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ADVERTISED PLAN

46-52 Breese Street, Brunswick

SUSTAINABILITY MANAGEMENT PLAN

DOCUMENT PROPERTIES

DOCUMENT BY: WRAP Engineering Pty Ltd
L2 600 Church Street
Cremorne, Victoria 3121

DATE: 16 April 2025

DESCRIPTION: Sustainability Management Plan

PROJECT NAME: 46-52 Breese Street, Brunswick

PROJECT NUMBER: 25101

DOCUMENT AMENDMENTS

REVISION	DETAILS	AUTHOR/S	DATE	REVIEWED BY
01	Draft for review	NS	24/03/2025	KG
02	Issue for TP	NS	16/04/2025	KG

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1 INTRODUCTION

This Sustainability Management Plan (SMP) has been prepared to assist the design, construction and operation of the proposed residential development at 46-52 Breese St Brunswick to achieve a range of best-practice sustainable development objectives.

WRAP Engineering has assessed the proposed plans and provided input to the design team. This SMP captures initiatives necessary to ensure that the development meets the sustainability requirements of the Merri-bek City Council, in particular the ESD requirements of the following Planning Clauses:

- 15.01-2L Environmentally Sustainable Development.
- 53.18 Stormwater Management (Water Sensitive Urban Design).

1.1 SITE DESCRIPTION

The development proposed for the site at 46-52 Breese St consists of 43 townhouses, a recycling and mobility hub and an extensive landscape. The townhouses are one to four bedrooms with kitchen and dining areas, living rooms, laundries and bathrooms.



Figure 1: Aerial view of the site. (Source: google, Mark-up: WRAP Engineering)

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1.2 COUNCIL PLANNING REQUIREMENTS

Merri-bek City Council expects new developments to be designed, built and maintained at a level that reflects best practice sustainable development outcomes. The ESD response will need to ensure that the design meets sustainability targets in the areas of energy reduction, water use reduction and water sensitive urban design, indoor environment quality, materials selection, transportation, waste management and urban ecology.

Merri-bek City Council encourages the implementation of SDAPP (Sustainable Design Assessment in the Planning Process). to enhance the sustainability of the built environment. For this project, the SDAPP framework on the 10 Key Sustainable Building Categories will be addressed. These categories are as follows:

- Energy Efficiency;
- Water Efficiency;
- Stormwater Management;
- Indoor Environment Quality;
- Building Materials;
- Construction and Waste Management;
- Transport;
- Urban Ecology;
- Building Management; and
- Innovation.

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The council’s Planning Scheme also encourages the use of relevant ESD tools to assess the proposed development. For this project, the following tools will be used:

- Built Environment Sustainability Scorecard (BESS) – a holistic sustainability assessment tool; and
- Melbourne Storm Water – a stormwater assessment tool.

This SMP incorporates initiatives to ensure that the council’s ESD requirements are satisfied by addressing the Key Sustainable Building Categories, demonstrating that council’s Best Practice Standards will be achieved, and using relevant and appropriate ESD assessment tools.

1.3 REFERENCE DOCUMENTATION

This SMP should be read in conjunction with the other relevant documentation included within the development’s town planning submission to council. These documents may include the following:

- Architectural documentation drawn on 03/03/2025

2 ESD ASSESSMENT

The following sections outline the ESD assessment which has been completed for the project. The assessment is presented within the Key Sustainable Building Categories, and for each item, the following information is provided:

1. A short description of the ESD initiative and/or the project’s design response.
2. The nominated party responsible for implementation of the initiative; and
3. The stage of the project at which implementation could be demonstrated.

Within this assessment, the level of detail that has been provided is generally in proportion to what is appropriate or practicable at this early stage of design. This is described or explained within each item, with future commitments included as appropriate.

2.1 INDOOR ENVIRONMENT QUALITY

2.1.1 OBJECTIVES

- *To achieve a healthy indoor environment quality for the wellbeing of building occupants.*
- *To provide a naturally comfortable indoor environment will lower the need for building services, such as artificial lighting, mechanical ventilation and cooling and heating devices.*

2.1.2 DEVELOPMENT RESPONSE

ESD INITIATIVE	RESPONSIBILITY & IMPLEMENTATION	PROJECT STAGE
Volatile Organic Compounds All paints, adhesives and sealants and carpets will not exceed the limits outlined in Appendix A.	Architect Services Engineer	Contract Documentation
Formaldehyde All engineered wood products will have 'low' formaldehyde emissions, certified as E0 or better, or will not exceed the limits outlined in Appendix A.	Architect	Contract Documentation
Perimeter Bedrooms The development has 100% of the bedrooms along the exterior of the building, with windows direct to outside.	Architect	Design Development
Natural Cross Ventilation The design has incorporated natural ventilation with the provision of operable windows to all habitable spaces.	Architect	Contract Documentation
Thermal Comfort The development will include Low-E double glazing to all town houses, and it will exceed the minimum house energy rating of 6.0 Stars and an average house energy rating of 7.0 Stars.	Architect ESD Consultant	Contract Documentation
Window Shading Internal blinds/curtains are provided throughout.	Architect	Contract Documentation
Artificial Lighting The lighting design within development will include task-based lighting over sinks and benches.	Services Engineer	Contract Documentation

2.2 ENERGY EFFICIENCY

2.2.1 OBJECTIVES:

- *To ensure the efficient use of energy.*
- *To reduce total operating greenhouse emissions.*
- *To reduce energy peak demand.*
- *To reduce associated energy costs.*

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2.2.2 DEVELOPMENT RESPONSE

ESD INITIATIVE	RESPONSIBILITY & IMPLEMENTATION	PROJECT STAGE
House Energy Ratings NatHERS modelling has been completed for the development with results indicating that a NatHERS rating greater than 6.0 stars with an average of 7.0-star result is achievable. A summary of the NatHERS performance is included in Appendix C.	Architect ESD Consultant	Building Permit
Heating and Cooling Systems The project will implement the following energy efficient heating and cooling systems: - Residential heating and cooling systems with minimum 3 Star energy rating (ZERL)	Services Engineer	Contract Documentation
Solar PV The project will install a solar PV array of maximum capacity in consideration of the available roof area. A notional 2 Kw/dwelling capacity is nominated currently, final sizing to be coordinated during the design development phase.	Architect Services Engineer	Contract Documentation
Artificial Lighting - The lighting design throughout the development will be at least 10% more energy efficient than the BCA 2022 requirements. - External and common area lighting systems will use daylight and occupancy sensors to control lighting energy usage.	Services Engineer	Contract Documentation
Energy Efficient Appliances Where domestic appliances are installed or provided by the developer, they will be within one star of the best available and comparable type of appliance, as per the Equipment Energy Efficiency (E3) program.	Architect	Contract Documentation
Energy Metering – Electricity All dwellings will be provided with individual electricity meters.	Services Engineer	Contract Documentation
Electrification The development will be all-electric and fossil-fuel free.	Services Engineer	Contract Documentation

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2.3 WATER EFFICIENCY

2.3.1 OBJECTIVES:

- To ensure the efficient use of water.
- To reduce total operating potable water use.
- To encourage the collection and reuse of stormwater.
- To encourage the appropriate use of alternative water sources (e.g. grey water).
- To minimise associated water costs.

