

ADVERTISED COPY



Think Sustainability. Live Comfortably.

SUSTAINABILITY MANAGEMENT PLAN

501-515 & 517-521 Police Road, Mulgrave

Revision A

21/11/2022

PREPARED BY

The Urban Leaf
L2, 433-435 South Rd, Bentleigh
VIC 3204

T: 03 88 99 6149
E: energy@tul.net.au

tul.net.au

CONTENTS

COMPANY PROFILE – The Urban Leaf Pty Ltd.....	3
1.1 SITE AND DEVELOPMENT DESCRIPTION	5
2. BUILT ENVIRONMENT SUSTAINABILITY SCORECARD (BESS)	6
3. CONSTRUCTION AND BUILDING MANAGEMENT	7
4. WATER RESOURCES	8
5. ENERGY EFFICIENCY	9
6. STORMWATER MANAGEMENT	10
7. INDOOR ENVIRONMENT QUALITY	11
8. MATERIALS	13
9. TRANSPORT	14
10. WASTE MANAGEMENT	16
11. URBAN ECOLOGY	17
12. IMPLEMENTATION & COMMISSIONING	18
REFERENCE	
Appendix A: BESS Summary Report	
Appendix B: STORM Report	
Appendix C: Stormwater Treatment Maintenance Schedule	
Appendix D: SMP Documentation Checklist	

COMPANY PROFILE – The Urban Leaf Pty Ltd

Mission Statement

We are a team of professionals, dedicated to encouraging sustainable design within the building industry and its related businesses.

We provide clients with reports that comprehensively outline, describe and recommend ecological solutions for different stages of the construction process.

Our team's professional and personal growth is fostered within a positive working environment. Our innovative, original thinking works diligently towards ensuring the social, economic and environmental needs of our community are met and enjoyed by future generations.

Company Philosophy

Our philosophy and motivation is simple. We believe everyone has a responsibility to protect the Earth's eco-systems.

By preserving natural resources, we can guarantee that communities will continue to benefit from an uncompromised quality of life.

In addition, conserving natural resources within our lifetime ensures the legacy we leave for future generations is one that advocates respect for our environment as well as for each other.

Our role in assessing and encouraging sustainable design within the building industry is an important one because it supports ecologically-sound practises.

Our work enables us to promote more efficient use of ecological resources and reduce unnecessary environmental impact.

Services

All of our services are connected to our company's philosophy and contribute to supporting a sustainable environment. We pride ourselves on delivering professional, independent, objective appraisals and reports. Any recommendations we make are underpinned by legislative and regulatory compliance.

1. PROJECT INFORMATION

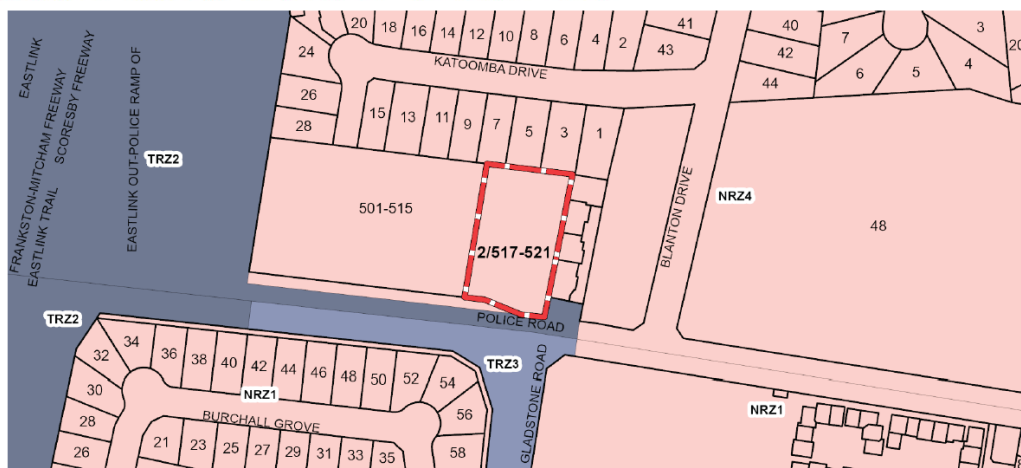
The Urban Leaf Pty Ltd has been engaged by **501 Mulgrave Pty Ltd** to prepare a Sustainability Management Plan (SMP) for the proposed development.

Municipality: **Monash City Council**
 Site Address: **501-515 & 517-521 Police Road, Mulgrave**
 Total Site Area: **13,239 m²**
 Project Description: **Residential development of 28 townhouses**
 TUL Reference Number: **G57**
 Assessment Completed by: **Thea Aganon (B. Arch, M. Sus.I)**
Febria Margaretha (M. Arch, BESS Trained Professional)



■ GRZ - General Residential
 ■ NRZ - Neighbourhood Residential
 ■ PPRZ - Public Park and Recreation
■ TR22 - Principal Road Network
 ■ TRZ3 - Significant Municipal Road

Note: labels for zones may appear outside the actual zone - please compare the labels with the legend.



■ NRZ - Neighbourhood Residential
 ■ TR22 - Principal Road Network
 ■ TRZ3 - Significant Municipal Road

Note: labels for zones may appear outside the actual zone - please compare the labels with the legend.

Figure 1: Site location (source: planning.vic.gov.au)

All results generated by this report are based on Town Planning prepared by **Millar Merrigan, 20.07.22.**

Note: ESD initiatives must be shown on the endorsed plan or be included in a schedule to the plan. Additionally, the drawings shall be read in conjunction with the endorsed SMP report.

Disclaimer- This report contains guidelines and recommendations to assist the specified project meet ESD requirements. It is the responsibility of the Owner/Builder to apply said specifications in the later stages of the development to ensure compliance. It is not the responsibility of The Urban Leaf Pty Ltd

1.1 SITE AND DEVELOPMENT DESCRIPTION

The proposed development is located within the Neighbourhood Residential Zone (NRZ4) of the Monash City Council. It is approximately 30.1km south-east of Melbourne’s CBD and is currently surrounded by residential buildings. The subject site is currently occupied by a single storey brick dwelling which will be demolished prior to commencing the construction. In total, the proposed development will consist of **a total of 28 townhouses (1 single-storey townhouse and 27 double-storey townhouses):**

- 1 four-bedroom single storey dwelling
- 4 three-bedroom townhouses, and
- 18 four-bedroom townhouses, and
- 5 five-bedroom townhouses, and total



Figure 2 – 3D image (source: Millar Merrigan)

2. BUILT ENVIRONMENT SUSTAINABILITY SCORECARD (BESS)

Sustainable design is a critical intervention in today's-built environment to protect the environment and living standards, as well as future proofing the coming generations. The Sustainable Management Plan contains a summary of environmental initiatives integrated into the design of the subject development, whilst providing information ensuring the following:

- New buildings to meet acceptable environmental performance standards
- Outline environmental objectives and standards required by Council
- Consistent and fair approach to the associated environmental impact
- Flexible methods of meeting environmental standards
- Promote the benefit of sustainability within the development

All information and calculations necessary to produce the report are provided by using version 6 of the Built Environment Sustainability Scorecard (BESS). The BESS tool (**Appendix A**) assesses energy and water efficiency, thermal comfort, and overall environmental sustainability performance of new buildings or alterations.

