



Our Ref: 43126-006-01
Your Ref: MCU25/0091

19 February 2026

Chief Executive Officer
Townsville City Council
PO Box 1268
Townsville QLD 4810

Attention: Development Assessment – Mr. Lachlan Pether

Dear Lachlan,

**RESPONSE TO INFORMATION REQUEST
DEVELOPMENT APPLICATION FOR MATERIAL CHANGE OF USE
FOR CHILDCARE CENTRE (MCU25/0091)
2 TREELINE DRIVE, RASMUSSEN**

Brazier Motti act on behalf of the applicant, Griffith Group, with respect to the abovementioned development proposal, and refer to the Information Request (IR) issued by Townsville City Council ('the Council') on the 23rd December 2025. The information and supporting documentation herein represent the applicant's full response to the IR.

Supporting information

This information request response has addressed the four (4) request items and is supported by the following additional information:

- **Appendix A:** Amended concept plans prepared by Elevation Architecture
- **Appendix B:** Amended Landscaping Concept prepared by LaudInk
- **Appendix C** Waste Management Plan prepared by Rhodium Environmental
- **Appendix D:** Noise Impact Assessment prepared by SLR; and
- **Appendix E:** Sewer and Water Capacity Assessment prepared by DPM Water

Request item 1

The applicant is requested to provide updated Plans and Landscape Concept Plans including detail of:

- *The location of any proposed fire booster cabinet;*
- *Additional articulation in built form and/or materiality of the 2 metre high rendered fence to the Bluewattle Boulevard / Saltbush Boulevard corner;*
- *Provision of gaps/breaks in garden beds along parking spaces 21 – 25 where they look to block access from car parking spaces to the path and building frontage.*



Response to RFI Item 1

The development concepts and associated landscaping plans have been amended as per Council's request items. The updated concept and landscaping plans are included in **Appendices A** and **B**.

Request item 2

The applicant is requested to provide a Waste Management Plan prepared in accordance with SC6.4.22 Waste management Planning Scheme Policy of the Townsville City Plan which includes detail of appropriate storage and collection arrangements for bulk refuse facilities. Consideration is to be given to Section 3.4 Servicing and Refuse Collection of the Traffic Report by Q Traffic submitted with the application.

Response to RFI Item 2

A Waste Management Plan has been prepared by Rhodium Environmental and is attached in **Appendix C**.

Request item 3

The applicant is requested to provide a Noise Impact Assessment, prepared by a suitably qualified person as per SC6.4.19 Noise and Vibration of the Development Manual.

Response to RFI Item 3

A Noise Impact Assessment has been prepared by SLR and is included in **Appendix D**. The report provides recommendations regarding mitigation measures which will be implemented at construction stage.

Request item 4

The applicant is requested to provide Sewer and Water Planning Report(s) demonstrating that the development can be appropriately serviced for the level of demand generated.

Response to RFI Item 4

A Water and Sewer Capacity Assessment was undertaken by DPM Water and confirms that the development can be appropriately serviced. Please refer to **Appendix E**.



Proceeding

We trust the above response provides Council sufficient information to satisfactorily proceed with the assessment of the application. In the meantime, the applicant will proceed with public notification of the development. We welcome the opportunity to work through any queries Council may have in order to expedite the assessment.

Yours faithfully

ANNE ZAREH

Associate/Senior Planner

Brazier Motti Pty Ltd

APPENDIX A

Updated Development Concepts prepared by Elevation Architecture

brazier motti



Rasmussen Early Learning Centre

New Lot on Saltbush Boulevard, Rasmussen, QLD 4815



SITE INFORMATION

Real Property Description: Lot 194 of Lot 904 SP344615

Local Authority: Townsville City Council
 Site Area: 2,988m²
 Site Cover: 1,081.1m²
 Carparking Provided: 32 (Ratio of 1:3.75)

GFA: Ground 897.4m²
 First 64.2m²
 Total 961.6m²

Landscape (Incl. outdoor play): 1,067m² (35.7%)

Outdoor Play Calculations				
Zone	Age Group	Area Required	Area Provided	Occupancy
Outdoor Play 1	0-2 yrs	252.00	255.03	36
Outdoor Play 2	2-3 yrs	280.00	286.11	40
Outdoor Play 3	3-5 yrs	308.00	313.68	44
		840.00 m ²	854.82 m ²	120

Activity Room Calculations							
Level	Room	Age Group	Area Required	Area Provided	Staff Ratio	No. of Staff	Occupancy
Ground Floor	Activity Room 1	0-24 mnths	39.00	44.42	1:4	3	12
	Activity Room 2	0-24 mnths	39.00	40.39	1:4	3	12
	Activity Room 3	0-24 mnths	39.00	39.58	1:4	3	12
	Activity Room 4	2-3 yrs	65.00	66.44	1:5	4	20
	Activity Room 5	2-3 yrs	65.00	66.91	1:5	4	20
	Activity Room 6	3-5 yrs	71.50	71.68	1:11	2	22
	Activity Room 7	3-5 yrs	71.50	73.05	1:11	2	22
			390.00 m ²	402.47 m ²		21	120

DA
NOT FOR CONSTRUCTION

SALTBUSH BOULEVARD

LEGEND

B Bollard
LOU Fixed Louvre
WH Window Hood

Notes

- All ancillary equipments to be screened from both streetscapes.
- Shade sail shown on plans are indicative only, location and extents are subjected to future playscape design and confirmation with childcare operator.
- Refer to consultant's drawing for landscaping and streetscape detail.



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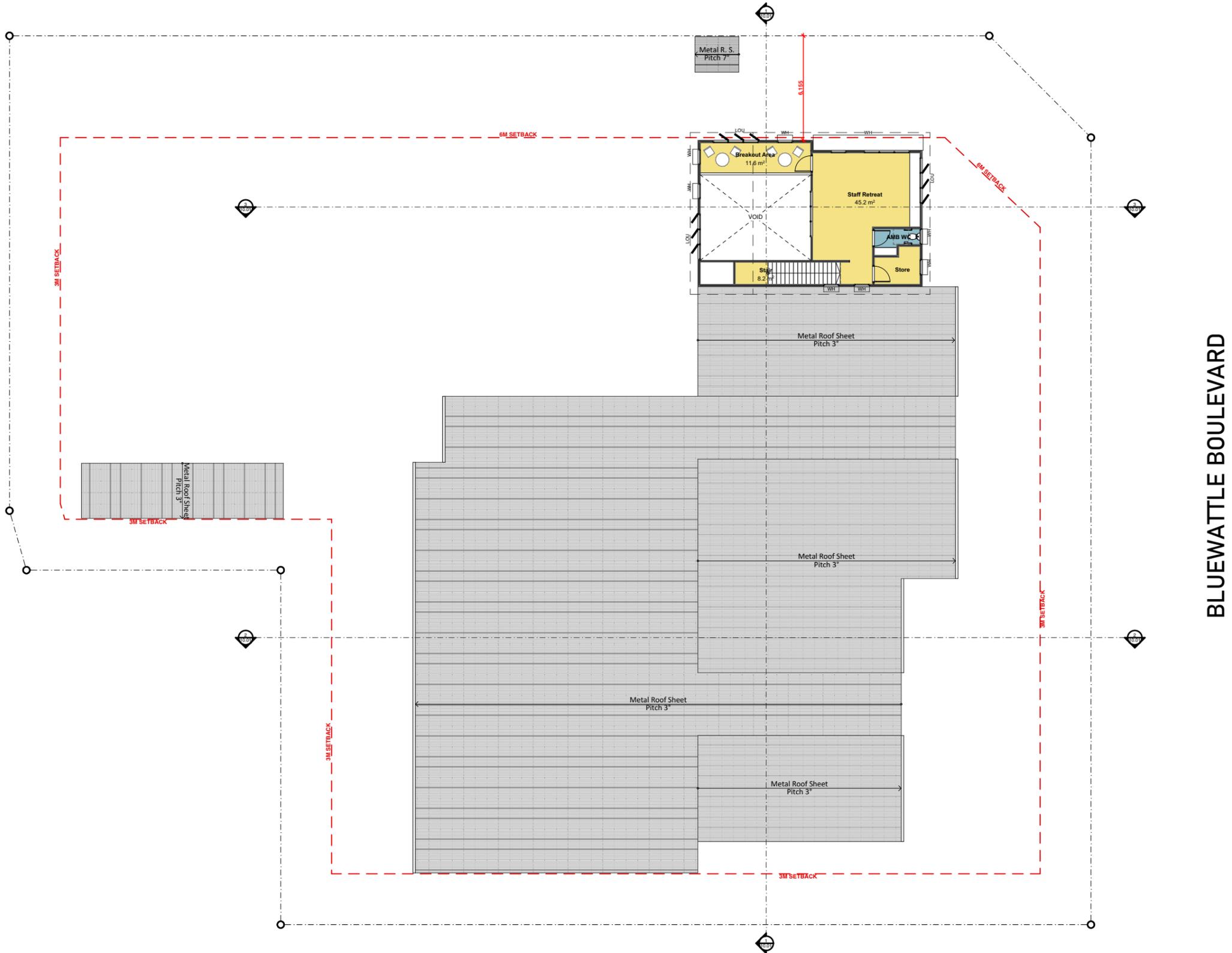
SALTBUSH BOULEVARD

LEGEND

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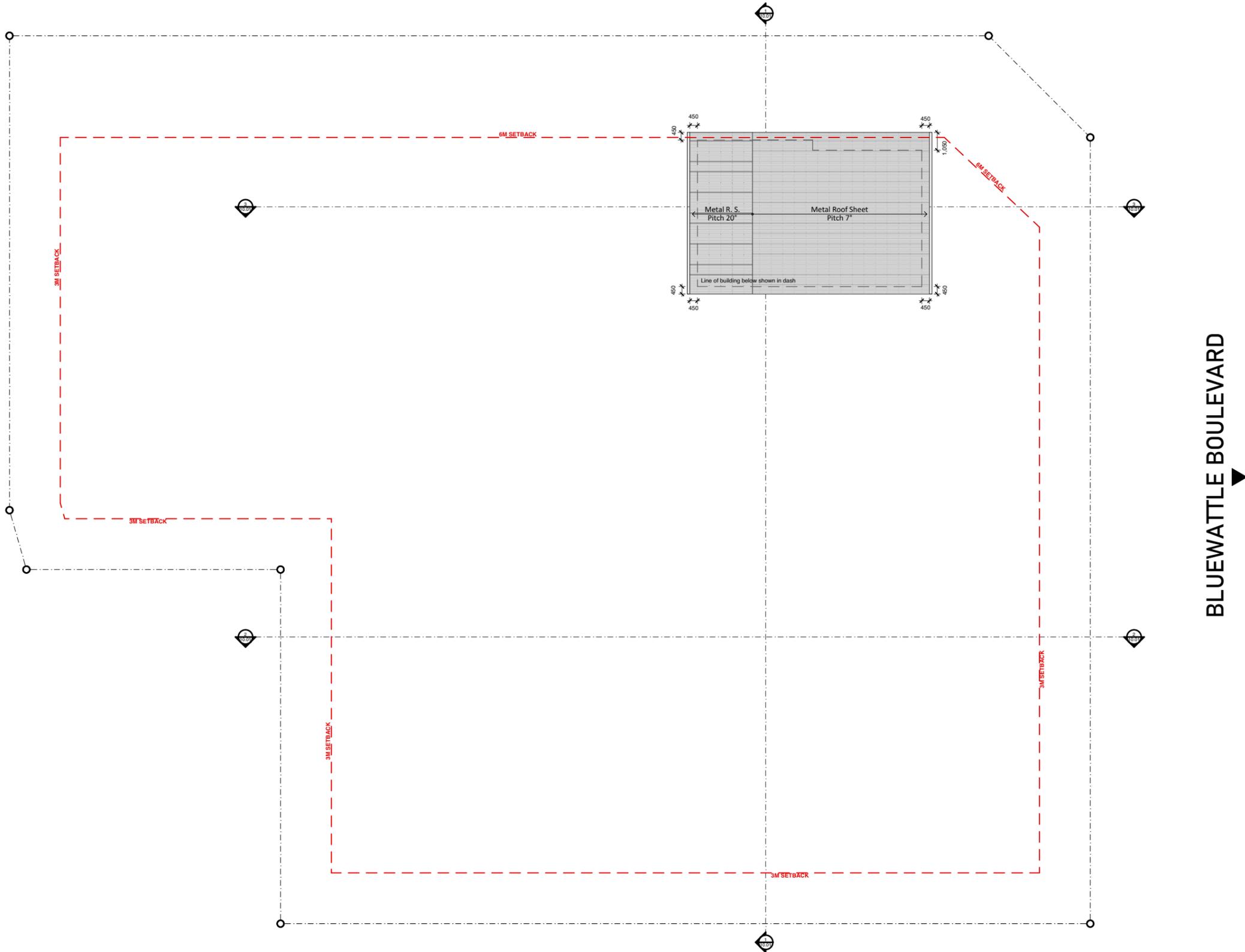


BLUEWATTLE BOULEVARD

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NOT FOR CONSTRUCTION



SALTBUSH BOULEVARD



BLUEWATTLE BOULEVARD

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NOT FOR CONSTRUCTION

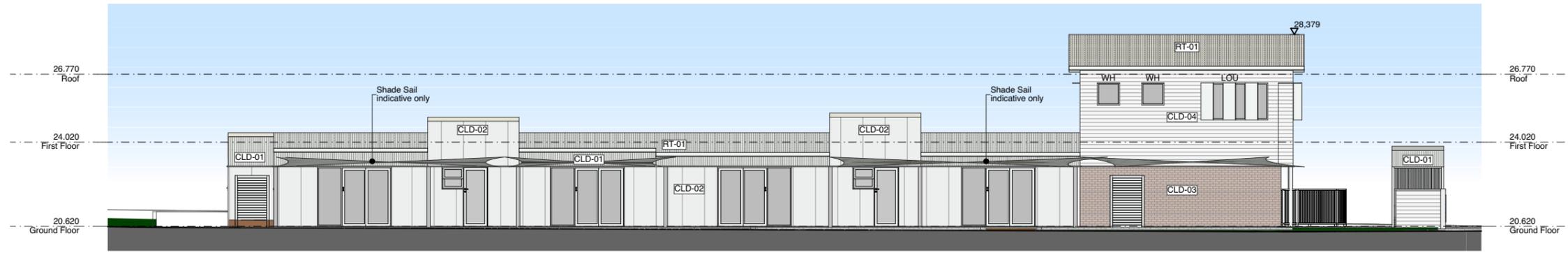


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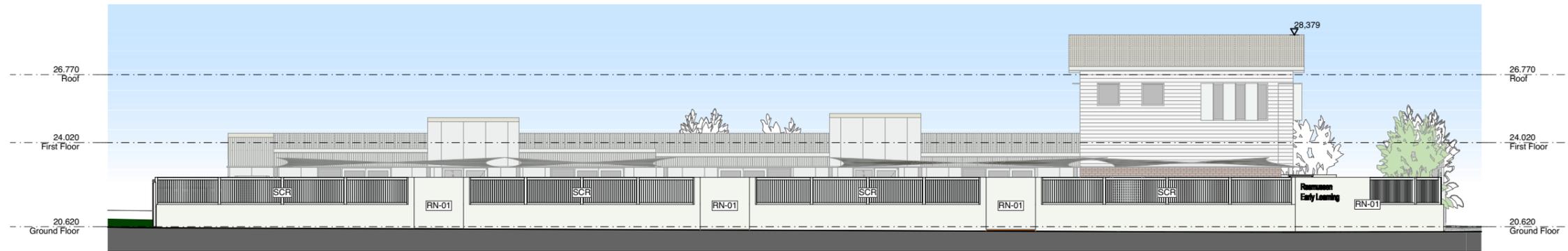
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1 North
Scale 1:200



2 North - Fencing
Scale 1:200



CLD-01
METAL CLADDING
(LIGHT FINISH)

CLD-02
900MM FIBRE CEMENT PANELS
(WHITE FINISH)

CLD-03
STANDARD BRICK
(NATURAL FINISH)

CLD-04
WEATHERBOARD
(WHITE FINISH)

CLD-05
FIBRE CEMENT PANELS
EXPRESSED JOINT
(WHITE FINISH)

RT-01
METAL ROOF SHEETING
(LIGHT FINISH)

SCR
BATTENED SCREEN
(LIGHT FINISH)

RN-01
RENDERED BLOCK
(WHITE FINISH)

SHADE SAIL
INDICATIVE ONLY
SUBJECT TO FUTURE PLAYSCAPE DESIGN

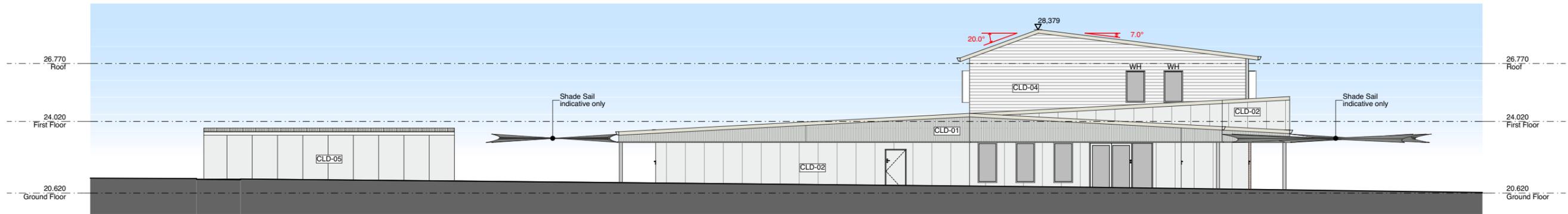
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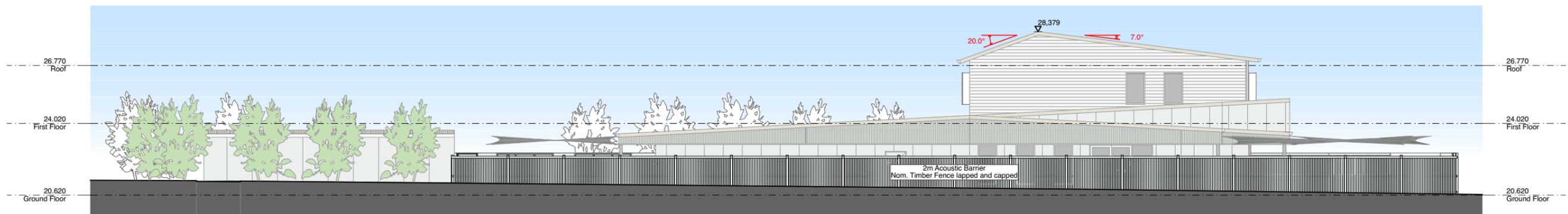
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1 East
Scale 1:200



