Job Details	
Date:	7th December 2023
Project:	Sustainable Design Assessment for 6 Unit Development
Client:	David Mitchell
Address:	1 & 3 Murphy Crescent, Traralgon VIC 3844
Planning No:	TBC
Assessor:	Proud Kraturerk
Job No:	230920

Revision		
A:	8th November 2023	Preliminary SDA Report
B:	10th November 2023	SDA Report
C:	7th December 2023	Amended SDA Report

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Introduction

The Subject site is located at 1 & 3 Murphy Crescent, Traralgon. The plans prepared by Latrobe Valley Drafting proposes a 6 unit development. The site has a total area of 826.19m2 and is orientated north to south and has minimal wall on boundary construction. The driveways are proposed to the south of the development.

The following report is to be read in conjunction with the following documents.

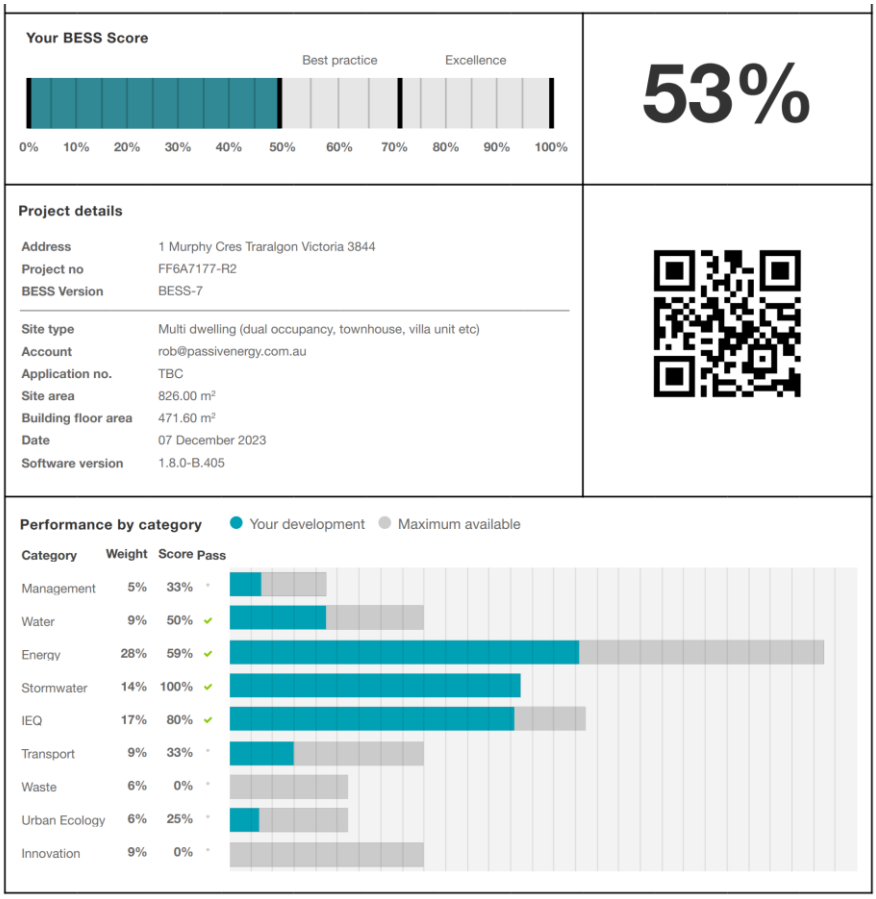
- BESS assessment
- NatHERs ratings
- STORM assessment
- Walk score

BESS Assessment (Project number **FF6A7177**)

The BESS (Built Environment Sustainable Scorecard) V3, 1.7 was used to assess

- Water
- Energy
- Stormwater
- Indoor Environment Quality (IEQ)
- Transport
- Waste
- Urban Ecology &
- Innovation

Following is a list of initiatives inputted into the scorecard to achieve a best practice score of 53%



Water requirements

Objectives

- To improve water efficiency.
- To reduce total operating potable water use.
- To encourage the collection and reuse of stormwater.
- To encourage the appropriate use of alternative water sources (eg. Grey water)

