



Environmental Noise Assessment

Proposed Mixed Use Development

At 9 Hercules Street, Hamilton

On behalf of Clarence Property Diversified Fund

24BRA0170 R01_1



About TTM

For 40 years, we've been at the centre of the Australian development and infrastructure industry. Our unique combination of acoustics, data, traffic and waste services is fundamental to the success of any architectural or development project.

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Revision Record

No.	Author	Reviewed/Approved	Description	Date
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Executive Summary

TTM (now a Colliers Company) was engaged by Clarence Property Diversified Fund to undertake an environmental noise assessment of a proposed mixed-use development located at 9 Hercules Street, Hamilton.

The assessment was based on the Northshore Hamilton Priority Development Area (PDA) planning scheme (October 2022) with additional reference to the Brisbane City Council City Plan 2014 Planning Scheme for the purpose of more detailed noise assessment guidelines.

Compliance with the Northshore Hamilton PDA scheme (and City Plan 2014 planning scheme) is predicted to be achieved based on the assessment and recommendations outlined in Section 6 of this report.

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1 Introduction

1.1 Background

TTM was engaged by Clarence Property Diversified Fund to undertake an environmental noise assessment of a proposed mixed-use development located at 9 Hercules Street, Hamilton. This report will form part of a development application for consideration by Economic Development Queensland (EDQ).

1.2 References

This report is based on the following:

- Northshore Hamilton Priority Development Area Development Scheme (October 2022)
- Brisbane City Council *City Plan 2014*
- *Noise impact assessment planning scheme policy* - Schedule 6, City Plan 2014
- Development plans shown in Appendix A
- Site inspection, noise measurements, analysis and calculations conducted by TTM

1.3 Scope

The assessment includes the following:

- Description of the development site and proposal
- Measurement of existing ambient noise levels and statement of assessment criteria relating to environmental noise emissions
- Assessment of the external noise environment.
- Assessment of noise generated by the development onto nearby noise sensitive receivers.
- Details of noise control recommendations to be incorporated to achieve predicted compliance.

2 Site Description

2.1 Site Location

The site is described by the following:

- 9 Hercules Street, Hamilton

The site locality is shown in Figure 1.

Figure 1: Site Locality



2.2 Description of Surrounding Environment

The site is bound by Hercules Street to the west, business property to the north, future development sites to the south and east. The current acoustic environment primarily consists of local road traffic noise.

3 Proposed Development

3.1 Development Description

The proposal is a mixed-use development comprising of the following:

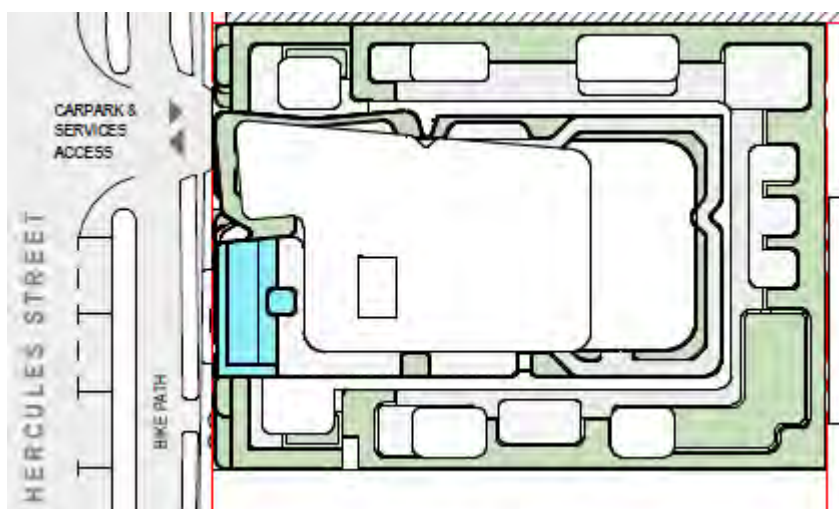
- Basement and podium car parking
- Ground floor retail
- Podium level apartments and residential communal use facilities
- Tower: residential apartments
- Rooftop: residential communal use

Proposed hours of operation are:

- Retail (ground floor) between 6am – 10pm

A plan of the development is shown in Figure 2. Further development plans are provided in Appendix A.

