

MIXED USE DEVELOPMENT

1529 Creek Road, Carina

Noise Impact Assessment

Salvation Army



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1. INTRODUCTION

Trinity Consultants Australia (Trinity) was commissioned by Salvation Army to provide acoustic engineering consultancy services for the proposed mixed used development being constructed at 1529 Creek Road, Carina.

This acoustic report is to accompany a Development Application for consideration by Brisbane City Council for a development permit for a mixed used. The application is made over land at 1529 Creek Road, Carina, QLD 4152, and described as Lot 881 on SL11921.

The purpose of this report is as follows:

- Outline the relevant project noise criteria.
- Present the results of noise monitoring.
- Predict and assess the noise emission impacts onto the surrounding premises.
- Describe noise mitigation requirements, if any.

To aid in the understanding of the terms in this report a glossary is included in **Appendix A**.

1.1 Response to RFI

The previous report, being Trinity Report 237401.0047.R01V03, dated 17/11/2025, was prepared to address an information request issued by the Brisbane City Council (BCC) on 20/12/2024, as summarised in **Table 1.1**.

Following the submission of the response, the Brisbane City Council issued a further advice letter on 25/02/2026, requesting that the Emerging Community (EC) zone (currently occupied by a service station) be included in the assessment. The further advice and Trinity's response are summarised in **Table 1.2**.

Table 1.1 BCC Feedback and Response

BCC Feedback	Response
9) The Noise Impact Assessment prepared by Trinity Consultants, dated 15/8/24, 237401.0047.R01V02 in Appendix E has been reviewed and further clarification is required. Submit an amended Noise Impact Assessment containing the following additional information:	
a) Assess the southern site boundary as a receiver due to it being in the EC zone. There are criteria for the EC zone in the related performance outcome PO2 of the Community facilities code;	A service station (7-Eleven) is located immediately south of the project site within the EC zone. Given the established use of this land and the restrictions on its future redevelopment for sensitive purposes due to contamination (should the service station cease operation), it is not considered reasonable to assess noise impact at the southern boundary.
b) While the receiver locations have been provided in the report, confirm if the criteria are being assessed on the boundary (not at the dwelling);	Receivers were defined on zone boundaries. Criteria was assessed on zone boundaries.
c) Correct Section 6.2 (point 2) to mention the receiver to the west on Creek Road;	Receivers to the west on Creek Road are now mentioned in the text, in Section 6.2 .
d) Provide a separate assessment for amplified music. Table 6.1 has been reviewed and does not indicate amplified music levels in dB(C). The assessment is to include the following: <ul style="list-style-type: none"> i) provide the source levels at a distance from a speaker. ii) show that the low frequency noise criteria in PO1 of the Centre or mixed use code is met. 	<p>The original report did include amplified sound in the dBC predictions presented.</p> <p>In this updated report, it is confirmed that predicted noise levels with and without mitigation, referring to Table 6.2 and 6.4 respectively, both include amplified sound.</p> <p>Nevertheless, a separate amplified music low frequency noise impact assessment (dBC) has been provided in Section 6.3.1. Multiple loudspeakers in Multipurpose Hall were modelled and it assumed they are operating simultaneously.</p> <p>In response to the specific items:</p>

BCC Feedback	Response
<p>iii) justify predicted impacts such as with distance separation or building construction.</p> <p>iv) address emissions from the 2x openings facing west and the 2x openings facing east at the Multi-Purpose Hall, which are in addition to the main entrance which includes a foyer. Confirm which doors will remain closed while the Hall is in use, and design sound lock doors using plans for those doors which will be used while the Hall is in use.</p> <p>v) It is assumed that the only part of the building producing amplified music is the Multi Purpose Hall. Review other areas of the development such as the Youth Hall and Activity Space and assess emissions from these areas or any other areas of the site.</p> <p>vi) Advise whether the use of a microphone is proposed and assess emissions.</p>	<p>i) Source levels are presented in Table 6.1 and Section 6.3.1.</p> <p>ii) The predictions provided in Table 6.3 and Table 6.4 show full compliance with the dBC criteria.</p> <p>iii) The base modelling assumes all doors are open and to achieve full compliance, mitigation is required, including sound lock doors, as discussed in Section 6.4.2.</p> <p>v) As identified in Section 6.2, the modelling considers amplified sound in the Multi Purpose Hall. There are no other areas where amplified sound is expected.</p> <p>vi) There is a potential use of a microphone for events. The modelling considers amplified sound levels (whether music or microphone).</p>
<p>e) Confirm/clarify the maximum number of people that can access the site at any point in time. The report is based on 100 and 200 people whereas Section 3.1 states 300 people may occupy the site;</p>	<p>Section 6.1 has been updated. The number of patrons expected in the Multipurpose Hall was assumed to be 300 for the assessment. Room internal average noise level was still assumed to be 85 dBA.</p>
<p>f) The assessment of carparking activities, based on the number of vehicles accessing the site and door slams (Table 6.1) is not considered to be reflective of the maximum number of vehicles and patrons accessing the site. (Two door slams per hour during the day, would involve one person in one car entering and exiting per hour). Assess more than one person in one car for the number of door slams and consider that patron turnover may be higher where a person spends less than one hour at the Hall. Also, assess more than 1 car movement per hour;</p>	<p>Traffic and car park assumptions have been updated based on a new layout, assumptions regarding hall capacity and the latest traffic report (prepared by Bitzios Consulting, dated 05/05/2026). Specific inputs include:</p> <ul style="list-style-type: none"> ■ During a 4 hr event in Multipurpose Hall - the maximum number of patrons, including those attending events in the Multipurpose Hall, was estimated to be 150. It was further assumed that, on average, each vehicle carries 2.5 patrons, resulting in approximately 60 vehicles per event (as per traffic report). ■ Hours outside an event - the traffic impact report predicts approximately 85 vehicles per hour under peak conditions, including community, retail, and commercial activities. This traffic volume was conservatively applied across all regular hours without Multipurpose Hall activities, assuming one occupant per vehicle. <p>The above assumptions are considered conservative as they rely on peak car park activity.</p> <p>Furthermore, expected patron turnover is inherently considered in the assessment by adopting the peak hourly traffic movements.</p> <p>Section 6 was updated accordingly. More modelling detail was provided in Section 6.2.</p>
<p>g) Provide further information regarding the assessment of the plant and equipment on the roof. If parapet walls are required in particular roofs, amend the design accordingly;</p>	<p>Design details for the plant and equipment on the roof is not available at this stage.</p> <p>Assumptions and sound power levels for mechanical plant in Table 6.1 have not changed. Assessment should be updated once the details are available.</p>

BCC Feedback	Response
h) Demonstrate with calculations that the proposed mitigation techniques of acoustic barriers and the construction of the Hall to Rw standards, are sufficient to reduce emissions to acceptable levels, based on all activities occurring at the same time;	A 3D environmental noise model with SoundPlan v8.2 was prepared for this assessment. The model assumes an internal noise level within the hall and noise attenuation through adopted construction materials (with a specific Rw value of 24). Trinity can provide the noise model files for review upon request. SoundPlan uses the ISO9613-2 prediction algorithm and is adopted industry wide (locally and internationally).
i) Provide a more detailed assessment of the various noise sources, to justify the summary at the end of Section 6.3 which states that if plant and equipment are appropriately managed, the overall site can meet noise criteria;	Design details of the plant and equipment on the roof is not available at this stage. Typical equipment is expected but mechanical plant noise should be revisited once the details are available. At this stage, we are not able to provide more detailed assessment.
j) Provide the density and Rw of the 2.4m high barrier on the eastern boundary and provide the materials of construction for the barrier given the interface with the adjacent development;	A typical noise barrier construction was considered. The Brisbane City Council 2014 City Plan definition is as follows: <ul style="list-style-type: none"> ■ Solid, gap free fence with minimum panel surface density of 12.5 kg/m².
k) Remove any assessment of the night-time frame from the report as the hours of operation are for the day and evening (7AM – 10PM);	The nighttime frame from the assessment has been removed. Accordingly, it is assumed that mechanical plant will not be run during the nighttime period.
l) Confirm the hours of operation of the Youth Hall. The report discusses that the hours are from day to evening;	Youth Hall has been removed from proposed design.
m) The report at Sections 3.1 to 3.2 does not indicate clear hours of operation for the Multi Purpose Hall, clarify the hours of operation for this part of the overall use; and	Hours of operations for Multi Purpose Hall was stated by the proponent as below: “Sunday Family Worship 8am-12pm average 80-100 (Could extend to 200-300 on any day 9am-10pm with hire functions)” Operation hours conservatively assumed from day to evening, specifically from 7 am to 10 pm to align the assessment with Brisbane City Council’s definitions of day and evening periods.
n) Submit section plans showing the acoustic barrier in context with the adjoining property	Proposed noise barrier locations are shown in Figure 6.1 . Section plan showing acoustic barrier proposed for one of existing noise sensitive receivers in context with the adjoining property is shown in Figure 6.2 .

Table 1.2 BCC Further Advice and Response

BCC Feedback	Response
4) The Noise Report by Trinity R01V03 dated 17/11/25 has been reviewed. The zone on the adjoining land to the south that is used for a Service station is in the Emerging community (EC) zone and requires assessment	The Emerging Community (EC) zone located to the south of the proposed development, currently occupied by a service station, has been considered in this noise impact assessment as a potential noise sensitive receiver. A noise barrier along the boundary between the EC zone and the project site was also included in the assessment to demonstrate how the noise criteria could be achieved at the boundary of the EC-zoned land to the south.
a) In accordance with PO2 of the Community facilities code, provide a letter/addendum from the noise consultant which advises whether the noise criteria are achievable on the boundary of the EC zoned land to the south. Ensure that the letter is supported with calculations and other information to justify any assumptions made.	Due to other design changes to the project layout, a revised version of the noise report has been prepared instead of an addendum letter, to comprehensively incorporate these updates. It is noted that the noise barrier is not currently required, as the existing use within the Emerging Community (EC) zone (i.e. a service station) is not classified as a noise-sensitive use. It is recommended that the noise barrier be considered in the future if the existing use is replaced with a noise-sensitive development.

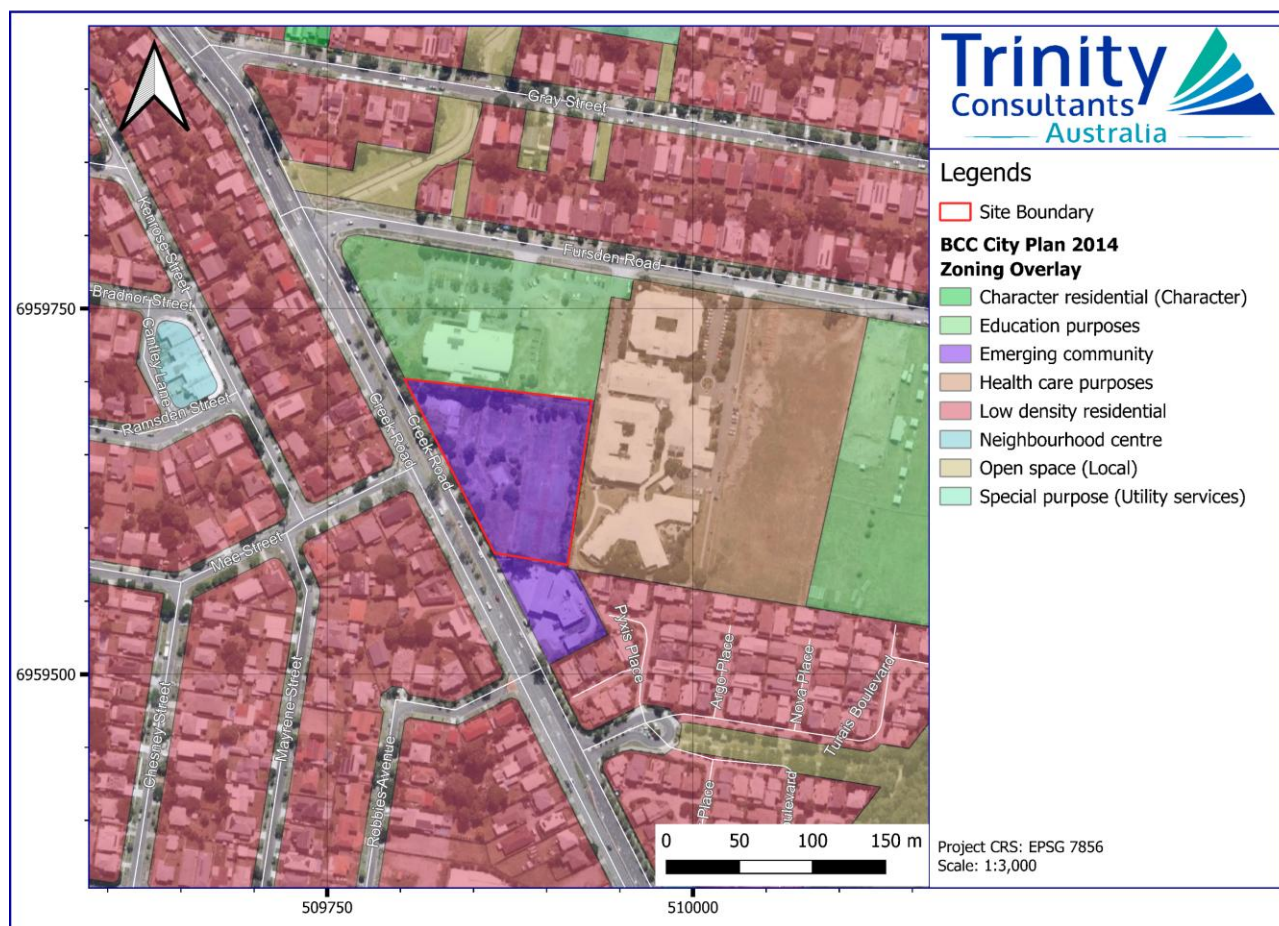
2. STUDY AREA DESCRIPTION

The proposed development is to be located at 1529 Creek Road, Carina. The site location and zoning map are shown in **Figure 2.1** and **Figure 2.2**, respectively.

