

AQUINAS COLLEGE – YEAR 9

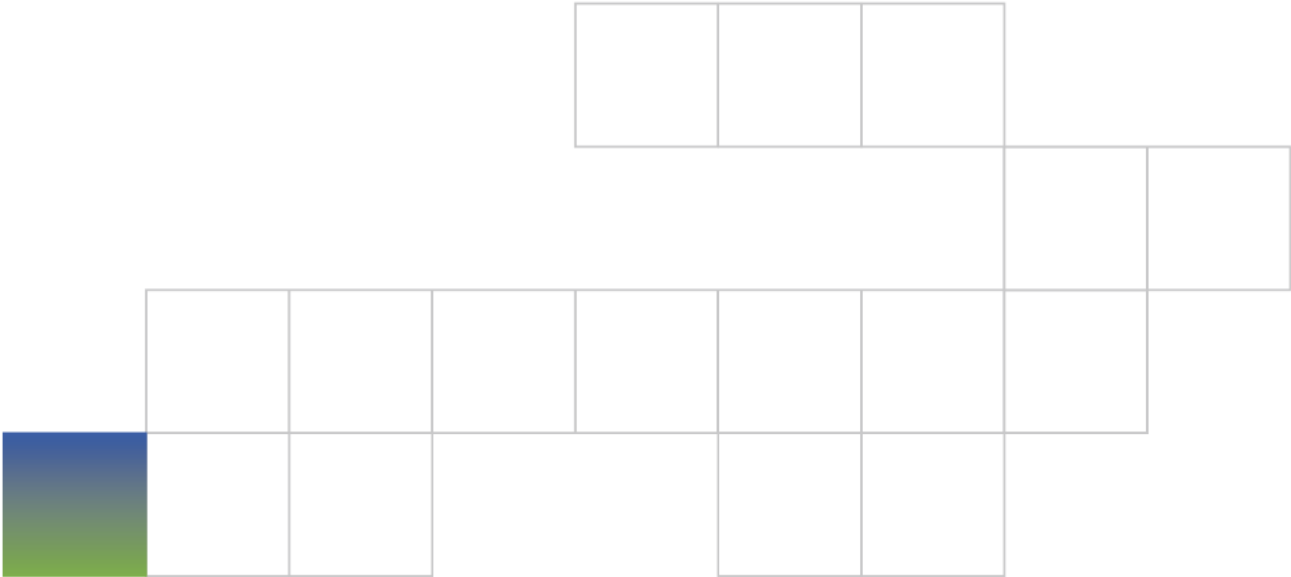
SUSTAINABILITY MANAGEMENT PLAN

ADVERTISED
PLAN

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

Date: 16 April 2025

Document Number: LCE101605-008



DOCUMENT ISSUE REGISTER

PROJECT: AQUINAS COLLEGE – YEAR 9
PROJECT REF: 101605

REVISION	DESCRIPTION	DATE ISSUED	AUTHOR	REVIEWED
0	Draft issue	22.11.2024	KK	JF
1	TP Submission	16.04.2025	KK	JF

**ADVERTISED
PLAN**

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

CONTENTS

1.	INTRODUCTION	4
2.	KEY ESD INITIATIVES	4
3.	DESCRIPTION OF DEVELOPMENT	5
4.	SUSTAINABLE DESIGN ASSESSMENT IN THE PLANNING PROCESS (SDAPP)	6
4.1	SDAPP	6
4.2	CITY OF MAROONDAH CLAUSE 15.01-2L	7
4.3	CITY OF MAROONDAH PLANNING SCHEME CLAUSE 53.18	7
5.	SDAPP ASSESSMENT FRAMEWORK: BESS	8
6.	ESD INITIATIVES	9
6.1	MANAGEMENT	9
6.2	INDOOR ENVIRONMENT QUALITY	10
6.3	ENERGY EFFICIENCY	11
6.4	WATER EFFICIENCY	12
6.5	ECOLOGY	13
6.6	EMISSIONS - STORMWATER MANAGEMENT	14
6.7	WASTE MANAGEMENT	15
7.	SUMMARY OF ESD PERFORMANCE	15
	APPENDIX A – BESS REPORT	17
	APPENDIX B – PRELIMINARY SECTION J ENVELOPE ASSESSMENT	18
	APPENDIX C – WSUD / STORMWATER MANAGEMENT REPORT	19

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

**ADVERTISED
PLAN**

1. INTRODUCTION

This Sustainability Management Plan (SMP) provides an overview of the sustainability initiatives that have been assessed for inclusion in the proposed non-residential development (Class 9b) Aquinas College located at 46 Great Ryrie St, Ringwood, VIC 3134.

This SMP provides a comprehensive summary of the assessment of this development against the applicable ESD frameworks at the planning stage.

An SMP identifies beneficial, easy to implement and best practice sustainability initiatives in line with the Sustainable Design Assessment in the Planning Process (SDAPP) framework. This includes:-

- A practical approach to assessing sustainable development matters during the planning permit application process.
- The consistent inclusion of key environmental performance considerations into the planning approvals process.
- A guide to achieving more sustainable building outcomes for the long-term benefit of the wider community.

The initiatives proposed provide a holistic approach to sustainability within the built environment with a focus on energy efficiency, indoor environment quality, management practices, stormwater quality and water efficiency.

2. KEY ESD INITIATIVES

The key ESD initiatives in the proposed development will include:

- High-efficiency all-electric DX type heating and cooling system.
- DHW via high-efficient heat-pump system.
- Increase outside air rates to all classrooms (+50% above AS1668.2 requirements).
- Excellent indoor air quality through the application of low TVOC emission materials including paints, sealants, adhesives, floor finishes and engineered wood products.
- Appropriate external shading is provided to the east, west and north facades.
- Provision of a significant extent of external communal areas.
- Provision of access to daylight to enhance indoor environment quality and reduce reliance on artificial lighting. The glazing will have a minimum VLT of 60%.
- High-efficiency LED lighting providing for improvements beyond minimum NCC Section J 2022 illumination power density requirements.
- Compliance with best-practice stormwater quality objectives, including a 15kL rainwater harvesting and re-use system for irrigation and toilet flushing as per SWMP.
- High water efficiency fixtures, fittings and appliances reducing the dependence on potable water resources.
- Sub-metering for all relevant water and energy end-uses as per NCC Section J, BESS and VSBA BQSH guidelines.
- The inclusion of a solar PV renewable energy system providing an installed DC capacity of not less than 30kW_p for the Year 9 building.
- Integration of ecology and vegetation into the design with Ground Level landscaped areas.

On the basis of the above key initiatives, the Aquinas College development achieves a Built Environment Sustainability Score (BESS) of **56%**.

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

ADVERTISED
PLAN

3. DESCRIPTION OF DEVELOPMENT

Table 1 – Project Details

Building Elements	Project Details
Site Address	Great Ryrie St, Ringwood 3134
Description	Year 9 Building Classrooms, amenities and office spaces
Municipality	City of Maroondah
Building Classification	Class 9b School
GFA	~1,390m ²
Site Area	~3,600 m ²

Figure 1 displays the site location and general arrangement of the proposed development.



Figure 1 – General Site Location and Arrangement

**ADVERTISED
PLAN**

4. SUSTAINABLE DESIGN ASSESSMENT IN THE PLANNING PROCESS (SDAPP)

4.1 SDAPP

Sustainability or Ecological Sustainable Development (ESD) are terms that are typically used to describe the intent to balance the elements of society, economics and the environment.

Sustainable Design Assessment in the Planning Process (SDAPP) is the framework used to achieve ESD outcomes in the planning process. This process specifically responds to the State Policy Planning Framework (SPPF), local Structure Plans, Municipal Strategic Statements and planning overlays.

SDAPP was developed to achieve a harmonised approach to ESD outcomes within the planning process and;

- Recognises the role of the Responsible Authority as a statutory authority for planning matters.
- Provides a framework for consideration of sustainable design elements of planning applications.
- Offers a consistent method for identifying opportunities for improved environmental building performance, and
- Ensures that sustainability is considered at the very early design phase.

Through local planning requirements, SDAPP framework calls up a number of sustainability rating tools which can be used to demonstrate performance criteria have been achieved for the purposes of planning assessment. These include

- **Built Environment Sustainability Scorecard (BESS):** This tool was developed by the Municipal Association of Victoria (MAV) and is only used within Victoria and limited to the planning process only.
- **Green Star:** This tool is the industry standard green building tool and was developed by the Green Building Council of Australia (GBCA). Green Star is used broadly by the property and construction sector, nationally, to drive sustainability outcomes.

SDAPP and the preparation of an SMP outlining performance against referenced sustainability rating frameworks addresses the specific requirements of the planning scheme as applicable to the Relevant Authority.

For this development the applicable planning scheme policy specific to ESD is outlined within Table 2.

Table 2 – Sustainability Policy & Assessment Frameworks

Responsible Authority or LGA	Planning Scheme Policy
City of Maroondah	Clause 15.01-2L-01 Environmentally Sustainable Development Clause 53.18 Stormwater Management in Urban Development

The particulars of City of Maroondah's Planning Scheme Clause 15.01-2L and 53.18 are discussed below.

**ADVERTISED
PLAN**

4.2 CITY OF MAROONDAH CLAUSE 15.01-2L

Clause 15.01-2L applies within the City of Maroondah to residential and non-residential development. The overarching objective is that development should achieve “**best practice**” in ESD from the design stage through to construction and operation.

The application requirements contained in Clause 15.01-2L-01 are outlined in Figure 2. Based on development type and size, these define the application requirements and the permissible ESD assessment tools that can be used.

Non-residential

A Sustainable Design Assessment (including an assessment using BESS and STORM /MUSIC or other methods) for:

- A non-residential building with a gross floor area of between 500sqm to 999sqm.
- An extension to an existing non-residential building creating between 500sqm to 999sqm of additional gross floor area.

A Sustainability Management Plan (including an assessment using BESS/Green star, STORM/MUSIC or other methods) and a Green Travel Plan for:

- A non-residential building with a gross floor area of more than 1000sqm.
- An extension to an existing non-residential building creating more than 1000sqm of additional gross floor area.

Per Clause 15.01-2L-01, this development is stilling the submission of a Sustainability Management Plan using the Built Environment Sustainability Scorecard (BESS) rating system as the assessment framework as outlined in Table 3.

Table 3 – ESD Application Response (Aquinas College)

Development Type	Application Document	Assessment Tool
Non-Residential Development	Sustainability Management Plan	BESS

4.3 CITY OF MAROONDAH PLANNING SCHEME CLAUSE 53.18

Clause 53.18 applies within the City of Maroondah to residential and non-residential development. The overarching objective is to ensure that stormwater in urban development, including retention and reuse, is managed to mitigate the impacts of stormwater on the environment, property and public safety, and to provide cooling, local habitat and amenity benefits.

The main design criteria to meet this objective are per below and further addressed in detail within Appendix C of this SMP by the Civil Engineer.

**ADVERTISED
PLAN**

- Meet the current best practice performance objectives for stormwater quality as contained in the Urban Stormwater - Best Practice Environmental Management Guidelines (Victorian Stormwater Committee, 1999).
- Minimise the impact of chemical pollutants and other toxicants including by, but not limited to, bunding and covering or roofing of storage, loading and work areas.
- Contribute to cooling, improving local habitat and providing attractive and enjoyable spaces

5. SDAPP ASSESSMENT FRAMEWORK: BESS

The Built Environment Sustainability Scorecard (BESS) tool is a performance-based tool with a number of categories and design criteria, similar to other sustainability benchmarking systems. BESS includes the following sustainability categories:

- Management
- Energy
- Water
- Stormwater
- Indoor Environment Quality (IEQ)
- Transport
- Waste
- Urban Ecology, and
- Innovation



This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

The required design criteria or design performance contributes to an overall percentage (%) category score. Summation of the individual category scores provides an overall development score.

To comply with minimum requirements, a development must achieve a BESS score of not less than 50%. In addition, minimum performance must be achieved within the following categories:

- Water – 50%
- Energy – 50%
- Stormwater – 100%
- Indoor Environment Quality – 50%

Per SMP and Clause 15.01 of the City of Maroondah Planning Scheme, the Aquinas College development has defined specific ESD initiatives to exceed the minimum BESS outcome. This is summarised in Table 5.

**ADVERTISED
PLAN**

Table 5 – Aquinas College

Planning Scheme Policy	Policy Objective	BESS Target
City of Maroondah Clause 15.01-2L-01 Environmentally Sustainable Development	'development should achieve <u>best practice</u> in environmentally sustainable development'	> 50% (Best Practice)

Please note that the proposed BESS pathway and ESD initiatives are presented for transparency to identify initiatives which can be readily committed to and have been incorporated into the design at this stage. However, should activities within the detailed design indicate that an initiative cannot be obtained, such impacts will be compensated through the identification of other initiatives to maintain the same BESS score commitment.

6. ESD INITIATIVES

6.1 MANAGEMENT

Management opportunities during the design, construction and operation of a building can have a significant impact on environmental performance. It is highly important that appropriate practices and design features are implemented to ensure the facility can be operated per design intent.

Key Issues

The key issues relevant to Management within this development include:

- Ensuring professional guidance and input early within the design process to achieve high-performance outcomes with regards to ESD.
- Enhancement of information transparency to facility managers and occupants to enable more efficient operations.

The proposed ESD initiatives address these issues.

Proposed ESD Initiatives

1. ESD Professional

The development has engaged an ESD Consultant to facilitate the implementation of the ESD commitments and BESS pathway throughout all stages of the project. The ESD Consultant will be involved in liaison with Council after review of this SMP.

2. Preliminary Thermal Performance Modelling

NCC Section J Façade Calculator v1.1 will be used to perform preliminary Section J NCC 2022 Volume 1 – Façade Assessment to inform passive design from the early stages of design. The preliminary assessment indicates that the thermal performance of the wall-glazing construction will meet the performance of the reference case and achieve a compliance. Refer Appendix B for detailed results.

3. Sub-Metering

Electricity meters will be provided to all individual buildings and major services will be sub-metered required by NCC Section J, BESS and VSBA BQSH guidelines. Meters are to be located in areas that are easy to access to facilitate regular monitoring and maintenance.

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

ADVERTISED
PLAN

6.2 INDOOR ENVIRONMENT QUALITY

Indoor Environment Quality (IEQ) is important for the health and well-being of all building occupants and users. IEQ can be measured utilising metrics such as air quality, lighting and acoustics. Buildings with higher levels of IEQ have been found to promote general physical and mental health.

Key Issues

The key issues relevant to indoor environment quality within this development include:

- Provision of access to daylight to enhance indoor environment quality and reduce reliance on artificial lighting.
- Appropriate external shading is provided to the east, west and north facades.
- Provision of 50% increase in outdoor air to provide fresh air.
- Avoidance and/or minimisation of materials which negatively impact on indoor air quality.

The proposed ESD initiatives address these issues.

Proposed ESD Initiatives

1. Daylight.

At least 60% of the regular-use areas shall be subject to a Daylight Factor.

2. Indoor Air Quality - Low Emission Products & Materials

- All interior surface paints will be specified as low-VOC.
- All interior sealants and adhesives will be low-VOC except when there is no alternative (PVC cement for example);
- All interior carpets and flooring will be low-VOC;
- Incorporation of low or zero emissions (i.e. E1 or E0) medium density fibreboard (MDF) as opposed to standard MDF; and
- Materials selected for longevity, non-porous, easy to clean, and anti-bacterial qualities.

3. Acoustic Comfort

The development will be designed to minimise internal noise levels through an acoustically designed and sealed façade, and acoustic attenuation to the mechanical systems, especially for the learning areas.

The mechanical services systems will be nominated with vibration levels, duct air velocity, ductwork insulation and noise attenuation provisions in accordance with the project Acoustic Consultant's recommendations. The acoustic separation between spaces will be achieved through appropriate wall specification and reduction of cross-talk through mechanical ductwork through the provision of suitable ductwork linings.

**ADVERTISED
PLAN**

6.3 ENERGY EFFICIENCY

Energy efficiency is considered critical for ensuring that usage of non-renewable forms of energy is minimised such that continued economic activity does not impact the natural environment. Additionally, energy efficiency has a direct financial benefit, as it reduces exposure to real escalations in energy costs.

Aquinas College focuses on passive design features to improve energy efficiency; such features do not consume operational energy and generally last the lifetime of the building > 50 years.

Key Issues

The key issues relevant to energy efficiency within this development include:

- Minimising annual energy, emissions and costs arising from school facilities.
- Minimising the contribution to peak electrical demand during high ambient temperature weather events.
- Maximising the integration of solar PV renewable energy within the built environment.

The proposed ESD initiatives address these issues.

Proposed ESD Initiatives

1. Thermal Envelope Enhancement

The Class 9 building will achieve enhanced building performance which will meet and where feasible exceed the NCC 2022 Part 9 and Functional Level 4 provisions for walls, ceilings, floor, glazing system etc. The preliminary Section 9 DTSUragat calculations used for energy indicates that the proposed wall-glazing construction will meet the minimum performance requirements. Please refer to Appendix B.

2. Energy Efficient Building Services – High Efficiency LED Lighting

The development will incorporate high-efficient light fittings and effective and pragmatic control strategies. Lighting will also be selected to achieve high quality artificial light to contribute to enhanced indoor environment quality.

For all non-residential Class-9b spaces, provisions of 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 Vol1.

3. Energy Efficient Building Services – Heating & Cooling Systems

High efficient all-electric air-cooled heating and cooling systems will be considered for the development. Efficiencies for the thermal plant will be 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.

ADVERTISED PLAN

4. Energy Efficient Building Services – DHW Systems

All electric water heating systems within one star of the best available, or 85% or better than the most efficient equivalent capacity unit will be considered for the development.