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2.3.2 DEVELOPMENT RESPONSE

ESD INITIATIVE	RESPONSIBILITY & IMPLEMENTATION	PROJECT STAGE
<p>Water Fixtures and Fittings</p> <p>The following Water Efficiency Labelling Scheme (WELS) star ratings will be specified:</p> <ul style="list-style-type: none"> - Toilets: 4 Star; - Taps (bathroom and kitchen): 5 Star; and - Showerheads: 4 Star (> 6.0 but ≤7.5.0 L/min). 	Architect	Contract Documentation
<p>Water Efficient Appliances</p> <p>Where domestic appliances are installed or provided by the developer, they will be within one star of the best available and comparable type of appliance, as per the WELS program. This may include dishwashers or washing machines.</p>	Architect	Contract Documentation
<p>Rainwater Collection and Reuse</p> <p>The WSUD strategy will utilise the following:</p> <ul style="list-style-type: none"> - Rainwater tank size: 15 kL; - Roof catchment area: approximately 1716 m²; and - Rainwater usage: toilet flushing for west (total 8 THs) and central town houses (total 20 THs) and landscape irrigation. Refer to Appendix B for details. 	Architect Services Engineer	Contract Documentation
<p>Landscape Irrigation</p> <p>Landscaping will be supplied from the rainwater system and will use water-efficient irrigation systems as appropriate to each application.</p>	Services Engineer Landscape	Contract Documentation
<p>Waterless HVAC</p> <p>All HVAC systems will use air-cooled heat rejection systems.</p>	Services Engineer	Contract Documentation
<p>Water Metering</p> <p>All dwellings will be provided with individual authority meters, and all major water uses, such as irrigation, will be individually sub-metered to allow for effective building tuning.</p>	Services Engineer	Contract Documentation

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2.4 STORMWATER MANAGEMENT

2.4.1 OBJECTIVES:

- *To reduce the impact of stormwater run-off.*
- *To improve the water quality of stormwater run-off.*
- *To achieve best practice stormwater quality outcomes.*
- *To incorporate water sensitive urban design principles.*

2.4.2 DEVELOPMENT RESPONSE

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ESD INITIATIVE	RESPONSIBILITY & IMPLEMENTATION	PROJECT STAGE
<p>Stormwater Pollution Reduction</p> <p>The project will achieve best practice stormwater pollution reduction by achieving a STORM score of at least 100. Preliminary calculations show a rating of 100% is likely to be achieved. Refer to Appendix B for details.</p>	<p>Architect Services Engineer</p>	<p>Contract Documentation</p>

2.5 BUILDING MATERIALS

2.5.1 OBJECTIVES:

- *To minimise the environmental impacts materials used by encouraging the use of materials with a favourable lifecycle assessment based on the following factors:*
 - *Fate of material*
 - *Recycling/Reuse*
 - *Embodied energy*
 - *Biodiversity*
 - *Human health*
 - *Environmental toxicity*
 - *Environmental responsibility.*

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2.5.2 DEVELOPMENT RESPONSE

ESD INITIATIVE	RESPONSIBILITY & IMPLEMENTATION	PROJECT STAGE
<p>Timber</p> <p>At least 90% of solid (not engineered) timber used in the project will be reused or will be from FSC or PEFC certified forests.</p>	<p>Architect Contractor</p>	<p>Construction</p>
<p>Recycled Materials</p> <p>Products with post-consumer recycled content such as steel, insulation, will be specified.</p>	<p>Architect Structural Engineer Contractor</p>	<p>Construction</p>
<p>Insulation</p> <p>All insulants will have zero ozone depletion potential (ODP).</p>	<p>Contractor</p>	<p>Construction</p>
<p>Refrigerants</p> <p>All HVAC refrigerants used in the development will be selected to have an Ozone Depletion Potential (ODP) of zero.</p>	<p>Services Engineer</p>	<p>Contract Documentation</p>

2.6 TRANSPORT

2.6.1 OBJECTIVES:

- To minimise car dependency.
- To ensure that the built environment is designed to promote the use of public transport, walking and cycling.

2.6.2 DEVELOPMENT RESPONSE

ESD INITIATIVE	RESPONSIBILITY & IMPLEMENTATION	PROJECT STAGE
Access to Public Transport The development is located in Brunswick, with good access to trains and buses. It scores a Transit Score of 71 out of 100.		N/A
Walking Access to Amenities The development has excellent access to local amenities achieving a Walk Score of 97 out of 100.		N/A

661 Sydney Road

Brunswick, Melbourne, 3056

Commute to Downtown Melbourne

12 min 23 min 24 min

Favorite

Map

Nearby Apartments

Walk Score
97

Walker's Paradise

Daily errands do not require a car.

Transit Score
71

Excellent Transit

Transit is convenient for most trips.

About your score

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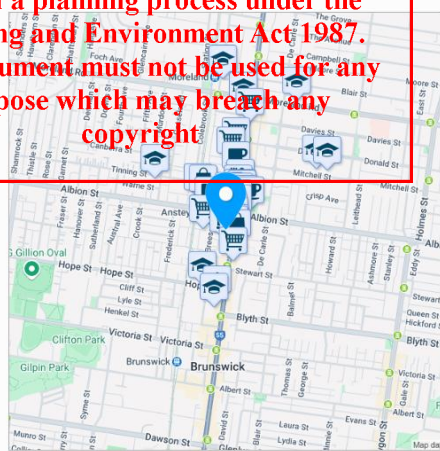


Figure 2: Walk Score and Transit Score for the site location

2.7 WASTE MANAGEMENT

2.7.1 OBJECTIVES:

- To ensure waste avoidance, reuse and recycling during the design, construction and operation stages of development.
- To ensure long term reusability of building materials.

