Sustainable Management Plan & WSUD Response

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Proposed Mixed Use Development

170-174 Highbury Road, Mt Waverley

Prepared for: Compliance Energy Rating Pty Ltd

Project ID: MAK2026

16 July 2020

makao

Table of Contents

DATE	STATUS	PREPARED BY	VERSION
7 July 2020	Issue for Review - Draft	KMK / TS	V1
17 July 2020	Issue for TP Issue - Final	KMK / TS	V2

Introduction

Compliance Energy Rating Pty Ltd engaged Makao to prepare a Sustainable Management Plan report for the proposed development at 170-174 Highbury Road, Mt Waverley.

This report demonstrates how this development incorporates sustainability initiatives and meets the sustainable development objectives set out in City of Monash's planning scheme. Particularly:

- Clause 22.13: Environmentally Sustainable Development Policy; and
- Clause 53.18-5: Stormwater Management (WSUD) Policy
- Clause 55.07: Apartment Developments (relevant standards)

In summary, the proposed development:

- Incorporates a range of sustainable design initiatives
- Attains the 'Best Practice' score in Built Environment Sustainability Scorecard (BESS)
- Achieves the best practice stormwater quality performance objectives set out in the *Urban Stormwater Best Practice Environmental Management Guidelines, CSIRO 1999*
- Promotes water sensitive urban design, including onsite rainwater harvesting and re-use

The contents presented in this report are based on:

- Discussions and correspondence with:
  - Terry Stamatopoulos – Director, Compliance Energy Rating
- Architectural drawings prepared by Petridis Architects

The findings presented in this report are based on the sustainable design assessment undertaken using the following rating/modelling tools:

- Built Environment Sustainability Scorecard (BESS)
- Melbourne Water STORM Calculator
- FirstRate 5

Limitations

This report and its contents are based on the architectural plans and other documentation provided to Makao at the time of writing. The drawings and documentation are subject to change during design development. Consequently, some initiatives in this report may be amended or substituted while still meeting the sustainable development objectives set out in the applicable planning scheme policies. Lastly, note that the analysis presented in this report is considered adequate for this project type and at this stage. Actual performance may vary depending on build quality, building use and occupancy rates & behaviour during operation.

Project Overview

The subject site contains vacant land. A three-storey mixed use development is proposed in this application and will include:

- 11 residential apartments on Level 2
- A café (NLA 256 m^2) and medical centre (NLA 959 m^2) on ground floor,
- Childcare centre with outdoor play areas on ground, Level 1 and rooftop
- Associated carpark areas in the basement.

The site is located within the City of Monash and covers an area of approx. 2563m^2.

The proposed development comprises of the following building uses:

BUILDING LEVEL	BUILDING USE
Basement Levels 1 & 2	Car parking spaces, services, water tanks, bike racks, storage facilities
Ground Floor	Entrance foyer, café, medical centre tenancies (8 suites), bin store, childcare centre (14 children)—includes an outdoor play area
First Floor	Childcare centre (130 children)—includes an outdoor play area
Second Floor	11 residential apartments (19 bedrooms)

The development site is in a General Residential Zone – Schedule 3 (GRZ3) withing the Monash LGA. The adjacent locale comprises a mix of residential and commercial properties. See image below for the subject site and surrounding locality.

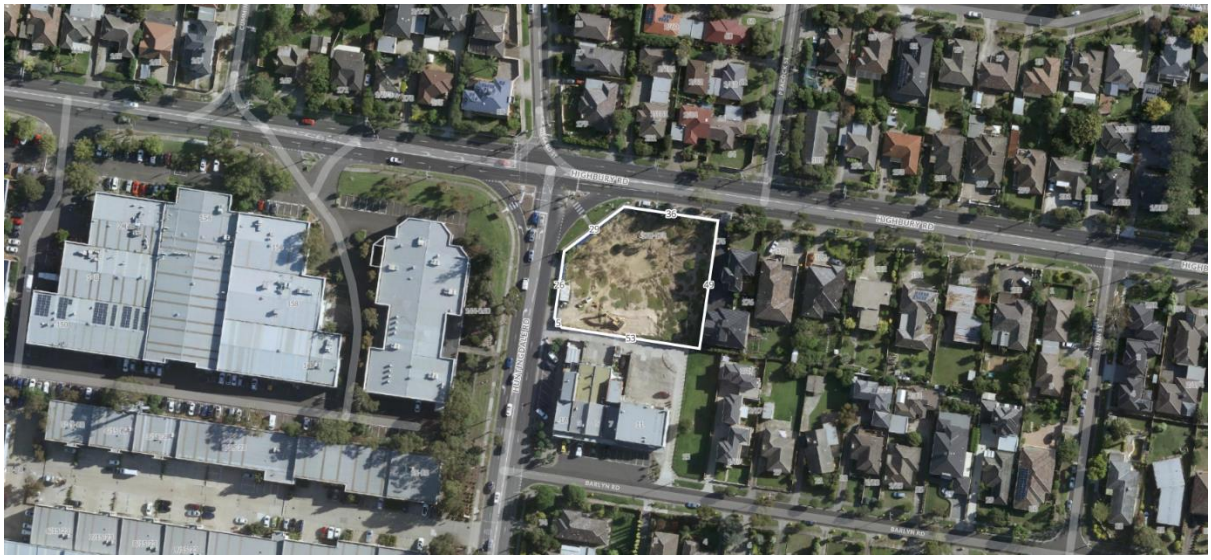

Figure 1 Site Location [accessed July 2020]

Sustainability Initiatives

The proposed development has been designed to contribute to the broader City of Monash sustainability objectives. In summary, the sustainability initiatives integrated into the development aim to:

- Minimise demand for resources by building occupants
- Promote indoor environment quality
- Minimise water consumption
- Contribute to the protection of waterways by improving stormwater quality

Accordingly, the analysis presented in this report demonstrates that the proposed development attains these objectives by incorporating the following measures:

- ✓ Achieves the 50% rating score required to demonstrate *Best Practice* in the Built Environment Sustainability Scorecard (BESS) rating tool
- ✓ Attains the *best practice standard* for urban stormwater quality
- ✓ Attains the NCC2016 thermal performance requirements
- ✓ Onsite rainwater harvesting and reuse

To meet minimum State Environment Protection Policy (SEPP) requirements, developments need to attain Best-Practice Environmental Guidelines for Urban Stormwater, CSIRO 1999 as outlined below (post-construction phase):

- 80% reduction in the mean annual load of Total Suspended Solids (TSS)
- 45% reduction in the mean annual load of Total Phosphorus (TP)
- 45% reduction in the mean annual load of Total Nitrogen (TN)
- 70% reduction in the mean annual load of Gross Pollutants or Litter (GP) – where litter is defined as anthropogenic material larger than 5mm

Preliminary compliance with the above targets can be demonstrated using either of the following tools:

- Melbourne Water's online STORM rating tool (a minimum 100% score required to show compliance) – ideal for small developments
- Model for Urban Stormwater Improvement Conceptualisation (MUSIC) – ideal for larger developments or where treatment trains are required

Melbourne Water's STORM calculator was used for this development.

Built Environment Sustainability Scorecard (BESS)

The BESS rating tool was developed by the Council Alliance for a Sustainable Built Environment to help design teams benchmark and show how sustainable design principles have been integrated in projects.

The tool has been adopted into the planning process of several Victorian local governments including Monash City Council.

Notably the development application achieves 'pass' in the Water, Energy, Stormwater, Indoor Environment Quality categories.

The proposed development attains the BESS results shown below:

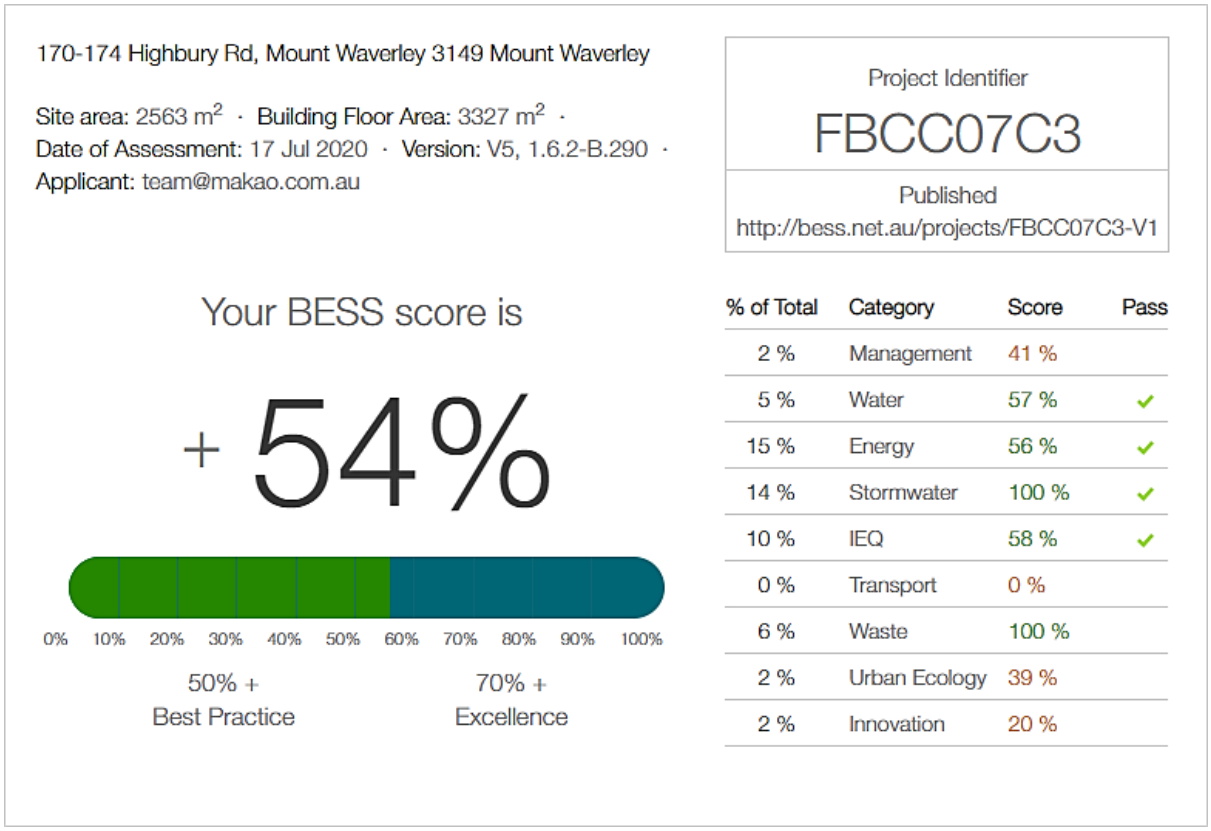

Figure 2 Summary of BESS Results [the full BESS report is published online for Council to review].

Project ESD Summary

The following sections outline the sustainability initiatives incorporated into the development. The initiatives in this report are based on the holistic framework provided by the BESS rating tool. The following tools were used in the assessment presented in this section:

- BESS Version 1.6.2 and Melbourne Water's STORM Calculator

Focus Area	BUILDING MANAGEMENT
Objective	To ensure that building managers and users are adequately informed about the best ways to operate their building and its systems to achieve optimum building performance.

Metering

In order to enable the building occupants and the building manager to monitor and assess consumption use, the following meters shall be installed:

- Individual utility meters for the dwellings and commercial tenancies
- Separate submeters for common area services e.g. lighting and power meters
- External lighting
- Rainwater harvesting system

Building Users Guide

Upon practical completion, a non-technical Building Users' Guide shall be prepared and issued to building occupants.

Focus Area	WATER EFFICIENCY
Objective	To reduce potable water use within the development.

Fixtures and Fittings

Water efficient fixtures and fittings will be specified and installed as follows:

- WELS 5-star kitchen taps and bathroom taps
- WELS 4-star toilets
- WELS 4-star dishwashers
- WELS 3-star showerheads (>6.0 but <=7.5L/min)

Water saving fixture will help in reducing potable water use and consumption within the development.