There are four mandatory categories with minimum score: Indoor Environment Quality (IEQ), Energy, Water, and Stormwater. The final BESS overall score is determined by the individual category scores:

- 'Best Practice' is defined within BESS as an overall score of 50% or above.
- 'Excellence' is defined within BESS as an overall score of 70%.

The development has achieved the following BESS scores:

BESS Category	Required Score	Project Score	Compliance
Management	0%	16%	Yes
Water	50%	50%	Yes
Energy	50%	50%	Yes
Stormwater	100%	100%	Yes
IEQ	50%	60%	Yes
Transport	0%	66%	Yes
Waste	0%	50%	Yes
Urban Ecology	0%	50%	Yes
Innovation	0%	0%	Yes
Total Score		53%	Best Practice

3. CONSTRUCTION AND BUILDING MANAGEMENT

Environmentally Sustainable Design (ESD) Principle – Construction and Building Management should be integrated into the design of the proposed development. These principles will inspire a holistic and integrated design and construction process. It also encourages ongoing high performance.

Key elements may include:

- Building Users’ Guide
- Environmental Credentials of Project Team
- Environmental Management Plan; Construction and Operation
- Effective Metering

ISSUES	POTENTIAL IMPACT	STRATEGIES AND INNOVATION
Building Users’ Guide	Provide education information to the building occupants on how to operate the building most effectively	<ul style="list-style-type: none"> ▪ A Building Users’ Guide will be provided to owners, future users and if required, building managers and maintenance contractors. ▪ The guide will explain and educate the future users about the development’s key sustainable design initiatives, systems and targets, in common, non-technical language. ▪ The document is to include the following features, and shall not be limited to: <ul style="list-style-type: none"> ○ Concept and implementation of passive design strategies, such as the use of flexible shading and night purging opportunities. ○ Building services control ○ Potable and non-potable water supply ○ Sustainable material choices ○ Sustainable transport opportunities ○ Waste minimisation and separation policies ○ Pro-active maintenance regime ▪ It shall also recommend possible operational strategies to reduce energy, water and waste consumption.
Environmental Credentials of Project Team Environmental Management Plan; Construction and Operation	Adopt a formal environmental management system in line with established guidelines during construction.	<ul style="list-style-type: none"> ▪ Appointed contractors will have valid environmental credentials (e.g. ISO 14001 Environmental Management System accreditation, Green Star Accredited Professional and Certified Green Plumber). ▪ A project specific Environmental Management Plan will be implemented during the operation phase.



Effective Metering	Effective metering and monitoring of water and energy consumption will reduce the energy and water consumption in the development.	<ul style="list-style-type: none"> Utility meters shall be provided for all individual dwellings.
---------------------------	--	--

4. WATER RESOURCES

Environmentally Sustainable Design (ESD) Principle - Water resources and its key elements should be integrated into the design of the proposed development. These principles contribute to efficient water usage by reducing total operating potable water use, promoting the collection and re-use of rainwater and stormwater, consequently helping to conserve precious water resources and minimising associated water costs.

Key elements include:

- Fixtures, fittings and appliances
- Rainwater
- Landscaping

The following table summarises the approach taken to reduce potable (drinkable) water use by residential and/or non-residential areas within the development. Information below is supported by the following resources: **BESS report (Appendix A)**.

ISSUES	POTENTIAL IMPACT	STRATEGIES AND INNOVATION
Efficient Fittings & Appliances	Highly efficient fittings and appliances can reduce water use by 50% or more.	<ul style="list-style-type: none"> Showerhead: 4 Star WELS¹ (≥ 6.0 but ≤ 7.5) Taps & Basins: 5 Star WELS Toilets: 4 Star WELS Dishwasher: 5 Star WELS All other appliances if provided by the developer will be within one star of the best available.
Efficient Landscaping	Reduces total operating potable water use	<ul style="list-style-type: none"> Water efficient landscaping to be installed. Native and draught tolerant plants recommended. A water efficient garden should not require irrigation system and should not need watering when plants are established.

¹ Water Efficiency Labelling and Standards (WELS). Refer to www.waterrating.gov.au for further details.

5. ENERGY EFFICIENCY

Environmentally Sustainable Design (ESD) Principle - Energy and its main elements contribute to reducing greenhouse emissions by utilising energy efficient appliances, energy conservation measures and renewable energy. In addition to maintaining and improving comfort levels, efficient energy use is vitally important to reduce energy costs and the associated environmental impacts.

- Heating & Cooling
- Hot water services
- Lighting
- Appliances

The following table summarises energy efficient approach of residential and/or non-residential areas within the development. Information below is supported by the following resources: the **BESS report (Appendix A)**.

ISSUES	POTENTIAL IMPACT	STRATEGIES AND INNOVATION
Energy Rating	A higher rated dwelling indicates a higher level of thermal energy efficiency, therefore requires less heating and cooling during its operational period.	<ul style="list-style-type: none"> ▪ A commitment has been made for the 28 proposed units within this multi-unit development to have a minimum of 6 Star energy rating. ▪ Final energy rating to be conducted at building permit stage. Minimum compliance levels have been used as an input to the BESS assessment at this stage.
Efficient HVAC	Heating and cooling systems may account for up to 40% of a household's energy use, hence efficient systems can significantly reduce the household's carbon footprint and bills.	<ul style="list-style-type: none"> ▪ Gas central duct heating system (minimum 4 Stars) will be provided in the proposed development. ▪ Refrigerative space cooling system (minimum 4 Stars) will be provided in the proposed development.
Hot Water System	Accounts for up to 21% of a household's energy use.	<ul style="list-style-type: none"> ▪ Gas instantaneous system (minimum 5 Stars) will be provided in the proposed development.
Efficient Lighting	Lighting contributes significantly to a dwelling's energy use.	<ul style="list-style-type: none"> ▪ LEDs – all internal areas ▪ LEDs or Solar – garden lighting ▪ Two-way switching- hallways, stairwells. ▪ The development shall achieve a maximum illumination power density of 4W/sqm or less. ▪ All external lighting to be controlled by a motion sensors or timers.
Fixed Clothes Lines/Racks	Reduces energy consumption associated with clothes drying.	<ul style="list-style-type: none"> ▪ Private outdoor clothesline has been allocated in each dwelling's private open space. ▪ Refer to town planning drawings for locations.

Efficient Appliances	Highly efficient appliances can significantly reduce energy consumption.	<ul style="list-style-type: none"> All appliances if provided by the developer will be within one star of the best available.
-----------------------------	--	--

6. STORMWATER MANAGEMENT

Environmentally Sustainable Design (ESD) Principle - Melbourne's rapid urbanisation in recent times has resulted in a significant increase in hard and impervious areas. Efficient Water Sensitive Urban Design (WSUD) ensures natural systems are protected and enhanced whilst promoting on-site detention. Key elements may include:

- Rain gardens
- Rainwater storage tanks

The following table summarises the approach taken to improve stormwater quality and to reduce peak and total stormwater run-off produced by the residential and/or non-residential areas within the development. Information below is supported by the following resources: **STORM report (Appendix B)** and/or **BESS report (Appendix A)**.