5. Renewable Energy

A solar PV renewable energy system providing an installed DC capacity of not less than 30kW_p for the Year 9 building will be provided. The array will be installed orientated to the North and will be at a tilt angle of not less than 10°. Further array design activities and safe access provision reviews are being undertaken.

6.4 WATER EFFICIENCY

Water efficiency is deemed critical due to the growing needs of Melbourne's population, and the current wasteful actions of general households when it comes to potable water usage. Additionally, water is a costly resource which is in turn becoming a financial burden.

Key Issues

The key issues relevant to water efficiency within this development include:

- Minimising potable water demand to maintain reservoir capacities and extend water resources during drought periods.
- Minimising energy and emissions associated with the processing of waste water from the built environment.
- Maximising water efficiency to reduce costs associated with water and energy (domestic hot water energy)
- Utilisation of non-potable water resources to reduce demands on potable water resources.
- Achieving integrated water cycle management outcomes through the use of rainwater harvesting for stormwater management.

The proposed ESD initiatives address these issues.

Proposed ESD Initiatives

1. Amenity Water Demand

Selection of fittings, fixtures and water consuming equipment is highly important for achieving a water efficient building. All fixtures and fittings shall be selected as low flow with high Water Efficiency Labelling (WELS) star ratings.

Table 6 provides a summary of the minimum water efficiency requirements of amenity fixtures and fittings.

**ADVERTISED
PLAN**

Table 6 – Water Efficiency Requirements

Fixture / Fitting	WELS Star Rating
Toilets/Water Closets	≥4-Star
Taps – Bathroom	≥6-Star

2. Water-Based Heat Rejection Avoidance

The development will not utilise water-based heat rejection systems, with all HVAC being air-cooled. This significantly reduces water demand and reduces risks associated with the heat rejection system (e.g. microbial growth).

3. Rainwater Harvesting System

The development will include a rainwater harvest and re-use systems to provide non-potable water for irrigation of landscaping and to ground level toilets.

This system will include a 15kL rainwater storage tank harvesting water from roof surfaces excluding balconies and terraces.

Please refer to Appendix C for supporting WSUD calculations and report.

4. Water Efficient Irrigation System & Landscape

Landscape areas of the project will be provided with water-efficient sub-surface irrigation systems utilising non-potable water (rainwater).

6.5 ECOLOGY

Urban ecology is about promoting and protecting ecosystems and biodiversity. Urban and agricultural development has caused displacement of species and degradation of natural ecosystems.

Issues

The key issues relevant to ecology within this development include:-

- Enhancement of urban areas through landscape which provides ecological benefit.
- Provision of landscaping which provides habitat.
- Consideration of the built environment's impact on urban heat island effect.

The proposed ESD initiatives address these issues.

Key ESD Initiatives

1. Site vegetation

At least 15% of the site area will be covered by vegetation.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

**ADVERTISED
PLAN**

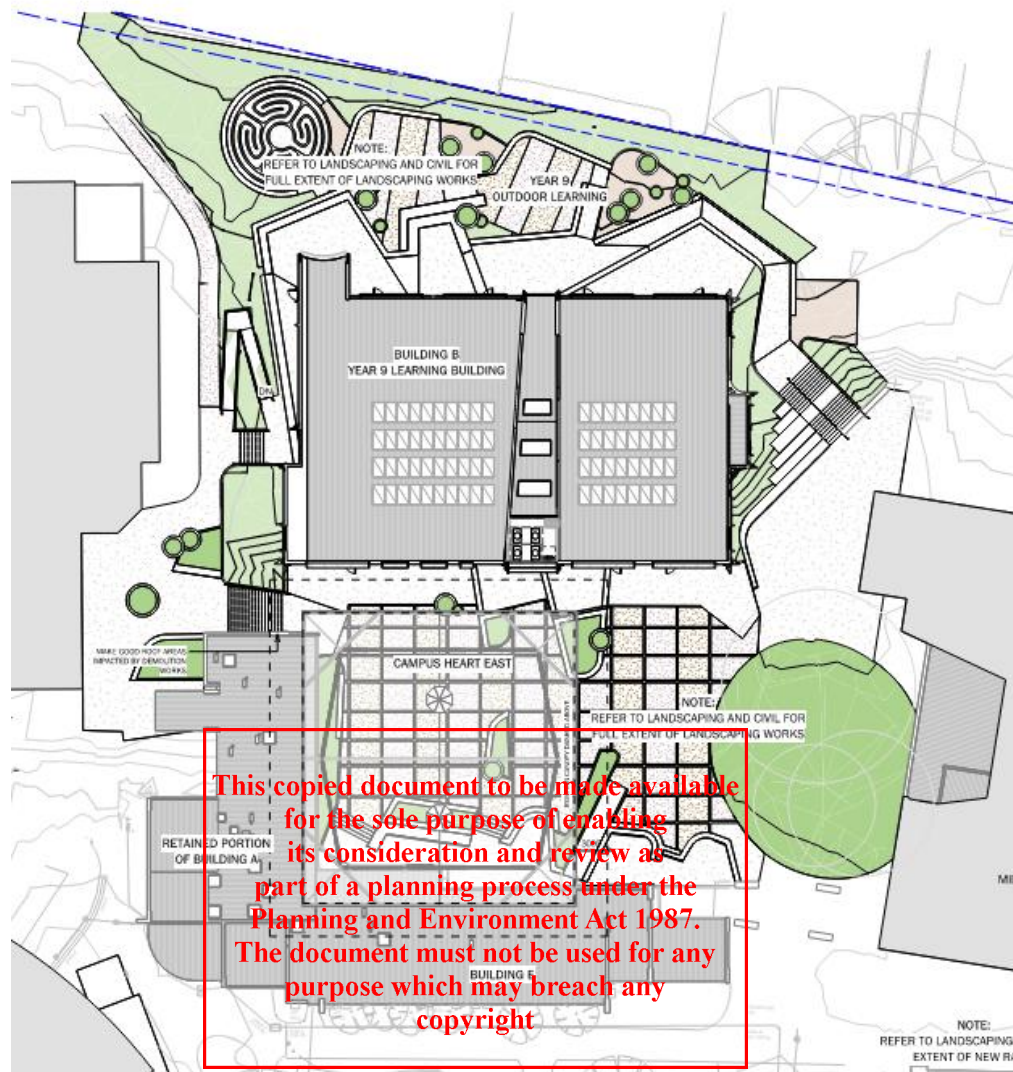


Figure 3 – Landscape

ADVERTISED PLAN

2. Communal Spaces

To encourage and recognise initiatives that facilitate interaction between building occupants communal spaces of ~200m² have been proposed in the development.

6.6 EMISSIONS - STORMWATER MANAGEMENT

Due to the urbanisation of the Melbourne region and our large regional centres, a large proportion of the land, which was once permeable soil, has been replaced with impervious surfaces presenting significant implications for our existing stormwater systems and the environment.

Stormwater discharge direct into natural watercourses and bays without appropriate treatment presents numerous pollution issues, associated with gross pollutants (such as litter, plastics and sediments), nutrient pollution (nitrogen and phosphorous) which can contribute to algae blooms and free-oils washed off roadways and carparks.

The key issues relevant to stormwater within this development include:-

- Minimising pollutant run-off into water courses
- Minimising the detrimental impact of high run-off volumes into water courses.

The proposed ESD initiatives address these issues.

Key ESD Initiatives

1. Stormwater Management

The project will meet the stormwater quality objectives of the City of Maroondah Planning Scheme Clause 53.18 Stormwater Management in Urban Development.

- Suspended Solids - 80% retention of typical urban annual load
- Total Nitrogen - 45% retention of typical urban annual load
- Total Phosphorus - 45% retention of typical urban annual load
- Litter - 70% reduction of typical urban annual load.

**ADVERTISED
PLAN**

Stormwater quality objectives will be achieved through the application of rainwater harvesting with reuse for landscape irrigation and toilet flushing.

This system will include a 15kL rainwater storage tank harvesting water from roof surfaces.

Please refer to Appendix C for supporting WSUD calculations in the Stormwater Management Report.

6.7 WASTE MANAGEMENT

Construction waste management is considered critical, with up to 40% of landfill in Australia being attributed to the construction and demolition of buildings. On top of this, there is the on-going waste from building occupants as a result of their everyday living and consumption. Managing and planning for such waste is necessary to act on reducing the quantity going to landfill, whilst also ensuring that materials which can be appropriately recycled are treated separately.

Issues

The issues relevant to waste management include:-

- Optimisation of waste management infrastructure to maximise waste recycling from the operational phase of the development.
- Reduction of construction and demolition waste

1. Operational Waste Management

Development will include recycling waste storage facility located as conveniently as non-recyclable waste storage. This will include separate waste collection points for general and recycled waste for the development.

7. SUMMARY OF ESD PERFORMANCE

Table 7 provides a summary of the BESS performance within each category of the assessment tool.

Table 7 – BESS performance

BESS Category	Category Performance
Management	42%
Indoor Environment Quality	50%
Energy	77%
Transport	0%
Water	85%
Stormwater	100%
Urban Ecology	37%
Waste	33%
Innovation	0%
TOTAL	56%

Please refer to Appendix A for the BESS pathway to the target ESD performance outcomes.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

**ADVERTISED
PLAN**

APPENDIX A – BESS REPORT

**ADVERTISED
PLAN**

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

BESS Report

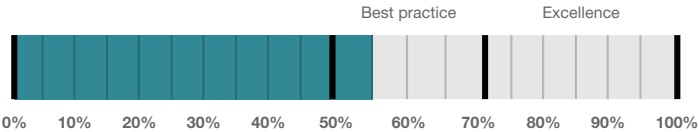
Built Environment Sustainability Scorecard



This BESS report outlines the sustainable design commitments of the proposed development at 46 Great Ryrie St Ringwood Victoria 3134. 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 Maroondah 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



56%

Project details

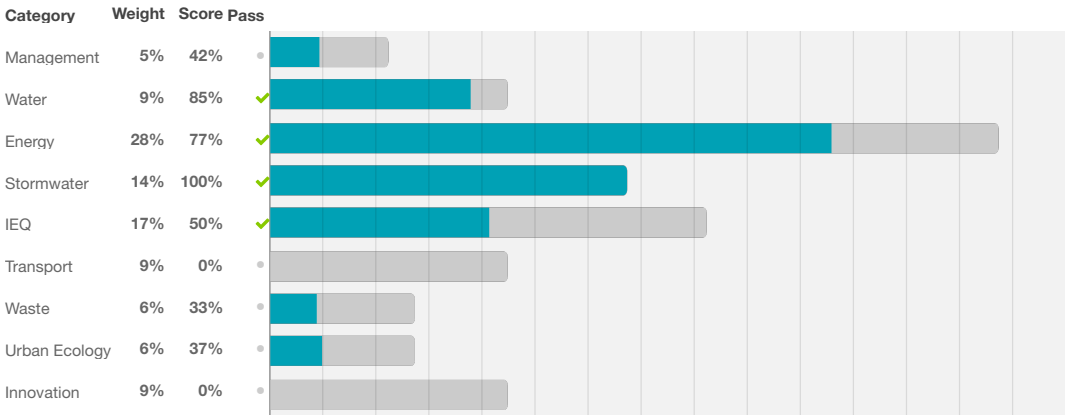
Name	Aquinas College - Year 9 Building
Address	46 Great Ryrie St, Ringwood VIC 3134
Project ID	3E2F7A8C-R1
BESS Version	BESS-8
Site type	Non-residential development
Account	kiara.kcomt@lucide.com.au
Application no.	
Site area	3,600 m ²
Building floor area	1,390 m ²
Date	16 April 2025
Software version	2.1.0-B.596

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright



Performance by category

● This project ● Maximum available



Buildings

Name	Height	Footprint	% of total footprint
Year 9 Building	9	1,000 m ²	100%

Dwellings & Non Res Spaces

Non-Res Spaces

Name	Quantity	Area	Building	% of total area
Other building				
Classrooms	1	1,390 m ²	Year 9 Building	100%
Total	1	1,390 m ²	100%	

Supporting Evidence

Shown on Floor Plans		This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright	Response	Status
Credit	Requirement			
Management 3.3	Annotation: Sub-meters to be provided to all major common area services (list each)			-
Water 3.1	Annotation: Water efficient garden details			-
Energy 4.2	Location and size of solar photovoltaic system			-
Stormwater 1.1	Location of any stormwater management (landscaping, raingardens, buffer strips)			-
Waste 2.2	Location of recycling facilities			-
Urban Ecology 1.1	Location and size of communal spaces			-
Urban Ecology 2.1	Location and size of vegetated areas			-

Supporting Documentation

Credit	Requirement	Response	Status
Management 2.3a	Section J glazing assessment		-
Management 2.3b	Preliminary modelling report		-
Energy 1.1	Energy Report showing calculations of reference case and proposed buildings		-
Energy 3.7	Average lighting power density and lighting type(s) to be used		-
Energy 4.2	Specifications of the solar photovoltaic system(s)		-
Stormwater 1.1	STORM report or MUSIC model		-
IEQ 1.4	A short report detailing assumptions used and results achieved.		-

ADVERTISED
PLAN

Credit summary

Management Overall contribution 4.5%

		42%
1.1 Pre-Application Meeting		0%
2.3 Thermal Performance Modelling - Non-Residential		100%
3.2 Metering - Non-Residential		N/A ✦ Scoped Out
No commercial tenancies for this development		
3.3 Metering - Common Areas		100%
4.1 Building Users Guide		0%

Water Overall contribution 9.0%

	Minimum required 50%	85% ✓ Pass
1.1 Potable Water Use Reduction		100%
3.1 Water Efficient Landscaping		100%
4.1 Building Systems Water Use Reduction		0%

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 carpark in this development		
3.2 Hot Water		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.		

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

Stormwater Overall contribution 13.5%

	Minimum required 100%	100% ✓ Pass
1.1 Stormwater Treatment		100%

IEQ Overall contribution 16.5%

		Minimum required 50%	50%	✓ Pass
1.4 Daylight Access - Non-Residential			60%	✓ Achieved
2.3 Ventilation - Non-Residential			33%	✓ Achieved
3.4 Thermal comfort - Shading - Non-Residential			66%	
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 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%

**ADVERTISED
PLAN**

Credit breakdown

Management Overall contribution 4.5%

		42%
--	--	-----

1.1 Pre-Application Meeting		0%
-----------------------------	--	----

Score Contribution	This credit contributes 42.9% 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		100%
---	--	------

Score Contribution	This credit contributes 28.6% towards the category score.	
--------------------	---	--

Criteria	Has a preliminary facade assessment been undertaken in accordance with NCC2022 Section J4D6?	
Question	Criteria Achieved ?	
Other building	Yes	

Criteria	Has a preliminary facade assessment been undertaken in accordance with either NCC2022 Section J4D6 or NCC2019 Section J4D6?	
Question	Criteria Achieved ?	
Other building	Yes	

3.2 Metering - Non-Residential		N/A  Scoped Out
--------------------------------	--	--

No commercial tenancies for this development		
--	--	--

This credit was scoped out	No commercial tenancies for this development	
----------------------------	--	--

3.3 Metering - Common Areas		100%
-----------------------------	--	------

Score Contribution	This credit contributes 14.3% towards the category score.	
Criteria	Have all major common area services been separately submetered?	
Question	Criteria Achieved ?	
Other building	Yes	

4.1 Building Users Guide		0%
--------------------------	--	----

Score Contribution	This credit contributes 14.3% towards the category score.	
Criteria	Will a building users guide be produced and issued to occupants?	
Question	Criteria Achieved ?	
Project	No	

Water Overall contribution 9.0%

		Minimum required 50%	85%	✓ Pass
--	--	----------------------	-----	--------

Water Approach	
What approach do you want to use for Water?:	Use the built in calculation tools
Do you have a reticulated third pipe or an on-site water recycling system?:	No
Are you installing a swimming pool?:	No
Are you installing a rainwater tank?:	Yes
Fixtures, fittings & connections profile	
Showerhead:	Scope out
Bath:	Scope out
Kitchen Taps:	>= 6 Star WELS rating
Bathroom Taps:	>= 6 Star WELS rating
Dishwashers:	Scope out
WC:	>= 4 Star WELS rating
Urinals:	Scope out
Washing Machine Water Efficiency:	Scope out
Which non-potable water source is the dwelling/space connected to?:	Tank 1
Non-potable water source connected to Toilets:	Yes
Non-potable water source connected to Laundry (washing machine):	No
Non-potable water source connected to Hot Water System:	No
Rainwater tank profile	
What is the total roof area connected to the rainwater tank?:	985 m ²
Tank 1	
Tank Size: Tank 1	15,000 Litres
Irrigation area connected to tank: Tank 1	0.0 m ²
Is connected irrigation area a water efficient garden?: Tank 1	Yes
Other external water demand connected to tank?: Tank 1	0.0 Litres/Day
1.1 Potable Water Use Reduction	100%

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

ADVERTISED PLAN

Score Contribution	This credit contributes 71.4% 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	1192 kL	
Output	Proposed (excluding rainwater and recycled water use)	
Project	761 kL	
Output	Proposed (including rainwater and recycled water use)	
Project	342 kL	
Output	% Reduction in Potable Water Consumption	
Project	71 %	
Output	% of connected demand met by rainwater	
Project	100 %	
Output	How often does the tank overflow?	
Project	Very Often	
Output	Opportunity for additional rainwater connection	
Project	102 kL	
3.1 Water Efficient Landscaping	This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright	100%
Score Contribution	This credit contributes 14.3% towards the category score.	
Criteria	Where applicable, have measures been taken to reduce potable water consumption by >80% in the buildings air-conditioning chillers and when testing fire safety systems?	
Question	Criteria Achieved ?	
Project	No	
4.1 Building Systems Water Use Reduction	This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright	0%
Score Contribution	This credit contributes 14.3% towards the category score.	
Criteria	Where applicable, have measures been taken to reduce potable water consumption by >80% in the buildings air-conditioning chillers and when testing fire safety systems?	
Question	Criteria Achieved ?	
Project	No	

**ADVERTISED
PLAN**

Energy Overall contribution 27.5%

		Minimum required 50%	77%	✓ Pass
--	--	----------------------	-----	--------

	Use the BESS Deem to Satisfy (DtS) method for Non-residential spaces?:	Yes
	Do all exposed floors and ceilings (forming part of the envelope) demonstrate meeting the 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
	Solar Photovoltaic system profile	
	System Size (lesser of inverter and panel capacity): PV 1	30.0 kW peak
	Orientation (which way is the system facing)? PV 1	North
	Inclination (angle from horizontal): PV 1	10.0 Angle (degrees)
	1.1 Thermal Performance Rating - Non-residential	37%
	Score Contribution	This credit contributes 38.1% 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
This credit was scoped out		No carpark in this development	
3.2 Hot Water		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 ?		
Other building	Yes		
4.1 Combined Heat and Power (cogeneration / trigeneration)		N/A	✦ Scoped Out
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		
Other building	36,355 kWh		
Output	% of Building's Energy		
Other building	93 %		
4.4 Renewable Energy Systems - Other		N/A	✦ Scoped Out
This credit was scoped out		No other (non-solar PV) renewable energy is in use.	