2 East - Fencing
Scale 1:200



- CLD-01**
METAL CLADDING
(LIGHT FINISH)
- CLD-02**
900MM FIBRE CEMENT PANELS
(WHITE FINISH)
- CLD-03**
STANDARD BRICK
(NATURAL FINISH)
- CLD-04**
WEATHERBOARD
(WHITE FINISH)
- CLD-05**
FIBRE CEMENT PANELS
EXPRESSED JOINT
(WHITE FINISH)
- RT-01**
METAL ROOF SHEETING
(LIGHT FINISH)
- SCR**
BATTENED SCREEN
(LIGHT FINISH)
- RN-01**
RENDERED BLOCK
(WHITE FINISH)
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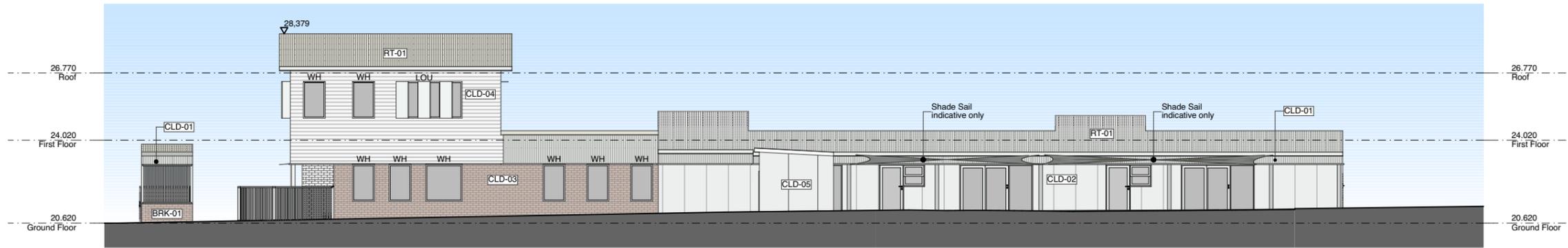
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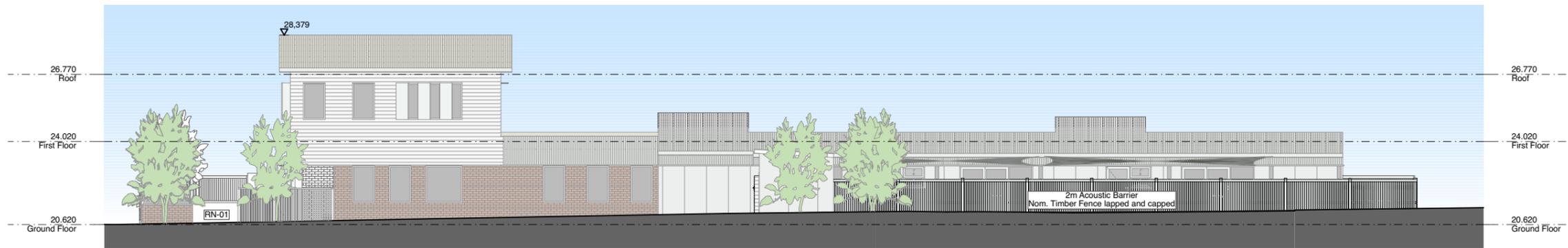
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1 South
Scale 1:200



2 South - Fencing
Scale 1:200



CLD-01
METAL CLADDING
(LIGHT FINISH)

CLD-02
900MM FIBRE CEMENT PANELS
(WHITE FINISH)

CLD-03
STANDARD BRICK
(NATURAL FINISH)

CLD-04
WEATHERBOARD
(WHITE FINISH)

CLD-05
FIBRE CEMENT PANELS
EXPRESSED JOINT
(WHITE FINISH)

RT-01
METAL ROOF SHEETING
(LIGHT FINISH)

SCR
BATTENED SCREEN
(LIGHT FINISH)

RN-01
RENDERED BLOCK
(WHITE FINISH)

SHADE SAIL
INDICATIVE ONLY
SUBJECT TO FUTURE PLAYScape DESIGN

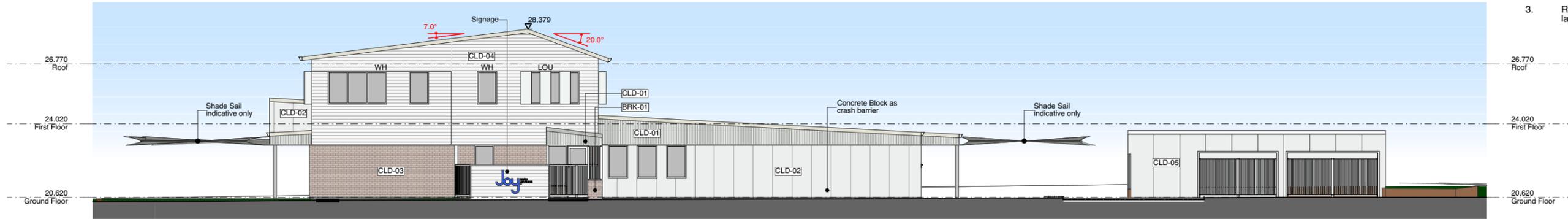
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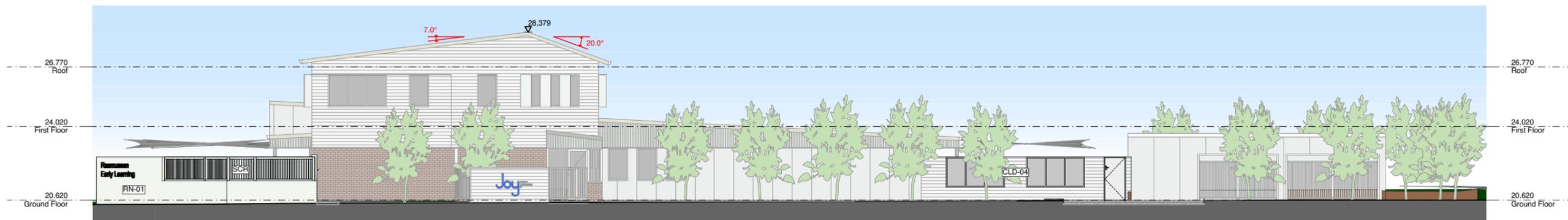
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1 West
Scale 1:200

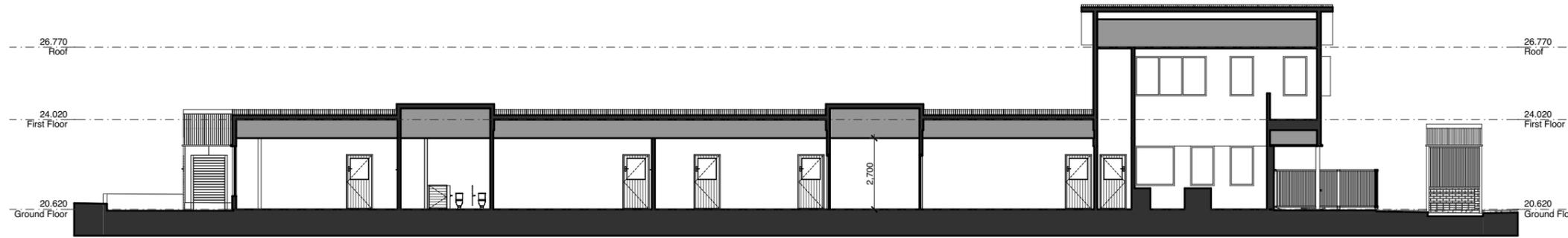


2 West - Fencing
Scale 1:200

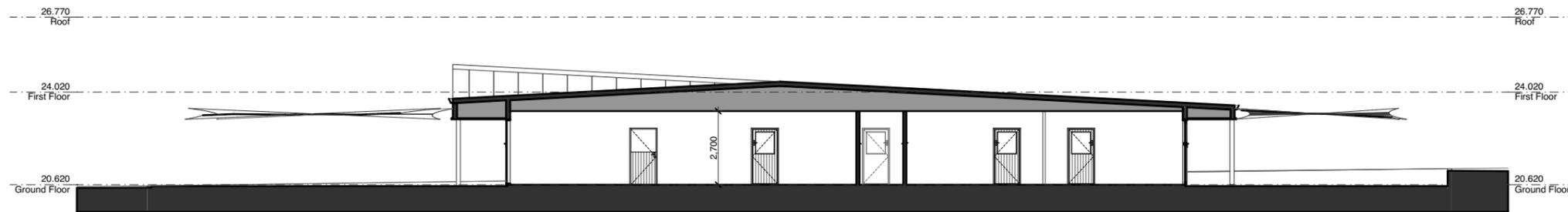


- CLD-01**
METAL CLADDING
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900MM FIBRE CEMENT PANELS
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RENDERED BLOCK
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INDICATIVE ONLY
SUBJECT TO FUTURE PLAYScape DESIGN

DA
NOT FOR CONSTRUCTION



1 Section A
Scale 1:200



2 Section B
Scale 1:200



3 Section C
Scale 1:200

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APPENDIX B

Amended Landscaping Concept prepared by LaudInk

brazier motti



CITY OF TOWNSVILLE

SALTBUSH BOULEVARD, RASMUSSEN

LOT 194 OF LOT 904 on SP344615



SITE LOCATION
NTS

DRAWING INDEX		
DRAWING No.	DRAWING TITLE	REVISION
SK001	COVERSHEET & DRAWING INDEX	D
SK002	PLANTING PLAN - GROUND FLOOR	D
SK010	PLANT SPECIES SCHEDULE, IMAGES & NOTES	D

PRELIMINARY

rev	description	drawn	date
D	REVISED ISSUE	NS	16.01.26
C	REVISED ISSUE	JC	19.11.25

BELO DEVELOPMENTS
SALTBUSH BOULEVARD, RASMUSSEN
LANDSCAPE CONCEPT PLAN
COVERSHEET & DRAWING INDEX

LAUD ink

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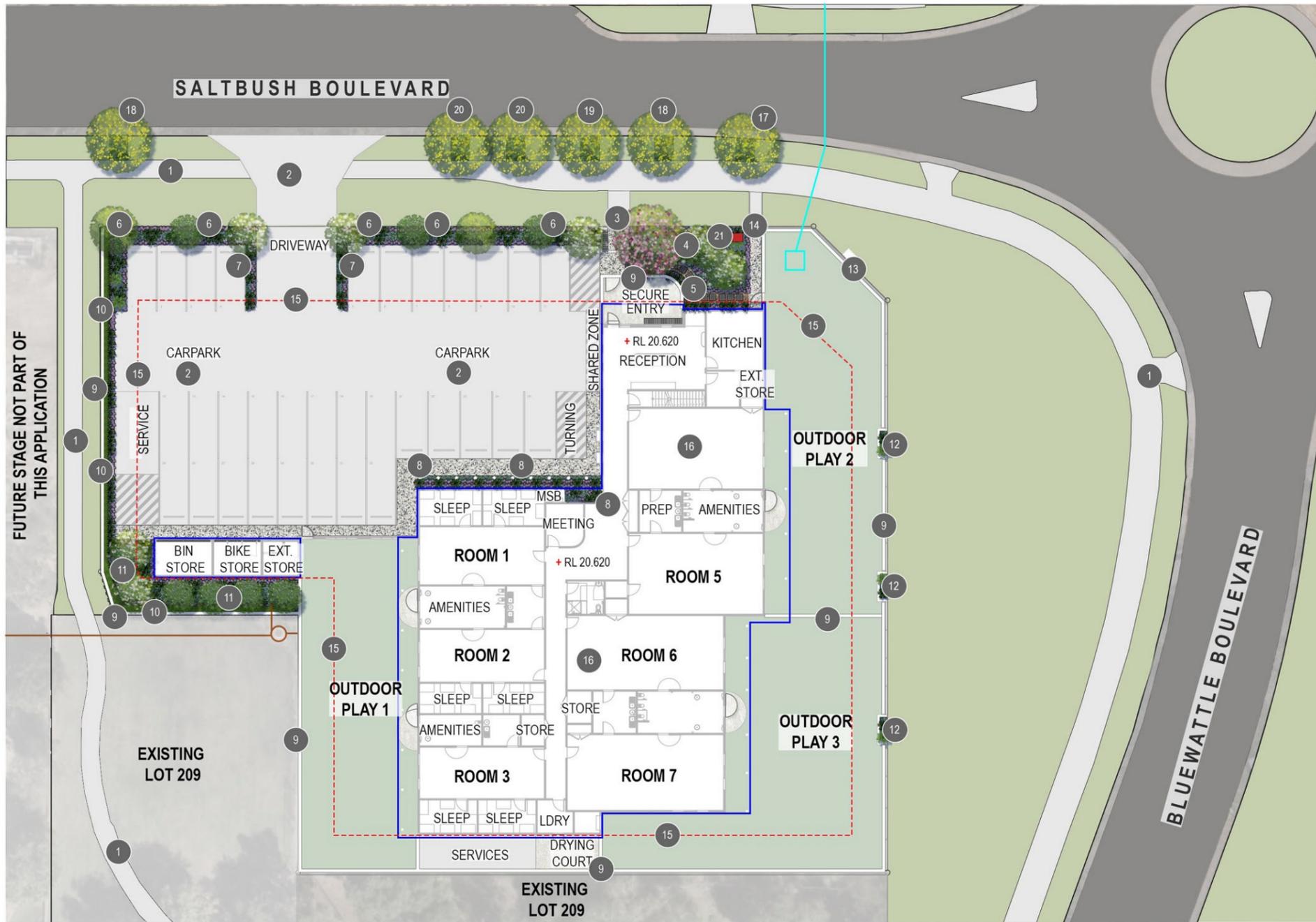


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scale | NTS for A1 job no. | 2508-032
date | JAN 2026 rev no. | D

approved | E. NICHOLAOU* SK001



PLAN
SCALE 1:200

ANNOTATION NOTES

- 1 REFER TO RPS MASTERPLAN DOCUMENTAITON FOR STREETScape DESIGN DETAILS
- 2 PROPOSED DRIVEWAY CROSSOVER AND CARPARK SPACES TO ENGINEER'S DETAILS
- 3 PEDESTRIAN SITE ENTRY / EXITS
- 4 FEATURE TREES BUC cel, TAB pal AND COLUMNAR TREES ELA eum TO PROVIDE AMENITY AND SOFTEN SALTBUSH BOULEVARD PEDESTRIAN ENTRY. TREES TO BE UNDERPLANTED WITH SHRUBS ALP nut, CAL LJ, CAL lut AND PHI XAN WITH GROUNDCOVERS BRA mul, DIE gra, GAZ tom, HYM lit AND LIR EG
- 5 CONCRETE STEPPERS FOR ACCESS TO OUTDOOR PLAY AREA 2
- 6 FEATURE TREES BUC cel AND SHADE TREES ELA eum AND MAG TB TO PROVIDE VISUAL AMENITY AND SOFTEN CARPARK AND DRIVEWAY HARDSTAND. TREES TO BE UNDERPLANTED WITH (MAX 0.6m HIGH) SHRUBS AND GROUNDCOVERS AS PER PLANT SPECIES SCHEDULE ON DRG
- 7 ENTRY GARDEN BEDS TO SOFTEN CARPARK AND BUILDING HARDSTAND. GARDEN BEDS TO BE PLANTED OUT WITH SHRUBS ALP nut, CAL LJ, LAV den and PHI XAN WITH GROUNDCOVERS BRA mul, GAZ tom, VIO hed AND ZOY ten.
- 8 CARPARK GARDEN BEDS TO SOFTEN CRASH BARRIERS AND PROVIDE AMENITY. GARDEN BEDS TO BE PLANTED OUT WITH SHRUBS AND GROUNDCOVERS AS PER PLANT SPECIES SCHEDULE ON DRG 2508-032-SK010
- 9 REFER TO ARCHITECT'S DRAWINGS FOR ALL FENCING DETAILS
- 10 BUFFERING SHRUB SYZ RES TO SCREEN BOUNDARY INTERFACE. SHRUBS TO BE UNDERPLANTED WITH GROUNDCOVERS AS PER PLANT SPECIES SCHEDULE ON DRG 2508-032-SK010
- 11 FEATURE TREES BUC cel AND COLUMNAR TREES ELA eum TO SOFTEN CARPARK HARDSTAND AND PROVIDE BUFFERING TO REAR BIN STORE. TREES TO BE UNDERPLANTED WITH SHRUBS ALP nut, PHI XAN AND PIT MM WITH GROUNDCOVERS LIR EG, MYO PAR AND VIO hed
- 12 GARDEN BEDS TO PROVIDE VISUAL AMENITY AND SOFTEN BUILDING HARDSTAND ON BLUEWATTLE BOULEVARD FRONTAGE. GARDEN BEDS TO BE PLANTED OUT WITH SHRUBS AND GROUNDCOVERS AS PER PLANT SPCIES SCHEDULE ON DRG 2508-032-SK010
- 13 PROPOSED CORNER TRUNCATION - REFER TO ARCHITECT'S DRAWINGS FOR DETAILS
- 14 FIRE EGRESS PATH
- 15 PROPOSED SETBACK
- 16 REFER TO ARCHITECT'S DRAWINGS FOR ALL INTERNAL DETAILS
- 17 PROPOSED STREET TREES MIM ele. ALL STREET TREES TO BE IRRIGATED.
- 18 PROPOSED STREET TREES CUP ana. ALL STREET TREES TO BE IRRIGATED.
- 19 PROPOSED STREET TREES SYZ hem. ALL STREET TREES TO BE IRRIGATED.
- 20 PROPOSED STREET TREES GRE bai. ALL STREET TREES TO BE IRRIGATED.
- 21 PROPOSED FIRE BOOSTER CABINET

