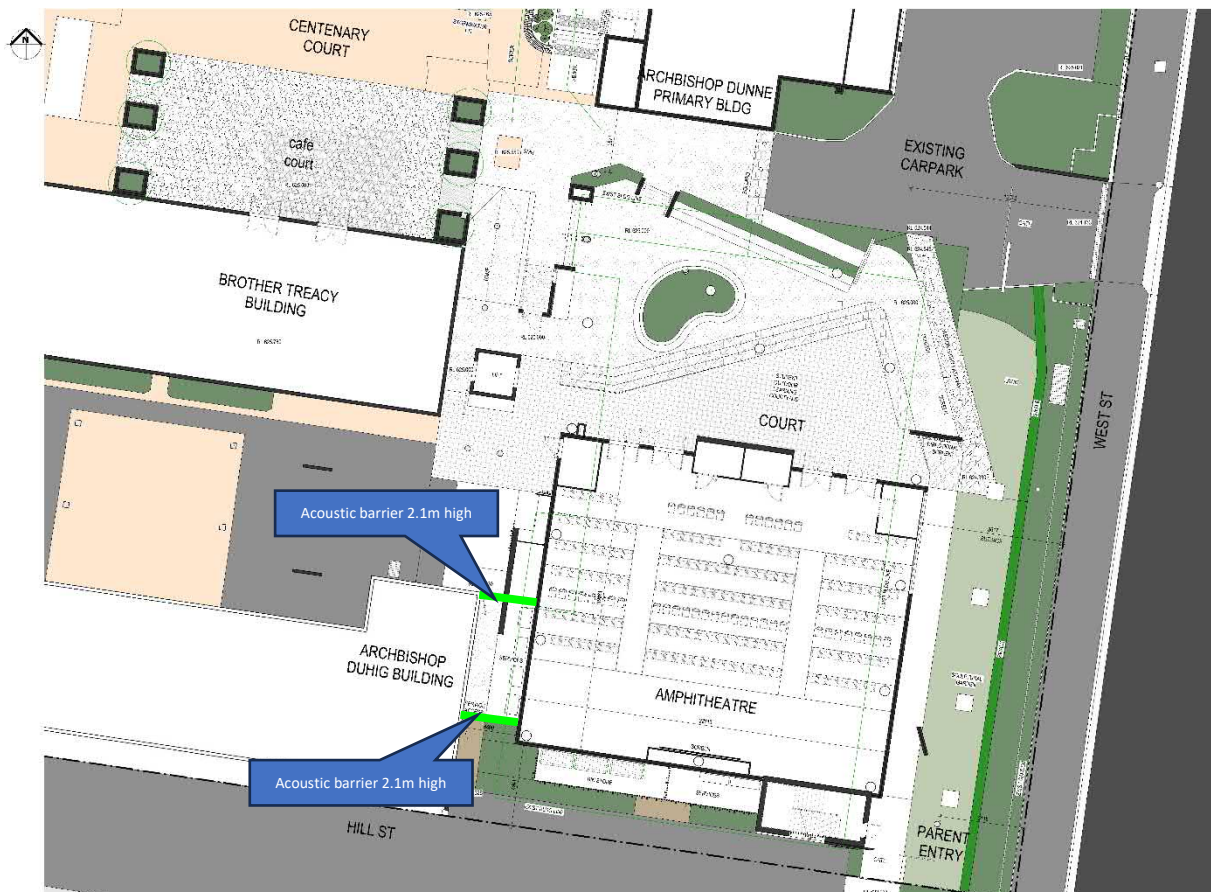


Figure 4: Site plan and acoustic barrier locations

The new Learning Centre consists of a four storey building containing:

- Ground Floor: Amphitheatre (246 seats), Welcome Courtyard and a Bin and Services Area.
- Level 1: GLA 1, GLA 2, GLA 3, GLA 4 and Courtyard.
- Level 2: Library, Courtyard and Amenities.
- Level 3: GLA 5 and GLA 6, Covered Area, Roof Terrace and Mechanical Services plantroom.

The entire building will be air-conditioned, with the air-conditioning condensers located at Ground Level along the western sides of the building and on Level 3 in the Mechanical Services Plantroom on the southern side of the building. To minimise noise emissions from the Ground level plant enclosure, 2.1m high acoustic barriers are proposed along the northern and southern ends of the

enclosure between the new Learning Centre and the existing Archbishop Duhig Building as indicated in Figure 4.

3.2. Use of the Building

Advice has been obtained from St Mary's College regarding how the new Learning Centre will be used:

- The building will be used for school purposes only, within school hours with limited after-hours use (i.e.: use will be limited to between 7:00am and 10:00pm).
- The Ground Level Amphitheatre will be used for:
 - General teaching (mini lecture theatre).
 - Exams.
 - House/sports team assemblies and meetings.
 - Parent/teacher nights.
 - Staff meetings/workshops, occasional after-hours use (once per term to 9:00pm).
 - External area will be used by students during lunch breaks.
- Level 1 GLAs:
 - Standard classrooms, likely to be a mixture of primary and secondary students (28 students per classroom)
 - External area will be used by students during lunch breaks and external learning .
- Level 2 Library:
 - School library for primary and secondary students (50 students).
 - External area will be used by students during lunch breaks and external learning.
- Level 3 GLA's and external space
 - Standard classrooms (28 students per classroom).
 - External learning space.
 - Staff and Committee meetings after hours (once per week to 6:30pm – 20 staff).
 - Potential school functions (once per term to 9:00pm – 100 people).

4. NOISE SOURCES REQUIRING ASSESSMENT

Based on the architectural plans and advice provided by St Mary's College, the noise emission sources that need to be assessed are:

- Mechanical plant and equipment located in the Ground Floor plant enclosure along the western side of the building and the Level 3 plant room located along the southern side of the building. That mechanical plant will only operate during the daytime and evening, with the possible exception of a small domestic sized condenser associated with the Comms Room on the Ground Floor.
- Noise associated with people using the outdoor areas on the Ground Floor, Level 1, Level 2 and Level 3 during the daytime and evening. Based upon the number of people each GLA, the Library and Auditorium can accommodate, the numbers of people using each outdoor space during the daytime and evening have been calculated as presented in Table 1. There will be no night-time usage of the building.

Table 1: Usage of the outdoor areas

Period	Location	Number of People
Daytime	Welcome Courtyard	150
	Level 1	120
	Level 2	50
	Level 3	60
Evening	Welcome Courtyard	150
	Level 3 – staff meetings	20
	Level 3 - function	100

Noise breaking out of the Ground Floor Auditorium will not be an issue. As per the advice provided by St Mary's College, the Auditorium will not be used for performances (the College uses the Edmund Rice Cultural Centre for performances). The Auditorium has minimal glazing facing nearby residences and the sound reduction performance of that glazing to control intruding road traffic noise (at least 10.38mm laminate achieving R_w 35) will be more than adequate to mitigate noise from within the Auditorium.

The noise emissions need to be assessed to the residential uses located to the east and west of the site. Even though RSM Australia on the corner of Hill and West Streets is a commercial use, it is possible that it could become a residential use again in the future. As such, it has been assessed as a potential residential use.

5. EXISTING AMBIENT NOISE LEVELS

To provide an indication of the typical ambient noise levels in the area, noise logging was conducted between Tuesday the 14th and Tuesday the 21st of July 2026. The logger was located on school grounds in the garden along West Street as indicated in Figure 5. The microphone was positioned in free-field conditions at a height of 1.35m above the ground and 5.3m from the nearest curb of West Street.



Figure 5: Noise logging location (source: QLD Globe)

The test instrumentation consisted of:

- Logger: Norsonic Nor139 Environmental Noise Meter (serial number: 1392812)
- Calibrator: Norsonic Nor1256 Sound Calibrator (serial number: 125626123)

All instrumentation have current NATA calibrations. The logger was field calibrated before and after measurement, with no drift observed between the calibrations.

The results from the logging are presented in Table 2 and Appendix B. During the logging period local weather stations were used to monitor the local conditions, with the weather data from the nearest weather station presented in Appendix C. There was one very short period of rain during the logging period on the 17th that was analysed and found not to have affected the measured noise levels.

The results presented in Table 2 and Appendix B include values for the average¹ L_{Amax} ², L_{A01} ³, L_{A10} ⁴, L_{Aeq} ⁵ and L_{A90} ⁶ parameters for each of the day, evening and night periods. During the site visits the ambient noise levels were observed to be primarily influenced by vehicles driving along West Street.

Table 2: Noise logging results

Parameter	Time of Day	Measured Level (dBA)		
		Minimum	Maximum	Average
L_{Amax}	Daytime (7:00am to 6:00pm)	80.3	83.2	81.6
	Evening (6:00pm to 10:00pm)	78.7	83.6	80.2
	Night-time (10:00pm to 7:00am)	75.2	77.6	76.1
L_{A01}	Daytime (7:00am to 6:00pm)	74.6	75.5	75.1
	Evening (6:00pm to 10:00pm)	72.7	74.5	73.6
	Night-time (10:00pm to 7:00am)	69.0	70.3	69.5
L_{A10}	Daytime (7:00am to 6:00pm)	69.3	71.5	70.8
	Evening (6:00pm to 10:00pm)	65.8	68.5	67.6
	Night-time (10:00pm to 7:00am)	56.9	58.6	57.6
L_{Aeq}	Daytime (7:00am to 6:00pm)	66.6	69.3	68.0
	Evening (6:00pm to 10:00pm)	62.2	69.1	64.7
	Night-time (10:00pm to 7:00am)	57.9	63.0	60.2
L_{A90}	Daytime (7:00am to 6:00pm)	47.4	53.1	50.4
	Evening (6:00pm to 10:00pm)	42.2	46.3	45.4
	Night-time (10:00pm to 7:00am)	39.5	41.5	40.3

From the logging results, the rating background levels (RBL), determined as the median of the daily 10th percentile of the L_{A90} noise levels, are:

- Daytime (7:00am to 6:00pm): 48dBA
- Evening (6:00pm to 10:00pm): 44dBA
- Night-time (10:00pm to 7:00am): 36dBA

¹ Averages are presented as the arithmetic average of the measured parameters over consecutive 15-minute intervals throughout each period of the day, evening and night, apart from L_{Aeq} data which is calculated as a logarithmic average.

² L_{Amax} is the maximum A-weighted sound pressure level occurring during the sample period

³ L_{A01} is the A-weighted sound pressure level exceeded for 1% of the time

⁴ L_{A10} is the A-weighted sound pressure level exceeded for 10% of the time

⁵ L_{Aeq} is the equivalent or energy-averaged A-weighted sound pressure level

⁶ L_{A90} is the A-weighted sound pressure level exceeded for 90% of the time

6. TRC REQUIREMENTS

As per the Pre-Lodgement Meeting Minutes, Performance Outcome PO₈ and Acceptable Outcomes AO_{8.1} and AO_{8.2} as contained within the Environmental Standards Code of the *Toowoomba Regional Planning Scheme* are presented in Table 3.

Table 3: Assessment benchmarks for assessable development – noise

Performance Outcome	Acceptable Outcome
PO₈ The generation of noise from the premises does not cause Environmental Harm or Nuisance to adjoining properties or other noise sensitive uses. (a) Development: (i) Is located in an appropriate zone; (ii) Proposes best practice design and construction materials (in relation to noise attenuation); and (iii) Proposes operational practices that will minimise noise nuisance for adjoining sensitive land uses.	AO_{8.1} The development will achieve the following noise levels (when measured at the nearest sensitive receiver): (a) Background (L₉₀) + 5dBA for variable noise between the hours of 7:00am to 10:00pm (measured at the façade of the sensitive land use); (b) Background (L₉₀) + 3dBA for variable noise between the hours of 10:00pm and 7:00am (measured within bedrooms assuming open windows); (c) Background (L₉₀) for continuous noise sources (measured at the façade of the sensitive land use between 7:00am and 10:00pm and within bedrooms assuming opening windows from 10:00pm to 7:00am); and (d) Maximum limit L_{Amax} 45dBA inside dwellings; and The development will achieve the Acoustic Quality Objectives listed within the <i>Environmental Protection (Noise) Policy 2008</i>. HOWEVER AO_{8.2} Where a development is unable to meet noise levels specified in AO_{8.1} an acoustic assessment has been undertaken by a suitably qualified and skilled person which demonstrates that the development will not result in environmental nuisance at any existing or likely future residential premises (within a 10 year planning horizon).

It is noted that based on the building location and proposed use, other performance outcomes and acceptable outcomes contained in Council's Environmental Standards Code either are not applicable⁷ or will otherwise be satisfied (e.g.: AO_{13.2}) by meeting emission limits derived in accordance with AO_{8.1}.

⁷ West Street is classified by TRC as a sub-arterial road and does not need intruding road traffic noise to be formally assessed, while the development will not cause vibration impacts.

6.1. Assessment Benchmarks Limits

6.1.1. Variable Noise

Using the RBLs presented in Section 5, the noise emission limits for variable noise have been derived as presented in Table 4. For design purposes the component limits have been derived from the measured limits. The limits for variable noise will apply to noise from people using the outdoor areas on the Ground Floor, Level 1, Level 2 and Level 3 during the daytime and evening and use of the Auditorium.

Table 4: Derived noise emission limits for variable noise

Period	RBL (dBA)	Criteria	Derived Emission Limit, $L_{Aeq, T}$ (dBA)	
			Measured	Component
Daytime (7:00am to 6:00pm)	48	BG + 5dBA (at façade)	53	51
Evening (6:00pm to 10:00pm)	44	BG + 5dBA (at façade)	49	47
Night (10:00pm to 7:00am)	36	BG + 3dBA (within bedrooms)	39	36

6.1.2. Continuous Noise

Using the RBLs presented in Section 5, the noise emission limits for continuous noise have been derived as presented in Table 5. For design purposes the component limits have been derived from the measured limits. To ensure there is no increase in the measured background noise level, the component level must be 10dB less than the corresponding measured limit. The continuous noise emission limits apply to the mechanical plant and equipment located in the Ground Floor plant enclosure along the western side of the building and the Level 3 plant room located along the southern side of the building

Table 5: Derived noise emission limits for continuous noise

Period	RBL (dBA)	Criteria	Derived Emission Limit, $L_{A90, T}$ (dBA)	
			Measured	Component
Daytime (7:00am to 6:00pm)	48	BG (at façade)	48	38
Evening (6:00pm to 10:00pm)	44	BG (at façade)	44	34
Night (10:00pm to 7:00am)	36	BG (within bedrooms)	36	26

6.1.3. Transient Noise

The maximum limit L_{Amax} 45dBA inside dwellings is used to assess short-duration transient noise events. For the new Learning Centre there are no associated transient noise sources.

6.2. Acoustic Quality Objectives

The acoustic quality objectives contained in Schedule 1 of the EPP(Noise) are used to assess the cumulative impact of all of the noise sources. The applicable acoustic quality objectives, usually applied at surrounding dwellings, are presented in Table 6.

To convert the indoor criteria into their equivalent outdoor criteria a 7dB reduction from outside to inside has been adopted which corresponds to an open door or window of a naturally ventilated building. The resulting strictest limits external to the sensitive receptors are presented in Table 7.

Table 6: Acoustic quality objectives

Sensitive Receptor	Period	Acoustic Quality Objectives (dBA)			Environmental Value
		L _{Aeq} , adj, 1hr	L _{A10} , adj, 1hr	L _{A01} , adj, 1hr	
Dwelling (for outdoors)	7am to 10pm	50	55	65	Health and wellbeing
Dwelling (for indoors)	7am to 10pm	35	40	45	Health and wellbeing
	10pm to 7am	30	35	40	Health and wellbeing in relation to the ability to sleep

Table 7: Strictest limits external to the receivers based upon the acoustic quality objectives

Sensitive Receptor	Period	Acoustic Quality Objectives (dBA)		
		L _{Aeq} , adj, 1hr	L _{A10} , adj, 1hr	L _{A01} , adj, 1hr
Dwelling	7:00am to 10:00pm	42	47	52
	10:00pm to 7:00am	37	42	47

7. MECHANICAL PLANT AND EQUIPMENT

The mechanical plant and equipment will consist of air-conditioning condensers located in the Ground Floor plant enclosure along the western side of the building and the Level 3 plant room located along the southern side of the building.

7.1. Noise Emission limits

Based on the assessment benchmark limits and Acoustic Quality Objectives in Section 6, the strictest emission limits are based on those for continuous noise in Table 5. The component limits that need to be used for design are:

- Daytime: 38dBA L_{A90}
- Evening: 34dBA L_{A90}
- Night-time: 26dBA L_{A90}

7.2. Assessment of Mechanical Plant and Equipment Noise

The air-conditioning condenser selections and locations within the plant enclosure/plant room are unknown. It will be necessary to have a qualified acoustic engineer review the mechanical services design and provide design advice to ensure that the component noise levels in Section 7.1 are achieved.