Figure 2.1: Site Location (source: Queensland Globe).



Figure 2.2: Zoning Map (Brisbane City Plan)



The site is currently vacant and generally consists of cleared land/short grass.

The proposed development is surrounded by the following uses (refer **Figure 2.1**):

- Residential buildings to the north on the opposite side of Fursden Road (R1), and to the southwest on the opposite side of Creek Road (R2).
- Residential buildings (R3) to the south east, between service station and aged care.
- Cleared land and a church to the north.
- Aged care (R4) to the east.
- Service station (R5) to the south.

Nearby noise-sensitive receivers, i.e., R1 to R4, are potentially affected by noise from the proposed development. The Emerging Community (EC) zone, identified as R5 and located to the south of the proposed development, is currently occupied by a service station. However, it has been considered in this noise impact assessment as a potential noise-sensitive receiver if the existing use is replaced with a noise-sensitive land use in the future.

3. PROPOSED DEVELOPMENT

3.1 Site Design

The proposed development includes the following components:

- Salvo Store
- Multipurpose Hall
- Activity space
- Outdoor courtyard
- Outdoor playground
- Commercial / retails tenancies
- Various services and amenities
- Mechanical plant
- 104 carparking spots.

Parking is accessed off Creek Road via a driveway located at the south western side of the street frontage. The loading dock is accessed from the same driveway.

The proposed development includes a multipurpose hall. The Salvation Army intends to utilise this hall for community activities, including Sunday family worship services and local family-based ministry groups.

Currently, it is anticipated that activities within the multipurpose hall will accommodate between 80 and 100 attendees during daytime periods. There is also potential to expand the hall's capacity to up to 150 attendees during both daytime and evening periods.

Additionally, outdoor carol events may be held once or twice annually, attracting over 200 patrons (many of which would likely come from the surrounding community). These community activities are infrequent and are not included in the current assessment. It is not normal to apply typical day-to-day operational noise criteria to such events. Instead, an event-specific noise management plan may be implemented to manage potential noise impacts.

In general, it is understood that no activities are expected to take place after 10 pm in the Multipurpose Hall.

The proposed development plan and mechanical plant locations are shown in **Figure 3.1**.

The proposed development is planned to be constructed in four stages as shown in **Figure 3.2**.

3.2 Potential Noise Sources

Based on the proposed site layout, operations and building locations, the main potential noise sources include:

- Car parking activity
- Patron/customer noise from halls (associated with Multi Purpose hall, playground, courtyard, retail areas)
- Amplified music (during community activities within the Multi-Purpose Hall)
- Mechanical plant

The proposed hours of operation are as follows:

- 7 am to 10 pm including weekend days.

These potential impacts are required to be considered in the project design.

Figure 3.1: Proposed Development Plan

Drawing "A1-0-02_J_SITE PLAN - ROOF", provided on 14/05/2026 by Salvation Army

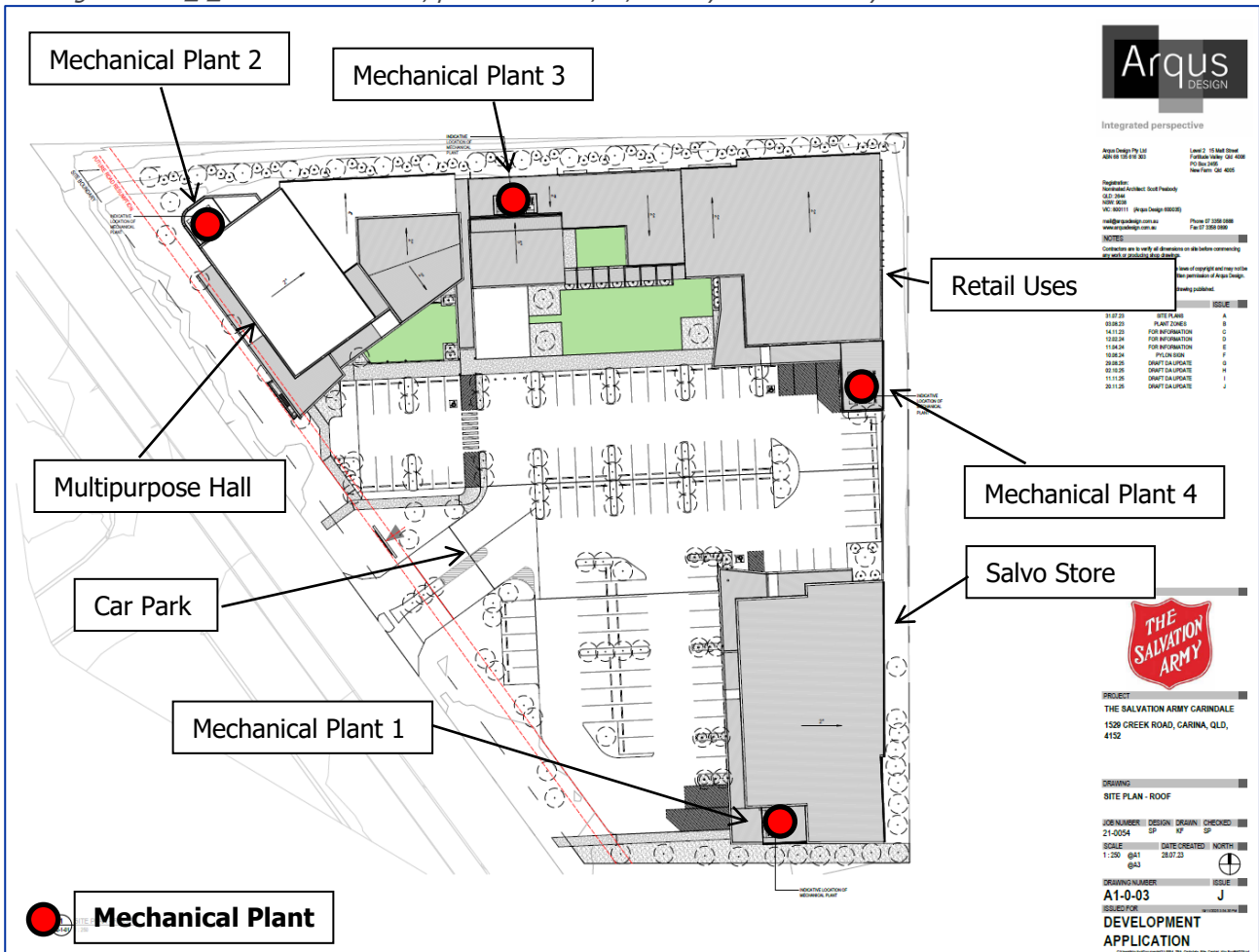
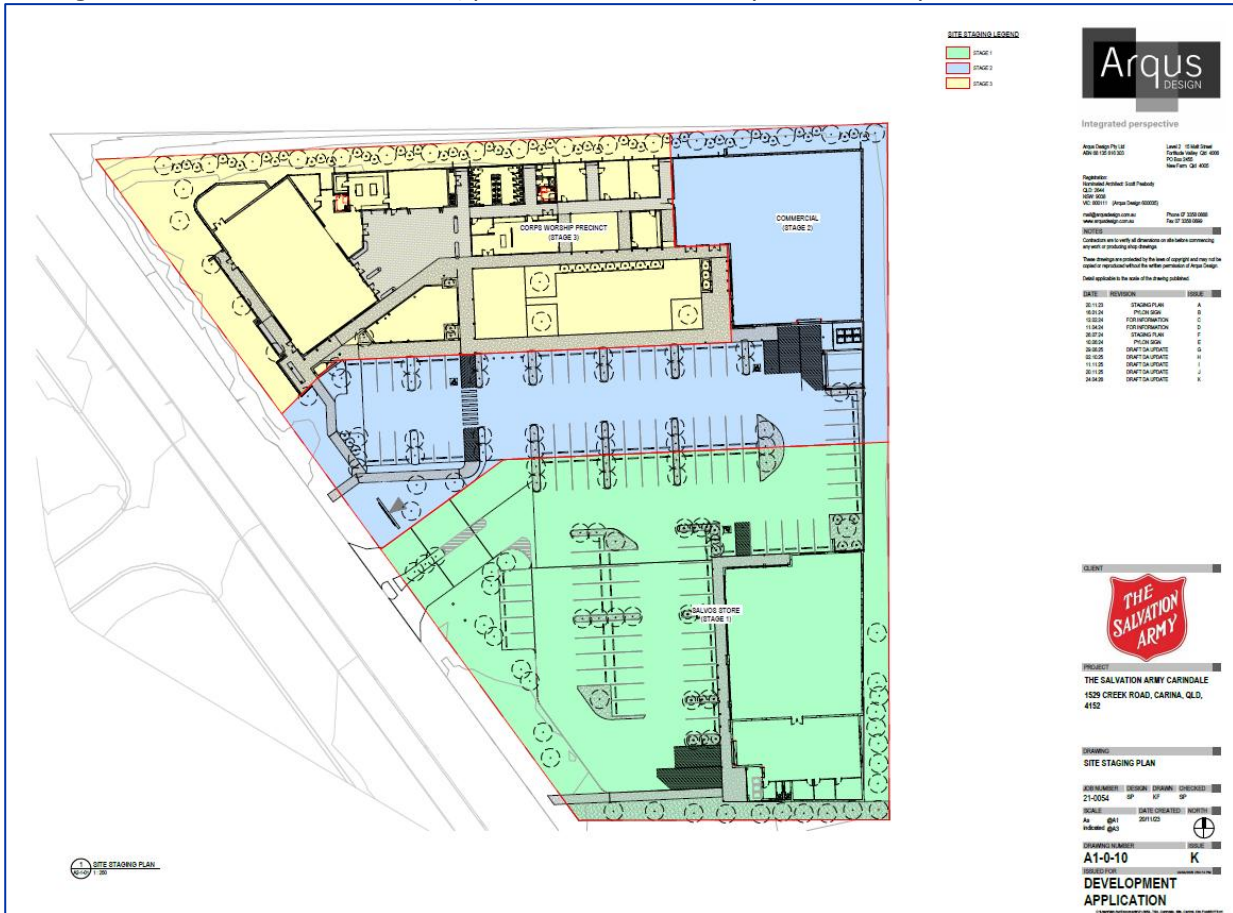


Figure 3.2: Proposed Staging Plan

Drawing "A1-0-10_K SITE STAGING PLAN", provided on 14/05/2026 by Salvation Army



4. NOISE MEASUREMENTS

4.1 Overview

Acoustic measurements consisted of attended noise measurements and noise logging. The noise measurement location is shown in **Figure 2.1**. Location A is located in the southwestern boundary of the development site, approximately 8 m from the shoulder of Creek Road; while, Location B is located on the northwestern corner of the development site.

The noise monitoring was undertaken in general accordance with Australian Standard AS1055 Acoustics – Description and measurement of environmental noise and the DES Noise Measurement Manual.

4.2 Attended Noise Measurement

Two attended noise measurements were undertaken at Location A and B. The measurements were undertaken on Wednesday 19/04/2023 using a field and laboratory calibrated Norsonic NOR140 sound level meter. The microphone height was approximately 1.3m above ground level and was located in the free field.

Weather during the time of monitoring was fine, 1/3 cloud cover, without wind.

The measured noise levels are summarised in **Table 4.1**.

Table 4.1: Attended Noise Measurement Results

Location	Date, Time and Duration	Results and Notes
A	02:00 pm 19/04/2023 15 minutes	Statistical noise levels: L ₁₀ 52 dBA, L _{eq} 66 dBA, L ₉₀ 69 dBA Traffic noise is dominant Passing car 65 to 70 dBA Passing trucks 71 to 76 dBA Passing SUVs 69 to 72 dBA Passing UTEs 69 to 74 dBA Passing motorcycle 80 dBA Birds 55 to 60 dBA
B	12:38 pm 88/88/2021 15 minutes	Statistical noise levels: L ₁₀ 46 dBA, L _{eq} 54 dBA, L ₉₀ 57 dBA Traffic noise is audible and dominant Distance traffic 48 to 59 dBA Unloading gas cylinders at Service Station (impact / bang noise) 53 to 57 dBA Plane pass by 62 to 68 dBA Birds 56 to 60 dBA

Note: * The reported noise levels, excluding the statistical noise levels, are the instantaneous levels read from the sound level meter, and generally represent the range in noise levels or maximum noise levels for a particular noise source.

4.3 Noise Logging

Noise logging was undertaken at Location A and B from Wednesday 19/04/2023 to Thursday 27/04/2023 using a field and laboratory calibrated Larson Davis LD831 environmental noise logger. Noise logging was undertaken in the free field.

Data from the Bureau of Meteorology (Brisbane) indicates that the weather during the monitoring period was generally fine and warm, but there was rainfall on Wednesday 19th (0.4mm), Thursday 20th (0.2mm), Monday 24th (0.4mm), Tuesday 25th (7.4mm), Wednesday 26th (1.6mm), and Thursday 27th (3.0mm). Based on a review of noise monitoring data, it was observed that noise levels on Tuesday 25th, Wednesday 26th, and

Thursday 27th were affected by rainfall. Therefore, affected time periods were excluded from the statistical noise analysis.

