ENGINEERING SERVICES

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BRT

Sustainable Management Plan

MacKillop Family Services - Geelong Campus

DOCUMENT REVISION

Stage	Revision	Revision Description	Author	Checked by	Revision Date
SD	00	For Review	CB	LE	23.01.2026
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Project Information

Job Number	12385
Job Name	MacKillop Family Services - Geelong Campus
Address	25 Oxford Street, Whittington VIC 3219
Printed	9/02/2026 2:12 PM

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1.0 Table of Contents

2.0 Executive Summary

This Sustainable Management Plan (SMP), also referred to as an Environmentally Sustainable Design (ESD) Report, has been prepared for PMDL. The report supports the town planning permit application and outlines the environmental initiatives integrated into the proposed development.

This assessment has been undertaken of the architectural drawings prepared by PMDL which are referenced in Appendix A – Referenced Architectural Documents.

2.1 SMP Assessment Summary

The proposed sustainable design initiatives proposed for the development, these initiatives to be implemented into requirements and documentation.

The analysis for the Sustainability Management Plan (SMP) has been undertaken in accordance with the City of Greater Geelong's Planning Scheme. The following tools were utilised to assess the proposed development:

- Built Environment Sustainability Scorecard (BESS);

  Scores between 50–70% reflect best practice, while those above 70% are considered excellent. The project must satisfies minimum standards in key areas including Energy, Water, and Indoor Environmental Quality (IEQ).

- Blue Factor assessment tool for stormwater management;
- Table J7D3a of the NCC 2022 BCA Volume 1 Section J;
- NCC 2022 BCA Façade Calculator - Appendix C;
- Green Star Daylight and Views Hand Calculation - Appendix D.

Figure 1 shows the BESS score for this development, which meets the required minimum of 50% overall.

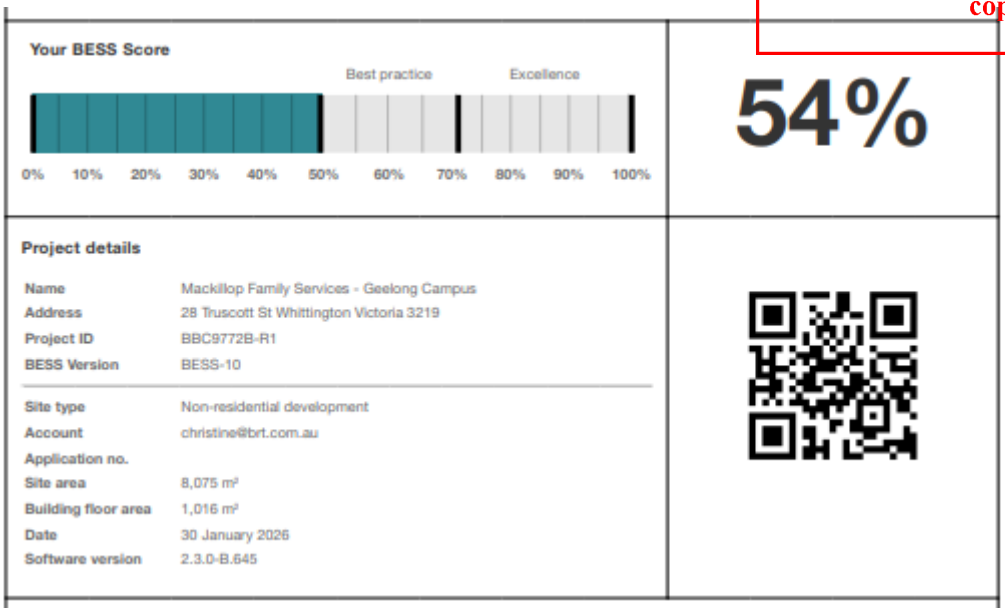


Figure 1: BESS score

2.2 SMP Stakeholders Commitment and Implication

The table below outlines the key sustainability commitments made in this Sustainable Management Plan(SMP), the practical implications for design and construction, and the relevant stakeholders responsible for ensuring implementation. These commitments align with the objectives of the City of Greater Geelong's Planning Scheme ESD policy and aim to embed sustainability principles throughout the project lifecycle.

Commitment	Implication	Relevant to
	Management	
Façade Assessment	A preliminary facade assessment has been undertaken in accordance with NCC2022 Section J4D6	ESD Consultant
Building Users Guide	Building Users Guide to be produced to help facilitate more sustainable behavior by building occupants	Services
	Integrated Water Management	
Project Profile	No reticulated third pipe or an on-site water recycling system is utilized for irrigation, toilets and laundry needs	Services
Sanitary Fixtures	WELS star rating to be greater than: kitchen taps: >=6* bathroom taps: >=6* WC: >=4* dishwasher: >=6*	Architect
Water efficient landscaping	The developments water resources require to be designed to maximise water resources throughout the development garden areas.	Architect/Landscape
Stormwater	Blue Factor assessment to be conducted and to have a Blue Factor score = 100% - 5,000L Rainwater tanks will be installed to each new building as part of stormwater management.	Civil Engineer
	Operational Energy	
Project Profile	10kW solar photovoltaic system to be installed No other renewable energy systems are being implements The new buildings are to be all-electric	Services
Deemed to Satisfy Approach	All floors and ceilings, forming part of the envelope, require a minimum 10% improvement in required NCC2022 insulation levels Heating and cooling systems within one Star of the most efficient equivalent capacity unit available, or Coefficient of Performance (CoP) & Energy Efficiency Ratios (EER) not less than 85% of the CoP & EER of the most efficient equivalent capacity unit available Water heating systems within one star of the best available, or 85% or better than the most efficient equivalent capacity unit Maximum illumination power density (W/m2) in at least 90% of the area of the building shall meet the requirements in Table J7D3a of the NCC 2022 Vol 1	Architect & Services
	Indoor Environmental Quality	

Commitment	Implication	Relevant to
Daylight Access	54% of regularly used areas in the proposed Learning Building have daylight access	Architect
Glazing	Double Glazing to be used throughout the Learning Building All the glazing facing the north, east and west are to be effectively shaded	Architect
Ventilation	60% of the regular use areas are to be effectively naturally ventilated	Services
Air Quality	All paints, sealants and adhesives meet the maximum total indoor pollutant emission limits All carpet meets the maximum total indoor pollutant emission limits	Architect
Thermal Comfort	Ceiling fans are to be provided to all regular use areas in the Learning Building and the Multipurpose Hall	Architect/Services
Transport – no credits claimed only line marking works to existing car park		
Waste & Resource Recovery		
Operational Waste - Convenience of Recycling	Recycling bins to be provided in all kitchens and wherever general waste is disposed.	Architect/Waste Consultant
Urban Ecology		
Communal Spaces	Availability of around 105 sqm of communal space is provided in the new Learning Building	Architect
Vegetation	5% of the site is covered with vegetation	Architect/Landscape

Table 1 – SMP Stakeholders Commitment and Implication

3.0 Site Description

3.1 Location of local government area

The proposed development is in the Victorian local government area of the City of Greater Geelong

Figure 2 – Council map

The City of Greater Geelong is active in their strategic planning to meet the ongoing challenges that climate change presents to their communities.

3.2 Project Details

This project at the existing Mackillop Education Geelong Campus proposes the construction of 2 new non-residential buildings, a new Learning Building and a new Sports Multipurpose Hall.

Proposed Development Details	
Address:	25 Oxford Street,
Suburb:	Whittington VIC 3219
Development Type:	Non-residential development
Number of Storeys:	1
Number of Buildings:	2
Climate Zone:	6
Site Area:	8075 m^2
Floor Area:	1016 m^2

Table 2 - Proposed Development Details

3.3 Site Location

The site address in 25 Oxford Street, Whittington VIC 3219 is in Climate Zone 6. The total site is approximately 8075 m^2.

The site is currently located in a residential zone with residential housing located on both sides of the development.

Figure 3 – Locality image showing site. Google Maps©

The client's objective in undertaking the development of the site is to provide a sustainable facility with enhanced internal and external environment for community members whilst reducing recurrent energy consumption and the environment impact on the site.

4.0 Response to Environmentally Sustainable Development Policy – City of Greater Geelong Planning Scheme

This Sustainable Management Plan has been prepared in response to the Environmentally Sustainable Development (ESD) policy outlined in the City of Greater Geelong Planning Scheme clause 15.01-2L. The policy applies to residential and non-residential developments that meet specific floor area thresholds and seeks to ensure best practice sustainability outcomes from design through to construction and operation.

In accordance with the policy, this report addresses key sustainability categories including energy efficiency, water conservation, indoor environmental quality, sustainable transport, waste management, and urban ecology. These categories align with the Built Environment Sustainability Scorecard (BESS) assessment tool used in this report.

The proposed development meets the requirement for a Sustainable Management Plan (SMP) and has been evaluated using the BESS and Bue Factor tools, with consideration of other best practice frameworks such as MUSIC and the City of Greater Geelong Environment Strategy (31st March 2025). The report demonstrates how the project minimises environmental impacts through passive design, efficient water and energy use, support for active and low-emission transport, and strategies to enhance biodiversity and mitigate the urban heat island effect.

This SMP ensures the development aligns with the objectives and strategies of the planning scheme and reflects a commitment to achieving environmentally responsible outcomes in line with local policy expectations.

5.0 Built Environment Sustainability Scorecard (BESS) Assessment Tool

5.1 Management

5.1.1 Preliminary Façade Assessment

A preliminary facade assessment has been undertaken in accordance with NCC2022 to inform the material selections.

5.1.2 Builder User Guide

A Building User Guide provides occupants, facility managers and visitors with clear information on how to operate and interact with the building in a way that supports sustainability outcomes. By explaining the building's systems, sustainability features and operational best practice in simple terms, the guide helps reduce energy, water and waste use while improving comfort and safety. It also ensures that future staff or tenants can easily understand and maintain sustainable practices, supporting the long-term performance targets set out in this Sustainability

5.2 Integrated Water Management

5.2.1 Water Efficient Fixtures

The site is proposed to be provided with water efficient fixtures throughout. Using the Water Efficient Labelling Standard (WELS) rating system, the following ratings are proposed;

- Basins – 6 Star WELS rating
- WC's – 4 Star WELS (dual flush)
- Kitchen Taps – 6 Star WELS rating
- Dishwashers – 6 Star WELS rating

5.2.2 Rainwater Tank

Two 5,000-liter rainwater tank will be installed to capture roof water from both of the new buildings. Rainwater tanks can be used as an effective component of stormwater management by capturing roof runoff, reducing peak stormwater flows, and lowering the volume of water discharged to the drainage network. By temporarily storing rainfall tanks help reduce runoff frequency and pollutant loads. When appropriately sized and integrated with overflow and detention measures, rainwater tanks contribute to improved flood mitigation, reduced downstream impacts, and compliance with best-practice stormwater management objectives.

5.2.3 Stormwater Management

The proposed development will incorporate best-practice urban stormwater management in accordance with Melbourne Water requirements. Where required by the planning permit, the Melbourne Water Blue Factor assessment tool will be used to assess stormwater performance and will be verified by the project's civil drainage engineer. The project will target a Blue Factor score of 125% for Stage 1A and 151% for Stage 1B, demonstrating best-practice stormwater management outcomes. The stormwater strategy is designed to meet best-practice objectives for urban stormwater quality and management, consistent with the intent of the CSIRO Urban Stormwater Best Practice guidelines.

5.3 Operational Energy

5.3.1 Services

All appliances and services throughout the project will be electric.

All heating and cooling throughout the project shall be via reverse cycle air conditioning as a minimum.

5.3.2 Gas to Site

The new buildings will not have a gas connection provided. All appliances and services will be electric.

5.3.3 Deemed to Satisfy (DtS) Approach

The BESS assessment utilises the Deemed-to-Satisfy (DtS) provisions to demonstrate compliance with prescribed energy efficiency requirements. Under this approach each of the following 4 elements are achieved

- All exposed floors and ceilings (forming part of the envelope) demonstrate a minimum 10% improvement in required NCC2022 insulation levels (total R-value upwards and downwards)
- All wall-glazing construction meet the minimum NCC2022 requirements through the NCC facade calculator
- Heating and cooling systems within one Star of the most efficient equivalent capacity unit available, or Coefficient of Performance (CoP) & Energy Efficiency Ratios (EER) not less than 85% of the CoP & EER of the most efficient equivalent capacity unit available
- Water heating systems are within one star of the best available, or 85% or better than the most efficient equivalent capacity unit

5.3.4 Internal Lighting

The development is targeting, to exceed the minimum NCC Section J requirements for lighting energy efficiency by at least 10%.

Artificial lighting is proposed to use LED fittings for all areas. The selection of fittings will be developed during the design phase of the project.

5.3.5 Domestic Hot Water

The development is proposed to be served by instant electric/electric heat pump hot water systems.

Note that on sites with several smaller, remote buildings, this may not be practical and will be re-evaluated. Regardless, gas hot water systems will not be used.

5.3.6 Building Ventilation

Natural ventilation is proposed throughout the development however, where natural ventilation cannot be achieved mechanical ventilation shall be provided in accordance with the BCA requirements.

5.3.7 Renewable Energy Generation

A minimum of 10kWs of photovoltaic panels will be incorporated within the projects scope of works. The system's location will be confirmed at a later stage of the project, with a preference for north-facing orientation where suitable. The design will also account for roof direction, pitch, and the provision of safe maintenance access.