If the noise emissions from untreated mechanical plant and equipment exceed the derived component limits at nearby noise-sensitive receivers, it will be necessary to implement acoustic amelioration measures such as acoustic barriers, sound absorptive treatments and acoustic louvres, noting that acoustic barriers 2.1m high have already been specified at the northern and southern ends of the Ground Level plant enclosure. To be effective, those barrier should achieve a minimum superficial density of minimum 12.5kg/m², a maximum aggregated leakage of 1.0% and have a sound absorptive finish on the side facing the mechanical plant.

8. PEOPLE IN OUTDOOR AREAS

Noise associated with people using the outdoor areas on the Ground Floor, Level 1, Level 2 and Level 3 during the daytime and evening has the potential to impact upon nearby noise-sensitive receivers.

8.1. Software

Noise emissions due to people in outdoor areas have been predicted using the SoundPLAN v8.2 computer program. SoundPLAN is an integrated software package for noise and air pollution evaluation developed in Germany by Braunstein + Berndt GmbH. It has been configured to predict the noise emissions from the site in accordance with International Standard ISO 9613-2:1996 *Acoustics – Attenuation of Sound during Propagation Outdoors – Part 2: General Method of Calculation*.

8.2. Model Setup

Topographic contours for the surrounding area are based upon digital elevation model data provided by the Queensland Government. Locations of surrounding features have been determined from aerial photographs and site inspection.

The positioning of the buildings and sources has been determined based upon the architectural plans in Appendix A.

The patrons have been divided into average sound power levels over the nominated areas.

The receiver grid map consists of lowset receivers 1.8m above the ground and highset receivers 4.6m above the ground at a grid spacing of 5m.

Neutral weather conditions have been adopted with a wind blowing at 3m/s away from the noise sources, with soft ground specified for grassed areas and hard ground for paths, roadways and carparks.

A penalty adjustment of +2dBA has been applied to the results to account for the different character of the emitted noise compared to the ambient noise in the local area.

8.3. Noise Emission Limits

The *Environmental Protection Act 1994* (EPA⁸) contains provisions that excludes noise emissions from indoor venues, open-air events and amplified devices other than at an indoor venue or open air-event between 7:00am and 10:00pm if⁸:

- (a) The premises is, or is part of, an educational institution; and
- (b) The use of the premises is organised by or for the educational institution for non-commercial purposes of the institution.

⁸ Sections 440W, 440X and 440Y of the EPA⁸.

As stated in Section 3.2, the building will only be used by the school between 7:00am and 10:00pm, fulfilling the requirements of the EPA Act to allow the exclusion of noise emissions from the use. However, to ensure that use of the building will not cause nuisance, an assessment has still been completed against the requirements of Acceptable Outcomes AO_{8.1} and AO_{8.2} as contained within the Environmental Standards Code.

Patron noise is characterised as a variable noise, with groups of people talking creating a quasi-continuous hubbub which is punctuated by an occasional peal of laughter or loud exclamation. Hence $L_{Aeq, adj, T}$ is the most appropriate parameter to use when assessing patron noise.

Based on the assessment benchmark limits and Acoustic Quality Objectives in Section 6, the strictest emission limits are based on the Acoustic Quality Objectives for the daytime and evening:

- Daytime: 42dBA $L_{Aeq, adj, 1hr}$
- Evening: 42dBA $L_{Aeq, adj, 1hr}$

8.4. Crowd Noise Emission Level

Research into crowd noise has determined that the sound power level from a group of people can be determined from the expression⁹:

$$L_{Aeq} = 15\log N + 64\text{dBA}$$

Where N = number of people.

Using Equation (1) the people noise sound power levels have been calculated, considering:

- The number of people in each area as detailed in Table 1, noting that it will be unlikely that every area will be at capacity at the same time;
- Sound absorptive soffit treatments achieving a Noise Reduction Coefficient (NRC) of at least 0.9 will be implemented to the soffits/ceilings above all of the outdoor areas¹⁰.

To obtain the octave band levels between 63Hz and 8kHz the average A-weighted octave band speech levels for a group of people, normalised to an overall level of 100dBA, have been used as presented in Table 8.

Table 8: Octave band sound pressure levels for people conversing

Parameter	Sound Pressure Level in dBA at Frequency Hz								Total (dBA)
	63	125	250	500	1k	2k	4k	8k	
L_{Aeq}	75	84	88	95	95	92	85	73	100

⁹ Hayne, M.J., Taylor, J.C., Rumble, R.H. and Mee, D.J. 2011, 'Prediction of noise from small to medium sized crowds', Acoustics 2011 Conference, Gold Coast, Australia, 2-4 November.

¹⁰ In addition to preventing reverberant patron noise build-up, the sound absorption will reduce the level of intruding road traffic noise from West Street.

The resulting source sound power levels used in the SoundPLAN model are presented in Table 9. A source height of 1.2m has been used.

Table 9: Sound power levels for different sized groups of people

Number of People	Sound Power Level in dBA at Frequency Hz								Total L _w (dBA)
	63	125	250	500	1k	2k	4k	8k	
20	59	68	72	79	79	76	69	57	84
50	64	73	77	84	84	81	74	62	89
60	66	75	79	86	86	83	76	64	91
100	69	78	82	89	89	86	79	67	94
120	70	79	83	90	90	87	80	68	95
150	72	81	85	92	92	89	82	70	97

8.5. Noise Amelioration Measures

During the design of the new Learning Centre, multiple noise amelioration measures have been incorporated into the design to minimise noise emissions associated with use of the outdoor spaces. These measures include:

- The provision of solid balustrades and/or planter boxes and raised garden beds as shown on the current architectural plans in Appendix A to minimise line-of-sight between the source and receiver.
- Closing off openings along the eastern, southern and western facades of Levels 1 and 2 using fixed or openable glazing systems that achieve minimum R_w 32.
- Installation of sound absorptive treatments to the soffits of the slabs and roofs above the outdoor areas. Those treatments will achieve an average sound absorption performance of NRC 0.7 over the surface areas of those structures located above where people will congregate.

These measures and the 2.1m high acoustic barriers at the northern and southern ends of the Ground Level plant enclosure have been incorporated into the 3D SoundPLAN model to ensure the most accurate noise modelling possible.

8.6. SoundPLAN Modelling Results

The SoundPLAN modelling results are presented in Appendix D. Predictions have been made for both lowset and highset receivers, noting that currently, the only highset receivers are the unit blocks situated at 94 West Street and 49 Hill Street.

Table 10 presents a summary of the predicted emissions compared to the 42dBA $L_{Aeq, adj, 1hr}$ Acoustic Quality Objective (AQO) for daytime and evening use. While the predictions indicate it is possible for the Acoustic Quality Objective of 42dBA $L_{Aeq, adj, 1hr}$ to be exceeded, noise emissions due to people

Table 10: Summary of the SoundPLAN prediction results

Figure	Description	Comparison Against AQO Based Limits
6	Lowset LAeq, adj, 1hr noise emission contours for 150 people using the Ground Floor Courtyard	The highest noise emission level at nearby receivers is around 51dBA LAeq, adj, 1hr.
7	Highset LAeq, adj, 1hr noise emission contours for 150 people using the Ground Floor Courtyard	The highest noise emission level at existing nearby receivers is around 50dBA LAeq, adj, 1hr.
8	Lowset LAeq, adj, 1hr noise emission contours for 120 people on Level 1	The highest noise emission level at nearby receivers is around 46dBA LAeq, adj, 1hr.
9	Highset LAeq, adj, 1hr noise emission contours for 120 people on Level 1	The highest noise emission level at nearby receivers is around 47dBA LAeq, adj, 1hr.
10	Lowset LAeq, adj, 1hr noise emission contours for 50 people on Level 2	Compliance achieved.
11	Highset LAeq, adj, 1hr noise emission contours for 50 people on Level 2	The highest noise emission level at nearby existing receivers is around 43dBA LAeq, adj, 1hr.
12	Lowset LAeq, adj, 1hr noise emission contours for 60 people on Level 3	Compliance achieved.
13	Highset LAeq, adj, 1hr noise emission contours for 60 people on Level 3	The highest noise emission level at nearby existing receivers is around 44dBA LAeq, adj, 1hr.
14	Lowset LAeq, adj, 1hr noise emission contours for 20 people on Level 3	Compliance achieved.
15	Highset LAeq, adj, 1hr noise emission contours for 20 people on Level 3	Compliance achieved.
16	Lowset LAeq, adj, 1hr noise emission contours for 100 people on Level 3	The highest noise emission level at nearby receivers is around 44dBA LAeq, adj, 1hr.
17	Highset LAeq, adj, 1hr noise emission contours for 100 people on Level 3	The highest noise emission level at nearby existing receivers is around 46dBA LAeq, adj, 1hr.

in the outdoor areas are unlikely to cause nuisance at nearby residences as:

- The local ambient background noise levels are significantly higher than the Acoustic Quality Objective. This is clearly demonstrated as the Daytime RBL of 48dBA and the evening RBL of 44dBA, which are the median of the 10th percentile of the measured LA90 noise levels, exceed the Acoustic Quality Objective limit of 42dBA LAeq, adj, 1hr. Furthermore, the component variable noise limits as derived in Table 4 are 9dB higher during the daytime and 5dB higher during the evening compared to the Acoustic Quality Objective.
- The ambient LAeq noise levels in the local area are dominated by West Street. Examination of the logging traces in Appendix B and the overall summary levels in Table 2 show that the minimum LAeq noise levels in the local area exceed the predicted noise levels from people. During the daytime and evening, noise due to people will be barely audible or inaudible at nearby residences.
- For Levels 2 and 3, the predicted exceedances are minor (≤ 4 dBA) and are within the uncertainty of the prediction methodology.

- The calculations assume maximum capacity in each of the areas, which will rarely occur. Most of the time the emitted sound power levels will be lower than those used in the predictions.
- Use of the Level 3 function area by significant numbers of people during the evening will be limited to several times each year and will not be a regular occurrence.

Based on the above discussion and noting that:

1. Use of the new Learning Centre will be by the school between 7:00am and 10:00pm, which under the EPAct allows noise emissions from those activities to be excluded; and
2. Amelioration measures such as solid balustrades, raised planter boxes and sound absorptive treatments have been incorporated into the design to minimise noise emissions,

it is concluded that Performance Outcome PO₈ is satisfied via Acceptable Outcome AO_{8.2} as defined in Table 3. Noise associated with people in the outdoor areas will not adversely impact upon nearby noise-sensitive receivers.

9. CONCLUSIONS

The analysis presented in this report has determined that:

- Noise breaking out of the Ground Floor Auditorium will not be an issue. As per the advice provided by St Mary's College, the Auditorium will not be used for performance. The Auditorium has minimal glazing facing nearby residences and the sound reduction performance of that glazing to control intruding road traffic noise will be more than adequate to mitigate noise from within the Auditorium.
- The mechanical plant and equipment located in the Ground Floor plant enclosure along the western side of the building and the Level 3 plant room located along the southern side of the building will need to be ameliorated to ensure that the following component limits are achieved at nearby residences:
 - Daytime: 38dBA L_{A90}
 - Evening: 34dBA L_{A90}
 - Night-time: 26dBA L_{A90}
- The acoustic barriers along the northern and southern sides of the Ground Level plant enclosure should be designed to achieve a minimum superficial density of minimum 12.5kg/m², a maximum aggregated leakage of 1.0% and have a sound absorptive finish on the side facing the mechanical plant
- During detailed design a qualified acoustic engineer will need to check the mechanical services installations and advise on any additional noise amelioration measures necessary to achieve compliance.
- Noise emissions associated with people in outdoor areas have the potential to exceed derived noise emission limits. To minimise potential people noise emissions and achieve compliance with PO₈ of the Environmental Standards Code contained in the *Toowoomba Regional Planning Scheme*, noise amelioration measures must be incorporated into the design consisting of:
 - Solid balustrades and/or planter boxes and raised garden beds as shown on the current architectural plans to minimise line-of-sight between the source and receiver.
 - Closing off openings along the eastern, southern and western facades of Levels 1 and 2 using fixed or openable glazing systems that achieve minimum R_w 32.
 - Installation of sound absorptive treatments to the soffits of the slabs and roofs above the outdoor areas. Those treatments will achieve an average Noise Reduction Coefficient of 0.7 over the surface areas of structures located above where people will congregate.

- Use of the new Learning Centre should be limited to St Mary's College activities only, with usage hours limited to between 7:00am and 10:00pm.

APPENDIX A: ARCHITECTURAL PLANS





1 SITE LOCALITY PLAN
1 : 500

NOT FOR CONSTRUCTION



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A.B.N 96071786948 | BOAQ 4487

SMC LEARNING CENTRE

CONCEPT DESIGN ISSUE

SITE LOCALITY

Stage
CONCEPT

Revision
D 14/07/26

MP10-01

Designer
WTE

Project No. 230710

Scale
1 : 500 @ A1
0m 1 2 3 4 5



WALL LEGEND:

- EXISTING TO REMAIN
- EXISTING TO BE REMOVED

EXISTING SERVICES + SITE LEGEND

- WATER - EXISTING
- STORM WATER - EXISTING
- OVERHEAD POWER - EXISTING
- FENCING - EXISTING

ABBREVIATION LEGEND

- FH-E FIRE HYDRANT, EXISTING
- GD-E GRATED DRAIN, EXISTING
- PP-E POWER POLE, EXISTING
- SWP-E STORM WATER PIT, EXISTING
- TP-E TELSTRA PIT, EXISTING



1 EXISTING / DEMOLITION SITE PLAN
1 : 200

NOT FOR CONSTRUCTION



SMC LEARNING CENTRE

CONCEPT DESIGN ISSUE

EXISTING - DEMOLITION SITE

Stage
CONCEPT

Revision
D 14/07/26

MP15-01

Designer
WTE

Project No. 230710

Scale
As indicated @ A1
0m 1 2 3 4 5



3 EAST ELEVATION
1:100



1 EAST ELEVATION SITE
1:200

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SMC LEARNING CENTRE
CONCEPT DESIGN ISSUE

BUILDING ELEVATIONS
Stage
CONCEPT

MP25-01

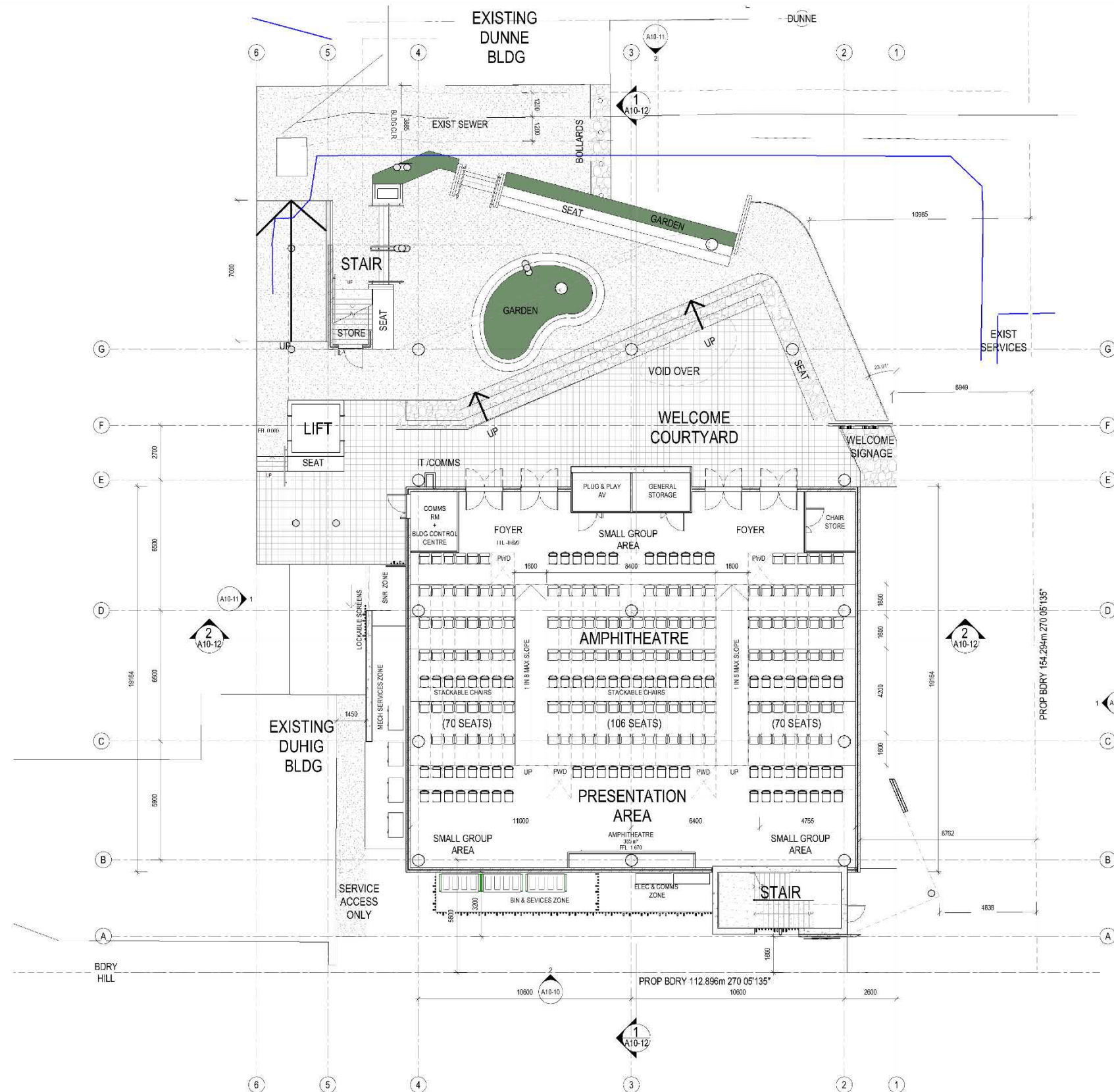
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Revision D 14/07/26