Figure 2: Proposed Development Plan – Site Plan



4 Measurements

4.1 Equipment

The following equipment was used to measure existing noise levels:

- Norsonic Nor140 sound level meter as a logger (SN# 1406505)
- Norsonic Nor131 sound level meter (SN# 1313158)
- RION NC-73 acoustical calibrator (SN# 10697023)

All equipment was calibrated by a National Association of Testing Authorities (NATA) accredited laboratory. The equipment was field calibrated before and after the measurement session. No significant drift from the reference signal was recorded.

4.2 Unattended Noise Monitoring

Unattended noise monitoring was conducted to establish the existing ambient noise levels between Friday 13th November and Wednesday 18th November, 2020 (Note: noise monitoring was included for reference however is not required to be used for noise analysis within this assessment). The noise monitor was located on the site, as shown in Figure 3. The monitor position was considered representative of the ambient noise levels experienced by the nearby noise sensitive receivers with consideration to access and security requirements.

Figure 3: Noise Monitoring Location



The ambient noise monitor was in a free-field location and 1.5m above ground level. The monitor was set to measure statistical noise levels in 'A'-weighting, 'Fast' response, over 15 minute intervals. Ambient noise levels were measured in accordance with Australian *Standard AS1055:2018 Acoustics – Description and Measurement of Environmental Noise* (AS1055).

Weather during the monitoring period was generally fine with rain occurring on the 18th November (source: Bureau of Meteorology). Weather affected data was excluded from the analysis.

4.3 Noise Source Measurements

Noise levels associated with typical activities which may impact noise sensitive receivers were taken from similar investigations conducted by TTM. Measurements were conducted generally in accordance with Australian Standard AS1055.

4.4 Results of Noise Measurements

4.4.1 Ambient Noise Levels

Table 1 presents the measured ambient noise levels. The Rating Background Level (RBL) was determined in accordance with the BCC *Noise Impact Assessment Planning Scheme Policy* (NIAPSP). Graphical presentation of the measured levels is shown in Appendix B. The measurement results were used to determine the assessment criteria for the development.

Table 1: Measured Ambient Noise Levels

Time Period	Measured Noise Levels, dB(A)	
	RBL L ₉₀	L _{eq}
Daytime (7am – 6pm)	52	57
Evening (6pm – 10pm)	51	56
Night time (10pm – 7am)	48	52

5 Noise Criteria

The applicable noise criteria codes for the site location are the Northshore Hamilton PDA Scheme (October 2022) and relevant references to the Brisbane City Plan 2014.

5.1 Northshore Hamilton PDA Scheme

The Northshore Hamilton Priority Development Area Development Scheme states in relation noise criteria:

General noise requirements

Development achieves acceptable noise levels for noise sensitive uses in affected areas

The Northshore Hamilton Priority Development Area Proposed Development Scheme Amendment no.1 October 2021 states in relation to noise criteria:

2.5.9.1 Noise

Development manages the noise amenity expectations of different land uses, especially sensitive land uses, with consideration for the variety of noise sources that may contribute to background noise levels in the PDA, such as aircraft operations, transport noise, marine activities, industrial activities and mixed-used urban environments.

Development is designed, sited and constructed to:

i. mitigate exposure of occupants to noise impacts from:

- a. industrial noise sources,*
- b. airport and aviation facilities,*
- c. marine facilities,*
- d. designated transport noise corridors, and*

ii. meet building standards for recommended sound levels for building interiors, and

iii. achieve minimum acoustic environmental values for indoor and outdoor areas.

The site is not located within a transport noise corridor or aircraft noise overlay location (based on City Plan 2014 mapping). The site is also screened to the port area by existing buildings in the south direction and is therefore not expected to be adversely impacted by port noise. Furthermore, passenger cruise ships do not use the port anymore.

Hence, the applicable noise assessment aspects are potential onsite noise emissions and the industrial amenity overlay (the site is partially within the overlay).

The Northshore Hamilton PDA Scheme provides only general descriptions of noise assessment requirements. To provide additional guidance for noise assessment requirements and parameters, City Plan 2014 was

referenced. This assessment considers that relevant noise aspects may be addressed by referencing the performance and/or acceptable outcomes of City Plan 2014.