CHARACTER REFERENCE IMAGES



INDICATIVE 1800mm HIGH ALUMINIUM BATTEN FENCE TO SECURE ENTRY AREA. GATES TO MATCH



INDICATIVE PROPOSED 1800mm RENDERED BLOCK COLUMNS / FEATURE WALLS TO NOTHERN BOUNDARY INTERFACE



INDICATIVE PROPOSED 1800mm HIGH TIMBER PALING PRIVACY FENCE TO EASTERN BOUNDARY INTERFACE WITH STEP DOWN WHERE REQUIRED. GATES TO MATCH



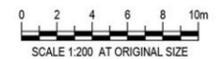
INDICATIVE STREET FRONTAGE / DRIVEWAY SOFTENING WITH FEATURE TREES TABEBUIA palmeri

LEGEND

- PROPOSED FEATURE TREES
- PROPOSED SHADE TREES
- PROPOSED SHRUB AND LOW LEVEL PLANTING
- PROPOSED GROUNDCOVER PLANTING
- PROPOSED BUFFER PLANTING
- TURF
- DECORATIVE GRAVEL
- HARDSTAND SURFACE FINISH TO PEDESTRIAN PRIORITY PATHWAY
- CONCRETE AREA - REFER CIVIL ENGINEERS DRGS FOR DETAILS
- PAVED AREA - REFER ARCHITECTS DRGS FOR DETAILS
- OUTDOOR PLAY AREA
- PROPOSED STEPPERS
- STORMWATER - REFER CIVIL ENGINEERS DRGS FOR DETAILS
- SEWER - REFER CIVIL ENGINEERS DRGS FOR DETAILS
- BUILDING LINE OVER
- PROPERTY BOUNDARY
- BOUNDARY SETBACK
- + RL 20.620 PROPOSED LEVEL

NOTES

1. REFER TO DRG 2508-032-SK010 FOR PLANT SPECIES SCHEDULE, IMAGES AND GENERAL NOTES
2. REFER ARCHITECTS DRGS FOR ALL FENCE DETAILS
3. REFER CIVIL ENGINEERS DRGS FOR ALL RETAINING WALL DETAILS



PRELIMINARY

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C	REVISED ISSUE	JC	19.11.25

BELO DEVELOPMENTS
SALTBUSH BOULEVARD, RASSMUSSEN
LANDSCAPE CONCEPT PLAN
PLANTING PLAN - GROUND FLOOR

LAUDink
landscape architecture & urban design
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ABN 80 169 838 144

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scale 1:200 for A1 job no. 2508-032
date JAN 2026 rev no. D

approved E. NICHOLAOU* SK002

PROPOSED PLANT SPECIES IMAGES

TREES



SHRUBS



GROUNDCOVERS, CLIMBERS & CASCADING SPECIES



PROPOSED PLANT SPECIES SCHEDULE

CODE	PLANT SPECIES	COMMON NAME	CENTRES (mm)	POT SIZE	MATURE SIZE (HxW)
TREE SPECIES					
BUC cel	BUCKINGHAMIA celsissima	Ivory Curl	AS SHOWN	45L	8 x 4
CUP ana	CUPANIOPSIS anacardioides	Tuckeroo	AS SHOWN	25L	10 x 4 (HxW)
ELA eum	ELAEOCARPUS eumundii	Eumundii Quandong	AS SHOWN	25L	8-10 X 3-5 (HxW)
HAR pen	HARPULLIA pendula	Tulipwood	AS SHOWN	45L	10x5 (HxW)
MAG TB	MAGNOLIA grandiflora 'Teddy Bear'	Magnolia Teddy Bear	AS SHOWN	25L	4-6 x 2-3 (HxW)
TAB pal	TABEBUIA palmeri	Pink Trumpet Tree	AS SHOWN	200L	10 x 6
WAT flo	WATERHOUSEA floribunda	Weeping Lilly Pilly	AS SHOWN	200L	15 x 8
SHRUBS SPECIES					
ALP nut	ALPINIA nutans	Dwarf Cardamon	700mm	300mm	
BAE LP	BAECKEA 'La Petite'	Dwarf Baeckea	750mm	300mm	
CAL LJ	CALLISTEMON viminalis 'Little John'	Dwarf Weeping bottlebrush	1000mm	300mm	
CAL lut	CALATHEA lutea	Cigar Plant / Havana Cigar	700mm	300mm	
IXO PM	IXORA 'Pink Malay'	Dwarf Pink Ixora	500mm	300mm	
LAV den	LAVANDULA dentata	Dwarf French Lavender	500mm	300mm	
PHI XAN	PHILODENDRON 'Xanadu'	Xanadu	500mm	300mm	
PIT MM	PITTOSPORUM 'Miss Muffet'	Pittosporum	750mm	300mm	
RHA exc	RHAPIS excelsa	Lady Palm	750mm	200mm	
RHA ind	RHAPHIOLEPIS indica 'Ballerina'	Raphiolepis Ballerina	500mm	300mm	
ROS off	ROSMARINUS officinalis	Rosemary	500mm	300mm	
SYZ RES	SYZYGIUM 'Resilience'	Psyllid resistant Lilly Pilly	1000mm	300mm	
VIB odo	VIBURNUM odoratissimum	Sweet viburnum	1000mm	300mm	
WES ZEN	WESTRINGIA fruticosa Zena	Coastal Rosemary	400mm	300mm	
GROUNDCOVERS, CLIMBERS AND CASCADING SPECIES					
BRA mul	BRACHYSCOME multifida	Cut-Leaved Daisy	500mm	140mm	
CAS CI	CASUARINA glauca	Cousin It	750mm	140mm	
DIC SF	DICHONDRA 'Silver Falls'	Silver Falls	500mm	140mm	
DIE gra	DIETES grandiflora	Large Wild Iris	500mm	140mm	
GAZ tom	GAZANIA tomentosa	Silver Leaved Gazania	300mm	140mm	
HYM lit	HYMENOCALLIS littoralis	Spider Lily	500mm	140mm	
LIR EG	LIRIOPE muscari 'Evergreen Giant'	Evergreen Giant	500mm	140mm	
LOM LT	LOMANDRA 'Lime Tuff'	Lomandra Shara	400mm	140mm	
MYO par	MYOPORUM parvifolium	Creeping Boobialla	750mm	140mm	
THY vul	THYMUS vulgaris	Common Thyme	500mm	140mm	
TRA jas	TRACHELOSPERMUM jasminoides	Star Jasmine	AS SHOWN	140mm	
VIO hed	VIOLA hederacea	Native Violet	300mm	140mm	
ZOY ten	ZOYSIA tenuifolia	Korean Velvet Grass	250mm	140mm	

NOTES

- REFER TO LANDSCAPE CONCEPT PLANS 2508-032-SK002 FOR PLANTING DESIGN
- REFER TO CIVIL ENGINEERS DRAWINGS FOR DRIVEWAY AND CROSSOVER DETAILS
- REFER TO ARCHITECTS DRAWINGS FOR ALL FENCE DETAILS
- LANDSCAPE DETAILED DESIGN IS TO BE COORDINATED WITH HYDRAULIC AND ENGINEERING DESIGN TO CONFIRM LOCATIONS OF UNDERGROUND SERVICES PRIOR TO CONSTRUCTION
- LANDSCAPE GENERAL STANDARDS:
 - 5.1 SOIL TO AS 4419 PLANTING BEDS CULTIVATION MINIMUM DEPTH 100mm GRASSED AREAS (TURF) 150mm PLANTING AREAS 150mm. SOURCE IMPORT TOP SOIL THAT COMPLIES WITH AS 4419.
 - 5.2 MULCH TO AS 4454 PROVIDE MULCH WHICH IS FREE OF DELETERIOUS AND EXTRANEIOUS MATTER SUCH AS SOIL, WEEDS AND STICKS
 - 5.3 STAKE SIZES FOR PLANTS 1-2.5m HEIGHT TWO 50 x 50 x 1800mm STAKES PER PLANT PROVIDE TIES FIXED SECURELY TO THE STAKES, ONE TIE AT HALF THE HEIGHT OF THE MAIN STEM, OTHERS AS NECESSARY TO STABILISE PLANT. FOR PLANTS <2.5m HIGH 50mm HESSIAN WEBBING STAPLED TO THE STAKES
- ALL PLANTS SELECTED FOR OUTDOOR PLAY AREAS TO COMPLY WITH KIDSAFE QLD GUIDELINES & EXCLUDE POTENTIALLY HAZARDOUS PLANT SPECIES AS IDENTIFIED ON THE CHILDREN'S HEALTH QUEENSLAND HOSPITAL AND HEALTH SERVICE

PRELIMINARY

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LANDSCAPE CONCEPT PLAN
PLANT SPECIES SCHEDULE, IMAGES & NOTES

LAUDink
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APPENDIX C

Waste Management Plan prepared by Rhodium Environmental

brazier motti





Waste Management Plan

Rasmussen Early Learning Centre
2 Treeline Drive, Rasmussen

January 2026
DRAFT

Prepared for
Belo Developments



DOCUMENT CONTROL

Project reference: RH2601-88
Version: DRAFT
Project name: Waste Management Plan
Rasmussen Early Learning Centre
2 Treeline Drive, Rasmussen
Client: Belo Developments

REVISION HISTORY

DATE	VERSION	TYPE	AUTHOR	APPROVED
27/01/2026	Draft	WMP	RHenry	RHenry

NOTE

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It is based on general accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice include in this report. It is prepared in accordance with the scope of work.

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A RHODIUM ENVIRONMENTAL REPORT

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DISCLAIMER

This Waste Management Plan has been prepared for Belo Developments by Rhodium Environmental, for the proposed Rasmussen Early Learning Centre located at 2 Treeline Drive, Rasmussen. Opinions and judgements expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal opinions. The report also contains comments and information provided by others. Rhodium Environmental takes no responsibility for advice provided by any third party. This document has been prepared for the sole purpose of a Waste Management Plan and does not present final or detailed engineering designs for construction purposes.

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Attachment A: Development summary and site information prepared by Elevation Architecture.

1.0 DEFINITIONS

Bin carting route – the proposed route to move bins between the storage point and the servicing point.

Bulk bins – bins fitted with lids and side pockets to allow them to be serviced by a front-lift or rear-lift truck.

Common servicing point – a common area where more than two dwellings/tenancies stand their bins for servicing.

Common storage point – a common area where more than two dwellings/tenancies store their bins.

Constructed hardstand area – a hardstand area, for example a concrete pad which has been constructed for bin storage.

e-waste - Electronic waste includes discarded electrical or electronic devices. Used electronics which are destined for refurbishment, reuse, resale, salvage recycling through material recovery, or disposal are also considered e-waste.

Drive-on service – where the waste collection vehicle services bulk bins on site, bins are to be positioned for direct access/servicing without the need for manual handling by the waste vehicle driver or other person.

General waste – waste, other than domestic clean-up waste, green waste, recyclable waste, interceptor waste or waste discharged to a sewer, produced as a result of the ordinary use or occupation of domestic or commercial premises.

Internal servicing roadway – is a driveway, private roadway or other path intended for use by vehicles, in which the waste collection vehicle is required to use to service a bin.

Organic waste - is waste that comes from plants or animal that is biodegradable for example green waste and food waste.

Recyclable waste – for a local government’s area, means clean and inoffensive waste that is declared by the local government to be recyclable waste for the area. Townsville City Council deems the following wastes as recyclable: bottles and containers; aluminium and steel cans and aerosols; bottles and jars made only of glass; clean cardboard, newspaper, loose paper, junk mail, magazines and cartons.

Servicing point – the designated area allocated to the temporary storage of waste bins for the period of servicing only. The point may be within or external to a development.

Storage point – the area allocated to the permanent storage of waste bins. This is the normal location of the waste bins and excludes the period where the bin is serviced. A storage point may be a common storage point or an individual bin storage point.

Waste – includes any thing, other than a resource that is: left over, or an unwanted by-product from an industrial, commercial, domestic or other activity; or surplus to the industrial, commercial, domestic or other activity generating the waste.

Waste carting distance – the distance required for a person to transport their waste from the nearest point of exit of their dwelling/tenancy to a storage point (or in the case of a multi-level building, to the nearest waste disposal point).

Waste storage room – the room at the base of the chute used for the storage of waste bins.

Wheelie bin – two wheeled mobile garbage bins, made from high density polyethylene (HDPE). Wheelie bins are collected by a side-lift truck.

2.0 INTRODUCTION

2.1 DEVELOPMENT BACKGROUND

The applicant, Belo Developments, proposes to construct a commercial development comprising an early learning centre for up to 120 children. The Rasmussen Early Learning Centre will service the growing residential community in the surrounding area. The development is to be constructed on a 2,988 m² parcel of land described as Lot 194 which forms part of Lot 904 on SP344615.

Following submission of an application to Townsville City Council (TCC) for the proposed development in 2025 (application reference MCU25/0091), TCC responded with an Information Request (IR) requiring additional details to complete the assessment of the proposal. Item 2 of the IR requires the provision of a Waste Management Plan (WMP) in accordance with SC6.4.22 *Waste management Planning Scheme Policy* and demonstrating compliance with Performance Outcome PO35 of the Works code of the Townsville City Plan.

Rhodium Environmental was commissioned to prepare this WMP in support of the application and in response to Item 2 of the IR. This WMP ensures that the waste storage and collection activities for the operational phase of the proposed development are in accordance with Local Law No.7 – *Waste Management 2018*, and SC6.4.22 *Waste Management*, Townsville City Plan (Version 2025/01).

2.2 SITE DETAILS

The development site is located on land at 2 Treeline Drive, Rasmussen (refer to **Figure 1**). The site is currently bound by park land to the east, and undeveloped land to the south, west and north of the site.

The development will include an early learning centre consisting of seven activity rooms, three outdoor play areas, a staff kitchen, amenities, reception area, and supporting facilities (refer to **Attachment A** for a detailed development summary).

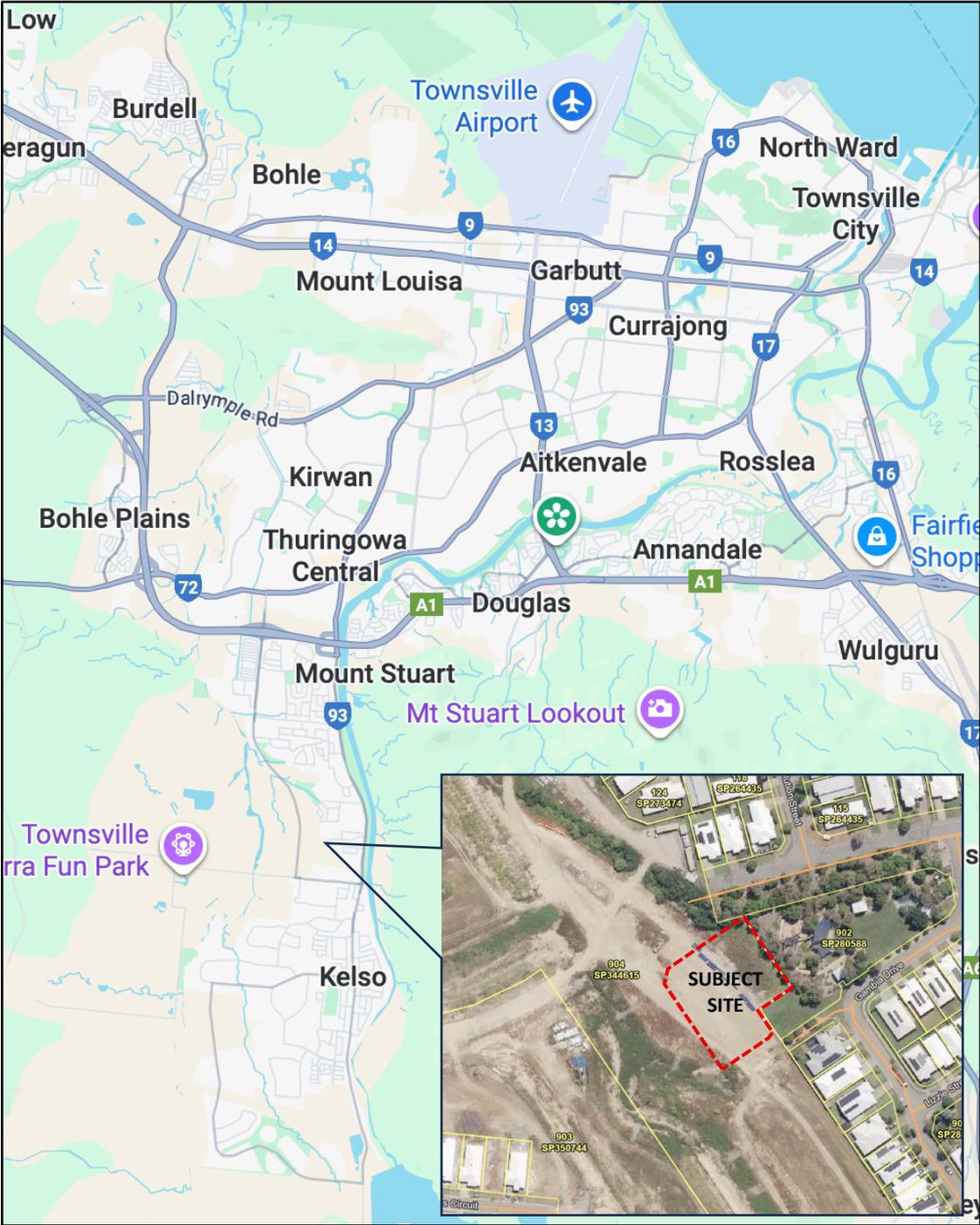
2.3 PURPOSE AND SCOPE

This report represents a Waste Management Plan for the operational phase of the development which includes:

- Details on the anticipated type and quantity of waste (**Section 3.0**);
- Details of the waste storage point requirements and waste storage bins (**Section 4.0**); and
- Details of the waste collection point requirements and proposed waste collection arrangements (**Section 5.0**).