Designer WTE

Scale: As indicated @ A1
0m 1 2 3 4 5



1 GROUND PLAN
1:100

SIGN-OFF STAGE	
DATE	
CLIENT	
CONSULTANT	
OTHER	

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SMC LEARNING CENTRE

REASON FOR ISSUE

CONCEPT PLAN - GROUND

Stage
MP

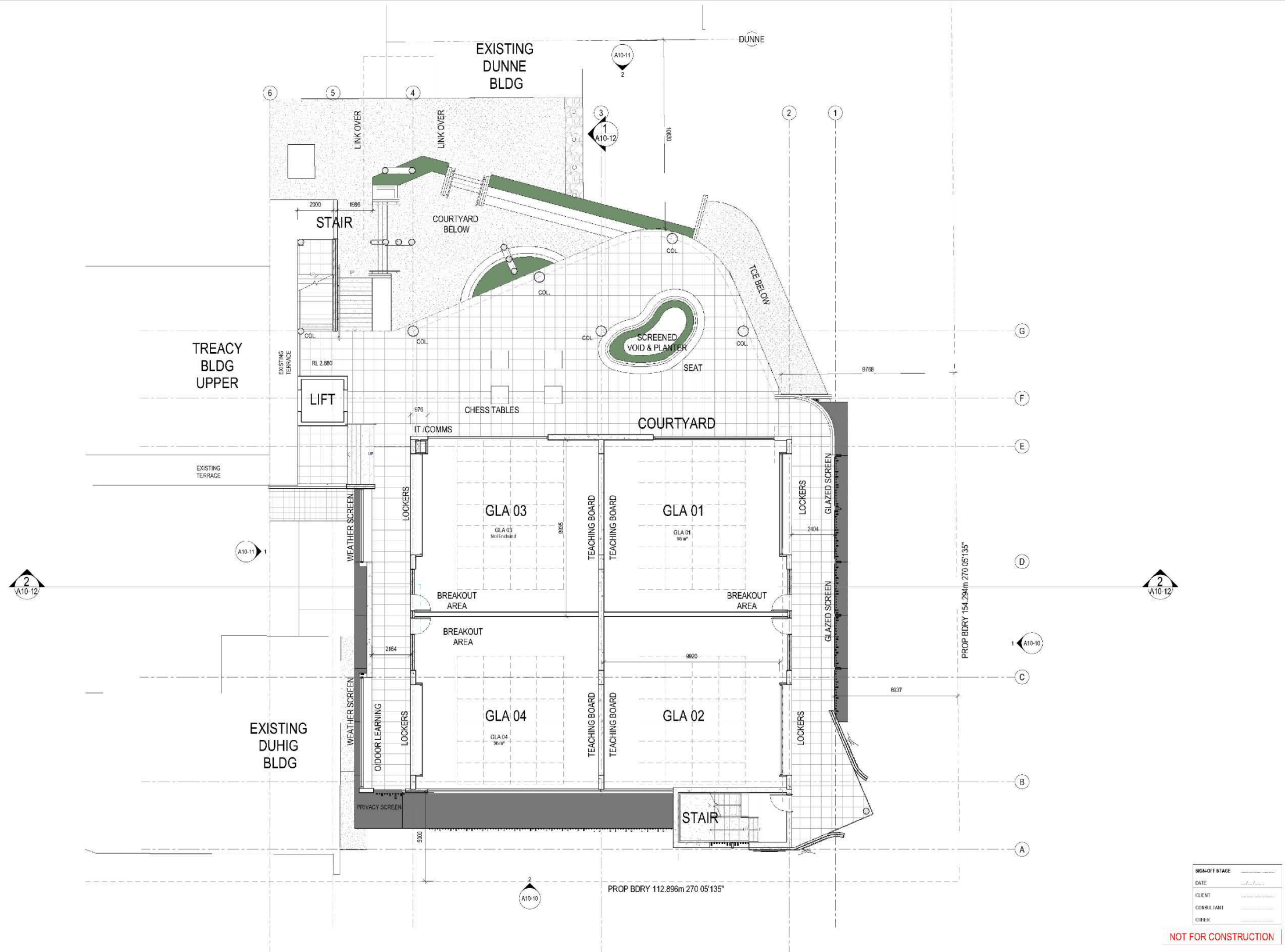
Revision
F 14/07/26

A10-01

Designer
WTE

Project No. 23-0710

View Scale 1:100 @ A1
Scale Bar 1:100 @ A1 0m 1 2 3 4 5



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SMC LEARNING CENTRE

REASON FOR ISSUE

CONCEPT PLAN - LEVEL 1

Stage
MP

Revision
F 14/07/26

A10-02

Designer
WTE

Project No. 23-0710

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SHR-OFF STAGE	_____
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CLIENT	_____
CONSULTANT	_____
OTHER	_____

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A.B.N 96071786948 BOAQ 4487

SMC LEARNING CENTRE

REASON FOR ISSUE

CONCEPT PLAN - LV 2

Stage
MP

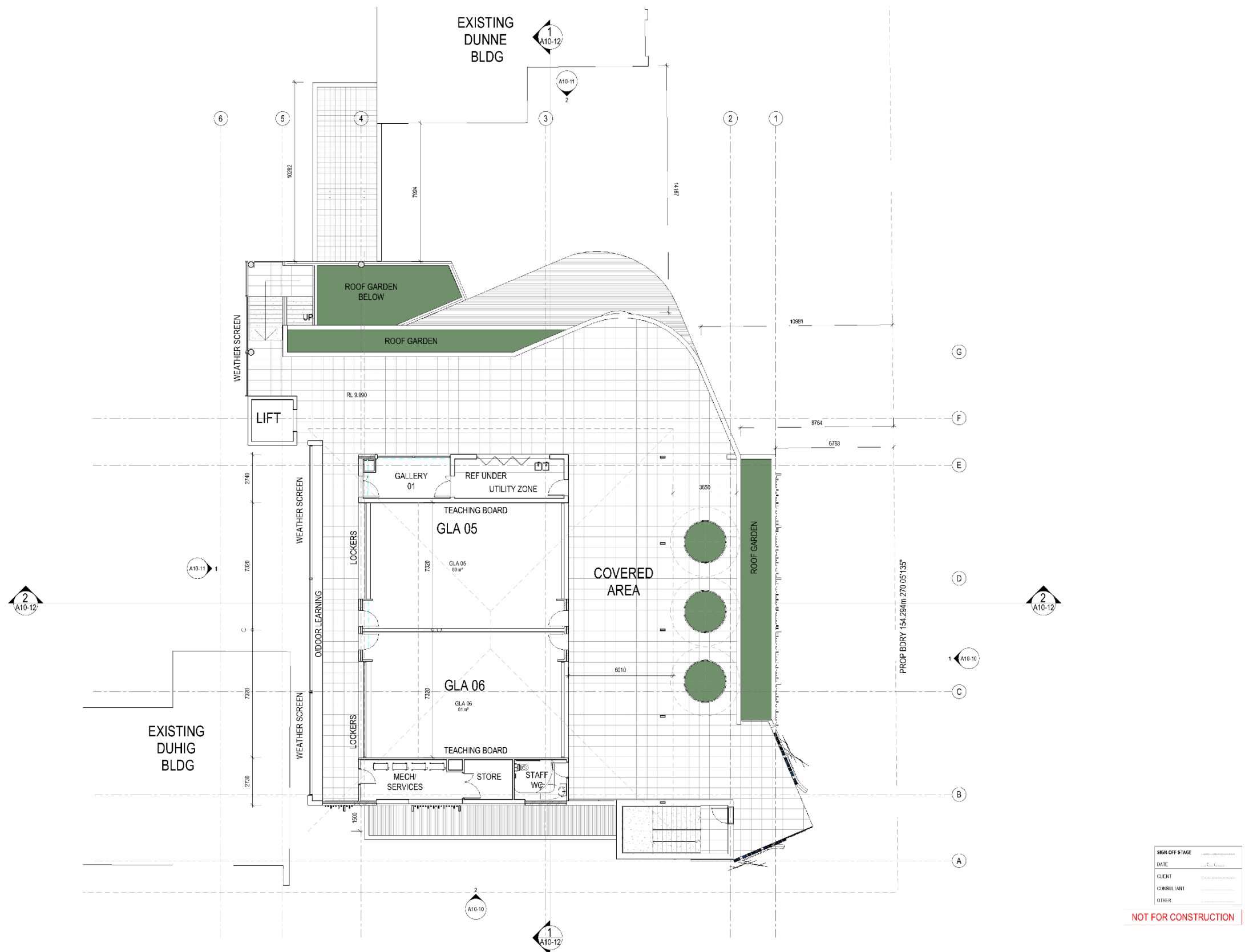
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E 14/07/26

A10-03

Designer
WTE

Project No. 23-0710

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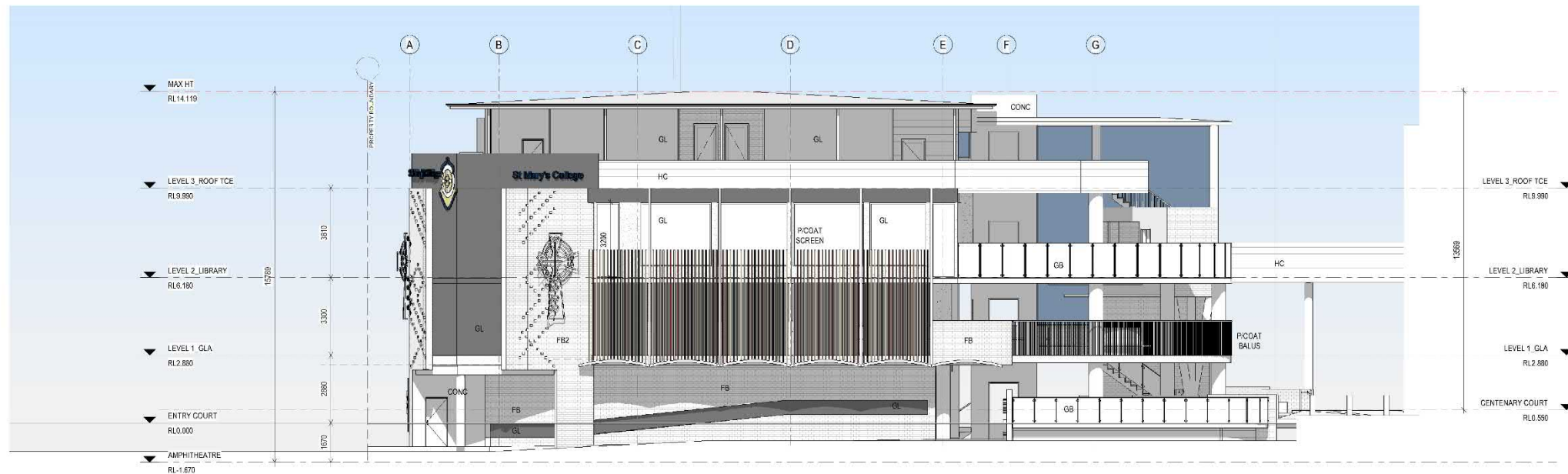
SMC LEARNING CENTRE
REASON FOR ISSUE

CONCEPT - LV 3
Stage MP

Revision F 14/07/26

A10-04
Designer WTE

Project No. 23-0710
View Scale 1 : 100 @ A1
Scale Bar 1:100 @ A1 0m 1 2 3 4 5



1 EAST ELEVATION
1 : 100



2 SOUTH ELEVATION
1 : 100

MATERIALS LEGEND

GL	GLAZING
HC	HORIZONTAL CLADDING
FB	FACE BRICK
FB2	FEATURE FACE BRICK
CONC	CONCRETE WALLS
PICOAT BALUS	POWDERCOAT ALUM BALUSTRADE
PICOAT SCREEN	POWDERCOAT ALUM SCREEN
MS	METAL ROOF SHEETING
RF	RENDERED CLADDING

SIGN-OFF STAGE

DATE	
CLIENT	
CONSULTANT	
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SMC LEARNING CENTRE

REASON FOR ISSUE

CONCEPT ELEVATIONS

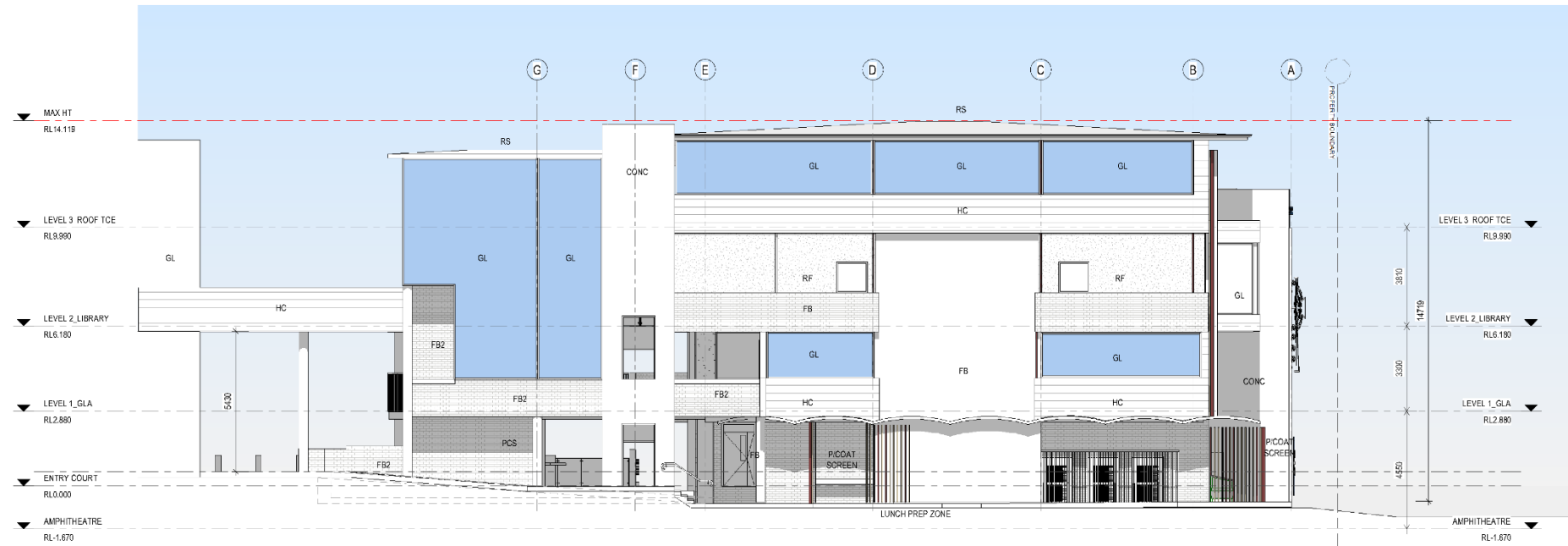
Stage MP Revision E 14/07/26

A10-10

Designer WTE

Project No. 23-0710

View Scale 1 : 100 @ A1
Scale Bar 1:100 @ A1 0m 1 2 3 4 5



1 WEST ELEVATION
1:100



2 NORTH ELEVATION
1:100

MATERIALS LEGEND

GL	GLAZING
HC	HORIZONTAL CLADDING
FB	FACE BRICK
FB2	FEATURE FACE BRICK
CONC	CONCRETE WALLS
PICOAT BALLUS	POWDERCOAT ALUM BALUSTRADE
PICOAT SCREEN	POWDERCOAT ALUM. SCREEN
MS	METAL ROOF SHEETING
RF	RENDERED CLADDING