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

**ADVERTISED
PLAN**

Stormwater Overall contribution 13.5%

	Minimum required 100%	100%	✔ Pass
--	-----------------------	------	--------

Which stormwater modelling software are you using?:		Melbourne Water STORM tool	
1.1 Stormwater Treatment			100%
Score Contribution	This credit contributes 100% towards the category score.		
Criteria	Has best practice stormwater management been demonstrated?		
Question	STORM score achieved		
Project	103		
Output	Min STORM Score		
Project	100		

ADVERTISED
PLAN

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

IEQ Overall contribution 16.5%

		Minimum required 50%	50%	✓ Pass
--	--	----------------------	-----	--------

1.4 Daylight Access - Non-Residential			60%	✓ 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?			
Question	Percentage Achieved?			
Other building	60 %			
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?			
Other building	0 %			
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?			
Other building	50 %			
Criteria	What percentage of regular use areas have the systems designed to achieve, to monitor and maintain the indoor air quality?			
Question	Percentage Achieved?			
Other building	0 %			
3.4 Thermal comfort - Shading - Non-Residential			66%	
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?			
Other building	50 %			
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?			
Other building	-			
4.1 Air Quality - Non-Residential			100%	
Score Contribution	This credit contributes 5.9% towards the category score.			


This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

Criteria	Do all paints, sealants and adhesives meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Other building	Yes
Criteria	Does all carpet meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Other building	Yes
Criteria	Does all engineered wood meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Other building	Yes

ADVERTISED PLAN

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

Transport Overall contribution 9.0%

		0%
1.4 Bicycle Parking - Non-Residential		0%
Score Contribution	This credit contributes 25% 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 ?	
Other building	No	
Question	Bicycle Spaces Provided ?	
Other building	-	
1.5 Bicycle Parking - Non-Residential Visitor		0%
Score Contribution	This credit contributes 12.5% 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 ?	
Other building	No	
Question	Bicycle Spaces Provided ?	
Other 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 25% 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 12.5% towards the category score.	
Criteria	Has a formal car sharing scheme been integrated into the development?	
Annotation	not applicable to this type of development	
Question	Criteria Achieved ?	
Project	No	
2.3 Motorbikes / Mopeds		0%

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

ADVERTISED PLAN

Score Contribution	This credit contributes 12.5% 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)?
Annotation	not applicable to this type of development
Question	Criteria Achieved ?
Project	No

Waste 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 treatment 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	

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

**ADVERTISED
PLAN**

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 : * 1m ² for each of the first 50 occupants * Additional 0.5m ² for each occupant between 51 and 250 * Additional 0.25m ² for each occupant above 251?	
Question	Common space provided	
Other building	200 m ²	
Output	Minimum Common Space Required	
Other building	59 m ²	
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	15 %	
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	
Other building	-	
Output	Min Food Production Area	
Other building	18 m ²	

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

ADVERTISED PLAN

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)?	

Disclaimer

The Built Environment Sustainability Scorecard (BESS) has been provided for the purpose of information and communication. While we make every effort to ensure that material is accurate and up to date (except where denoted as 'archival'), this material does in no way constitute the provision of professional or specific advice. You should seek appropriate, independent, professional advice before acting on any of the areas covered by BESS.

The Municipal Association of Victoria (MAV) and CASBE (Council Alliance for a Sustainable Built Environment) member councils do not guarantee, and accept no legal liability whatsoever arising from or connected to, the accuracy, reliability, currency or completeness of BESS, any material contained on this website or any linked sites

ADVERTISED
PLAN

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

APPENDIX B – PRELIMINARY SECTION J ENVELOPE ASSESSMENT

**ADVERTISED
PLAN**

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

KEYNOTE LEGEND

R.DPT-2 150MM DOWNPIPE STAINLESS STEEL FINISH

Refer Furniture, FF&E and Sanitary Schedules for Specifications

MATERIAL LEGEND - INTERNAL

M.CON-2 POLISHED CONCRETE SCREED
M.CPM-1 ENTRY MATTING
M.CPT-1 CARPET TILE FLOORING
M.GLZ-2 INTERNAL GLAZING
M.GLZ-8 GLASS BLOCK
M.MTL-5 FULL HEIGHT WOVEN MESH BALUSTRADE
M.RFV-1 VINYL FLOORING

Refer External Finishes Schedule for Specifications

PROPOSED FLOOR PLAN LEGEND

- DO NOT SCALE DRAWINGS. USE FIGURED DIMENSIONS AS PER DRAWINGS
- THE BUILDER IS TO VERIFY ALL DIMENSIONS AND LEVELS PRIOR TO COMMENCING ANY WORK. DISCREPANCIES ARE TO BE REPORTED BACK TO THE SUPERINTENDENT FOR CLARIFICATION
- ALL WORKS TO COMPLY WITH CURRENT AUSTRALIAN STANDARDS AND THE BUILDING CODES OF AUSTRALIA
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND CONSULTANT DRAWINGS AND THE SPECIFICATION FOR THE FULL SCOPE OF WORKS
- ALL DIMENSIONS TO BE READ IN CONJUNCTION WITH PLAN DETAILS, DETAILED WALL & COLUMN SETOUT DIMENSIONS SHOWN IN PLAN DETAILS
- ALL LEVELS TO BE READ IN CONJUNCTION WITH CIVIL DRAWINGS, CO-ORDINATE STAIR CONSTRUCTION WITH CIVIL PAVING LEVELS, CIVIL PAVING LEVELS TAKE PRECEDENCE OVER INDICATIVE LEVELS SHOWN ON ARCHITECTURAL DRAWINGS
- TO BE READ IN CONJUNCTION WITH ALL SPECIFICATIONS INCLUDING SCHEDULES
- REFER TO WINDOW SCHEDULE FOR ALL WINDOW SIZES & CONFIGURATIONS
- REFER TO MATERIALS AND FINISHES SCHEDULE FOR ALL FINISHES DETAILS.
- REFER TO FIXTURES AND FITTINGS SCHEDULE FOR ALL FIXTURES AND FITTINGS DETAILS.
- ALL STUD WALLS TO BE FULL HEIGHT TO UNDERSIDE OF ROOFING OR SLAB OVER UNLESS OTHERWISE NOTED. REFER STRUCTURAL ENGINEERS DOCUMENTS FOR STUD CONSTRUCTION AND COMPLIANCE.
- ALL COLUMN DIMENSIONS ARE SHOWN FROM CENTRE-LINE

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

ADVERTISED PLAN

DETAILED DESIGN

DO NOT SCALE OF THIS DRAWING. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION THAT ALL DIMENSIONS, LEVELS & DETAILS ARE CO-ORDINATED PRIOR TO COMMENCEMENT OF THE WORK AND ORDERING OF MATERIALS. ALL DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT FOR RESOLUTION PRIOR TO COMMENCEMENT OF THE WORK.

Kosloff Architecture

A: Level 2 137 Flinders Lane
Melbourne, VIC 3000
E: contact@kosloffarchitecture.com
W: kosloffarchitecture.com
ABN: 85 616 495 651

**MELBOURNE ARCHDIOCESE
CATHOLIC SCHOOLS**

PROJECT NUMBER
K096
PROJECT
AQUINAS COLLEGE

STREET ADDRESS
**46 GREAT RYRIE ST
RINGWOOD VIC 3134**

DRAWING TITLE
**BUILDING B - YEAR 9 BUILDING
FLOOR PLANS - LOWER & UPPER
GROUND**
SCALE @ A1
As indicated

DRAWN
VB
CHECKED
SL

DRAWING No. (REV)
B-A101 [03]

MATERIAL LEGEND - EXTERNAL

M.BRK-1	BRICK - TYPE 1
M.BRK-2	BRICK - TYPE 2
M.FCS-1	FIBRE CEMENT SHEET
M.FLA-1	METAL ROOF FLASHING
M.GLZ-1	EXTERNAL GLAZING
M.GLZ-3	SKYLIGHT
M.GLZ-8	GLASS BLOCK
M.MTL-1	METAL ROOF SHEETING
M.MTL-7	METAL FASCIA
M.MTL-8	ALUMINIUM AWNING
M.TMB-1	TIMBER SOFFIT / FEATURE CEILING

Refer External Finishes Schedule for Specifications

ADVERTISED PLAN

01	PRELIMINARY DO ISSUE	17.03.25
02	SERVICES CO-ORDINATION	28.03.25
03	ROOF DESIGN UPDATE	03.04.25
04	CO-ORDINATION ISSUE	04.04.25

REVISIONS

DETAILED DESIGN

DO NOT SCALE OF THIS DRAWING.
THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION THAT ALL DIMENSIONS, LEVELS & DETAILS ARE CO-ORDINATED PRIOR TO COMMENCEMENT OF THE WORK AND ORDERING OF MATERIALS. ALL DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT FOR RESOLUTION PRIOR TO COMMENCEMENT OF THE WORK.

Kosloff Architecture

A: Level 2 137 Flinders Lane
Melbourne, VIC 3000
E: contact@kosloffarchitecture.com
W: kosloffarchitecture.com
ABN: 85 616 495 651

CLIENT
**MELBOURNE ARCHDIOCESE
CATHOLIC SCHOOLS**

PROJECT NUMBER
K096
PROJECT
AQUINAS COLLEGE

STREET ADDRESS
**46 GREAT RYRIE ST
RINGWOOD VIC 3134**

DRAWING TITLE
**BUILDING B - YEAR 9 BUILDING
ROOF PLAN**

SCALE @ A1
1 : 100

DRAWN
VB
CHECKED
SL

DRAWING No. (REV)
B-A111 [04]

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

APPENDIX C – WSUD / STORMWATER MANAGEMENT REPORT

ADVERTISED PLAN

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

**ADVERTISED
PLAN**

Aquinas College 46 Great Ryrie Street, Ringwood VIC 3134

Stormwater Management Plan

Project No.: 23212
7 April 2025
Revision No. 1

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

EVISION	DATE	COMMENT	AUTHOR	CHECKER
1	08/04/2025	Final	DR	DK
2	15/04/2025	Final	DR	DK

Contents

1	Executive Summary	3
2	Introduction	4
2.1	Purpose	4
2.2	Objectives.....	4
2.3	Legislation, Regulation & Guidelines	4
3	Existing Condition	6
3.1	Site Description	6
3.2	Existing Stormwater Infrastructure	7
3.3	Flood Risk	7
4	Proposed Development	8
4.1	Description	8
5	Stormwater Management Strategy	9
5.1	Pre to Post Comparative Analysis	9
5.2	Design Objectives – Stormwater Design	9
5.3	Legal Point of Discharge (LPD)	10
5.4	WSUD Systems.....	10
6	Stormwater Quantity	11
6.1	Storage & Peak Flow Mitigation	11
6.2	OSD Storage Volumes.....	11
6.3	Private Stormwater Drainage Network	12
6.4	Rainwater Reuse.....	12
7	Stormwater Quality	13
7.1	STORM Model.....	13
7.2	Treatment Train Configuration & Results.....	13
8	Overland Flows and Flooding.....	15
8.1	Design Provisions for Flood Protection	15
9	Conclusions.....	16
9.1	Treatment Train Schematic.....	16
9.2	Summary	17
9.3	Design Progression	17
10	Limitations	17

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

**ADVERTISED
PLAN**

1 Executive Summary

This Stormwater Management Plan (SMP) has been prepared to support the proposed development at Aquinas College, located at 46 Great Ryrie Street, Ringwood, VIC. The development comprises the construction of a new three-level Year 9 Learning Building and associated landscaping and infrastructure works, including the redevelopment of the Campus Heart East courtyard. These works will result in changes to the site's impervious areas, necessitating a robust and compliant stormwater strategy.

The SMP evaluates the existing site conditions, current drainage infrastructure, and flood risks, and outlines a stormwater management approach that aligns with Council regulations, Melbourne Water guidelines, and best practice principles. The strategy focuses on mitigating both stormwater quantity and quality impacts through:

- Implementation of On-site Stormwater Detention (OSD) across three sub-catchments to control peak flows and reduce flood risk.
- Integration of Water Sensitive Urban Design (WSUD) measures, including raingardens and a 15kL rainwater reuse tank, achieving a STORM model score of 103%, demonstrating compliance with best practice targets.
- Design of a new underground stormwater network to accommodate a 1 in 20-year storm event, with conservative assumptions to address existing downstream capacity constraints.

Importantly, the development is well separated from designated flood-prone areas, with a vertical clearance of approximately 3.20 meters, and includes additional protective measures such as cut-off drains and positive site grading to reduce surface water ingress.

This SMP provides a performance-based framework that supports both development approval and future design progression, ensuring that stormwater is effectively managed to protect downstream environments, public infrastructure, and site users.

**ADVERTISED
PLAN**

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

2 Introduction

2.1 Purpose

Increased intensity of urbanisation of any site drives a need for effective stormwater management to appropriately manage effects of the proposed development on the natural receiving environment. Consequently, regulatory authorities set criteria that new developments need to satisfy to ensure adverse effects on the natural receiving environment are effectively mitigated. The stormwater mitigation measures are broadly characterised into two categories:

- Water Quantity – the increase in impervious surfaces will lead to increased stormwater flows which will need to be mitigated. This is typically done by the provision of detention of the increased runoff from the pre-development baseline in stormwater storage devices with controlled outlets.
- Water Quality – the proposed change in land use from the pre-existing greenfield baseline to an extensive impervious character will lead to generation of polluted stormwater from the various types of impervious surfaces created by the development. As such, mitigation measures need to be provisioned to ensure the treatment of stormwater to the required levels through the implementation of Water Sensitive Urban Design (WSUD) practices.

This Stormwater Management Plan (SMP) report has been prepared to provide an initial description of the proposed stormwater management strategy. The information used to prepare this report includes the architectural drawings, project design team meetings, site investigations, existing condition surveys, existing infrastructure documents, site visits, and associated reports. This report should be read in conjunction with the Design Development drawings including documentation and reports from other relevant design disciplines.

This is a restricted document and must not be used for any purpose which may breach any copyright.

2.2 Objectives

The purpose of this report is to present a stormwater management strategy to collect, convey, treat and discharge stormwater for the proposed development which will meet the performance requirements of the proposed development whilst mitigating adverse impacts to surrounding environments and existing infrastructure.

The report will outline how the development will achieve the following key objectives:

- Safely and effectively convey stormwater away from the facility to approved points of discharge.
- Mitigate the flood impact of the development on existing infrastructure, overland flow paths and watercourses by controlling the quantity of stormwater discharged off the site.
- Incorporate best practice WSUD principles to protect downstream watercourses and reduce potable water demand.