This report presents conceptual information on the above dot points, rather than involving detailed engineering designs.

Figure 1: Site location map.



Proposed development site at 2 Treeline Drive, Rasmussen.

3.0 WASTE AND RECYCLING GENERATION

3.1 TYPE OF WASTE

The development is proposed to include an early learning centre and as such, the anticipated waste types include (but are not limited to):

General waste

- Food scraps from meal preparation and children’s lunches
- Soiled paper products (paper towels, tissues, napkins)
- Disposable gloves and PPE
- Nappy and hygiene waste
- Contaminated packaging and non-recyclable materials

Recycling material

- Cardboard and paper packaging
- Office paper
- Plastic containers and bottles
- Glass bottles and jars
- Aluminium and steel cans

No regulated waste is expected to be generated at the site during the operational phase.

3.2 WASTE VOLUMES

Calculations of the anticipated waste quantities from the development were performed using typical waste generation rates based on industry benchmarks for childcare / educational land uses and are considered conservative for the proposed development. This approach is consistent with the provisions of SC6.4.22 Waste Management, Townsville City Plan (Version 2024/01).

Table 1 below displays the anticipated volume of general waste and recyclable material that is expected to be generated during operation of the centre.

Table 1: Anticipated waste quantities.

Waste Type	TUA (m ²)*	Waste Generation Rate (L/100m ² /day)#	Estimated Waste Generation (L/day)	Estimated Waste Generation (m ³ /week)	Estimated Waste Generation (m ³ /day)
General	402	220	885.4	4.43	0.89
Recycling		110	442.7	2.21	0.44

*TUA of the activity rooms used to determine overall waste generation from the centre.

The development is expected to generate approximately 4.43m³ of general waste and 2.21m³ of recycling material per week. Based on these rates, the nominated bin provision and collection frequencies provide adequate capacity to manage waste generated on site while maintaining appropriate contingency and minimising odour and amenity impacts.

Waste minimisation measures to be implemented include:

- Separation of general waste and recyclable materials at source;
- Use of clearly labelled bins for staff and visitors;
- Preference for bulk purchasing and products with recyclable packaging;
- Reuse of materials for craft and learning activities where appropriate;
- Staff training and induction on waste separation and management procedures.

These measures align with the objectives of the Queensland Waste Management and Resource Recovery Strategy.

4.0 WASTE AND RECYCLING STORAGE

Section 4 outlines the general design criteria of the waste storage and servicing areas as required by SC6.4.22 Waste Management, Townsville City Plan (Version 2024/01) along with a description of the proposed bins to be used. Should the proposed development be unable to meet any of the following requirements, alternative arrangements may be negotiated with Council at the appropriate time.

4.1 BIN STORAGE POINT

The development is proposed to include a single bulk bin storage room at ground level for the storage of all general waste and recycling material generated from the development (refer to **Figure 2**). The bulk bin storage room will be provided in an accessible location ensuring easy access for waste and recycling disposal.

The bin storage room will be designed and constructed to meet Council's design requirements as listed below. The bin storage room will be:

1. Located at ground level;
2. Provided with convenient access for owners, tenants, and site staff;
3. Provided with a suitable level enclosure with a concrete slab floor;
4. Graded, and drained through an approved sediment/silt trap to a legal sewer connection;
5. Provided with a hose cock and hose within (or in close proximity to) the bin storage point;
6. Enclosure dimensions for bulk bins will exceed the size of the nominated bin size by at least 200mm;
7. Enclosed/screened such that bins are not visible from any street frontage;
8. Site management will keep bins clean, in good repair and securely covered;
9. Designed with adequate clearance surrounding bins within the bin storage point to ensure practical waste management at the site;
10. Roofed and designed to prevent entry of rainwater;
11. Doors will be wide enough to allow for the easy removal of the largest bin to be stored;
12. Provided with adequate artificial lighting.

Note that it will be the responsibility of site management to wash bins and to maintain the cleanliness of the bins and bin storage area.

To minimise impacts on surrounding land uses:

1. Waste storage areas will be appropriately setback from site boundaries where practicable;
2. All bins will be fitted with secure lids and kept in a clean and serviceable condition;
3. Odour will be managed through regular waste collection and bin cleaning;
4. Waste handling will be undertaken to minimise noise and spillage;
5. Any spills will be cleaned immediately and contained within the waste storage area.
6. Staff will receive training on waste separation, hygiene waste handling, and bin use.
7. The WMP will be reviewed periodically to ensure ongoing effectiveness and compliance.

4.2 PROPOSED WASTE BINS

To ensure that the bin storage area provided for the development are sufficiently sized, details of the type and quantity of waste and number of bins to be stored are provided in **Table 2** below.

Table 2: Details of waste and bins required at each bin storage point.

Waste Type	Waste Quantity (m ³ /week)	Proposed Bins	Servicing frequency*	Comments
General	4.43	2 x 1.1m ³ bulk bins	Twice per week	All bins are lightweight plastic bulk bins allowing for easy maneuvering and bin carting. It will be the responsibility of site management to cart bins from the storage room to the servicing area ahead of collection by the contracted waste service provider.
Recycling	2.21	2 x 1.1m ³ bulk bins	Once per week	

*Once the development is operational, the servicing frequency will be reviewed to ensure that it is sufficient but not excessive for the development.

Table 3 below provides dimensions of the bins to be used on-site.

Table 3: Dimensions of proposed bins.

Bin Type	Volume	Length (mm)	Width (mm)	Height (mm)	Collection Vehicle Type
Plastic bulk bin	1.1m ³	1,280	1,080	1,340	Rear lift truck

5.0 SERVICING

5.1 BIN SERVICING POINT

Bulk bins will be carted by site management from the bin storage room to a nearby servicing point (refer to **Figure 2**). The contracted service provider will empty all bins at the servicing point. It will be the responsibility of site management to return the bins to the bin storage room following servicing. All bins will be serviced via rear-lift collection vehicles by a privately contracted, licensed service provider. Multiple waste service providers have confirmed availability to collect general and recycling waste from the centre using rear-lift collection vehicles.

The bin storage room will hold two general waste bins and two recycling bins and as such, the bin servicing point will be designed to temporarily hold two bulk bins as the general and recycling bins will be collected on alternate days by the contracted service provider.

The bin servicing point will be designed and constructed to meet the requirements listed below. The bin servicing point will be:

1. Designed to ensure access for refuse collection vehicles is maintained at all times;
2. Designed to ensure that bins can be serviced safely while minimising the impediment of traffic flow during servicing;
3. Separated from car parking bays, footpaths and pedestrian access, and any other similar areas;
4. Clear of speed control devices or similar provisions which inhibit direct access to the bins for servicing;
5. Bin-carting route will allow bins to be easily manoeuvred and is devoid of steps or steep rises;
6. Designed with vertical and horizontal clearances for refuse collection vehicles to operate safely, and efficiently;
7. All circulation and access roads utilised by the refuse collection vehicles will be minimum 6.5m wide;
8. Refuse collection vehicles will enter and exit the site in a forward direction;
9. Bins will be stored and serviced on an imperviously paved area;
10. Clearance height will not be obstructed by any overhead structures such as trees, wires, sails, awnings, fascia, etc.

Table 4 details the dimensions of the waste collection vehicles that will service the development. Rear lift refuse vehicles will empty the bulk bins internally at the nominated servicing point in a clear area with no overhead obstructions.

Table 4: Service vehicle dimensions.

Vehicle type	Travelling Height	Width	Length	Servicing Height	Total Tonnage (maximum)	Min Turning Circle (kerb to kerb)
Rear lift truck	3.6m	2.5m	10.24m	3.6m	27.5tn	9.5m

5.2 INTERNAL SERVICING ROADWAYS

As the service vehicles will be required to enter the development site and service the bins internally, the internal roadways will be designed to meet the following requirements:

1. Waste and recycling collection vehicles to enter and exit the site in a forward motion.
2. Designed with sufficient space for the applicable type of waste collection vehicle to travel around the site, turnaround if required and manoeuvre into position for bin servicing, without obstructing parking areas, loading zones or pedestrian areas (refer to service vehicle swept path in project traffic report).
3. Constructed to withstand the fully loaded weight of the waste and recycling collection vehicles (not less than G.V.M. 33 tonnes);
4. Provided with sufficient clearance height for the waste collection vehicle when travelling and servicing the bins under a structure or roof, taking into account:
 - travelling height of vehicle (and bins);
 - servicing height of vehicle and bins;
 - gradient of roadways;
 - obstructions such as roof-mounted services, signage, driveway doors, etc.
5. All circulation and access roads utilised by the refuse collection vehicles will be minimum 6.5m wide.

6.0 CONCLUSION

This Waste Management Plan has been prepared to provide conceptual details for an efficient and compliant waste management system in the operational phase of the proposed early learning centre at 2 Treeline Drive, Rasmussen. Further detail on the engineering specifics regarding waste area design and drainage will be completed by others.

The following details provide a summary of the proposed development and the related waste management requirements:

- Belo Developments proposes to construct an early learning centre on land at 2 Treeline Drive, Rasmussen;
- The development will be constructed across a 2,988m² parcel of land described as Lot 194 which forms part of Lot 904 on SP344615;
- This WMP has been prepared in response to a request for further information from Townsville City Council following an initial development application for the centre, and to demonstrate compliance with SC6.4.22 Waste Management, Townsville City Plan (Version 2024/01);
- The development will include an early learning centre consisting of seven activity rooms, three outdoor play areas, a staff kitchen, amenities, reception area, and supporting facilities catering for up to 120 children;
- Waste from the development is expected to consist of general waste and co-mingled recycling material only;
- The development is expected to generate approximately 4.43m³ per week of general waste and 2.21m³ per week of recycling material;
- A bin storage room will be provided at ground level for the storage of 2 x 1.1m³ general waste bulk bins and 2 x 1.1m³ recycling bulk bins;
- Bin wash facilities will be provided in the bulk bin storage room, and it will be the responsibility of site management staff to maintain the amenity of the bins and bin storage areas;
- A suitably sized bin servicing point will be provided in proximity of the bin storage room;
- Site management staff will cart bins from the bin storage room to the bin servicing point for collection by the contracted service provider;
- The general waste bins will require servicing twice per week, while the recycling bins will require servicing once per week;
- Bulk bin servicing will be carried out by privately contracted, rear-lift service vehicles at a designated bin servicing point within the site;
- Sufficient access and clearance is available at the nominated servicing point for safe servicing of the bulk bins;
- Service vehicles will enter and exit the site in a forward direction;
- All bin storage and servicing areas will be designed and constructed generally in accordance with Council's waste policy requirements.



NOTES Adapted from original prepared by Elevation Architecture.



DESIGNED	RH		CLIENT	BELO DEVELOPMENTS	
APPROVED	RH		JOB NO.	RH2601-88	
			DATE	JANUARY 2026	
			SHEET SIZE	A3	
			AHD	NA	

PROJECT	WASTE MANAGEMENT PLAN 2 TREELINE DRIVE, RASMUSSEN		
TITLE	GROUND LAYOUT AND BIN STORAGE ROOM		
SCALE	NTS	REVISION	A
FIGURE	FIGURE 2		

ATTACHMENT A

Development summary and site information prepared by Elevation Architecture.

Rasmussen Early Learning Centre

New Lot on Saltbush Boulevard, Rasmussen, QLD 4815



SITE INFORMATION

Real Property Description: Lot 194 of Lot 904 SP344615

Local Authority: Townsville City Council
 Site Area: 2,988m²
 Site Cover: 1,081.1m²
 Carparking Provided: 32 (Ratio of 1:3.75)

GFA: Ground 898.7m²
 First 64.2m²
 Total 962.9m²

Landscape (Incl. outdoor play): 1,069.6m² (35.8%)

Outdoor Play Calculations				
Zone	Age Group	Area Required	Area Provided	Occupancy
Outdoor Play 1	0-2 yrs	252.00	255.03	36
Outdoor Play 2	2-3 yrs	280.00	286.11	40
Outdoor Play 3	3-5 yrs	308.00	313.68	44
		840.00 m ²	854.82 m ²	120

Activity Room Calculations							
Level	Room	Age Group	Area Required	Area Provided	Staff Ratio	No. of Staff	Occupancy
Ground Floor	Activity Room 1	0-24 mnths	39.00	44.42	1:4	3	12
	Activity Room 2	0-24 mnths	39.00	40.39	1:4	3	12
	Activity Room 3	0-24 mnths	39.00	39.58	1:4	3	12
	Activity Room 4	2-3 yrs	65.00	66.44	1:5	4	20
	Activity Room 5	2-3 yrs	65.00	66.91	1:5	4	20
	Activity Room 6	3-5 yrs	71.50	71.68	1:11	2	22
	Activity Room 7	3-5 yrs	71.50	73.05	1:11	2	22
			390.00 m ²	402.47 m ²		21	120

DA
NOT FOR CONSTRUCTION

APPENDIX D

Noise Impact Assessment prepared by SLR

brazier motti





Rasmussen Early Learning Centre, Lot 194 Saltbush Boulevard, Rasmussen

Noise Impact Assessment

Belo Developments Pty Ltd

PO Box 287
Carina QLD 4152

Prepared by:

SLR Consulting Australia Pty Ltd

SLR Project No.: 620.043108.00001

18 February 2026

Revision: 02

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
01	16 February 2026	T Anderson	J Conomos	
02	18 February 2026	T Anderson	T Anderson	

Basis of Report

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

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.



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Appendix C	Ambient Noise Monitoring Graphs
Appendix D	SoundPLAN Noise Emissions Contour Maps



1.0 Introduction

SLR Consulting Australia Pty Ltd (SLR) has been commissioned by Belo Development Pty Ltd (the Client) to prepare a Noise Impact Assessment (NIA) for the proposed Rasmussen Early Learning Centre at Lot 194 on Saltbush Boulevard within the future Somers and Harvey Estate in Rasmussen, Townsville, Queensland (the Project). This technical report presents a NIA which has been undertaken in response to Request Item 3 in the Information Request from Townsville City Council dated 23 December 2025 (document ref.: 27862849).

The purpose of the NIA is to demonstrate the operational viability of the Project with regards to compliance with relevant Queensland noise legislation and the noise criteria within the Townsville City Plan version 2025/01 (latest version at the time of this assessment). This report outlines the applicable noise assessment criteria, demonstrates the viability of the Project's operation with respect to noise emissions and noise intrusion, and provides in-principle reasonable and feasible mitigation measures that can be implemented during the Project planning stages. The following has been assessed in this report:

- Operational noise emissions from the Project to existing offsite noise sensitive receptors and future noise sensitive receptors within the Somers and Harvey Estate.
- Onsite acoustic amenity in relation to potential noise intrusion from existing environmental noise sources.

A glossary of acoustic terms used in this report is presented in **Appendix A**. The drawings used to inform this NIA are attached in **Appendix B**.

This report has been prepared with reference to the following documents:

- Townsville City Plan version 2025/01
- Queensland Environment Protection Act 1994
- Environmental Protection (Noise) Policy 2019



2.0 Project Description

2.1 Site Location

The Project site is to be located at Lot 194 at the intersection of Saltbush Boulevard and Bluewattle Boulevard within the future Somers and Harvey Estate in Rasmussen, in the City of Townsville local government area. The Project site location and the Somers and Harvey Estate Masterplan, which is being progressively developed at the time of this assessment, is shown in **Figure 2-1**.

The Project site is on the eastern corner of the Bluewattle Boulevard and Saltbush Boulevard intersection toward the southern end of the Somers Harvey Estate. The site is currently unoccupied with no existing buildings and is surrounded by the following current and known future notable physical environmental aspects:

- Bluewattle Boulevard and Saltbush Boulevard which border the site to the north and west respectively.
- Birdwing Park which borders the site to the east.
- Residential dwellings which border the site to the south and future residential lots which will also border the site to the south, as a part of the Somers and Harvey Estate Masterplan.
- Predominately single storey residential dwellings located north of the site, opposite Bluewattle Boulevard and future residential lots which will also be located north of the site, opposite Bluewattle Boulevard, as a part of the Somers and Harvey Estate Masterplan.
- Residential dwellings located east, opposite Birdwing Park.
- Vegetation/wetlands located west of the site, opposite Saltbush Boulevard, and future residential lots located further west, as a part of the Somers and Harvey Estate Masterplan.