SHOWN OFF STAGE	
DATE	
CLIENT	
CONSULTANT	
OTHER	

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REASON FOR ISSUE

CONCEPT ELEVATIONS

Stage
MP

Revision
F 14/07/26

Designer
WTE

A10-11

Project No. 23-0710

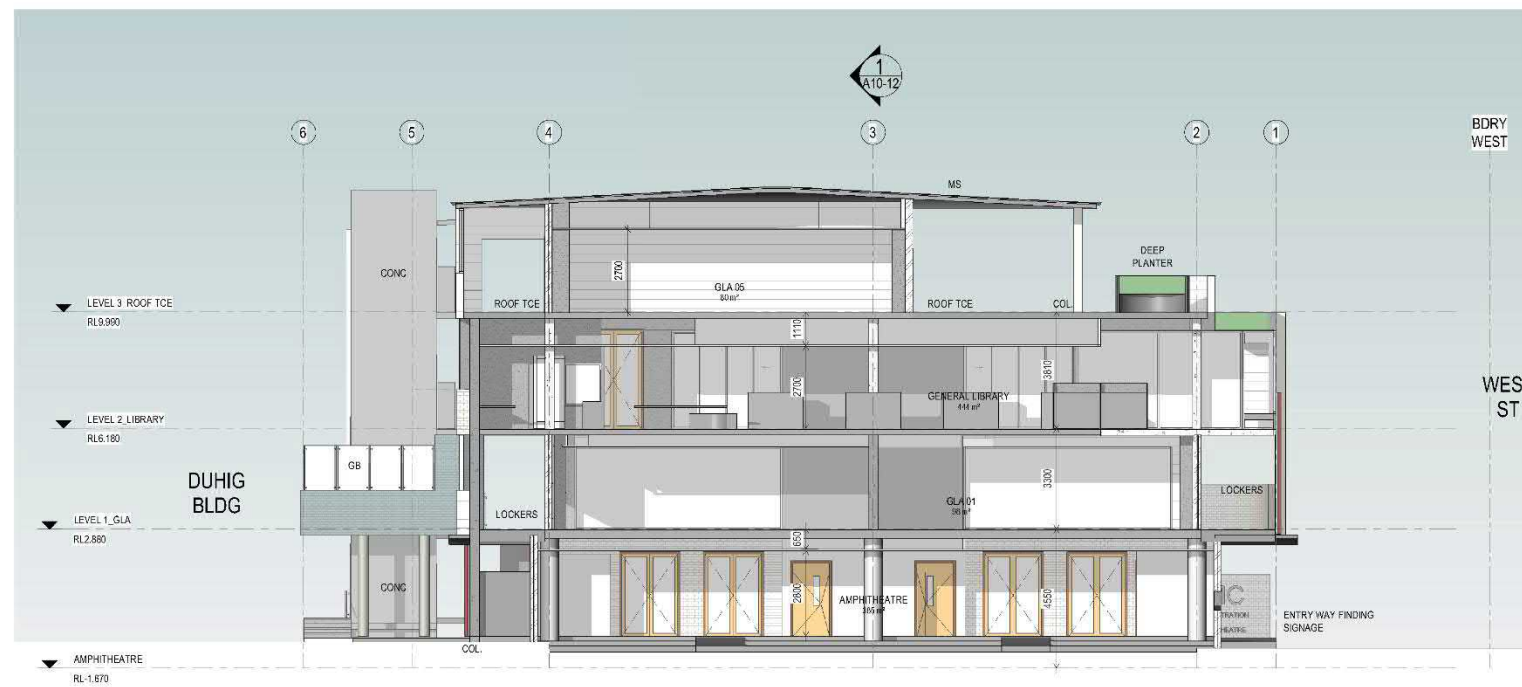
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MATERIALS LEGEND

GL	GLAZING
HC	HORIZONTAL CLADDING
FB	FACE BRICK
FB2	FEATURE FACE BRICK
CONC	CONCRETE WALLS
P/COAT BALUS	POWDERCOAT ALUM BALUSTRADE
P/COAT SCREEN	POWDERCOAT ALUM SCREEN
MS	METAL ROOF SHEETING
RF	RENDERED CLADDING

1 SECTION AA
1:100



2 SECTION BB
1:100

SIGN-OFF STAGE

DATE	_____
CLIENT	_____
CONSULTANT	_____
OTHER	_____

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REASON FOR ISSUE

CONCEPT - SECTION

Stage **MP**

Revision **F** 14/07/26

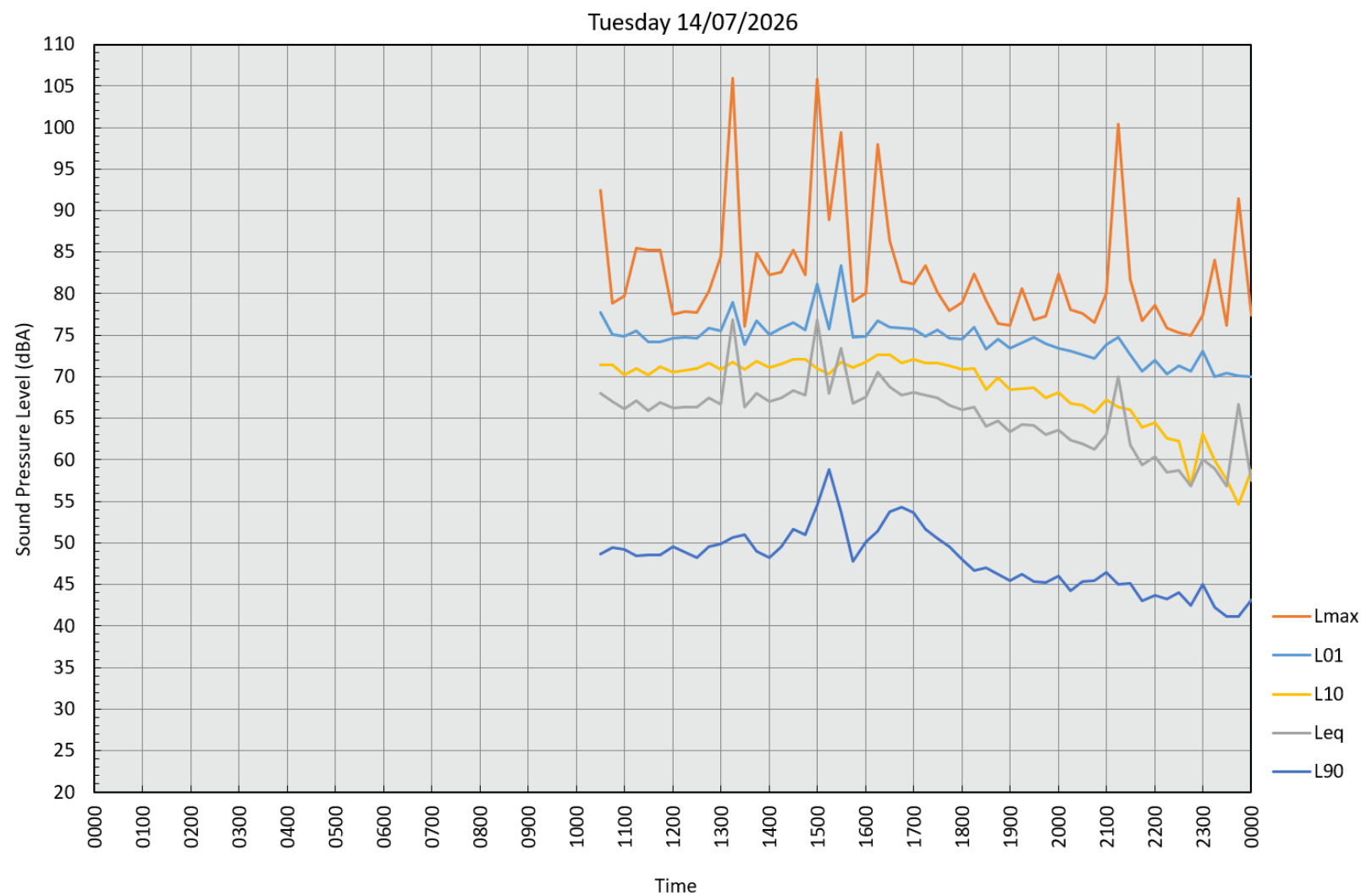
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Designer **WTE**

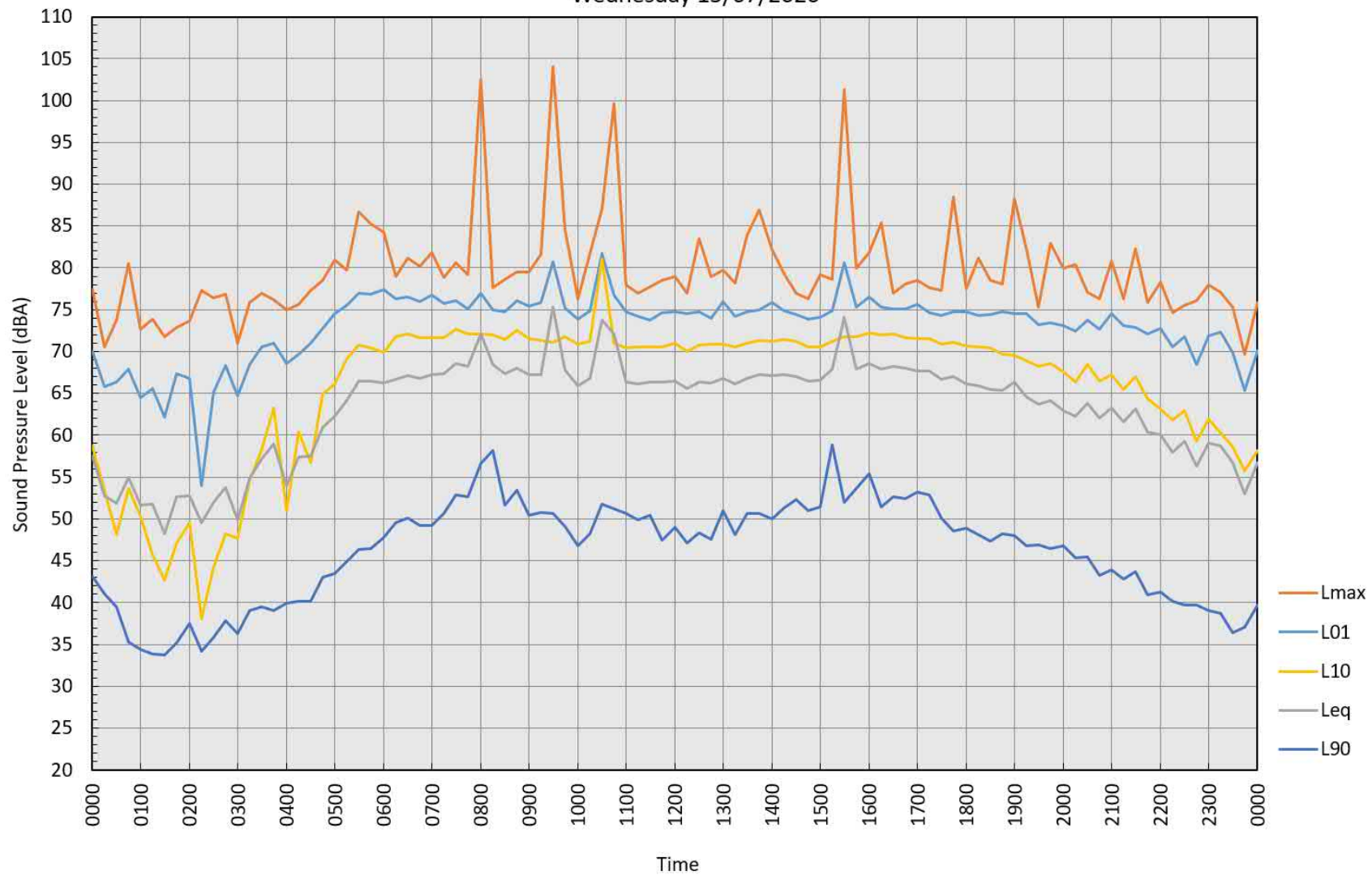
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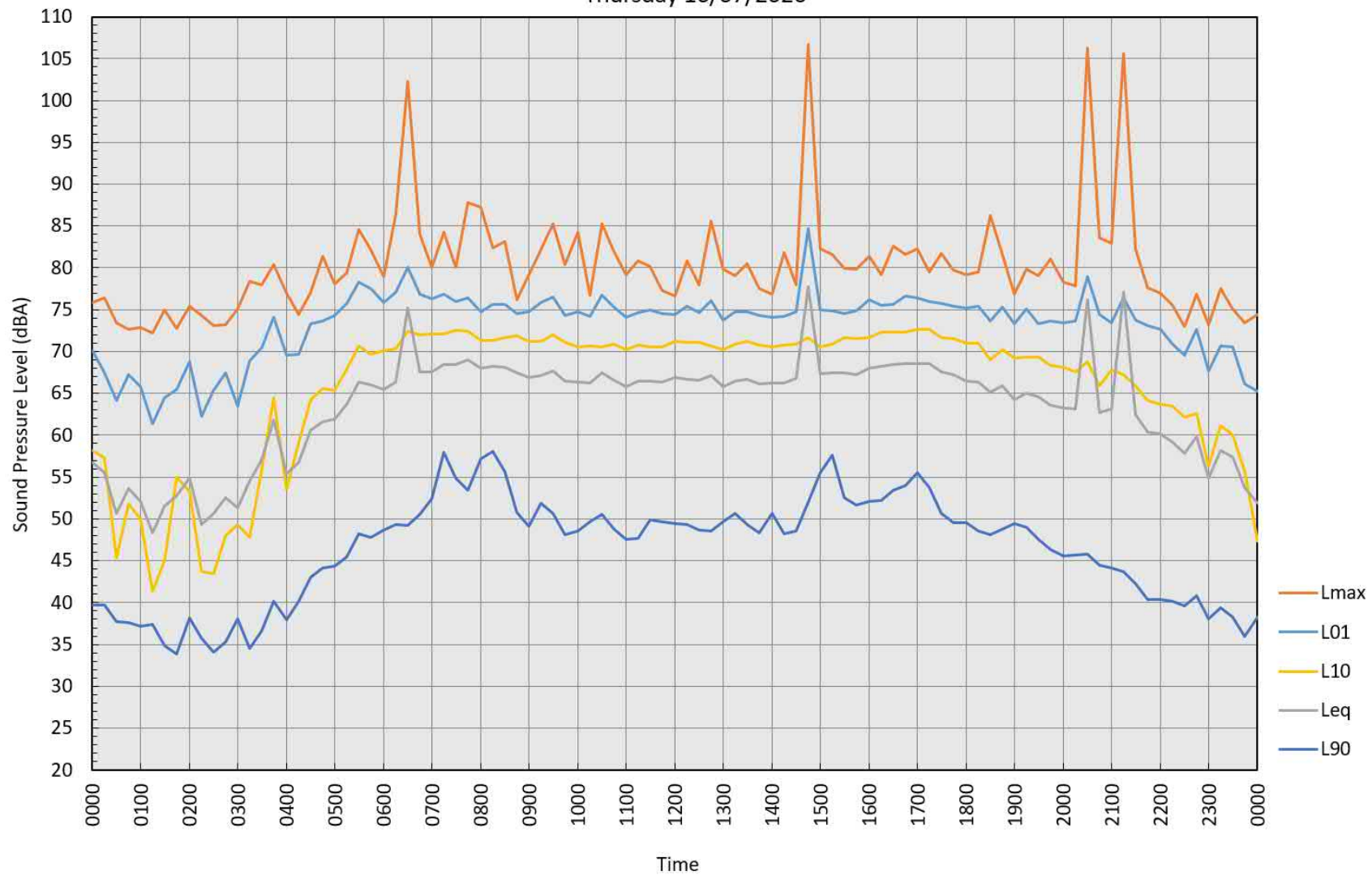
APPENDIX B: NOISE LOGGING TRACES