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- *To meet Councils' requirement that all multi-unit developments must provide a Waste Management Plan in accordance with the Guide to Best Practice for Waste Management in Multi-unit Developments 2010, published by Sustainability Victoria.*

2.7.2 DEVELOPMENT RESPONSE

ESD INITIATIVE	RESPONSIBILITY & IMPLEMENTATION	PROJECT STAGE
Construction Waste Management The contractor will prepare a construction waste management plan for the project and will divert at least 80% of all demolition and construction waste from landfill.	Contractor	Construction
Operational Waste A dedicated storage area (bin room) will be provided for the collection of recyclable waste, located in a convenient location.	Architect	Contract Documentation

2.8 URBAN ECOLOGY

2.8.1 OBJECTIVES:

- *To protect and enhance biodiversity.*
- *To provide sustainable landscaping.*
- *To protect and manage all remnant indigenous plant communities.*
- *To encourage the planting of indigenous vegetation.*

2.8.2 DEVELOPMENT RESPONSE

ESD INITIATIVE	RESPONSIBILITY & IMPLEMENTATION	PROJECT STAGE
Vegetation At least 25% of the site area will be covered by vegetation throughout the development.	Landscape	Contract Documentation

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2.9 CONSTRUCTION AND BUILDING MANAGEMENT

2.9.1 OBJECTIVES:

- *To encourage a holistic and integrated design and construction process and ongoing high performance.*

2.9.2 DEVELOPMENT RESPONSE

ESD INITIATIVE	RESPONSIBILITY & IMPLEMENTATION	PROJECT STAGE
Construction Environmental Management The contractor will prepare and implement a project specific EMP at the start of construction. The EMP will be developed in accordance with the VIC Environmental Management Systems Guidelines or equivalent.	Contractor	Construction
Building Information Prior to occupancy, a package of building information will be developed and handed over to the building manager/occupants. This will include as-built drawings, operations and maintenance manuals, and supplier and warranty details.	Contractor	Construction

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3 BESS ASSESSMENT

A summary of the BESS assessment is presented below.

BESS, 46-52 Breese Street, Brunswick VIC, Australia 46 Breese St, Brunswick 30...

BESS Report

Built Environment Sustainability Scorecard



This BESS report outlines the sustainable design commitments of the proposed development at 46 Breese St Brunswick Victoria 3056. 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 Merri-bek City Council (Moreland).

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

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

56%

Project details	
Name	46-52 Breese Street, Brunswick VIC, Australia
Address	46 Breese St Brunswick Victoria 3056
Project ID	56BA0EAD-R2
BESS Version	BESS-9
Site type	Multi dwelling (dual occupancy, townhouse, villa, unit etc)
Account	admin@wrapengineering.com.au
Application no.	
Site area	2,315 m ²
Building floor area	4,626 m ²
Date	16 April 2025
Software version	2.1.0-B.596

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Performance by category

● This project ● Maximum available

Category	Weight	Score	Pass
Management	5%	50%	○
Integrated Water Management	23%	74%	✓
Operational Energy	28%	71%	✓
Indoor Environment Quality	17%	60%	✓
Transport	9%	33%	○
Waste & Resource Recovery	6%	50%	○
Urban Ecology	6%	37%	○
Innovation	9%	0%	○

The Built Environment Sustainability Scorecard is an initiative of the Council Alliance for a Sustainable Built Environment (CASBE). For more details see www.bess.net.au

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APPENDIX A – VOC & FORMALDEHYDE LIMITS

VOC LIMITS – PAINTS, ADHESIVES & SEALANTS

PRODUCT CATEGORY	MAX. TVOC (g/L OF READY TO USE PRODUCT)
General purpose adhesives and sealants	50
Interior wall and ceiling paint, all sheen levels	16
Trim, varnishes and wood stains	75
Primers, sealers and prep coats	65
One and two pack performance coatings for floors	140
Acoustic sealants, architectural sealant, waterproofing membranes and sealant, fire retardant sealants and adhesives	250
Structural glazing adhesive, wood flooring and laminate adhesives and sealants	100

VOC LIMITS – CARPETS

COMPLIANCE OPTIONS	COMPLIANCE CRITERIA
A – PRODUCT CERTIFICATION	<p>The product is certified under a recognised Product Certification Scheme (listed on the GBCA website http://new.gbca.org.au/product-certification-schemes/) or other recognised standards.</p> <p>The certificate must be current at the time of project registration or submission and list the relevant product name and model.</p>
B – LABORATORY TESTING	<p><u>ASTM D5116:</u></p> <ul style="list-style-type: none"> - Total VOC limit: 0.5mg/m² per hour, & - 4-PC limit: 0.05mg/m² per hour <p><u>ISO 16000 / EN 13419:</u></p> <ul style="list-style-type: none"> - TVOC at three days: 0.5mg/m² per hour <p><u>ISO 10580 / ISO/TC 219 (Document N238):</u></p> <ul style="list-style-type: none"> - TVOC at 24 hours: 0.5mg/m² per hour

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FORMALDEHYDE LIMITS

TEST PROTOCOL	EMISSION LIMIT/ UNIT OF MEASUREMENT
AS/NZS 2269:2004, testing procedure AS/NZS 2098.11:2005 method 10 for Plywood	≤1mg/ L
AS/NZS 1859.1:2004 - Particle Board, with use of testing procedure AS/NZS 4266.16:2004 method 16	≤1.5 mg/L
AS/NZS 1859.2:2004 - MDF, with use of testing procedure AS/NZS 4266.16:2004 method 16	≤1mg/ L
AS/NZS 4357.4 - Laminated Veneer Lumber (LVL)	≤1mg/ L
Japanese Agricultural Standard MAFF Notification No.701 Appendix Clause 3 (11) - LVL	≤1mg/ L
JIS A 5908:2003- Particle Board and Plywood, with use of testing procedure JIS A 1460	≤1mg/ L
JIS A 5905:2003 - MDF, with use of testing procedure JIS A 1460	≤1mg/ L
JIS A1901 (not applicable to Plywood, applicable to high pressure laminates and compact laminates)	≤0.1 mg/m ² hr
ASTM D5116 (applicable to high pressure laminates and compact laminates)	≤0.1 mg/m ² hr
ISO 16000 part 9, 10 and 11 (also known as EN 13419), applicable to high pressure laminates and compact laminates	≤0.1 mg/m ² hr (at 3 days)
ASTM D6007	≤0.12mg/m ³
ASTM E1333	≤0.12mg/m ³
EN 717-1 (also known as DIN EN 717-1)	≤0.12mg/m ³
EN 717-2 (also known as DIN EN 717-2)	≤3.5mg/m ² hr

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APPENDIX B – STORMWATER ASSESSMENT

OVERVIEW

Under clause 53.18 Stormwater Management (Water Sensitive Urban Design) of Merri-bek City Council Planning Scheme, the proposed development is required to demonstrate, as part of its town planning application, its ability to meet the water quality performance objectives as set out in the Urban Stormwater Best Practice Environmental Management Guidelines, Victorian Stormwater Committee 1999.