Landscape Irrigation

The landscaping features integrated into the development will incorporate the following water-saving principles to conserve potable water use:

- Specification of low water use plants, or vegetation that is suitable to local climate conditions
- Re-use of rainwater for irrigation where appropriate

Rainwater Collection

The following rainwater harvesting system will be installed in the development:

WSUD ELEMENT	DESCRIPTION	COMMENTS
Rainwater Tank(s) Capacity	25,000 litres	RWT located in the basement levels
Rainwater Collection Areas	Approx. 1146m^2 of roof areas and upper terrace	Stormwater captured from terraces shall undergo filtration prior to draining into the RWT
Re-use purpose	Landscape Irrigation	
Re-use purpose	Toilet Flushing	Captured rainwater shall be re-used for WC flushing in all non-residential toilets. And where practical, for bin washdown.

Refer to the image below for a mark-up of the rainwater catchment areas.

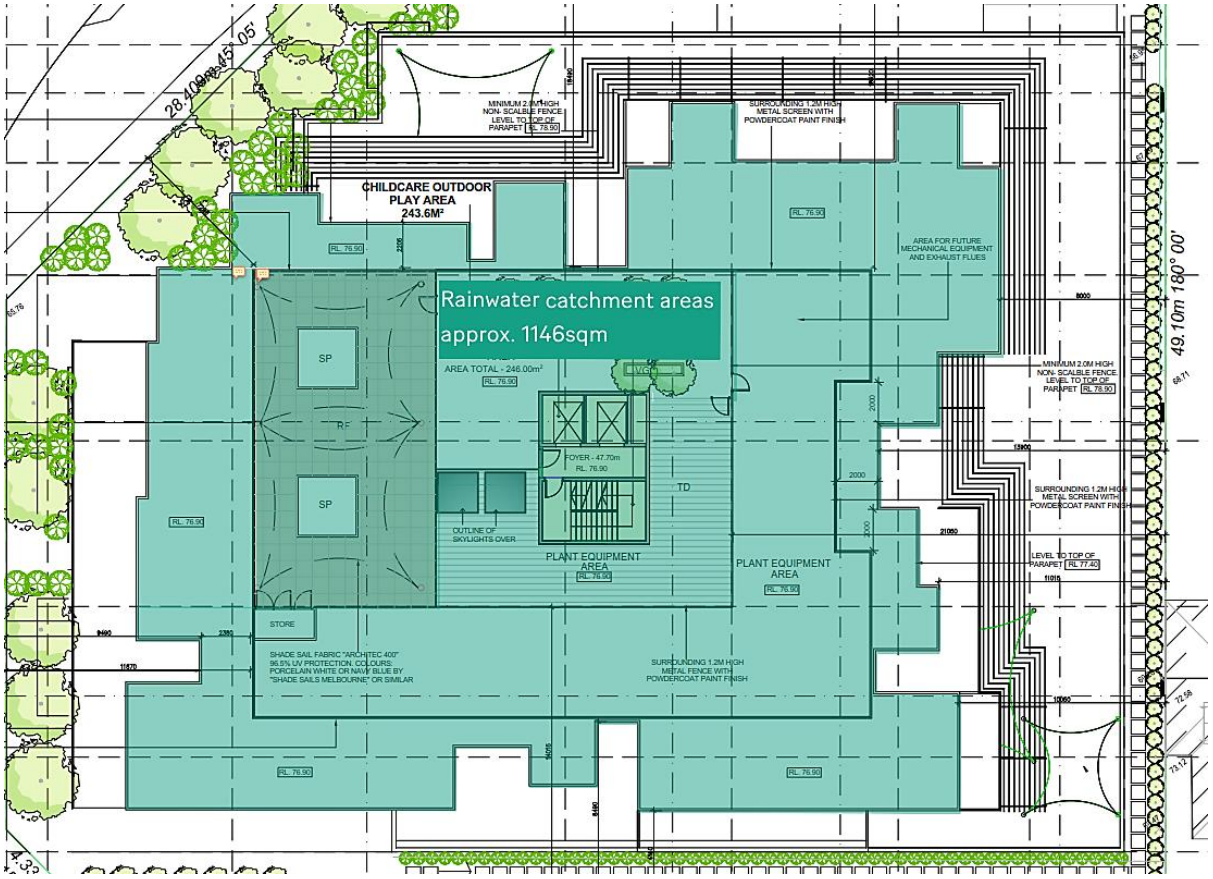

Figure 3 Stormwater treatment areas – rainwater harvesting

Focus Area	ENERGY
Objective	To implement initiatives that reduce the development's operational use, minimise reliance on grid energy supply and the greenhouse gas emissions related grid energy consumption.

Thermal Performance Assessment - Residential

The proposed development is expected to meet the NCC Thermal Performance Requirements. The dwellings will achieve a development energy rating average of at least **6.6stars**. The energy rating achieved exceeds the NCC energy efficiency requirements for Class 2 dwellings.

Additionally, the residential dwellings will comply with the 21MJ/m^2 cooling load cap for NatHERS Climate Zone 62 as mandated by the Better Apartments Design Standards.

The preliminary NatHERS energy rating results are presented below. Thermal performance assessment was undertaken using

Table 1 Preliminary NatHERS energy ratings

DWELLING	STAR RATING	TOTAL ENERGY USE (MJ/m²)	HEATING ENERGY (MJ/m²)	COOLING ENERGY (MJ/m²)	COOLING LOAD CAP MET? 21MJ/m²
Apt 1	7.7	69.9	58.6	11.3	☑
Apt 7	6.9	107.9	87.4	20.5	☑
Apt 10	6.6	105.8	86.7	19.1	☑
Apt 12	7.7	68.0	59.2	8.8	☑
Est. development Average	7.1	87.9	72.98	14.93	

Refer to the preliminary thermal performance assessment prepared by Compliance Energy Rating for the building fabric assumptions:

Table 2 Building fabric assumptions

BUILDING ELEMENT	COMMENTS
Floor details	
Concrete suspended slab enclosed:	No insulation
Walls	
Fibre cement walls:	R2.5 insulation plus 1 anti-glare reflective foil
Internal walls between dwellings/corridors:	R2.5 insulation
Roof and Ceiling	
Concrete suspended roof:	R3.5 Insulation
Windows and Glazing	
Frames:	Aluminium frames
Glazing:	Double Glazed: U-value = 3.10, SHGC = 0.27 U-value to be equal or less. SHGC can be within ±5%.