ISSUES	POTENTIAL IMPACT	STRATEGIES AND INNOVATION
STORM Rating	Complying with best practice guidelines as set by Melbourne Water	<ul style="list-style-type: none"> A The STORM assessment achieves a score of 102%, which exceeds the required minimum.
Stormwater Treatment	Reduction in volume of stormwater and maintaining integrity of stormwater infrastructure is protected. Mains consumption reduced by on-site reuse	<ul style="list-style-type: none"> A combination of rainwater tanks and raingardens have been proposed to be connected to all dwelling roofs. Refer to Table 1 below for further details. The rainwater tanks are to be connected to all toilets within their respective dwellings. It must be further clarified that the specified capacity of the rainwater tank is exclusive for reuse within the development – any detention requirement is additional. No charged piping system shall travel underneath dwellings' footings or slabs. The individual driveways to D12-D17 will also be connected to a minimum of 2m² of raingarden each. Refer to Table 2 below for further details. The stormwater initiatives are subject to the final drainage design to be prepared by the appointed civil/hydraulic consultants.
Maintenance	Ensures the efficiency and longevity of stormwater interventions	<ul style="list-style-type: none"> The stormwater management assets are to be maintained periodically as according to the manufacturer's guidelines or the generic maintenance schedule provided within the Appendix C.

	<ul style="list-style-type: none"> It will be the responsibility of the Owners Corporation to organise the required maintenance and upgrades when required. This includes engaging an appropriate, qualified contractor to conduct the necessary tasks.
--	--

Table 1: Roof connection to stormwater treatments.

D1	Partial (50%) roof connection to 3,500L rainwater tank for toilet flushing purposes. Partial roof connection (50%) to 2m ² of raingarden.
D2-D3	Partial (50%) roof connection to 3,500L rainwater tank for toilet flushing purposes. Partial roof connection (50%) to 2.5m ² of raingarden.
D4-D28	Partial (50%) roof connection to 3,500L rainwater tank for toilet flushing purposes. Partial roof connection (50%) to 2m ² of raingarden.

Table 2: Driveway connection to stormwater treatments.

D12-D17	Individual driveways to be connected to a minimum of 2m ² of raingarden each.
----------------	--

7. INDOOR ENVIRONMENT QUALITY

Environmentally Sustainable Design (ESD) Principle – The key elements of Indoor Environment Quality play a significant role in the health, wellbeing and satisfaction of the development’s occupants. Ensuring a naturally comfortable indoor environment means less dependence on building services such as artificial lighting, mechanical ventilation and heating and cooling devices.

Key elements may include:

- Daylight
- Ventilation
- Thermal Comfort
- Hazardous Materials and VOC
- External Views

ISSUES	POTENTIAL IMPACT	STRATEGIES AND INNOVATION
Daylight	Access to daylight has physical and mental health benefits for occupants, particularly important for living spaces	<ul style="list-style-type: none"> Each habitable room will satisfy the minimum NCC Part 3.8.4 light requirement through windows & doors shown on elevations. No borrowed light to bedrooms.

Ventilation	Reduces demand for mechanical cooling and prevent build-up of indoor pollutants.	<ul style="list-style-type: none"> ▪ All kitchens are ventilated with dedicated and separated extract fans. ▪ Energy efficient mechanical heating and cooling system provided for days with extreme temperatures.
Effective Glazing	Glazing has significant impact on heating and cooling loads of the dwelling.	<ul style="list-style-type: none"> ▪ Double glazed windows shall be installed to all habitable areas. This will provide passive heat gains and reduce energy consumptions. ▪ Glazing to comply with energy report specifications at the building approval stage.
Thermal Comfort	Good thermal comfort enhances health and wellbeing of building occupants while reduces the necessity for heating and cooling.	<ul style="list-style-type: none"> ▪ At least 50% of the living areas are orientated towards the north. (The dwellings considered are: D1-D2, D13 & D18-D28.) ▪ Good insulation levels will maintain comfortable temperature within the proposed development. ▪ Effective shadings and efficient cross ventilation of the proposed design reduces cooling demand in summer.
External View	Visual connection for with the outdoors may improve the wellbeing of building occupants.	<ul style="list-style-type: none"> ▪ Sliding doors are proposed for access to private open spaces, hence providing a visual connection for the building users with the outdoor.

8. MATERIALS

Environmentally Sustainable Design (ESD) Principle – Materials selection should be integrated into the design of the proposed development. The criteria for appropriate materials used are based on economic and environmental cost.

These key elements include:

- Low VOC
- Concrete
- Best Practice PVC
- Recycled Material
- Flooring
- Joinery

An analysis of material selection and its impact on the comfort, cost effectiveness and energy efficiency should be assessed. Its aim is to ensure materials selected, and their associated environmental impact are minimised. In addition, consideration for lifecycle of a material, their associated processes and air pollution amounts.

ISSUES	POTENTIAL IMPACT	STRATEGIES AND INNOVATION
Low Volatile Organic Compounds (VOC) Materials	Reduction of 'off-gassing' and associated health issues from products with high levels of VOCs	<ul style="list-style-type: none"> ▪ Low VOC paints and flooring. ▪ Low VOC wall and ceiling coverings. ▪ Low VOC adhesives and sealants.
Concrete	Reduces embodied energy in concrete by replacing the cement or aggregate by recycled products.	<ul style="list-style-type: none"> ▪ The development will reduce the quantity of cement by substituting it with industrial waste product or oversized aggregate by 30% for in situ concrete, 20% for pre-cast concrete and 15% for stressed concrete ▪ 20% of all aggregate used for structural purposes is recycled ▪ No natural aggregates are used in non-structural uses
Best Practice PVC	Reduces the environmental and health impacts of Polyvinyl Chloride (PVC) by encouraging the use of PVC material, which adheres to best practice guidelines.	<ul style="list-style-type: none"> ▪ All PVC use and suppliers in the development will meet the 'Best Practice Guidelines for PVC in the built environment'. This includes cables, pipes, conduits, flooring and blinds. ▪ The usage of PVC in the development, particularly in sanitary plumbing and electrical wiring, shall be minimised. ▪ Use of High-density polyethylene (HDPE) piping for water delivery shall be considered.
Recycled Materials	Decreases the consumption of natural resources and energy.	<ul style="list-style-type: none"> ▪ All timber used in the project will be either plantation or recycled timber. All other timber imports to be FSC2 or AFS3 certified.

		<ul style="list-style-type: none"> All insulation installed within the development will contain a minimum of 50% recycled glass and no formaldehyde binder.
Flooring	Increases usage of environmentally preferable products.	<ul style="list-style-type: none"> All flooring installed in the development will have Ecospecifier², Green Tag³, Carpet Institute of Australia⁴ or GECA certification⁵.
Joinery		<ul style="list-style-type: none"> All Joinery installed in the development will have Ecospecifier, Green Tag, or GECA certification.

9. TRANSPORT

Environmentally Sustainable Design (ESD) Principle – Green, or “eco-friendly” buildings encourage people to use modes of transport other than cars to reduce urban air pollution and the generation of greenhouse gas emissions. Alternative transportation can be facilitated by incorporating cyclist facilities and access to public transport networks into the building’s design.

Key elements may include:

- Car Parking
- Bicycle Parking
- Public Transport
- Trip Reduction – Nearby Amenities

ISSUES	POTENTIAL IMPACT	STRATEGIES AND INNOVATION
Car Parking	Limits the number of car parking spaces provided on site	<ul style="list-style-type: none"> Onsite resident parking space is available and is limited to two car space per unit. Additional visitor parking spaces on the proposed Bitumen Road. Refer to architectural drawings for further details.
Bicycle Parking	Reduces demand on car transport and general public transport, while promoting active and cost-effective transportation option	<ul style="list-style-type: none"> 28 secure residential bicycle parking spaces will be provided in the development. Additionally, 6 secure visitor bicycle parking spaces will be provided in the development. Refer to architectural drawings for locations.
Public Transport	Acts as an alternative to private vehicle use	<ul style="list-style-type: none"> Bus Stop distance: Approximately 190m to Fillmore Rd/Gladstone Rd bus stop. Train station distance: Approximately 6.3km to Noble Park train station.