5.4 Indoor Environmental Quality

5.4.1 Natural Light

The use and treatment of natural light in the Learning Building can enhance the feeling and wellbeing of students and staff.. The treatment and use of the natural light is proposed to be carefully located to minimise solar heat gain to the building envelope and/or cause nuisance of glare or shadowing internally. Refer to the daylight hand calculation in Appendix D showing a minimum of 54% of the floor area achieving the target daylight factor of 2%.

The sports multipurpose hall has scoped out of the BESS daylight credit due to its specific functional and operational requirements. These spaces typically require controlled lighting conditions to support a wide range of sporting activities, competitions, and events, where uniform artificial lighting, glare control, and visual comfort are critical for player safety and performance. Extensive daylight openings can introduce glare, uneven light levels, and visual distractions, and may also conflict with the need for wall space for courts, equipment, scoreboards, and impact-resistant finishes. As a result, daylight provision is often deliberately limited in favour of high-quality, efficient artificial lighting systems that better support the intended use of the hall.

5.4.2 Window Systems

The Learning Building is proposed to be provided with double-glazed windows throughout which will enhance the indoor environment for students. This is a targeted objective and not mandated to the development.

The double-glazed window system will also enhance the thermal and acoustic performance for all building occupants. Double glazed windows will minimise the inducement of cold drafts during low ambient temperatures which will allow students and staff to minimise the use of window furnishings and enhance their outlook through uncovered windows.

The double-glazed system will also provide acoustic treatment and reduction of transmission of external noises including traffic noise. Acoustic performance will enhance the indoor environment.

Single glazing may be considered to zones which are not conditioned or habitable.

5.4.3 External Shading

The proposed buildings are to incorporate shading strategies through design features such as building overhangs and extended eaves. These elements should be strategically positioned to provide effective shading during warmer months while allowing sunlight penetration in cooler months. The implementation of these strategies will be influenced by the roof design and layout. 50% of the east, north and west glazing to regular use areas is effectively shaded.

5.4.4 Ventilation

The building is to be naturally and/or mechanically ventilated to the Building Code of Australia and Australian Standards requirements.

5.4.4.1 Effective Natural Ventilation

The development provides effective natural ventilation to a minimum of 60% of all regularly occupied areas, ensuring high indoor environmental quality and reduced reliance on mechanical systems. By enabling cross-flow ventilation where feasible, the design supports passive cooling, improved indoor air freshness, and lower operational energy demand. This approach enhances occupant comfort while aligning with BESS objectives for sustainable building performance.

5.4.5 Air Conditioning & Heating

The use of local control of heating/cooling and lighting systems also provides the space with increased environmental quality to allow users to locally control the internal temperature in the space. The ability to locally and/or centrally isolate individual air conditioning units also enables energy consumption to be reduced by not conditioning areas that aren't occupied. Similarly operating and controlling individual room temperatures to potentially higher or lower temperature (variable setpoints) during summer and winter will also enable the environment to be better controlled as well as potentially reduce energy consumption for the facility.

5.4.6 Air Quality

The project specifies low-emission products across all relevant material categories, including paints, sealants, adhesives, carpets, and engineered wood. By ensuring that all selected products meet maximum total indoor pollutant emission limits, the development minimises exposure to volatile organic compounds (VOCs) and formaldehyde, thereby improving indoor air quality and supporting healthier indoor environments.

5.4.7 Thermal Comfort

Each of the above initiatives ensure that the development achieves a high level of thermal comfort for the students and staff.

The use and treatment of natural light can enhance the feeling and wellbeing of students and staff. The treatment and use of natural light have been carefully located to minimise solar heat gain to the building envelope and/or cause nuisance of glare or shadowing internally.

Along with the use of shading, acoustic and ventilation considerations throughout the building, the project shall provide high level of thermal comfort.

5.5 Transport

5.5.1 Public Transport

The site is currently served by public transport, with buses within short walking distances from the development.

A brief summary of the public transport options serving the site is as follows:

Bus route 30 — runs between Geelong Station / Railway Terrace and Windsor Park Retirement Village / Townsend Rd, passing close to Whittington

Bus route 31 — also serves the area linking Geelong Station with St Albans Park / Windsor Park Retirement Village, stopping near Whittington (e.g., Coppards Rd stops).

5.6 Waste

5.6.1 Convenience of Recycling

Convenience of recycling ensures that occupants have easy access to well-located and clearly labelled recycling facilities. By reducing barriers to participation, it increases recycling rates, reduces contamination in waste streams, and supports sustainable resource use. Well-planned recycling infrastructure is essential to achieving a building's overall sustainability and waste reduction goals.

The installation of general and recycling bins will be provided throughout the facility to enable the separation of rubbish at the source.

The provision of the exact size, number and type of recycling bins will be determined at a later stage of the project.

5.7 Urban Ecology

5.7.1 Communal Spaces

Communal spaces are places where people gather for social exchange, enhancing the health of the community. The new development is proposed to have 105 m^2 of communal space for the students in the form of an enclosed area communal area in the Learning Building

5.7.2 Vegetation

The landscaping is proposed to compliment the current environment, protecting the natural habitat and increasing the biodiversity with the provision of a variety of native and indigenous trees, shrubs and understorey planting which will provide a natural habitat for birds and animals. Once the new works have been completed 19% of the site will be covered with vegetation

6.0 Future Action

The following steps are recommended for the continuation of this project

1. Review credits with client and design team.
2. Agree credits to be targeted.
3. Implement credit requirements into documentation.
4. Design review by owner's representative, contractor or building manager.
5. Preliminary council advice/submission.
6. Final council advice/submission.

7.0 Disclaimer

This report focuses solely on the sustainability performance of the building as per the design intent and drawings provided. It does not specify materials or detailed site implementation. The contractor must implement the design according to the Building Code of Australia (BCA), building permit requirements and relevant standards.

This report does not address any acoustic, bush fire, combustibility, and condensation requirements. This report does not cover building standard practice.

8.0 Appendix A – Referenced Architectural Documents

Architect's Job Number	Site	Drawings Number	Drawings Date	Drawings Revision	Drawings Description
3271	MacKillop Family Services - Geelong Campus	TP1.02	17 Dec 2025	B	Proposed Site Plan
3271	MacKillop Family Services - Geelong Campus	TP1.03	17 Dec 2025	B	Detail Plan - New Learning Building (Stage 1a)
3271	MacKillop Family Services - Geelong Campus	TP1.04	17 Dec 2025	F	Elevation & Section - New Learning Building (Stage 1a)
3271	MacKillop Family Services - Geelong Campus	TP1.05	17 Dec 2025	F	Detail Plan - Sports Multipurpose Building (Stage 1b)
3271	MacKillop Family Services - Geelong Campus	TP1.06	17 Dec 2025	F	Elevation & Section - Sports Multipurpose Building (Stage 1b)

9.0 Appendix B – BESS Report

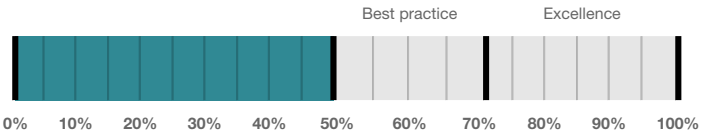
BESS Report

Built Environment Sustainability Scorecard

This BESS report outlines the sustainable design commitments of the proposed development at 28 Truscott St Whittington Victoria 3219. The BESS report and accompanying documents and evidence are submitted in response to the requirement for a Sustainable Design Assessment or Sustainability Management Plan at Greater Geelong City Council.

Note that where a Sustainability Management Plan is required, the BESS report must be accompanied by a report that further demonstrates the development's potential to achieve the relevant environmental performance outcomes and documents the means by which the performance outcomes can be achieved.

Your BESS Score

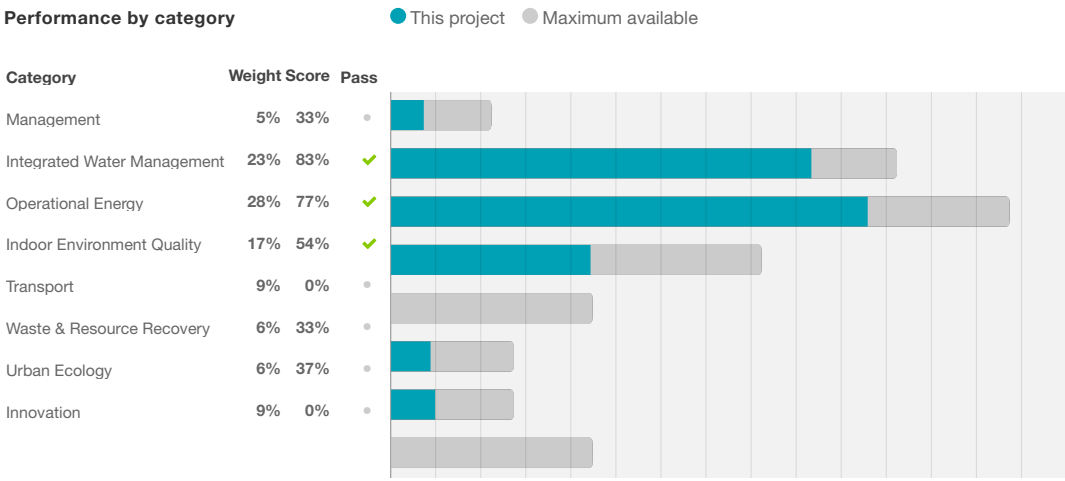


54%

Project details

Name	Mackillop Family Services - Geelong Campus
Address	28 Truscott St Whittington Victoria 3219
Project ID	BBC9772B-R1
BESS Version	BESS-10
Site type	Non-residential development
Account	christine@brt.com.au
Application no.	
Site area	8,075 m²
Building floor area	1,016 m²
Date	30 January 2026
Software version	2.3.0-B.645

Performance by category



Buildings

Name	Height	Footprint	% of total footprint
Learning Building	1	555 m²	54%
Multipurpose Building	1	461 m²	45%

Dwellings & Non Res Spaces

Non-Res Spaces

Name	Quantity	Area	Building	% of total area
Public building				
Non-Residential Space 1	1	555 m²	Learning Building	54%
Non-Residential Space 2	1	461 m²	Multipurpose Building	45%
Total	**2**	**1,016 m²**	**100%**	

Supporting Evidence

Shown on Floor Plans

Credit	Requirement	Response	Status
Integrated Water Management 2.1	Location of any stormwater management systems (rainwater tanks, raingardens, buffer strips)	To be printed	✔
Integrated Water Management 3.1	Annotation: Water efficient garden details	To be printed	✔
Operational Energy 4.2	Location and size of solar photovoltaic system	To be printed	✔
Waste & Resource Recovery 2.2	Location of recycling facilities	To be printed	✔
Urban Ecology 1.1	Location and size of communal spaces	To be printed	✔
Urban Ecology 2.1	Location and size of vegetated areas	To be printed Currently shown on site plan	✔

Supporting Documentation

Credit	Requirement	Response	Status
Management 2.3a	Section J glazing assessment	To be printed Section J Facade Calculation	✔
Integrated Water Management 2.1	STORM report or MUSIC model	To be printed Blue Factor Results	✔
Operational Energy 1.1	Energy Report showing calculations of reference case and proposed buildings	To be printed DtS method used	✔
Operational Energy 3.7	Average lighting power density and lighting type(s) to be used	To be printed committment	✔
Operational Energy 4.2	Specifications of the solar photovoltaic system(s)	To be printed committment	✔
Indoor Environment Quality 1.4	A short report detailing assumptions used and results achieved.	To be printed Green Star Hand Method Mark Ups	✔

Credit summary

Management Overall contribution 4.5%

	33%	
1.1 Pre-Application Meeting	0%	
2.3 Thermal Performance Modelling - Non-Residential	50%	
3.2 Metering - Non-Residential	N/A	Scoped Out
		No tenants
3.3 Metering - Common Areas	N/A	Scoped Out
		No tenants
4.1 Building Users Guide	100%	

IWM Overall contribution 22.5%

	83%	Pass
1.1 Potable Water Use	50%	Achieved
2.1 Stormwater Treatment	100%	Achieved
3.1 Water Efficient Landscaping	100%	
4.1 Building Systems Water Use	N/A	Scoped Out
		No sprinklers, boilers or chillers

Operational Energy Overall contribution 27.5%

	Minimum required 50% 77%	Pass
1.1 Thermal Performance Rating - Non-Residential	37%	
2.1 Greenhouse Gas Emissions	100%	
2.2 Peak Demand	100%	
2.6 Electrification	100%	
2.7 Energy consumption	100%	
3.1 Carpark Ventilation	N/A	Scoped Out
		no enclosed carpark
3.2 Hot Water - Non-Residential	100%	
3.7 Internal Lighting - Non-Residential	100%	
4.1 Combined Heat and Power (cogeneration / trigeneration)	N/A	Scoped Out
		No cogeneration or trigeneration system in use.
4.2 Renewable Energy Systems - Solar	100%	
4.4 Renewable Energy Systems - Other	N/A	Scoped Out
		No other (non-solar PV) renewable energy is in use.