2km DIRECT ACCESS TO TOWNSVILLE RING ROAD

6min WILLOWS SHOPPING CENTRE & CANNON PARK ENTERTAINMENT PRECINCT



Figure 2-1: Project Site Location (Source: Urbex)

Somers & Hervey

ESTATE

Masterplan

- Walking Trails
- Neighbourhood Parks & Playgrounds
- Community Purpose
- Proposed Bus Stop
- Conservation/Wetland Area
- Landscaped Open Space
- Future Residential Lots
- Now Selling Residential Lots
- Sold Residential Lots

AMENITIES WITHIN 6MINS

- Parks & Playgrounds**
 - Ross River
 - Apex Park
 - Birdwing Park
 - Jeff Caddies Park
 - Neil McCarthy Park
- Education & Child Care**
 - Good Shepherd Catholic School
 - Rasmussen State School
 - Little Zebra
 - Goodstart Early Learning
- Sports & Recreation**
 - Upper Ross PCYC
 - Riverway Rowing Club
 - Loam Island Boat Ramp
- Retail**
 - Riverway Plaza
 - Willows Shopping Centre
 - Cannon Park Entertainment Precinct
- Medical**
 - Rasmussen Medical Centre

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Project Site

GOOD SHEPHERD CATHOLIC SCHOOL

UPPER ROSS PCYC

RASMUSSEN STATE SCHOOL

APEX PARK & ROSS RIVER 5min

3min RIVERWAY PLAZA

CHILDCARE CARE CENTRE

2.2 Proposed Development

The proposal consists of a two-storey early learning centre use building. The majority of usages are contained to the ground level, with staff use areas located on the first level.

The proposal includes the following space usages:

- One (1) reception area on the ground floor.
- Seven (7) children activity rooms and six (6) sleeping rooms on the ground floor.
- Five (5) amenities spaces and one (1) laundry on the ground floor and one (1) toilet on the first floor.
- One (1) kitchen and meeting room on the ground floor and one (1) staff retreat and breakout space on the first floor.
- Numerous low noise generating operational support space usages, such as prep rooms and storage rooms, primarily located on the ground level, with one (1) storeroom located on the first floor
- An external plant deck located at the eastern end of the site.
- Three (3) outdoor play areas.
- External car parking with 32 visitor and staff parking bays and 1 service vehicle bay.

The proposed operation times of the Project are weekdays between 7:00am and 7:00pm Monday to Friday. Staff arrivals have been advised by the Client to occur between 6:00 am and 7:00 am and it has also been assumed in this NIA that staff departures occur between 7:00 pm and 8:00 pm.

The proposed children occupancy is 36 children aged 0-2 years, 40 children aged 2-3 years and 44 children aged 3-5 years totalling a maximum occupancy of 120 children.

Distribution of children within the Project and usages layouts are included in **Appendix B**.



3.0 Local Environment

3.1 Noise Sensitive Receptors

The nearest identified existing and known future noise sensitive receptors (NSRs) nearest to the Project are summarised in **Table 3-1** and shown in **Figure 3-1**. Due to the number of sensitive uses in proximity to the Project, those nearest to the project have been grouped into NSR clusters for the purposes of assessment.

Future dwelling footprint designs within the Somers and Harvey Estate allotments are subject to the future owners and are as such currently unknown. The possibility of future two-storey dwellings has been considered in this NIA, however a review of aerial photography has shown that a majority of the existing houses are single storey.

Table 3-1: Summary of Existing Noise Sensitive Receptors Nearest to The Project

Receptor ID	Description	Approximate distance and direction from the Project site lot boundary to nearest receptor lot boundary
NSR1	Future residential lot northwest of the site within the Somers and Harvey Estate Masterplan on Saltbush Boulevard.	74 m northwest
NSR2	Residential cluster north/northeast of the site consisting of: <ul style="list-style-type: none"> • Single and two-storey dwellings at 44, 46, 48, 50, 52 and 54 Bluewattle Boulevard and 2 and 4 Resolution Street. • Future residential lots within the Somers and Harvey Estate Masterplan on Saltbush Boulevard. 	31 m north
NSR3	Residential cluster south/southeast of the site consisting of: <ul style="list-style-type: none"> • Single-storey dwellings at 7, 9, 11, 14 and 15 Gambia Drive and 2 Parsonia Drive. • Future residential lots within the Somers and Harvey Estate Masterplan on Saltbush Boulevard. 	12 m south
NSR4	Future residential lots southwest of the site within the Somers and Harvey Estate Masterplan opposite Saltbush Boulevard.	55 m southwest



Figure 3-1: Identified Existing Noise Sensitive Receptors Nearest to The Project



3.2 Existing Acoustic Environment

The existing acoustic environment local to the Project site can be described as general suburban ambient noise with distant road traffic noise from Riverway Drive. The Somers and Harvey Estate is under development at the time of this report. During a site visit carried out by SLR on 29 January 2026, earthworks equipment, site offices and general vehicles could be observed within the Somers and Harvey Estate development in proximity to the Project site.

To quantify the existing local ambient noise levels, SLR have carried out unattended ambient noise monitoring as detailed in **Section 3.2.1**. Noise monitoring was carried out at a location considered to be acoustically representative of the Project site whilst avoiding interference from potential noise emissions associated with the temporary Somers and Harvey Estate development activities.

3.2.1 Ambient Noise Monitoring

One (1) Acoustic Research Labs NGARA class 1 noise logger (serial number 8781C7) was used to measure the existing ambient noise levels within the locality of the Project site. The noise loggers were programmed to record statistical noise level indices continuously, including L_{Amin} , L_{Amax} , L_{A1} , L_{A10} , L_{A90} and L_{Aeq} , and were post-processed to present in 15-minute intervals.



At all times the noise monitoring conducted was consistent with guidelines provided in AS 1055:2018 *Acoustics - Description and measurement of environmental noise* (AS 1055) and the Department of Environment, Tourism, Science and Innovations' (DETSI) *Noise Measurement Manual* (NMM). The acoustic instrumentation was designed to comply with AS/NZS IEC 61672.1-2019 *Electroacoustics – Sound level meters Specification* (AS/NZS IEC 61672.1) and carry current calibration certification from a NATA¹ accredited laboratory.

Instrument calibration was checked before and after the measurement survey, with the variation in calibrated levels not exceeding ± 0.5 dBA. Therefore, the noise measurements are considered valid, following AS 1055 guidance.

Ambient noise monitoring was undertaken from Thursday 29 January to Monday 9 February 2026 at the location shown in **Figure 3-2**. The monitoring location was selected with consideration of:

- avoiding extraneous noise from activities associated with the Somers and Harvey Estate development,
- being representative of a suburban acoustic environment comparable to the Project site; and
- being an approximate equivalent distance from Riverway Drive as the Project site.

¹ National Association of Testing Authorities



Figure 3-2: Noise Monitoring Location



Weather data for the survey period was obtained from the nearest meteorological monitoring station to the Project site operated by the Bureau of Meteorology (BoM); the Townsville Aero automatic weather station (AWS), Station ID 032040 located approximately 11.9 km north-northeast of the noise monitoring location. Noise data corresponding to periods of adverse weather comprised of rainfall and/or wind speeds at 1.5 m above ground exceeding 5 m/s were discarded.

Detailed results from the ambient noise monitoring survey are displayed graphically in **Appendix C**.

Noise levels measured during the evenings and at night were observed to be affected by insect noise, predominantly within the 2 kHz to 5 kHz 1/3 octave frequency range. Insect noise has been removed from the affected range by substituting the values with the arithmetic average noise levels from the nearest bandwidths either side of the effected range.

A summary of the Rating Background Level (RBL), average L_{A90} and average L_{Aeq} noise levels is provided in **Table 3-2**.



Table 3-2: Ambient Noise Monitoring Results Summary

Monitoring Location as shown in Figure 3-2	Time Period, T, Monday to Friday ¹	Average $L_{eq,T}$ Noise Level, dBA	Average Background Noise Level $L_{90,15min}$ dBA	Rating Background Level (RBL), dBA
Noise logger location	6:00 am to 7:00 am	48	44	40 ²
	Day – 7:00 am to 6:00 pm	51	42	38
	6:00 pm to 8:00 pm	50	45	42 ²
Note 1: Consistent with the proposed operational hours being sought by the Project plus 1-hour shoulder periods before and after operational hours for staff arrivals and departures. Note 2: 'RBL' calculation method applied to the reduced time period T.				



4.0 Regulatory Framework and Environmental Noise Assessment Criteria

4.1 Townsville City Council Information Request Reference 27862849

This NIA has been prepared in response to the Request Items relevant to acoustics reproduced below, as requested in Townsville City Council's Information Request dated 23 November 2025 (document ref.: 27862849).

Request Item 3 – Noise Impact Assessment

The applicant is requested to provide a Noise Impact Assessment, prepared by a suitable qualified person as per SC6.4.19 Noise and Vibration of the Development Manual.

Reason

To demonstrate compliance with Performance Outcome PO10 of the Low density residential zone of the Townsville City Plan.

Advice

Consideration towards noise generated by frequently operating safety gates in the outdoor play areas adjoining residential uses is required.

PO10 of the Townsville City Plan Low density residential zone code is reproduced in **Table 4-2** below.

Table 4-1: Performance Outcome PO10 of the Low Density Residential Zone Code

Performance Outcome	Acceptable Outcome
PO10 Landscaping is provided to enhance the appearance of the development, screen unsightly components, create an attractive on-site environment and provide shading.	No acceptable outcome is nominated.

PO10 of the Townsville City Plan Low density residential zone code applies to landscaping and is not acoustically relevant. However, PO9 of the Townsville City Plan Low density residential zone code presented in **Section 4.2.1** specifies acoustic controls and as such is acoustically relevant to this NIA. Therefore, it has been assumed that PO10 has been incorrectly referenced in Request Item 3 and PO9 has been referenced in this NIA.

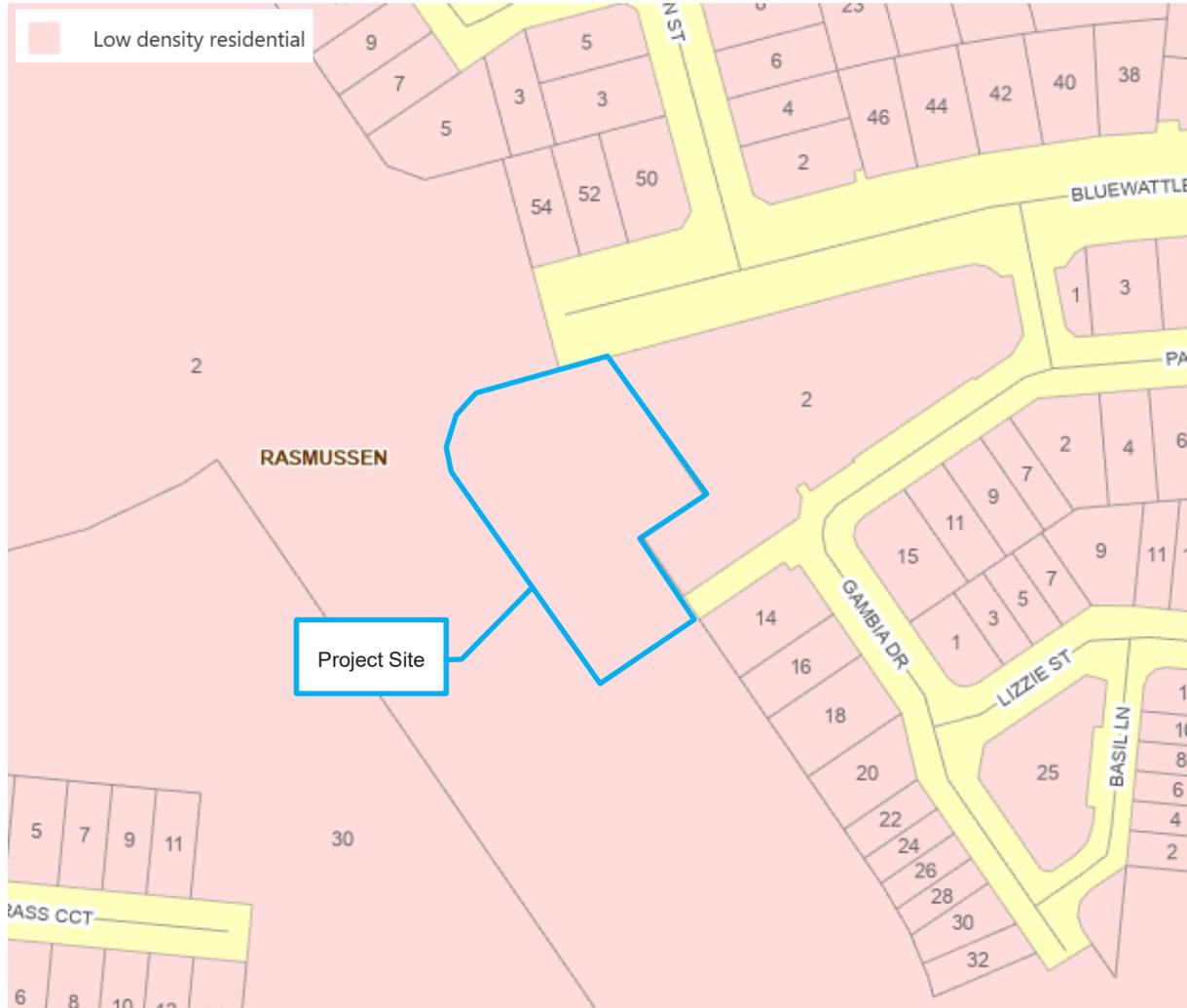
4.2 Townsville City Plan v2025/01

Based on the Townsville City Plan v2025/01 zone mapping overlay in **Figure 4-1**, the Project site is located in the following zones:

- Low Density Residential.



Figure 4-1: Townsville City Plan v2025/01 Zones Mapping Overlay



Section 5.3.2 of the Townsville City Plan identifies the Project as impact assessable and the following relevant codes apply:

- Low density residential zone code.

4.2.1 Low density Residential Zone Code

Section 6.2.1 Low density residential zone code of the Townsville City Plan specifies the performance and acceptable outcomes in **Table 4-2** in relation to noise controls relevant to the Project.

Table 4-2: Low Density Residential Zone Code Project Noise Benchmarks

Performance Outcome	Acceptable Outcome
<p>PO9 Development minimises impacts on surrounding land and provides for an appropriate level of amenity within the site having regard to:</p> <ul style="list-style-type: none"> a) Noise; b) Hours of operation; 	<p>No acceptable outcome is nominated.</p>



Performance Outcome	Acceptable Outcome
c) Traffic; d) Visual impact; e) Odour and emissions; f) Lighting; g) Access to sunlight; h) Privacy; and i) Outlook.	
PO31 Air conditioning units are insulated so that adjoining properties are not affected by the noise source, and are not significantly visible from the street.	No acceptable outcome is nominated.

PO9 and PO31 specifies general acoustic controls regarding noise emissions from the Project to the surrounding environment and regarding the onsite acoustic amenity, however does not specify noise criteria or limits. The Townsville City Council Information request reproduced in **Section 4.1**, references section SC6.4 Development Manual Planning Scheme Policy of the Townsville City Plan. Therefore, the noise criteria contained in SC6.4.19.6 Noise Assessment Levels have been referenced in **Section 4.2.2** to assess acoustic compliance with PO9 and PO31 in relation to noise emissions. The Queensland Environmental Protection Act 1994 has also been referenced in **Section 4.3** to inform this NIA and assess acoustic compliance with PO9 and PO31.

The Environmental Protection (Noise) Policy 2019 has been applied to address onsite noise amenity referenced in PO9 is summarised in **Section 4.4**.

4.2.2 SC6.4 Development Manual Planning Scheme Policy

Section SC6.4.19.6 Noise Assessment Levels of the Townsville City Plan specifies trigger noise levels to assess a proposal or site. The trigger levels are not intended as mandatory requirements, but instead as benchmarks for assessing potential community disturbances and the requirement for noise controls and mitigation strategies. Notwithstanding, the trigger levels have been referenced to inform this NIA.

Intrusive and amenity noise levels are specified to establish project trigger levels, with the most stringent being applicable. The intrusive noise level $L_{Aeq,15min}$ is limited to the RBL plus 5 dB for the day, evening and night time periods. Based on the background noise levels in **Section 3.2.1** the intrusive noise levels applicable to the Project are shown below, relevant to the operational hours being sought.

- 6:00 am to 7:00 am – 45 dBA $L_{Aeq,15min}$
- 7:00 am to 6:00 pm – 43 dBA $L_{Aeq,15min}$
- 6:00 pm to 8:00 pm – 47 dBA $L_{Aeq,15min}$

Amenity noise levels are specified relative to the receptor land use. The land uses surrounding the site can be best characterised as suburban and the following noise limits have been calculated to apply. Guidance has been sought from the New South Wales Environmental Protection Authority Noise Policy for Industry 2017 when deriving the noise limits, from which the amenity criteria has been adopted.

- Day (7:00 am to 6:00 pm): $55 - 5 + 3 = 53$ dBA $L_{Aeq,15min}$
- Evening (6:00 pm to 8:00 pm): $45 - 5 + 3 = 43$ dBA $L_{Aeq,15min}$



- Night (6:00 am to 7:00 am): $40 - 5 + 3 = 38$ dBA $L_{Aeq,15min}$

Section SC6.4.19.6 Noise Assessment Levels also specifies criteria in relation to sleep disturbance (applicable at night only) and low frequency criteria. The Project does not propose uses that are expected to generate significant low frequency noise and as such the criteria has not been determined to be relevant. The sleep disturbance criteria apply as follows.