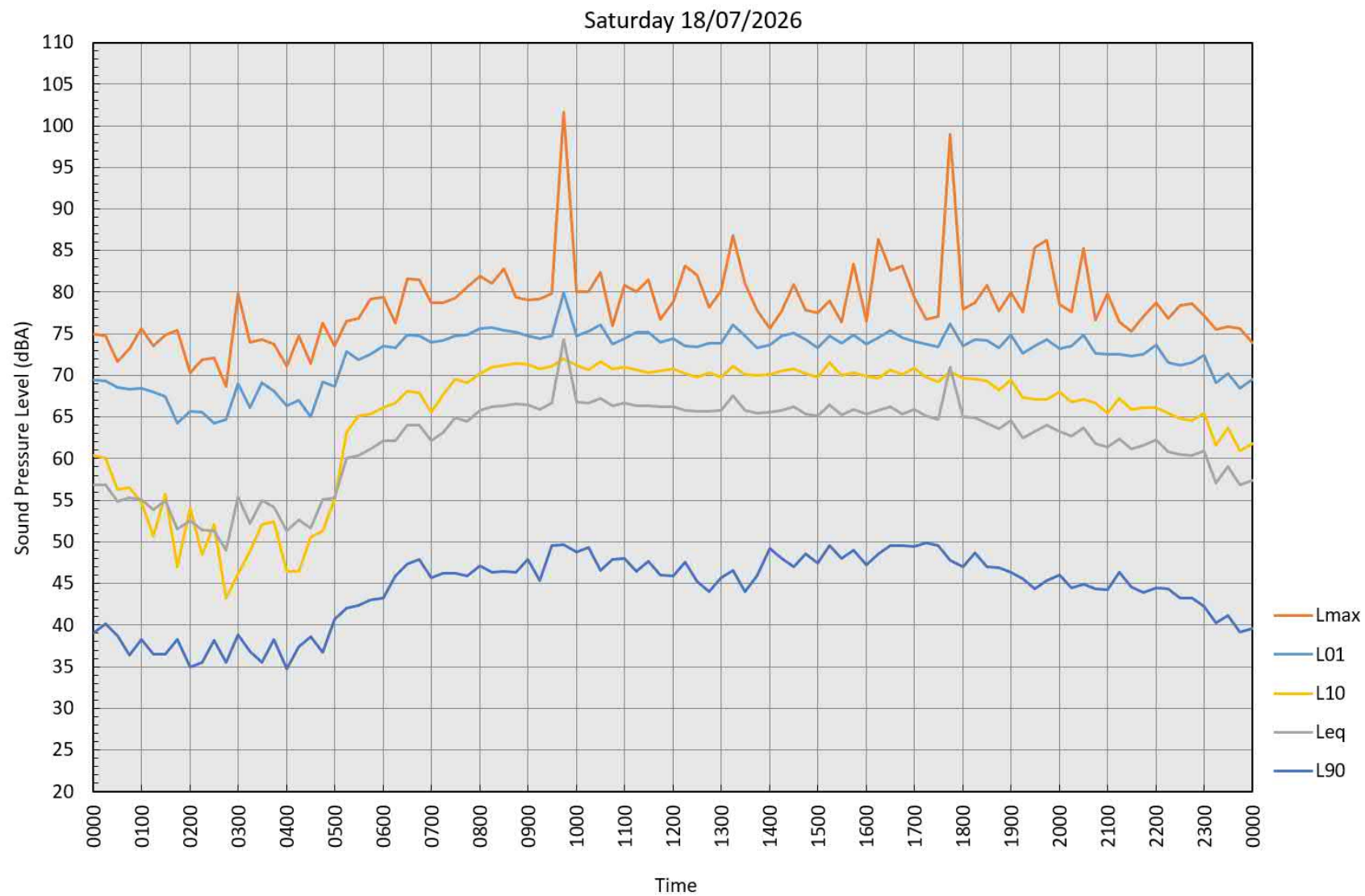
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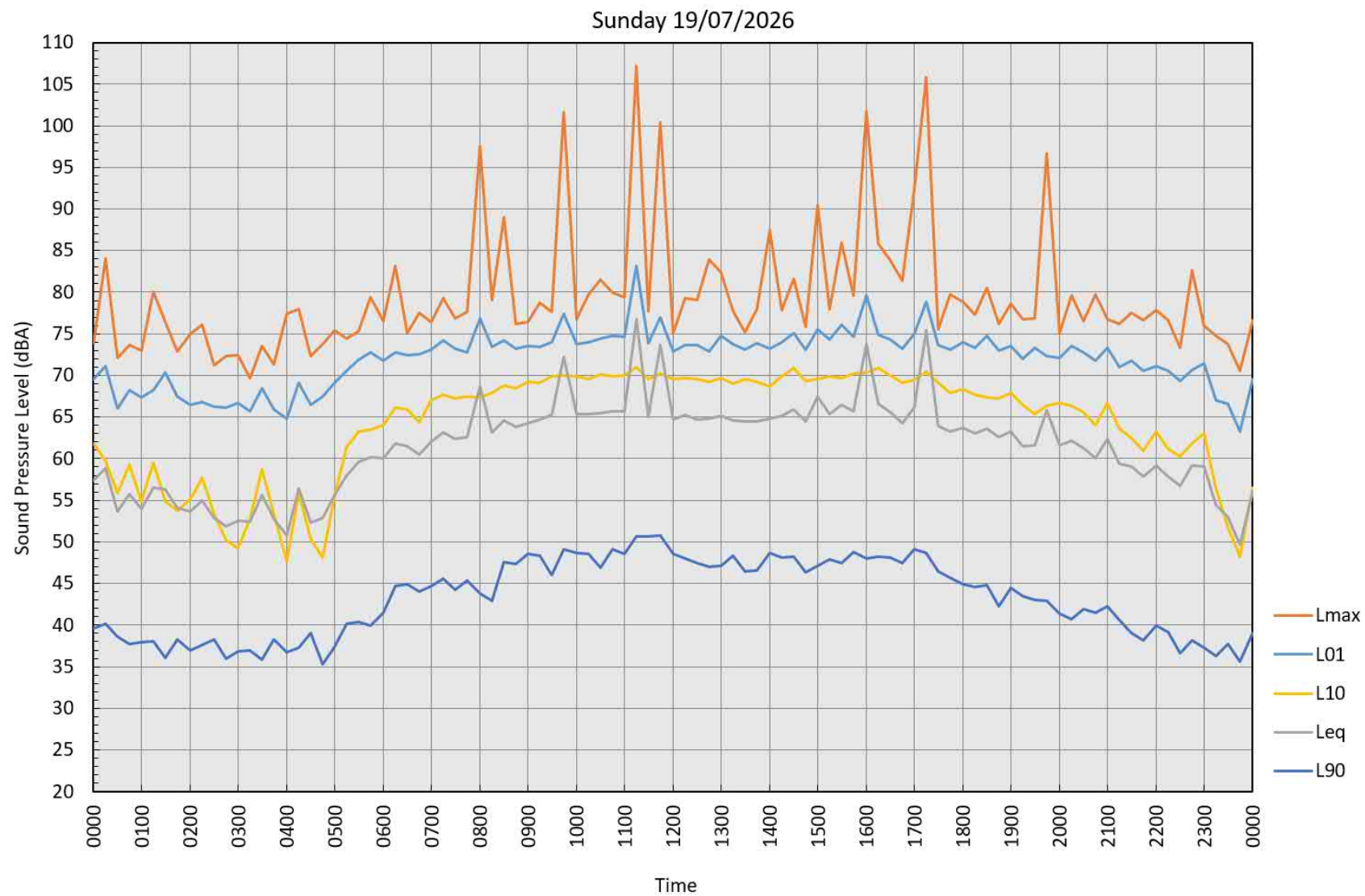


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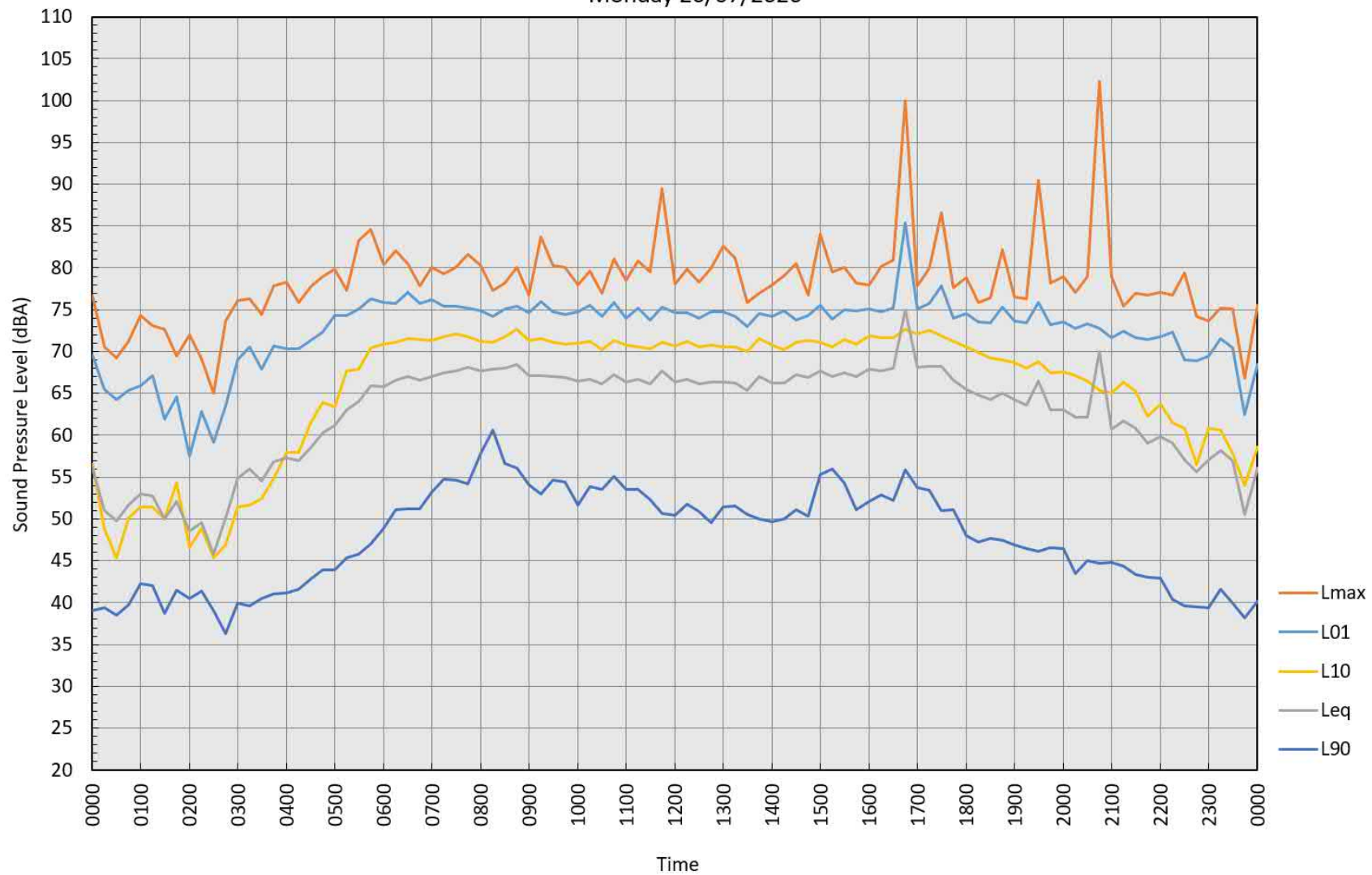




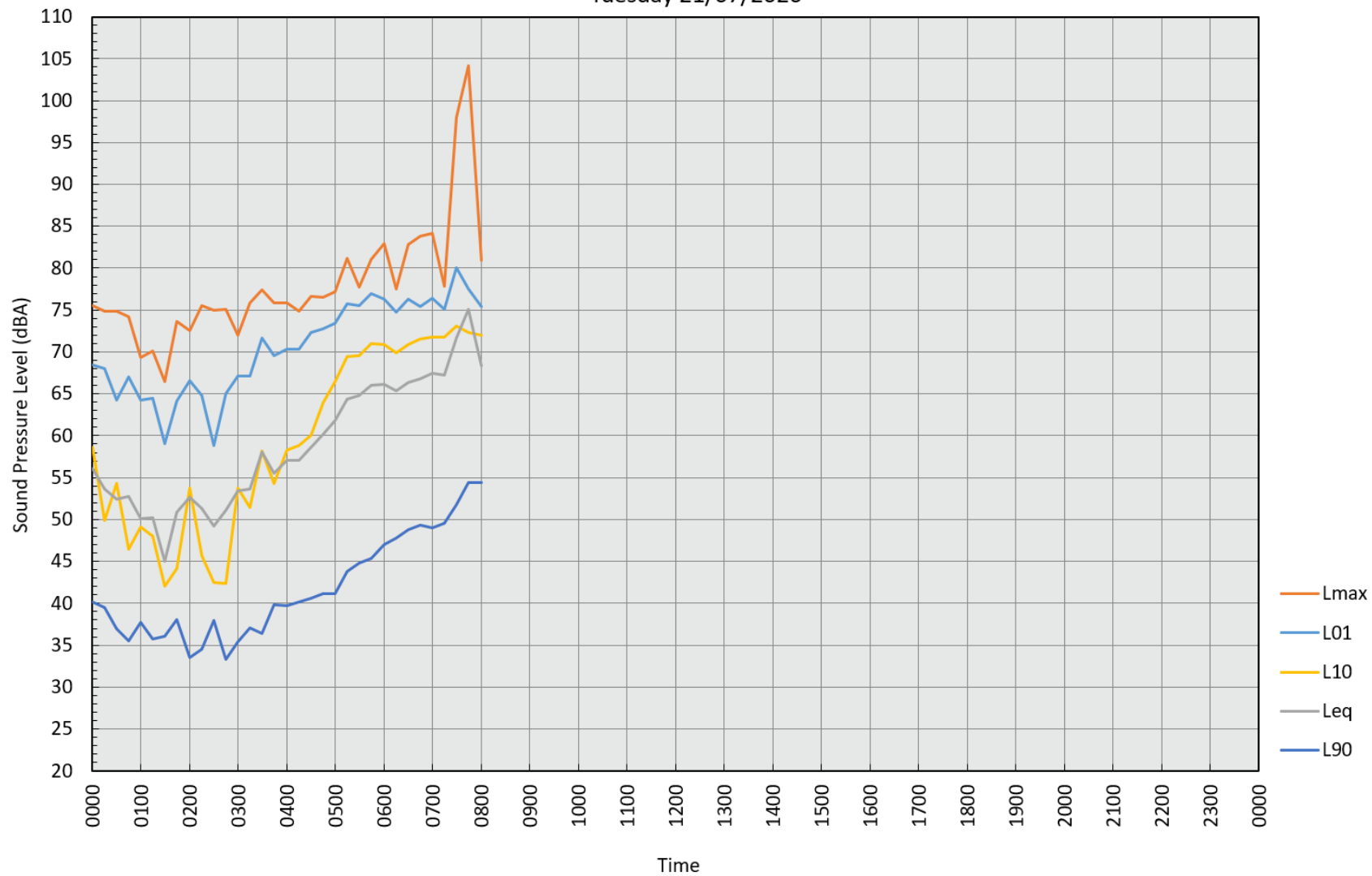




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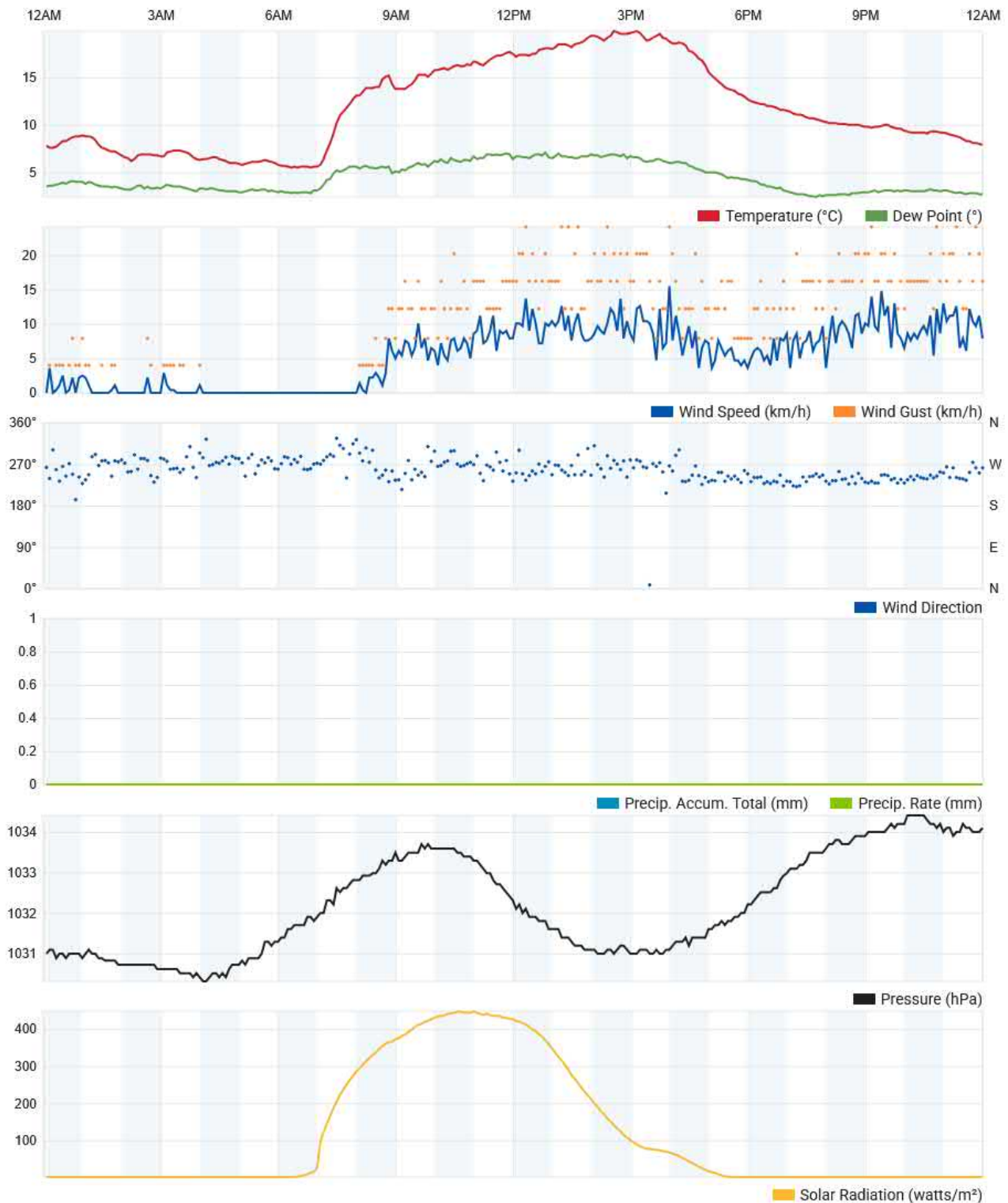