²Ecospecifier is a data base of sustainable products. <http://www.ecosepcifier.com.au>

³Green Tag is a global product certification organisation. <http://www.Globalgreentage.com>

⁴Carpet Institute of Australia (CIAL) represents carpet manufactures, retailers and suppliers. <http://www.carpetinstitute.com.au>

⁵Good Environmental Choice Australia (GECA) – eco labelling program. <http://geca.org.au>

<p>Trip Reduction – Nearby Amenities</p>	<p>Reduces travel and promotes health and environmental benefits</p>	<ul style="list-style-type: none"> ▪ Refer to site plan below. ▪ The develop is within close proximities of: <ul style="list-style-type: none"> ▪ Waverley Gardens Shopping Centre (2.2 km) ▪ National Pharmacies Mulgrave (1.6 m)
---	--	---



Figure 3: Site Location (source: Melway Online)

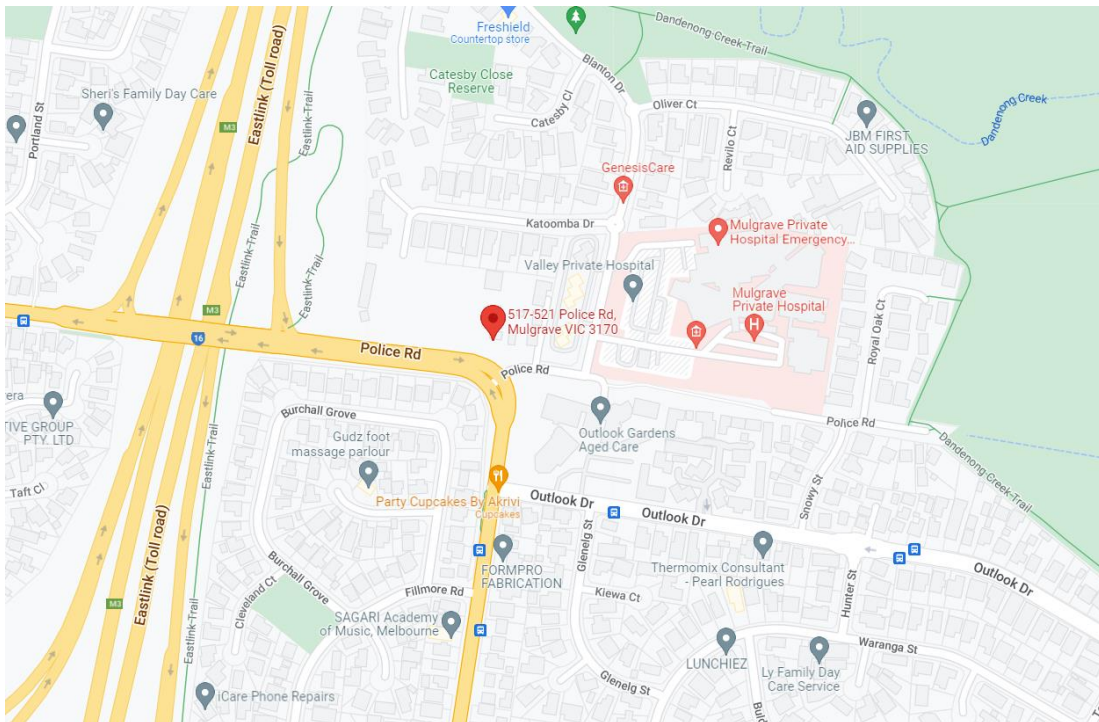


Figure 4: Site Location (source: Google Maps)

10. WASTE MANAGEMENT

Environmentally Sustainable Design (ESD) Principle – A waste management plan should be incorporated into the design of the proposed development to ensure minimal waste is transported to landfill by means of disposal, recycling and on-site waste storage and/or collection methods.

Key elements may include:

- Operational Waste Management Plan
- Storage of Waste, Recycling and Green Waste

ISSUES	POTENTIAL IMPACT	STRATEGIES AND INNOVATION
Operation Waste Management Plan	Efficient waste practices reduce the amount of waste going to landfill.	<ul style="list-style-type: none"> ▪ The Owners Corporation will implement a waste management plan that retains waste records and annual reports to residents, occupants and owners.
Allocated Spaces for General Waste, Recycle Waste and Green Waste	Ensures waste avoidance and efficient reuse and recycling during the operational life of the building.	<ul style="list-style-type: none"> ▪ Space allocation for waste streams are indicated on plans. ▪ General and Recycling waste facilities shall be conveniently placed near the entry of the dwelling for better accessibility.

<p>Food and Garden Waste</p>		<ul style="list-style-type: none"> ▪ The future occupants will have access to a food and garden waste collection system. ▪ It is recommended that facilities be provided to support onsite management of food and garden waste (ie. compost bins or worm farms). This can help to minimise the amount of waste leaving the development.
-------------------------------------	--	---

11. URBAN ECOLOGY

Environmentally Sustainable Design (ESD) Principle – Urban Ecology and its fundamental principles aim to promote and protect ecosystems and biodiversity. Urban and agricultural developments should aim to enhance Urban Ecology by decreasing hard or impervious areas and at the same time increasing vegetation and landscaping opportunities.

Key elements may include:

- Reuse of developed Land
- Maintaining Ecological Value

ISSUES	POTENTIAL IMPACT	STRATEGIES AND INNOVATION
<p>Re-use of Land</p>	<p>Increased density within an established urban area will reduce urban sprawl</p>	<ul style="list-style-type: none"> ▪ The development is a redevelopment of an existing established site.
<p>Maintaining Ecological Value</p>	<p>Encourages the use of vegetation and landscaping throughout the development.</p>	<ul style="list-style-type: none"> ▪ Approximately 42% of the site is covered with vegetation.

12. IMPLEMENTATION & COMMISSIONING

Implementation of the ESD initiatives outlined in this report requires the following processes:

- Full integration with architectural plans and specifications
- Full integration with building services design drawings and specifications
- Endorsement of the ESD Report with town planning drawings
- ESD initiatives to be included in plans and specifications for building approval
- Submission of a compliance report after construction to ensure no initiatives is omitted.