IEQ Overall contribution 16.5%

	Minimum required 50%	54%	✔ Pass
1.4 Daylight Access - Non-Residential		54%	✔ Achieved
2.3 Ventilation - Non-Residential		33%	✔ Achieved
3.4 Thermal comfort - Shading - Non-Residential		100%	
3.5 Thermal Comfort - Ceiling Fans - Non-Residential		0%	
4.1 Air Quality - Non-Residential		100%	

Transport Overall contribution 9.0%

		0%	
1.4 Bicycle Parking - Non-Residential		0%	
1.5 Bicycle Parking - Non-Residential Visitor		0%	
1.6 End of Trip Facilities - Non-Residential		0%	⊘ Disabled
		Credit 1.4 must be complete first.	
2.1 Electric Vehicle Infrastructure		0%	
2.2 Car Share Scheme		0%	
2.3 Motorbikes / Mopeds		0%	

Waste & Resource Recovery Overall contribution 5.5%

	33%	
1.1 Construction Waste - Building Re-Use	0%	
2.1 Operational Waste - Food & Garden Waste	0%	
2.2 Operational Waste - Convenience of Recycling	100%	

Urban Ecology Overall contribution 5.5%

	37%	
1.1 Communal Spaces	100%	
2.1 Vegetation	50%	
2.2 Green Roofs	0%	
2.3 Green Walls and Facades	0%	
3.2 Food Production - Non-Residential	0%	

Innovation Overall contribution 9.0%

	0%	
1.1 Innovation	0%	

Credit breakdown

Management Overall contribution 4.5%

33%

1.1 Pre-Application Meeting		0%
Score Contribution	This credit contributes 50% towards the category score.	
Criteria	Has an ESD professional been engaged to provide sustainability advice from schematic design to construction? AND Has the ESD professional been involved in a pre-application meeting with Council?	
Question	Criteria Achieved ?	
Project	No	
2.3 Thermal Performance Modelling - Non-Residential		50%
Score Contribution	This credit contributes 33.3% towards the category score.	
Criteria	Has a preliminary facade assessment been undertaken in accordance with NCC2022 Section J4D6?	
Question	Criteria Achieved ?	
Public building	Yes	
Criteria	Has preliminary modelling been undertaken in accordance with either NCC2022 Section J (Energy Efficiency), NABERS or Green Star?	
Question	Criteria Achieved ?	
Public building	No	
3.2 Metering - Non-Residential		N/A Scoped Out
		No tenants
This credit was scoped out	No tenants	
3.3 Metering - Common Areas		N/A Scoped Out
		No tenants
This credit was scoped out	No tenants	
4.1 Building Users Guide		100%
Score Contribution	This credit contributes 16.7% towards the category score.	
Criteria	Will a building users guide be produced and issued to occupants?	
Question	Criteria Achieved ?	
Project	Yes	

IWM Overall contribution 22.5%

		83%	✔ Pass

Do you have a reticulated third pipe or an on-site water recycling system?:	No
Are you installing a swimming pool?:	No

Stormwater profile

Which stormwater modelling software are you using?:	Blue Factor
Blue Factor score achieved?:	125
Flow:	-
Total Suspended Solids:	-
Total Phosphorus:	-
Total Nitrogen:	-

Fixtures, fittings & connections profile

Building:	
Non-Residential Space 1	Learning Building
Non-Residential Space 2	Multipurpose Building
Showerhead:	
Non-Residential Space 1	4 Star WELS (>= 6.0 but <= 7.5)
Non-Residential Space 2	5 Star WELS (>= 4.5 but <= 6.0)
Bath: All	Scope out
Kitchen Taps: All	>= 6 Star WELS rating
Bathroom Taps: All	>= 6 Star WELS rating
Dishwashers:	
Non-Residential Space 1	Scope out
Non-Residential Space 2	>= 6 Star WELS rating
WC: All	>= 4 Star WELS rating
Urinals: All	>= 5 Star WELS rating
Washing Machine Water Efficiency: All	Scope out
Non-potable water source connected to Toilets: All	No
Non-potable water source connected to Laundry (washing machine): All	No
Non-potable water source connected to Hot Water System: All	No

1.1 Potable Water Use		50%	✔ Achieved

Score Contribution	This credit contributes 33.3% towards the category score.
Criteria	What is the reduction in total potable water use due to efficient fixtures, appliances, rainwater use and recycled water use? To achieve points in this credit there must be >25% potable water reduction.
Output	Reference
Project	3264 kL
Output	Proposed (excluding rainwater and recycled water use)
Project	2187 kL
Output	Proposed (including rainwater and recycled water use)
Project	2187 kL
Output	% Reduction in Potable Water Consumption
Project	33 %

2.1 Stormwater Treatment 100% ✔ Achieved

Score Contribution	This credit contributes 60% towards the category score.
Criteria	Has best practice stormwater management been demonstrated?
Output	Min Blue Factor Score
Project	100
Output	Blue Factor Score
Project	125

3.1 Water Efficient Landscaping 100%

Score Contribution	This credit contributes 6.7% towards the category score.
Criteria	Will water efficient landscaping be installed?
Question	Criteria Achieved ?
Project	Yes

4.1 Building Systems Water Use N/A ⟡ Scoped Out

No sprinklers, boilers or chillers

This credit was scoped out	No sprinklers, boilers or chillers

Operational Energy Overall contribution 27.5%

	Minimum required 50%	77%	✔ Pass

Project profile	
Use the BESS Deem to Satisfy (DtS) method for Non-residential spaces?:	Yes
Are you installing any renewable energy system(s) (other than solar photovoltaic)?:	No
Energy Supply:	All-electric
Solar Photovoltaic system profile	
System Size (lesser of inverter and panel capacity): Solar Photovoltaic system 1	10.0 kW peak
Orientation (which way is the system facing)?: Solar Photovoltaic system 1	North
Inclination (angle from horizontal): Solar Photovoltaic system 1	15.0 Angle (degrees)
Non-residential Deemed-to-Satisfy profile	
Do all exposed floors and ceilings (forming part of the envelope) demonstrate a minimum 10% improvement in required NCC2022 insulation levels (total R-value upwards and downwards)?:	Yes
Does all wall and glazing demonstrate meeting the required NCC2022 facade calculator (or better than the total allowance)?:	Yes
Are heating and cooling systems within one Star of the most efficient equivalent capacity unit available, or Coefficient of Performance (CoP) & Energy Efficiency Ratios (EER) not less than 85% of the CoP & EER of the most efficient equivalent capacity unit available?:	Yes
Are water heating systems within one star of the best available, or 85% or better than the most efficient equivalent capacity unit?:	Yes

1.1 Thermal Performance Rating - Non-Residential		37%
Score Contribution	This credit contributes 36.4% towards the category score.	
Criteria	What is the % reduction in heating and cooling energy consumption against the reference case (NCC2022 Section J)?	
2.1 Greenhouse Gas Emissions		100%
Score Contribution	This credit contributes 9.1% towards the category score.	
Criteria	What is the % reduction in annual greenhouse gas emissions against the benchmark?	
2.2 Peak Demand		100%
Score Contribution	This credit contributes 4.5% towards the category score.	
Criteria	What is the % reduction in the instantaneous (peak-hour) demand against the benchmark?	
2.6 Electrification		100%

Score Contribution	This credit contributes 13.6% towards the category score.
Criteria	Is the development all-electric?
Question	Criteria Achieved?
Project	Yes

2.7 Energy consumption 100%

Score Contribution	This credit contributes 18.2% towards the category score.
Criteria	What is the % reduction in annual energy consumption against the benchmark?

3.1 Carpark Ventilation N/A Scoped Out

no enclosed carpark

This credit was scoped out	no enclosed carpark

3.2 Hot Water - Non-Residential 100%

Score Contribution	This credit contributes 4.5% towards the category score.
Criteria	What is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark?

3.7 Internal Lighting - Non-Residential 100%

Score Contribution	This credit contributes 9.1% towards the category score.
Criteria	Does the maximum illumination power density (W/m2) in at least 90% of the area of the relevant building class meet the requirements in Table J7D3a of the NCC 2022 Vol 1?
Question	Criteria Achieved ?
Public building	Yes

4.1 Combined Heat and Power (cogeneration / trigeneration) N/A Scoped Out

No cogeneration or trigeneration system in use.

This credit was scoped out	No cogeneration or trigeneration system in use.

4.2 Renewable Energy Systems - Solar 100%

Score Contribution	This credit contributes 4.5% towards the category score.
Criteria	What % of the estimated energy consumption of the building class it supplies does the solar power system provide?
Output	Solar Power - Energy Generation per year
Public building	12,444 kWh
Output	% of Building's Energy
Public building	33 %

4.4 Renewable Energy Systems - Other N/A Scoped Out

No other (non-solar PV) renewable energy is in use.

This credit was scoped out	No other (non-solar PV) renewable energy is in use.

IEQ Overall contribution 16.5%

Minimum required 50%	54%	✔ Pass

1.4 Daylight Access - Non-Residential		54%	✔ Achieved
Score Contribution	This credit contributes 35.3% towards the category score.		
Criteria	What % of the nominated floor area has at least 2% daylight factor?		
Annotation	Learning Building 54.1% of daylight requirement to the Regular Use Areas. TThe sports multipurpose hall has scoped out of the BESS daylight credit due to its specific functional and operational requirements. These spaces typically require controlled lighting conditions to support a wide range of sporting activities, competitions, and events, where uniform artificial lighting, glare control, and visual comfort are critical for player safety and performance. Extensive daylight openings can introduce glare, uneven light levels, and visual distractions, and may also conflict with the need for wall space for courts, equipment, scoreboards, and impact-resistant finishes. As a result, daylight provision is often deliberately limited in favour of high-quality, efficient artificial lighting systems that better support the intended use of the hall.		
Question	Percentage Achieved?		
Public building	54 %		
2.3 Ventilation - Non-Residential		33%	✔ Achieved
Score Contribution	This credit contributes 35.3% towards the category score.		
Criteria	What % of the regular use areas are effectively naturally ventilated?		
Question	Percentage Achieved?		
Public building	60 %		
Criteria	What increase in outdoor air is available to regular use areas compared to the minimum required by AS 1668.2:2012?		
Question	Percentage Achieved?		
Public building	-		
Criteria	What CO2 concentrations are the ventilation systems designed to achieve, to monitor and to maintain?		
Question	Value		
Public building	-		
3.4 Thermal comfort - Shading - Non-Residential		100%	
Score Contribution	This credit contributes 17.6% towards the category score.		
Criteria	What percentage of east, north and west glazing to regular use areas is effectively shaded?		
Question	Percentage Achieved?		
Public building	100 %		

3.5 Thermal Comfort - Ceiling Fans - Non-Residential	0%
Score Contribution	This credit contributes 5.9% towards the category score.
Criteria	What percentage of regular use areas in tenancies have ceiling fans?
Question	Percentage Achieved?
Public building	0 %

4.1 Air Quality - Non-Residential	100%
Score Contribution	This credit contributes 5.9% towards the category score.

Criteria	Do all paints, sealants and adhesives meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Public building	Yes

Criteria	Does all carpet meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Public building	Yes

Criteria	Does all engineered wood meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Public building	Yes

Transport Overall contribution 9.0%

		0%

1.4 Bicycle Parking - Non-Residential		0%
Score Contribution	This credit contributes 22.2% towards the category score.	
Criteria	Have the planning scheme requirements for employee bicycle parking been exceeded by at least 50% (or a minimum of 2 where there is no planning scheme requirement)?	
Question	Criteria Achieved ?	
Public building	No	
Question	Bicycle Spaces Provided ?	
Public building	-	
1.5 Bicycle Parking - Non-Residential Visitor		0%
Score Contribution	This credit contributes 11.1% towards the category score.	
Criteria	Have the planning scheme requirements for visitor bicycle parking been exceeded by at least 50% (or a minimum of 1 where there is no planning scheme requirement)?	
Question	Criteria Achieved ?	
Public building	No	
Question	Bicycle Spaces Provided ?	
Public building	-	
1.6 End of Trip Facilities - Non-Residential		0% ⊘ Disabled
		Credit 1.4 must be complete first.
This credit is disabled	Credit 1.4 must be complete first.	
2.1 Electric Vehicle Infrastructure		0%
Score Contribution	This credit contributes 22.2% towards the category score.	
Criteria	Are facilities provided for the charging of electric vehicles?	
Question	Criteria Achieved ?	
Project	No	
2.2 Car Share Scheme		0%
Score Contribution	This credit contributes 11.1% towards the category score.	
Criteria	Has a formal car sharing scheme been integrated into the development?	
Question	Criteria Achieved ?	
Project	No	
2.3 Motorbikes / Mopeds		0%
Score Contribution	This credit contributes 22.2% towards the category score.	
Criteria	Are a minimum of 5% of vehicle parking spaces designed and labelled for motorbikes (must be at least 5 motorbike spaces)?	
Question	Criteria Achieved ?	
Project	No	

Waste & Resource Recovery Overall contribution 5.5%

33%

1.1 Construction Waste - Building Re-Use	0%
Score Contribution	This credit contributes 33.3% towards the category score.
Criteria	If the development is on a site that has been previously developed, has at least 30% of the existing building been re-used?
Question	Criteria Achieved ?
Project	No
2.1 Operational Waste - Food & Garden Waste	0%
Score Contribution	This credit contributes 33.3% towards the category score.
Criteria	Are facilities provided for on-site management of food and garden waste?
Question	Criteria Achieved ?
Project	No
2.2 Operational Waste - Convenience of Recycling	100%
Score Contribution	This credit contributes 33.3% towards the category score.
Criteria	Are the recycling facilities at least as convenient for occupants as facilities for general waste?
Question	Criteria Achieved ?
Project	Yes

Urban Ecology Overall contribution 5.5%

37%

1.1 Communal Spaces	100%
Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	Is there at least the following amount of common space measured in square meters : * 1m² for each of the first 50 occupants * Additional 0.5m² for each occupant between 51 and 250 * Additional 0.25m² for each occupant above 251?
Annotation	Communal area provided in new learning building
Question	Common space provided
Public building	105 m²
Output	Minimum Common Space Required
Public building	75 m²
2.1 Vegetation	50%
Score Contribution	This credit contributes 50% towards the category score.
Criteria	How much of the site is covered with vegetation, expressed as a percentage of the total site area?
Question	Percentage Achieved ?
Project	19 %
2.2 Green Roofs	0%
Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	Does the development incorporate a green roof?
Question	Criteria Achieved ?
Project	No
2.3 Green Walls and Facades	0%
Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	Does the development incorporate a green wall or green façade?
Question	Criteria Achieved ?
Project	No
3.2 Food Production - Non-Residential	0%
Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	What area of space per occupant is dedicated to food production?
Question	Food Production Area
Public building	0.0 m²
Output	Min Food Production Area
Public building	26 m²

Innovation Overall contribution 9.0%

		0%

1.1 Innovation		0%
Score Contribution	This credit contributes 100% towards the category score.	
Criteria	What percentage of the Innovation points have been claimed (10 points maximum)?	