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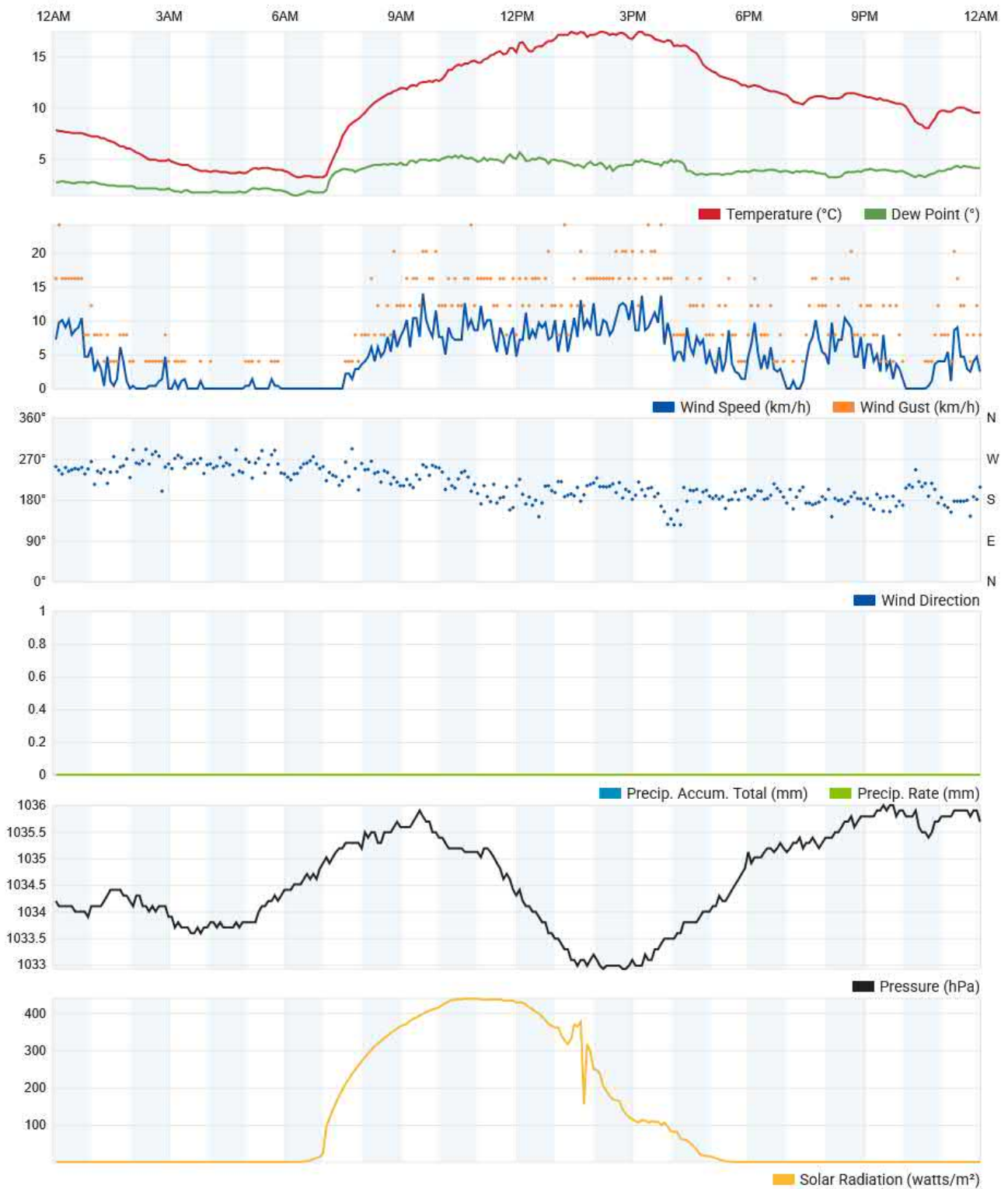


APPENDIX C: WEATHER LOGGING

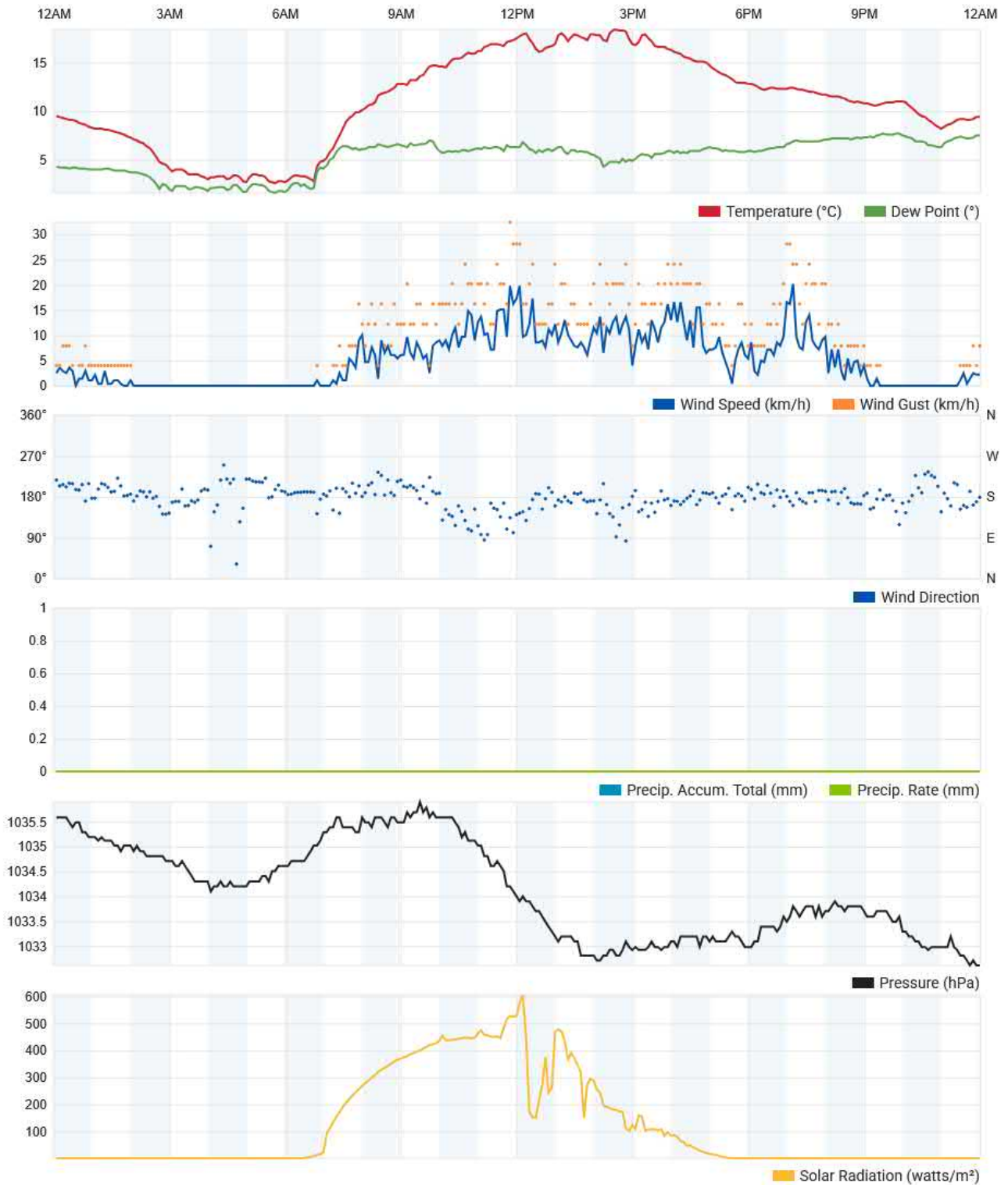
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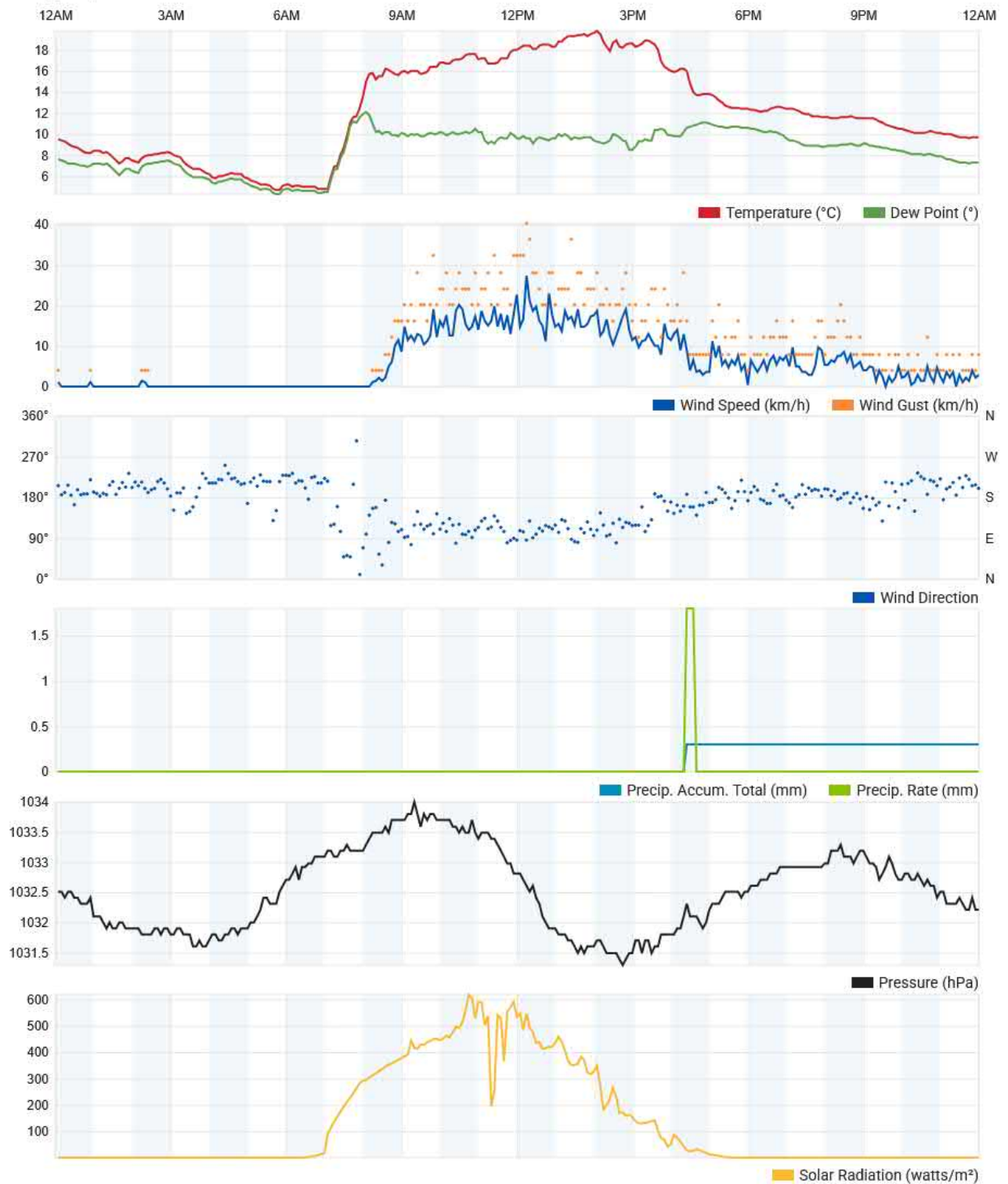
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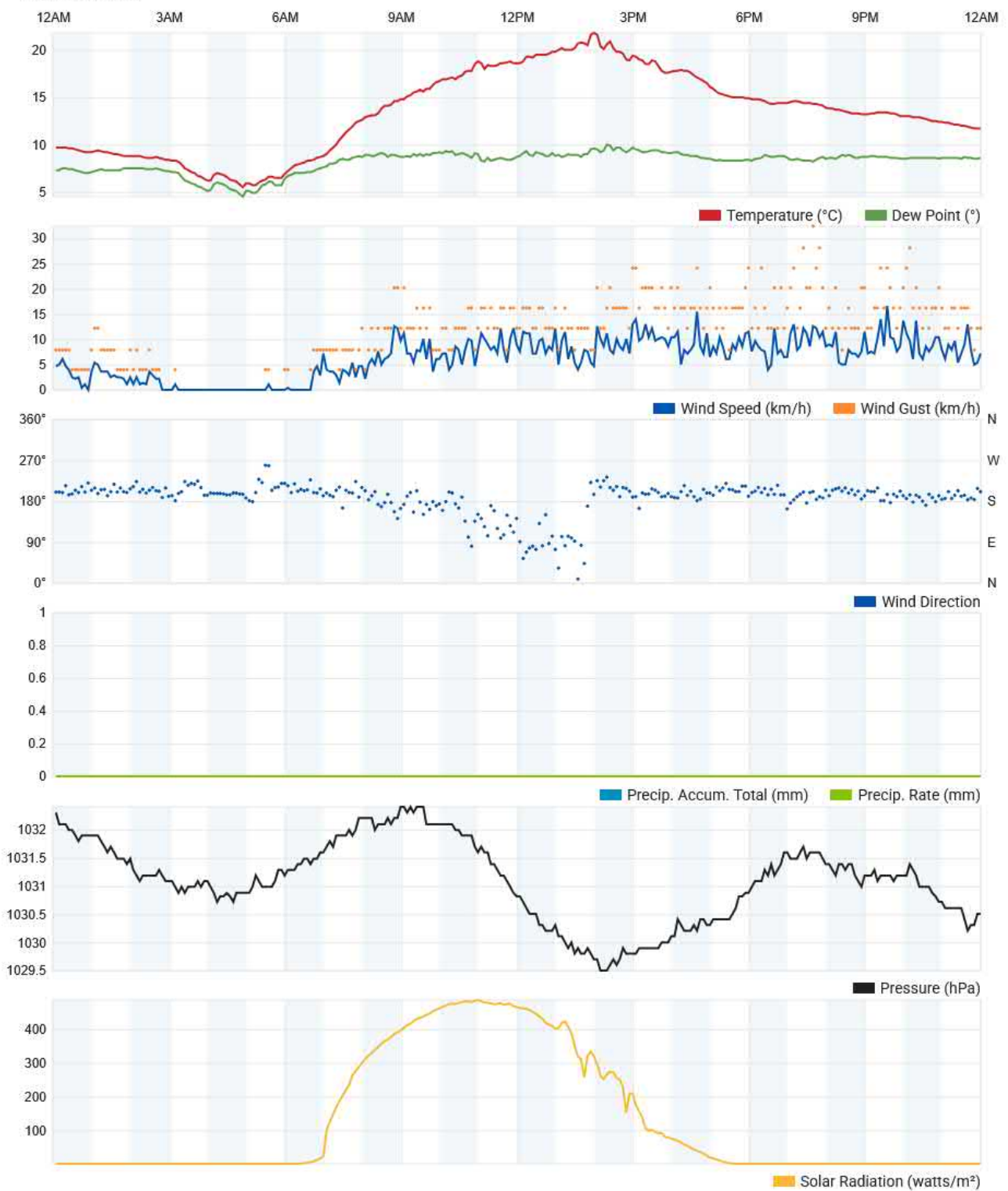
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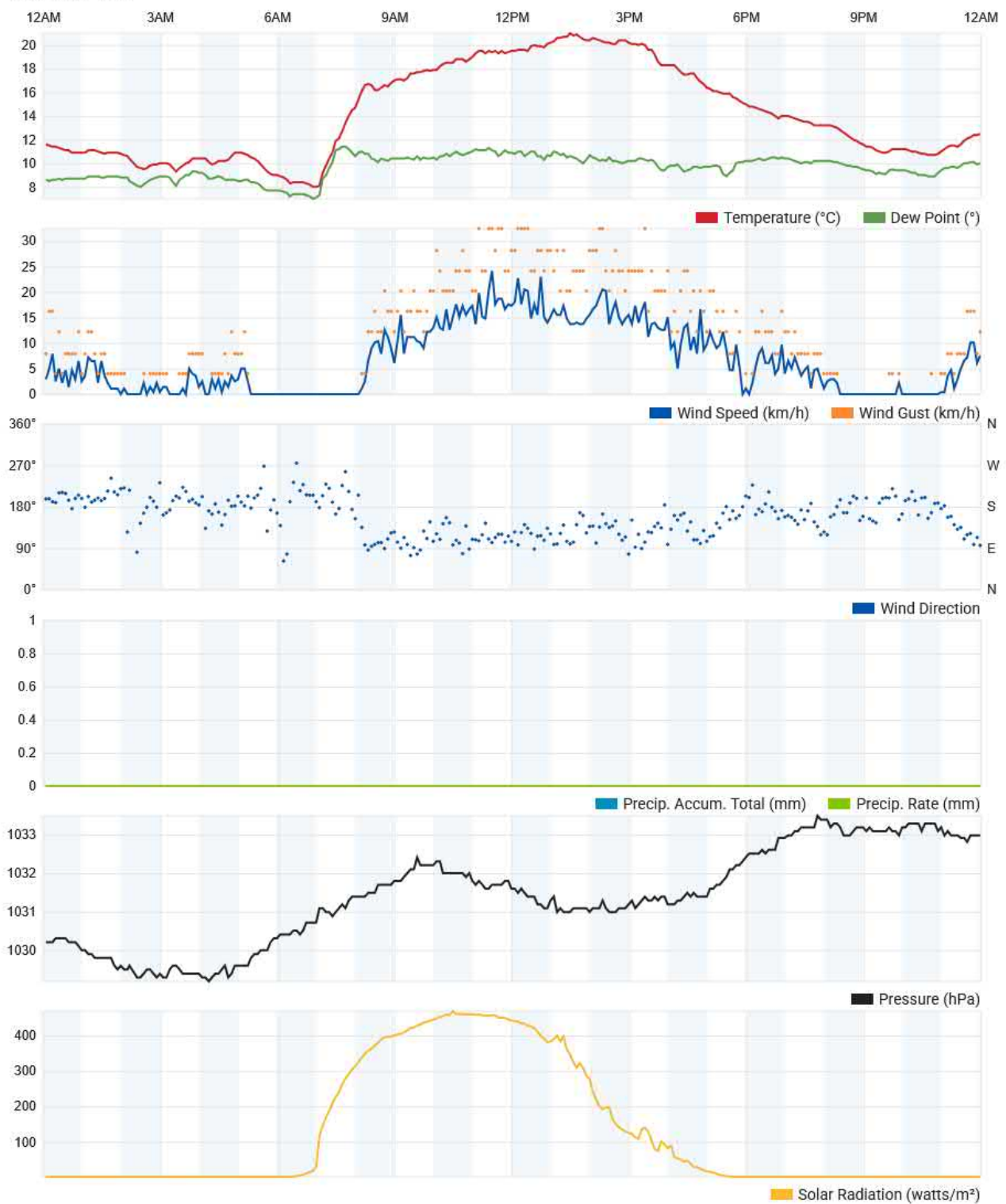
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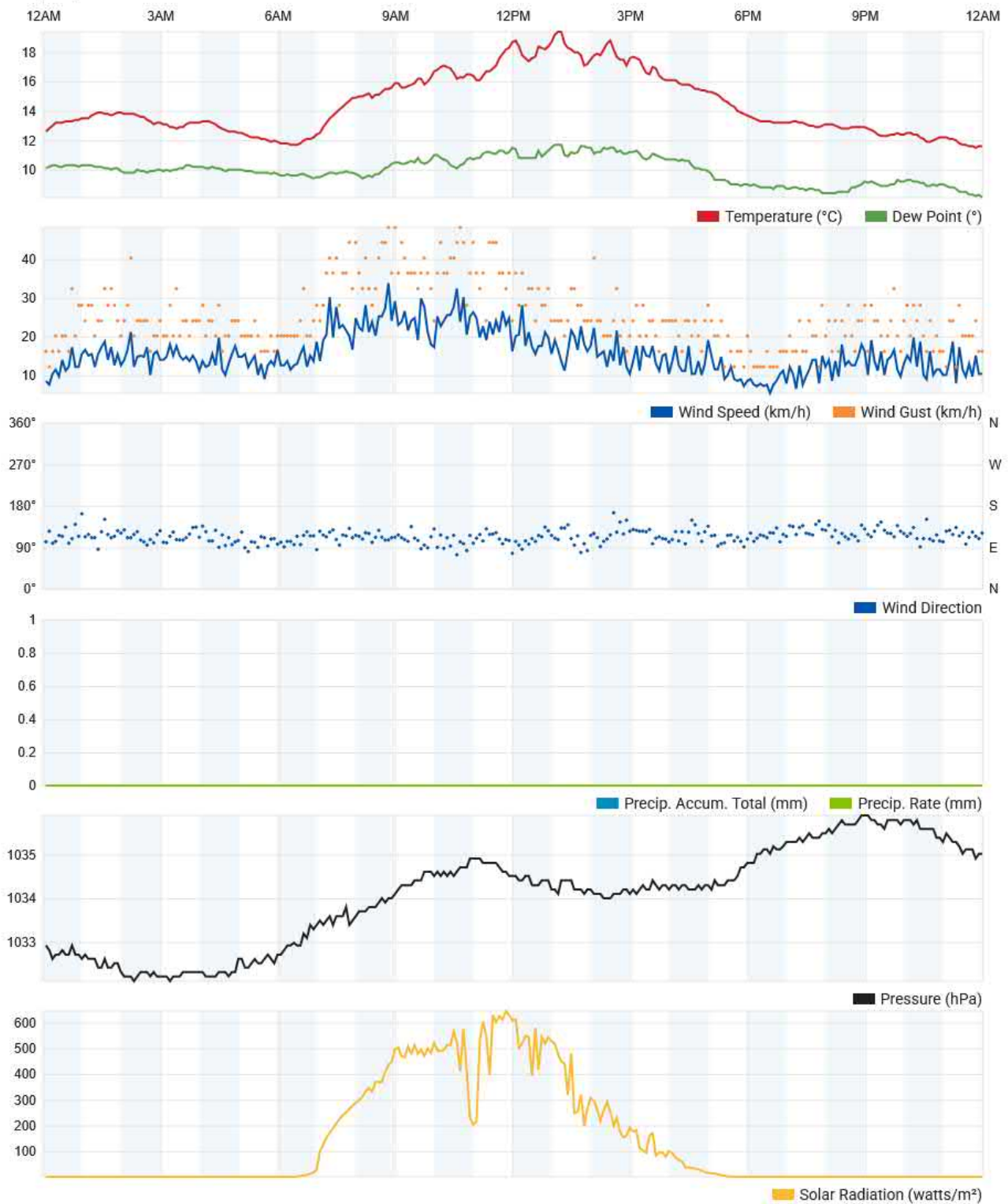
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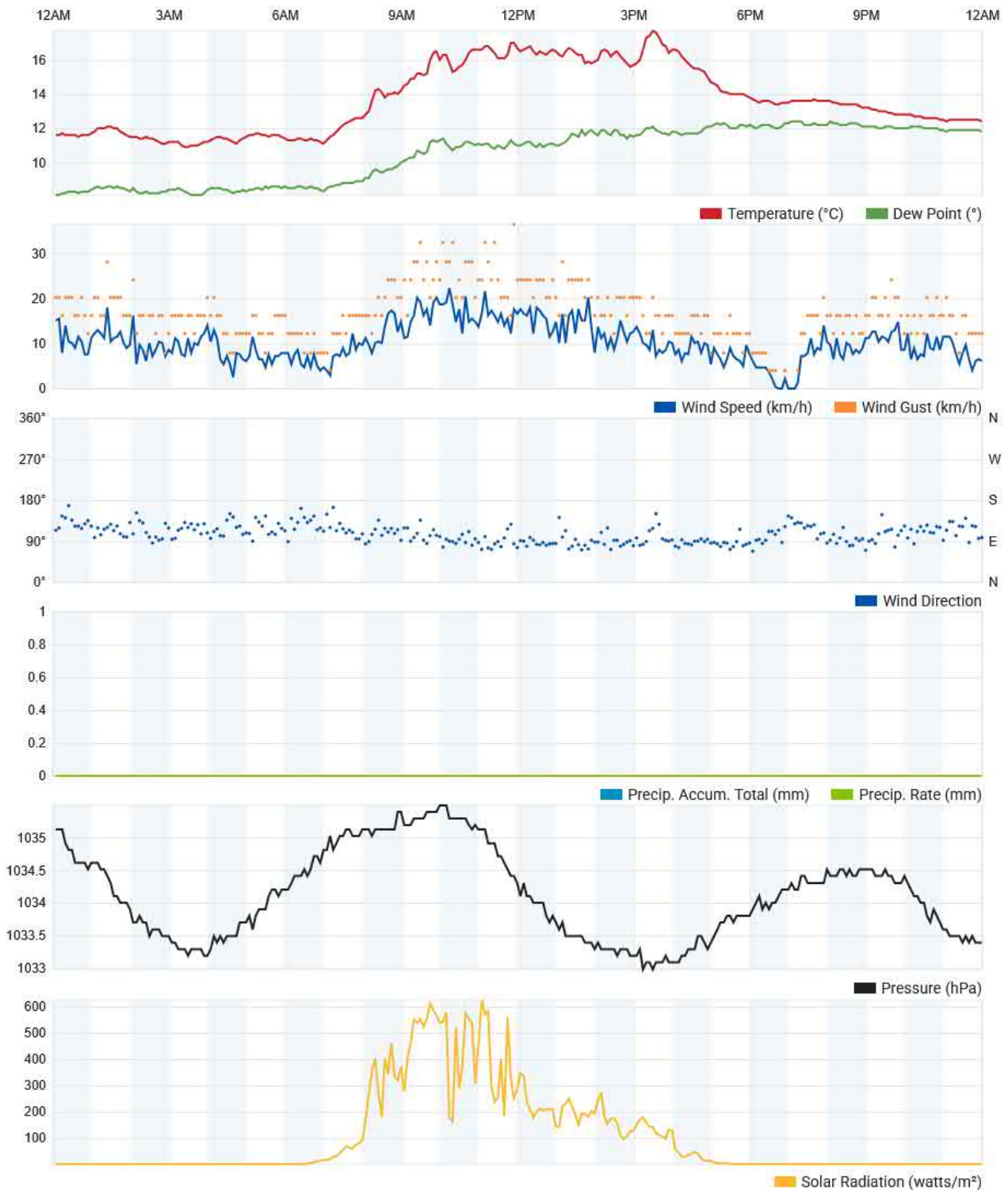
July 19, 2026