The measured noise levels are shown in **Figure 4.1** and **Figure 4.2**.

Figure 4.1: Graph of Noise Logging Results at Location A

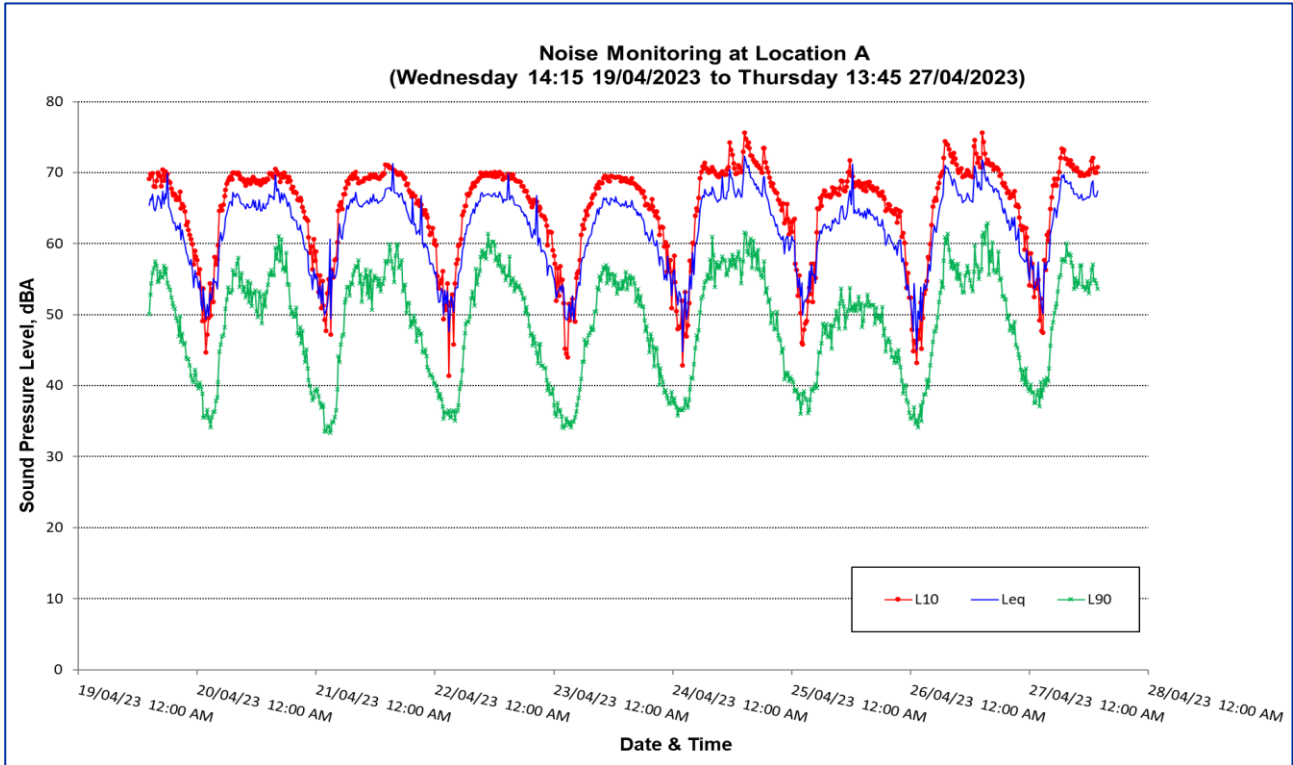
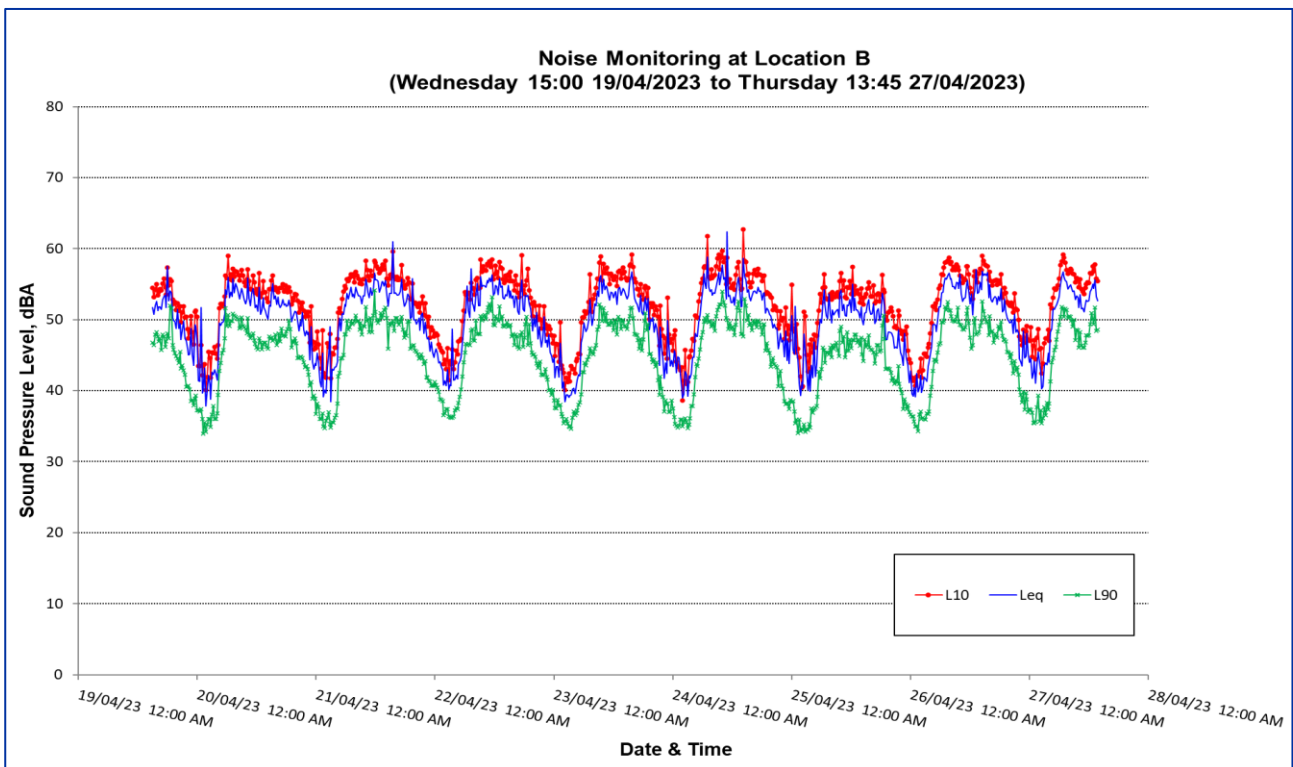


Figure 4.2: Graph of Noise Logging Results at Location B



The daily statistical noise levels are summarised in **Table 4.2** and **Table 4.3**.

Table 4.2: Daily Statistical Noise Levels at Location A

Day and Date	L _{eq} (24 hour)	L ₁₀ (18 hour)	L ₁₀ (12 hour)	Maximum L _{eq} (1 hour)		L ₉₀ (8 hour)	L ₉₀ (18 hour)
				Day	Night		
Thursday 20/04/2023	64	68	69	68	66	39	52
Friday 21/04/2023	65	68	70	69	64	39	53
Saturday 22/04/2023	64	67	69	68	61	37	52
Sunday 23/04/2023	63	66	68	66	67	40	50
Monday 24/04/2023	66	70	71	71	63	40	54
Tuesday 25/04/2023	Excluded – Rainfall Effected						
Wednesday 26/04/2023	Excluded – Rainfall Effected						
Thursday 27/04/2023	Excluded – Rainfall Effected						
Average	64	68	69	68	64	39	52
Average*(7 day)	64	68	70	69	64	39	52

Note: * The 7 day average is calculated as the average of five times the average weekday plus 2 times the average weekend day.

Table 4.3: Daily Statistical Noise Levels at Location B

Day and Date	L _{eq} (24 hour)	L ₁₀ (18 hour)	L ₁₀ (12 hour)	Maximum L _{eq} (1 hour)		L ₉₀ (8 hour)	L ₉₀ (18 hour)
				Day	Night		
Thursday 20/04/2023	51	54	55	55	54	39	47
Friday 21/04/2023	53	55	56	57	54	39	48
Saturday 22/04/2023	52	54	56	56	51	38	47
Sunday 23/04/2023	51	54	55	56	57	38	46
Monday 24/04/2023	53	55	57	58	53	37	48
Tuesday 25/04/2023	Excluded – Rainfall Effected						
Wednesday 26/04/2023	Excluded – Rainfall Effected						
Thursday 27/04/2023	Excluded – Rainfall Effected						
Average	52	54	56	56	54	38	47
Average*(7 day)	52	54	56	56	54	38	47

Note: * The 7 day average is calculated as the average of five times the average weekday plus 2 times the average weekend day.

The average L_{eq,9hour(night)} result, excluding rainy days, was 58 dBA for Location A and 47 dBA for Location B.

4.4 Background Noise Levels

The background noise levels were relatively free of insect noise and were calculated using the lowest 10th percentile method. The background noise levels are shown in **Table 4.4**.

Table 4.4: Background Noise Levels at Location A and B

Period	Rating Background Noise Level (RBL) L ₉₀ dBA	
	Location A	Location B
Day (7am to 6pm)	53	47
Evening (6pm to 10pm)	45	43
Night (10pm to 7am)	36	35

4.5 Summary

From the results above the following comments are made:

- Road traffic is the dominant noise at the proposed development location; and Location A is more affected from road traffic, compared with Location B.
- Background noise levels are similar at both Location A and B during evening and night periods.
- As traffic noise propagates symmetrically from both sides of road, noise monitoring data collected at Location A was deemed to be also representative of the noise at Receiver R2 (which is on the opposite/western side of the main road to where Logger A was located).

5. NOISE CRITERIA

5.1 Overview

The site is located within the Brisbane City Council area and therefore is required to comply with the requirements of the City Plan 2014 Development and Overlay Codes, and Noise impact assessment planning scheme policy.

5.2 Brisbane City Council

5.2.1 Overview

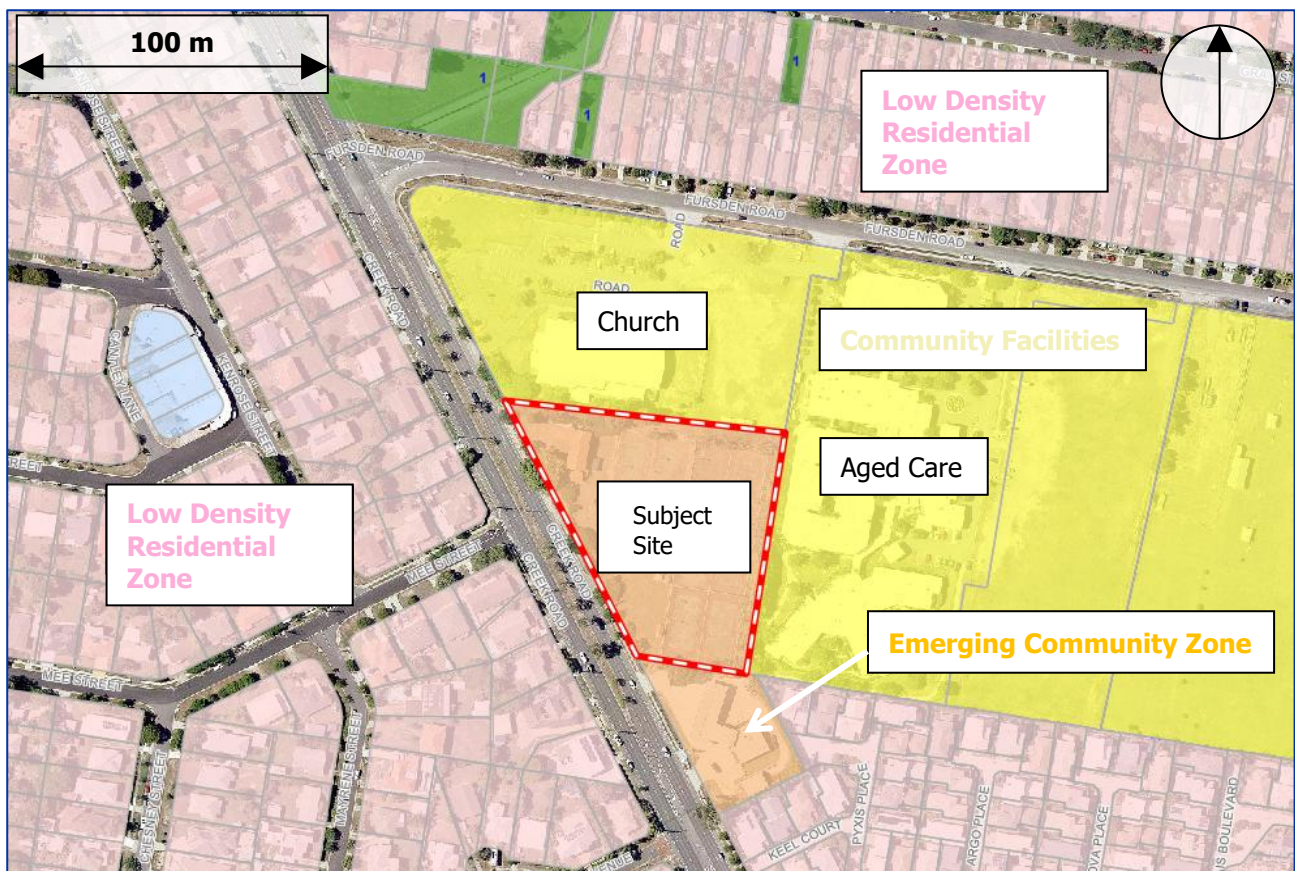
The acoustic assessment will be undertaken in accordance with Brisbane City Council (BCC) City Plan 2014.