- $L_{Aeq,15min}$ 40 dBA 1 metre from the façade or the existing rating background level plus 5 dB, whichever is the greater.
- The arithmetic average of the maximum levels from up to 15 single events over a given night-time period L_{AFmax} 52 dBA 1 metre from the façade or the existing rating background level plus 15 dB, whichever is the greater.
- The absolute highest L_{AFmax} 60 dBA 1 metre from the façade or the existing rating background level plus 15 dB, whichever is the greater.

Based on the background noise levels in **Section 3.2.1** the following intrusive noise levels apply for the Project between 6:00 am and 7:00 am:

- 45 dBA $L_{Aeq,15min}$ at 1 m from facades
- 55 dBA L_{AFmax} arithmetic average of the maximum levels from up to 15 single events at 1 m from facades.
- 60 dBA L_{AFmax} absolute maximum at 1 m from facades

4.3 Queensland Environmental Protection Act 1994

The Environmental Protection Act (EPA) 1994 specifies the following noise control restrictions relevant to the Project:

- 440U Air-conditioning equipment:
 - An occupier of the premises must not use, or permit the use of, the equipment on any day:
 - before 7 am, if it makes a noise of more than 3 dBA above the background level; or
 - from 7 am to 10 pm, if it makes a noise of more than 5 dBA above the background level; or
 - after 10 pm, if it makes a noise of more than 3 dBA above the background level.

In the absence of explicit reference to ventilation fans in the EPA, the criteria for air-conditioning equipment shall also be applied to ventilation fans servicing the Project. The noise limits in **Table 4-3** apply under the EPA criteria, consistent with the proposed operational hours being sought by the Project.

Table 4-3: EPA 1994 Noise Limits

Receptor	Noise Source	Time Period	Noise limit applied externally
NSR 1, NSR 2, NSR 3 and NSR 4	Air-Conditioning Equipment and Ventilation Fans	6:00 am to 7:00 am	43 dBA $L_{eq,adj,15 min}$
		7:00 am to 6:00 pm	43 dBA $L_{eq,adj,15 min}$



Receptor	Noise Source	Time Period	Noise limit applied externally
		6:00pm to 8:00pm	47 dBA $L_{Aeq,adj,15\ min}$

4.4 Environmental Protection (Noise) Policy 2019 – Project Noise Intrusion

The Acoustic Quality Objectives from the Queensland Environmental Protection (Noise) Policy 2019 (EPP Noise) have been applied as the assessment criteria for noise intrusion to the site. Where noise levels are above the objectives, it triggers the investigation of reasonable and practicable measures to maintain and preserve acoustic amenity and health and wellbeing.

Sensitive receptor	Time of day	Acoustic Quality Objectives ² , dBA			Environmental value
		$L_{Aeq,adj,1hr}$	$LA_{10,adj,1hr}$	$LA_{1,adj,1hr}$	
Childcare centre of kindergarten (for indoors)	When open for business, other than when the children usually sleep	35			Health and wellbeing
Childcare centre of kindergarten (for indoors)	When the children usually sleep	30			Health and wellbeing, in relation to the ability to sleep

4.5 Summarised Project Noise Limits

Based on the criteria presented and discussed in **Section 4.0**, the Project specific noise limits adopted in this assessment are summarised in **Table 4-4** based on the most stringent criteria and relevant to the operational hours being sought.

Table 4-4: Project Noise Limits

Receptor	Noise Source	Time of Day	Noise limit applied externally
NSR 1, NSR 2, NSR 3 and NSR 4	General Childcare Activity and Mechanical Plant	Day (7:00 am to 6:00 pm)	43 dBA $L_{Aeq,adj,15min}$ free field
		Evening (6:00 pm to 8:00 pm)	43 dBA $L_{Aeq,adj,15min}$ free field
		Night (6:00 am to 7:00 am)	38 dBA $L_{Aeq,adj,15min}$ free field 55 dBA L_{AFmax} arithmetic average of the maximum levels from up to 15 single events at 1 m from facades 60 dBA L_{AFmax} absolute maximum at 1 m from facades
Early Learning Centre (indoors)	-	7:00 am to 7:00 pm	Generally – 35 dBA $L_{Aeq,adj,1hr}$ Sleeping Areas – 30 dBA $L_{Aeq,adj,1hr}$



Based on State Planning Policy (SPP) mapping overlays, the Project is not located in a state-controlled transport noise corridor and based on the Townsville City Plan, is not located within Aircraft Noise Exposure (ANEF) contours, both of which have therefore not been addressed in this NIA.



5.0 Noise Emissions Assessment

5.1 Noise Prediction Modelling

5.1.1 Modelling Software and Algorithm

A SoundPLAN (Version 8.2) computer noise model was developed to predict noise levels at the identified receptors. SoundPLAN is a software package enabling calculation of environmental noise by combining a digitised ground map (topography), the location and acoustic sound power levels of potentially critical noise sources, and the location of receptors for assessment purposes.

The model calculates noise levels considering factors such as the sound power levels and locations of noise sources, distance attenuation, ground absorption, air absorption, shielding attenuation and atmospheric conditions.

The noise propagation algorithm described in ISO 9613-2:1996 *Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation* as implemented within SoundPLAN was selected to model general Project activities on site.

5.1.2 Noise Modelling General Parameters

A 3D noise model was developed from a LiDAR based digital survey of the existing terrain contours obtained from a Queensland Government website and future terrain data of the Somers and Harvey Estate from previous SLR assessment, covering the closest external sensitive receptors and a developed digital model of the Project based on the drawings provided by the Client and attached in **Appendix B**.

An average ground absorption coefficient of '0' to '1' can be applied to the noise model, with '0' representative generally hard or fully reflective ground surfaces and '1' representative of generally soft or absorptive ground surfaces. A ground absorption of '0.6' has been applied in the model, except at the Project carpark where a ground absorption of '0' has been applied.

Noise contour maps were calculated from a noise grid of calculated noise levels at 0.5 m intervals, at 1.5 m and 4.5 m above the ground representative of single and two storey receptors respectively.

An air temperature of 20°C and 70% humidity level was applied in the noise model based on a tropical climate and no overnight operation being sought by the Project.

5.1.3 Noise Modelling Assumptions

This assessment is based on the assumptions outlined below:

- This assessment pertains only to the acoustically significant Project activities within the proposed Project site as detailed in **Section 5.2**.
- Car door closures have been modelled as point noise sources. Point sources contain all acoustic energy in one fixed location.
- Private vehicles and delivery vehicles entering and leaving the Project site have been modelled as moving point sources travelling at 10 km/hr within the proposed carpark.
- Children playing outdoors have been modelled as area sources with all noise assumed to be equivalently distributed within the locations shown in **Section 5.2.1.1**.



- Outdoor condenser units have been modelled as an area source with all noise assumed to be equivalently distributed within the locations shown in **Section 5.2.1.3**.
- The assessment has been carried out based on assumed worst case 1-hour time periods and assumes an equivalent distribution of noise generation from assessed activities throughout that 1-hour. Therefore, the noise levels calculated for 1-hour are also representative of the worst-case 15-minute time period as specified by Project criteria in **Section 4.5**.

5.2 Operational Noise Emissions

5.2.1 Modelled Noise Sources

5.2.1.1 Outdoor Play Area

The outdoor play areas modelled is shown in **Figure 5-1**. The outdoor play area times of use have not been specified at this stage and will be decided by the centre operator.

Children noise has been established based on the Association of Australasian Acoustical Consultant (AAAC) *Guideline for Child Care Centre Acoustic Assessment* version 3.0. The AAAC Guideline provides a typical range of effective sound power levels for groups of 10 children playing. The effective sound power levels for the Project have been established based on the number of children playing and are presented in **Table 5-1** and **Table 5-2**.

It has been assumed that on average 80% of the total children occupancy within each outdoor play area can occur at the same time within a given 15-min and 1-hour period.



Figure 5-1: Outdoor Play Area Locations



Table 5-1: Outdoor Play Area Source Noise Levels

Location	Description	Maximum Number of Children at the Same Time	Source Noise Level, $L_{eq,adj,1hour}$ dBA	Source Height
Outdoor Play 1	Children playing outdoors	29 children 0-2 years for minimum 1 hour between 7:00 am and 7:00 pm	82 dBA sound power level	1 m
Outdoor Play 2		32 children 2-3 years for minimum 1 hour between 7:00 am and 7:00 pm	90 dBA sound power level	1 m
Outdoor Play 3		35 children 3-5 years for minimum 1 hour between 7:00 am and 7:00 pm	92 dBA sound power level	1 m



Table 5-2: Outdoor Play Area Source Noise Spectrum

Source	Sound power level – octave values in dB linear								
	Overall, L _{eq} dBA	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Outdoor Play 1	82	84	80	79	79	78	74	70	69
Outdoor Play 2	90	92	88	86	87	86	81	78	76
Outdoor play 3	92	95	91	88	89	88	84	80	78

5.2.1.2 Carpark Activity

The ground level carpark noise sources modelled are shown in **Figure 5-2** and noise levels are shown in **Table 5-3** and **Table 5-4**.

Car door closures are most appropriately assessed against the L_{max} criteria, which only applies at night. The carpark is only in use during the night time period by staff arrivals between 6:00 am and 7:00 am, and as such only staff parking bays have been considered in the L_{max} assessment. The L_{max} is not cumulative, however multiple source locations have been considered to assess source locations nearest to NSRs.

Figure 5-2: Carpark Noise Sources

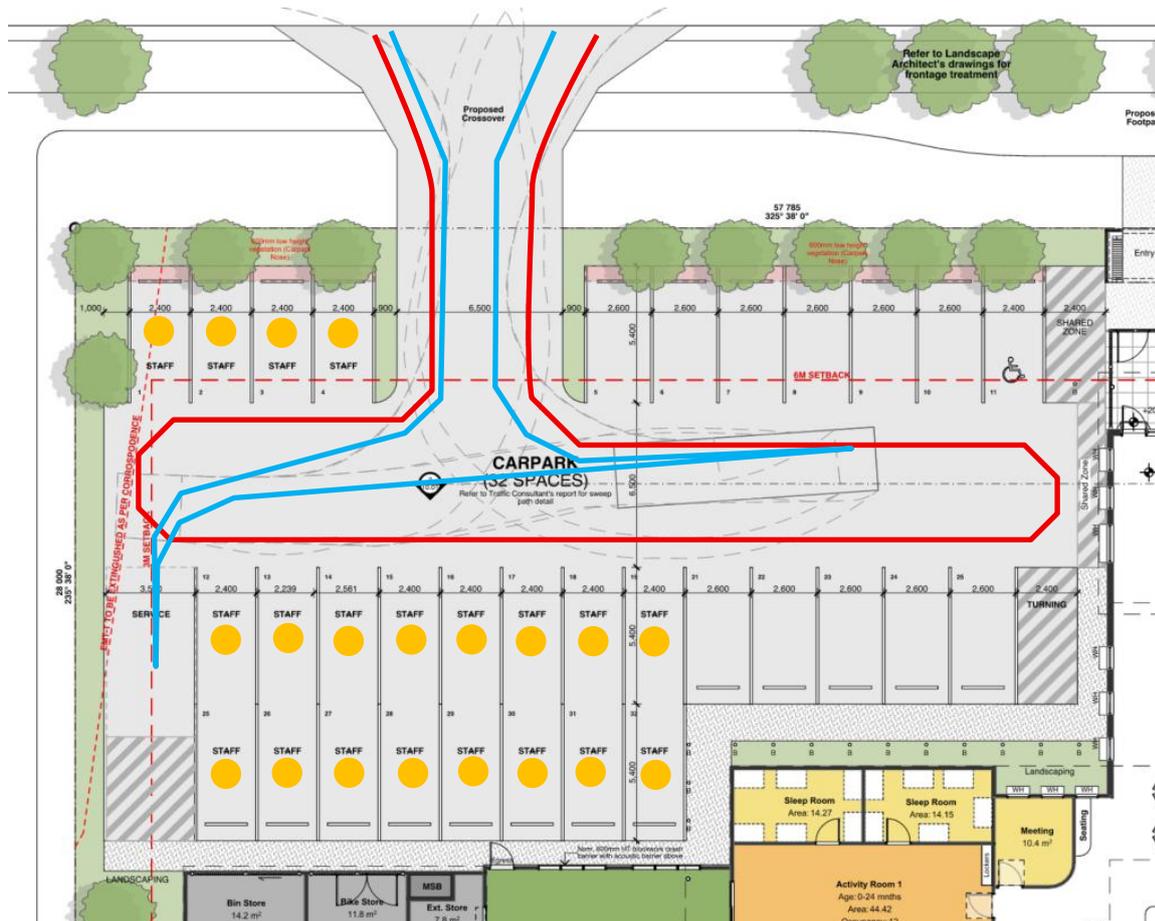


Table 5-3: Carpark Source Noise Levels

Location	Description	Number of Noise Sources	Source Noise Level, $L_{eq,adj,1hour}$ dBA	Height
	Car movement path	10 staff vehicles between 6:00 am to 7:00 am and 7:00 pm to 8:00 pm Up to 80 vehicles within 1-hour between 7:00 am and 7:00 pm ¹ All vehicles travelling at 10km/hr	79 sound power level	1 m
	Delivery van movement path	1 vehicle/hr between 7:00 am and 7:00 pm travelling at 10km/hr	93 sound power level	1 m
	Vehicle door closures	20 staff parking bays	87 (L_{max}) sound power level	0.5 m
<p>Note 1: As per the traffic report undertaken for the Project titled <i>Proposed Childcare Centre, Saltbush Boulevard, Rasmussen Traffic Report</i> by Traffic Engineering Consultants Revision A dated 29 October (document reference: 2193_GRI17).</p>				

Table 5-4: Carpark Source Noise Spectrum

Source	Sound power level – octave values in dB linear								
	Overall, L_{eq} dBA	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Car movement	79	85	77	76	76	72	71	70	69
Delivery van	93	87	92	95	90	88	85	79	73
Car door closure	87 (L_{max})	80	73	80	74	83	75	71	84

5.2.1.3 Mechanical Plant

Ancillary mechanical plant is proposed to be installed to service the Project, however equipment selections have not been carried out at this stage. Equipment selections must be reviewed by the Project acoustic consultant and noise emissions restricted to the limits in **Table 4-4**. Care must be taken when reviewing equipment noise emissions where equipment operates outside of the proposed Project operational hours (e.g. refrigeration) as noise limits must then consider the entire nighttime period, not just Project operational hours.

A preliminary noise emissions assessment of outdoor air-conditioning condenser units has been carried out based on the increased potential for adverse noise impacts to the external environment that can occur based on experience with similar applications. The assessment assumes ten (10) condenser units all operational simultaneously in steady-state conditions emitting 62 dBA sound pressure level at 1 m each. Condensers have been modelled as equivalently distributed within the outdoor plant deck shown in **Figure 5-3** with noise levels in **Table 5-5** at 1 m above the ground (no stacked condensers have been assumed). It has been assumed condensers can operate between 6:00 am to 7:00 pm.



Figure 5-3: Modelled Condensers Location

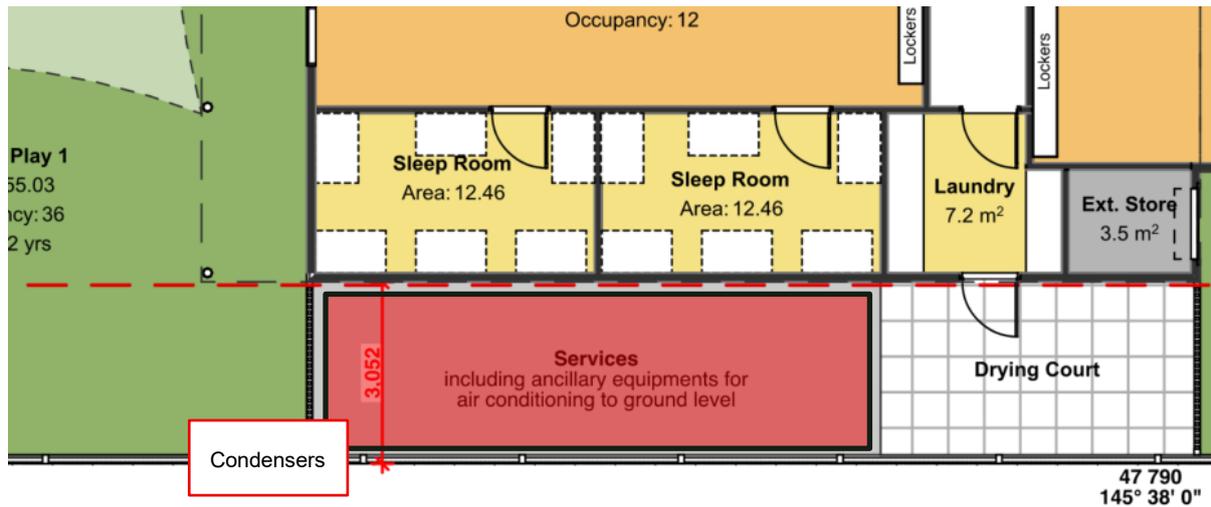


Table 5-5: Condenser Source Noise Spectrum

Source	Sound power level – octave values in dB linear								
	Overall, L_{eq} dBA	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Condenser	62	71	65	60	59	58	53	47	41