5.2 City Plan 2014

As outlined in Section 5.1, City Plan 2014 is referenced to provide additional noise assessment guidance missing from the general noise assessment descriptions of the PDA Scheme. Table 2 summarises relevant planning scheme references for the site for the noise assessment.

Table 2: City Plan 2014 – Relevant Guidance

Location	Zone	Development Code	Overlay Code
Site	Emerging Community	Multiple Dwelling Code Centre or Mixed-Use Code	Industrial Amenity
Noise Sensitive Receivers	Emerging Community	n/a	n/a

5.2.1 Multiple Dwelling Code

The development includes residential accommodation units which are applicable for assessment under the *Multiple Dwelling Code*. Table 3 summarises the acoustic requirements that apply to the site.

Table 3: Multiple Dwelling Code Performance Outcomes

Performance Outcomes	Acceptable Outcomes
PO22 Development that includes mechanical plant (including air conditioning plant, heat pumps and swimming pool pumps) ensures it is located, designed and attenuated to achieve the following criteria: • $L_{Aeq,adj,T}$ emitted from mechanical plant is not greater than the rating background level plus 3 at a sensitive use not associated with the development. Note — Where T is • Day (7am to 6pm): 11hr, • Evening (6pm to 10pm): 4hr, • Night (10pm to 7am): 9hr. Where • $L_{Aeq,adj,T}$ is the A-weighted equivalent continuous sound pressure level during measurement time T, adjusted for tonal and impulsive noise characteristics, determined in accordance with the methodology described in the Noise impact assessment planning scheme policy. • The rating background level is determined in accordance with the methodology described in the Noise impact assessment planning scheme policy. Note—A noise impact assessment report prepared in accordance with the Noise impact assessment planning scheme policy can assist in demonstrating achievement of this performance outcome.	AO22 Development ensures mechanical plant is acoustically screened from nearby sensitive uses.

Performance Outcomes	Acceptable Outcomes
PO35 Development where not in a zone in the centre zones category or the Mixed use zone, ensures that car parking, hardstand or manoeuvring areas are: a. located to minimise noise and fumes disturbance on residents within and adjoining the site; b. acoustically and visually screened to: i) minimise the reflection of headlights into dwelling windows; ii) attenuate noise impacts; c. landscaped to: i) soften the visual appearance of at grade hardstand areas; ii) enhance pedestrian safety; iii) improve visual amenity for the streetscape and urban area; iv) provide shade for pedestrians and reduce the impact of glare and radiant heat from car parking areas. Note—where in a zone in the centre zones category or the Mixed use zone, the car parking provisions of the Centre or mixed use code apply.	AO35.1 Development where not in a zone in the centre zones category or the Mixed-use zone, ensures that a hardstand or manoeuvring area situated at or above ground level is: a. located a minimum of 3 metres vertically and horizontally from any habitable window on site to minimise noise disturbance on residents; b. screened to prevent the reflection of car headlights onto dwelling windows adjoining or opposite the site.
	AO35.2 Development where not in a zone in the centre zones category or the Mixed use zone ensures any vehicle movement or vehicle parking areas along the side or rear boundary are: b. acoustically screened from adjoining dwellings to a minimum height of 1.8m; c. provided with a vegetated buffer next to any movement or parking areas: i) a minimum of 1m wide along the side boundary; ii) a minimum of 2m wide along the rear boundary; iii) planted at a pot size and density sufficient to screen up to 1.5m above ground level at establishment.
	AO35.3 Development, where not in a zone in the centre zones category or the Mixed use zone, and where car parking is above ground and uncovered, provides: a. a minimum of 1 shade tree for every 6 car spaces; b. trees which are planted to achieve a minimum 50% shade cover along internal pedestrian paths and driveways within 5 years of certification in accordance with the Landscape work code and the Planting species planning scheme policy.
	AO35.4 Development where not in a zone in the centre zones category or the Mixed use zone, provides: a. landscaping that is used to delineate safe pedestrian movement through car parks; b. exterior vehicle movement areas that are broken up by alternative materials, patterns or threshold treatments.