The Brisbane City Council (BCC) City Plan 2014 includes noise criteria within the various codes in the document. Schedule 6 of City Plan 2014 includes SC6.21 "Noise impact assessment planning scheme policy" which includes information on location of noise criteria within the City Plan, guidelines for preparation of a noise impact assessment report, noise impact control measure information (including maximum acoustic barrier heights), and methods for undertaking assessment.

According to Council's online mapping, the subject site is zoned as Emerging Community Zone, as shown in **Figure 5.1**. The residences around the subject site are zoned as Low Density Residential Zone. Furthermore, the church and the aged care are zoned as Community Facilities Zone.

Figure 5.1: Site Location & BCC City Plan 2014 Zones

Ref: BCC City Plan 2014, accessed on 20/04/2023



The relevant codes for the subject site are “centre or mixed use development code” and “community facilities code”.

5.2.2 Centre or Mixed Use Development Code

The proposed development is assessable under the Centre or Mixed-Use Development Code in Council’s City Plan. The Centre or Mixed Use Development Code contains performance outcomes and acceptable outcomes for noise impacts relating to the proposed development. The relevant performance outcomes and acceptable outcomes from the Code are presented in **Table 5.1**.

The tables referred to in **Table 5.1** are given in **Table 5.2** to **Table 5.3**.

Table 5.1: Relevant Section of Centre or Mixed Use Development Code Performance and Acceptable Outcomes (Partial Copy Table 9.3.3.3.A – Performance Outcomes and Acceptable Outcomes)

Performance Outcomes	Acceptable Outcomes
<p>PO1 Development:</p> <ul style="list-style-type: none"> a. has hours of operation which are controlled so that the use does not detrimentally impact on the amenity of adjoining residents; b. 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, except music noise where located in a Special entertainment precinct identified in a neighbourhood plan. <p>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.</p>	<p>AO1.1 Development:</p> <ul style="list-style-type: none"> a. for accommodation activities, dwelling unit or emergency services has unlimited hours of operation; b. for a club, if licensed, bar, 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; <p>Note—Development for a club, if licensed, bar, function facility, hotel or nightclub entertainment facility is not expected to achieve this outcome.</p> <ul style="list-style-type: none"> c. for any other use: <ul style="list-style-type: none"> i. where in the Principal centre zone or Major centre zone has unlimited hours of operation; ii. where in the District centre zone, Neighbourhood centre zone or Mixed use zone: <ul style="list-style-type: none"> A. has hours of operation, including for 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: <ul style="list-style-type: none"> 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. <p>AO1.2 Development ensures mechanical plant or equipment is acoustically screened from an adjoining sensitive use.</p>

Performance Outcomes	Acceptable Outcomes
	Note—Mechanical plant includes generators, motors, compressors and pumps e.g. air-conditioning, refrigeration or cold room motors
<p>PO20 Development minimises the adverse impact of a use on building occupants and residents in or adjoining the site through appropriate land use mix.</p> <p>Note—Low impact commercial activities are shops, banks, offices and similar.</p>	<p>AO20 Development provides:</p> <p>co-location of low impact commercial activities where air or noise impacts are not detectable and disturbing in a dwelling or other sensitive use;</p> <p>b. co-location of uses with potential air or noise impacts away from sensitive uses;</p> <p>c. mitigation of impacts resulting from co-location of food and drink outlet uses such as a restaurant with residential uses in the same building;</p> <p>d. that nightclub entertainment facilities are not co-located with residential or other sensitive development within the same building;</p> <p>e. that the location of exhaust or ventilation outlets from food outlets, drycleaners, salons, car parks and bus stations as far from a sensitive use as practicable;</p> <p>f. adequate separation distances between service stations and any sensitive use;</p> <p>g. dwelling balconies and windows do not overlook ventilation stacks and bulk waste bin storage areas</p>

Table 5.2: Relevant Noise Criteria For Sensitive Uses (Partial Copy of Code Table 9.3.3.3.F)

Criteria Location	Intrusive Noise Criteria Day, evening and night $L_{Aeq,adj,T}$ are not greater than the RBL plus the value in this column for the relevant criteria location, where T equals: day – 11hr evening – 4hr night – 9hr	Acoustic Amenity Criteria Day, evening and night $L_{Aeq,adj,T}$ are not greater than the values in the columns below for the relevant criteria location, where T equals: day – 11hr evening – 4hr night – 9hr		
		Day	Evening	Night
Low density residential zone boundary	3 dB(A)	55 dB(A)	45 dB(A)	40 dB(A)
Medium density residential zone boundary ¹	3 dB(A)	55 dB(A)	45 dB(A)	40 dB(A)
Emerging community zone boundary ²	5 dB(A)	55 dB(A)	50 dB(A)	45 dB(A)

¹Adopted for the aged care facilities located on Community Facilities Zone

²Adopted for the service station located to the south of the proposed development, taking into account the potential for future noise-sensitive receivers should the service station cease operation and be replaced by an alternative land use.

Notes—

- $L_{Aeq,adj,T}$: The adjusted A-weighted equivalent continuous sound pressure level of the development during the time period T, where T is an 11-hour day (7am–6pm), 4-hour evening (6pm–10pm) and 9-hour night (10pm–7am), determined in accordance with the methodology in the Noise impact assessment planning scheme policy.
- RBL: Rating background level determined in accordance with the methodology in the Noise impact assessment planning scheme policy.
- dB(A): A-weighted decibels

Table 5.3: Relevant Low Frequency Noise Criteria for Sensitive Uses (Partial Copy of Code Table 9.3.3.3.G)

Criteria location	Day $L_{Ceq,adj,11hr}$ is not greater than the following values at the relevant criteria location	Evening $L_{Ceq,adj,4hr}$ is not greater than the following values at the relevant criteria location	Night $L_{Ceq,adj,9hr}$ is not greater than the following values at the relevant criteria location
Low density residential zone boundary	65 dB(C)	65 dB(C)	60 dB(C)
Medium density residential zone boundary ¹	65 dB(C)	65 dB(C)	60 dB(C)
Emerging community zone boundary ²	65 dB(C)	65 dB(C)	60 dB(C)

¹Adopted for the aged care facilities located on Community Facilities Zone

²Adopted for the service station located to the south of the proposed development, taking into account the potential for future noise-sensitive receivers should the service station cease operation and be replaced by an alternative land use.

Notes—

- $L_{Ceq,adj,T}$: The adjusted C-weighted equivalent continuous sound pressure level of the development during the time period T, where T is an 11-hour day (7am–6pm), 4-hour evening (6pm–10pm) and 9-hour night (10pm–7am), determined in accordance with the methodology in the noise impact assessment planning scheme policy.
- dB(C): C-weighted decibels

5.2.3 Community Facilities Code

The proposed development is also assessable under the Community Facilities Code in Council’s City Plan. The Community Facilities Code contains performance outcomes and acceptable outcomes for noise impacts relating to the proposed development. The relevant performance outcomes and acceptable outcomes from the Code are presented in **Table 5.4**.

The relevant table referred in **Table 5.4** is given in **Table 5.5**. It is noted that the criteria defined in the Community Facilities Code are identical to those presented in the Centre/Mixed Use Code (except low frequency criteria is excluded).

Table 5.4: Relevant Section of Community Facilities Code Performance and Acceptable Outcomes (Partial Copy Table 9.3.3.3.A – Performance Outcomes and Acceptable Outcomes)

Performance Outcomes	Acceptable Outcomes
<p>PO2</p> <p>Development ensures that noise generated does not exceed the noise (planning) criteria in Table 9.3.5.3.B and night-time noise criteria in Table 9.3.5.3.C at a sensitive zone or sensitive use.</p> <p>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.</p> <p>Note—Where the development involves an activity regulated by the Entertainment Venues and Events Local Law, the operating noise levels and requirements may be specified on a permit or approval issued under that law.</p>	<p>AO2.1</p> <p>Development:</p> <ol style="list-style-type: none"> does not involve amplified music entertainment; is conducted wholly within an enclosed building and does not involve external activity, dining or entertainment areas; provides a 2m high acoustic fence along any boundary with land in a residential zone; ensures mechanical plant or equipment is acoustically screened from adjoining sensitive uses. Use; <p>Note— Mechanical plant includes generators, motors, compressors and pumps such as air-conditioning, refrigeration or cold room motors.</p>

Performance Outcomes	Acceptable Outcomes
	<p>AO1.2</p> <p>Development does not generate noise that is clearly audible and creates a disturbance within a dwelling or its associated balcony or patio.</p>

Table 5.5: Relevant Noise (planning) Criteria For Sensitive Uses (Partial Copy of Code Table 9.3.3.3.B)

Criteria Location	Intrusive Noise Criteria Day, evening and night $L_{Aeq,adj,T}$ are not greater than the RBL plus the value in this column for the relevant criteria location, where T equals: day – 11hr evening – 4hr night – 9hr	Acoustic Amenity Criteria Day, evening and night $L_{Aeq,adj,T}$ are not greater than the values in the columns below for the relevant criteria location, where T equals: day – 11hr evening – 4hr night – 9hr		
		Day	Evening	Night
Low density residential zone boundary	3 dB(A)	55 dB(A)	45 dB(A)	40 dB(A)
Medium density residential zone boundary ¹	3 dB(A)	55 dB(A)	45 dB(A)	40 dB(A)
Emerging community zone boundary ²	5 dB(A)	55 dB(A)	50 dB(A)	45 dB(A)

¹Adopted for the aged care facilities located on Community Facilities Zone

²Adopted for the service station located to the south of the proposed development, taking into account the potential for future noise-sensitive receivers should the service station cease operation and be replaced by an alternative land use.

Notes—

- $L_{Aeq,adj,T}$: The adjusted A-weighted equivalent continuous sound pressure level of the development during the time period T, where T is an 11-hour day (7am–6pm), 4-hour evening (6pm–10pm) and 9-hour night (10pm–7am), determined in accordance with the methodology in the Noise impact assessment planning scheme policy.
- RBL: Rating background level determined in accordance with the methodology in the Noise impact assessment planning scheme policy.
- dB(A): A-weighted decibels

5.3 Summary of Criteria

The church and the service station nearby the proposed development are not considered as noise sensitive receptors under the Brisbane City Plan. The noise sensitive receptors considered further in this assessment are residential buildings (R1, R2 and R3) and the nearby aged care facility (R4). However, noise levels on the southern boundary of the proposed development, being an emerging community zone, was also assessed as R5 as it is requested by the council. The proposed noise criteria for sensitive receptors are summarised as follows:

- The lower of the Acoustic Quality Objectives and the Background Creep Criteria, which are as follows:
 - Acoustic amenity criteria (on zone boundary):
 - For low and medium density residential zone and community facilities zone:
 - Day (7am to 6pm): 55 dBA $L_{Aeq,adj,11hr}$
 - Evening (6pm to 10pm): 45 dBA $L_{Aeq,adj,4hr}$
 - For emerging community zone:

- Day (7am to 6pm): 55 dBA $L_{Aeq,adj,11hr}$
- Evening (6pm to 10pm): 50 dBA $L_{Aeq,adj,4hr}$
- Intrusiveness criteria (on zone boundary):
 - For low and medium density residential zone and community facilities zone:
 - Day (7am to 6pm): $L_{Aeq,adj,11hr} \leq \text{Background noise level } (L_{A90}) + 3 \text{ dBA}$
 - Evening (6pm to 10pm): $L_{Aeq,adj,4hr} \leq \text{Background noise level } (L_{A90}) + 3 \text{ dBA}$
 - For emerging community zone:
 - Day (7am to 6pm): $L_{Aeq,adj,11hr} \leq \text{Background noise level } (L_{A90}) + 5 \text{ dBA}$
 - Evening (6pm to 10pm): $L_{Aeq,adj,4hr} \leq \text{Background noise level } (L_{A90}) + 5 \text{ dBA}$
- Low frequency noise: (on zone boundary)
 - Day (7am to 6pm): 65 dBA $L_{Ceq,adj,11hr}$
 - Evening (6pm to 10pm): 65 dBA $L_{Ceq,adj,4hr}$

The project noise limits can be determined based using the above noise criteria and the noise monitoring results in **Section 4**. The noise limits are calculated as shown in **Table 5.6**.

Table 5.6: Noise Limits

Period	Rating Background Noise Level RBL L_{90} dBA	Intrusive Noise Limits $L_{eq,adj,T}$ dBA	Amenity Noise Limits (Low Density Res) $L_{eq,adj,T}$ dBA	Overall Noise Limits
Residential zone boundary near Location A (Applicable at Locations at Receiver R2)				
Day (7am to 6pm)	53	56	55	55 dBA $L_{eq,adj,T}$ 65 dBC $L_{eq,adj,T}$
Evening (6pm to 10pm)	45	48	45	45 dBA $L_{eq,adj,T}$ 65 dBC $L_{eq,adj,T}$
Residential zone boundary near Location B (Applicable at Locations at Receiver R1, R3 and R4)				
Day (7am to 6pm)	47	50	55	50 dBA $L_{eq,adj,T}$ 65 dBC $L_{eq,adj,T}$
Evening (6pm to 10pm)	43	46	45	45 dBA $L_{eq,adj,T}$ 65 dBC $L_{eq,adj,T}$
Southern site boundary near Location A (Applicable at Locations R5, within Emerging Community Zone)				
Day (7am to 6pm)	53	58	55	55 dBA $L_{eq,adj,T}$ 65 dBC $L_{eq,adj,T}$
Evening (6pm to 10pm)	45	50	50	50 dBA $L_{eq,adj,T}$ 65 dBC $L_{eq,adj,T}$

6. NOISE MODELLING

6.1 Noise Methodology

A model of the project has been setup using the SoundPLAN v9.1 computer modelling software using the calculation algorithms defined in ISO Standard 9613-2 (2024) Acoustics - Attenuation of sound during propagation outdoors. ISO 9613-2 predictions are relevant for light to moderate downwind conditions (1 to 5 m/s) or a well-developed moderate ground-based temperature inversion (e.g. clear, calm night).