Initiatives

- 2000L water tank connect to each unit roof area.
- Rainwater tanks connected to toilet flushing.
- Water efficient landscaping. A landscape plan prepared by a suitable landscape architect to nominate water efficient vegetation throughout the development.
- For outdoor water reductions, plants, shrubs and lawn which require low amounts of water (drought-resistance) should be chosen. Native plants will be selected as they use less water and are more resistant to local plant diseases. Plant slopes with plants that will retain water and help reduce runoff.
- Group plants according to their watering needs.
- Mulch will slow evaporation of moisture while discouraging weed growth. Adding 2 - 4 inches of organic material such as compost or bark mulch will increase the ability of the soil to retain moisture.
- Shower heads to be 4 Star WELS rating(>6.0L/min but <= 7.5L/min).
- Kitchen taps to be 5 Star WELS rating.
- Bathroom taps to be 5 Star WELS rating.
- Toilets to be 4 Star WELS rating.

Energy

Objectives

- To improve the efficient use of energy, by ensuring development demonstrates design potential for ESD initiatives.

Initiatives

- Each dwelling will achieve a minimum 7 star energy rating.
- Internal lighting will achieve a maximum 4watts/m2.
- LED lighting fixtures will be considered for alternatives to fluorescent fittings to reduce energy consumption.
- External lighting will be controlled by motion sensors.
- Nominated heating and cooling systems will be 4 stars or within 1 star of the best relevant system in the market.
- Nominated gas instantaneous hot water system to be at least 5 star rating.

Stormwater

Objectives

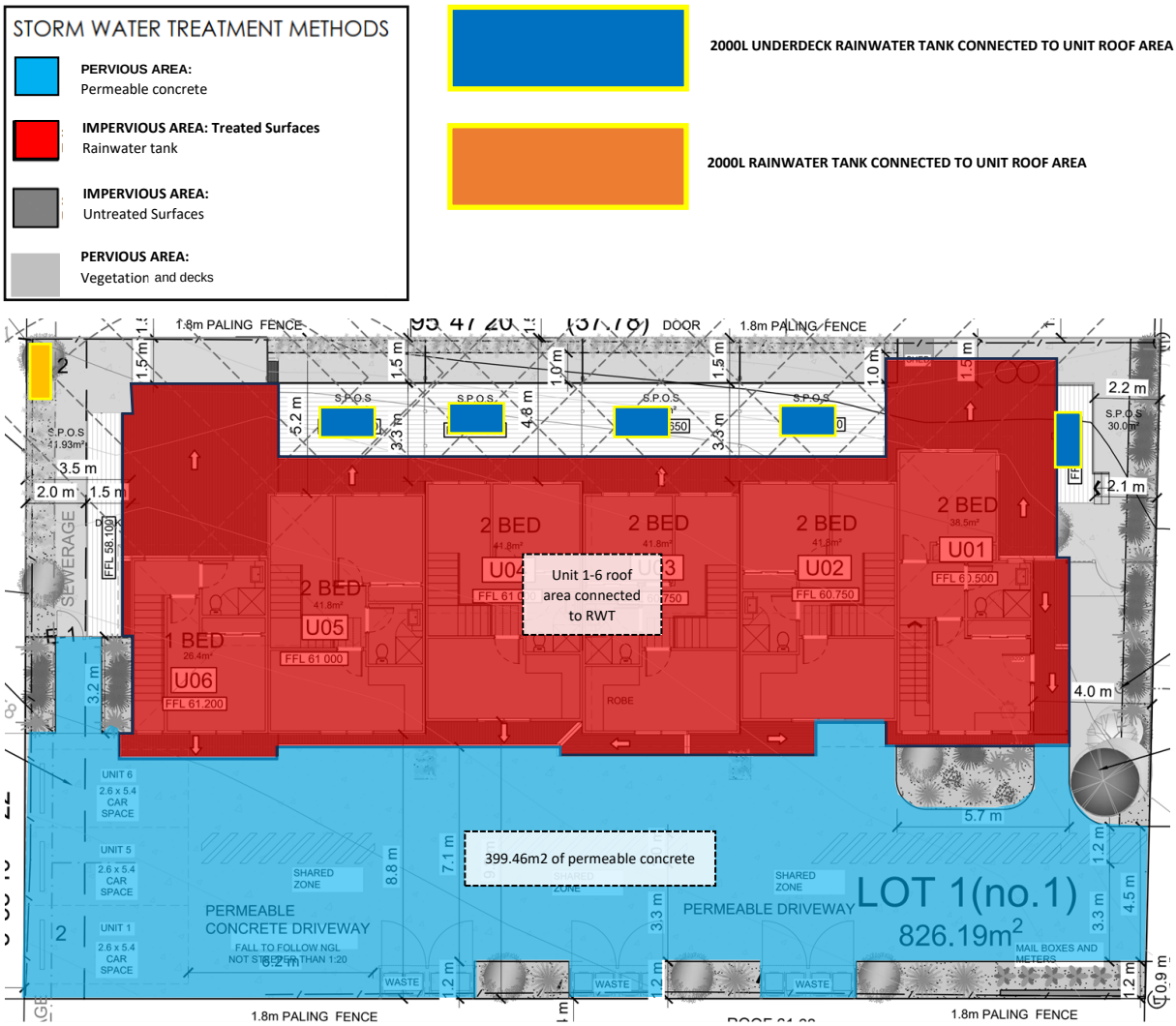
- To reduce the impact of stormwater run-off.
- To improve the water quality of the water run-off.
- To achieve best practice stormwater quality outcomes.
- To incorporate the use of water sensitive urban design, including storm water re-use.