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10.0 Appendix C – Façade Calculator

Façade

Report

Calculator

Project Summary

Date
23/01/2026

Name
Jude Wong

Company
BRT Consulting Engineers

Position
Intern

Building Name / Address
Mackillop Family Services - Geelong Campus
Truscott St, Whittington VIC 3219

Building State
VIC

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Class 9b - schools

Storeys Above Ground
1

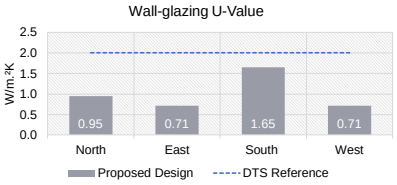
Tool Version
1.5 (May 2024)

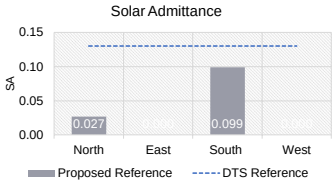
The summary below provides an overview of where compliance has been achieved for Specification S37 - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

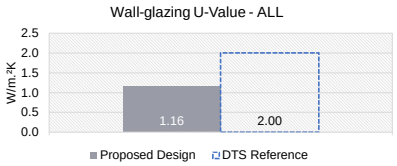
	Method 1 North	East	South	West	Method 2 All
Wall-glazing U-Value (W/m².K)	0.95	0.71	1.65	0.71	1.16
Solar Admittance	0.03		0.10		
AC Energy Value					0

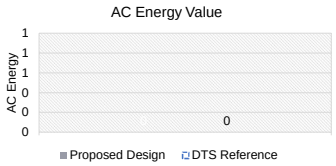
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	9.19836	0	40.074336	0
Glazing to Façade Ratio	5%	0%	19%	0%
Glazing References	North	East	South	
Glazing System Types	Fixed	Fixed	Fixed	
Glass Types	0	0	0	
Frame Types	0	0	0	0
Average Glazing U-Value (W/m².K)	5.60		5.60	
Average Glazing SHGC	0.56	0.00	0.56	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	179.933	72.974	168.936	72.974
Wall Types	Wall	Wall	Wall	Wall
Methodology	Wall			
Wall Construction	DtS Wall	DtS Wall	DtS Wall	DtS Wall
Wall Thickness	0	0	0	0
Average Wall R-value (m².K/W)	1.40	1.40	1.40	1.40
Solar Absorptance	0.13	0.13	0.13	0.13

Façade

Report

Calculator

Project Summary

Date
23/01/2026

Name
Jude Wong

Company
BRT Consulting Engineers

Position
Intern

Building Name / Address
Mackillop Family Services - Geelong Campus
Truscott St, Whittington VIC 3219

Building State

VIC

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification

Class 9b - schools

Storeys Above Ground
1

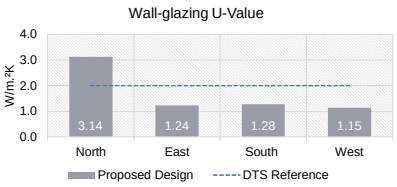
Tool Version
1.5 (May 2024)

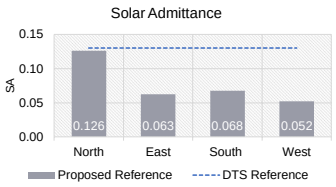
The summary below provides an overview of where compliance has been achieved for Specification S37 - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	3.14	1.24	1.28	1.15	1.87
Solar Admittance	0.13	0.06	0.07	0.05	
AC Energy Value					41

Method 1





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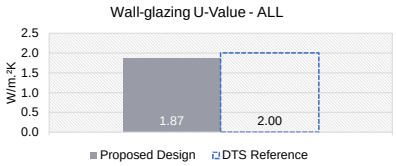
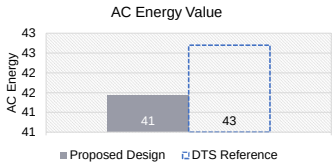


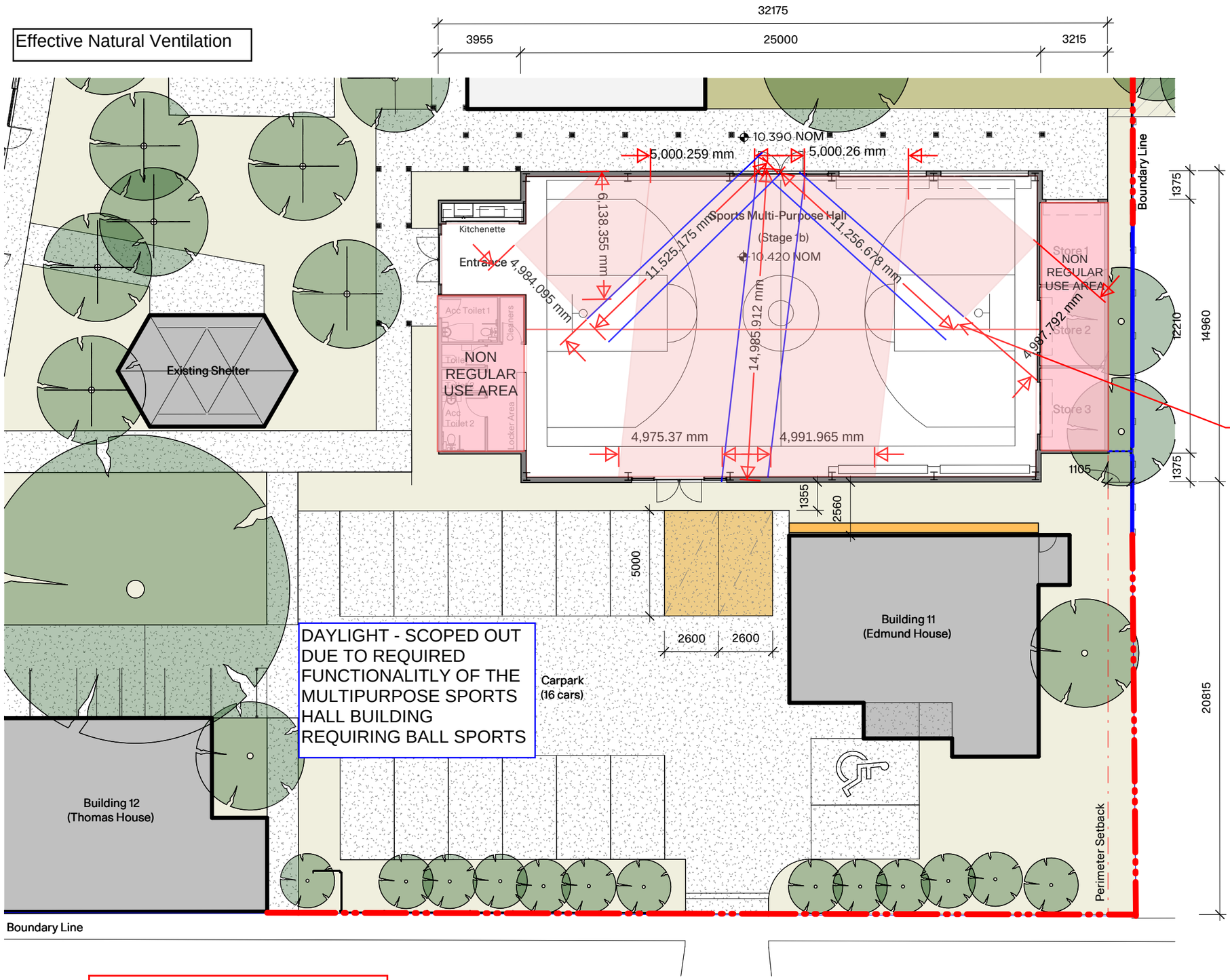


Project Details

	North	East	South	West
Glazing Area (m²)	89.6	12.136896	23.5467	10.14
Glazing to Façade Ratio	58%	15%	16%	12%
Glazing References	North	East	South	West
Glazing System Types	Fixed	Fixed	Fixed	Fixed
Glass Types	0	0	0	0
Frame Types	0	0	0	0
Average Glazing U-Value (W/m².K)	4.90	4.20	4.20	4.20
Average Glazing SHGC	0.24	0.42	0.42	0.42
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	65.3223	69.064	122.336	71.33
Wall Types	Wall	Wall	Wall	Wall
Methodology	Wall			
Wall Construction	Dts	Dts	Dts	Dts
Wall Thickness	0	0	0	0
Average Wall R-value (m².K/W)	1.40	1.40	1.40	1.40
Solar Absorptance	0.13	0.13	0.13	0.13

11.0 Appendix D – Daylight Green Star Hand Assessment

Effective Natural Ventilation



HIGHTLIGHT WINDOWS TO BE OPERABLE TO ACHIEVE 60% EFFECTIVE NAT VENT. (63%)

Legend

- Circulation
- Additional Carpark
- Existing Trees
- Proposed Infill timber panel fence to match existing fence
- Proposed palisade fence for security, to match height of adjacent fence
- Waste Management Area

Notes

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2. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS.
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consulting engineers
BRT

Project	MacKillop Family Services Geelong Hall
Service	ESD - Effeectively Natural Ventillation & Daylight Access
Drawing	Nat Vent & Daylight Access

Job No	Dwg No	Rev
12385		00
Date	Stage	Drawn By
19/01/2026	SD	CB & JW

Not for construction

Scale 1:200 (0m, 1.6, 3.2, 4m)

PMDL mcglashan everist

MacKillop Family Services - Geelong Campus

Detail Plan - Sports Multipurpose Building (Stage 1b)

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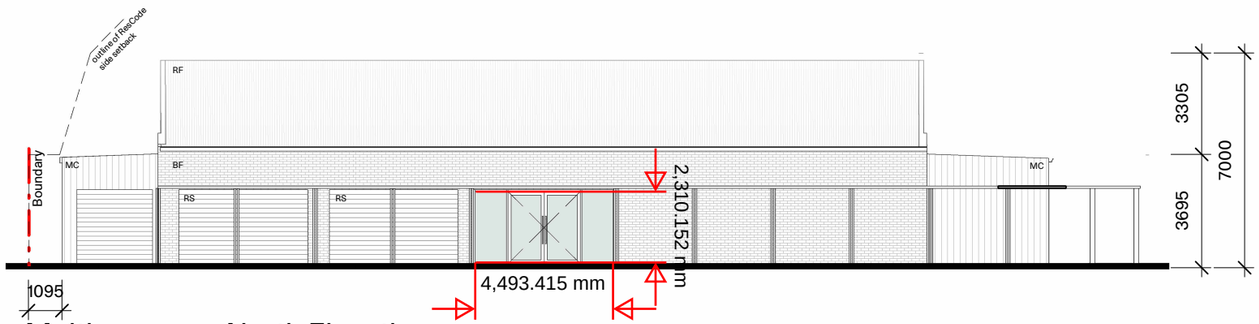
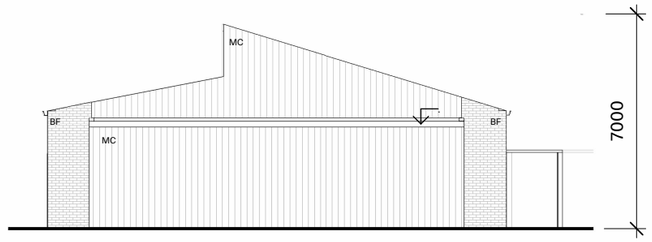