6.2 Input Data

The following data has been used in the noise calculations:

- Noise sources include car movements, car door slams and engine starts, truck movements and reverse beepers, patrons at outdoor areas and inside halls and amplified music inside halls. The locations of noise sources are shown in **Figure C.1** in **Appendix C**.
 - The Multi Purpose Hall was modelled as noise emitting buildings with a façade noise reduction rating R_w 30. It was also assumed that doors are kept open during activities (R_w 0 for open doors).
- Noise sensitive premises include the residences to the east, north, west and south. The locations of noise sensitive receivers are shown in **Figure 2.1**.
- Ground contours for the site obtained from QSpatial as 1 metre elevation lines.
- Receiver heights of 1.5m was modelled on the boundaries of sensitive neighbour uses.

The noise source data (i.e. sound power or sound pressure level, source height, source speed, duration and/or number of events) used in the model are included in **Table 6.1**.

Table 6.1: Noise Source Data

Noise Source	Octave Band Noise Data dBA								Overall Noise Level dBA
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
Patron Noise – 50 people ^a	49	66	80	88	88	84	79	71	92
Patron Noise – 100 people ^a	54	70	84	93	92	89	84	76	97
Patron Noise – 150 people ^a	57	74	88	97	96	92	87	79	101
Carpark Lot ^b (During community activities)	31	41	52	52	52	52	46	41	59
Carpark Lot ^c (Regular hours)	28	38	49	49	49	49	43	38	56
Passenger Car ^d	57	67	78	78	78	78	72	67	84
Truck (MRV) ^e	72	80	86	91	94	92	85	78	98
Reverse Beeper ^f					90				90
Mechanical Plant ^g	70	79	82	86	87	77	79	70	91
Speaker ^{a,h}	68	83	82	86	87	87	82	74	93

^a Continuous noise during events

^b 1.5 second per hour per parking lot (5 off door slam and 1 off engine start) (1 hour time averaged noise level tabulated) during events, assuming 2.5 passenger in average per car, approximate 60 cars in total for community activity attendees.

^c 0.75 second per hour per parking lot (2 off door slam and 1 off engine start) (1 hour time averaged noise level tabulated) for regular hours and only for day period by assuming commercial and majority of community activities occurring day period only, approximate 85 cars in total for peak commercial activity hours.

^d 1 car movements per hour during peak day period and 0.5 car movement per parking lot during evening peak period, considering retail business customers and other occasional visitors, per parking lot at 15 km/h during events, modelled as a line source.

^e 1 truck movement per hour per service bay at 15 km/h, modelled as a line source.

^f 36 second per hour per service bay during day time period (1 hour time averaged noise level tabulated).

Noise Source	Octave Band Noise Data dBA								Overall Noise Level dBA
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	

^g A typical mechanical plant commonly used at projects similar to the proposed development. It is assumed mechanical plant will be run during day and evening time only, during operating hours.

^h Speaker source noise level details:

- SWL 93 dBA / 101 dBC
- SPL 75 dBA @3m / 83 dBC @3m (on reflective ground)

The number of vehicle movements has been modelled as follows:

- Carpark movements:
 - Day (7am to 6pm): Turnover of 60 carpark lots once during a community activities held in Multi Purpose Hall (two and half passengers per car) and turnover of 85 carpark lots once during other times representing peak commercial activities.
 - Evening (6pm to 10pm): Turnover of 60 carpark lots once during an community activity held in Multi Purpose Hall. Two and half passengers per car.
 - Night (10pm to 7am): No movement
- Truck movements:
 - Day (7am to 6pm): 1 medium rigid truck per hour per service bay during peak condition.
 - Evening (6pm to 10pm): No movement.
 - Night (10pm to 7am): No movement.

Patron noise has been modelled as follows:

- Outdoor Area:
 - Day (7am to 6pm): 50¹ patrons on each of the playground and the park area.
4 hours event duration
 - Evening (6pm to 10pm): No activity.
 - Night (10pm to 7am): No activity.
- Indoor Area:
 - Day (7am to 6pm): 150 patrons in the Multi Purpose Hall, representing potential extensive community activities.
Six background music speakers in the Multi Purpose Hall.
No internal acoustic treatment was assumed (basic wall, glazing and ceiling with minimal acoustic absorption)
Indoor reverberant noise level equates to 85 dBA with assumed speaker sound power levels and internal finishes.
Five open doors at Multi Purpose Hall
4 hours of event duration
 - Evening (6pm to 10pm): 150 patrons in the Multi Purpose Hall, representing potential extensive community activities.
Six background music speakers in the Multi Purpose Hall.
No internal acoustic treatment was assumed (basic wall, glazing and ceiling with minimal acoustic absorption).

¹ Outdoor carol events during Christmas—typically once or twice in a year with over 200 patrons—may occur. However, these are infrequent and not included in the assessment. These are community events and strict compliance with day-to-day operational criteria is not considered reasonable. An event specific noise management plan could be implemented to manage noise impacts.

Indoor reverberant noise level equates to 85 dBA with assumed speaker sound power levels and internal finishes

Five open doors at Multi Purpose Hall

4 hours of event duration

- Night (10pm to 7am): No activity.

Mechanical plant noise has been modelled as continuous noise during day and evening period.

6.3 Noise Level Results

The calculated noise levels without any additional noise mitigation are listed in **Table 7.2**.

Table 6.2: Predicted Noise Levels at Zone Boundaries – Without Noise Mitigation

Exceedances marked with bold black.

Receiver	Predicted $L_{Aeq,adj,T}$	Limit $L_{Aeq,adj,T}$	Predicted $L_{Ceq,adj,T}$	Limit $L_{Ceq,adj,T}$
Day Period (7 am to 6 pm)				
R1	43 dBA	50 dBA	50 dBC	65 dBC
R2	53 dBA	55 dBA	58 dBC	65 dBC
R3	42 dBA	50 dBA	54 dBC	65 dBC
R4	60 dBA	50 dBA	69 dBC	65 dBC
R5	65 dBA	55 dBA	68 dBC	65 dBC
Evening Period (6 pm to 10 pm)				
R1	43 dBA	45 dBA	50 dBC	65 dBC
R2	53 dBA	45 dBA	58 dBC	65 dBC
R3	41 dBA	45 dBA	54 dBC	65 dBC
R4	60 dBA	45 dBA	69 dBC	65 dBC
R5	56 dBA	50 dBA	65 dBC	65 dBC

Outcomes of the assessment are as follows:

■ Day period (7 am to 6 pm):

- Full compliance is predicted at R1, R2 and R3.
- The levels predicted for the noise sensitive receiver R4 was identified as 10 dBA above the noise limits, primarily due to its close proximity to Mechanical Plant 4, the loading bay, and the car park. Furthermore, up to 4 dB exceedance for low frequency noise was predicted at noise sensitive receiver R4.
- The levels predicted for the noise sensitive receiver R5 was identified as 10 dBA above the noise limits, primarily due to its close proximity to Mechanical Plant 1 and the car park. Furthermore, 3 dB exceedance for low frequency noise was predicted.

■ Evening period (6 pm to 10 pm):

- The levels predicted for the noise sensitive receivers were identified to be 6 to 15 dBA above the noise limits. In particular, the level predicted for R4 is significantly above the noise limit, i.e., 15 dBA exceedance. The main contributor to this was identified to be community activities at the Multipurpose Hall and Mechanical Plant 4 of which locations are shown in **Figure 3.1**.
- Up to 4 dBC exceedance for low frequency noise was also predicted at noise sensitive receiver R4.

In summary exceedances are predicted, which are primarily due to mechanical plant equipment. The equipment is proposed to be located adjacent to the site boundary where noise limits apply. Car park activities and noise emissions from doors of the Multi Purpose Hall are also dominant.

6.3.1 Assessment of Amplified Music Noise

Noise impacts from amplified music associated with activities in the Multi Purpose Hall was assessed. Doors of the hall were assumed to be opened.

Amplified music noise was modelled as follows:

- Day (7am to 6pm):

 - Loudspeaker SWL 93 dBA / 101 dBC
 - SPL 75 dBA @3m / 83 dBC @3m (on reflective ground)
 - Six speakers in the Multi Purpose Hall.
 - Five open doors at Multi Purpose Hall were modelled.
 - No internal acoustic treatment was assumed (basic wall and ceiling with minimal acoustic absorption)
 - 4 hours of event duration
- Evening (6pm to 10pm):

 - Loudspeaker SWL 93 dBA / 101 dBC
 - SPL 75 dBA @3m / 83 dBC @3m (on reflective ground)
 - Six background speakers in the Multi Purpose Hall.
 - Five open doors at Multi Purpose Hall were modelled.
 - No internal acoustic treatment was assumed (basic wall and ceiling with minimal acoustic absorption)
 - 4 hours of event duration

The calculated noise levels without noise mitigation are listed in **Table 6.3. Full compliance with the low-frequency noise was predicted.** However, a 5 dBA exceedance was identified at receiver R2 during the evening period. The main noise contributor to this exceedance was identified as open doors on the western façade of the Multi-Purpose Hall.

Table 6.3: Predicted Amplified Music Noise Levels at Zone Boundaries – Without Noise Mitigation

Exceedances marked with bold black.

Receiver	Predicted $L_{Ceq,adj,T}$	Limit $L_{Ceq,adj,T}$	Predicted $L_{Aeq,adj,T}$	Limit $L_{Aeq,adj,T}$
Day Period (7 am to 6 pm)				
R1	29 dBC	65 dBC	27 dBA	50 dBA
R2	48 dBC	65 dBC	45 dBA	55 dBA
R3	22 dBC	65 dBC	19 dBA	50 dBA
R4	41 dBC	65 dBC	40 dBA	50 dBA
R5	39 dBA	65 dBC	38 dBA	55 dBA
Evening Period (6 pm to 10 pm)				
R1	34 dBC	65 dBC	31 dBA	45 dBA
R2	52 dBC	65 dBC	50 dBA	45 dBA
R3	27 dBC	65 dBC	24 dBA	45 dBA
R4	46 dBC	65 dBC	44 dBA	45 dBA
R5	44 dBC	65 dBC	43 dBA	50 dBA

6.4 Noise Mitigation

6.4.1 Fixed Plant

As previously outlined, mechanical plant noise is the dominant contributor to noise exceedances identified in **Table 6.2**. It is noted that the mechanical plant assessment is indicative based on approximate locations and estimated sound power levels, as the final design is currently not available.

To mitigate the noise impact, consideration was given to two methods of reducing noise, i.e., noise barriers and limiting sound power levels of mechanical plants where necessary after a noise barrier. Firstly, 3 metre high noise barriers around each mechanical plant were identified as shown in **Figure 6.1**. Including 3 metre high noise barriers, sound power levels of the mechanical plants were still limited to achieve noise compliance, as follows:

- Mechanical plant 1: Total sound power level of units must be limited to 91 dBA
- Mechanical plant 2: Total sound power level of units must be limited to 91 dBA
- Mechanical plant 3: Total sound power level of units must be limited to 91 dBA
- Mechanical plant 4:
 - If it will be operated day time only, total sound power level of units must be limited to 91 dBA
 - If it will be operated day and evening time, total sound power level of units must be limited to 86 dBA.

Importantly, the above limits apply to the combined sound power levels of all units at each plant location. For example, at mechanical plant 1 location, multiple chiller and/or outdoor air-conditioning condenser units may be installed; however, their combined sound power level must not exceed 91 dBA.

It is recommended that noise from fixed plant be further reviewed during the detailed design stage. Consideration can be given to relocation of fixed plant away from site boundaries, where the noise criteria is applicable. Lower barriers can be achieved with larger separation distances and low noise fixed plant.

6.4.2 Sound Lock Doors

Although amplified music noise does not trigger a low-frequency noise exceedance as outlined in **Section 6.3.1**, noise emissions from the Multipurpose Hall combined with indoor patron noise were identified as contributors to A-weighted noise exceedances.

As part of the noise mitigation strategy, sound lock doors are proposed for the following locations:

- 2 x doors located on the western façade of the Multipurpose Hall (to mitigate noise impact onto receiver R2).

Sound lock doors are assumed to have a minimum noise reduction rating of Rw 24. It is noted that solid core doors or glazed doors typically achieve Rw ratings in the high 20s. Acoustic seals should be installed around the door frame. The door should be fitted with a high-quality acoustic drop seal and appropriate metal lining at the base, to allow for a proper seal between the drop seal and the frame.

6.4.3 Acoustic Barrier along Car Park

Carpark activity, including day time truck movements, was also identified to be a significant contributor to noise levels from the site. R4, an aged care facility, and R5 are the closest receivers to the proposed development, which is predicted to be impacted on most by car park activity.

To reduce noise levels to within the criteria following noise barriers were proposed:

- 2.2 metre high noise barrier between the noise sensitive receiver R4 and the carpark area, between proposed buildings.