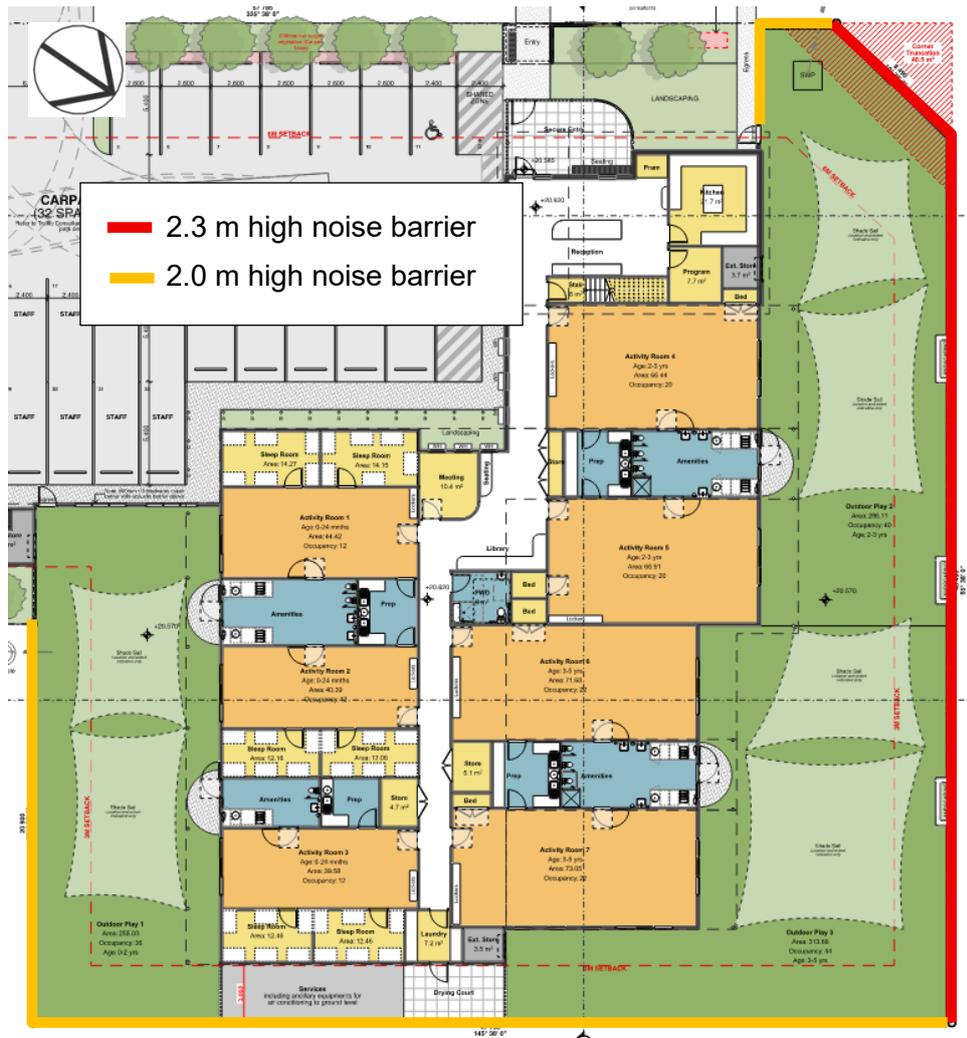
5.2.2 Noise Barriers

The solid fences (noise barriers) shown in **Figure 5-4** have been determined to be required to achieve compliance with Project noise limits and have been included in the noise model. The solid fences are to be constructed of materials achieving a minimum surface density of 12.5 kg/m². Suitable materials are expected to include, but are not limited to, 9mm fibrous cement sheeting, 75mm thick Hebel, 12 mm acrylic, or combination thereof.

The required noise barrier heights are shown in **Figure 5-4**, measured from the outdoor play area finished level of reduced level (RL) 20.62 m, and is so be comprised of solid continuous construction and free from gaps.



Figure 5-4: Modelled Noise Barriers



5.2.3 Noise Emissions Assessment

The results of the noise emissions assessment are summarised in **Sections 5.2.3.1 to Section 5.2.3.5** and noise contour maps are presented in **Appendix D**. Noise emissions results have been presented at the receptor locations also shown in **Appendix D**.

Noise levels at existing dwellings within the NSR clusters identified in **Section 3.1** have been assessed at building facades facing the Project. The noise levels at NSR2 future Somers and Harvey Estate receptors have been assessed at future building facades assumed to in-line with the existing residential buildings also on Bluewattle Boulevard. Other future receptors have been assessed at 1 m from the lot boundary nearest the Project.

5.2.3.1 Outdoor Play Area

Predicted $L_{Aeq,adj,15min}$ noise levels from children playing within the outdoor play areas is presented in **Table 5-6**. Noise modelling contour maps are presented in Map D-1 and Map D-2 in **Appendix D**.



Table 5-6: Outdoor Play Areas Noise Predictions with Noise Barrier Mitigation

NSR	Operational Time Period	Noise limit	Noise Impacts at Most Impacted NSR Ground Level and Level 1 as per Section 3.1	Complies
NSR1	7:00 am to 7:00 pm	43 dBA $L_{Aeq,adj,15min}$	Ground Level – 38 dBA $L_{Aeq,adj,15min}$ Level 1 – 39 dBA $L_{Aeq,adj,15min}$	Yes
NSR2			Ground Level – 43 dBA $L_{Aeq,adj,15min}$ Level 1 – 45 dBA $L_{Aeq,adj,15min}$	No – refer to comments below
NSR3			Ground Level – 40 dBA $L_{Aeq,adj,15min}$ Level 1 – 41 dBA $L_{Aeq,adj,15min}$	Yes
NSR4			Ground Level – 39 dBA $L_{Aeq,adj,15min}$ Level 1 – 40 dBA $L_{Aeq,adj,15min}$	Yes

Compliance has been calculated at NSR1, NSR3 and NSR4 and potential exceedances have been calculated at NSR2. Within the NSR2 cluster, compliance has been calculated at all existing dwellings and the ground levels of the future lots within the Somers and Harvey Estate. Aerial imagery indicates that most residential dwellings along Bluewattle Blvd are single storey, however, if two-storey dwellings are constructed on future lots, noise emission from the outdoor area may exceed the criteria. The following is noted regarding the exceedances calculated based on the assessment carried out:

- To achieve compliance at first level, a 3.2 m high noise barrier is required in lieu of the proposed 2.3 m high noise barriers (refer to **Figure 5-4**).

Exceedances are only calculated to occur at the first level dwelling heights being assumed for the purposes of assessment at the future residential lots within NSR2. Actual dwelling heights at the time of this assessment are unknown and are at the discretion of future lot owners, with the only certainty being that dwellings will be minimum single storey. Furthermore, the Project noise limits based on the intrusive and amenity criteria in the Townsville City Plan are not intended for use as a mandatory requirement but are to inform the requirement for noise controls to mitigate potential noise nuisances.

No further assessment has been undertaken given that:

- practically feasible noise control options have been adopted in this NIA (i.e. noise barriers of reasonable height as specified in **Figure 5-4**);
- noise controls are calculated to achieve compliance with the Project noise limits in **Table 4-4** between the proposed operational hours of 7:00 am to 7:00 pm at the known existing and future ground level receptors within NSR2; and
- that future dwelling heights are unknown.

It is also noted that compliance with the Australian/New Zealand Standard 2107:2016 *Acoustics – Recommended design sound levels and reverberation times for building interiors* (AS 2107) recommended internal noise levels of 30-40 dBA L_{Aeq} within living areas are calculated to be achieved at first level first level dwelling heights, assuming a 7dB reduction across facades when windows are open for ventilation as allowed in The Townsville City Plan Section SC6.4.9.



5.2.3.2 Carpark Activity

Predicted $L_{Aeq,adj,15min}$ noise levels from carpark activities is presented in **Table 5-7**. Noise modelling contour maps are presented in Map D-3 and Map D-4 in **Appendix D**.

Table 5-7: Carpark Noise Predictions

NSR	Operational Time Period	Noise limit	Noise Impacts at Most Impacted NSR Ground Level and Level 1 as per Section 3.1	Complies
NSR1	7:00 am to 7:00 pm	43 dBA $L_{Aeq,adj,15min}$	Ground Level – 25 dBA $L_{Aeq,adj,15min}$ Level 1 – 26 dBA $L_{Aeq,adj,15min}$	Yes
NSR2			Ground Level – 17 dBA $L_{Aeq,adj,15min}$ Level 1 – 21 dBA $L_{Aeq,adj,15min}$	Yes
NSR3			Ground Level – 40 dBA $L_{Aeq,adj,15min}$ Level 1 – 40 dBA $L_{Aeq,adj,15min}$	Yes
NSR4			Ground Level – 32 dBA $L_{Aeq,adj,15min/1hr}$ Level 1 – 33 dBA $L_{Aeq,adj,15min/1hr}$	Yes

In relation to staff arrivals and departures between 6:00 am to 7:00 am and 7:00 pm to 8:00 pm respectively, the following is noted:

- 10 staff arrivals and departures are assumed to occur, which is 13% of the total peak 1-hour vehicle movements assessed in **Table 5-7** and corresponds to a noise reduction of -9dB comparatively.
- A -9 dB correction for staff vehicles leads to worst case noise impacts of 31 $L_{Aeq,adj,15min}$ at NSR 3, which is compliant with the 38 dBA $L_{Aeq,adj,15min}$ noise limit between 6:00 am and 7:00 am and the 43 dBA $L_{Aeq,adj,15min}$ limit between 7:00 pm and 8:00 pm.

In relation to the L_{max} noise levels associated with car door closures during staff arrival between 6:00 am and 7:00 am the following is noted:

- NSR3 is the nearest receptor cluster to the carpark, with the nearest residential property within the cluster being a future residence within the Somer and Harvey Estate. The future façade has been assumed to be 1 m from the future lot boundary and therefore, potential noise impacts have been calculated to the future lot boundary, in accordance with the assessable location in **Table 4-4**.
- The average distance from the nearest 10 staff parking bays to the nearest lot boundary is 22 m, which corresponds to a noise reduction of 35 dB. Deducted from a source noise level of 87 dBA L_{max} as per **Table 5-3** and including an additional 2.5 dB correction for façade reflections at 1 m from the potential future façade location leads to a calculated noise level of 55 dBA L_{max} . The calculated outcome is compliant with the 55 dBA L_{max} limit.
- Considering the staff parking bay location of 16 m from the nearest NSR3 dwelling boundary (32 dB reduction) and 2.5 dB façade correction leads to 58 dBA L_{max} which is compliant with the 60 dBA L_{max} absolute limit in **Table 4-4**.

Based on the assessment carried out compliance with the Project noise limits in **Table 4-4** have been calculated.



5.2.3.3 Mechanical Plant – Condensers

Predicted $L_{Aeq,adj,15min}$ noise levels from condensers is presented in **Table 5-8**. Noise modelling contour maps are presented in Map D-5 and Map D-6 in **Appendix D**.

Table 5-8: Condenser Plant Noise Predictions

NSR	Operational Time Period	Noise limit	Noise Impacts at Most Impacted NSR Ground Level and Level 1 as per Section 3.1	Complies
NSR1	7:00 am to 7:00 pm	43 dBA $L_{Aeq,adj,15min}$	Ground Level – 12 dBA $L_{Aeq,adj,15min}$ Level 1 – 15 dBA $L_{Aeq,adj,15min}$	Yes
NSR2			Ground Level – 29 dBA $L_{Aeq,adj,15min}$ Level 1 – 28 dBA $L_{Aeq,adj,15min}$	Yes
NSR3			Ground Level – 31 dBA $L_{Aeq,adj,15min}$ Level 1 – 30 dBA $L_{Aeq,adj,15min}$	Yes
NSR4			Ground Level – 22 dBA $L_{Aeq,adj,15min}$ Level 1 – 22 dBA $L_{Aeq,adj,15min}$	Yes
NSR1	6:00 am to 7:00 am	38 dBA $L_{Aeq,adj,15min}$	Ground Level – 12 dBA $L_{Aeq,adj,15min}$ Level 1 – 15 dBA $L_{Aeq,adj,15min}$	Yes
NSR2			Ground Level – 29 dBA $L_{Aeq,adj,15min}$ Level 1 – 28 dBA $L_{Aeq,adj,15min}$	Yes
NSR3			Ground Level – 31 dBA $L_{Aeq,adj,15min}$ Level 1 – 30 dBA $L_{Aeq,adj,15min}$	Yes
NSR4			Ground Level – 22 dBA $L_{Aeq,adj,15min}$ Level 1 – 22 dBA $L_{Aeq,adj,15min}$	Yes

Based on the assessment carried out compliance with the Project noise limits in **Table 4-4** have been calculated.

5.2.3.4 Safety Gate Closure Impacts

It is acknowledged that Townsville City Council’s Information Request reproduced in **Section 4.1** specifically references consideration of noise impacts from safety gate closures. The nature of impact noise generation from safety gate closures are most appropriately represented by the L_{max} parameter. The project L_{max} criteria only applies at night, which is outside of the 7:00am to 7:00pm operational hours being sought by the Project. Notwithstanding, to reduce potential adverse impact noise and nuisance to the surrounding community, recommendations have been provided in **Section 7.0**.

5.2.3.5 Combined Noise Impacts

Multiple noise generating activities assessed can occur simultaneously, therefore contributing to combined noise impacts to the surrounding environment. It is unlikely that many children will be playing outdoors during peak pickup and drop off hours, as children will either be getting collected or dropped off in this time, however, mechanical plant can be operational during outdoor play times and during times of peak carpark activity. Therefore, potential combined noise impacts have been assessed considering the following scenarios:

1. Carpark activity and condenser operation between 6:00 am and 7:00 pm.



2. Children outdoor play and condenser operation between 7:00 am and 7:00 pm.

Table 5-9: Peak Carpark Activities and Condenser Plant Combined Noise Predictions

NSR	Operational Time Period	Noise limit	Noise Impacts at Most Impacted NSR Ground Level and Level 1 as per Section 3.1	Complies
NSR1	7:00 am to 7:00 pm	43 dBA $L_{Aeq,adj,15min}$	Ground Level – 26 dBA $L_{Aeq,adj,15min}$ Level 1 – 26 dBA $L_{Aeq,adj,15min}$	Yes
NSR2			Ground Level – 29 dBA $L_{Aeq,adj,15min}$ Level 1 – 29 dBA $L_{Aeq,adj,15min}$	Yes
NSR3			Ground Level – 41 dBA $L_{Aeq,adj,15min}$ Level 1 – 41 dBA $L_{Aeq,adj,15min}$	Yes
NSR4			Ground Level – 32 dBA $L_{Aeq,adj,15min}$ Level 1 – 33 dBA $L_{Aeq,adj,15min}$	Yes

In relation to staff arrivals between 6:00 am to 7:00 am with mechanical plant operational (assumed operational for the full hour for the purposes of this assessment), the following is noted:

- Compliance has been predicted in .
- with the Project 38 dBA $L_{Aeq,adj,15min}$ noise limit between 6:00 am and 7:00 am at NSR1, NSR2 and NSR4 with peak carpark activity and would therefore further demonstrate compliance during reduced carpark activity.
- Applying the -9dB correction to staff vehicles noise only during 6:00 am to 7:00 am, as discussed in **Section 5.2.1.2**, leads to a combined noise level of ≤ 34 dBA $L_{Aeq,adj,15min}$ at NSR3 which is also compliant with the 6:00 am to 7:00 am noise limit.

Table 5-10: Outdoor Play Areas and Condenser Plant Combined Noise Predictions with Noise Barrier Mitigation

NSR	Operational Time Period	Noise limit	Noise Impacts at Most Impacted NSR Ground Level and Level 1 as per Section 3.1	Complies
NSR1	7:00 am to 7:00 pm	43 dBA $L_{Aeq,adj,15min}$	Ground Level – 38 dBA $L_{Aeq,adj,15min}$ Level 1 – 39 dBA $L_{Aeq,adj,15min}$	Yes
NSR2			Ground Level – 43 dBA $L_{Aeq,adj,15min}$ Level 1 – 46 dBA $L_{Aeq,adj,15min}$	No
NSR3			Ground Level – 39 dBA $L_{Aeq,adj,15min}$ Level 1 – 41 dBA $L_{Aeq,adj,15min}$	Yes
NSR4			Ground Level – 39 dBA $L_{Aeq,adj,15min}$ Level 1 – 40 dBA $L_{Aeq,adj,15min}$	Yes

The calculated noise levels have not led to further non-compliances than discussed in **Section 5.2.3.1**. Therefore, the comments provided in **Section 5.2.3.1** remain applicable.



6.0 Onsite Noise Amenity

Noise logging at the site could not be undertaken at the time of this report due to extraneous noise interference from the Somers and Harvey Estate development. However, the Project site is located within a typical suburban area, described by low level ambient noise levels and significant noise intrusion is not expected to occur.

The measured average day time L_{eq} noise levels at the noise monitoring location in **Section 3.2.1** was 51 dBA $L_{eq,11hr}$. Based on other early learning/childcare projects carried out by SLR within comparable acoustic environments, the following minimum building envelopes are required to achieve the acceptable EPP(Noise) acoustic quality objectives in **Section 4.5**.

- **External walls:** Rw 42. Typically achievable by a fibre cement sheeting or weatherboards external façade, insulated cavity wall construction and an internal plasterboard lining (or equivalent).
- **Roof:** Rw 42. Typically achievable by profiled metal roof sheeting, insulated roof cavity and plasterboard ceiling system.
- **External glazing:**
 - Indoor play/education areas: Rw 32. Typically achievable by 6.38mm thick laminated glass, with full perimeter acoustically rated seals.
 - Sleeping areas: Rw 35. Typically achievable by 10.38mm thick laminated glass, with full perimeter acoustically rated seals

Alternative construction may be suitable on the proviso the nominated acoustic performances are achieved. Alternative building envelope compositions are subject to review by the Project's acoustic consultant.

The Project includes mechanical ventilation so that windows and doors can be closed to achieve compliance with indoor noise objectives.