	AO35.5 Development of ground level or other above ground car parking, where not in a zone in the centre zones category or the Mixed use zone, provides densely planted setbacks. Note—Front boundary setbacks must be treated to address streetscape interface issues and be in accordance with the streetscape interface performance outcomes and acceptable outcomes.
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It is recommended acoustic screening is utilised for exposed mechanical plant with the potential to impact adjacent sensitive receivers to comply with *Acceptable Outcome AO22*.

Podium level car parking complies with AO35.1 as it is located at least 3m vertically and horizontally from any habitable window and is enclosed within the building envelope (solid façade).

The ground level car movement area complies with AO35.2 in relation to noise, with acoustic screening to adjoining dwellings (future, adjoining residential use to the east) by the building envelope (solid façade).

5.2.2 Centre or Mixed Use Code

The proposed development includes retail use that is applicable for assessment by the *Centre or Mixed Use Code*. Table 4 summarises the primary acoustic requirements that apply.

Table 4: Centre or Mixed-Use Code Requirements

Performance Outcomes	Acceptable Outcomes
PO1 Development: (a) has hours of operation which are controlled so that the use does not detrimentally impact on the amenity of adjoining residents; (b) where not located in a Special entertainment precinct identified in a neighbourhood plan, does not result in noise emissions that exceed the noise (planning) criteria in Table 9.3.3.3.F, low frequency noise criteria in Table 9.3.3.3.G and night-time noise criteria in Table 9.3.3.3.H in a sensitive zone or a nearby sensitive use. Note—A noise impact assessment report prepared in accordance with the Noise impact assessment planning scheme policy can assist in demonstrating achievement of this performance outcome.	AO1.1 Development: (a) for accommodation activities, dwelling unit or emergency services has unlimited hours of operation; (b) for a club, if licensed, function facility, hotel or nightclub entertainment facility does not generate noise which is clearly audible and detectable, or impacts on the amenity of a resident, in a dwelling or other sensitive use; Note-Development for a club, if licensed, function facility, hotel or nightclub entertainment facility is not expected to achieve this outcome. (c) for any other use: - Where in the Principal centre zone or Major centre zone has unlimited hours of operation; - Where in District centre zone, Neighbourhood centre zone or Mixed use zone:

Performance Outcomes	Acceptable Outcomes
	a. Has hours of operation, including deliveries, which are limited to 6am to 10pm; or b. Does not generate noise which is clearly audible and disturbing in a dwelling or other sensitive use; iii. Where in any other zone: a. Has hours of operation, including for deliveries, which are limited to 6am to 8pm; or b. Does not generate noise which is clearly audible and disturbing in a dwelling or other sensitive use.
	A01.2 Development ensures mechanical plant or equipment is acoustically screened from an adjoining sensitive use.
PO7 Development mitigates impacts on residential amenity in or adjoining the building through: (a) providing an outdoor dining area that is appropriately located (b) ensuring external dining and entertainment areas are visually and acoustically screened from an adjoining dwelling.	A07 Development provides for external dining or entertainment areas to be: (a) located in or directly adjacent to the public realm (b) visually and acoustically screened from an adjoining dwelling.
PO62 Development of garages, driveways and parking structures minimise impacts on the amenity of neighbouring dwellings.	A062.1 Development for a car park: (a) provides a 2m-high acoustic fence and a landscaped area 1.5m wide where located adjacent to a neighbouring dwelling; (b) is acoustically screened where the car park is used at night and where located adjacent to a neighbouring dwelling.
	A062.2 (a) Development for a driveway or vehicle movement area is screened by a 2m-high acoustic fence along the side or rear boundary if located adjacent to a residential dwelling.

Accommodation activities comply with *Acceptable Outcome A01.1 (a)* as these activities are allowed unlimited hours of operation.

The site is located in an Emerging community zone and therefore *Acceptable Outcome A01.1 (c)(iii)* is applicable and allows hours of operation, including deliveries from 6am to 8pm. The proposed operating hours are 6am to 10pm.

Relevant external noise emissions are vehicle movements, however the vehicle movement areas are enclosed within the building envelope (solid façade) and are not expected to adversely impact a noise sensitive receiver.

Ground level car movement area complies with AO62.1/62.2 in relation to noise, with acoustic screening to adjoining dwellings (future, adjoining residential use to the east) by the building envelope (solid façade).