- 1.8 metre high noise barrier between the noise sensitive receiver R5 and the carpark area, between the Creek Road and proposed building.

The location and extent of the proposed noise barriers are shown in **Figure 6.1**.

It should be noted that the proposed 2.2 metre high noise barrier spans from construction stage 1 to stage 2 (refer to **Figure 3.2**); however, the entire barrier should be constructed at the outset of stage 1 to ensure effective noise mitigation for the carpark. Section plan showing this acoustic barrier in context with the adjoining property is also shown in **Figure 6.2**.

Furthermore, the 1.8 metre high noise barrier is not currently required, as the existing use within the Emerging Community (EC) zone (i.e. a service station) is not classified as a noise-sensitive use. It is recommended that the noise barrier be considered in the future if the existing use is replaced with a noise-sensitive development.

The proposed noise barrier/s may be constructed in accordance with a number of alternative designs including via timber, brick, concrete block, sheet metal or polymer/composite material. The acoustic barrier may comprise a combination of an earth mound or crib lock wall and a timber fence on top. A solid timber barrier with overlapping palings is usually the most economical. The minimum acoustic requirement of the noise barrier is that it be solid and continuous with negligible holes and gaps between palings or panels or near the ground. The barrier is to be constructed with a material with minimum mass of 12.5 kg/m² or minimum acoustic rating of R_w 23.

To achieve the calculated noise levels, the barrier is not required to have an absorptive finish facing to minimise adverse reflections of noise, aforementioned materials could be used without any surface treatment.

Figure 6.1: Location and Extent of the Modelled Fixed Plant Noise Barriers

Drawing "A1-0-02_J_SITE PLAN - ROOF", provided on 14/05/2026 by Salvation Army

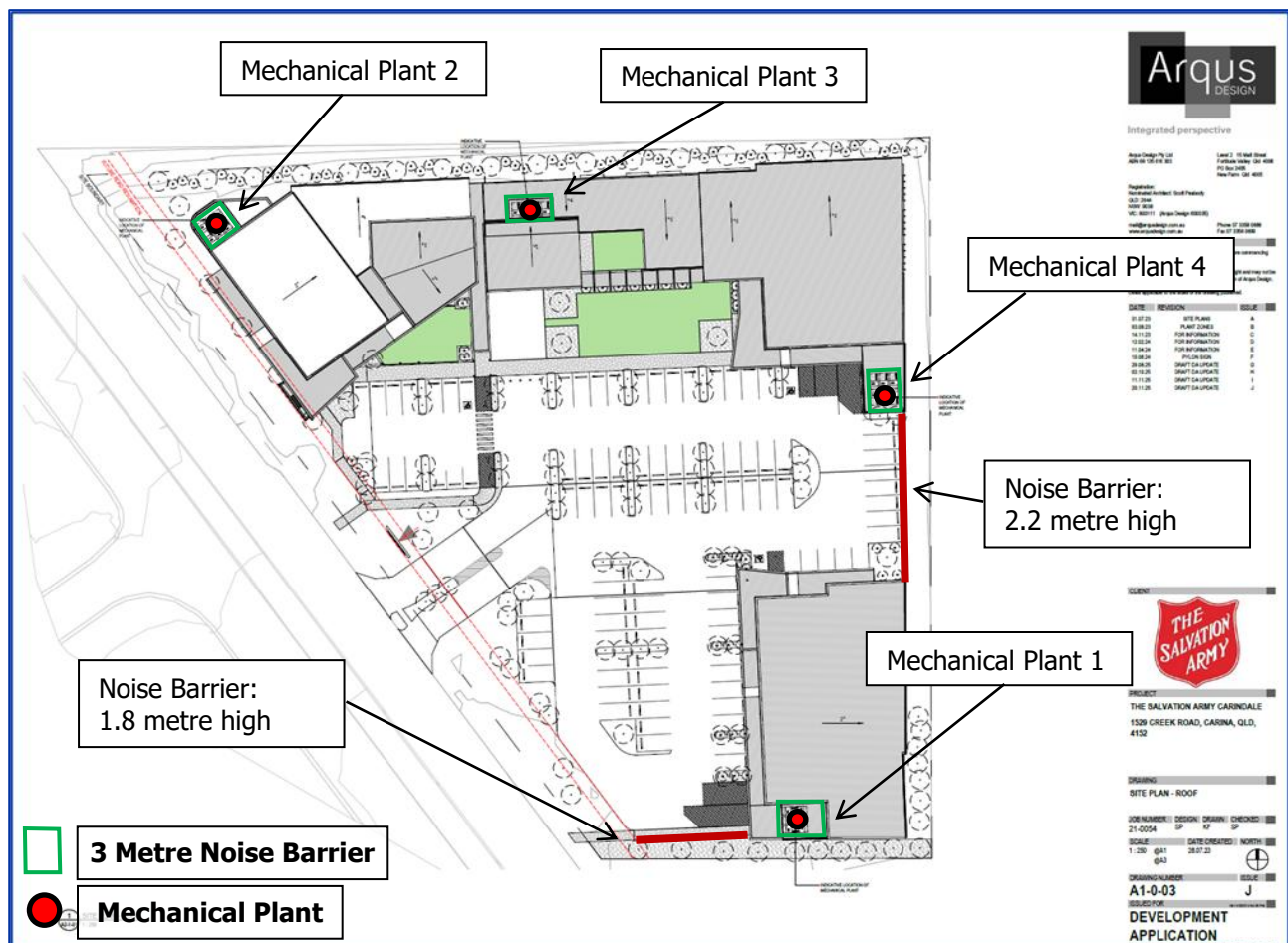
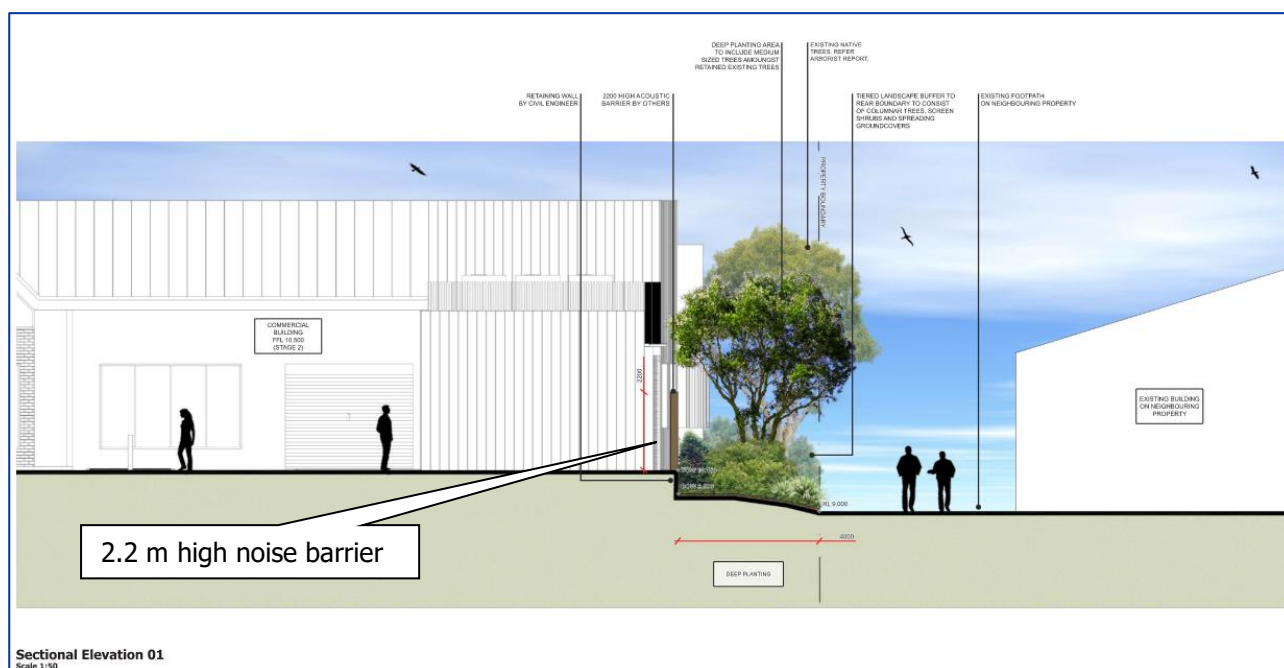


Figure 6.2: Section View – 2.2 m High Noise Barrier on Easter Side



6.5 Noise Levels with Mitigation

With the above mitigation in place, noise levels from the proposed development are predicted to be compliant with the project noise criteria, as outlined in **Table 6.4**.

Table 6.4: Predicted Noise Levels at Zone Boundaries – With Noise Mitigation

Receiver	Predicted $L_{Aeq,adj,T}$	Limit $L_{Aeq,adj,T}$	Predicted $L_{Ceq,adj,T}$	Limit $L_{Ceq,adj,T}$
Day Period (7 am to 6 pm)				
R1	36 dBA	50 dBA	47 dBC	65 dBC
R2	52 dBA	55 dBA	56 dBC	65 dBC
R3	39 dBA	50 dBA	53 dBC	65 dBC
R4	50 dBA	50 dBA	63 dBC	65 dBC
R5	55 dBA	55 dBA	59 dBC	65 dBC
Evening Period (6 pm to 10 pm)				
R1	34 dBA	45 dBA	47 dBC	65 dBC
R2	42 dBA	45 dBA	52 dBC	65 dBC
R3	36 dBA	45 dBA	52 dBC	65 dBC
R4	42 dBA	45 dBA	50 dBC	65 dBC
R5	45 dBA	50 dBA	57 dBC	65 dBC

It is important to note that no detailed mechanical plant design is currently available. The mechanical plant noise assessment, therefore, is based on assumptions derived from Trinity’s previous experience with similar noise assessments. **Once a detailed mechanical plant design is available, it is required that the mechanical plant noise assessment be reviewed and updated with actual acoustic specifications and design details.**

7. RECOMMENDATIONS AND CONCLUSION

A noise impact assessment has been conducted for the proposed mixed used. The purpose of the assessment is to accompany a Development Application for consideration by Brisbane City Council for a development permit for a mixed used over land at 1529 Creek Road, Carina, QLD 4152, and described as Lot 881 on SL11921. The results and recommendations of the assessment are as follows:

- Study area and the proposed development were outlined in **Section 2** and **Section 3**, respectively. A review of the study area shows the nearest noise sensitive receivers are residential houses to the west, north and an aged care facility to the east. Moreover, the most dominant noise sources within the proposed development, i.e., car park and mechanical plants, are relatively close to the nearest noise sensitive receivers.
 - The Emerging Community (EC) zone located to the south of the proposed development, currently occupied by a service station, has been also considered in this noise impact assessment as a potential future noise sensitive receiver.
- Background noise monitoring and the project noise criteria based on the noise monitoring were delineated in **Section 4** and **Section 5**, respectively. The proposed noise criteria for sensitive receptors are summarised **Table 5.6**.
- A 3D noise model has been developed based on project drawings and detailed in **Section 6**. The locations of noise sources are shown in **Figure C.1** in **Appendix C**.
- Predicted noise levels at noise sensitive receivers are reported in **Section 6.3**. The following outcomes are highlighted:
 - Day period (7 am to 6 pm): The levels predicted for the noise sensitive receivers R4 and R5 were identified to be up to 10 dBA above noise limits.
 - Evening period (6 pm to 10 pm): Exceedance were predicted at multiple receivers, being up to 15 dBA above noise limits.
 - In general, the reason for exceedances in day and evening periods are mechanical plant equipment (which are located along the site boundary where the noise criteria applies). Car park noise is also dominant during day and evening period, triggering a requirement of noise barriers between the car park and noise sensitive receivers.
- To achieve compliance with the noise criteria, the following mitigation measures are recommended:
 - 2.2 metre high noise barrier between the noise sensitive receiver R4 and the carpark area, between proposed buildings, shown in **Figure 6.1**.
 - 1.8 metre high noise barrier between the noise sensitive receiver R5 and the carpark area, between the Creek Road and proposed building, shown in **Figure 6.1**.
 - It should be noted that this 1.8 metre high noise barrier is not currently required, as the existing use within the Emerging Community (EC) zone (i.e. a service station) is not classified as a noise-sensitive use. It is recommended that the noise barrier be considered in the future if the existing use is replaced with a noise-sensitive development.
 - Sound lock doors on following doors:
 - 2 x doors located on the western façade of the Multi Purpose Hall
 - Fixed plant - no detailed mechanical plant design is currently available. Based on the current proposed locations and with inclusion of 3 metre high noise barriers shown in **Figure 6.1**, sound power level of fixed plant should be limited to (after noise barrier installations):
 - Mechanical plant 1: Sound power level must be limited to 91 dBA
 - Mechanical plant 2: Sound power level must be limited to 91 dBA
 - Mechanical plant 3: Sound power level must be limited to 91 dBA
 - Mechanical plant 4: Sound power level must be limited to 91 dBA for day time only operations or 86 dBA if the plant is planned to be operated both day and evening time.

Once a detailed mechanical plant design is available, it is required that the mechanical plant noise assessment be reviewed and updated with actual acoustic specs of mechanical plants.