ASPECT	REQUIREMENT	RESPONSIBILITY
Building Users Guide	Prepare Building Users Guide and distribute to occupants.	Owners Corporation
Metering	Install separate utility meters to each individual townhouse	Services Engineer, Builder
Showers	4 star WELS (>=6.0 but <=7.5)	Architect, Builder
Taps	5 star WELS	Architect, Builder
Toilets	4 star WELS	Architect, Builder
Dishwashers	5 star WELS	Architect, Builder
Other Appliances	If provided by developer, specify and install appliances with WELS and energy rating within 1 star of the best available.	Architect, Builder
Water Efficient Landscaping	Water efficient landscaping to be installed.	Landscape Architect, Builder
Rainwater Tank & Raingardens	Install rainwater tanks and raingardens as per Section 6 and Appendix B of this report.	Architect, Services Engineer, Builder
Energy Assessment	Minimum 6-star energy rating to each dwelling at building permit stage	ESD Consultant, Architect
HVAC	Specify and install central gas ducted heating system (min 4 stars) and refrigerative space cooling system (min 4 stars)	Services Engineer, Builder
Hot Water System	Gas instantaneous hot water system (min 5 stars)	Services Engineer, Builder

Clothes Drying	Foldaway clotheslines to be installed in each dwelling's POS	Architect, Builder
Lighting	LED, external lighting to be controlled by a motion detector. Each dwelling will achieve a maximum illumination power density of 4W / m ² or less.	Services Engineer, Builder
Glazing	Double Glazing (or better) to all habitable areas.	Architect, Energy Rater, Builder
Air Quality	All paints, adhesives, carpet, and engineered wood must meet the maximum total indoor pollutant emission limits. Specified products must meet the relevant certifications.	Architect, Builder
Low VOC Materials	Use low VOC paints, flooring, wall and ceiling coverings, adhesives, and sealant.	Builder
Concrete	Reduce cement quantity by substituting it with industrial waste product or oversized aggregate by 30% for in situ concrete, 20% for pre-cast concrete and 15% for stressed concrete. 20% of all aggregate used for structural purposes is recycled. No natural aggregates are used in non-structural uses.	Builder.
PVC	All major PVC use and suppliers to meet best practice guidelines. Usage of PVC in the development, particularly in sanitary plumbing and electrical wiring, to be minimised. Use of HDPE piping for water delivery preferred.	Builder
Recycled Materials	All insulation to contain a minimum of 50% recycled glass and no formaldehyde binder.	Builder

Timber	All timber used in the project to be either be plantation or recycled timber imported to be FSC or PEFC certified.	Builder
Flooring	All flooring to have Ecospecifier, Green Tag, Carpet Institute of Australia or GECA certification	Builder
Joinery	All joinery to have Ecospecifier, Green Tag or GECA certification	Builder
Bicycle Storage	Specify and install 28 secure bicycle parking spaces for each unit and 6 secure visitor bicycle parking spaces in the development.	Architect, Builder
Food & Garden Waste	Ensure the development has access to City of Monash’s food and garden waste collection Recommended to install facilities to manage food and garden waste onsite, such as compost bins or the like.	Owners Corporation Architect, Builder
Ecological Value	At least 42% of the overall site to be covered with vegetation.	Landscape Architect, Architect, Builder

REFERENCE

Appendix A – BESS Summary Report

Appendix B – STORM Report

Appendix C – Stormwater Asset Maintenance Schedule

Appendix D – SMP Documentation Checklist

**Appendix A:
BESS Summary Report**

BESS Report

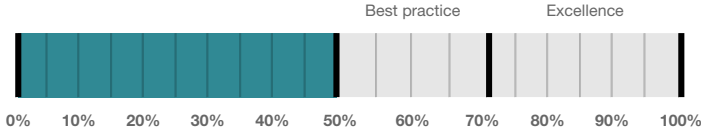
Built Environment Sustainability Scorecard



This BESS report outlines the sustainable design commitments of the proposed development at 501-521 Police Rd Mulgrave VIC 3170. 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 Monash 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



53%

Project details

Address 501-521 Police Rd Mulgrave VIC 3170
Project no 82872B21-R1
BESS Version BESS-6

Site type Multi dwelling (dual occupancy, townhouse, villa unit etc)
Account energy@tul.net.au
Application no.
Site area 13,239.00 m²
Building floor area 23,288.00 m²
Date 18 November 2022
Software version 1.7.1-B.393



Performance by category

● Your development ● Maximum available

Category	Weight	Score	Pass
Management	5%	16%	*
Water	9%	50%	✓
Energy	28%	50%	✓
Stormwater	14%	100%	✓
IEQ	17%	60%	✓
Transport	9%	66%	*
Waste	6%	50%	*
Urban Ecology	6%	50%	*
Innovation	9%	0%	*

Dwellings & Non Res Spaces

Dwellings

Name	Quantity	Area	% of total area
Townhouse			
G14 - D21, D22, D23, D24, D25, D26, 7 D27		1,645 m ²	49%
G6 - D7, D8, D9, D10, D15, D16	6	1,335 m ²	34%
G13 - D19, D20	2	425 m ²	3%
G5 - D5, D6	2	264 m ²	2%
G15 - 28	1	235 m ²	1%
G4 - D4	1	264 m ²	1%
G3 - D3	1	264 m ²	1%
G2 - D2	1	264 m ²	1%
G12 - D18	1	182 m ²	< 1%
G11 - D17	1	225 m ²	< 1%
G10 - D14	1	201 m ²	< 1%
G9 - D13	1	132 m ²	< 1%
G8 - D12	1	180 m ²	< 1%
G7 - D11	1	225 m ²	< 1%
G1 - D1	1	213 m ²	< 1%
Total	28	23,288 m²	100%

Supporting information

Floorplans & elevation notes





Credit	Requirement	Response	Status
Water 3.1	Water efficient garden annotated	To be printed Refer to submitted documents.	✓
Energy 3.3	External lighting sensors annotated	To be printed Refer to submitted documents.	✓
Energy 3.4	Clothes line annotated (if proposed)	To be printed Refer to submitted documents.	✓
Stormwater 1.1	Location of any stormwater management systems used in STORM or MUSIC modelling (e.g. Rainwater tanks, raingarden, buffer strips)	To be printed Refer to submitted documents.	✓
IEQ 3.1	Glazing specification to be annotated	To be printed Refer to submitted documents.	✓
IEQ 3.3	North-facing living areas	To be printed Refer to submitted documents.	✓
Transport 1.1	All nominated residential bicycle parking spaces	To be printed Refer to submitted documents.	✓
Transport 1.2	All nominated residential visitor bicycle parking spaces	To be printed Refer to submitted documents.	✓
Waste 2.1	Location of food and garden waste facilities	To be printed Refer to submitted documents.	✓
Urban Ecology 2.1	Vegetated areas	To be printed Refer to submitted documents.	✓

Supporting evidence




Credit	Requirement	Response	Status
Energy 3.5	Provide a written description of the average lighting power density to be installed in the development and specify the lighting type(s) to be used.	To be printed Architectural Drawings Refer to submitted documents. The development shall commit to achieve a maximum illumination power density of 4W/sqm or less.	✓
Stormwater 1.1	STORM report or MUSIC model	To be printed SMP Appendix B Refer to submitted documents.	✓
IEQ 3.1	Reference to floor plans or energy modelling showing the glazing specification (U-value and Solar Heat Gain Coefficient, SHGC)	To be printed Architectural Drawings Refer to submitted documents. The development shall commit to double glazing in all habitable areas. Energy rating shall be prepared at building permit stage.	✓
IEQ 3.3	Reference to the floor plans showing living areas orientated to the north.	To be printed Architectural Drawings Refer to submitted documents.	✓

Credit summary

Management Overall contribution 4.5%

		16%
1.1 Pre-Application Meeting		0%
2.2 Thermal Performance Modelling - Multi-Dwelling Residential		0%
4.1 Building Users Guide		100%

Water Overall contribution 9.0%

		Minimum required 50%	50%	✓ Pass
1.1 Potable water use reduction		40%		
3.1 Water Efficient Landscaping		100%		

Energy Overall contribution 27.5%

		Minimum required 50%	50%	✔ Pass
1.2 Thermal Performance Rating - Residential			0%	
2.1 Greenhouse Gas Emissions			100%	
2.2 Peak Demand			0%	
2.3 Electricity Consumption			100%	
2.4 Gas Consumption			100%	
2.5 Wood Consumption			N/A	✦ Scoped Out
				No wood heating system present
3.2 Hot Water			100%	
3.3 External Lighting			100%	
3.4 Clothes Drying			100%	
3.5 Internal Lighting - Residential Single Dwelling			100%	
4.4 Renewable Energy Systems - Other			N/A	⊘ Disabled
				No other (non-solar PV) renewable energy is in use.
4.5 Solar PV - Houses and Townhouses			N/A	⊘ Disabled
				No solar PV renewable energy is in use.