Ground floor retail possible outdoor seating area is small in size and is not expected to adversely impact a sensitive receiver during proposed operating hours considering also that there are no adjoining sensitive receivers to the site (relative to the location of outdoor seating areas).

It is recommended the development comply with *Acceptable Outcome AO1.2* by applying acoustic screening to exposed mechanical plant with the potential to impact adjacent sensitive receivers.

Therefore, no further analysis is required of onsite noise for the proposed hours of operation.

5.2.2.1 Noise (Planning) Criteria

The noise emission criteria of Performance Outcome PO1 of the Centre or Mixed Use Code (Table 9.3.3.F) is presented in Table 5.

Table 5: Noise (Planning) Criteria (Table 9.3.3.3.F)

Criteria Location	Intrusive noise criteria, dB(A) Day, evening and night $L_{Aeq,adj,T}$ are not greater than the RBL plus the value shown in Column 1				Acoustic amenity criteria, dB(A) Day, evening and night $L_{Aeq,adj,T}$ are not greater than the values in this column for the relevant criteria location		
	Column 1	Day	Evening	Night	Day	Evening	Night
Emerging community zone boundary	+5	57	56	53	55	50	45

Day: 7am – 6pm. Evening: 6pm – 10pm. Night 10pm – 7am.

5.2.3 Industrial Amenity Overlay Code

The site is partially located within an *Industrial Amenity Overlay* area of City Plan 2014. During site visits no adverse noise activities were observed from any industrial uses. A survey of the surrounding area did not identify any industrial uses with the potential to adversely impact the proposed development. Hence no further analysis of industrial uses was conducted.

6 Recommendations

Recommended noise mitigation measures are presented in this section to achieve predicted compliance with the relevant assessment criteria.

6.1 Noise Mitigation Measures

The following management strategies are recommended to achieve predicted compliance and minimise noise annoyance:

- a. Any speed humps should be bitumen, concrete (as part of the slab), or rubber, and not metal.
- b. Any grates or other protective covers in the car park and access driveways must be rigidly fixed in position to eliminate movement and be maintained.

6.2 Mechanical Plant

As detailed mechanical plant selections are not available at this stage, it is not possible to carry out a detailed examination of any attenuation measures that may be required to achieve the noise criteria.

To comply with planning scheme acceptable outcomes for mechanical plant (City Plan 2014), we recommend the following for plant with the potential to adversely impact nearby sensitive receivers:

Development ensures mechanical plant is acoustically screened from nearby sensitive uses.

The definition of 'acoustically screened' is provided in Table SC1.2.3.B of Brisbane City Plan 2014, Schedule 1 Definitions:

The source of noise is completely screened from view of habitable rooms (including balconies, patios, decks and verandas) of an adjoining sensitive use by solid, gap free material and construction e.g. acoustic fence, building, or enclosure.

Acoustic barrier: Solid, gap free barrier with minimum surface density of 12.5kg/m²

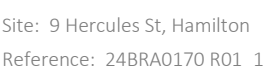
Furthermore, it is also recommended that a mechanical plant noise assessment is conducted once plant selections are finalised to ensure noise emissions comply with criteria.

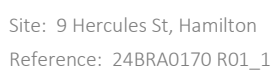
7 Conclusion

An environmental noise assessment was conducted of a proposed mixed-use development located at 9 Hercules Street, Hamilton.

Compliance with the Northshore Hamilton Priority Development Area (PDA) planning scheme (and Brisbane City Council *City Plan 2014* planning scheme) is predicted to be achieved based on the recommendations outlined in Section 6 of this report.