In response to this, the Water Sensitive Urban Design Response proposed for this development has been assessed using the Melbourne Water *STORM* software.

The preliminary stormwater treatment proposed for this development achieves best practice performance objectives outlined in the Urban Stormwater Best Practice Environmental Management Guidelines (CSIRO 1999) to achieve the objectives of the State Environment Protection Policy (Water of Victoria).

General considerations and potential maintenance activities for the proposed WSUD response have been outlined in this report. The final detailing of the systems will be agreed with the civil and hydraulic design consultants.

General measures to be considered by the building contractor to minimise stormwater pollution during construction have also been included.

BASIS OF ASSESSMENT

The policy is based on the best practice performance objectives outlined in the Urban Stormwater Best Practice Environmental Management Guidelines (CSIRO 1999) to achieve the objectives of the State Environment Protection Policy (Water of Victoria). These performance objectives are:

- 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.

The policy also aims to promote use of Water Sensitive Urban Design (WSUD) strategies as well as stormwater re-use, minimise peak stormwater flows and pollutants, and mitigate the detrimental effect of development on downstream waterways.

PERFORMANCE MEASUREMENT TOOL

The Water Sensitive Urban Design Response proposed for this development has been assessed using the Melbourne Water software *STORM*.

DEVELOPMENT RESPONSE – WSUD

A summary of the development's WSUD response is presented below:

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STORMWATER TREATMENT	TREATMENT DESCRIPTION AND DETAILS
Treatment #1 – Rainwater Harvesting	- 15 kL rainwater tank. - Roof catchment area of approximately 1716 m ² collecting into rainwater tank. - Captured rainwater used for toilet flushing for west (total 8 THs) and central town houses (total 15 THs) and landscape irrigation.

STORM ASSESSMENT RESULTS

Based on the stormwater treatment details described above, the development achieves a STORM score of 106%.



STORM Rating Report

TransactionID: 0
 Municipality: MERRI-BEK
 Rainfall Station: MORELAND
 Address: 46-52 Breese St
 Brunswick
 Brunswick
 VIC 3056
 Assessor:
 Development Type: Residential - Multiunit
 Allotment Site (m2): 2,315.00
 STORM Rating %: 106

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Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
RWT1-A	1,716.00	Rainwater Tank	15,000.00	70	108.60	60.10
Untreated	47.00	None	0.00	0	0.00	0.00

Figure 3: STORM rating report results and inputs

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Figure 4: 46-52 Roof plan mark-up showing proposed catchment areas

RAINWATER TANK DESIGN & INSTALLATION CONSIDERATIONS

Rainwater tanks provide flow retention capacity and storage for reuse. They reduce stormwater run-off, decrease the demand of potable water and allow particle settlement within the tank, thus treating rainwater. General considerations for rainwater tank systems design and potential maintenance activities include:

- Incorporating a first flush device to the rainwater collection system. First flush devices divert the initial most polluted portion of water runoff.
- Automated switches to divert water supply from the tank to mains need to be incorporated.
- Connection to toilets ensure water tanks are run down on a daily basis, leaving spare capacity for new rainwater collection.

STORMWATER RUNOFF TREATMENT DURING THE CONSTRUCTION STAGE

Stormwater management in the construction stage will be required to minimise the likelihood of contaminating stormwater discharge from the site and reducing the velocity of the flows generated from the development as it is being constructed.

Stormwater management will form a part of the contractor’s EMP, and it will need to specifically address the following objectives:

1. Prevent discharge of contaminated stormwater;
2. Prevent impact on offsite surface or groundwater due to construction works; and
3. Slow down stormwater flows during heavy rainfall.

The EMP should consider the following specific items in relation to stormwater management:

- Storage of materials, chemicals and construction waste must be well clear of site drainage lines or other infrastructure;
- Immediate clean-up of chemical spills;
- Soil and dust containment;
- Regular cleaning of roadways and other impervious surfaces;
- Install sediment or silt traps around stormwater drain points;
- Prevent stormwater from adjacent properties entering the site;
- Capping/bunding of piles of contaminated materials or soil;
- Inspect and clean all sediment filters and traps after heavy rains; and
- Regularly evaluate site stormwater management systems for effectiveness.

More information is available from Melbourne Water booklet “Keeping Our Stormwater Clean – A Builder’s Guide”.