**ADVERTISED
PLAN**

2.3 Legislation, Regulation & Guidelines

The proposed stormwater management has been formulated as basis of compliance with the legislation and associated regulatory documents as follows:

- Environmental Protection Act 2017
- Environment Protection Regulations 2021
- National Construction Code
- Australian/New Zealand Standard AS/NZS 3500.3-2018 (Plumbing and Drainage, Part 3: Stormwater Drainage)

Stormwater management measures outlined in this report will be designed in reference to the following guidelines and documents:

- Melbourne Water MUSIC Modelling Guidelines – 2024
- Melbourne Water - STORM Calculator
- Climate Change in Australia (CSIRO and Bureau of Meteorology) 2015
- Development and Stormwater Management Design Guide - City of Unley 2016
- Australian Rainfall and Runoff (ARR) 2019
- Bureau of Meteorology for Rainfall Data and IFD Charts

ADVERTISED PLAN

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

3 Existing Condition

3.1 Site Description

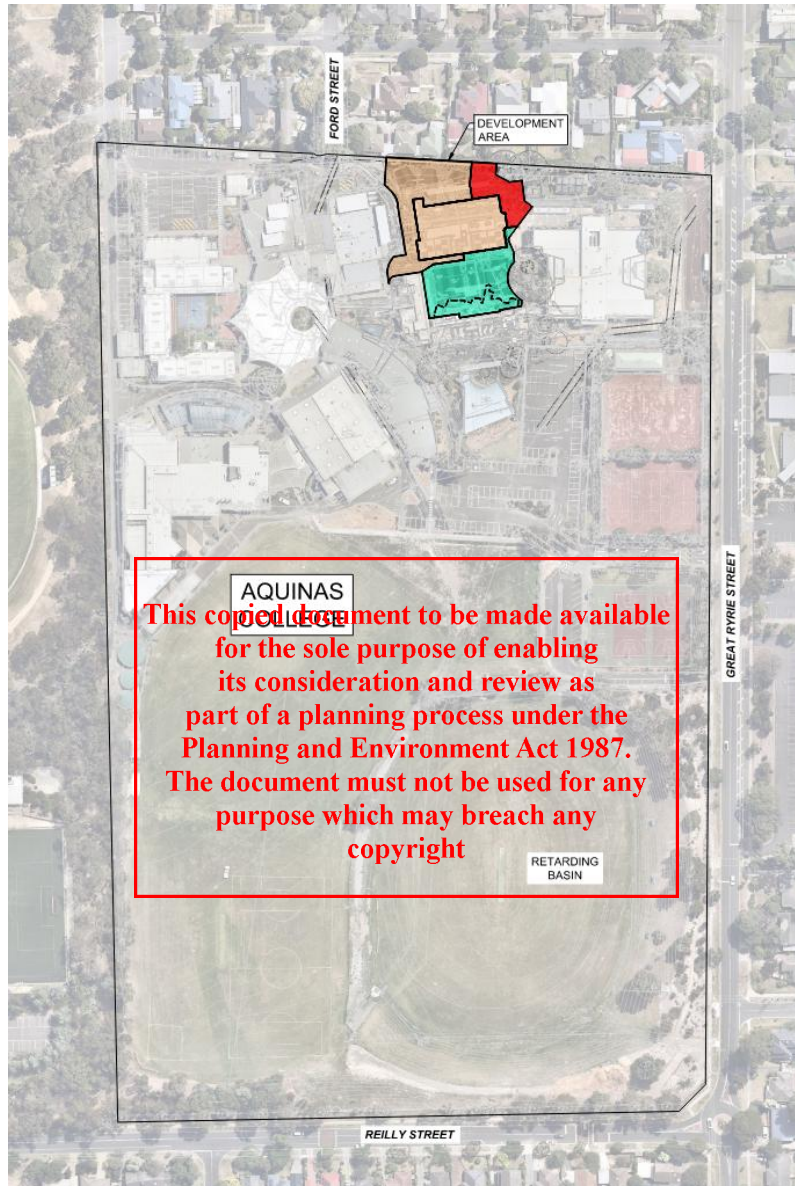


Figure 1 - Site Location of the Proposed Development

The site is located at 46 Great Ryrie Road, Ringwood, encompassing approximately 12.071 hectares at the intersection of Great Ryrie Road and Reilly Street. The proposed development area is 3,850 m².

The northern portion of the site is highly developed, comprising impervious surfaces such as buildings, car parks, footpaths, and hardstand areas typical of educational land use. In contrast, the southern portion is predominantly pervious, with short grass cover consistent with recreational or sporting activities.

The site generally slopes southward, with defined overland flow paths. A retarding basin is situated adjacent to the southern boundary, which receives overland flow from the northern section of the site. For further detail, refer to the Feature Level Survey in Appendix A.

3.2 Existing Stormwater Infrastructure

The site is located within a densely developed suburban area and is serviced by public stormwater infrastructure situated within the road reserves of Great Ryrie Street and Reilly Street. In addition to these public drains, several large stormwater trunks drains traverse the site in a north-south direction. These drains are located within an easement, indicating ownership or management by Council and/or Melbourne Water.

The site also contains an extensive private stormwater drainage network that connects to the public system. Anecdotal evidence and site observations suggest that this private network is operating below optimal performance, with frequent surcharge and overflow events. The proposed buildings will discharge into the existing private network; therefore, new connections to the public drainage system are not required.

3.3 Flood Risk

The site is affected by a Special Building Overlay (SBO) due to flood risk in urban areas. Inundation results from overland flow from the upper catchment, entering along the eastern boundary and discharging into a retarding basin in the southern portion of the site. The sporting oval functions as a temporary detention basin, with flows overflowing at a designated spill point on Reilly Street before continuing in a south-westerly direction.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

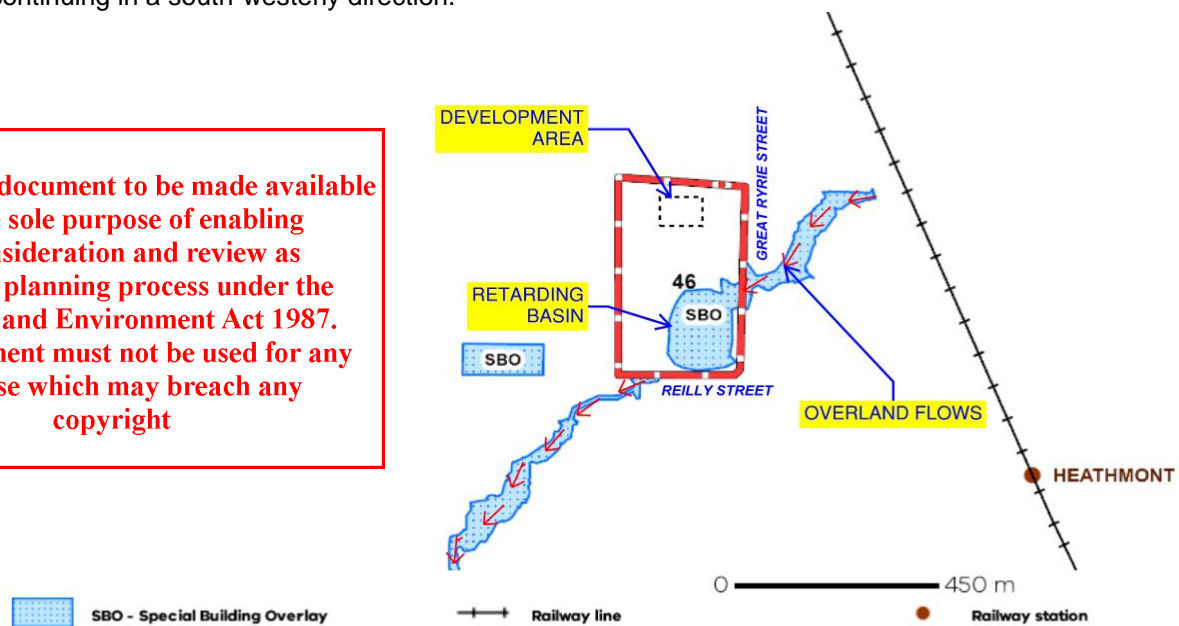


Figure 2: Special Building Overlay (SBO) – Flooding Risk

The proposed development area is sufficiently separated from the portion of the site subject to inundation risk (SBO), with a horizontal clearance of approximately 170 m and a vertical elevation difference of approximately 3.20 m. Accordingly, the risk of inundation to the new building is considered negligible.

**ADVERTISED
PLAN**

4 Proposed Development

4.1 Description

The proposed works for the school site include the construction of a new three-level Year 9 Learning Building and the redevelopment of the Campus Heart East courtyard. To facilitate these works, demolition of several existing elements is required, including:

- The existing Year 9 Learning Building (Building B)
- The Music School Building
- Adjacent landscaped and garden areas
- Existing concrete surfacing and drainage infrastructure within the Campus Heart East courtyard

The new building and courtyard works will result in additional impervious surfaces, such as building roofs and paved areas, designed to accommodate structural loads and pedestrian traffic. These changes will increase stormwater runoff volumes and may reduce the quality of stormwater discharges from the site. The following sections of this report outline the proposed stormwater infrastructure and management measures to mitigate potential adverse effects associated with these changes.

ADVERTISED PLAN

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

5 Stormwater Management Strategy

5.1 Pre to Post Comparative Analysis

The following tables present the pre-development and post-development site areas, enabling a clear comparison of impervious surfaces and the changes in site runoff characteristics.

Coverage Type	Pre-Development			Post-Development		
	Area	%	Impervious Factor	Area	%	Impervious Factor
Building	1608	41.8	1.0	985	25.6	1.0
Paved	788	17.7	0.9	2275	59.1	0.9
Grass	564	16.4	0.3	535	13.9	0.3
Gravel	890	20.7	0.5	-	-	-
Sand	-	-	-	55	1.4	0.5
Total	3850	100	0.76	3850	100	0.81

Table 1 – Pre to Post Development Imperviousness

The comparison in Table 1 indicates that the site already exhibits a high degree of imperviousness in its pre-development state. In the post-development scenario, the total impervious area is increased marginally by a factor of 0.05 compared to existing conditions. As a result, from a stormwater perspective, peak runoff flows are expected to increase correspondingly, thereby marginally increasing the potential for adverse effects associated with the development. However, due to known historic stormwater overflows within the downstream private network, peak flow mitigation is proposed to align with a greenfield pre-development condition (fully grass cover with runoff coefficient, C value of 0.3). This is effectively mitigated against effects beyond the pre-development baseline to a greenfield condition. Refer to Appendix E and F for Pre and Post Development areas breakdown respectively.

5.2 Design Objectives – Stormwater Design

In accordance with Council regulations and best practice stormwater management principles, the following design objectives have been adopted:

- **Volume Control – On-Site Detention (OSD):** OSD systems will be designed to meet Council requirements, with the aim of controlling and mitigating post-development peak flows to match pre-development greenfield conditions.
- **Flow Discharge Control:** Post-development discharge rates will not exceed pre-development rates. Flow attenuation will be achieved through appropriately designed OSD devices.
- **Sub-Catchment Based OSD Design:** Appropriately sized OSD tanks will be provided for each sub-catchment to enhance the performance of the existing stormwater network and minimise downstream impacts.

**ADVERTISED
PLAN**

5.3 Legal Point of Discharge (LPoD)

The site has an established Legal Point of Discharge (LPoD) via the existing private stormwater network. The proposed development will connect to this network at three separate locations, each situated adjacent to the respective development areas.

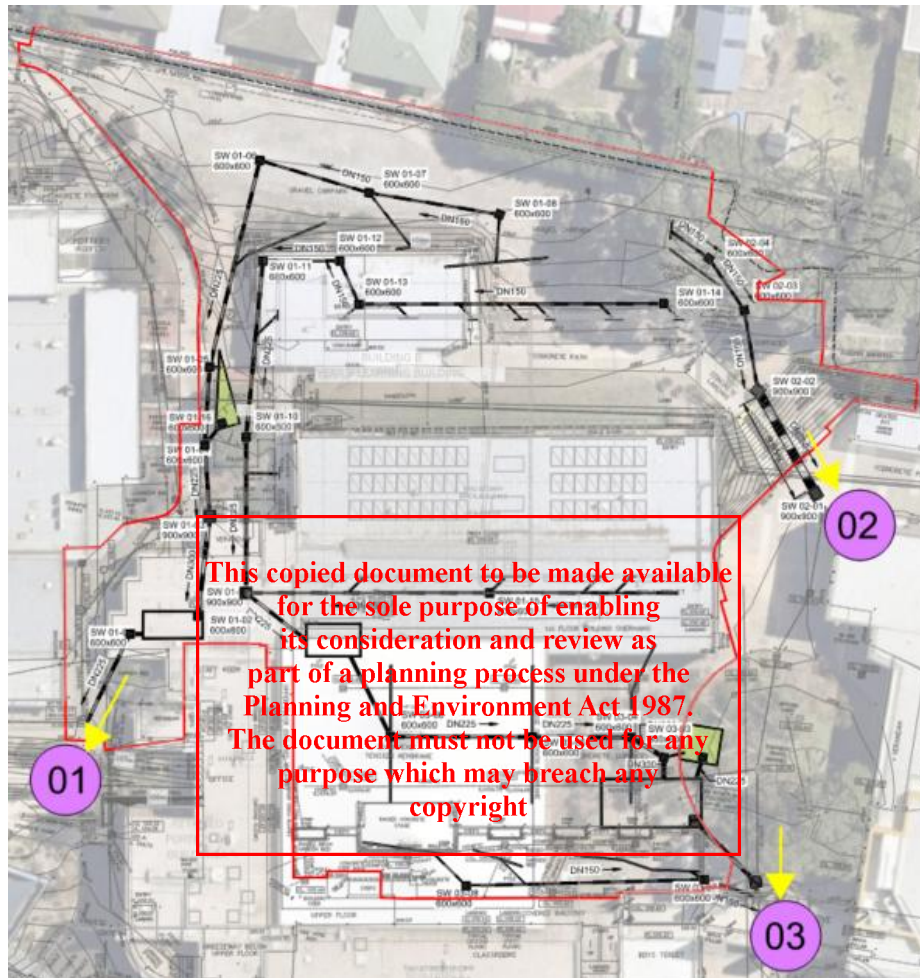


Figure 3: Points of Discharge into the Existing Private Network

5.4 WSUD Systems

Water Sensitive Urban Design (WSUD) seeks to integrate sustainable water management practices into urban planning and development. A key technical objective of WSUD is the removal of pollutants from stormwater runoff, particularly from newly created impervious surfaces. Council and regulatory authorities generally require that compliance with WSUD pollutant removal targets must be demonstrated as part of the Stormwater Management Plan (SMP).

A typical toolbox of WSUD solutions that usually implemented for similar development/site characteristics includes the following:

- Rainwater tanks – dependent of a feasible water harvesting use case
- Raingardens
- Bio-retention swale
- Permeable pavers
- Proprietary devices

Given the space constraints at the school, the primary WSUD devices for consideration are rainwater tanks and raingardens.

6 Stormwater Quantity

Stormwater quantity (volume) reduction will be required as a mitigation measure for the proposed development, subject to Council approval. The overarching approach is to reduce post-development outflows to align with pre-development flow rates.

This will be achieved through the implementation of On-site Stormwater Detention (OSD), using a detention storage device, such as a tank, located near the legal point of discharge. The underground pipe drainage system will be designed to accommodate the 1 in 20-year storm, in accordance with National Construction Code (NCC) requirements.

6.1 Storage & Peak Flow Mitigation

The primary objective of the stormwater volume management strategy is to mitigate the increase in peak flows resulting from the development, particularly given the transition to more intensive impervious land use. Anecdotal feedback from the school operators suggests that the existing drainage network is under capacity. While the pre-development imperviousness is relatively high at 76%, the proposed development increase this to approximately 86%. As a result, the required onsite detention volumes are comparatively small.

However, due to the known capacity limitations within the existing stormwater network, it is recommended that peak flows be conservatively over-detained, at least for events up to the 1 in 20-Year ARI, to help alleviate current drainage issues. Accordingly, a conservative mitigation baseline has been adopted, with pre-development conditions modelled as grassed (greenfield) to ensure a greater level of flow attenuation. The proposed design was hydrologically analysed using the Rational Method for both pre- and post-development scenarios, based on the following computational parameters:

Computation Methodology	Swinburne Method via OSD4 program
Location	Ringwood
Permissible Site Discharge	1 in 5 Year ARI (C _{PRE-DEVELOPMENT} = 0.3, TC = 10mins.)
Onsite Detention (OSD) Storage	1 in 20 Year ARI <i>Due existing surcharge sensitivities in downstream network</i>

Table 2: OSD Computational Parameters

6.2 OSD Storage Volumes

The following figure illustrates the outputs from the computation from the OSD4 program. Refer to Appendix C for detailed OSD outputs.

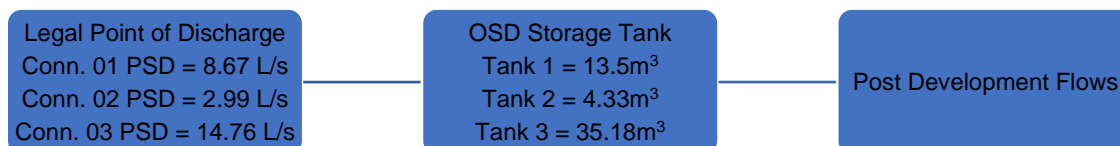


Figure 4: OSD Computation Results

The detention system is proposed to consist of a storage tank that will capture stormwater runoff during design rainfall events up to the 10% Annual Exceedance Probability (AEP). The tank will discharge at a controlled rate equivalent to the pre-development 20% AEP flow rate, with the stored volume generally draining out within a 6-hour period.

Following table summarises the proposed OSD design:

Catchment	Area (m ²)	PSD (L/s)	Storage (m ³)	Storage Device Type	Device Size
Sub-Catchment 01	1285	8.67	13.5	Rectangular	5.5m (L) x 2.5m (W) x 1.0m (D)
Sub-Catchment 02	445	2.99	4.33	Circular Pipe	DN 750; 9.9m Length
Sub-Catchment 03	2120	14.76	35.18	Rectangular	9.25m (L) x 4.5m (W) x 0.85m (D)

Table 3: OSD Design Summary

6.3 Private Stormwater Drainage Network

A new primary underground stormwater drainage network will be constructed to manage surface water runoff generated during the 20-year Average Recurrence Interval (ARI) event. The system will comprise pipes, pits, detention tanks, subsoil drains, pit covers, and inspection points, all designed to capture and convey runoff to the Legal Point of Discharge (LPoD).

The drainage network has been designed in accordance with *AS/NZS 3500.3: Plumbing and Drainage – Part 3: Stormwater Drainage*. Pits will be constructed as reinforced concrete chambers, while pipework will comprise either concrete or high-strength plastic, selected based on site-specific load and hydraulic requirements. All drainage components will utilise industry-standard sizes and materials.

6.4 Rainwater Reuse

The development proposes the capture of roof water into a 15kL rainwater tank for reuse in non-potable applications, including landscape irrigation and ground-level toilet flushing.

Overflow from the rainwater reuse tank will discharge into the civil stormwater drainage network. On-site detention (OSD) tanks will be positioned downstream of the rainwater tanks to provide additional flow attenuation.

For further details on water reuse initiatives, refer to the Environmental Sustainability Consultant (ESD). Water balance calculations are provided by the Hydraulics Engineer.