Appendix A Development Plans







Appendix B Unattended Noise Monitoring Graphs

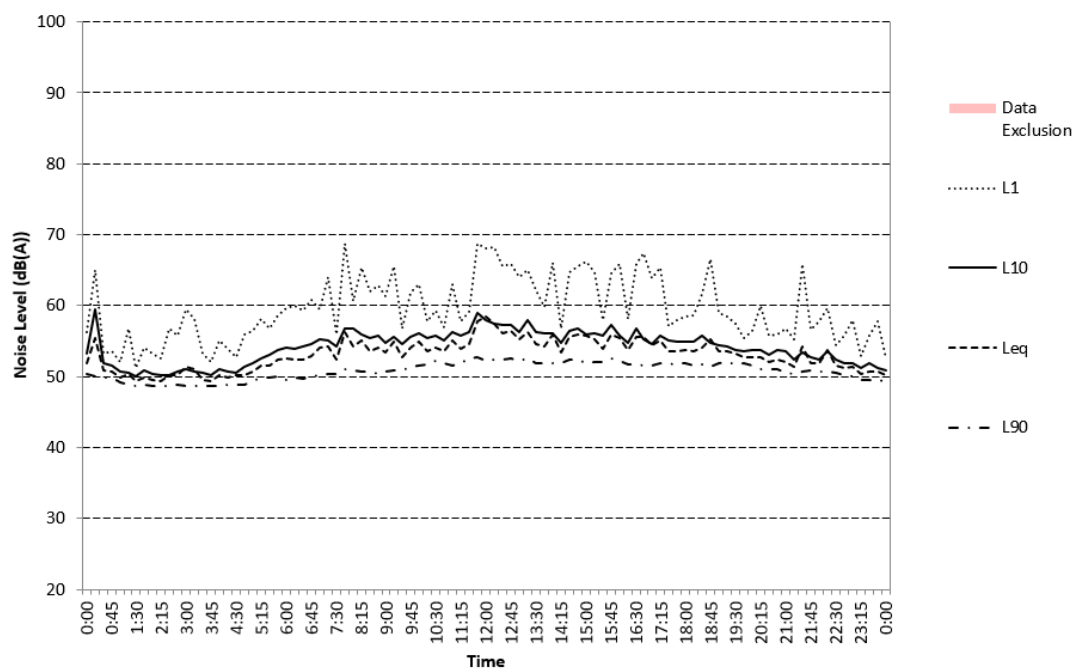
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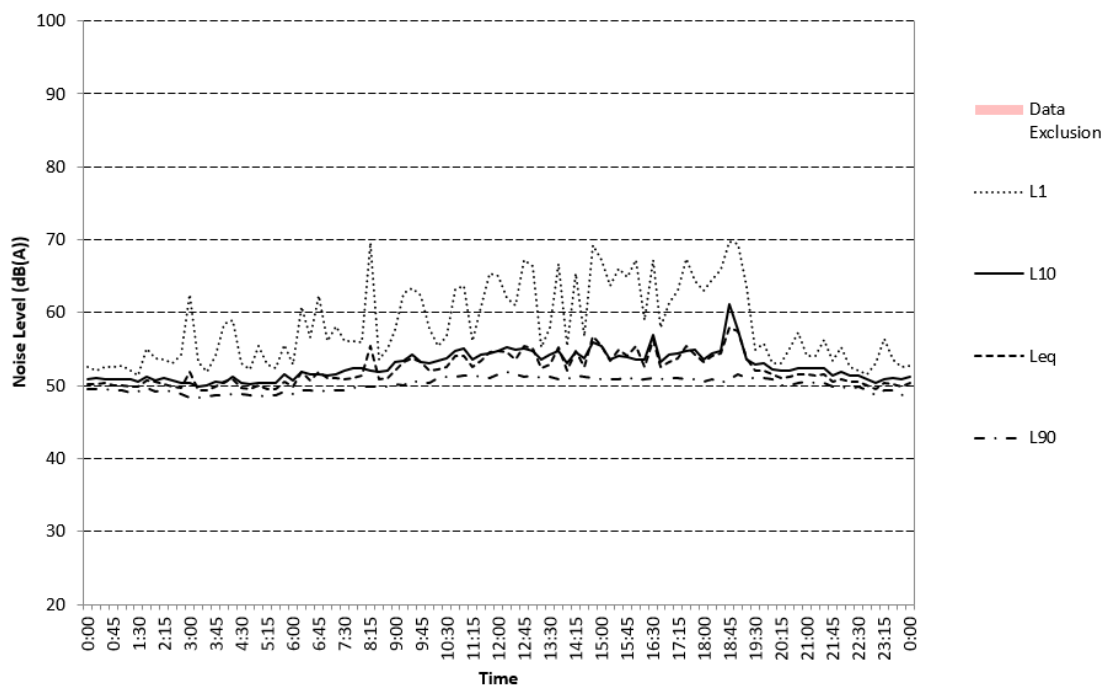


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