Stormwater Overall contribution 13.5%

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

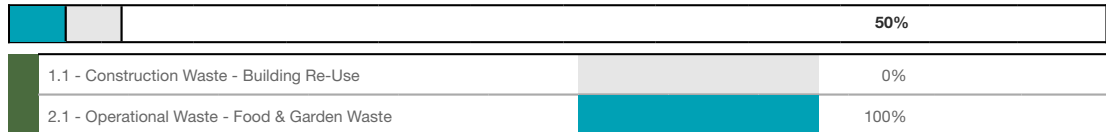
IEQ Overall contribution 16.5%

		Minimum required 50%	60%	✔ Pass
2.2 Cross Flow Ventilation			0%	
3.1 Thermal comfort - Double Glazing			100%	
3.2 Thermal Comfort - External Shading			0%	
3.3 Thermal Comfort - Orientation			100%	

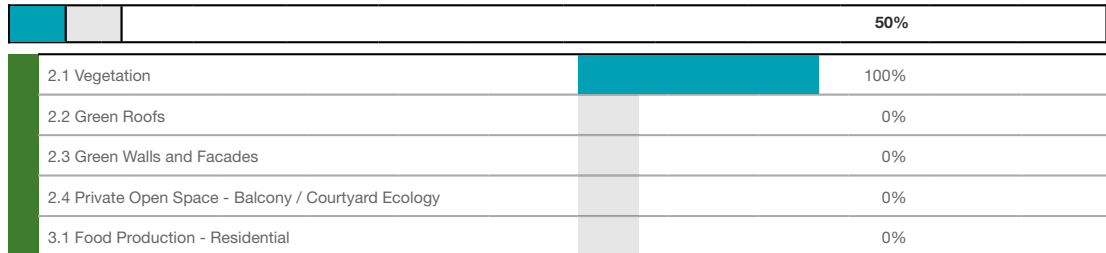
Transport Overall contribution 9.0%

		66%
1.1 Bicycle Parking - Residential		100%
1.2 Bicycle Parking - Residential Visitor		100%
2.1 Electric Vehicle Infrastructure		0%

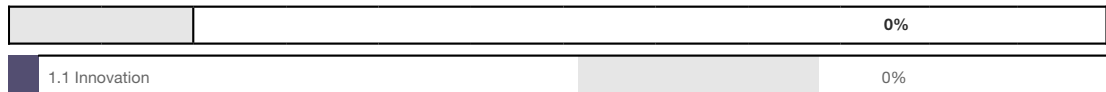
Waste Overall contribution 5.5%



Urban Ecology Overall contribution 5.5%



Innovation Overall contribution 9.0%



Credit breakdown

Management Overall contribution 1%

1.1 Pre-Application Meeting	0%
Score Contribution	This credit contributes 50.0% 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
2.2 Thermal Performance Modelling - Multi-Dwelling Residential	0%
Score Contribution	This credit contributes 33.3% towards the category score.
Criteria	Have preliminary NatHERS ratings been undertaken for all thermally unique dwellings?
Question	Criteria Achieved ?
Townhouse	No
4.1 Building Users Guide	100%
Score Contribution	This credit contributes 16.7% towards the category score.
Criteria	Will a building users guide be produced and issued to occupants?
Question	Criteria Achieved ?
Project	Yes

Water Overall contribution 4% Minimum required 50%

Water Approach	
What approach do you want to use for Water?:	Use the built in calculation tools
Project Water Profile Question	
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
Water fixtures, fittings and connections	
Showerhead: All	4 Star WELS (>= 6.0 but <= 7.5)
Bath:	
G1 - D1	Medium Sized Contemporary Bath
G2 - D2	
G3 - D3	
G4 - D4	
G5 - D5, D6	
G6 - D7, D8, D9, D10, D15, D16	
G7 - D11	
G8 - D12	
G10 - D14	
G11 - D17	
G12 - D18	
G13 - D19, D20	
G14 - D21, D22, D23, D24, D25, D26, D27	
G15 - 28	
G9 - D13	Scope out
Kitchen Taps: All	>= 5 Star WELS rating
Bathroom Taps: All	>= 5 Star WELS rating
Dishwashers: All	>= 5 Star WELS rating
WC: All	>= 4 Star WELS rating
Urinals: All	Scope out
Washing Machine Water Efficiency: All	Occupant to Install

Which non-potable water source is the dwelling/space connected to?:	
G1 - D1	D1
G2 - D2	D2-D3
G3 - D3	
G4 - D4	D4-D11
G5 - D5, D6	
G6 - D7, D8, D9, D10, D15, D16	
G7 - D11	
G8 - D12	D12 & D14
G10 - D14	
G9 - D13	D13 & D15-D17
G11 - D17	
G12 - D18	D18-D19
G13 - D19, D20	
G14 - D21, D22, D23, D24, D25, D26, D27	D20-D28
G15 - 28	
Non-potable water source connected to Toilets: All	Yes
Non-potable water source connected to Laundry (washing machine): All	No
Non-potable water source connected to Hot Water System: All	No
Rainwater Tanks	
What is the total roof area connected to the rainwater tank?:	
D1	86.2 m ²
D2-D3	229 m ²
D4-D11	786 m ²
D12 & D14	149 m ²
D13 & D15-D17	330 m ²
D18-D19	193 m ²
D20-D28	862 m ²
Tank Size:	
D1	3,500 Litres
D2-D3	7,000 Litres
D4-D11	28,000 Litres
D12 & D14	7,000 Litres
D13 & D15-D17	14,000 Litres
D18-D19	7,000 Litres
D20-D28	31,500 Litres

Irrigation area connected to tank:	
D1	0.0 m ²
D2-D3	0.0 m ²
D4-D11	0.0 m ²
D12 & D14	0.0 m ²
D13 & D15-D17	0.0 m ²
D18-D19	0.0 m ²
D20-D28	0.0 m ²
Is connected irrigation area a water efficient garden?:	
D1	No
D2-D3	No
D4-D11	No
D12 & D14	No
D13 & D15-D17	No
D18-D19	No
D20-D28	No
Other external water demand connected to tank?:	
D1	0.0 Litres/Day
D2-D3	0.0 Litres/Day
D4-D11	0.0 Litres/Day
D12 & D14	0.0 Litres/Day
D13 & D15-D17	0.0 Litres/Day
D18-D19	0.0 Litres/Day
D20-D28	0.0 Litres/Day


1.1 Potable water use reduction 40%

Score Contribution	This credit contributes 83.3% towards the category score.
Criteria	What is the reduction in total potable water use due to efficient fixtures, appliances, rainwater use and recycled water use? To achieve points in this credit there must be >25% potable water reduction.
Output	Reference
Project	8157 kL
Output	Proposed (excluding rainwater and recycled water use)
Project	6713 kL
Output	Proposed (including rainwater and recycled water use)
Project	5989 kL
Output	% Reduction in Potable Water Consumption
Project	26 %
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	3021 kL