Thermal Performance Assessment - Commercial

The commercial tenancy is expected to meet the NCC DtS Thermal Performance Requirements. Where this is not practicable, JV3 modelling shall be undertaken at the appropriate stage of the project. The project will nonetheless achieve a 10% improvement over the NCC reference case.

Additionally, all glazing and insulation specified for the building fabric (as appropriate) shall deliver at least 10% improvement on the required BCA Section J DtS insulation levels. A Section J or JV3 modelling report shall be prepared at the appropriate stage of the project.

Hot Water System

Residential component: Domestic hot water system specified and installed shall be a highly efficient central gas instantaneous hot water system.

Commercial component: Hot water system specified and installed shall be either:

- High efficiency gas instantaneous, or
- Electric instantaneous installed at the point of use to avoid standing heat losses

Please note that hot water heating systems specified shall be within 1-star, or 85% or better than the most efficient equivalent capacity unit available at time of specification. The hot water system details, location and capacity will be specified further during design development.

Heating and Cooling

Space heating and cooling will be provided by reverse cycle air conditioning systems with a minimum 4-star energy star rating.

Artificial Lighting

Energy efficient lighting systems shall be installed throughout the development including:

- *Internal lighting (residential)*– LED lighting generally to all dwellings designed to achieve a maximum power density of at least 20% lower than required by Table J6.2a of the NCC.
- *Internal lighting (commercial)* – LED lighting or compact fluorescent light to at least 90% of the relevant tenancy areas, designed to achieve a maximum power density (W/m^2) that meet the requirements in Table J6.2a of the NCC Volume 1.
- *External lighting* – LED or compact fluorescent lighting with daylight and/or motion sensor controls where appropriate
- *Common area lighting* – LED or compact fluorescent lighting with occupancy/motion sensor controls installed as appropriate
- *Car parking lighting* – T5 fluorescent energy efficient lighting with motion sensor controls. Skeleton lights will remain permanently lit.

Energy Efficient Appliances

All appliances specified and installed by the developer shall be within 1-star rating of the best available, at the time of specification.

Carpark Ventilation

The development has carparking on the basement level. To reduce electricity consumption, Carbon Monoxide sensors and monitoring shall be used to control the carparks' mechanical ventilation system fan speed and operation.

Focus Area	STORMWATER MANAGEMENT (WSUD)
Objective	To reduce peak stormwater flows and pollution from stormwater runoff that may cause negative impacts on waterways.

Urban Stormwater Quality

The proposed development achieves a **102%** STORM rating as a result of:

- Rainwater harvesting from roof areas and upper terrace
- Total storage volume of 25,000 litres – located within the basement levels
- Re-use of captured water for toilet flushing in all non-residential toilets
- Re-use of captured water for landscape irrigation
- Re-use of captured water for bin washdown where practicable
- Onsite rainwater harvesting and re-use is envisaged to divert runoff from the stormwater system
- Approx. 12m^2 of raingarden areas treating runoff from Level 1 outdoor play areas. Inground raingardens will have on overflow system connected to the stormwater system, and a detention/ponding depth of 100mm to minimise safety concerns.

The STORM rating attained demonstrates that the proposed development will meet the best practice objectives for stormwater quality as contained in the *Urban Stormwater - Best Practice Environmental Management Guidelines (Victorian Stormwater Committee, 1999)*.

See below for the Melbourne Water STORM Report:

Melbourne Water **STORM Rating Report**

TransactionID:	986253	
Municipality:	MONASH	
Rainfall Station:	MONASH	
Address:	170-174 Highbury Road	
	Mt Waverley	
	VIC	3149
Assessor:	KMK	
Development Type:	Residential - Mixed Use	
Allotment Site (m2):	2,563.00	
STORM Rating %:	102	

Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
RWT catchment areas	1,146.00	Rainwater Tank	25,000.00	100	139.80	77.00
Remaining impervious areas (balconies)	578.00	None	0.00	0	0.00	0.00
Eastern outdoor play areas to RG	535.00	Raingarden 100mm	12.00	0	129.20	0.00

Figure 4 Melbourne Water STORM Rating report

Refer to Appendix A for the preliminary water sensitive urban design maintenance manual.