**ADVERTISED
PLAN**

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

7 Stormwater Quality

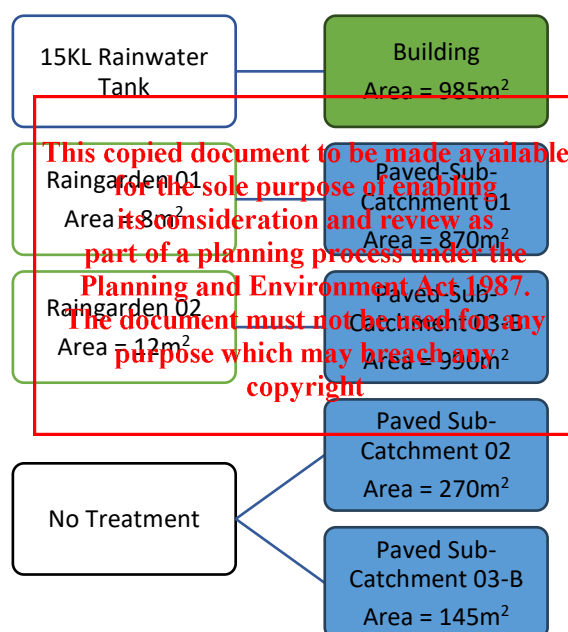
7.1 STORM Model

Melbourne Water's Stormwater Treatment Objective Relative Measure (STORM) Calculator has been developed to simplify the assessment of stormwater treatment performance. This online tool supports the evaluation of Water Sensitive Urban Design (WSUD) measures by providing a consistent and standardised framework, particularly suited to small-scale developments. It enables users to compare proposed treatment performance against established best practice benchmarks.

The treatment train configuration presented in Section 6.2 was modelled using the STORM Calculator to assess its effectiveness. A commercial/retail development category was used as a proxy for educational land use to benchmark performance against the applicable stormwater quality targets.

7.2 Treatment Train Configuration & Results

The following diagram illustrates the proposed treatment train configuration that was assessed using the STORM Calculator:



**ADVERTISED
PLAN**

Figure 5: WSUD Treatment Train

The proposed treatment train achieved a STORM effectiveness score of 103%, indicating compliance with best practice targets. Refer to Appendix D for detailed results.

Treatment Areas	Area (m²)	Treatment Device	Device Size	Low Flow
Paved-Sub-Catchment 01	870	Raingarden 01	8m²	6.9 L/s
Paved-Sub-Catchment 02	270	None	-	-
Building-Sub-Catchment 03-A	985	Rainwater Tank	15KL	N/A
Paved-Sub-Catchment 03-B	990	Raingarden 02	12m²	7.9 L/s
Paved-Sub-Catchment 03-C	145	None	-	-

Table 4: Proposed WSUD Measures

It is noted that the land use selected for constituent areas in the STORM Calculator was "retail/commercial," used as a proxy for educational land use due to the limited category options available within the tool. In practice, educational developments typically generate lower pollutant

loads, as the extent of vehicle-accessible pavement is minimal. Vehicles are a primary source of stormwater pollutants such as oils, fuels, and brake pad residue. Therefore, from a contaminant load perspective, the proposed stormwater design is expected to deliver a higher level of treatment performance compared to the actual minimum requirements for the site.

Low flows or treatment flows are defined as peak flows from a 3-month ARI rainfall event, will be diverted from the stormwater drainage system into the raingarden for treatment. These flows enter the raingarden via a DN100 outfall pipe, with the discharge point stabilised using rocks to prevent erosion. Water will pond to a maximum depth of 100mm within the raingarden, allowing infiltration into the soil which water is sufficiently treated. A perimeter sub-soil drain directs infiltrated water back into the stormwater network to avoid water build-up. A pit internal to the raingarden serves as an emergency overflow, while an upstream pit bypasses high flows during heavy rainfall to protect the raingarden.

The raingarden functions as both a stormwater treatment asset and a landscaped feature, enhancing green amenity. It will be planted with vegetation and grasses compliant with Melbourne Water's guidelines, as specified by the landscape architect.

The design presented serves as a performance specification for the proposed stormwater treatment devices. Detailed design and documentation of these elements will be undertaken by the relevant project consultants, as outlined below:

- **Rainwater Tanks:** Refer to the Hydraulics Engineer and Environmental Sustainability Design (ESD) Consultant for detailed specifications and design.
- **Raingarden:** Refer to the Landscape Architect for detailed design and integration within the landscape layout.

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

**ADVERTISED
PLAN**

8 Overland Flows and Flooding

8.1 Design Provisions for Flood Protection

The school land parcel is subject to a Special Building Overlay (SBO) flooding risk as identified in the Victorian Planning Maps. However, the identified flood-prone area is well isolated from the proposed development site, and the actual flood risk is considered extremely low. The development area is situated at least 3.20 metres above the elevation of the SBO overlay. In this context, the risk of flooding from local pipe surcharges is considered greater than from the SBO overlay.

To mitigate this risk, a higher level of volume and peak flow attenuation is proposed, as detailed in Section 5.

In accordance with Building Code requirements, external paved areas will be graded away from buildings to reduce the risk of surface water ingress. Additionally, along the northern boundary adjacent to the development area, a cut-off drain will be installed to intercept and convey any overland flow from upstream external catchments. This drain will be a formed surface channel, finished with either low-maintenance grasses or a sealed surface to promote efficient flow conveyance.

ADVERTISED PLAN

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

9 Conclusions

9.1 Treatment Train Schematic

The following schematic diagrams provide a summary of the proposed stormwater management strategy, illustrating the system layout across the three identified sub-catchments.

Sub-Catchment 01

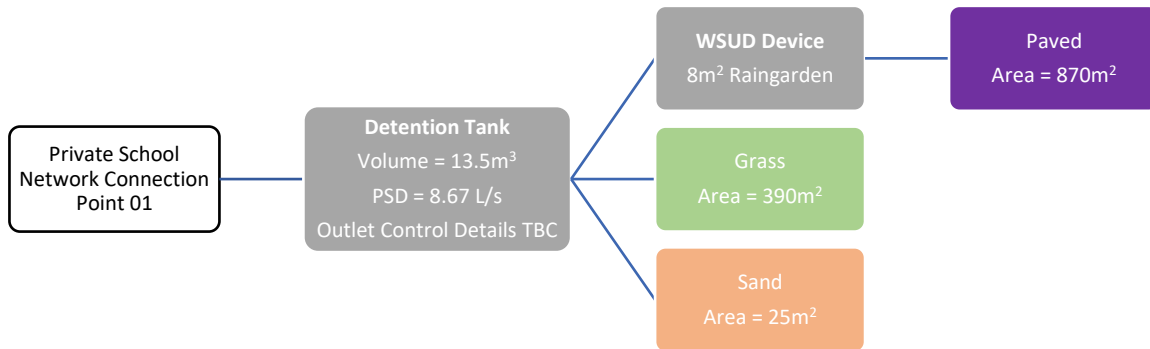


Figure 6: SW Management - Sub-Catchment 01

Sub-Catchment 02

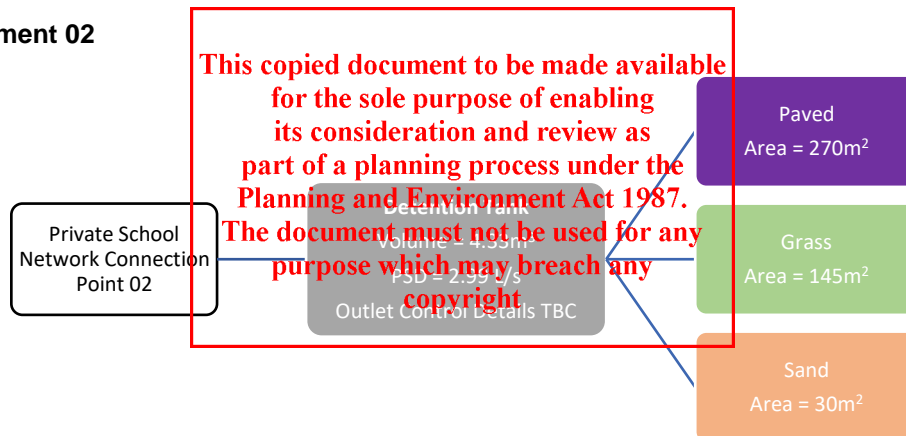


Figure 7: SW Management - Sub-Catchment 02

Sub-Catchment 03

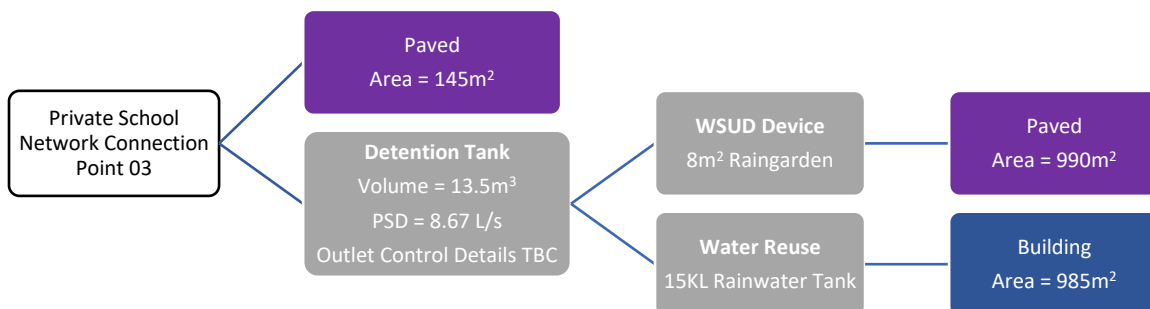


Figure 8: SW Management - Sub-Catchment 03

ADVERTISED
PLAN

9.2 Summary

This Stormwater Management Plan (SMP) analyses both the existing site conditions and the proposed development to establish a robust stormwater strategy that supports the delivery of the project. The assessment considers existing site features, the capacity and performance of the current stormwater network, and the nature of the proposed land use. Based on this analysis, a targeted design response has been developed to align with best practice standards and meet applicable compliance requirements.

The SMP demonstrates that the proposed stormwater management measures represent the most practical and effective approach to minimising potential adverse impacts on existing infrastructure and the surrounding receiving environments.

9.3 Design Progression

This report has been prepared for use by the developer and the consultant team directly involved with the project at this site. It is intended to support the development approval process as part of the overall submission package. This report should not be used or relied upon for any other site or development.

The SMP will be updated as the design progresses and further input is received from relevant stakeholders. While refinements may occur through the detailed design phase, the overarching objectives and strategic approach outlined in this SMP are intended to remain consistent.

10 Limitations

This report has been prepared specifically for the project described to Matter Consulting and is limited to the scope of services agreed upon between the parties. The assessment presented is primarily desktop-based and relies on information provided by the client, including survey data, architectural plans, and utility information obtained via Dial Before You Dig and publicly available GIS datasets. All third-party data is considered current at the time of the report's preparation.

Matter Consulting accepts no responsibility for the accuracy of information sourced from third parties, nor for the use of any part of this report outside its intended purpose or in any other context.

**ADVERTISED
PLAN**

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

Appendix A

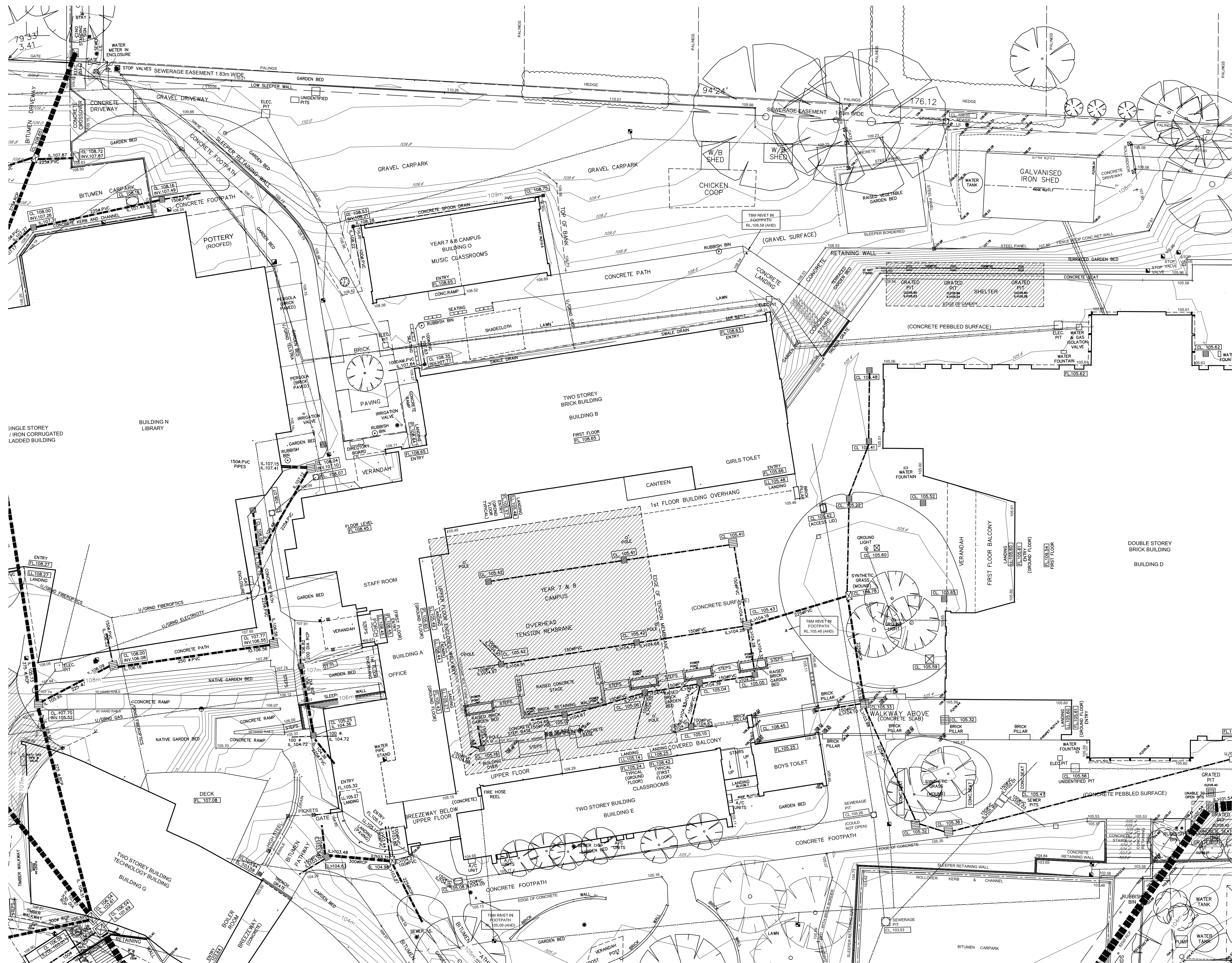
Feature Level Survey

**ADVERTISED
PLAN**

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

ADVERTISED
PLAN



This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

ADVERTISED PLAN

01 PRELIMINARY DD ISSUE 17.03.25
REVISIONS

DETAILED DESIGN

DO NOT SCALE OF THIS DRAWING. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION THAT ALL DIMENSIONS, LEVELS & DETAILS ARE CO-ORDINATED PRIOR TO COMMENCEMENT OF THE WORK AND ORDERING OF MATERIALS. ALL DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT FOR RESOLUTION PRIOR TO COMMENCEMENT OF THE WORK.