7.0 Recommendations

Based on the assessment carried out the following noise control strategies are recommended for the Project:

- 1 For control of noise intrusion into the occupied Project areas of the building apply the following acoustic rated constructions to the building envelope:
 - a) **External walls:** Rw 42. Typically, achievable by a fibre cement sheeting or weatherboards external façade, insulated cavity wall construction and an internal plasterboard lining (or equivalent).
 - b) **Roof:** Rw 42. Typically achievable by profiled metal roof sheeting, insulated roof cavity and plasterboard ceiling system.
 - c) **External glazing:**
 - i. Play/education areas: Rw 32. Typically achievable by 6.38mm thick laminated glass, with full perimeter acoustically rated seals.
 - ii. Sleeping areas: Rw 35. Typically achievable by 10.38mm thick laminated glass, with full perimeter acoustically rated seals.
- 2 Apply solid fences (acoustic barriers) as marked on site layout/plan **Figure 5-4**. The nominated solid fences are to be constructed of a material achieving a minimum surface density of 12.5 kg/m². Suitable materials are expected to include, but are not limited to, 9 mm fibrous cement sheeting, 75 mm thick Hebel, 12 mm acrylic, or combination thereof.
- 3 The carpark surface is of a 'low-squeal' compound (in relation to tyre noise). Asphalt or plain concrete surfaces are expected to satisfy this requirement.
- 4 Metal grates and man-hole covers be well fixed to avoid rattling, where applicable.
- 5 Noise emitting mechanical plant and equipment are to be shielded from view from the closest receivers where possible. Mechanical plant is required to be reviewed in future project stages once drawings and equipment selections have been finalised to ensure noise limits in **Table 4-4** can be achieved. Upon commissioning of the building, it will be the mechanical contractor's responsibility to submit confirmation that noise emissions from the installed plant comply with the noise criteria listed in this report.
- 6 No operation of safety gates to outdoor play areas is permitted before 7:00 am other than staff. Staff shall be trained to operate safety gates to minimise noise from impacts (i.e. not full open release, gentle closure) with visible signage. All safety gates should include rubber pads to assist in controlling impact noise.



8.0 Closure

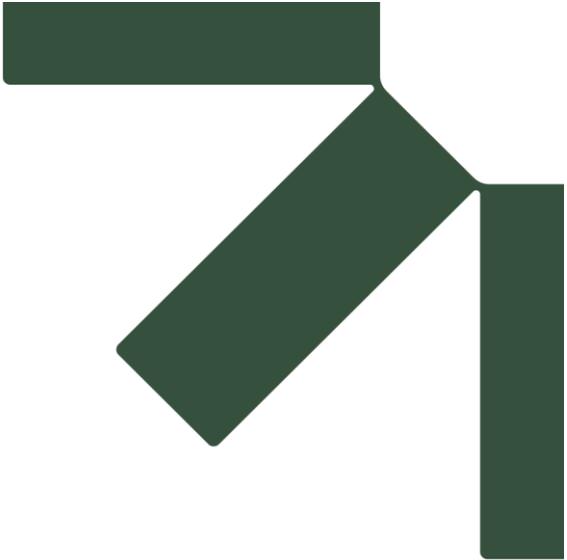
SLR Consulting Australia Pty Ltd (SLR) has been commissioned by Belo Development Pty Ltd (the Client) to prepare an environmental Noise Impact Assessment (NIA) for the proposed Rasmussen Early Learning Centre at Lot 194 on Saltbush Boulevard within the future Somers and Harvey Estate in Rasmussen, Townsville, Queensland (the Project).

Potential noise sources were identified, and hence future potential noise emissions assessed. The assessment has considered the requirements of the Townsville City Plan, Queensland EPP Noise and EP Act with regard to the applicable ambient noise level.

Based on the listed operating hours, the predictions show that the proposed development, with inclusion of the recommendations contained in this report, is capable of achieving the noise criteria at the ground level of all surrounding residential receptors (existing and future) and marginally exceeding Project noise limits at assumed first levels of future residential buildings within the Somers and Harvey Estate opposite Bluewattle Boulevard as discussed in **Section 5.2.3.1**.

Based on the discussion in **Section 5.2.3.1** and compliance status calculated for the Project, the Project has been considered to appropriately comply with the **Table 4-4** Project noise limits.





Appendix A Acoustic Terminology

**Rasmussen Early Learning Centre, Lot 194 Saltbush
Boulevard, Rasmussen**

Noise Impact Assessment

Belo Developments Pty Ltd

SLR Project No.: 620.043108.00001

18 February 2026



Sound Level (or Noise Level)

The terms sound and noise are almost interchangeable, except that in common usage noise is often used to refer to unwanted sound.

Sound (or noise) consists of minute fluctuations in atmospheric pressure capable of evoking the sense of hearing. The human ear (and those of other species) responds to changes in sound pressure over a very wide range. The loudest sound pressure to which the human ear responds is ten million times greater than the softest. The decibel (dB or dBL) scale reduces this ratio to a more manageable size by the use of logarithms.

A-weighted Sound Pressure Level

The overall level of a sound is usually expressed in terms of dBA, which is measured using a sound level meter with an 'A-weighting' filter. This is an electronic filter having a frequency response corresponding approximately to human hearing.

Change in Sound Pressure Levels

For human perception, a change of 1 dBA or 2 dBA in the level of a sound is considered to be indiscernible, while a 3 dBA to 5 dBA change corresponds to a small but noticeable change in loudness. A 10 dBA change corresponds to an approximate doubling or halving in loudness. As noted in Section 2.4 of the TMR CoP Vol 1, while the above noted changes in sound pressure level are *not precisely verifiable for road traffic noise, it is useful in understanding the significance of change in environmental noise exposure.*

Additional facts about road traffic noise as stated in Section 2.4 of the TMR CoP Vol 1:

- A 3 dBA change in noise level is equivalent to halving or doubling the traffic volumes.
- A 10 dBA change in noise level is equivalent to halving or doubling the subjective or perceived loudness or a tenfold increase or decrease in traffic volume.
- A 10 km/h increase in speed will increase the noise level by approximately 1 dBA.
- A 3.5% compound annual growth rate in traffic will increase the noise level by approximately 1.5 dBA over a 10-year horizon.
- An 8% compound annual growth rate in traffic will increase the noise level by approximately 3.0 dBA over a 10-year horizon.

Typical Sound Pressure Levels

The table below lists examples of typical sound pressure levels.

Table A-1: Examples of Perceived Sound Pressure Levels

Sound pressure level (dBA)	Typical example
130	Threshold of pain
120	Metal hammering
110	Grinding on steel
100	Loud car horn at 3 metres (m)
90	Dog bark at 1 m
80	Cicadas at 1 m
70	Noise level directly adjacent to a busy main road
60	Ambient noise level in urban area close to main roads



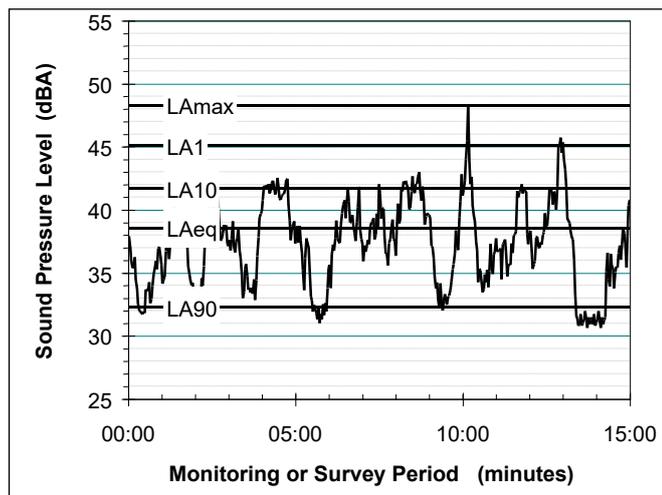
Sound pressure level (dBA)	Typical example
50	Day time in a quiet suburban environment with background or distant road traffic noise
40	Night-time in a quiet suburban environment with background or distant road traffic noise Ambient noise level in rural to semi-rural environments with light breezes and some noise from insects, birds and distant traffic
30	Ambient noise level in a typical rural noise environment in the absence of insect noise and wind. Inside bedroom
20	Ambient noise level in remote rural environment away from main roads with no wind and no insect noise

Statistical Noise Levels

Sounds that vary in level over time, such as road traffic noise and most community noise, are commonly described in terms of the statistical exceedance levels (LAN), where LAN is the A-weighted sound pressure level exceeded for N% of a given measurement period. For example, the LA1 is the noise level exceeded for 1% of the time and LA10 the noise exceeded for 10% of the time.

Figure A-1 below presents a hypothetical 15-minute noise measurement, illustrating various common statistical indices of interest.

Figure A-1: Hypothetical 15-minute Noise Measurement



Of particular relevance to this study, are:

- LA10: The A-weighted noise level exceeded for 10% during any given measurement period. This is commonly referred to as the average maximum noise level.

Additionally;

- LA10(18hour) Road Traffic Noise Level: the level exceeded for 10% of any measurement period; the usual period of measurement is 1 hour. The hourly LA10 level, therefore, is the traffic noise level exceeded for 6 minutes in the hour. The 18-hour LA10 level



($LA_{10(18\text{hour})}$) is the arithmetic average of 18, hourly LA_{10} traffic noise levels measured in consecutive hours between 6:00 am and 12:00 midnight.

- $LA_{10(12\text{hour})}$ Road Traffic Noise Level – is the arithmetic average of 12 hourly LA_{10} traffic noise levels measured in consecutive hours between 6:00 am and 6:00 pm.
- $LA_{1(1\text{hour})}$ Road Traffic Noise Level – the level exceeded for n% of a 1-hour period.

Noise Propagation

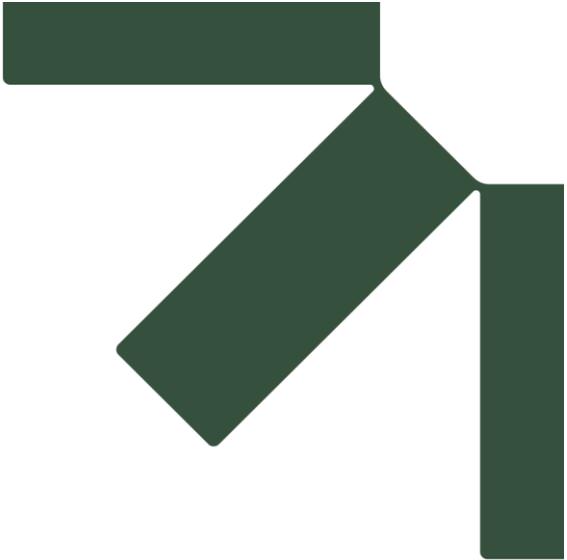
Provided the receptor is in the far-field of the noise source, noise levels will reduce as a receptor moves further away from the source. This is due to spreading of the noise source energy over distance. For a simple point source (for example, a motor) the theoretical reduction in noise levels is 6 dBA per doubling of distance. For a line source (for example, a busy road) the theoretical reduction is 3 dBA per doubling of distance. In reality however other factors affect noise propagation. These include ground absorption, air absorption, acoustic screening, and meteorological effects.

Facade Corrected versus Free field

A 'facade corrected' measurement/monitoring location is a location which is influenced by facade reflections. Measurements at facades are typically taken at a distance of 1 m away and the measured noise level generally regarded as being +2.5 dB higher than in the 'free field'.

A 'free field' measurement/monitoring location is a location where the microphone is positioned sufficiently far from nearby surfaces for the measured data to not be influenced by reflected noise. This is typically regarded as a position 3.5 m or greater from a reflective surface.





Appendix B Drawings Used in the Assessment

Rasmussen Early Learning Centre, Lot 194 Saltbush Boulevard, Rasmussen

Noise Impact Assessment

Belo Developments Pty Ltd

SLR Project No.: 620.043108.00001

18 February 2026



Rasmussen Early Learning Centre

New Lot on Saltbush Boulevard, Rasmussen, QLD 4815



SITE INFORMATION

Real Property Description: Lot 194 of Lot 904 SP344615

Local Authority: Townsville City Council
 Site Area: 2,988m²
 Site Cover: 1,081.1m²
 Carparking Provided: 32 (Ratio of 1:3.75)

GFA: Ground 897.4m²
 First 64.2m²
 Total 961.6m²

Landscape (Incl. outdoor play): 1,067m² (35.7%)

Outdoor Play Calculations				
Zone	Age Group	Area Required	Area Provided	Occupancy
Outdoor Play 1	0-2 yrs	252.00	255.03	36
Outdoor Play 2	2-3 yrs	280.00	286.11	40
Outdoor Play 3	3-5 yrs	308.00	313.68	44
		840.00 m ²	854.82 m ²	120

Activity Room Calculations							
Level	Room	Age Group	Area Required	Area Provided	Staff Ratio	No. of Staff	Occupancy
Ground Floor	Activity Room 1	0-24 mnths	39.00	44.42	1:4	3	12
	Activity Room 2	0-24 mnths	39.00	40.39	1:4	3	12
	Activity Room 3	0-24 mnths	39.00	39.58	1:4	3	12
	Activity Room 4	2-3 yrs	65.00	66.44	1:5	4	20
	Activity Room 5	2-3 yrs	65.00	66.91	1:5	4	20
	Activity Room 6	3-5 yrs	71.50	71.68	1:11	2	22
	Activity Room 7	3-5 yrs	71.50	73.05	1:11	2	22
			390.00 m ²	402.47 m ²		21	120

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NOT FOR CONSTRUCTION

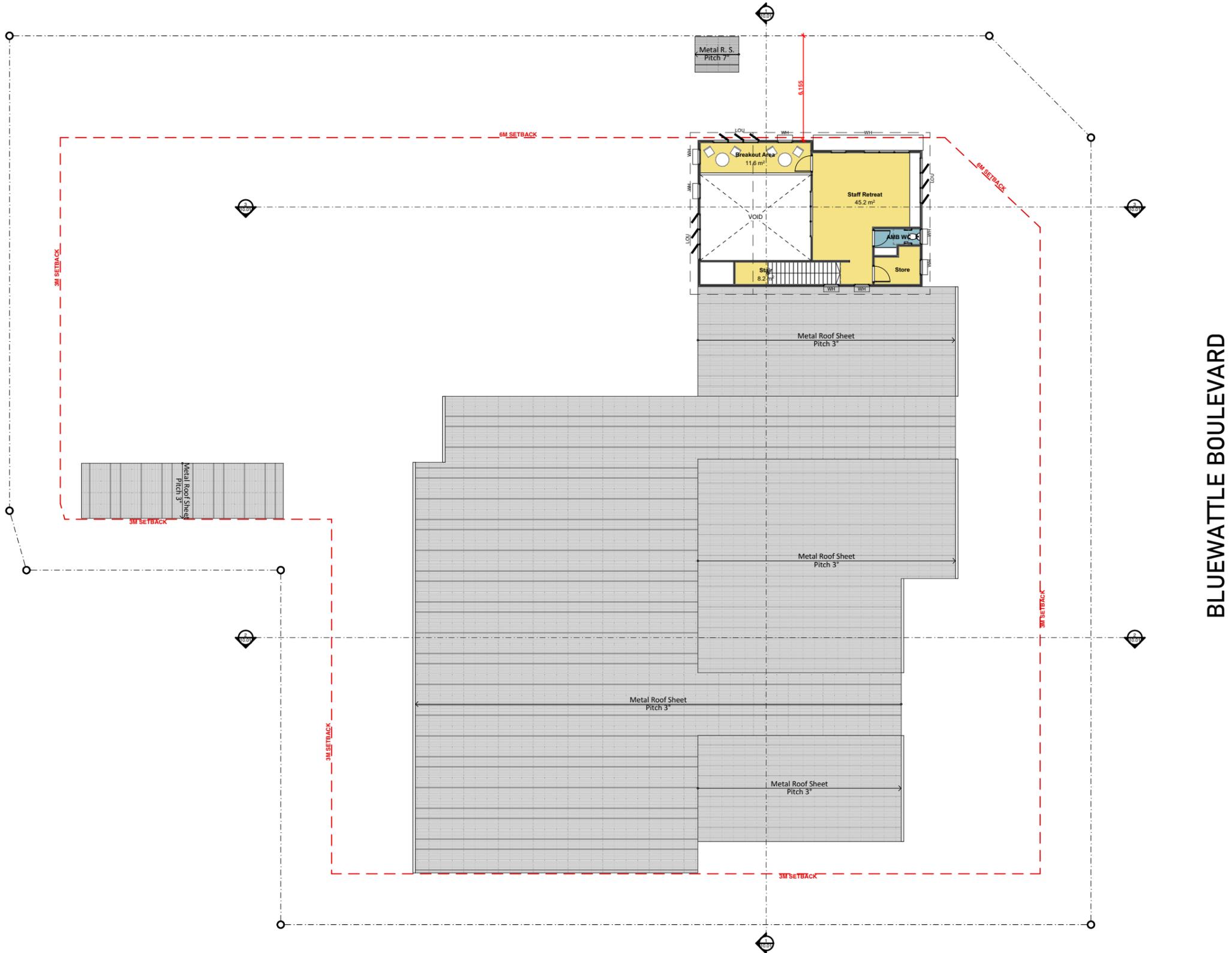
SALTBUSH BOULEVARD

LEGEND

- B Bollard
- LOU Fixed Louvre
- WH Window Hood

Notes

1. All ancillary equipments to be screened from both streetscapes.
2. Shade sail shown on plans are indicative only, location and extents are subjected to future playscape design and confirmation with childcare operator.
3. Refer to consultant's drawing for landscaping and streetscape detail.



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