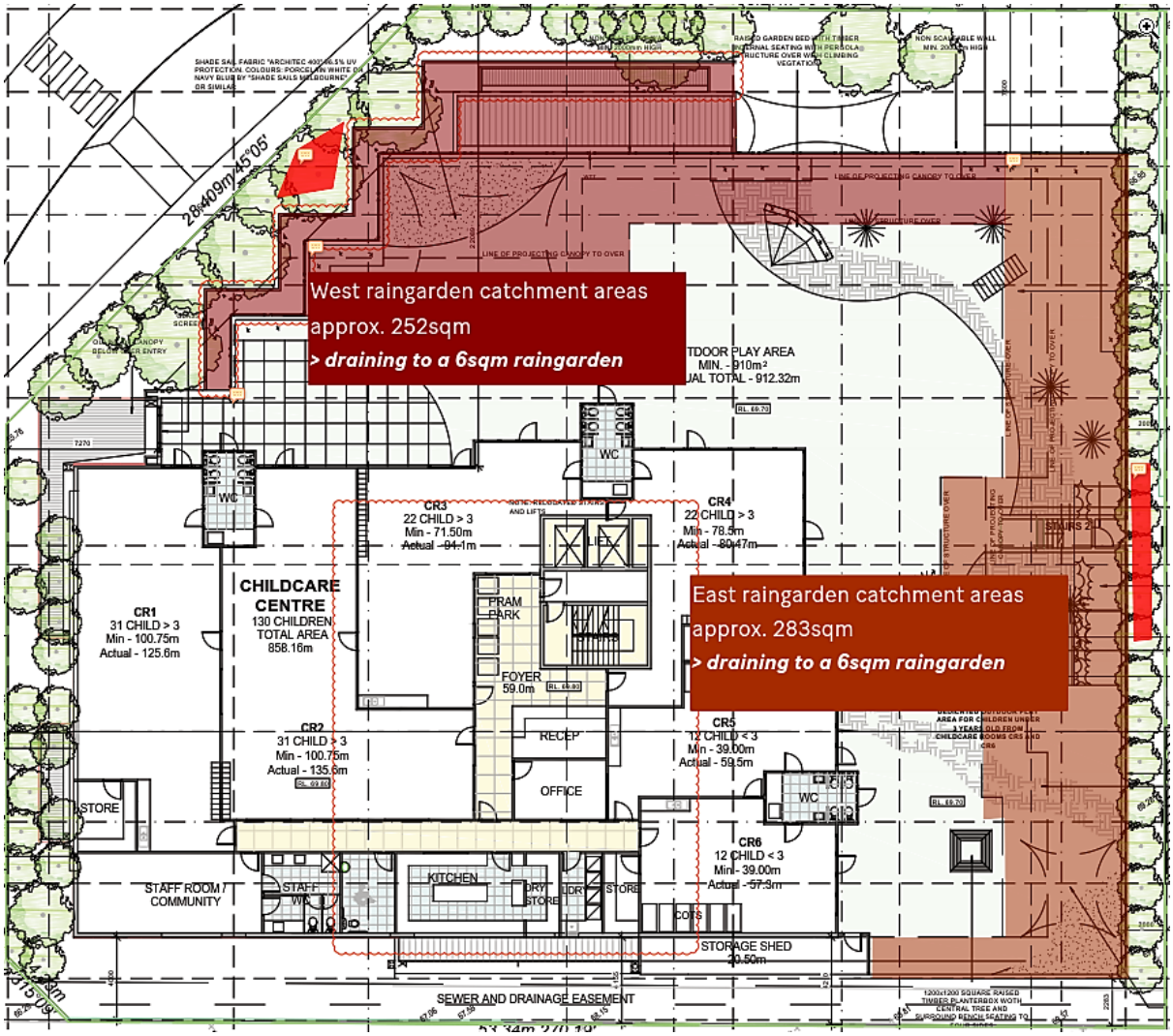

Figure 5 Stormwater treatment areas – raingarden catchment areas. Indicative raingarden locations shown in red (6m² each)

Construction Site Management Plan

During construction phase, the builder/general contractor will prepare and implement a *construction site management plan*. The plan will outline how the stormwater system shall be protected from erosion and pollution during construction works and will generally meet the guidelines set out in Melbourne Water's *'Keeping our stormwater clean: Builders Guidelines'*.

Refer to Appendix B for the preliminary Site Management Plan.

Focus Area	INDOOR ENVIRONMENT QUALITY [IEQ]
Objective	To create high quality indoor environments that are healthy and comfortable to live and work in. The strategies implemented shall also ideally promote wellness for the building occupants that use the development's internal spaces.

Passive Design

The following passive design strategies have been incorporated into the design:

- Natural Ventilation – all dwellings have access to natural ventilation via operable windows and sliding doors located along the façade.
    - Furthermore, at least 40% of the units shall achieve effective cross flow ventilation to living and bedroom areas—facilitated via operable windows located on alternate façades, or room depths of 5m or less for single aspect units
    - Refer to Second Floor Plan to view the cross-ventilation breeze paths
- Shading – where appropriate, shading strategies such as horizontal overhangs have been integrated into the design to help minimise solar heat gains.
- Glazing – High performance glazing will be specified where appropriate to reduce the effects of solar gains.
- Solar & Daylight Access – the floorplates have been designed so that the internal spaces have a north, east, or west facing view and therefore receive direct solar access.
    - Additionally, the proposed indoor floorplates have been designed to allow enough available natural daylight to penetrate as deep as possible into internal spaces.
    - Majority of primary internal spaces will have satisfactory daylight levels as the floor plates are shallow (less than 8m) and/or have a dual aspect.
    - All glazing to living areas will achieve at least 60% Visible Light Transmittance (VLT)
    - Light internal colours shall be specified to facilitate internal reflection of daylight

These features will improve comfort and internal amenity for building occupants while minimising reliance on artificial lighting, and mechanical heating & cooling systems.

Focus Area	SUSTAINABLE TRANSPORT
Objective	To encourage alternative modes of transportation in lieu of single occupant vehicles.

Walkability & Public Transit

The development attains a Walk Score of 61% which is defined as *'Somewhat Walkable'* and a Transit Score of 53% which is defined as *'Good Transit'*. The development is located close to Huntingdale Road with a few amenities such as restaurant, cafes, and parks nearby. Building occupants will therefore be able to accomplish some errands on foot.

The proposed development is also in proximity to the following public transit options:

Table 3 Public transport options nearby

PUBLIC TRANSIT OPTION	ROUTE NUMBER/NAME	DISTANCE
Bus Lines	767	Within <100m
Tram Line	75	Within 650m
Rail	N/A	

It is envisaged that access to the transit options above will promote public transport use instead of private vehicles.

Cyclists Facilities

To encourage cycling among future building occupants, the following bicycle facilities have been provided onsite:

Table 4 Bicycle facilities provided onsite

BIKE RACK USE	QUANTITY	LOCATION
Residents	9	Basement
Visitors	-	-

Focus Area	WASTE
Objective	To minimise demolition and construction waste that ends up in landfills and ensure that building users can conveniently re-use and/or recycle their waste

Operational Waste Management

To promote convenience of recycling, separate garbage and recycling waste bins shall be provided within the bin storage area. This initiative will encourage and promote separate collection of the recycling stream. Please refer to architectural ground floor plans to view the proposed bin store location. And the Waste Management Plan prepared by Leigh Design for details on:

- Estimated waste generation rates
- Recommended bin sizes
- Waste collection frequency

Construction Waste Management

To divert the waste that goes to landfills, a target recycling rate of 70% of construction waste shall be adopted during the construction phase by the builder/ general contractor. This will be achieved by:

- Record keeping of landfill waste and recyclable stream volumes to track performance against the 70% target
- Separation of all commercially viable recyclable streams
- Quarterly reporting of volumes and percentages for each stream
- Training in waste minimisation for all site and contractors to form part of site induction training

Focus Area	URBAN ECOLOGY
Objective	To encourage restoration of natural environments whenever possible.