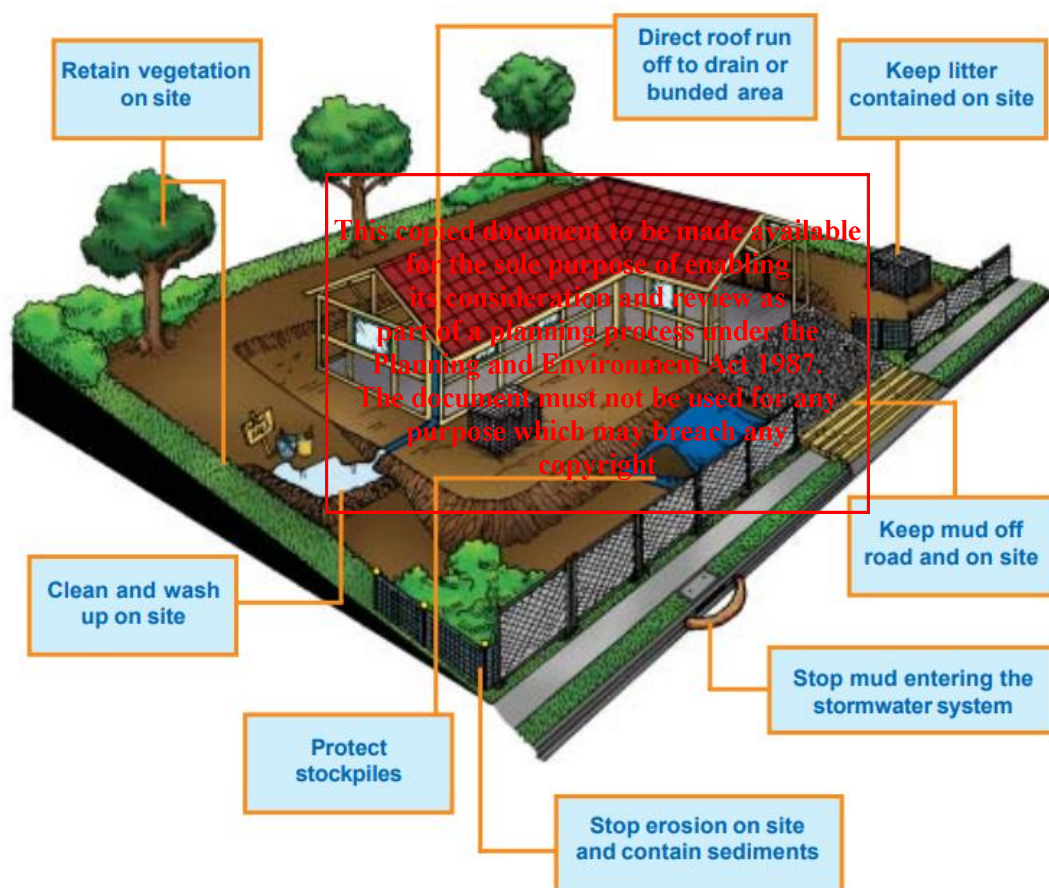


Figure 5 - Site stormwater management considerations. Source: Melbourne Water – Keeping Our Stormwater Clean: A Builder's Guide

STORMWATER MAINTENANCE PROGRAMME

The proposed rainwater harvesting system will be maintained in accordance with the manufacturer’s requirements. The building owner, body corporate or facility manager will be responsible for undertaking the routine maintenance and ensuring that the system is operating as designed.

The following specific maintenance activities will be required as a minimum:

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- Roof and other rainfall collection areas are to be inspected regularly, at minimum every 3 months, to ensure they are kept free of pollutants, leaves and other debris;
- First flush devices should be cleaned at least every 6 months; and
- Routine maintenance as specified by the manufacturers for the hardware; pumps, tanks and filters.

Sludge layers and biofilms can be formed in the tanks walls. If water colour and smell become an issue, professional tank cleaners should be engaged.

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APPENDIX C – NATHERS RESULTS

The assessment results for all the townhouses are presented below:

Table 1 NatHERS and WoH results

Dwelling	Heating (MJ/m ² yr)	Cooling (MJ/m ² yr)	Total (MJ/m ² yr)	Rating	WoH
Type 01-1	43.4 MJ/m ²	13.9 MJ/m ²	57.3 MJ/m ²	7.2	66
Type 02-1	43.7 MJ/m ²	12.8 MJ/m ²	56.5 MJ/m ²	7.3	66
Type 02-2	24.9 MJ/m ²	13.7 MJ/m ²	38.6 MJ/m ²	8.3	66
Type 02-3	43.0 MJ/m ²	11.6 MJ/m ²	54.6 MJ/m ²	7.4	67
Type 03-1	41.5 MJ/m ²	14.0 MJ/m ²	55.5 MJ/m ²	7.3	66
Type 03-2	42.7 MJ/m ²	16.8 MJ/m ²	59.5 MJ/m ²	7.1	66
Type 03-3	45.8 MJ/m ²	15.5 MJ/m ²	61.3 MJ/m ²	7	66
Type 03-4	43.4 MJ/m ²	14.6 MJ/m ²	58.0 MJ/m ²	7.2	66
Type 03-5	43.7 MJ/m ²	13.9 MJ/m ²	57.6 MJ/m ²	7.2	66
Type 07-1	42.1 MJ/m ²	24.0 MJ/m ²	66.1 MJ/m ²	6.8	71
Type 08-1	46.4 MJ/m ²	29.9 MJ/m ²	76.3 MJ/m ²	6.2	71
Type 10-1	27.6 MJ/m ²	32.4 MJ/m ²	60.0 MJ/m ²	7.1	65
Type 10-2	25.9 MJ/m ²	38.8 MJ/m ²	64.7 MJ/m ²	6.9	64
Type 10-3	20.6 MJ/m ²	39.2 MJ/m ²	59.8 MJ/m ²	7.1	65
Type 10-4	28.7 MJ/m ²	31.3 MJ/m ²	60.0 MJ/m ²	7.1	65
Type 11	50.3 MJ/m ²	19.9 MJ/m ²	70.2 MJ/m ²	6.5	70
Type 12	41.4 MJ/m ²	20.8 MJ/m ²	62.2 MJ/m ²	6.9	71

Average	38.5 MJ/m ²	19.0 MJ/m ²	57.5 MJ/m ²	7.2
Minimum	20.6 MJ/m ²	11.6 MJ/m ²	38.6 MJ/m ²	6.2
Maximum	50.3 MJ/m ²	39.2 MJ/m ²	76.3 MJ/m ²	8.3

BUILDING ELEMENT	THERMAL CONSTRUCTION DETAIL
Roof	R _M 4.5
External Walls	R _M 3.0
Partition Walls (party walls between townhouses)	R _M 2.0
Floor (Concrete slab of habitable space)	R _M 1.1
Exposed floor	R _M 2.5

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BUILDING ELEMENT	THERMAL CONSTRUCTION DETAIL
External Windows and Glazed Doors	<ul style="list-style-type: none"> - Argon-filled low-e double glazing. - Fixed $U_w \leq 2.6$, $SHGC_w \approx 0.55$ - Awning & Sliding Fixed $U_w \leq 3.5$, $SHGC_w \approx 0.45$

R_M is the R-Value of the added insulation material.

U_w is total U-Value of the window element, including glazing and frame.

$SHGC_w$ is total Solar Heat Gain Coefficient of the window element including glazing and frame.

WHOLE OF HOME

The Whole of Home (WoH) approach is integral to the NatHERS assessment process under NCC 2022. WoH considers the entire home's energy performance, including heating, cooling, lighting, and other operational energy uses. This holistic perspective ensures that all elements of the home, works together to achieve minimum energy efficiency and sustainability outcomes.