APPENDIX A GLOSSARY

Parameter or Term	Description
dB	The decibel (dB) is the unit measure of sound. Most noises occur in a range of 20 dB (quiet rural area at night) to 120 dB (nightclub dance floor or concert).
dBA	Noise levels are most commonly expressed in terms of the 'A' weighted decibel scale, dBA. This scale closely approximates the response of the human ear, thus providing a measure of the subjective loudness of noise and enabling the intensity of noises with different frequency characteristics (e.g. pitch and tone) to be compared.
Day	The period between 7am and 6pm.
Evening	The period between 6pm and 10pm.
Night	The period between 10pm and 7am.
Free-field	The description of a noise receiver or source location which is away from any significantly reflective objects (e.g. buildings, walls).
L ₁	The noise level exceeded for 1% of the measurement period.
L ₁₀	The noise level exceeded for 10% of the measurement period. It is sometimes referred to as the average maximum noise level.
L ₉₀	The noise level exceeded for 90% of the measurement period. This is commonly referred to as the background noise level.
L _{eq}	The equivalent continuous sound level, which is the constant sound level over a given time period, which is equivalent in total sound energy to the time-varying sound level, measured over the same time period.
L _{eq,1hour}	As for L _{eq} except the measurement intervals are defined as 1 hour duration.
L _{max}	Maximum A-weighted sound pressure level. Brisbane City Council 2014 City Plan and Moreton Bay Regional Council Noise Policy additional definition: L _{max} assessment only applies to 'specified noise sources' which are defined as - (a) impact noises; (b) hammering; (c) loading/unloading; (d) dropping items; (e) beepers, alarms, bells, phones, sirens; (f) power tools; (g) valve releases; (h) air brakes; and (i) door slamming. People noise and vehicle pass-by noise (engine, exhaust, induction, tyres) are specifically excluded.
L _{eq} (24 hour)	The average L _{eq} noise level over the 24-hour period from midnight to midnight.
L ₁₀ (18 hour)	The arithmetic average of the one-hour L ₁₀ values between 6am and midnight. This parameter is used in the assessment of road traffic noise.
Acoustically screened	Brisbane City Council 2014 City Plan definition: 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 fence	Brisbane City Council 2014 City Plan definition: Solid, gap free fence with minimum panel surface density of 12.5kg/m ² .
Sensitive Uses	Brisbane City Council 2014 City Plan definition: A use that is child care centre, community care centre, community residence, dual occupancy, dwelling house, dwelling unit, educational establishment, health care services, hospital, multiple dwelling, relocatable home park, residential care facility, retirement facility, rooming accommodation, short term accommodation or tourist park.

APPENDIX B DRAWINGS

PARKING SCHEDULE

TYPE	QTY
5400 X 2400 - VISITOR PARKING	7
5400 X 2500 - VISITOR PARKING	12
5400 X 2600 - VISITOR PARKING	82
VISITOR PARKING - PWD	3
TOTAL	104

Integrated perspective

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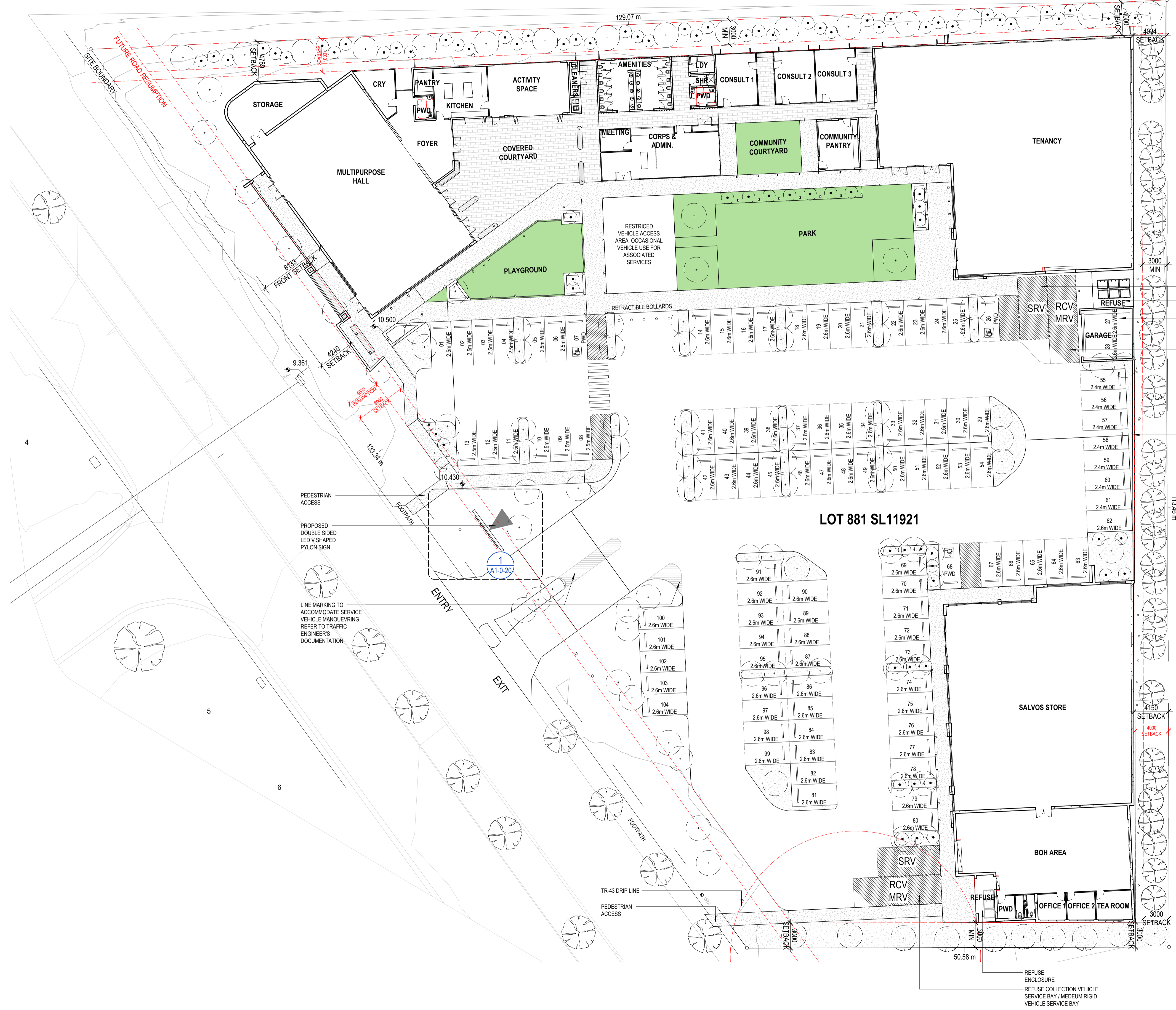
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DATE	REVISION	ISSUE
09.05.23	FOR INFORMATION	A
07.07.23	SITE PLAN ISSUE	B
28.07.23	SITE PLAN ISSUE FOR CIVIL COORD.	C
31.07.23	SITE PLANS	D
14.11.23	FOR INFORMATION	E
11.04.24	FOR INFORMATION	F
10.06.24	PLYON SIGN	G
29.08.25	DRAFT DA UPDATE	H
02.10.25	DRAFT DA UPDATE	I
11.11.25	DRAFT DA UPDATE	J
20.11.25	DRAFT DA UPDATE	K
24.04.26	DRAFT DA UPDATE	L



- SMALL RIGID VEHICLE SERVICE BAY
- REFUSE ENCLOSURE
- 2 BAY LOCK UP GARAGE
- REFUSE COLLECTION VEHICLE SERVICE BAY / MEDIUM RIGID VEHICLE SERVICE BAY
- 2.2m ACOUSTIC WALL BARRIER

LOT 881 SL11921

CLIENT



PROJECT

THE SALVATION ARMY CARINDALE
 1529 CREEK ROAD, CARINA, QLD,
 4152

DRAWING

SITE PLAN

JOB NUMBER	DESIGN	DRAWN	CHECKED
21-0054	SP	KF	SP

SCALE	DATE CREATED	NORTH
1:250 @A1	09/05/23	
1:400 @A3		

DRAWING NUMBER	ISSUE
A1-0-02	L

ISSUED FOR

DEVELOPMENT APPLICATION

Integrated perspective

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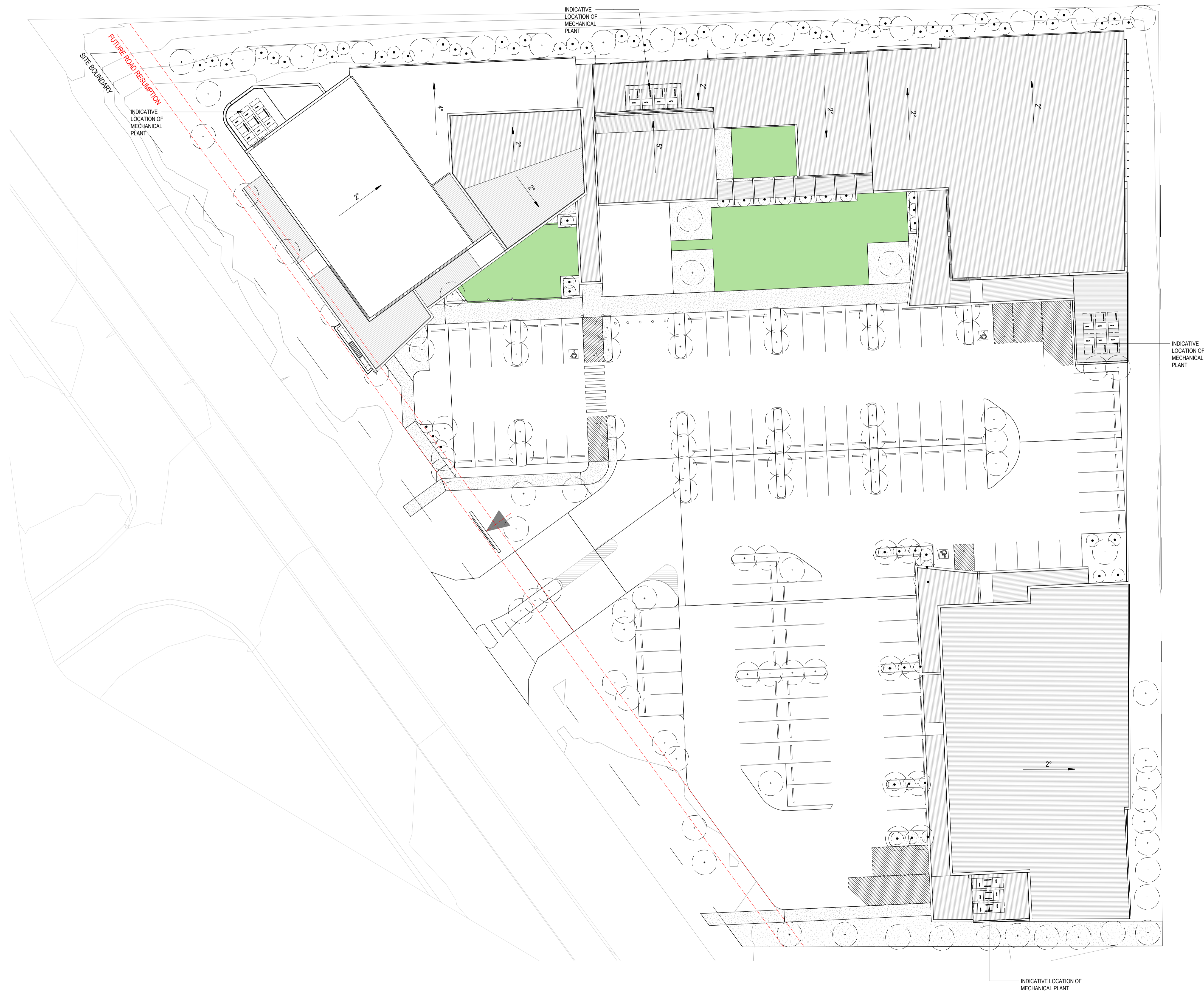
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DATE	REVISION	ISSUE
31.07.23	SITE PLANS	A
03.08.23	PLANT ZONES	B
14.11.23	FOR INFORMATION	C
12.02.24	FOR INFORMATION	D
11.04.24	FOR INFORMATION	E
10.06.24	PYLON SIGN	F
29.08.25	DRAFT DA UPDATE	G
02.10.25	DRAFT DA UPDATE	H
11.11.25	DRAFT DA UPDATE	I
20.11.25	DRAFT DA UPDATE	J



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PROJECT

THE SALVATION ARMY CARINDALE
 1529 CREEK ROAD, CARINA, QLD,
 4152

DRAWING

SITE PLAN - ROOF

JOB NUMBER	DESIGN	DRAWN	CHECKED
21-0054	SP	KF	SP

SCALE	DATE CREATED	NORTH
1:250 @A1 @A3	28.07.23	

DRAWING NUMBER

A1-0-03 **J**

ISSUED FOR 19/11/2025 3:54:35 PM

DEVELOPMENT APPLICATION



Area Schedule (Site Cover)			
Classification	Name	Area	Site Cover
Building	Building 1	2576.66 m ²	26%
Building	Building 2	1048.19 m ²	10%
		3624.86 m ²	36%
Hardstand		3770.14 m ²	38%
		3770.14 m ²	38%
Landscape Area		2648.62 m ²	26%
		2648.62 m ²	26%
Grand total		10043.62 m ²	100%