Maintain or Enhance Ecological Value

The development will integrate vegetated landscape areas on ground level and vegetated planter boxes on rooftop play area. This will enhance the ecological value of the site and improve building users' amenity and maintain the ecological value of the site.

Additionally, a raised vegetable garden shall be provided on Level 1 on the eastern side.

Focus Area	INNOVATION
Objective	To encourage design strategies or initiatives that are not covered in BESS or go beyond best practice standards.

Environmentally Preferable Building Materials

The environmental impacts of building materials can include depleting natural resources and degrading the environment during extraction, production and use of the materials. There are also health concerns related to the effects of off gassing of some building materials during use.

To mitigate these impacts, the following considerations will be made when specifying building materials:

- Low Volatile Organic Compounds (VOC) internal paints to be specified
- All feature timber will be from sustainable sources and certified (FCS, AFS or PEFC)

Summary and Conclusion

The outcomes presented in this report demonstrate how the proposed development incorporates sustainable design initiatives into the design.

The development will:

- Achieve the best practice objectives for stormwater quality as contained in the *Urban Stormwater - Best Practice Environmental Management Guidelines (Victorian Stormwater Committee, 1999)*. The STORM rating tool has confirmed this, and by integrating the following initiatives into the design:
    - → Integrate onsite rainwater harvesting and reuse
    - → Permeable landscape areas that promote stormwater infiltration
    - → Raingardens treating stormwater runoff from Level 1 outdoor play areas
- Meet NCC Energy Efficiency requirements for both residential and non-residential components
- Achieve the 50% score required to show sustainability Best Practice in BESS
- Achieve a maximum cooling load of 21MJ/m^2 or less (NatHERS Climate Zone 62) for all apartments, per the energy efficiency guidelines set out in the Better Apartment Design Standards and Standard B35 of Clause 55.07-1.

The proposed development therefore meets the objectives set out in *Clause 22.13: Environmentally Sustainable Development* and *Clause 53.18-5: Stormwater Management* of the Monash Planning Scheme.

The initiatives proposed in this report and development application are therefore deemed to be suitable for a development of this type and scale.

Appendix A WSUD Maintenance Program

MAINTENANCE MANUAL: RAINWATER HARVESTING SYSTEM

To ensure the rainwater harvesting system described in this report operates as designed and that the water quality is maintained during the life span of the tank, the building manager will implement the maintenance program outlined below:

Every 6 Months:

	TANK ELEMENT	ACTION REQUIRED	ADDITIONAL COMMENTS
☐	Gutters	a. Inspection b. Clean gutters	If large amounts of leaf material and other debris are found during inspection, then the inspection and cleaning frequency may need to be increased. Alternatively, gutter leaf screens may be installed.
☐	Pipework	a. Inspection b. Check for structural drainage issues c. Repair any issues if necessary	
☐	Tank filters and first flush diverters	a. Inspection b. Check for obstruction issues c. Clean or repair as necessary	
☐	Pumps	a. Inspection and maintenance as per manufacturer's guidelines	

Every 2-3 Years:

	TANK ELEMENT	ACTION REQUIRED	ADDITIONAL COMMENTS
☐	Rainwater Tank	a. Inspection b. Check for structural drainage issues c. Check for sediment accumulation d. Repair any issues if necessary e. Clean/ desludge the tanks if necessary	

The rainwater harvesting system will be installed in accordance with the guidelines set out in the Rainwater Design & Installation Handbook published by the National Water Commission. An indicative schematic diagram of the rainwater tank installation is provided below. Further specification to be confirmed during design development.