July 20, 2026



July 21, 2026



APPENDIX D: SOUNDPLAN MODELLING RESULTS

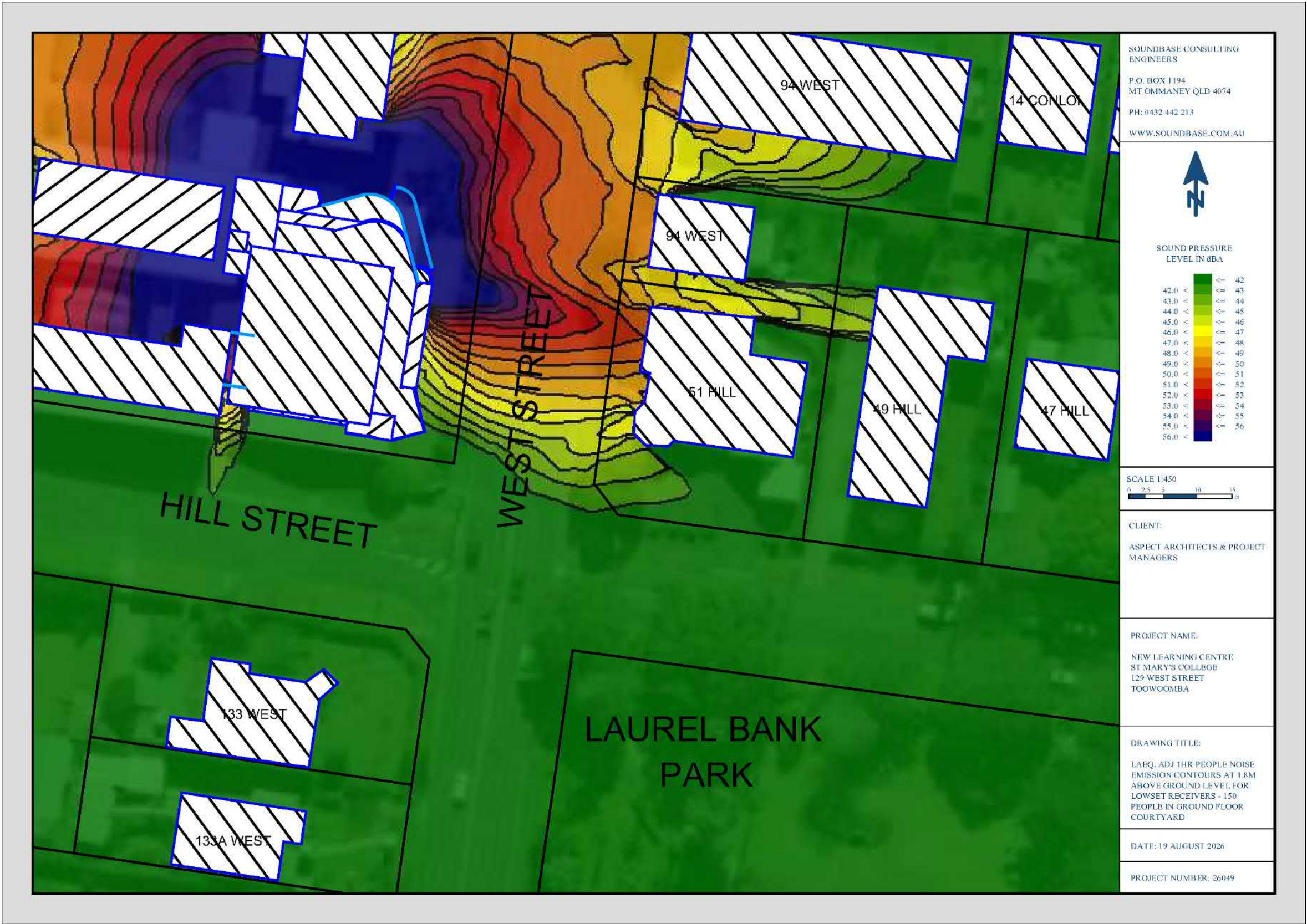


Figure 6: Lowset $L_{Aeq, adj, 1hr}$ noise emission contours for 150 people using the Ground Floor Courtyard

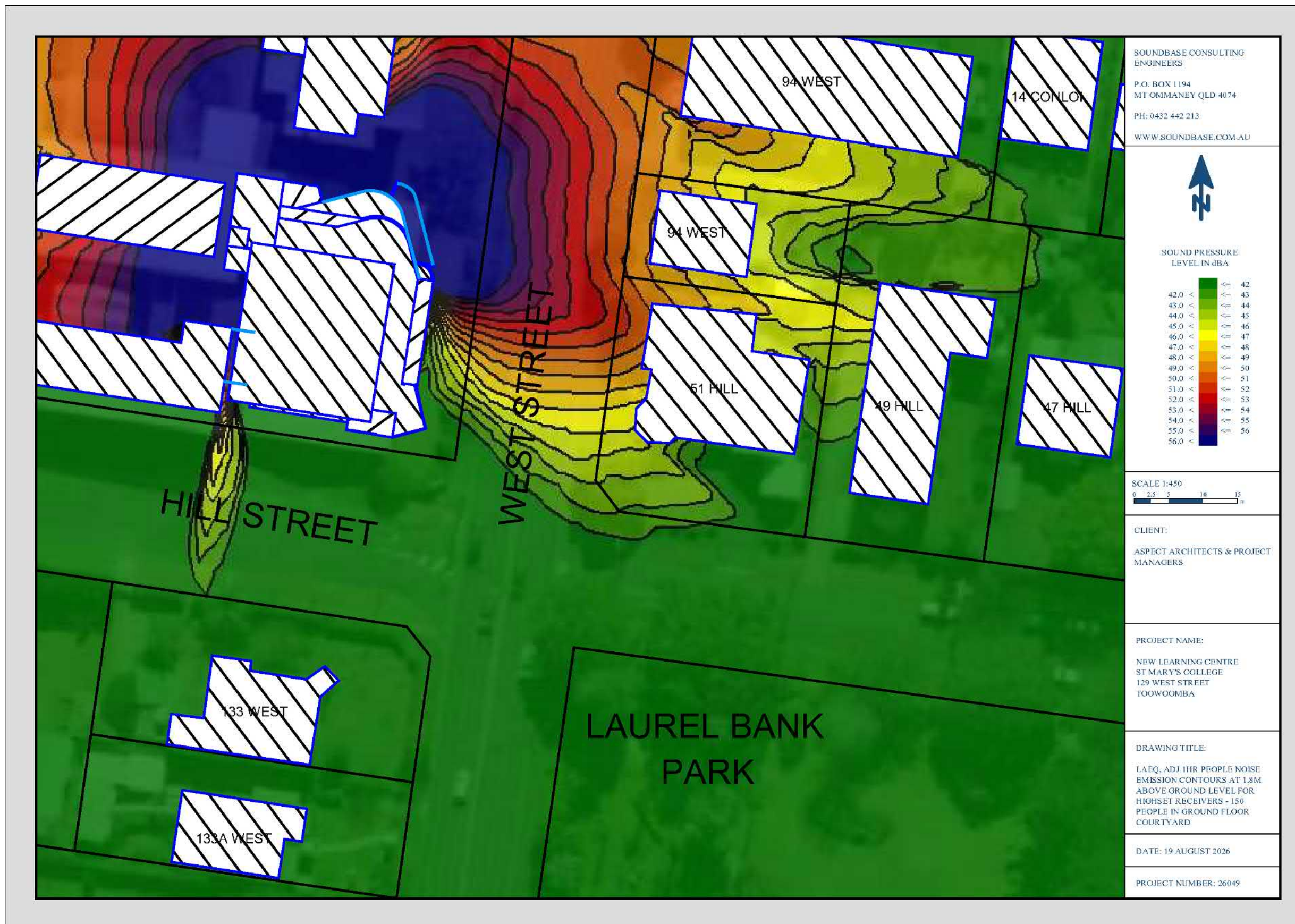


Figure 7: Highset $L_{Aeq, adj, 1hr}$ noise emission contours for 150 people using the Ground Floor Courtyard