Kosloff Architecture

A: Level 2 137 Flinders Lane
Melbourne, VIC 3000
E: contact@kosloffarchitecture.com
W: kosloffarchitecture.com
ABN: 85 616 495 651

CLIENT
MELBOURNE ARCHDIOCESE
CATHOLIC SCHOOLS

PROJECT NUMBER
K096
PROJECT
AQUINAS COLLEGE

STREET ADDRESS
46 GREAT RYRIE STREET,
RINGWOOD VIC 3134

DRAWING TITLE

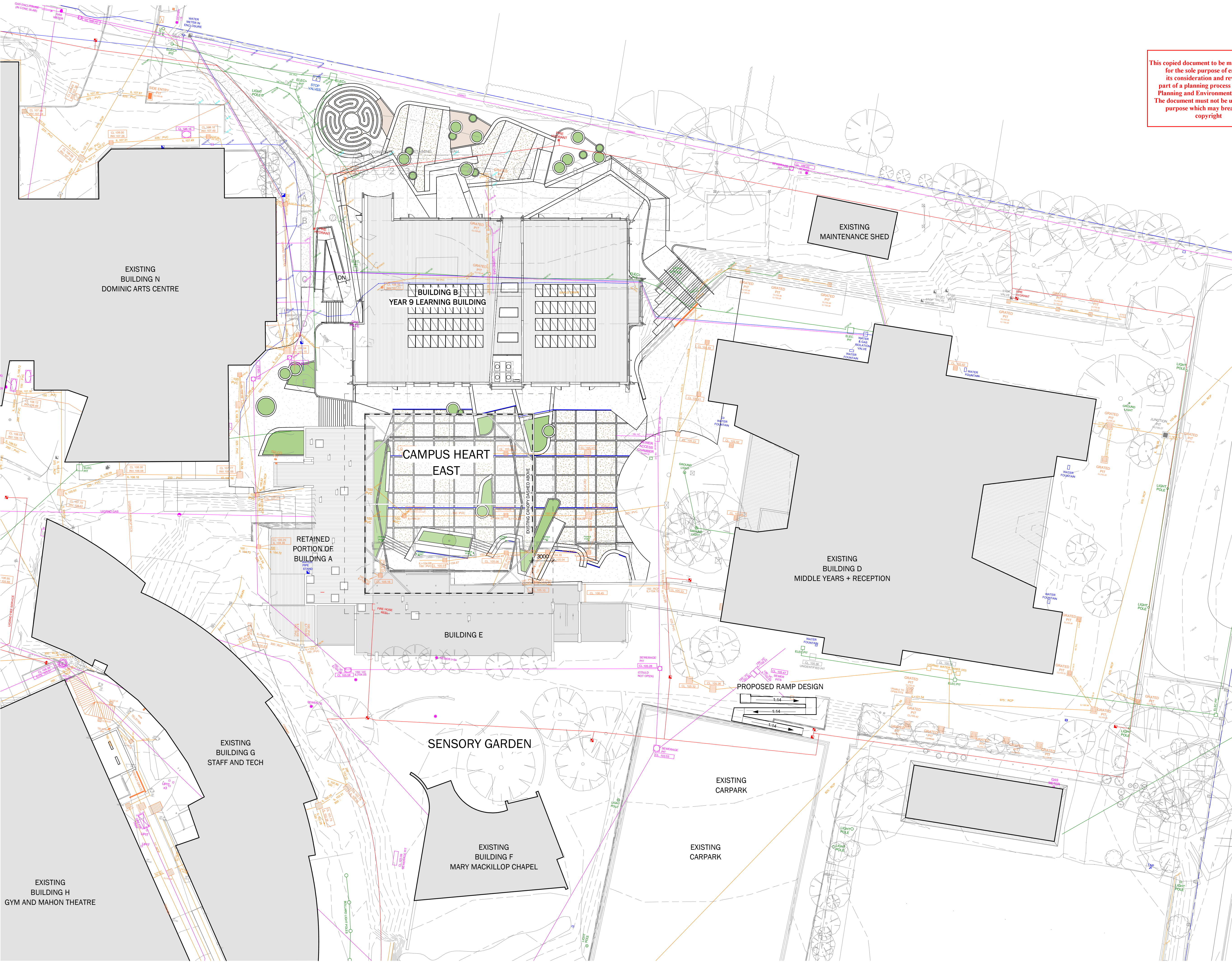
PROPOSED SITE PLAN

SCALE @ A1
1 : 250

DRAWN
VB

CHECKED
SL

DRAWING No. [REV]
S-A102 [01]



Appendix B

Stormwater Plan - Developed Design

**ADVERTISED
PLAN**

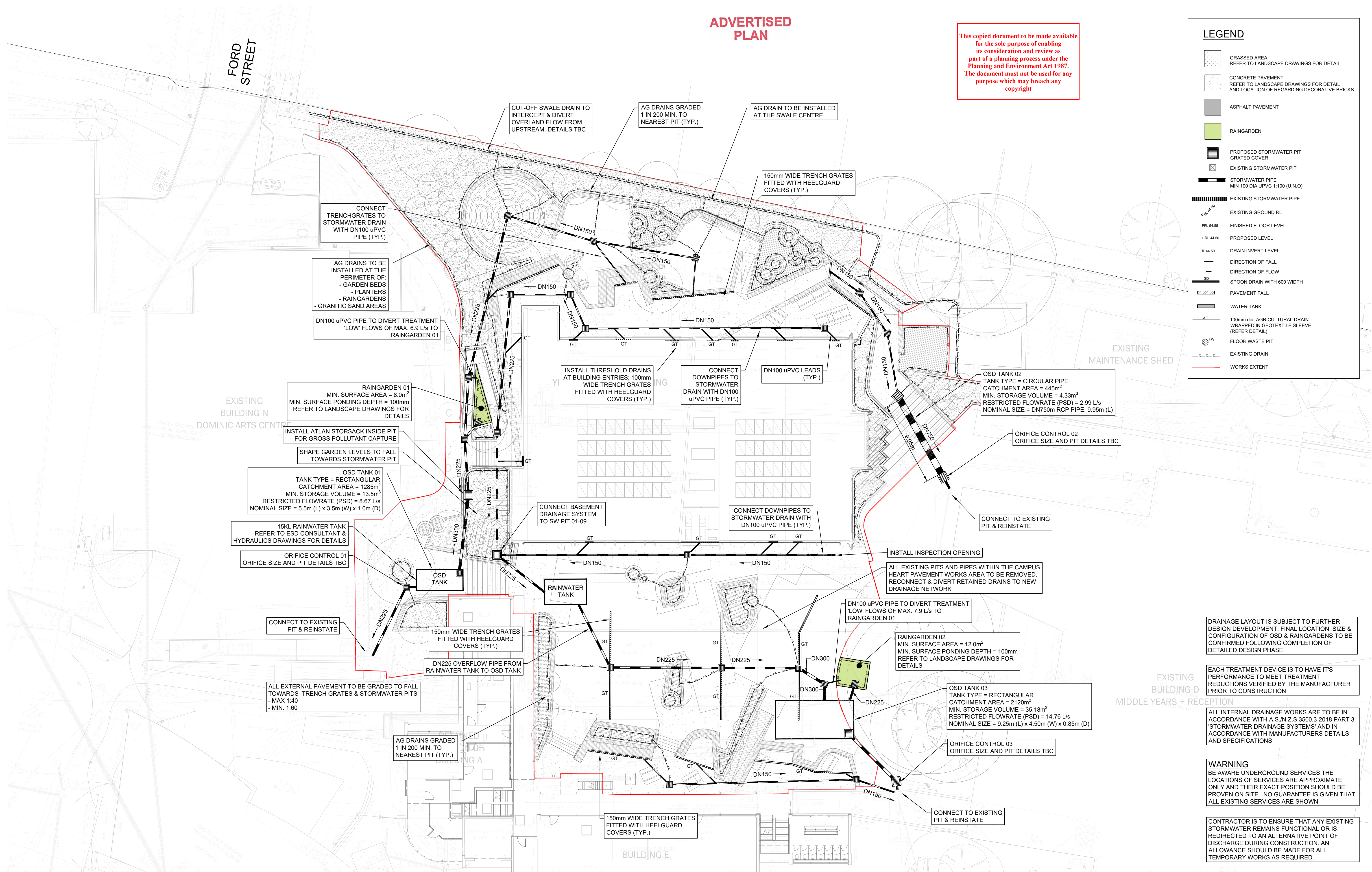
**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

ADVERTISED
PLAN

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

LEGEND

- GRASSED AREA
REFER TO LANDSCAPE DRAWINGS FOR DETAIL
- CONCRETE PAVEMENT
REFER TO LANDSCAPE DRAWINGS FOR DETAIL
AND LOCATION OF REGARDING DECORATIVE BRICKS.
- ASPHALT PAVEMENT
- RAINGARDEN
- PROPOSED STORMWATER PIT
GRADED COVER
- EXISTING STORMWATER PIT
- STORMWATER PIPE
MIN 100 DIA UPVC 1:100 (U.N.O)
- EXISTING STORMWATER PIPE
- EXISTING GROUND RL
- FINISHED FLOOR LEVEL
- PROPOSED LEVEL
- DRAIN INVERT LEVEL
- DIRECTION OF FALL
- DIRECTION OF FLOW
- SPOON DRAIN WITH 600 WIDTH
- PAVEMENT FALL
- WATER TANK
- 100mm dia. AGRICULTURAL DRAIN
WRAPPED IN GEOTEXTILE SLEEVE.
(REFER DETAIL)
- FLOOR WASTE PIT
- EXISTING DRAIN
- WORKS EXTENT



DRAINAGE LAYOUT IS SUBJECT TO FURTHER DESIGN DEVELOPMENT. FINAL LOCATION, SIZE & CONFIGURATION OF OSD & RAINGARDENS TO BE CONFIRMED FOLLOWING COMPLETION OF DETAILED DESIGN PHASE.

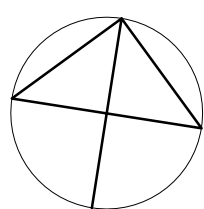
EACH TREATMENT DEVICE IS TO HAVE ITS PERFORMANCE TO MEET TREATMENT REDUCTIONS VERIFIED BY THE MANUFACTURER PRIOR TO CONSTRUCTION

ALL INTERNAL DRAINAGE WORKS ARE TO BE IN ACCORDANCE WITH A.S./N.Z.S.3500.3-2018 PART 3 'STORMWATER DRAINAGE SYSTEMS' AND IN ACCORDANCE WITH MANUFACTURERS DETAILS AND SPECIFICATIONS

WARNING
BE AWARE UNDERGROUND SERVICES THE LOCATIONS OF SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN

CONTRACTOR IS TO ENSURE THAT ANY EXISTING STORMWATER REMAINS FUNCTIONAL OR IS REDIRECTED TO AN ALTERNATIVE POINT OF DISCHARGE DURING CONSTRUCTION. AN ALLOWANCE SHOULD BE MADE FOR ALL TEMPORARY WORKS AS REQUIRED.

REV.	DATE	DESCRIPTION	BY
01	04/04/2025	DEVELOPED DESIGN	DR
02	15/04/2025	DD - SITE PLAN UPDATE	DR



MELBOURNE ARCHDIOCESE
CATHOLIC SCHOOLS
PROJECT
AQUINAS COLLEGE
34 GREAT RYRIE STREET RINGWOOD VIC 3134

M A T T E R

CONSULTING STRUCTURAL ENGINEERS

Level 8/650 Bourke Street
Melbourne VIC 3000
T (03) 8892 7262
matterconsulting.com.au

SHEET TITLE

STORMWATER
DRAINAGE PLAN

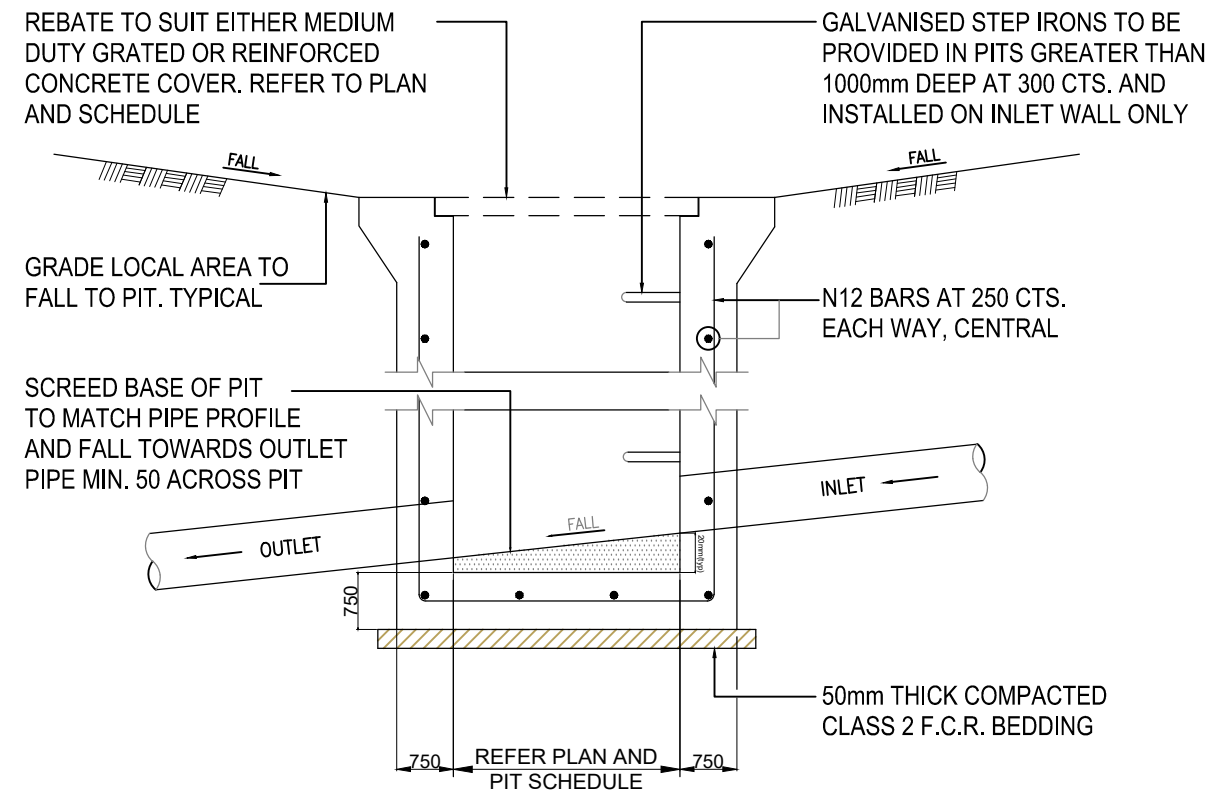
NOTE:
ALL DIMENSIONS ARE IN MILLIMETRES. VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCEMENT OF WORKS.
DO NOT SCALE OFF DRAWING. COPYRIGHT REMAINS THE PROPERTY OF MATTER CONSULTING PTY. LTD.

DEVELOPED DESIGN

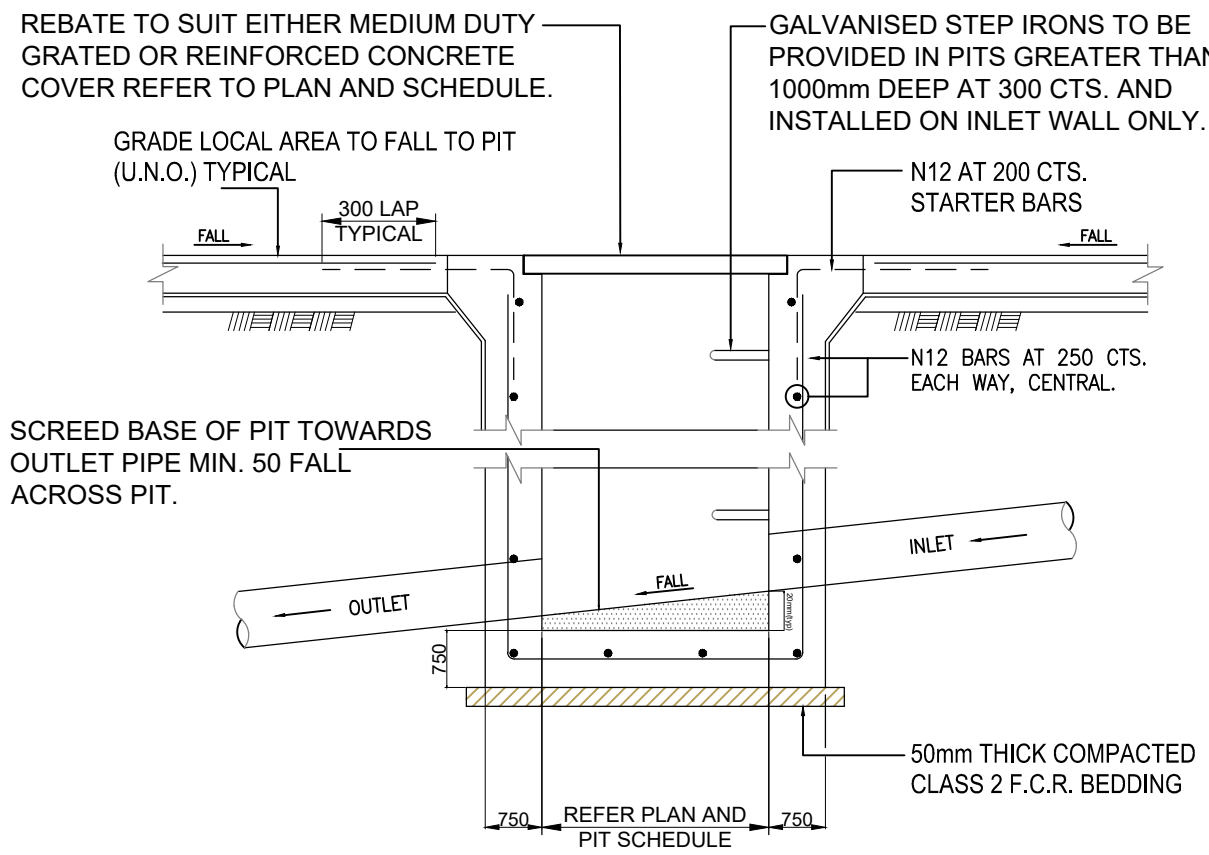
DRAWN BY: DR CHECKED BY: DR APPROVED BY: SCALE: 1:200 DRAWN DATE: 04/04/2025

PROJECT NO: SHEET NO: REVISION NO:

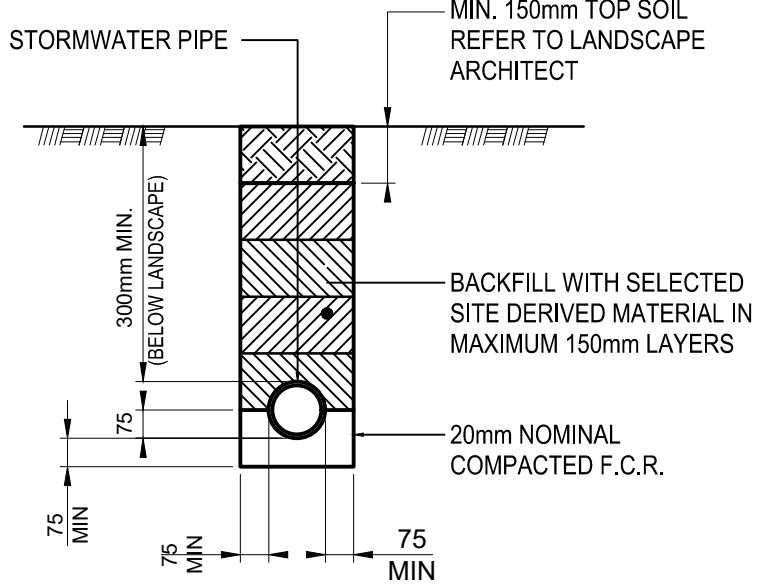
23212 C.0010 02



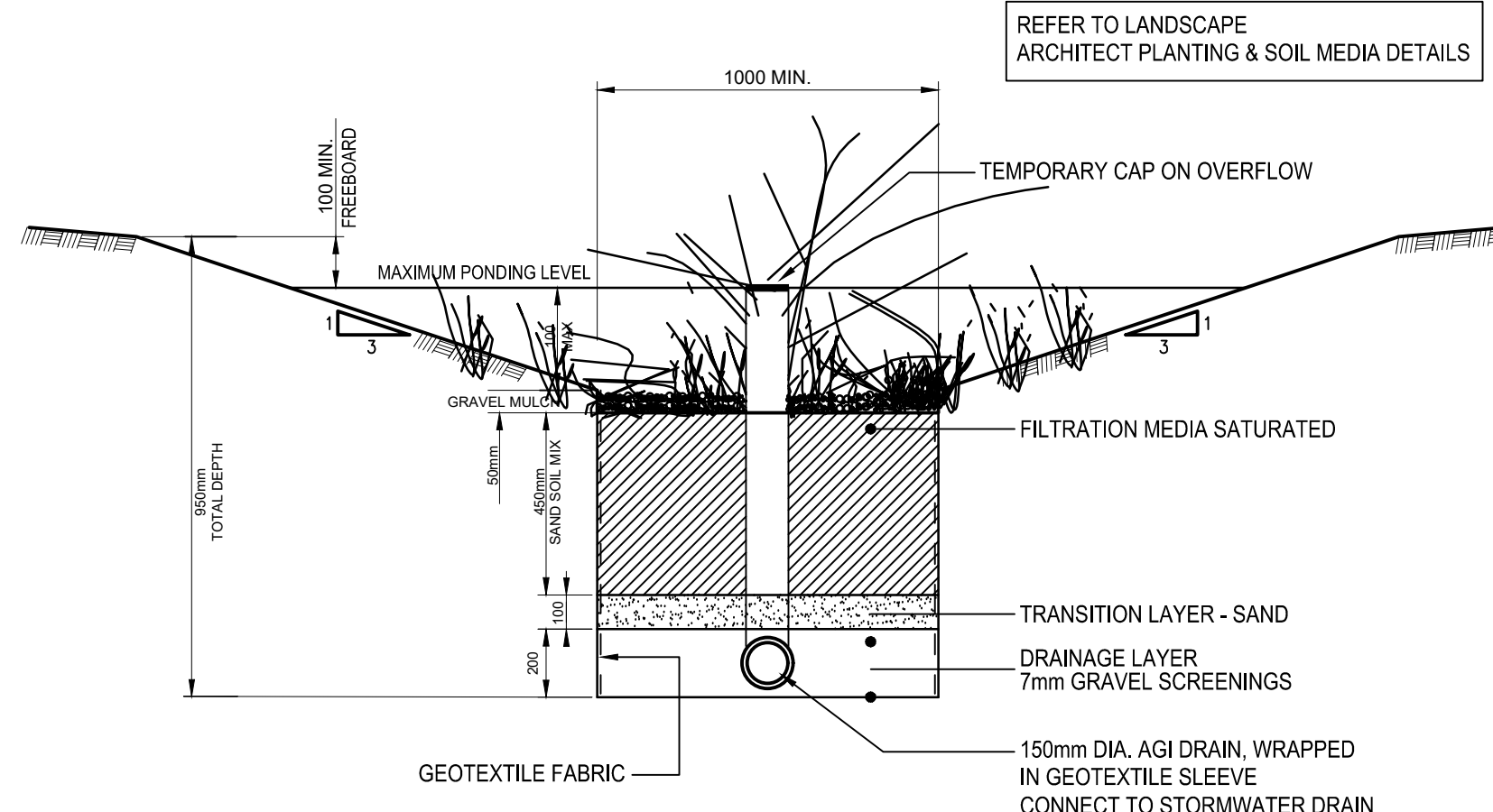
TYPICAL PIT DETAIL
(IN LANDSCAPING AREA)



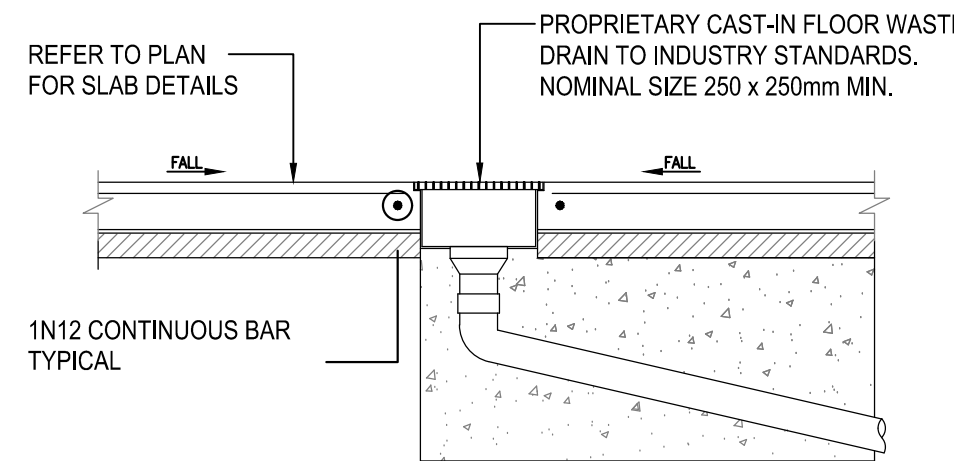
TYPICAL PIT DETAIL
(IN PAVEMENT AREA)



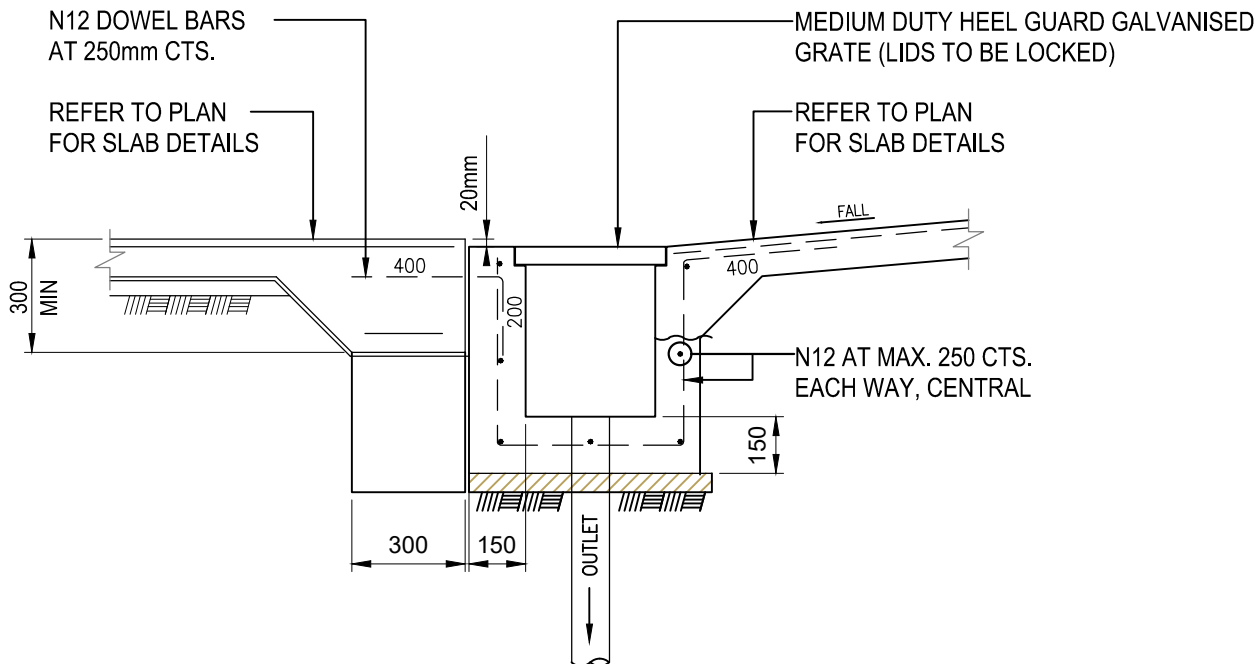
TYPICAL STORMWATER TRENCH DETAIL
(BELOW LANDSCAPE)



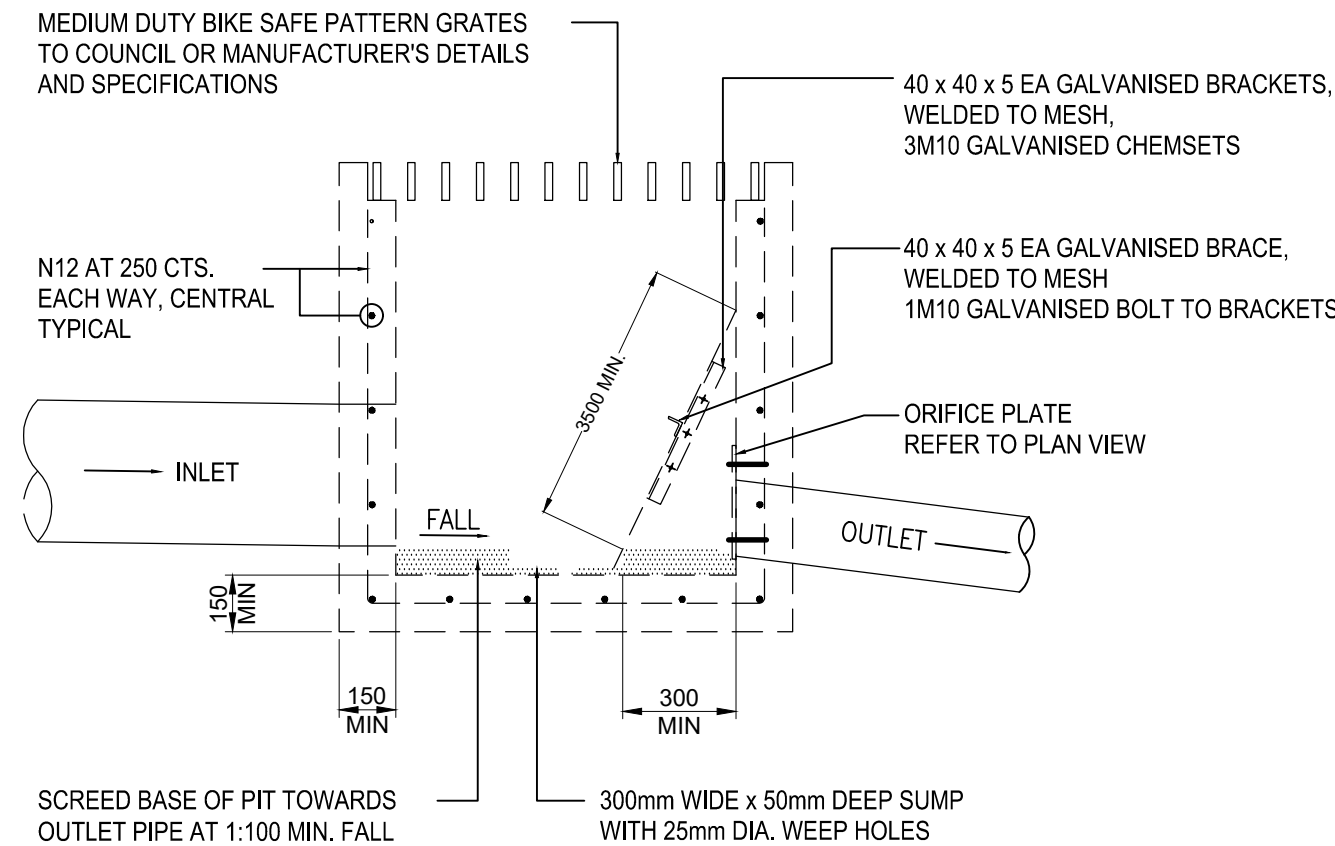
TYPICAL RAINGARDEN/BIORETENTION SYSTEM



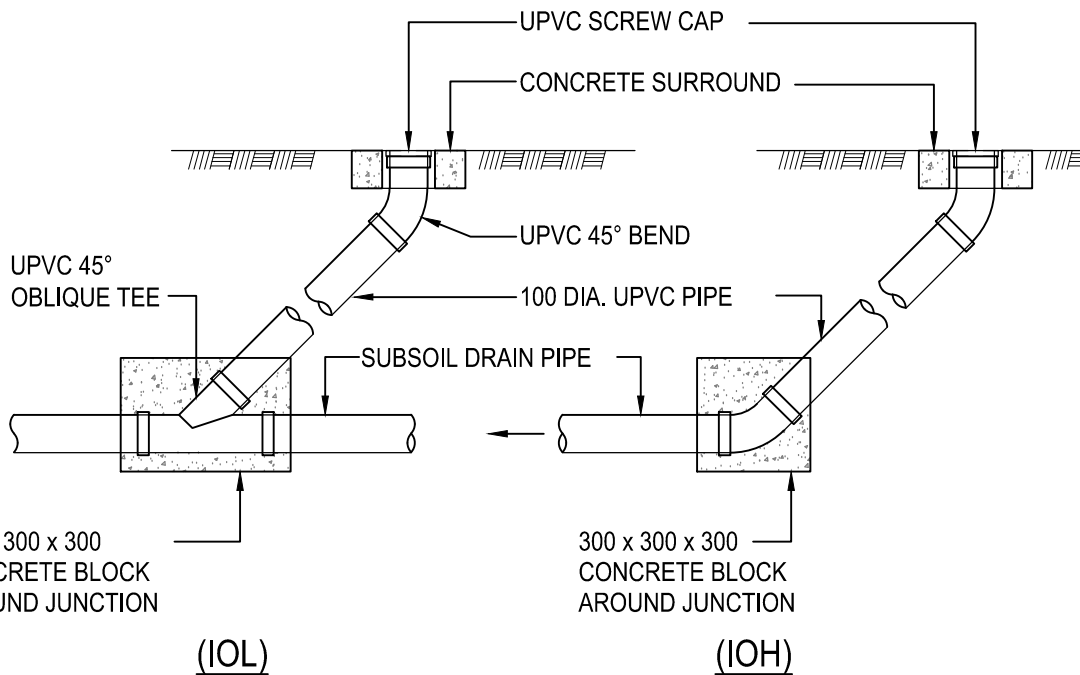
TYPICAL FLOOR WASTE PIT DETAIL



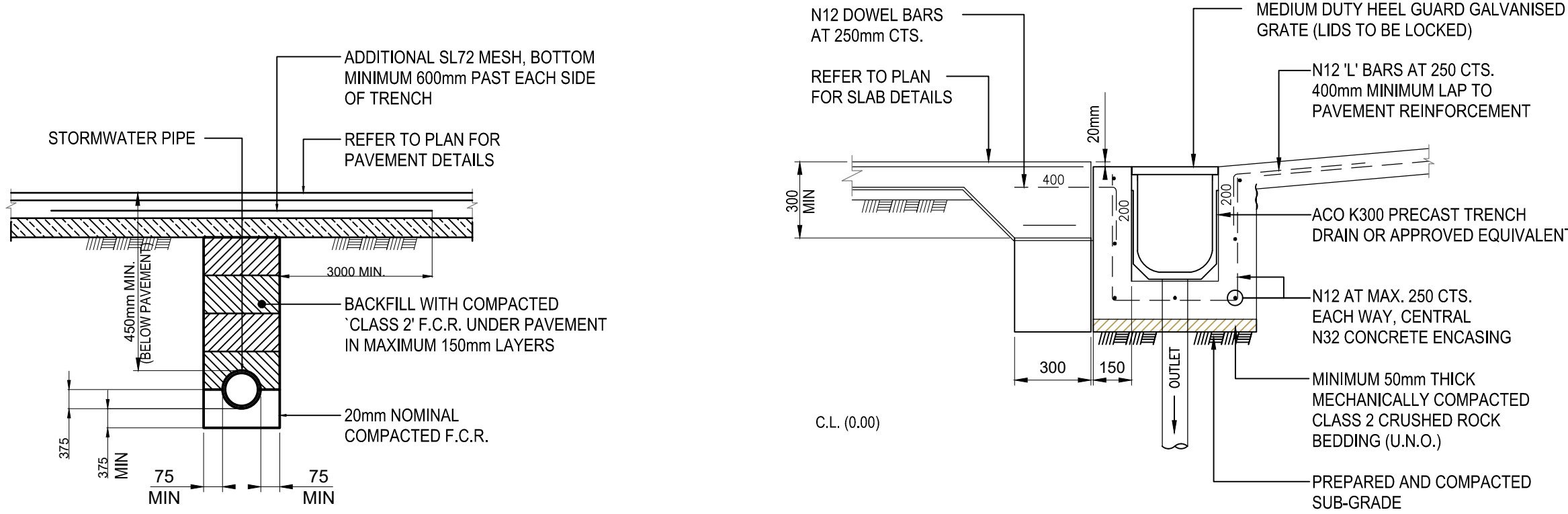
TYPICAL GRATED TRENCH (FORMED)
DRAIN TO FOOTING DETAIL



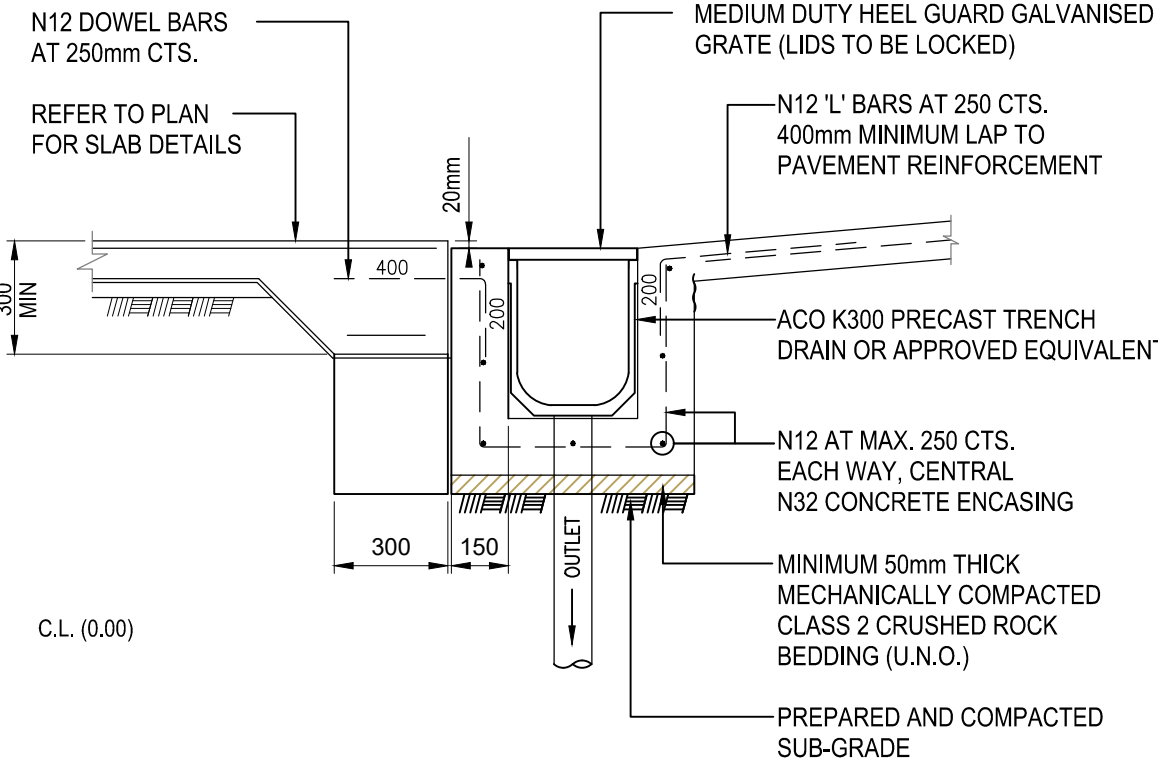
SECTION A-A
GRATED CONTROL PIT DETAIL



TYPICAL INSPECTION OPENING DETAILS
SUBSOIL DRAIN CLEANING POINT



TYPICAL STORMWATER TRENCH DETAIL
(BELOW NEW PAVEMENT)