Initiatives

A Stormwater Treatment Objective- Relative Measure (STORM) calculator was used to produce a 141% outcome.

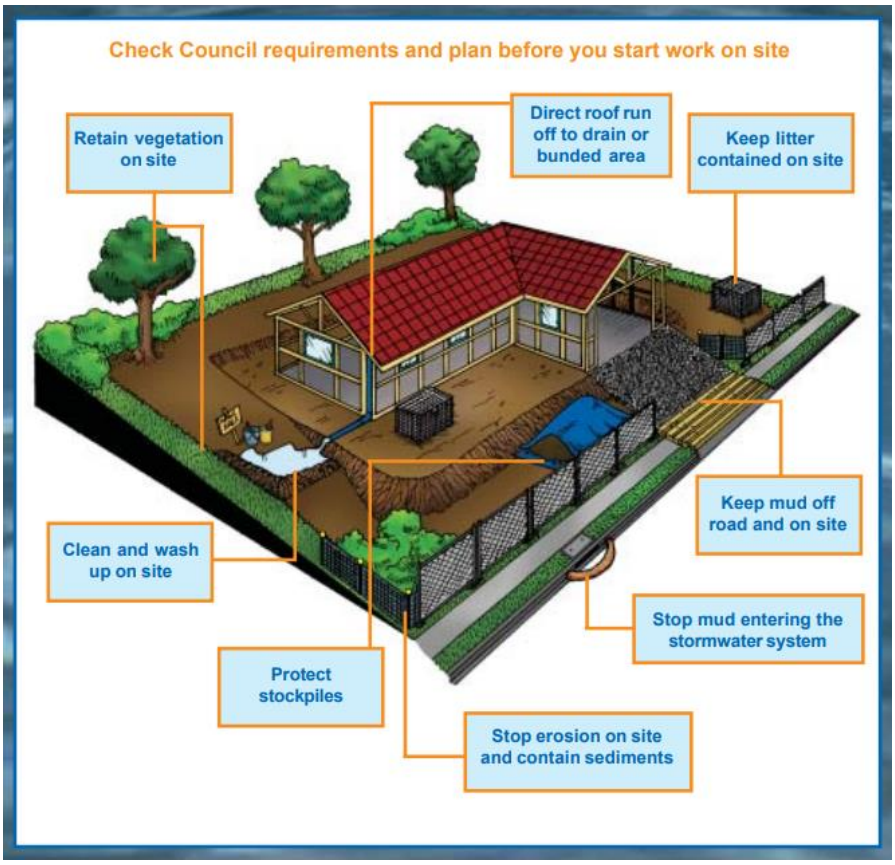
- The driveway will require:
  - All driveway will be permeable concrete.
- Each unit will require:
  - 2000 litre water tanks connected to roof space each.
- Each unit is connected to a 2000 litre rainwater tank, which will be connected to the toilets.