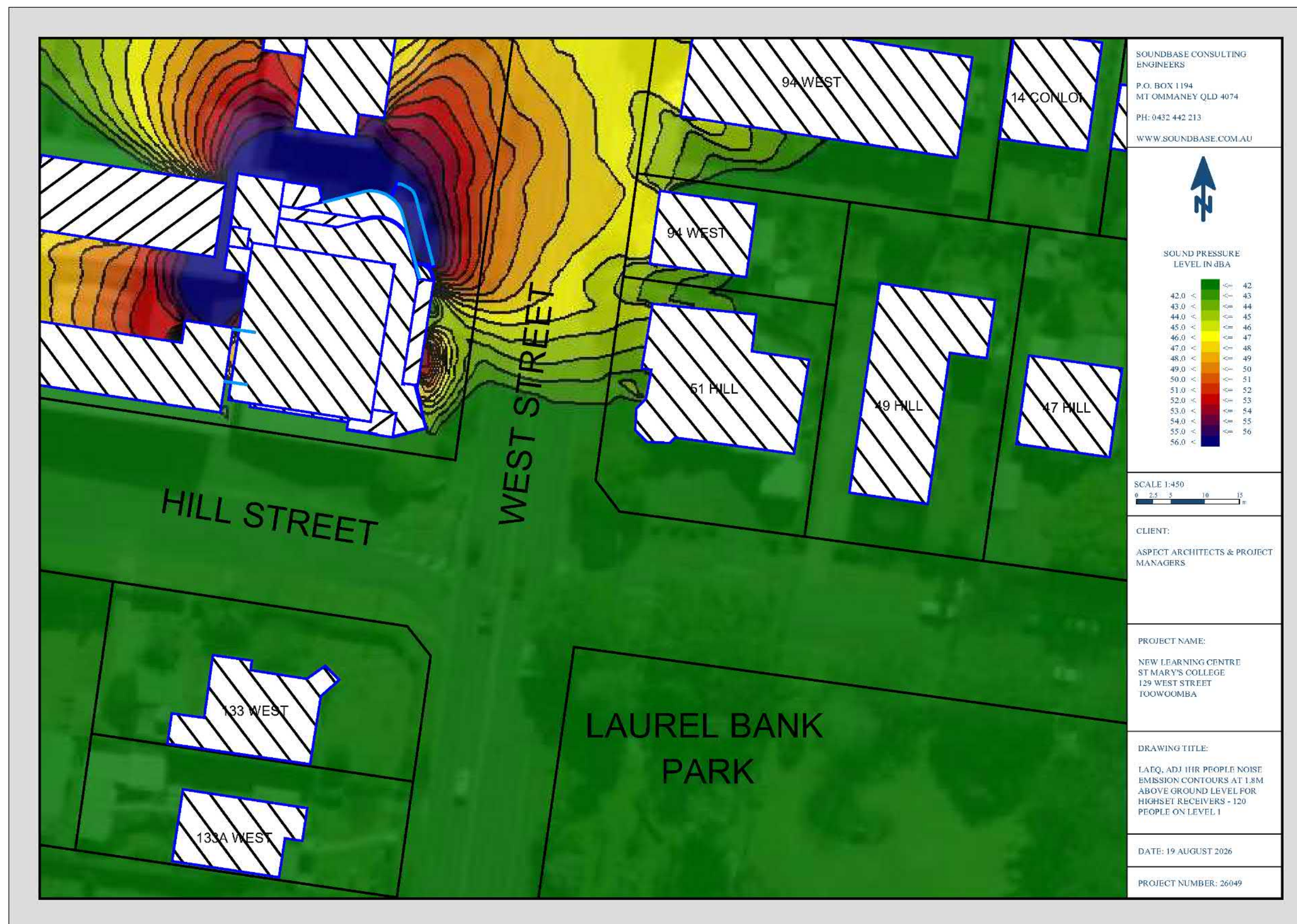


Figure 8: Lowset $L_{Aeq, adj, 1hr}$ noise emission contours for 120 people on Level 1

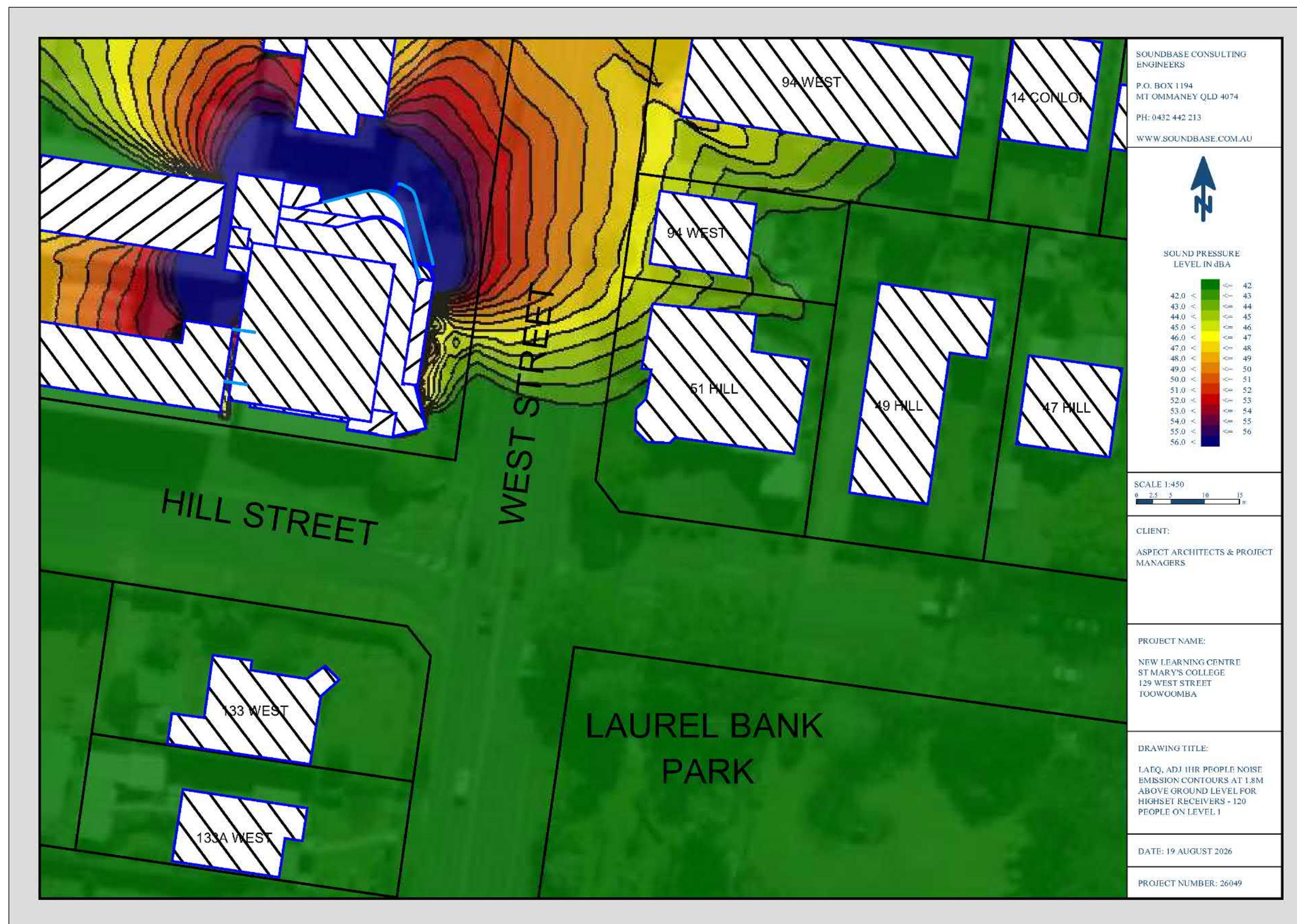


Figure 9: Highset $L_{Aeq, adj, 1hr}$ noise emission contours for 120 people on Level 1

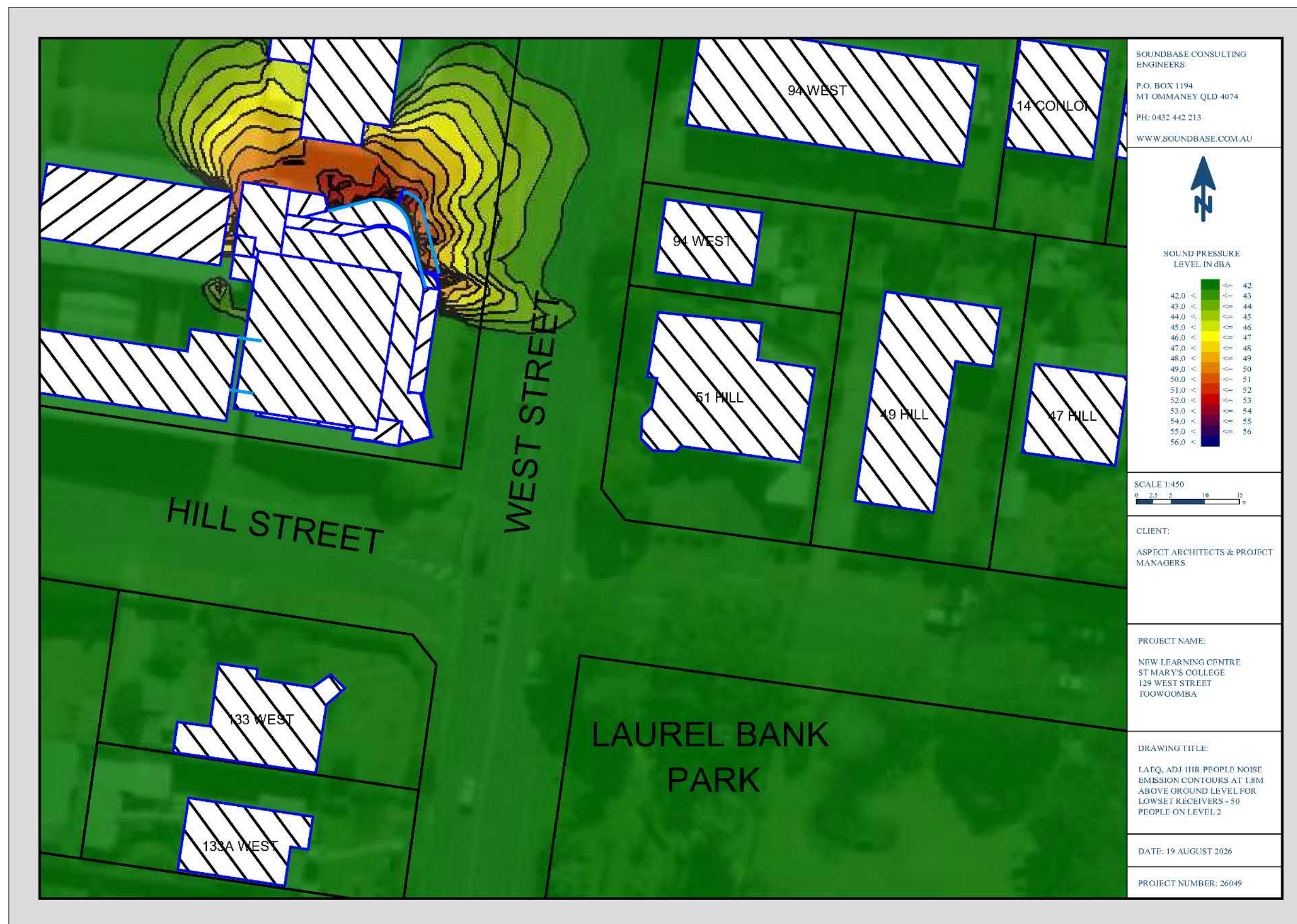


Figure 10: Lowset $L_{Aeq, adj, 1hr}$ noise emission contours for 50 people on Level 2

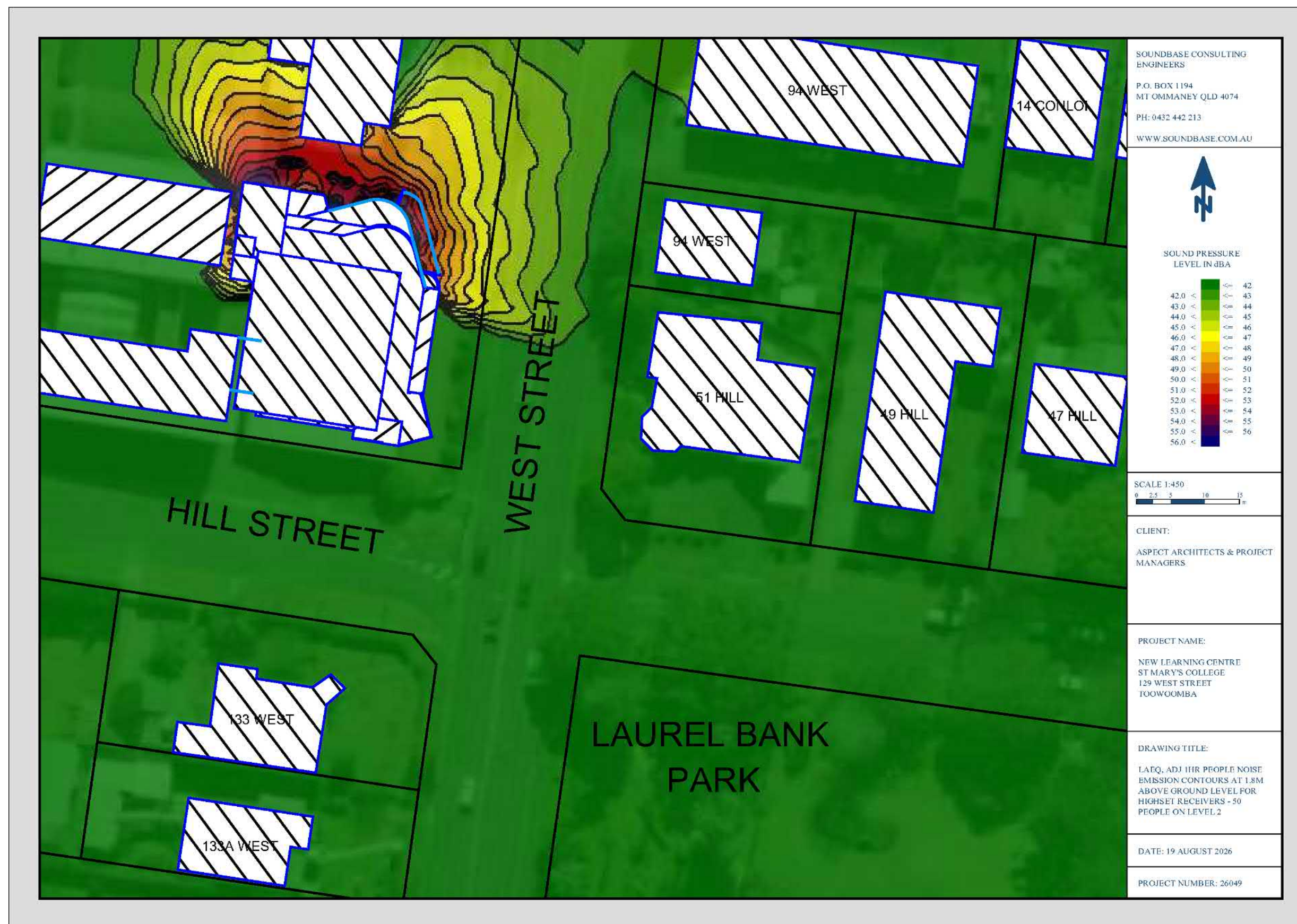


Figure 11: Highset $L_{Aeq, adj, 1hr}$ noise emission contours for 50 people on Level 2



Figure 12: Lowset $L_{Aeq,adj,1hr}$ noise emission contours for 60 people on Level 3



Figure 13: Highset $L_{Aeq, adj, 1hr}$ noise emission contours for 60 people on Level 3



Figure 14: Lowset $L_{Aeq,adj,1hr}$ noise emission contours for 20 people on Level 3



Figure 15: Highset $L_{Aeq, adj, 1hr}$ noise emission contours for 20 people on Level 3



Figure 16: Lowset $L_{Aeq,adj,1hr}$ noise emission contours for 100 people on Level 3



Figure 17: Highset $L_{Aeq, adj, 1hr}$ noise emission contours for 100 people on Level 3