NOTE: FOR DEEP PLANTING AREAS REFER TO LANDSCAPE DRAWINGS

IMPERVIOUS AND PERVIOUS AREAS	
IMPERVIOUS AREAS	7394.99 m ²
PERVIOUS AREAS	2648.62 m ²

Integrated perspective

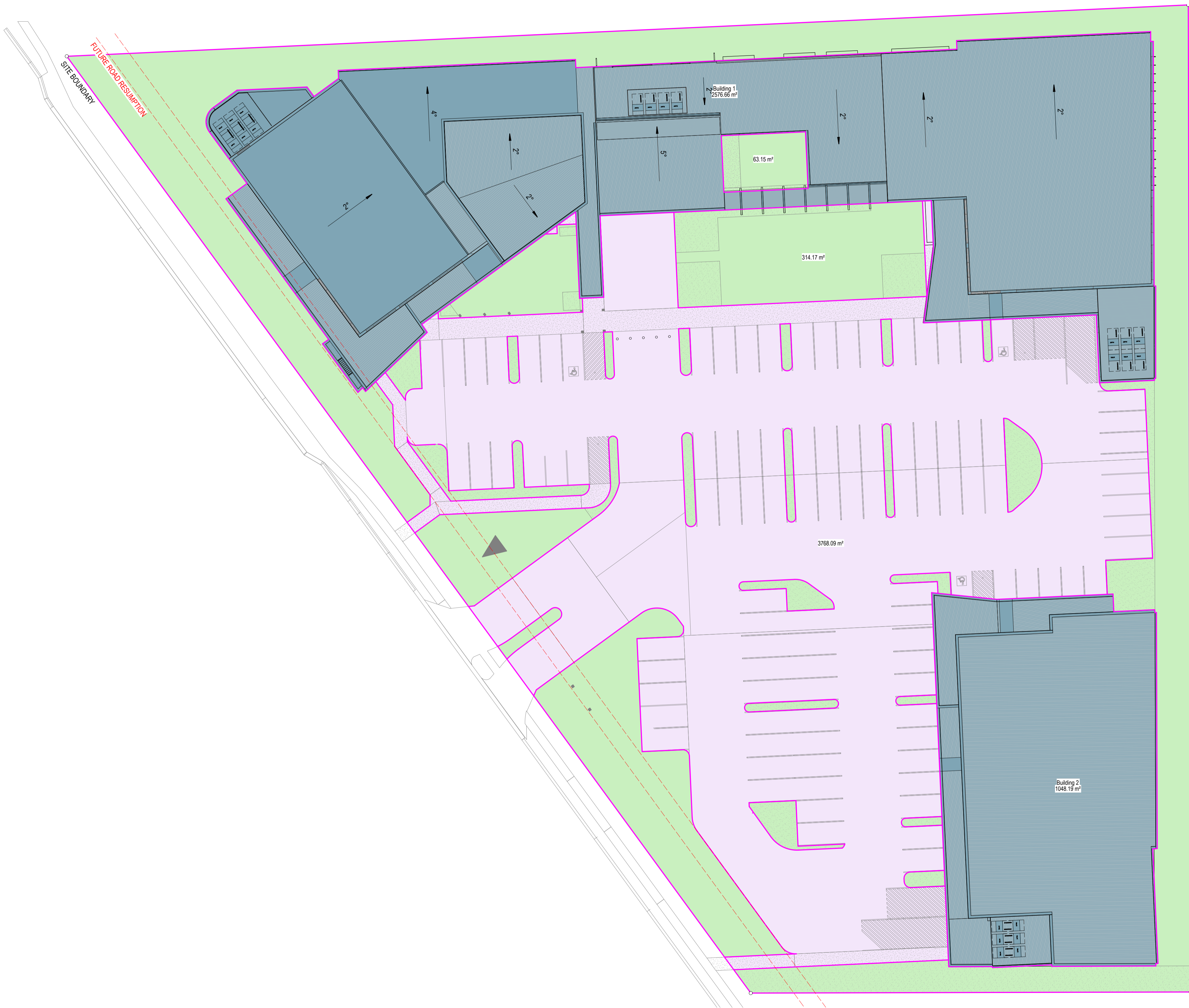
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31.07.23	SITE PLANS	A
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12.02.24	FOR INFORMATION	C
11.04.24	FOR INFORMATION	D
10.06.24	PYLON SIGN	E
02.10.25	DRAFT DA UPDATE	F
11.11.25	DRAFT DA UPDATE	G
20.11.25	DRAFT DA UPDATE	H



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PROJECT

THE SALVATION ARMY CARINDALE
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 4152

DRAWING

SITE PLAN - SITE COVER

JOB NUMBER	DESIGN	DRAWN	CHECKED
21-0054	SP	KF	SP

SCALE	DATE CREATED	NORTH
1 : 250 @A1 @A3	27.07.23	

DRAWING NUMBER

A1-0-04

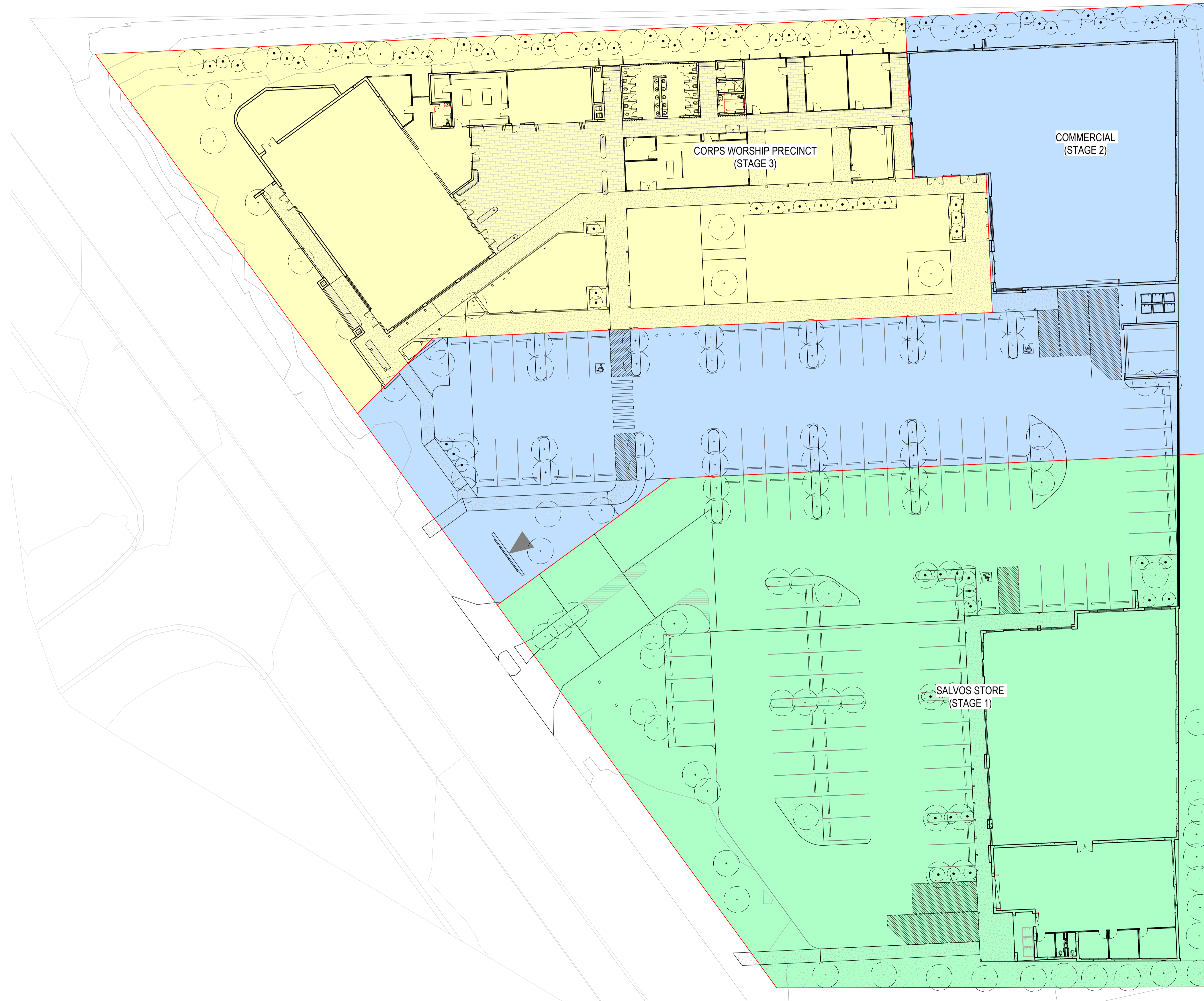
ISSUE

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DEVELOPMENT APPLICATION

SITE STAGING LEGEND

- STAGE 1
- STAGE 2
- STAGE 3



Integrated perspective

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20.11.23	STAGING PLAN	A
16.01.24	PYLON SIGN	B
12.02.24	FOR INFORMATION	C
11.04.24	FOR INFORMATION	D
26.07.24	STAGING PLAN	F
10.06.24	PYLON SIGN	E
29.08.25	DRAFT DA UPDATE	G
02.10.25	DRAFT DA UPDATE	H
11.11.25	DRAFT DA UPDATE	I
20.11.25	DRAFT DA UPDATE	J
24.04.26	DRAFT DA UPDATE	K

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THE SALVATION ARMY CARINDALE
 1529 CREEK ROAD, CARINA, QLD,
 4152

DRAWING

SITE STAGING PLAN

JOB NUMBER | DESIGN | DRAWN | CHECKED
 21-0054 | SP | KF | SP

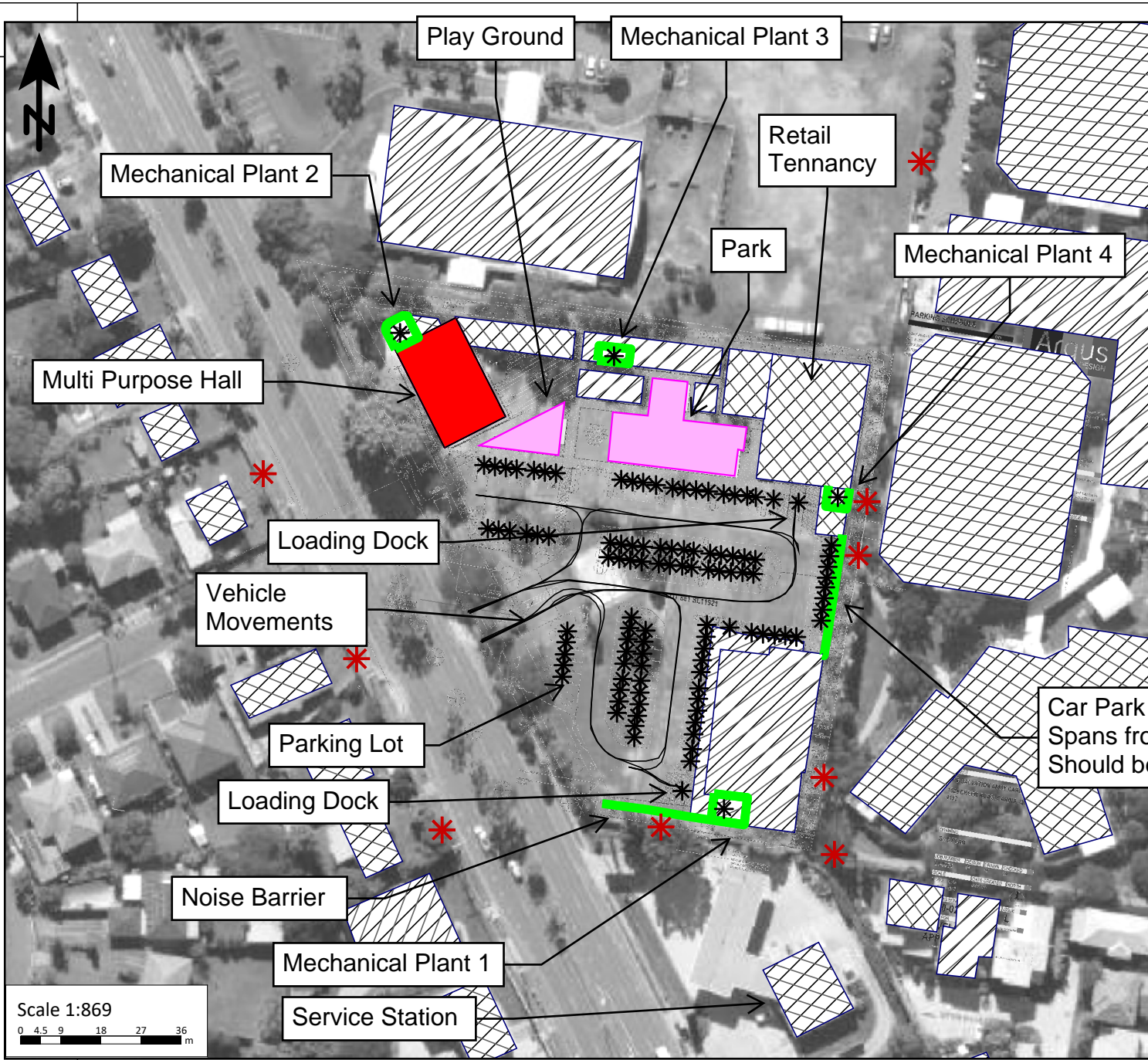
SCALE | DATE CREATED | NORTH
 As @A1 20/11/23
 indicated @A3

DRAWING NUMBER | ISSUE
A1-0-10 | **K**

ISSUED FOR 24/04/2026 2:53:13 PM

DEVELOPMENT APPLICATION

APPENDIX C NOISE SOURCE LOCATIONS



1529 Creek Road
 Project Number: 237401.0047
 Date: 21/05/2026
 Drawn By: BA
 Prepared For: Salvation Army

Figure
C.1

Noise Source Locations

- Signs and symbols**
- Buildings
 - Proposed Noise Barrier
 - Noise Emitting Building
 - Line Noise Sources
 - Point Noise Source
 - Outdoor Area Noise Source
 - Point receiver

Car Park Noise Barrier
 Spans from Stage 1 to Stage 2
 Should be constructed at once



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