Table 2 WoH minimum requirements

Category	Minimum NCC WoH Requirements
Heating ZERL Star Rating	3.0 Star
Cooling ZERL Star Rating	3.0 Star
Hot Water	Electric Storage (off-Peak)
Cooking Stove Top	Electric Induction
Cooking Oven	Electric
Lighting Density	5 W/m ²
Solar Array Capacity per Dwelling	2.0kW
Solar Inverter per Dwelling	1.5kW

The Whole of Home (WoH) minimum requirements outlined in Table 2 must be met to achieve the WoH scores detailed in Table 1

CONCLUSION

The results of the preliminary house energy rating assessment presented above indicate that the development is on track to meet both NCC Section J energy requirements.

NOTE

This preliminary house energy rating assessment is prepared only for the purpose for demonstrating that the development, as currently designed, is on track to meet the relevant regulatory targets as outlined by the BCA

There is still significant design development to occur, which may affect the final house energy ratings that the development achieves. The results achieved in this preliminary assessment, and the

construction inputs and assumptions used, do not represent the final details that will occur at the time of building permit.

As such, the construction details used within the assessment are not to be interpreted as a commitment to the final detailing that the development will use. The developer and design and construction teams reserve the right to modify the construction detailing as appropriate, within the general commitment that the development will meet the house energy rating performance targets as outlined in the “House Energy Rating Targets” section above.

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APPENDIX D – BESS ASSESSMENT

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BESS Report

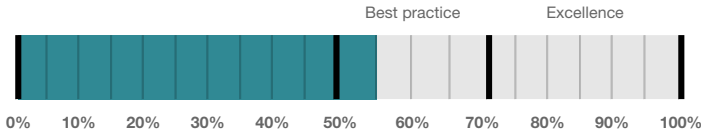
Built Environment Sustainability Scorecard



This BESS report outlines the sustainable design commitments of the proposed development at 46 Breese St Brunswick Victoria 3056. 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 Merri-bek City Council (Moreland).

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	46-52 Breese Street, Brunswick VIC, Australia
Address	46 Breese Street, Brunswick VIC, Australia
Project ID	56BA0EAD-R2
BESS Version	BESS-9
Site type	Multi dwelling (dual) site
Account	admin@wrapengine.com.au
Application no.	
Site area	2,315 m ²
Building floor area	4,626 m ²
Date	16 April 2025
Software version	2.1.0-B.596

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Performance by category

● This project ● Maximum available

Category	Weight	Score	Pass
Management	5%	50%	●
Integrated Water Management	23%	74%	✓
Operational Energy	28%	71%	✓
Indoor Environment Quality	17%	60%	✓
Transport	9%	33%	●
Waste & Resource Recovery	6%	50%	●
Urban Ecology	6%	37%	●
Innovation	9%	0%	●

Dwellings & Non Res Spaces

Dwellings

Name	Quantity	Area	% of total area
Townhouse			
Type 02-2	5	111 m ²	11%
Type 1	4	111 m ²	9%
Type 03-3	3	111 m ²	7%
Type 03-2	3	111 m ²	7%
Type 03-1	3	111 m ²	7%
Type 02-1	3	111 m ²	7%
Type 01-1	3	111 m ²	7%
Type 10-4	2	127 m ²	5%
Type 10-3	2	127 m ²	5%
Type 10-2	2	127 m ²	5%
Type 10-1	2	127 m ²	5%
Type 03-5	2	111 m ²	4%
Type 03-4	2	111 m ²	4%
Type 02-3	2	111 m ²	4%
Type 07-1	2	55.0 m ²	2%
Type 12	1	57.0 m ²	1%
Type 11	1	58.0 m ²	1%
Type 08-1	1	55.0 m ²	1%
Total	43	4,626 m²	100%

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Supporting Evidence

Shown on Floor Plans

Credit	Requirement	Response	Status
Integrated Water Management 2.1	Location of any stormwater management systems (rainwater tanks, raingardens, buffer strips)		-
Operational Energy 3.3	Annotation: External lighting controlled by motion sensors		-
Operational Energy 4.5	Location and size of solar photovoltaic system		-
Indoor Environment Quality 2.2	Annotation: Dwellings designed for 'natural cross flow ventilation' (If not all dwellings, include a list of compliant dwellings)		-
Indoor Environment Quality 3.1	Annotation: Glazing specification (U-value, SHGC)		-
Transport 2.1	Location of electric vehicle charging infrastructure		-
Waste & Resource Recovery 2.1	Location of food and garden waste facilities		-
Urban Ecology 2.1	Location and size of vegetated areas		-

Supporting Documentation

Credit	Requirement	Response	Status
Management 2.2	Preliminary NatHERS assessments		-
Integrated Water Management 2.1	STORM report or MUSIC model		-
Operational Energy 3.5	Average lighting power density and lighting type(s) to be used		-

Credit	Requirement	Response	Status
Operational Energy 4.5	Specifications of the solar photovoltaic system(s)		-
Indoor Environment Quality 2.2	A list of dwellings with natural cross flow ventilation		-
Indoor Environment Quality 3.1	Reference to floor plans or energy modelling showing the glazing specification (U-value and Solar Heat Gain Coefficient, SHGC)		-

Credit summary

Management Overall contribution 4.5%

		50%
1.1 Pre-Application Meeting		0%
2.2 Thermal Performance Modelling - Multi-Dwelling Residential		100%
4.1 Building Users Guide		100%

IWM Overall contribution 22.5%

		74%	✓ Pass
1.1 Potable Water Use		42%	✓ Achieved
2.1 Stormwater Treatment		100%	✓ Achieved
3.1 Water Efficient Landscaping		0%	




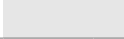
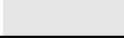
Operational Energy Overall contribution 27.5%

		71%	✓ Pass
1.2 Thermal Performance Rating - Residential		20%	✓ Achieved
2.1 Greenhouse Gas Emissions		77%	
2.6 Electrification		100%	
2.7 Energy consumption		100%	
3.3 External Lighting		100%	
3.4 Clothes Drying		0%	
3.5 Internal Lighting - Houses and Townhouses		100%	
4.4 Renewable Energy Systems - Other		0%	
4.5 Solar PV - Houses and Townhouses		100%	



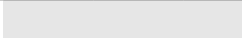

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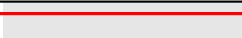

IEQ Overall contribution 16.5%

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






Transport Overall contribution 9.0%

			33%	
1.1	Bicycle Parking - Residential		0%	
1.2	Bicycle Parking - Residential Visitor		0%	
2.1	Electric Vehicle Infrastructure		100%	