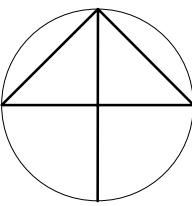


TYPICAL GRATED TRENCH (ACO) DRAIN
TO FOOTING DETAIL

ADVERTISED
PLAN

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

REV.	DATE	DESCRIPTION	BY
01	04/04/2025	DEVELOPED DESIGN	DR
02	10/04/2025	DD - DESIGN UPDATE	DR



MELBOURNE ARCHDIOCESE
CATHOLIC SCHOOLS
PROJECT
AQUINAS COLLEGE
34 GREAT RYRIE STREET RINGWOOD VIC 3134

CLIENT

PROJECT

MATTER

CONSULTING STRUCTURAL ENGINEERS

Level 8/650 Bourke Street
Melbourne VIC 3000
T (03) 8892 7262
matterconsulting.com.au

SHEET TITLE

TYPICAL
STORMWATER
DETAILS

NOTE:
ALL DIMENSIONS ARE IN MILLIMETRES. VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCEMENT OF WORKS.
DO NOT SCALE OFF DRAWING. COPYRIGHT REMAINS THE PROPERTY OF MATTER CONSULTING PTY. LTD.

DEVELOPED DESIGN

DRAWN BY: DR	CHECKED BY: DR	APPROVED BY: -	SCALE: -1:1 NTS	DRAWN DATE: 04/04/2025
PROJECT NO: 23212	SHEET NO: C.0100	REVISION NO: 02		

Appendix C

OSD Calculations

**ADVERTISED
PLAN**

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

Printed from *OSD4W* version 1.08.4

=====

1. CLIENT DETAILS

Name : ClientName
Address line 1 : ClientDet1.....
Address line 2 : ClientDet2.....
Address line 3 : ClientDet3.....

2. JOB NAME AND REFERENCE

Job Reference : OSD4W-2008-001
Job Name : JobName.....
Job Detail 1 : JobAddress1.....
Job Detail 2 : JobAddress2.....
Job Detail 3 : JobAddress3.....

3. AREAS (sq.m.) & RUN-OFF COEFFICIENTS

Total Site area : 1285

4. EXISTING SITE DETAILS

Aes1 : 1285 Ces1 : 0.30
Aes2 : 0 Ces2 : 0.50
Aes3 : 0 Ces3 : 0.90
Aes4 : 0 Ces4 : 0.12
Weighted C - site Cew : 0.30

5. PROPOSED SITE DETAILS

Aps1 : 390 Cps1 : 0.30
Aps2 : 25 Cps2 : 0.50
Aps3 : 870 Cps3 : 0.90
Aps4 : 0 Cps4 : 0.12
Weighted C - site Cpw : 0.71
Uncontrolled portion(s) UPfrac : 0.00

6. CATCHMENT TIMES (minutes)

Time of concentration : 10.00
Travel time from discharge point
to catchment outlet : 5.00

7. OSD DESIGN

Flow Control Device : MC2 Multi-Cell
Storage type : Pipe
Rainfall zone : RINGWOOD
ARI for OUTFLOW (years) : 5
ARI for STORAGE (years) : 20
Qptot (L/s) : 7.09
Qu (L/s) : 0.00
Qp (L/s) : 0.00
Calculated PSD (L/s) : 8.67
Nominated PSD (L/s) : ----
Adopted PSD (L/s) : 8.67

8. STORAGE DETAILS

Volume (cub.m.) : 13.50
Time to fill storage (mins) : 24.0
Time to empty storage (mins) : 43.3
Critical storm duration (mins) : 31.3

9. STORM DURATIONS & RAINFALL INTENSITIES

PSD Duration : 10.0 min. Intensity : 66.2 mm/hr
MAX. STORAGE Duration : 31.3 min. Intensity : 49.1 mm/hr

=====

Generated at : 14/04/2025 9:57:21 AM

**ADVERTISED
PLAN**

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

=====

Printed from *OSD4W* version 1.08.4

=====

1. CLIENT DETAILS

Name : ClientName
Address line 1 : ClientDet1.....
Address line 2 : ClientDet2.....
Address line 3 : ClientDet3.....

2. JOB NAME AND REFERENCE

Job Reference : OSD4W-2008-001
Job Name : JobName.....
Job Detail 1 : JobAddress1.....
Job Detail 2 : JobAddress2.....
Job Detail 3 : JobAddress3.....

3. AREAS (sq.m.) & RUN-OFF COEFFICIENTS

Total Site area : 445

4. EXISTING SITE DETAILS

Aes1 : 445 Ces1 : 0.30
Aes2 : 0 Ces2 : 0.50
Aes3 : 0 Ces3 : 0.90
Aes4 : 0 Ces4 : 0.12
Weighted C - site Cew : 0.30

5. PROPOSED SITE DETAILS

Aps1 : 145 Cps1 : 0.30
Aps2 : 30 Cps2 : 0.50
Aps3 : 270 Cps3 : 0.90
Aps4 : 0 Cps4 : 0.12
Weighted C - site Cpw : 0.68
Uncontrolled portion(s) UPfrac : 0.00

6. CATCHMENT TIMES (minutes)

Time of concentration : 10.00
Travel time from discharge point
to catchment outlet : 5.00

7. OSD DESIGN

Flow Control Device : MC2 Multi-Cell
Storage type : Pipe
Rainfall zone : RINGWOOD
ARI for OUTFLOW (years) : 5
ARI for STORAGE (years) : 20
Qptot (L/s) : 2.45
Qu (L/s) : 0.00
Qp (L/s) : 0.00
Calculated PSD (L/s) : 2.99
Nominated PSD (L/s) : ----
Adopted PSD (L/s) : 2.99

8. STORAGE DETAILS

Volume (cub.m.) : 4.33
Time to fill storage (mins) : 22.7
Time to empty storage (mins) : 40.4
Critical storm duration (mins) : 29.7

9. STORM DURATIONS & RAINFALL INTENSITIES

PSD Duration : 10.0 min. Intensity : 66.2 mm/hr
MAX. STORAGE Duration : 29.7 min. Intensity : 50.6 mm/hr

=====

Generated at : 14/04/2025 9:59:19 AM

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

**ADVERTISED
PLAN**

=====

Printed from *OSD4W* version 1.08.4

=====

1. CLIENT DETAILS

Name : ClientName
Address line 1 : ClientDet1.....
Address line 2 : ClientDet2.....
Address line 3 : ClientDet3.....

2. JOB NAME AND REFERENCE

Job Reference : OSD4W-2008-001
Job Name : JobName.....
Job Detail 1 : JobAddress1.....
Job Detail 2 : JobAddress2.....
Job Detail 3 : JobAddress3.....

3. AREAS (sq.m.) & RUN-OFF COEFFICIENTS

Total Site area : 2120

4. EXISTING SITE DETAILS

Aes1 : 2120 Ces1 : 0.30
Aes2 : 0 Ces2 : 0.50
Aes3 : 0 Ces3 : 0.90
Aes4 : 0 Ces4 : 0.12
Weighted C - site Cew : 0.30

5. PROPOSED SITE DETAILS

Aps1 : 0 Cps1 : 0.30
Aps2 : 0 Cps2 : 0.50
Aps3 : 1135 Cps3 : 0.90
Aps4 : 985 Cps4 : 1.00
Weighted C - site Cpw : 0.95
Uncontrolled portion(s) UPfrac : 0.00

6. CATCHMENT TIMES (minutes)

Time of concentration : 10.00
Travel time from discharge point
to catchment outlet : 5.00

7. OSD DESIGN

Flow Control Device : MC2 Multi-Cell
Storage type : Pipe
Rainfall zone : RINGWOOD
ARI for OUTFLOW (years) : 5
ARI for STORAGE (years) : 20
Qptot (L/s) : 11.69
Qu (L/s) : 0.00
Qp (L/s) : 0.00
Calculated PSD (L/s) : 14.76
Nominated PSD (L/s) : ----
Adopted PSD (L/s) : 14.76

8. STORAGE DETAILS

Volume (cub.m.) : 35.18
Time to fill storage (mins) : 34.3
Time to empty storage (mins) : 65.3
Critical storm duration (mins) : 44.1

9. STORM DURATIONS & RAINFALL INTENSITIES

PSD Duration : 10.0 min. Intensity : 66.2 mm/hr
MAX. STORAGE Duration : 44.1 min. Intensity : 39.9 mm/hr

=====

Generated at : 14/04/2025 10:01:03 AM

**ADVERTISED
PLAN**

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

Appendix D

WSUD - STORM Calculations

**ADVERTISED
PLAN**

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**



STORM Rating Report

TransactionID: 0
Municipality: MAROONDAH
Rainfall Station: MAROONDAH
Address: 46 Great Ryrie Street

Ringwood
VIC
Assessor: DR
Development Type: Commercial/Retail
Allotment Site (m2): 3,850.00
STORM Rating %: 103

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
Paved-Sub-Catchment 01	870.00	Raingarden 100mm	8.00	0	109.60	0.00
Paved-Sub-Catchment 02	270.00	None	0.00	0	0.00	0.00
Building-Sub-Catchment 03-A	985.00	Rainwater Tank	15,000.00	70	125.50	70.00
Paved-Sub-Catchment 03-B	990.00	Raingarden 100mm	12.00	0	117.50	0.00
Paved-Sub-Catchment 03-C	145.00	None	0.00	0	0.00	0.00

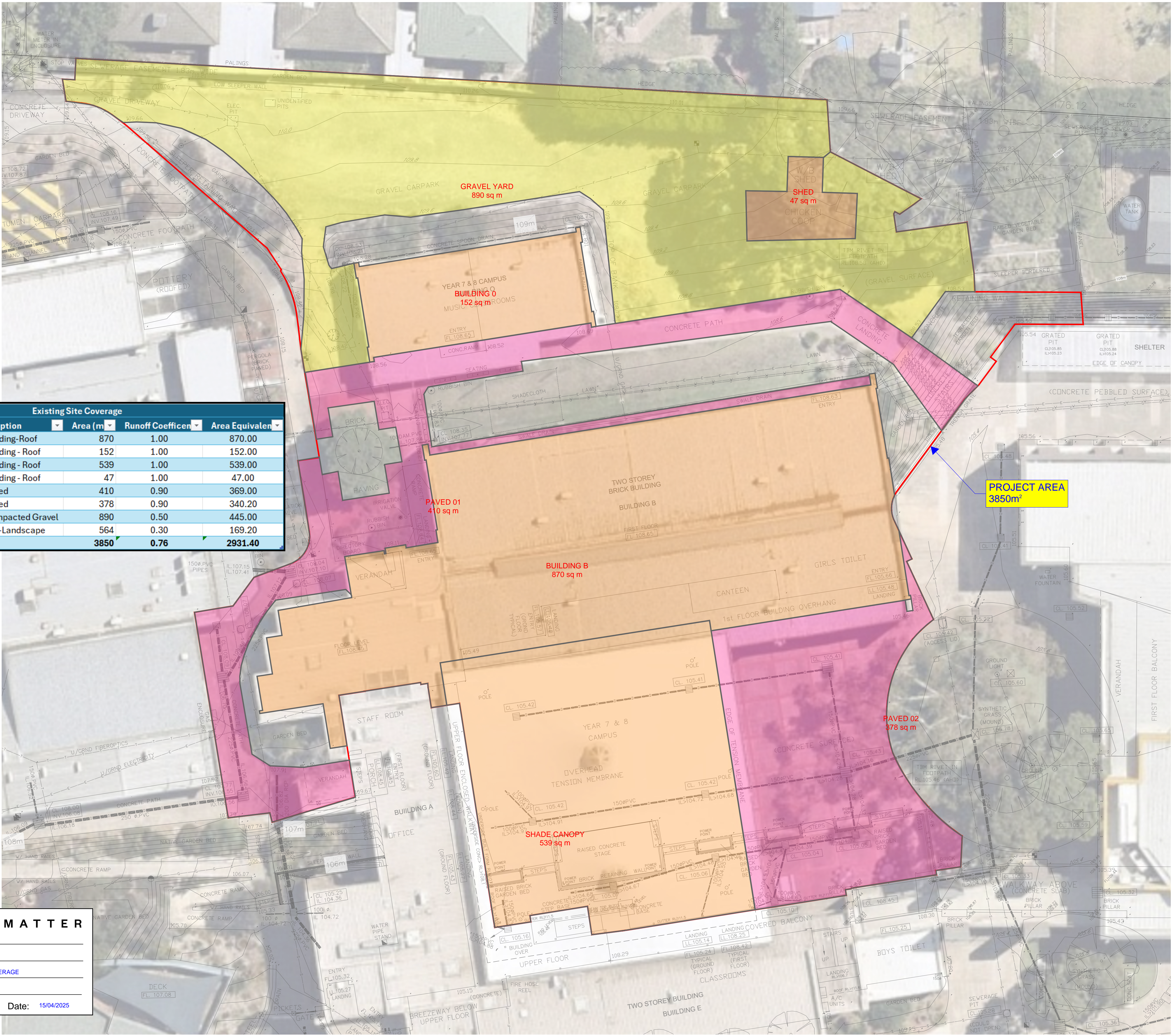
**ADVERTISED
PLAN**

Appendix E

Pre-Development Areas

**ADVERTISED
PLAN**

**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**



Existing Site Coverage				
Area ID	Description	Area (m²)	Runoff Coefficient	Area Equivalent
Building B	Impervious - Building - Roof	870	1.00	870.00
Building O	Impervious - Building - Roof	152	1.00	152.00
Shade Canopy	Impervious - Building - Roof	539	1.00	539.00
Shed	Impervious - Building - Roof	47	1.00	47.00
Paved 01	Impervious - Paved	410	0.90	369.00
Paved 02	Impervious - Paved	378	0.90	340.20
Gravel Yard	Impervious - Compacted Gravel	890	0.50	445.00
Grass	Pervious - Grass-Landscape	564	0.30	169.20
Total		3850	0.76	2931.40

LEGEND

- IMPERVIOUS BUILDING - ROOF
- IMPERVIOUS PAVED
- PERVIOUS GRAVEL

MATTER

Project: AQUINAS
Job No.: 23212
Sketch Title: EXISTING SITE COVERAGE
Sketch No.: CSK-006
By: DR Date: 15/04/2025

SCALE 1:150 @ A1

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

ADVERTISED PLAN

Appendix F

Post-Development Areas

**ADVERTISED
PLAN**

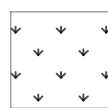
**This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright**

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

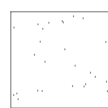
DL 108.72
NV 107.87

XISTING
JILDING N
C ARTS CENTRE

KEY



GRASS



SAND

M A T T E R

Project: [AQUINAS](#)

Job No.: [23212](#)

Sketch Title: [PROPOSED SITE COVERAGE](#)

Sketch No.: [CSK-007](#)

By: [DR](#)

Date: [15/04/2025](#)

SCALE 1:150 @ A1

SUB-CATCHMENT 01
PAVED = 870m²
GRASS = 390m²
SAND = 25m²

SUB-CATCHMENT 02
PAVED = 270m²
GRASS = 145m²
SANS = 30m²

SUB-CATCHMENT 03A
BUILDING = 985m²

SUB-CATCHMENT 03B
PAVED = 990m²

SUB-CATCHMENT 03C
PAVED = 145m²

BUILDING B
YEAR 9 LEARNING BUILDING

RETAINED
PORTION OF
BUILDING A

BUILDING E

ADVERTISED
PLAN