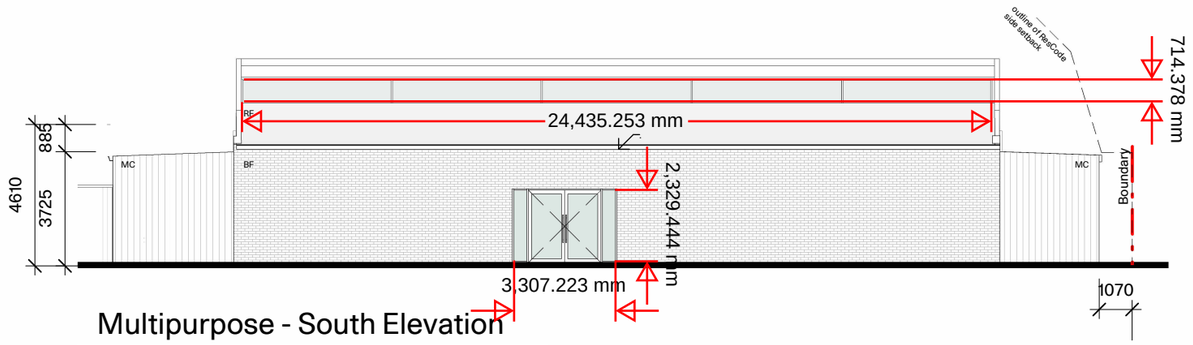
Multipurpose - North Elevation



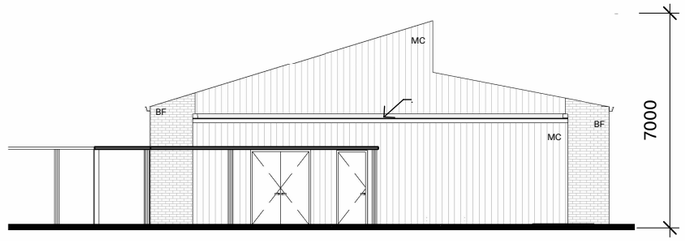
Multipurpose - East Elevation

Keynote Legend

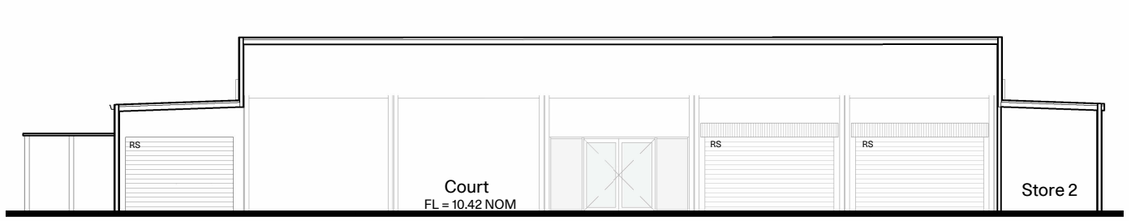
BF	Brick Face - red
MC	Metal Cladding - Grey
RF	Metal Roofing - grey
RS	Roller Shutter - Grey



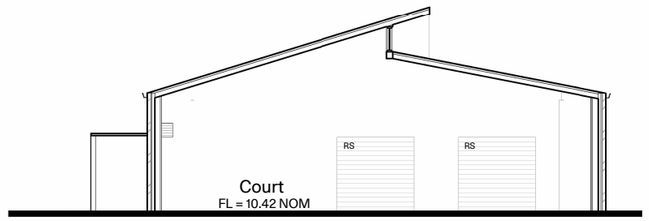
Multipurpose - South Elevation



Multipurpose - West Elevation



Multipurpose - Section A



Multipurpose - Section B

0m 1.6 3.2 4m
Scale 1:200

Not for construction

PMDL mcglashan everist

MacKillop Family Services - Geelong Campus

Elevation & Section - Multipurpose Building (Stage 1b)

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Effective Natural Ventilation

Truscott Street

Proposed hedge and planting to future detail

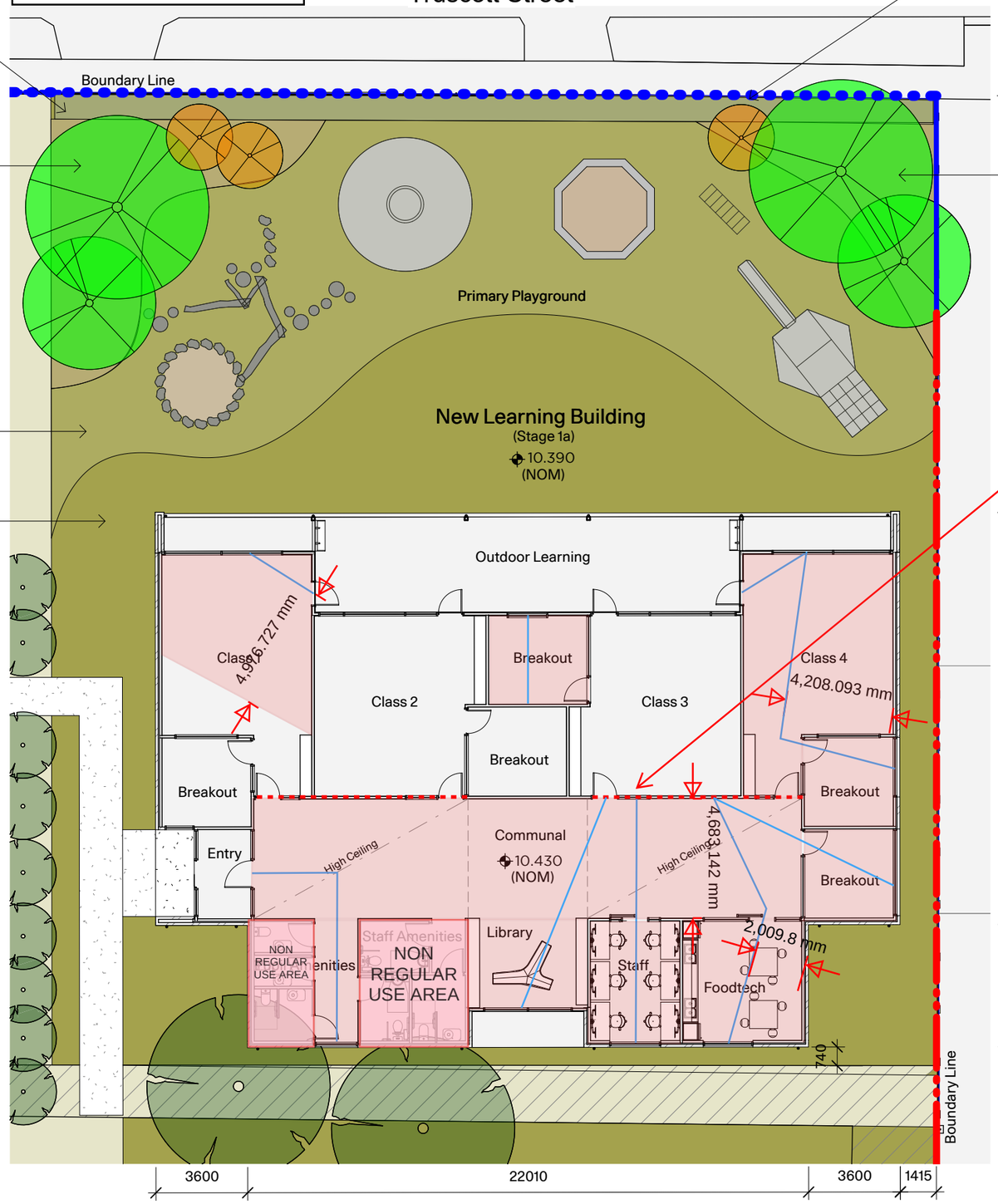
Proposed native trees & mulch to future detail

Proposed active play area to future landscape

Proposed passive play area to future landscape design detail

Proposed metal palisade fencing to match existing height (nom. 1.2m) and color

Proposed native trees & mulch to future detail



High window (operable) locations dashed

66.1% Coverage

Legend

- Drainage Easement
- Circulation
- Landscape to future detail
- Existing Trees
- Proposed Canopy Trees in accordance with Victorian Planning provision 52.37-3 requirements. Tree species to be confirmed
- Proposed shrubs, species to be confirmed
- Proposed metal palisade fencing to match existing height (nom. 1.2m) and color
- Proposed timber panel fence to match existing

Not for construction

PMDL mcglashan everist

MacKillop Family Services - Geelong Campus

Detail Plan - New Learning Building (Stage 1a)

0m 1.6 3.2 4m
Scale 1:200

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Daylight Access

Truscott Street

Proposed hedge and planting to future detail

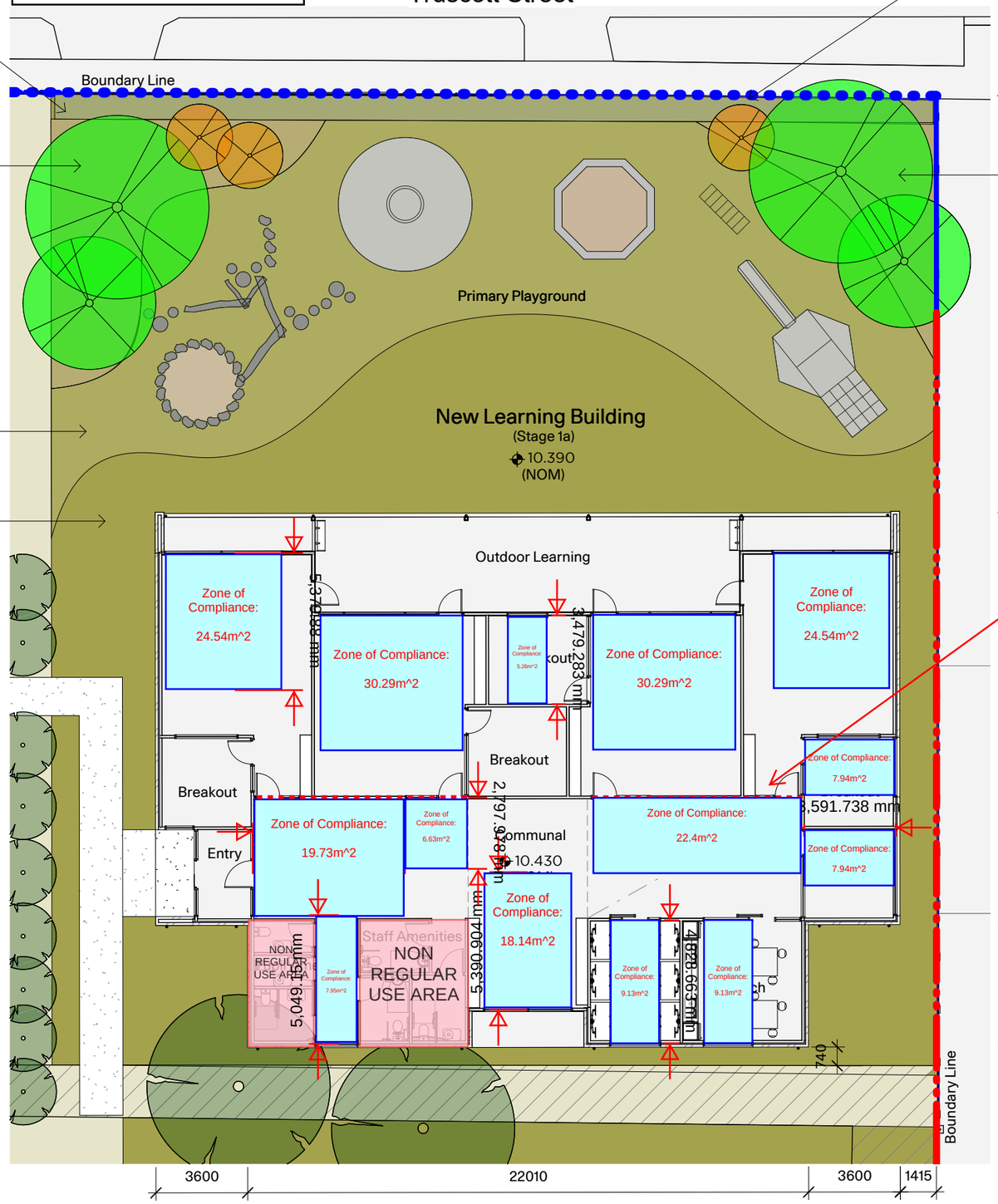
Proposed native trees & mulch to future detail

Proposed active play area to future landscape

Proposed passive play area to future landscape design detail

Proposed metal palisade fencing to match existing height (nom. 1.2m) and color

Proposed native trees & mulch to future detail



54.1% Coverage

High window (operable) locations dashed

Legend

- Drainage Easement
- Circulation
- Landscape to future detail
- Existing Trees
- Proposed Canopy Trees in accordance with Victorian Planning provision 52.37-3 requirements. Tree species to be confirmed
- Proposed shrubs, species to be confirmed
- Proposed metal palisade fencing to match existing height (nom. 1.2m) and color
- Proposed timber panel fence to match existing

ADVERTISED PLAN

Not for construction

PMDL mcglashan everist

MacKillop Family Services - Geelong Campus

Detail Plan - New Learning Building (Stage 1a)

Scale 1:200

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12.0 Appendix E – BLUE FACTOR

AMKAD GROUP
CONSULTING - CONSTRUCTION - MANAGEMENT
ABN 34 640 227 158
81 Mornington Street
North Geelong, Vic. 3215
Phone (03) 5277 0769

PMDL Pty. Ltd.