3.1 Water Efficient Landscaping		100%
Score Contribution	This credit contributes 16.7% towards the category score.	
Criteria	Will water efficient landscaping be installed?	
Question	Criteria Achieved ?	
Project	Yes	

Energy Overall contribution 14% Minimum required 50%

Dwellings Energy Approach	
What approach do you want to use for Energy?:	Use the built in calculation tools
Project Energy Profile Question	
Are you installing any solar photovoltaic (PV) system(s)?:	No
Are you installing any other renewable energy system(s)?:	No
Gas supplied into building:	Natural Gas
Dwelling Energy Profiles	
Below the floor is: All	Ground or Carpark
Above the ceiling is: All	Outside
Exposed sides:	
G1 - D1	4
G2 - D2	
G3 - D3	
G4 - D4	
G5 - D5, D6	
G6 - D7, D8, D9, D10, D15, D16	
G7 - D11	
G8 - D12	
G10 - D14	
G11 - D17	
G12 - D18	
G13 - D19, D20	
G14 - D21, D22, D23, D24, D25, D26, D27	
G15 - 28	
G9 - D13	3
NatHERS Annual Energy Loads - Heat: All	100 MJ/sqm
NatHERS Annual Energy Loads - Cool: All	25.0 MJ/sqm
NatHERS star rating: All	6.0
Type of Heating System: All	B Gas central ducts
Heating System Efficiency: All	4 Star
Type of Cooling System: All	Refrigerative space
Cooling System Efficiency: All	4 Stars
Type of Hot Water System: All	I Gas Instantaneous 5 star
% Contribution from solar hot water system: All	0 %
Is the hot water system shared by multiple dwellings?: All	No
Clothes Line: All	D Private outdoor clothesline
Clothes Dryer: All	Occupant to Install
1.2 Thermal Performance Rating - Residential	0%
Score Contribution	This credit contributes 30.0% towards the category score.
Criteria	What is the average NatHERS rating?
Output	Average NATHERS Rating (Weighted)
Townhouse	6.0 Stars

2.1 Greenhouse Gas Emissions		100%
Score Contribution	This credit contributes 10.0% towards the category score.	
Criteria	What is the % reduction in annual greenhouse gas emissions against the benchmark?	
Output	Reference Building with Reference Services (BCA only)	
Townhouse	438,317 kg CO2	
Output	Proposed Building with Proposed Services (Actual Building)	
Townhouse	294,455 kg CO2	
Output	% Reduction in GHG Emissions	
Townhouse	32 %	
2.2 Peak Demand		0%
Score Contribution	This credit contributes 5.0% towards the category score.	
Criteria	What is the % reduction in the instantaneous (peak-hour) demand against the benchmark?	
2.3 Electricity Consumption		100%
Score Contribution	This credit contributes 10.0% towards the category score.	
Criteria	What is the % reduction in annual electricity consumption against the benchmark?	
Output	Reference	
Townhouse	181,160 kWh	
Output	Proposed	
Townhouse	100,153 kWh	
Output	Improvement	
Townhouse	44 %	
2.4 Gas Consumption		100%
Score Contribution	This credit contributes 10.0% towards the category score.	
Criteria	What is the % reduction in annual gas consumption against the benchmark?	
Output	Reference	
Townhouse	4,932,576 MJ	
Output	Proposed	
Townhouse	3,741,228 MJ	
Output	Improvement	
Townhouse	24 %	
2.5 Wood Consumption		N/A  Scoped Out
This credit was scoped out	No wood heating system present	

3.2 Hot Water		100%
Score Contribution	This credit contributes 5.0% towards the category score.	
Criteria	What is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark?	
Output	Reference	
Townhouse	183,220 kWh	
Output	Proposed	
Townhouse	161,956 kWh	
Output	Improvement	
Townhouse	11 %	
3.3 External Lighting		100%
Score Contribution	This credit contributes 5.0% towards the category score.	
Criteria	Is the external lighting controlled by a motion detector?	
Question	Criteria Achieved ?	
Townhouse	Yes	
3.4 Clothes Drying		100%
Score Contribution	This credit contributes 5.0% towards the category score.	
Criteria	What is the % reduction in annual energy consumption (gas and electricity) from a combination of clothes lines and efficient driers against the benchmark?	
Output	Reference	
Townhouse	26,076 kWh	
Output	Proposed	
Townhouse	5,215 kWh	
Output	Improvement	
Townhouse	80 %	
3.5 Internal Lighting - Residential Single Dwelling		100%
Score Contribution	This credit contributes 5.0% towards the category score.	
Criteria	Does the development achieve a maximum illumination power density of 4W/sqm or less?	
Question	Criteria Achieved?	
Townhouse	Yes	
4.4 Renewable Energy Systems - Other		N/A <input type="checkbox"/> Disabled
This credit is disabled	No other (non-solar PV) renewable energy is in use.	
4.5 Solar PV - Houses and Townhouses		N/A <input type="checkbox"/> Disabled
This credit is disabled	No solar PV renewable energy is in use.	

Stormwater Overall contribution 14% Minimum required 100%

Which stormwater modelling are you using?:		Melbourne Water STORM tool
1.1 Stormwater Treatment		100%
Score Contribution	This credit contributes 100.0% towards the category score.	
Criteria	Has best practice stormwater management been demonstrated?	
Question	STORM score achieved	
Project	102	
Output	Min STORM Score	
Project	100	

IEQ Overall contribution 10% Minimum required 50%

2.2 Cross Flow Ventilation		0%
Score Contribution	This credit contributes 20.0% towards the category score.	
Criteria	Are all habitable rooms designed to achieve natural cross flow ventilation?	
Question	Criteria Achieved ?	
Townhouse	No	
3.1 Thermal comfort - Double Glazing		100%
Score Contribution	This credit contributes 40.0% towards the category score.	
Criteria	Is double glazing (or better) used to all habitable areas?	
Question	Criteria Achieved ?	
Townhouse	Yes	
3.2 Thermal Comfort - External Shading		0%
Score Contribution	This credit contributes 20.0% towards the category score.	
Criteria	Is appropriate external shading provided to east, west and north facing glazing?	
Question	Criteria Achieved ?	
Townhouse	No	
3.3 Thermal Comfort - Orientation		100%
Score Contribution	This credit contributes 20.0% towards the category score.	
Criteria	Are at least 50% of living areas orientated to the north?	
Question	Criteria Achieved ?	
Townhouse	Yes	

Transport Overall contribution 6%

1.1 Bicycle Parking - Residential		100%
Score Contribution	This credit contributes 33.3% towards the category score.	
Criteria	How many secure and undercover bicycle spaces are there per dwelling for residents?	
Question	Bicycle Spaces Provided ?	
Townhouse	28	
Output	Min Bicycle Spaces Required	
Townhouse	28	
1.2 Bicycle Parking - Residential Visitor		100%
Score Contribution	This credit contributes 33.3% towards the category score.	
Criteria	How many secure bicycle spaces are there per 5 dwellings for visitors?	
Question	Visitor Bicycle Spaces Provided ?	
Townhouse	6	
Output	Min Visitor Bicycle Spaces Required	
Townhouse	6	
2.1 Electric Vehicle Infrastructure		0%
Score Contribution	This credit contributes 33.3% towards the category score.	
Criteria	Are facilities provided for the charging of electric vehicles?	
Question	Criteria Achieved ?	
Project	No	