Waste & Resource Recovery Overall contribution 5.5%

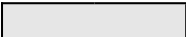
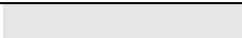
			50%	
1.1	Construction Waste - Building Re-Use		0%	
2.1	Operational Waste - Food & Garbage Waste		100%	

Urban Ecology Overall contribution 5.5%

			37%	
2.1	Vegetation		75%	
2.2	Green Roofs		0%	
2.3	Green Walls and Facades		0%	
2.4	Balconies, Courtyards & Roof Terraces		0%	
3.1	Food Production - Residential		0%	

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Innovation Overall contribution 9.0%

			0%	
1.1	Innovation		0%	

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Credit breakdown

Management Overall contribution 4.5%

			50%
--	--	--	-----

1.1 Pre-Application Meeting 0%

Score Contribution	This credit contributes 50% towards the category score.
Criteria	Has an ESD professional been engaged to provide sustainability advice from schematic design to construction? AND Has the ESD professional been involved in a pre-application meeting with Council?
Question	Criteria Achieved ?
Project	No

2.2 Thermal Performance Modelling - Multi-Dwelling Residential 100%

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	Yes

4.1 Building Users Guide 100%

Score Contribution	This credit contributes 87.0% towards the category score.
Criteria	Will a building users guide be produced and issued to occupants?
Question	Criteria Achieved ?
Project	Yes

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IWM Overall contribution 22.5%

		74% ✔ Pass
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Do you have a reticulated third pipe or an on-site water recycling system?:	No
Are you installing a swimming pool?:	No
Stormwater profile	
Which stormwater modelling software are you using?:	Melbourne Water STORM tool
STORM score achieved:	106
Flow:	-
Total Suspended Solids:	-
Total Phosphorus:	-
Total Nitrogen:	-
Rainwater tank profile	
What is the total roof area connected to the rainwater tank?: Rainwater Tank 1	1,716 m ²
Tank Size: Rainwater Tank 1	15,000 Litres
Irrigation area connected to tank: Rainwater tank 1	578 m ²
Is connected irrigation area a water efficient garden?: Rainwater Tank 1	No
Other external water demand connected to tank?: Rainwater Tank 1	-
Fixtures, fittings & connections profile	
Showerhead: All	4 Star WELS (>= 6.0 but <= 7.5)
Bath: All	Scope out
Kitchen Taps: All	>= 5 Star WELS rating
Bathroom Taps: All	>= 5 Star WELS rating
Dishwashers: All	Default or unrated
WC: All	>= 4 Star WELS rating
Urinals: All	Scope out
Washing Machine Water Efficiency: All	Occupant to Install

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Which non-potable water source is the dwelling/space connected to?:

Type 01-1	Rainwater Tank 1
Type 02-2	
Type 03-1	
Type 03-4	
Type 03-5	
Type 10-1	
Type 10-2	
Type 10-3	
Type 10-4	
Type 11	
Type 12	
Type 1	

Type 02-1	-1
Type 02-3	
Type 03-2	
Type 03-3	
Type 07-1	
Type 08-1	

Non-potable water source connected to Toilets:

Type 01-1	Yes
Type 02-1	
Type 02-2	
Type 02-3	
Type 03-1	
Type 03-3	
Type 03-4	
Type 03-5	
Type 07-1	
Type 08-1	
Type 10-1	
Type 10-2	
Type 10-3	
Type 10-4	
Type 11	
Type 12	
Type 1	

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Type 03-2	No
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Non-potable water source connected to Laundry (washing machine): All No

Non-potable water source connected to Hot Water System: All No

1.1 Potable Water Use



42% ✔ Achieved

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Score Contribution	This credit contributes 33.3% towards the category score.	
Criteria	What is the reduction in total potable water use due to efficient fixtures, appliances, rainwater use and recycled water use? To achieve points in this credit there must be >25% potable water reduction.	
Output	Reference	
Project	6737 kL	
Output	Proposed (excluding rainwater and recycled water use)	
Project	5553 kL	
Output	Proposed (including rainwater and recycled water use)	
Project	4915 kL	
Output	% Reduction in Potable Water Consumption	
Project	27 %	
Output	% of connected demand met by rainwater	
Project	81 %	
Output	How often does the tank overflow?	
Project	Very Often	
Output	Opportunity for additional rainwater connection	
Project	2623 kL	
2.1 Stormwater Treatment		100% ✔ Achieved
Score Contribution	This credit contributes 60% towards the category score.	
Criteria	Has a stormwater management plan been demonstrated?	
Output	Yes	
Project	100%	
Output	Criteria Met	
Project	100%	
3.1 Water Efficient Landscaping		0%
Score Contribution	This credit contributes 6.7% towards the category score.	
Criteria	Will water efficient landscaping be installed?	
Question	Criteria Achieved ?	
Project	No	

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Operational Energy Overall contribution 27.5%

		Minimum required 50%	71% ✔ Pass
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Are you installing any renewable energy system(s) (other than solar photovoltaic)?:		Yes
Energy Supply:		All-electric
Solar Photovoltaic system profile		
System Size (lesser of inverter and panel capacity): Solar Photovoltaic system 1		90.0 kW peak
Orientation (which way is the system facing)?: Solar Photovoltaic system 1		North
Inclination (angle from horizontal): Solar Photovoltaic system 1		10.0 Angle (degrees)
Dwellings profile		
Below the floor is: All		Ground or Carpark
Above the ceiling is: All		Outside
Exposed sides: All		3
NatHERS Annual Energy Loads - Heat:		
Type 01-1		48.4 MJ/sqm
Type 03-4		48.7 MJ/sqm
Type 1		48.7 MJ/sqm
Type 02-1		27.6 MJ/sqm
Type 03-5		43.8 MJ/sqm
Type 02-2		24.9 MJ/sqm
Type 02-3		43.8 MJ/sqm
Type 03-1		41.5 MJ/sqm
Type 03-2		43.7 MJ/sqm
Type 03-3		43.7 MJ/sqm
Type 07-1		42.1 MJ/sqm
Type 08-1		46.4 MJ/sqm
Type 10-1		27.6 MJ/sqm
Type 10-2		38.8 MJ/sqm
Type 10-3		20.6 MJ/sqm
Type 10-4		28.7 MJ/sqm
Type 11		50.3 MJ/sqm
Type 12		41.4 MJ/sqm