Stormwater Management Plan for

Proposed Stage 1a Development Mackillop Family Services, Geelong Campus

Project No: 26012

January 2026

Document Name: 26012-DC01

AMKAD Group Pty Ltd
ABN 34 640 227 158
81 Mornington Street
North Geelong VIC 3215
Tel +61 3 5277 0769

1) **Design Criteria for Stormwater Management Plan**

a) Stormwater for the proposed Stage 1A development to be discharged into the existing internal stormwater drainage system, to be determined during the drainage design and documentation phase.

b) On-site detention (OSD) to limit discharge to predevelopment flows from existing site for a 1:5y ARI, and a post development 1:5y ARI (20% AEP) as per the IDM for residential areas (clause 16.6).

c) Water sensitive urban design (WSUD) requirements to satisfy Clause 53.18

2) Stormwater Drainage Design (Stage 1a site area only)

a) Existing Site Area: = 1,300m^2

b) Rainfall Intensity: 1 in 5 Year ARI, (20% AEP) I_5 = 71mm/hr

c) Run-off Co-efficient:

Roof	= 1.0
Pavement	= 0.9
Landscaping	= 0.3

d) Maximum Site Discharge

- Existing Site Area

Roof	= 300m^2
Pavement	= 100m^2
Landscaping	= 900m^2
Total	= 1,300m^2

$$Q_e = \frac{300 \times 71 \times 1.0}{3600} + \frac{100 \times 71 \times 0.9}{3600} + \frac{900 \times 71 \times 0.3}{3600}$$

Q_e = 5.90 l/s + 1.8 l/s + 5.3 l/s

Q_e = 13 l/s

A total permissible discharge rate of 13 l/s shall be allowed for the Stage 1A site development area to discharge to the existing internal stormwater system.

3) On Site Detention – Stage 1a Building 9 Roof Area

a) Storage Requirements - Roof OSD

- Adopted discharge limit for roof area = 6.00 L/S
- Roof catchment area = 600m^2 (Building 9)
- 1 in 5 Year ARI Event
- The proposed building shall have a rainwater tank collecting roof water to be used for OSD and limited to a discharge rate of 6.00 l/s. The rainwater tank will then discharge into the proposed site OSD system.

Building 9 Roof

				Proposed Area	C	%
Area A =	600	m^2		Roof	1.0	100%
				Paving	0.9	0%
C_{ave} =	1.00			Lanscape	0.35	0%
Q_5 =	C_{ave}IA/3600 =		0.17	xI_5		
Q_{limit} =	6.0	L/sec		limit discharge for tank		

On Site Detention Calculation

Duration of Storm (min)	Intensity I_5 (mm/hr)	Runoff Rate Q_5 (L/s)	Q_{limit} L/s	Storage Vol Requirement m^3
5	71	11.83	6.0	1.75
6		0.00	6.0	Nil
10	53	8.83	6.0	1.70
15	43	7.17	6.0	1.05
30	28	4.67	6.0	Nil
60	18	3.00	6.0	Nil
120	11	1.83	6.0	Nil

Example Calculation Vol = (11.8333333333333-6)x5x60/1000 = 1.75m3

ORIFICE PLATE CALCULATIONS

Ao = Q/K(2gH)	therefore	Orifice Area =	0.0029	m3
		Orifice Diameter=	0.061	m
Ao = area of orifice		Check Velocity	2.07	m/s
K =	0.66			
Q = required flow	0.006	m^3/s		
g = gravity	9.81	m/s^2		
H = Head	0.5	m		

Orifice size = **60mm diameter**

Table 3.1 – Building 9 Roof Area

- Minimum tank storage volume required = 1,750 litres
- Therefore adopt 1,800 litres min storage.
- Tank to have a 60mm diameter orifice pipe to restrict flow.

4) **On Site Detention – Stage 1A Site**

a) Storage Requirements –

- Discharge Limit = 13.00 l/s to nominated LPOD via existing internal drains.
- 1 in 5 Year ARI
- Building roof area to discharge 6.0 l/s from rainwater OSD tanks into underground s/w system.
- Refer Table 4.1 for site areas
- Site catchment area = 1,300m^2 – 600m^2 (roof areas) = 5000m^2

Stage 1A Site

(- roof areas into tanks)

			Proposed Area (m2)		C	%
Area A =	700	m^2	Roof	0	1.0	0%
			Paving	200	0.9	29%
C_{ave} =	0.47		Lanscape	500	0.30	71%

Q_5 = $C_{ave}IA/3600$ = 0.09 xI_{10}

Q_{limit} = 13.0 L/sec From existing areas

On Site Detention Calculation

Duration of Storm (min)	Intensity I_5 (mm/hr)	Runoff Rate Q_5 (L/s)	Q_{limit} L/s	From Roofs (l/s)	Storage Vol Requirement m^3
5	71	6.51	13.0	6.0	Nil
6		0.00	13.0	6.0	Nil
10	53	4.86	13.0	6.0	Nil
15	43	3.94	13.0	6.0	Nil
30	28	2.57	13.0	6.0	Nil
60	18	1.65	13.0	6.0	Nil
120	11	1.01	13.0	6.0	Nil

Example Calculation Vol = (6.50833333333333-13)x5x60/1000 = Nilm3

ORIFICE PLATE CALCULATIONS

Ao = Q/K(2gH) therefore Orifice Area = 0.0063 m3

Orifice Diameter= 0.089 m

Ao = area of orifice

Check Velocity 2.07 m/s

K = 0.66

Q = required flow 0.013 m^3/s

g = gravity 9.81 m/s^2

H = Head 0.5 m

Orifice size = **n/a**

Table 4.1 – Stage 1A Site Area

- Therefore no additional underground onsite storage or detention is required for the development.

5) **Water Sensitive Urban Design**

All Building roof run-off shall be collected and discharged into a proposed rainwater tank for re-use in the development for toilet flushing and garden irrigation.
Refer to Blue Factor report below for further details.
To further improve the Blue Factor report and achieve all objectives, including the Total suspended solids target of greater than 80%, all rainwater tank overflow will be connected into the raingarden for further treatment before discharging from site via the existing internal drainage system.

Project # 58BF7B31 - MFS - stage 1a
25 Oxford St, Whittington VIC 3219, Australia
28 January 2026 10:32 a.m.

BLUE FACTOR

MFS - stage 1a

The proposed stormwater treatments provide 'deemed to comply' compliance with the minimum planning requirement for total nitrogen but does not comply with all the relevant objectives for management of stormwater flows on-site.

151%
SCORE

Project details

Name	MFS - stage 1a
Street address	25 Oxford St, Whittington VIC 3219, Australia
Municipality	Greater Geelong
Site area	1300 m^2
Planning Number	

Flow and pollutant load reductions

Item	Result	Target
Mean annual runoff volume harvested or evapotranspired (%)	43%	>28%
Mean annual runoff volume infiltrated or filtered (%)	14%	>9%
Total suspended solids (%)	77%	>80%
Total phosphorus (%)	69%	>45%
Total nitrogen (%)	68%	>45%
Total gross pollutants (%)	95%	>70%

Water treatment

Catchments

Building 9 Roof 600m2

Paved play area 300m2

bluefactor.com.au

Page 1 of 3

landscaping Pervious (garden and lawn), 400m2

Treatments

Rainwater Tank 1
Rainwater tank retention volume in kilolitres: 7

Raingarden 1 Area: 3 m^2, Extended detention depth: 0.3 m, Submerged zone depth: 0.3 m, Site soil type: Sandy loam

Buildings & dwellings

Building 9 Non-Residential BCA Class 5 - Commercial/Office, 30 employee(s)

Configuration 2

Paved play area 300m2

Raingarden 1 Area: 3 m^2, Extended detention depth: 0.3 m, Submerged zone depth: 0.3 m, Site soil type: Sandy loam,

Configuration 2

Building 9 Roof 600m2

Rainwater Tank 1
Rainwater tank retention volume in kilolitres: 7,

Building 9 Non-Residential BCA Class 5 - Commercial/Office, 30 employee(s)

Australian Government
Bureau of Meteorology

Location

Label: Not provided

Latitude: -38.1475 [Nearest grid cell: 38.1375 (S)]

Longitude:144.3527 [Nearest grid cell: 144.3625 (E)]

IFD Design Rainfall Intensity (mm/h)

Issued: 28 January 2026

Rainfall intensity for Durations, Exceedance per Year (EY), and Annual Exceedance Probabilities (AEP).
FAQ for New ARR probability terminology

	Annual Exceedance Probability (AEP)						
Duration	**63.2%**	**50%#**	**20%***	**10%**	**5%**	**2%**	**1%**
1 min	65.9	76.5	112	137	164	201	232
2 min	54.0	62.6	91.0	111	131	156	177
3 min	49.0	56.7	82.2	100	118	142	161
4 min	45.2	52.3	75.8	92.6	110	133	151
5 min	42.1	48.7	70.6	86.4	103	125	143
10 min	31.4	36.5	53.2	65.6	78.4	96.8	112
15 min	25.4	29.5	43.2	53.3	63.9	79.1	91.6
20 min	21.5	24.9	36.6	45.2	54.2	67.1	77.6
25 min	18.7	21.8	32.0	39.5	47.2	58.4	67.4
30 min	16.7	19.4	28.5	35.1	42.0	51.8	59.8
45 min	12.9	14.9	21.8	26.8	31.9	39.1	44.9
1 hour	10.7	12.4	17.9	21.9	26.1	31.8	36.4
1.5 hour	8.25	9.49	13.6	16.5	19.5	23.6	26.9
2 hour	6.91	7.90	11.2	13.5	15.9	19.2	21.8
3 hour	5.42	6.14	8.52	10.2	12.0	14.4	16.3
4.5 hour	4.29	4.82	6.57	7.82	9.11	10.9	12.4
6 hour	3.64	4.07	5.49	6.51	7.56	9.06	10.3
9 hour	2.89	3.22	4.30	5.07	5.87	7.05	7.99
12 hour	2.45	2.72	3.62	4.27	4.94	5.94	6.74
18 hour	1.92	2.13	2.85	3.36	3.89	4.68	5.32

Note:
The 50% AEP IFD **does not** correspond to the 2 year Average Recurrence Interval (ARI) IFD. Rather it corresponds to the 1.44 ARI.
* The 20% AEP IFD **does not** correspond to the 5 year Average Recurrence Interval (ARI) IFD. Rather it corresponds to the 4.48 ARI.

This page was created at **08:36 on Wednesday 28 January 2026 (AEDT)**

AMKAD GROUP
CONSULTING - CONSTRUCTION - MANAGEMENT
ABN 34 640 227 158
81 Mornington Street
North Geelong, Vic. 3215
Phone (03) 5277 0769

PMDL Pty. Ltd.

Stormwater Management Plan for

Proposed Stage 1b Development Mackillop Family Services, Geelong Campus

Project No: 26012

January 2026

Document Name: 26012-DC02

AMKAD Group Pty Ltd
ABN 34 640 227 158
81 Mornington Street
North Geelong VIC 3215
Tel +61 3 5277 0769

1) **Design Criteria for Stormwater Management Plan**

a) Stormwater for the proposed Stage 1b development to be discharged into the existing internal stormwater drainage system, to be determined during the drainage design and documentation phase.

b) On-site detention (OSD) to limit discharge to predevelopment flows from existing site for a 1:5y ARI, and a post development 1:5y ARI (20% AEP) as per the IDM for residential areas (clause 16.6).

c) Water sensitive urban design (WSUD) requirements to satisfy Clause 53.18

2) Stormwater Drainage Design (Stage 1b site area only)

a) Existing Site Area: = 700m^2

b) Rainfall Intensity: 1 in 5 Year ARI, (20% AEP) I_5 = 71mm/hr

c) Run-off Co-efficient:

Roof	= 1.0
Pavement	= 0.9
Landscaping	= 0.3

d) Maximum Site Discharge

- Existing Site Area

Roof	=	350m^2
Pavement	=	350m^2
Landscaping	=	0m^2
Total	=	700m^2

$$Q_e = \frac{350 \times 71 \times 1.0}{3600} + \frac{350 \times 71 \times 0.9}{3600}$$

Q_e = 6.90 l/s + 6.2 l/s

Q_e = 13 l/s

A total permissible discharge rate of 13 l/s shall be allowed for the Stage 1b site development area to discharge to the existing internal stormwater system.

3) On Site Detention – Stage 1b Building 10 Roof Area

a) Storage Requirements - Roof OSD

- Adopted discharge limit for roof area = 6.00 L/S
- Roof catchment area = 500m² (Building 10)
- 1 in 5 Year ARI Event
- The proposed building shall have a rainwater tank collecting roof water to be used for OSD and limited to a discharge rate of 6.00 l/s. The rainwater tank will then discharge into the proposed site OSD system.