Waste Overall contribution 3%

1.1 - Construction Waste - Building Re-Use		0%
Score Contribution	This credit contributes 50.0% 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		100%
Score Contribution	This credit contributes 50.0% towards the category score.	
Criteria	Are facilities provided for on-site management of food and garden waste?	
Question	Criteria Achieved ?	
Project	Yes	

Urban Ecology Overall contribution 3%

2.1 Vegetation	100%
Score Contribution	This credit contributes 50.0% 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	42 %
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
2.4 Private Open Space - Balcony / Courtyard Ecology	0%
Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	Is there a tap and floor waste on every balcony / in every courtyard?
Question	Criteria Achieved ?
Townhouse	No
3.1 Food Production - Residential	0%
Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	What area of space per resident is dedicated to food production?
Question	Food Production Area
Townhouse	0.0 m ²
Output	Min Food Production Area
Townhouse	31 m ²

Innovation Overall contribution 0%

1.1 Innovation	0%
Score Contribution	This credit contributes 100.0% 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

**Appendix B:
STORM Report**



STORM Rating Report

TransactionID: 1487796
Municipality: MONASH
Rainfall Station: MONASH
Address: 501-515 & 517-521 Police Road

Mulgrave
VIC 3170

Assessor: The Urban Leaf
Development Type: Residential - Subdivision
Allotment Site (m2): 13,239.00
STORM Rating %: 102

Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
50% of D1 Roof to 3500L RWT	86.20	Rainwater Tank	3,500.00	4	162.40	82.00
50% of D2-D3 Roofs to 3500L RWT each	228.90	Rainwater Tank	7,000.00	10	166.00	80.80
50% of D4-D11 Roofs to 3500L RWT each	785.55	Rainwater Tank	28,000.00	35	166.90	82.00
50% of D12 & D14 Roofs to 3500L RWT each	149.00	Rainwater Tank	7,000.00	7	166.00	82.00
50% of D13 & D15-D17 Roofs to 3500L RWT each	330.30	Rainwater Tank	14,000.00	15	166.00	82.00
50% of D18-D19 Roofs to 3500L RWT each	193.40	Rainwater Tank	7,000.00	7	147.40	87.60
50% of D20-D28 Roofs to 3500L RWT each	862.25	Rainwater Tank	31,500.00	35	151.80	84.40
Common Road (untreated)	1,274.40	None	0.00	0	0.00	0.00
Common Footpaths (untreated)	177.60	None	0.00	0	0.00	0.00

Date Generated: 16-Nov-2022

Program Version: 1.0.0



STORM Rating Report

TransactionID: 1487796
Municipality: MONASH
Rainfall Station: MONASH
Address: 501-515 & 517-521 Police Road

Mulgrave
VIC 3170

Assessor: The Urban Leaf
Development Type: Residential - Subdivision
Allotment Site (m2): 13,239.00
STORM Rating %: 102

Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
D12-D17 Individual driveway to RG (2m2 per dwelling)	178.70	Raingarden 100mm	12.00	0	133.50	0.00
50% of D1 Roof to RG	86.20	Raingarden 100mm	2.00	0	129.55	0.00
50% of D2-D3 Roofs to RG	228.90	Raingarden 100mm	5.00	0	128.95	0.00
50% of D4-D11 Roofs to RG	785.55	Raingarden 100mm	16.00	0	128.25	0.00
50% of D12 & D14 Roofs to RG	149.00	Raingarden 100mm	4.00	0	131.00	0.00
50% of D13 & D15-D17 Roofs to RG	330.30	Raingarden 100mm	8.00	0	130.00	0.00
50% of D18-D19 Roofs to RG	193.40	Raingarden 100mm	4.00	0	128.40	0.00
50% of D20-D28 Roofs to RG	862.25	Raingarden 100mm	18.00	0	128.50	0.00
D1-D11 & D18-D28 Individual driveway (untreated)	762.20	None	0.00	0	0.00	0.00

Date Generated: 16-Nov-2022

Program Version: 1.0.0

Appendix C: Stormwater Treatment Maintenance Schedule

Once endorsed, it is the responsibility of Owners Corporation to ensure that the stormwater treatment assets are maintained as according to the maintenance schedule provided by the manufacturer's guidelines or the schedule proposed below:

Rainwater Tank

Description	Action	Maintenance Frequency
Gutter guards	<ul style="list-style-type: none"> Inspection & cleaning 	Every 6 months
Leaf diverters	<ul style="list-style-type: none"> Inspection & cleaning 	Every 6 months
First flush diverters	<ul style="list-style-type: none"> Inspection & cleaning 	Every 6 months
Water tank	<ul style="list-style-type: none"> Prune overhanging tree branches and foliage Inspection for defects and repair or replace as required. 	Every 6 months
Water tank	<ul style="list-style-type: none"> Monitoring sediment build-up & cleaning 	1 – 2 years

Raingardens

Description	Action	Maintenance Frequency
Litter and organics	<ul style="list-style-type: none"> Litter removal Check for algal biofilms that may cause clogging issues 	Every 3 months
Vegetation	<ul style="list-style-type: none"> Weeds removal Dead plants replacement Prune and water plants 	Every 3 months
Mulch	<ul style="list-style-type: none"> Replace or top up mulch Check depth of mulch Making sure that mulch is distributed evenly 	Every 3 months
Civil components	<ul style="list-style-type: none"> Inspect functional elements for damage and repair as required. Check and clear sediment, litter and debris in inlet and outlet points. 	Every 3 months

Appendix D: SMP Documentation Checklist

CHECKLIST FOR SDA/SMP REPORT DOCUMENTATION:

In accordance with BESS protocols, the following items are recommended to be updated onto architectural drawings prior to Council submission. Please note the checklist is typical and some of the items below may not be applicable to your specific project. Items may directly be annotated onto relevant plans or be listed within the General Notes section. For further details, refer to the following link:

<https://www.merri-bek.vic.gov.au/globalassets/website-merri-bek/areas/building-business/planning-and-building/planning/environmentally-sustainable-design/esd-guidance-plans-june-2022.pdf>

- Indicate location and type of hot water system (*ie. Gas instantaneous hot water system, min 5 stars*)
- Annotate location of water efficient landscaping
- Indicate external lighting sensor(s)
- Annotate commitment of maximum illumination power density of 4W/m² or less. Specify lighting type (s) to be used, *ie. LED.*
- Indicate location of clotheslines on drawings
- Indicate location, size, and angle of PV panels on Roof Plan
- Indicate operable windows on Elevations
- Annotate double glazing commitment to all habitable areas
- Indicate external shading devices on relevant elevations (*fixed/adjustable to north, adjustable to east and west*)
- Indicate north-facing living area on Floor Plan
- Indicate location, size and plumbing of rainwater tanks on plan. Indicate roof catchment area draining to rainwater tanks on plans
- Indicate the location and size for all other stormwater treatments
- Indicate location and type of bicycle parking spaces and relevant facilities on Floor Plan. Clarify residential and visitor bicycle parking spaces.
- Indicate electric vehicle charging system
- Indicate onsite food waste management *ie. compost facilities and worm farms*
- Indicate floor waste and tap to every balcony and / or courtyard
- Indicate size and location of dedicated food production area
- Provide notation on the application drawings regarding energy efficient heating & cooling, lighting, water efficient fixtures, sustainable materials specification including low VOC materials, best practice PVC and sustainable timber