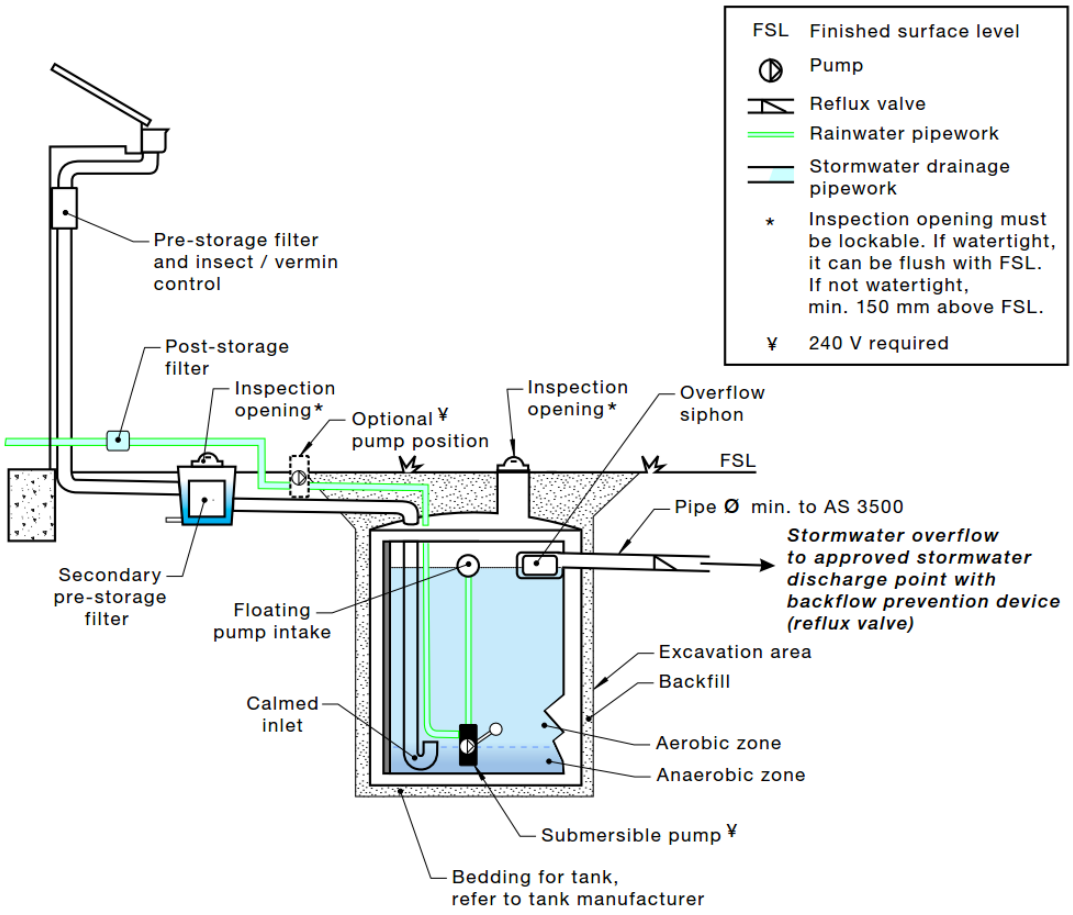

Figure 6 Indicative rainwater tank installation schematic

MAINTENANCE MANUAL: RAINGARDENS

To ensure the raingarden described in this report operates as designed and that the water quality is maintained, the homeowner will implement the maintenance program outlined below. The scope of the maintenance program will include inspection and rectification of issues associated with:

- Raingarden soil mix
- Ponding area
- Plants
- Overflow system
- Mulch/ pebble/ rock layer
- Underdrain system (where applicable)

Inspections of the raingarden system and any maintenance works required will be undertaken as outlined in the maintenance schedule below:

Maintenance Regime: After Storm Events

	ELEMENT	ACTION REQUIRED
☐	Ponding area	a. Check raingarden inlet for sediment, rubbish and leaves and remove as required. b. Check for erosion or scour and repair. c. Check and ensure that the garden is infiltrating effectively. d. Check and re-profile topsoil as necessary – ensure level is below surrounding hard surface and overflow.
☐	Mulch layer	a. Inspection b. Check and redistribute/add mulch as necessary – particularly at the raingarden inlets.

Maintenance Regime: Every 3 Months

	ELEMENT	ACTION REQUIRED
☐	Ponding area	a. Check raingarden inlets for sediment build up, litter and leaves. b. Check for erosion or scour and repair if necessary.
☐	Mulch layer	a. Remove litter, leaves and other debris. b. Redistribute/add mulch if necessary.
☐	Overflow system	a. Check for any blockages and remove, as necessary.
☐	Plants	a. Check plant health and replace dead plants, as necessary. b. Remove weeds – do not use herbicides, pesticides and fertilisers as the chemicals may infiltrate through the rain garden and pollute the stormwater runoff.

Maintenance Regime: Annually

	ELEMENT	ACTION REQUIRED
☐	Mulch layer	a. Check for sediment build up – remove and replace as required.
☐	Ponding area	a. Check all water has drained 24 hours after heavy rain – remove and replace the crust from the top of raingarden if drainage not effective. b. Check for litter, leaves and sediment build up and remove, as necessary. c. Check for erosion and gouging and repair where necessary.
☐	Raingarden soil mix	a. Check soil level is below surrounding hard surface level and the overflow.
☐	Underdrain system	a. If underdrain present, flush underdrain, and check for blockages – repair if necessary.

A cross-sectional diagram of a typical raingarden is provided below.