Building 10 Roof

(remainder direct to site)

Area A =	500	m²		Proposed Area	C	%
				Roof	1.0	100%
				Paving	0.9	0%
C_{ave} =	1.00			Lanscape	0.35	0%
Q_5 =	$C_{ave}IA/3600$ =		0.14	xI_5		
Q_{limit} =	6.0	L/sec		limit discharge for tank		

On Site Detention Calculation

Duration of Storm (min)	Intensity I_5 (mm/hr)	Runoff Rate Q_5 (L/s)	Q_{limit} L/s	Storage Vol Requirement m³
5	71	9.86	6.0	1.16
6		0.00	6.0	Nil
10	54	7.50	6.0	0.90
15	43	5.97	6.0	Nil
30	29	4.03	6.0	Nil
60	18	2.50	6.0	Nil
120	11	1.53	6.0	Nil

Example Calculation Vol = (9.86111111111111-6)x5x60/1000 = 1.15833333333333m3

ORIFICE PLATE CALCULATIONS

Ao = Q/K(2gH)	therefore	Orifice Area =	0.0026	m3
		Orifice Diameter=	0.058	m
Ao = area of orifice		Check Velocity	2.26	m/s
K =	0.66			
Q = required flow	0.006	m³/s		
g = gravity	9.81	m/s²		
H = Head	0.6	m		

Orifice size = **60mm diameter**

Table 3.1 – Building 10 Roof Area

- Minimum tank storage volume required = 1,160 litres
- Therefore adopt 1,200 litres min storage.
- Tank to have a 60mm diameter orifice pipe to restrict flow.

4) **On Site Detention – Stage 1B Site**

a) Storage Requirements –

- Discharge Limit = 13.00 l/s to nominated LPOD via existing internal drains.
- 1 in 5 Year ARI
- Building roof area to discharge 6.0 l/s from rainwater OSD tanks into underground s/w system.
- Refer Table 4.1 for site areas
- Site catchment area = 700m^2 – 500m^2 (roof areas) = 200m^2

Stage 1B site

(- roof areas into tanks)

				Proposed Area (m2)		C	%
Area A =	200	m^2		Roof	0	1.0	0%
				Paving	200	0.9	100%
C_{ave} =	0.90			Lanscape	0	0.30	0%

Q_5 = $C_{ave}IA/3600$ = 0.05 xI_{10}

Q_{limit} = 13.0 L/sec From existing areas

On Site Detention Calculation

Duration of Storm (min)	Intensity I_5 (mm/hr)	Runoff Rate Q_5 (L/s)	Q_{limit} L/s	From Roofs (l/s)	Storage Vol Requirement m^3
5	71	3.55	13.0	6.0	Nil
6		0.00	13.0	6.0	Nil
10	54	2.70	13.0	6.0	Nil
15	43	2.15	13.0	6.0	Nil
30	29	1.45	13.0	6.0	Nil
60	18	0.90	13.0	6.0	Nil
120	11	0.55	13.0	6.0	Nil

Example Calculation Vol = (3.55-13)x5x60/1000 = Nilm3

ORIFICE PLATE CALCULATIONS

Ao = Q/K(2gH) therefore

Ao = area of orifice

Orifice Area =	0.0057		m3
Orifice Diameter=	0.085		m
Check Velocity	2.26		m/s

K = 0.66

Q = required flow 0.013 m^3/s

g = gravity 9.81 m/s^2

H = Head 0.6 m

Orifice size = **N/A**

Table 4.1 – Stage 1B Site Area

- Therefore no additional underground onsite storage or detention is required for the development.

5) **Water Sensitive Urban Design**

All Building roof run-off shall be collected and discharged into a proposed rainwater tank for re-use in the development for toilet flushing and garden irrigation.
Refer to Blue Factor report below for further details.
To further improve the Blue Factor report and achieve all objectives, including the Total suspended solids target of greater than 80%, all rainwater tank overflow will be connected into the raingarden for further treatment before discharging from site via the existing internal drainage system.

Project # D0529498 - MFS - Stage 1B
25 Oxford St, Whittington VIC 3219, Australia
28 January 2026 10:38 a.m.

BLUE FACTOR®

MFS - Stage 1B

The proposed stormwater treatments provide 'deemed to comply' compliance with the minimum planning requirement for total nitrogen but does not comply with all the relevant objectives for management of stormwater flows on-site.

125% SCORE

Project details

Name	MFS - Stage 1B
Street address	25 Oxford St, Whittington VIC 3219, Australia
Municipality	Greater Geelong
Site area	700 m^2
Planning Number	

Flow and pollutant load reductions

Item	Result	Target
Mean annual runoff volume harvested or evapotranspired (%)	54%	>28%
Mean annual runoff volume infiltrated or filtered (%)	0%	>9%
Total suspended solids (%)	68%	>80%
Total phosphorus (%)	64%	>45%
Total nitrogen (%)	56%	>45%
Total gross pollutants (%)	96%	>70%

Water treatment

Catchments

Building 10 Roof, 600m2

Catchment 2 Pervious (garden and lawn), 100m2

bluefactor.com.au Page 1 of 2

Treatments

Rainwater Tank 1
Rainwater tank retention volume in kilolitres: 7

Buildings & dwellings

Building 10 Non-Residential BCA Class 5 - Commercial/Office,
20 employee(s)

Configuration 1

Building 10 Roof, 600m2

Rainwater Tank 1
Rainwater tank retention volume in kilolitres: 7,

Building 10
Non-Residential BCA Class 5 - Commercial/Office,
20 employee(s)

Australian Government
Bureau of Meteorology

Location

Label: Not provided

Latitude: -38.1475 [Nearest grid cell: 38.1375 (S)]

Longitude:144.3527 [Nearest grid cell: 144.3625 (E)]

IFD Design Rainfall Intensity (mm/h)

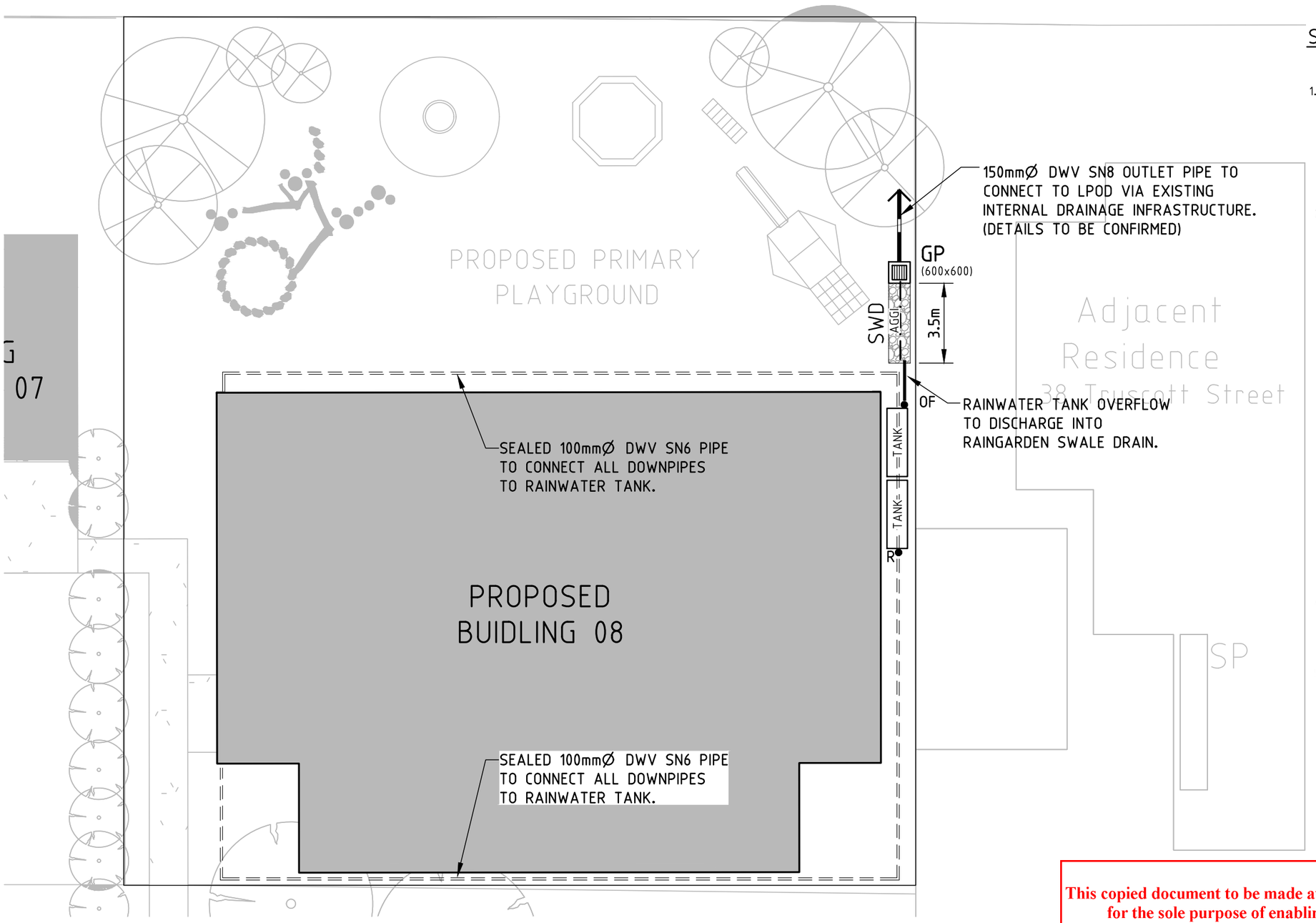
Issued: 28 January 2026

Rainfall intensity for Durations, Exceedance per Year (EY), and Annual Exceedance Probabilities (AEP).
FAQ for New ARR probability terminology

	Annual Exceedance Probability (AEP)						
Duration	**63.2%**	**50%#**	**20%***	**10%**	**5%**	**2%**	**1%**
1 min	65.9	76.5	112	137	164	201	232
2 min	54.0	62.6	91.0	111	131	156	177
3 min	49.0	56.7	82.2	100	118	142	161
4 min	45.2	52.3	75.8	92.6	110	133	151
5 min	42.1	48.7	70.6	86.4	103	125	143
10 min	31.4	36.5	53.2	65.6	78.4	96.8	112
15 min	25.4	29.5	43.2	53.3	63.9	79.1	91.6
20 min	21.5	24.9	36.6	45.2	54.2	67.1	77.6
25 min	18.7	21.8	32.0	39.5	47.2	58.4	67.4
30 min	16.7	19.4	28.5	35.1	42.0	51.8	59.8
45 min	12.9	14.9	21.8	26.8	31.9	39.1	44.9
1 hour	10.7	12.4	17.9	21.9	26.1	31.8	36.4
1.5 hour	8.25	9.49	13.6	16.5	19.5	23.6	26.9
2 hour	6.91	7.90	11.2	13.5	15.9	19.2	21.8
3 hour	5.42	6.14	8.52	10.2	12.0	14.4	16.3
4.5 hour	4.29	4.82	6.57	7.82	9.11	10.9	12.4
6 hour	3.64	4.07	5.49	6.51	7.56	9.06	10.3
9 hour	2.89	3.22	4.30	5.07	5.87	7.05	7.99
12 hour	2.45	2.72	3.62	4.27	4.94	5.94	6.74
18 hour	1.92	2.13	2.85	3.36	3.89	4.68	5.32

Note:
The 50% AEP IFD **does not** correspond to the 2 year Average Recurrence Interval (ARI) IFD. Rather it corresponds to the 1.44 ARI.
* The 20% AEP IFD **does not** correspond to the 5 year Average Recurrence Interval (ARI) IFD. Rather it corresponds to the 4.48 ARI.

This page was created at **08:36 on Wednesday 28 January 2026 (AEDT)**



STORMWATER DRAINAGE GENERAL NOTES

1. ▬▬▬ INDICATES UPVC DWV SN4 STORMWATER PIPES TO AS-1260 WITH SOLVENT WELDED JOINTS.
MAIN LINE SIZES AND FALLS AS INDICATED ON PLANS.

= = = = = = INDICATES SEALED 100mmØ DWV SN6 STORMWATER PIPE SYSTEM CONNECTING DOWNPIPES TO RAINWATER TANK INLETS. CONTRACTOR TO TEST SEALED LINES FOR ANY LEAKS.

2. TANK — INDICATES NEW 5,000 LITRE (MIN) RAINWATER TANK INSTALLED TO MANUFACTURER'S DETAILS.
PROVIDE 100mmØ RISER INLET FROM DOWNPIPES, AND 100mmØ OVERFLOW OUTLET PIPE CONNECTED TO EXISTING STORMWATER SYSTEM.

● R — INDICATES 100mmØ RISER CONNECTED INTO TANK INLET. SEALED WATER TIGHT.

● OF — INDICATES 100mmØ OVERFLOW CONNECTED TO STORMWATER SYSTEM.

3. GP — INDICATES NEW PRECAST CONCRETE GRATED PIT.
REFER TO TYPICAL DETAIL OR ADOPT TYPICAL PIT DETAILS AS SUPPLIED BY PIT MANUFACTURER.
ALT: ADOPT PROPRIETARY GRATED PIT SYSTEM ON APPROVAL FROM PROJECT ARCHITECT (e.g. ACODRAIN TYPE 45 OR TYPE 66 PIT OR APPROVED EQUIVALENT).
PROPRIETARY STORMWATER PITS TO BE INSTALLED TO MANUFACTURER'S SPECIFICATIONS AND DETAILS.

SWD — INDICATES NEW 900mm WIDE x 3500mm (MIN) LONG BIORETENTION SWALE DRAIN (RAINGARDEN). REFER STANDARD DETAIL.
FINAL RAINGARDEN LOCATION TO BE DETERMINED WITH ARCHITECT AND LANDSCAPE ARCHITECT DURING DOCUMENTATION STAGE.

4. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION INCLUDING STRUCTURAL, SERVICES, SURVEYING & ARCHITECTURAL. ALL POTENTIAL CLASHES OF SERVICES, ETC. ARE TO BE REPORTED TO THE ENGINEERS/ARCHITECTS FOR RESOLUTION.

5. ALL STORMWATER DRAINAGE WORKS TO COMPLY WITH AS-3500 AND RELEVANT PLUMBING CODES OF PRACTICE.

STAGE 1a STORMWATER DRAINAGE LAYOUT PLAN

SCALE 1 : 200

ADVERTISED PLAN

EXISTING SERVICES

REFER TO ARCHITECT AND RELEVANT SURVEY PLANS FOR LOCATIONS OF ALL EXISTING UNDERGROUND AND ABOVE GROUND SERVICES. THE CONTRACTOR IS TO LOCATE AND VERIFY SERVICES ON SITE PRIOR TO EXCAVATION WORKS. ANY DAMAGE TO EXISTING SERVICES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

CLIENT

PMDL Architects

-

Suite 8, 265 Pakington Street
Newtown, Vic. 3220

REV.	REMARKS	DATE
P1	PRELIM ISSUE FOR REVIEW	29.1.26

REVISIONS

N

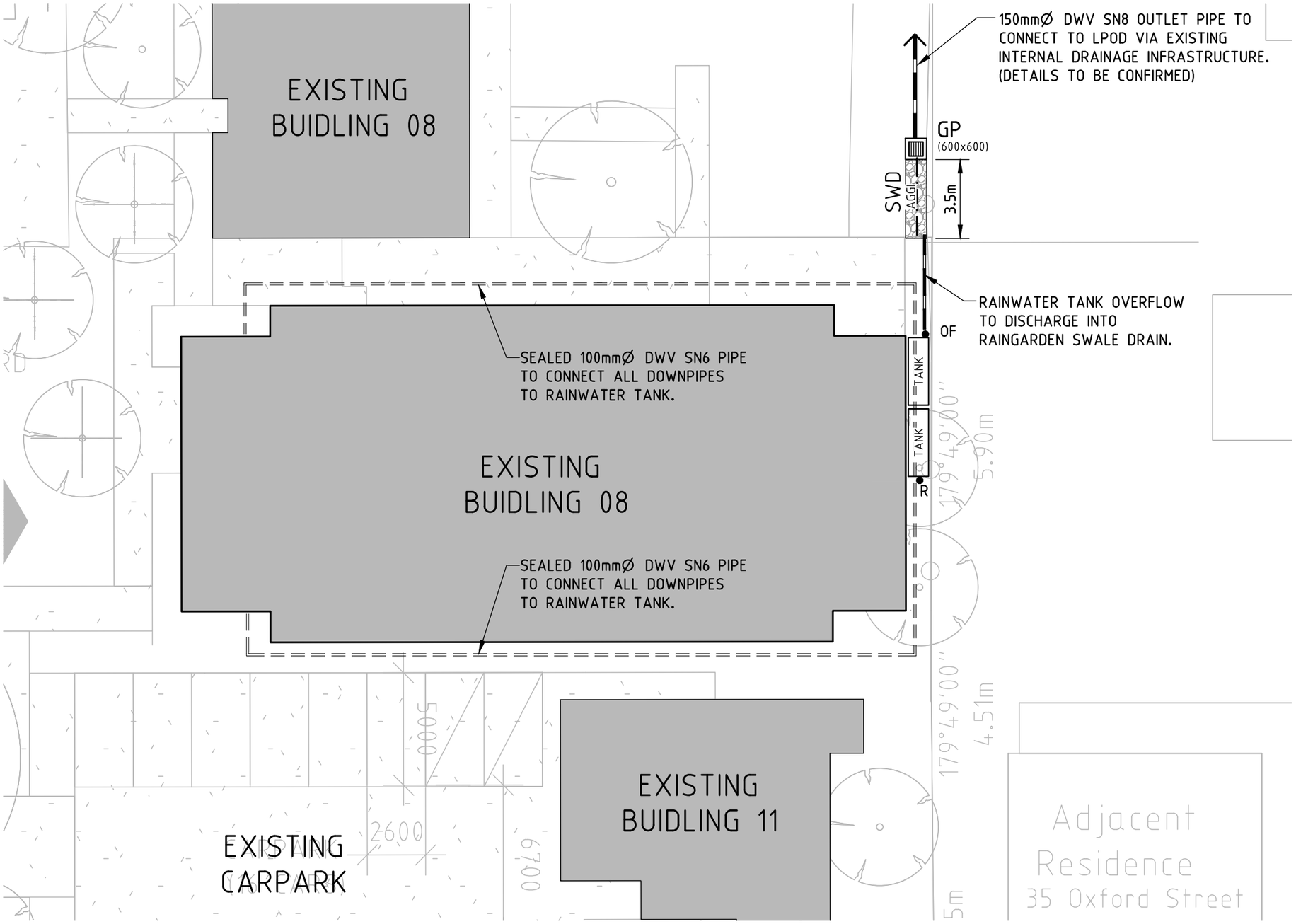
AMKAD GROUP
CONSULTING - CONSTRUCTION - MANAGEMENT
ABN 34 640 227 158
81 Mornington Street
North Geelong, Vic. 3215
Phone (03) 5277 0769

DESIGNED	DATE
K. Dawber	Jan 2026
DRAWN	SCALE AT A3 SIZE
K. Dawber	1:200

DRAWING DETAILS

Mackillop Family Services, Geelong
25 Oxford Street, Whittington
Stage1a Stomrwater Management Plan

DRAWING NUMBER	SHEET	OF	REV.	SHEET SIZE
26012	— C1 —	3	P1	A3



ADVERTISED PLAN

STAGE 1b STORMWATER DRAINAGE LAYOUT PLAN

SCALE 1 : 200

REFER GENERAL NOTES ON SHEET C1

CLIENT

PMDL Architects

-

Suite 8, 265 Pakington Street
Newtown, Vic. 3220

REV.	REMARKS	DATE
P1	PRELIM ISSUE FOR REVIEW	29.1.26

REVISIONS

N

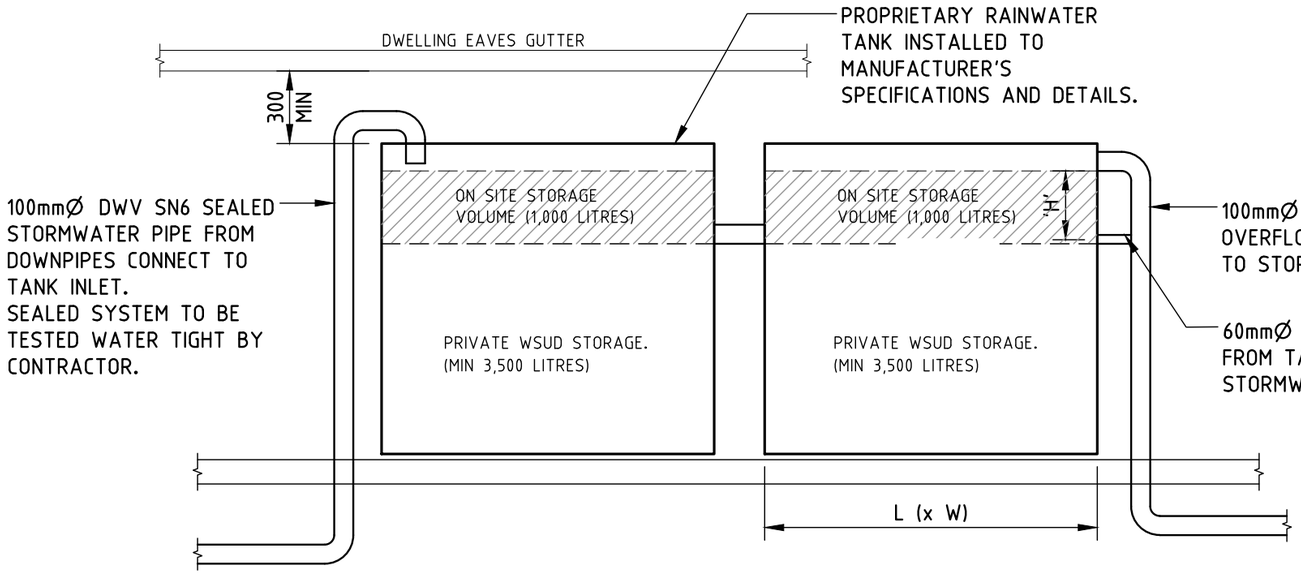
AMKAD GROUP
CONSULTING - CONSTRUCTION - MANAGEMENT
ABN 34 640 227 158
81 Mornington Street
North Geelong, Vic. 3215
Phone (03) 5277 0769

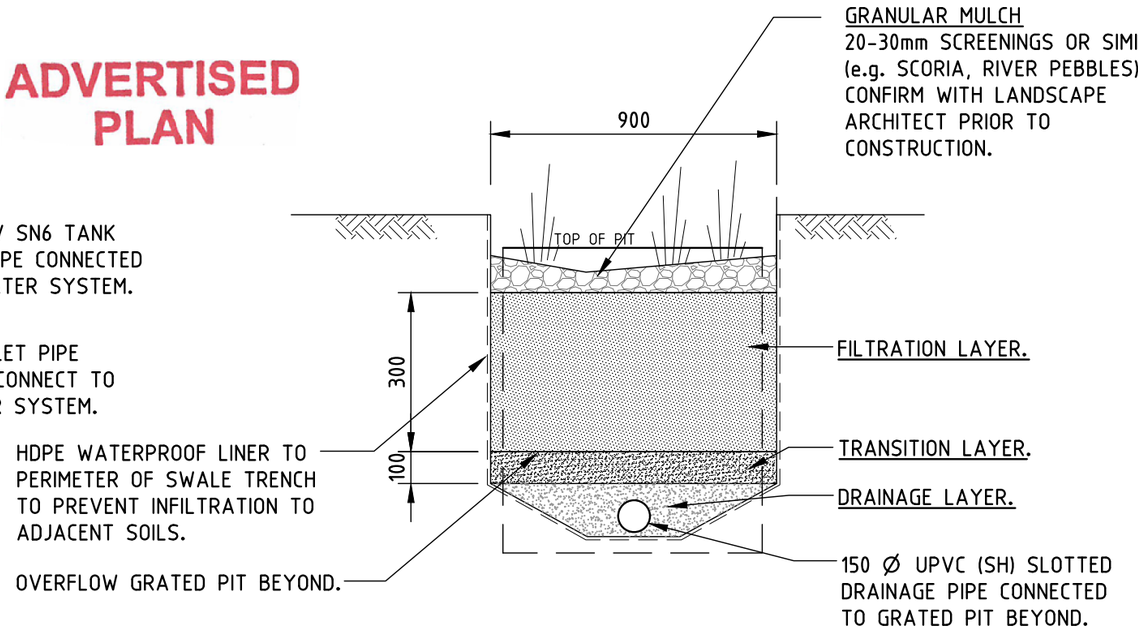
DESIGNED	DATE
K. Dawber	Jan 2026
DRAWN	SCALE AT A3 SIZE
K. Dawber	1:200

DRAWING DETAILS

Mackillop Family Services, Geelong
25 Oxford Street, Whittington
Stage 1b Stomrwater Management Plan

DRAWING NUMBER	SHEET	OF	REV.	SHEET SIZE
26012	— C2 —	3	P1	A3





UNIT WSUD & OSD RAINWATER TANK DETAIL

SCALE: NTS

NOTE: MINIMUM OSD STORAGE VOLUME TO BE 7,000 LITRES ($7.0m^3$) FOR ON SITE DETENTION REQUIREMENTS. HEIGHT 'H' OF 60mmØ OUTLET PIPE WILL DEPEND ON TANK DIMENSIONS.

PLUMBING CONTRACTOR TO CONFIRM HEIGHT OF ORIFICE OUTLET FROM TANK OVERFLOW WITH CONSULTING ENGINEER TO ENSURE CORRECT STORAGE VOLUME IS ACHIEVED.

TYPICAL BIORETENTION SWALE DETAIL

FILTER MATERIAL
CLEAN, WELL GRADED SAND/COARSE SAND MATERIAL CONTAINING LITTLE OR NO FINES AND MINIMAL CLAY CONTENT.

TRANSITION LAYER
CLEAN, WELL GRADED SAND/COARSE SAND MATERIAL CONTAINING LITTLE OR NO FINES.

DRAINAGE LAYER
CLEAN, FINE GRAVEL, SUCH AS 2-5mm WASHED SCREENINGS. PROVIDE 50mm MIN COVER TO TOP OF AGGI DRAIN.

REFER ALSO TO THE FACILITY FOR ADVANCING WATER BIOFILTRATION SPECIFICATION "GUIDELINES FOR SOIL MEDIA IN BIORETENTION SYSTEMS - MARCH 2008"

CLIENT
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-
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REV.	REMARKS	DATE
P1	PRELIM ISSUE FOR REVIEW	29.1.26

REVISIONS

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DESIGNED K. Dawber | DATE Jan 2026
DRAWN K. Dawber | SCALE AT A3 SIZE NTS

DRAWING DETAILS
Mackillop Family Services, Geelong
75-83 St Albans Road, Thomson
Typcial Details

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