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NatHERS Annual Energy Loads - Cool:	
Type 01-1	13.9 MJ/sqm
Type 03-5	
Type 1	
Type 02-1	12.8 MJ/sqm
Type 02-2	13.7 MJ/sqm
Type 02-3	11.6 MJ/sqm
Type 03-1	14.0 MJ/sqm
Type 03-2	16.8 MJ/sqm
Type 03-3	15.5 MJ/sqm
Type 03-4	14.6 MJ/sqm
Type 07-1	24.0 MJ/sqm
Type 08-1	29.9 MJ/sqm
Type 10-1	32.4 MJ/sqm
Type 10-2	25.9 MJ/sqm
Type 10-3	39.2 MJ/sqm
Type 10-4	31.3 MJ/sqm
Type 11	19.9 MJ/sqm
Type 12	20.8 MJ/sqm
NatHERS star rating:	
Type 01-1	7.2
Type 03-4	
Type 03-5	
Type 1	
Type 02-1	3
Type 03-1	
Type 02-2	8.3
Type 02-3	8.4
Type 03-2	7.1
Type 10-1	
Type 10-3	
Type 10-4	
Type 03-3	7.0
Type 07-1	6.8
Type 08-1	6.2
Type 10-2	6.9
Type 12	
Type 11	6.5
Type of Heating System: All	Reverse cycle space
Heating System Efficiency: All	2 Stars (2019 MEPS)
Type of Cooling System: All	Refrigerative space
Cooling System Efficiency: All	2 Stars (2019 MEPS)
Type of Hot Water System: All	Electric Heat Pump Band 1
% Contribution from solar hot water system: All	0 %
Clothes Line: All	No drying facilities

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Clothes Dryer: All		Occupant to install
1.2 Thermal Performance Rating - Residential		20% ✔ Achieved
Score Contribution	This credit contributes 16.7% towards the category score.	
Criteria	What is the average NatHERS rating?	
Output	Average NATHERS Rating (Weighted)	
Townhouse	7.2 Stars	
2.1 Greenhouse Gas Emissions		77%
Score Contribution	This credit contributes 16.7% 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	90,592 kg CO2	
Output	Proposed Building with Proposed Services (Actual Building)	
Townhouse	76,621 kg CO2	
Output	% Reduction in GHG Emissions	
Townhouse	15 %	
2.6 Electrification		100%
Score Contribution	This credit contributes 16.7% towards the category score.	
Criteria	What is the % of the building's electricity	
Question	Criteria Achieved	
Project	Yes	
2.7 Energy consumption		100%
Score Contribution	This credit contributes 22.2% towards the category score.	
Criteria	What is the % reduction in annual energy consumption against the benchmark?	
Output	Reference Building with Reference Services (BCA only)	
Townhouse	842,965 MJ	
Output	Proposed Building with Proposed Services (Actual Building)	
Townhouse	349,161 MJ	
Output	% Reduction in total energy	
Townhouse	58 %	
3.3 External Lighting		100%
Score Contribution	This credit contributes 2.8% towards the category score.	
Criteria	Is the external lighting controlled by a motion detector?	
Question	Criteria Achieved ?	
Townhouse	Yes	
3.4 Clothes Drying		0%

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Score Contribution	This credit contributes 5.6% 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	20,757 kWh
Output	Proposed
Townhouse	20,757 kWh
Output	Improvement
Townhouse	0 %

3.5 Internal Lighting - Houses and Townhouses 100%

Score Contribution	This credit contributes 2.8% 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 0%

Score Contribution	This credit contributes 5.6% towards the category score.
Criteria	Does another form of renewable energy (not solar) provide 5% of the estimated energy consumption of the building class it supplies?
Question	Other Renewable Energy - Energy Generation per year
Townhouse	

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4.5 Solar PV - Houses and Townhouses 100%

Score Contribution	This credit contributes 11.1% 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
Townhouse	109,065 kWh
Output	% of Building's Energy
Townhouse	112 %

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IEQ Overall contribution 16.5%

		Minimum required 50%	60%	✔ Pass
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2.2 Cross Flow Ventilation		100%
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Score Contribution	This credit contributes 20% towards the category score.	
Criteria	Are all habitable rooms designed to achieve natural cross flow ventilation?	
Question	Criteria Achieved ?	
Townhouse	Yes	

3.1 Thermal comfort - Double Glazing		100%
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Score Contribution	This credit contributes 40% 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%
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Score Contribution	This credit contributes 20% towards the category score.	
Criteria	Is appropriate external shading provided to east, west and north facing glazing?	
Question	Criteria Achieved ?	
Townhouse		

3.3 Thermal Comfort - Orientation		0%
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Score Contribution	This credit contributes 20% towards the category score.	
Criteria	At least 50% of main living areas face to the north?	
Question	Criteria Achieved ?	
Townhouse		

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Transport Overall contribution 9.0%

		33%
1.1 Bicycle Parking - Residential		
Score Contribution	This credit contributes 33.3% towards the category score.	
Criteria	How many secure and undercover bicycle spaces are there for residents?	
Question	Bicycle Spaces Provided ?	
Townhouse	14	
Output	Min Bicycle Spaces Required	
Townhouse	43	
1.2 Bicycle Parking - Residential Visitor		
Score Contribution	This credit contributes 33.3% towards the category score.	
Criteria	How many secure bicycle spaces are there for visitors?	
Question	Visitor Bicycle Spaces Provided ?	
Townhouse	-	
2.1 Electric Vehicle Infrastructure		100%
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	Yes	
Waste & Resource Recovery Overall contribution 50%		
		50%
1.1 Construction Waste - Building Re-Use		
Score Contribution	This credit contributes 50% 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	-	
2.1 Operational Waste - Food & Garden Waste		100%
Score Contribution	This credit contributes 50% towards the category score.	
Criteria	Are facilities provided for on-site management of food and garden waste?	
Question	Criteria Achieved ?	
Project	Yes	

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Urban Ecology Overall contribution 5.5%

	37%
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2.1 Vegetation 75%

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	25 %

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	-

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	-

2.4 Balconies, Courtyards & Roof terraces 0%

Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	Is there at least one balcony, courtyard or roof terrace (including any roof terrace)?
Question	Criteria Achieved ?
Townhouse	-

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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	-
Output	Min Food Production Area
Townhouse	27 m ²

Innovation Overall contribution 9.0%

	0%
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1.1 Innovation 0%

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

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