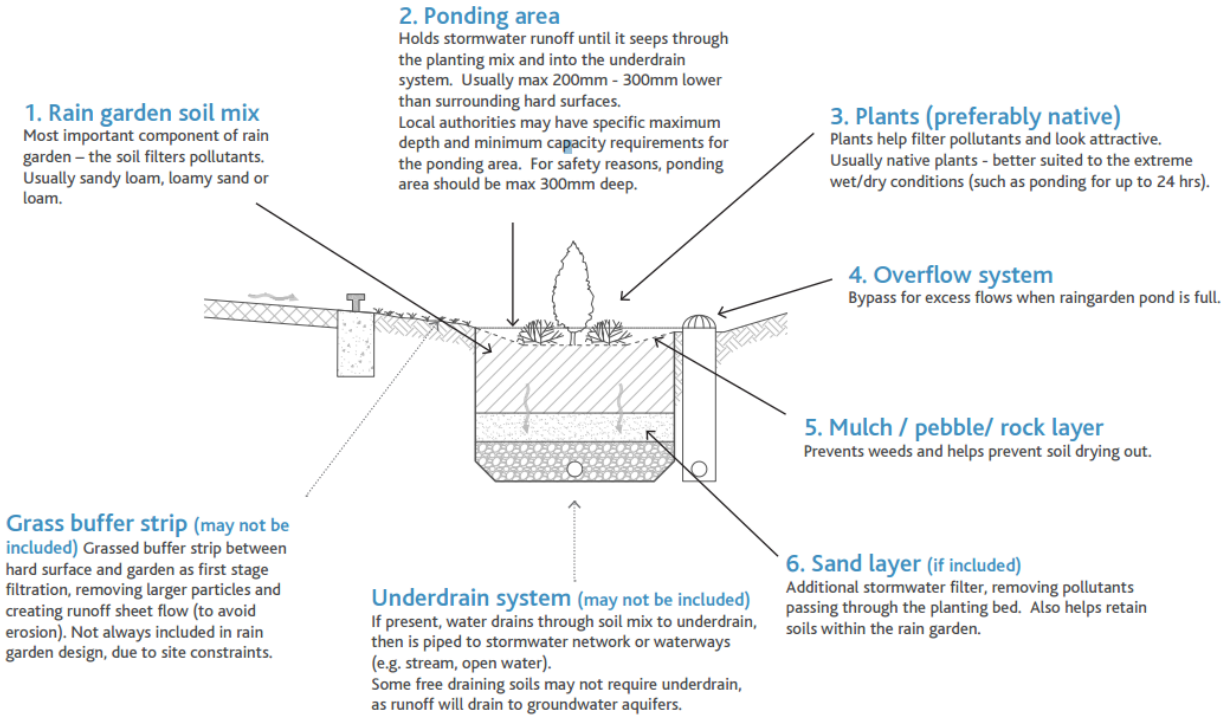

Figure 7 Typical raingarden cross-section

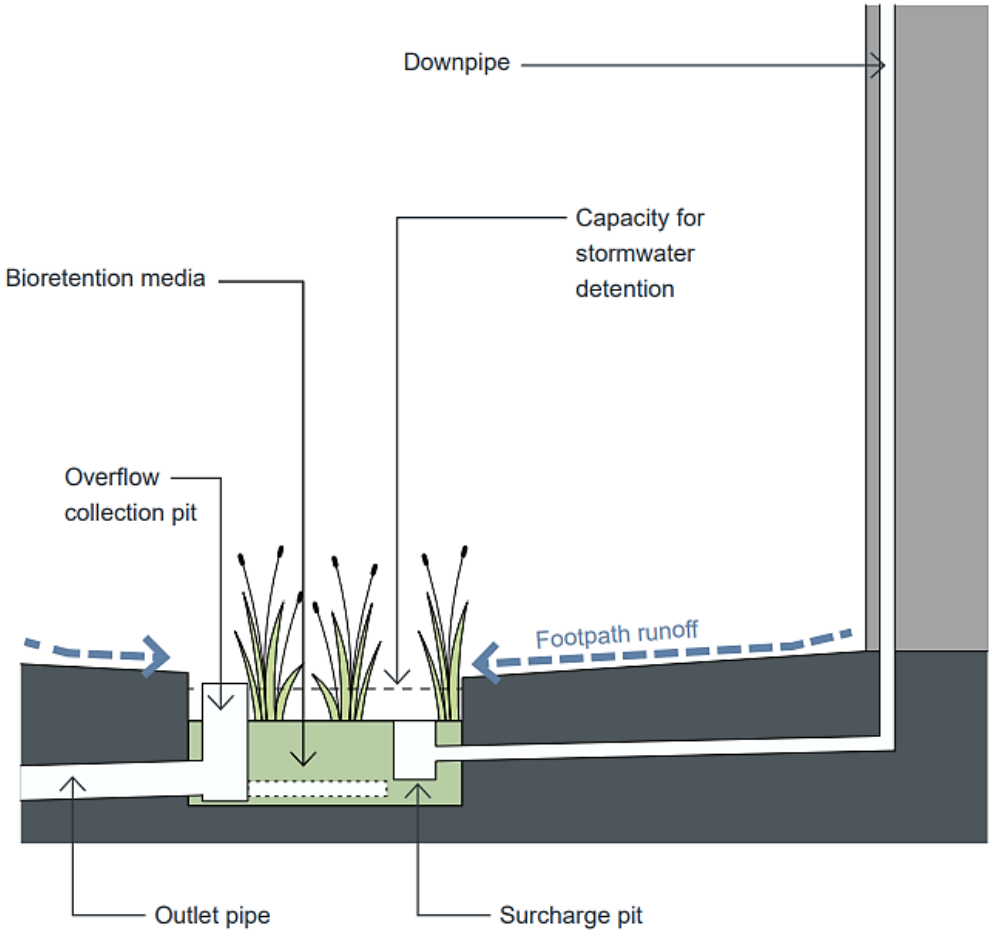

Figure 8 Indicative raingarden schematic

Appendix B Construction Site Management Plan

This preliminary site management plan outlines how the proposed development will reduce the risks and impacts of stormwater pollution on nearby waterways during construction works.

Pollutants at risk of entering the stormwater system during the construction phase include:

a. Sediments such as soil, sand, gravel, mud, and concrete washings.

b. Oil, foam, scum, grease, and other chemicals; and

c. Litter, stones, debris etc.

These pollutants arise from several factors such as dirt from construction vehicles, stockpiles located close to surface runoff flow paths, surface runoff from disturbed areas during earthmoving and construction works. It is therefore important to have measures that either prevent or minimise the pollutant loads entering stormwater system during construction.

To mitigate the impacts of the above pollutants on the stormwater system, the following stormwater management strategies will be implemented during the construction phase as appropriate:

	SCOPE
☐	Establish a single stabilised entry/exit point to the site
☐	Ensure any stockpiles are on the project site and not on footpaths, roadways, and neighbouring land
☐	Only clear those lands that must be disturbed during the building works
☐	Where necessary, put up barrier fences around areas where vegetation or topsoil is not to be disturbed
☐	Installation of onsite erosion and sediment control measures e.g. silt fences, sediment traps, hay bales and geotextile fabrics
☐	To prevent litter from getting blown away and potentially entering stormwater drains, waste bins with a lid shall be used where possible
☐	Site induction by the general contractor/ builder to make personnel aware of stormwater management measures in place
☐	Employ suitable measures to reduce mud being carried off-site into the roadways such as installing a rumble grid/ gravel/ crushed-rock driveway (or equivalent measure) to provide clean access for delivery vehicles, and removing mud from vehicle tyres with a shovel etc
☐	Safe handling and storage of chemicals, paints, oils, and other elements that could wash off site to prevent them from entering stormwater drains
☐	Where practicable, stockpiles will be covered, located within the site's fence and away from the lowest point of the site where surface runoff will drain to. This initiative will minimise erosion

The measures presented above are considered appropriate for the proposed development at this stage of the project. This management plan is in accordance with the objectives set out in Clause 53.18-6 of the Monash Planning Scheme.

makao

Makao Group is a Melbourne based sustainability engineering firm that specialises in providing environmentally sustainable design (ESD) advisory services.

We work with clients ranging from homeowners, architects and urban planners to other business owners and property developers. We thrive on identifying opportunities and strategies for incorporating sustainable principles into new and existing developments.

Our approach for each project is tailored and taps into the design and construction insights we have gained over the years. This helps us create tailored solutions, sustainable developments, and enhanced human comfort in buildings.

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