Indicative Stormwater Treatment Plan



Note: Plan is indicative only and final locations of treatment systems and roof catchment area is subject to civil engineering.

Stormwater Site Management Initiatives



Sourced from: Keeping our Stormwater Clean – A Builder's Guide, Melbourne Water.

6 Site Rules To Keep The Stormwater Clean:

1. Check council requirements and plan before you start work on site.
2. Stop erosion onsite and contain sediments.
3. Protect stockpiles.
4. Keep mud off road and on site.
5. Keep litter contained on site.
6. Clean and wash up on site.

The methods and processes specified in "Keeping our Stormwater Clean – A Builder's Guide, developed by Melbourne Water will be adhered to by the builder/developer for managing the construction site.

Indoor Environment Quality (IEQ)

Objectives

- To achieve a healthy indoor environment quality for the wellbeing of building occupants, including the provision of fresh air intake, cross ventilation, and natural daylight.
- To achieve thermal comfort levels with minimised need for mechanical heating, ventilation and cooling.
- To reduce indoor air pollutants by encouraging use of materials with low toxic chemicals.
- To reduce reliance on mechanical heating, ventilation, cooling and lighting systems.
- To minimise noise levels and noise transfer within and between buildings and associated external areas.

Initiatives

- All habitable rooms will allow for natural cross ventilation.
- Double glazed windows have been nominated to all living areas and bedrooms to assist with the thermal comfort.
- All living areas have been designed to take in northern sunlight.
- All carpets, internal paints and all finishes and flooring will be selected for their low VOC properties.
- Engineered wood products will be E1 – E0 grade.
- Where artificial lighting is required, only sealed energy efficient LED light fixtures should be selected or CFL's for common areas like kitchens.
- All kitchen rangehoods to be externally ducted.

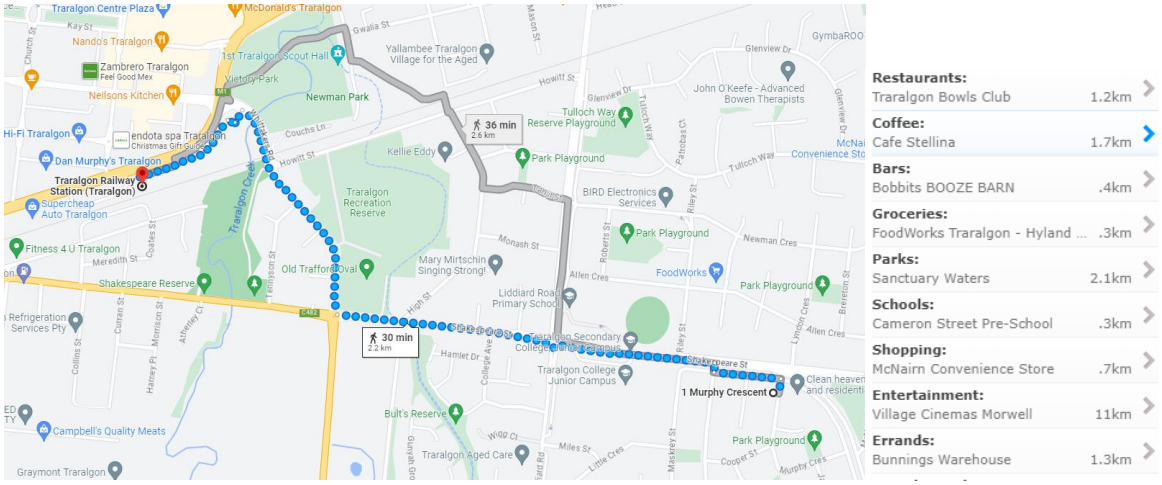
Transport

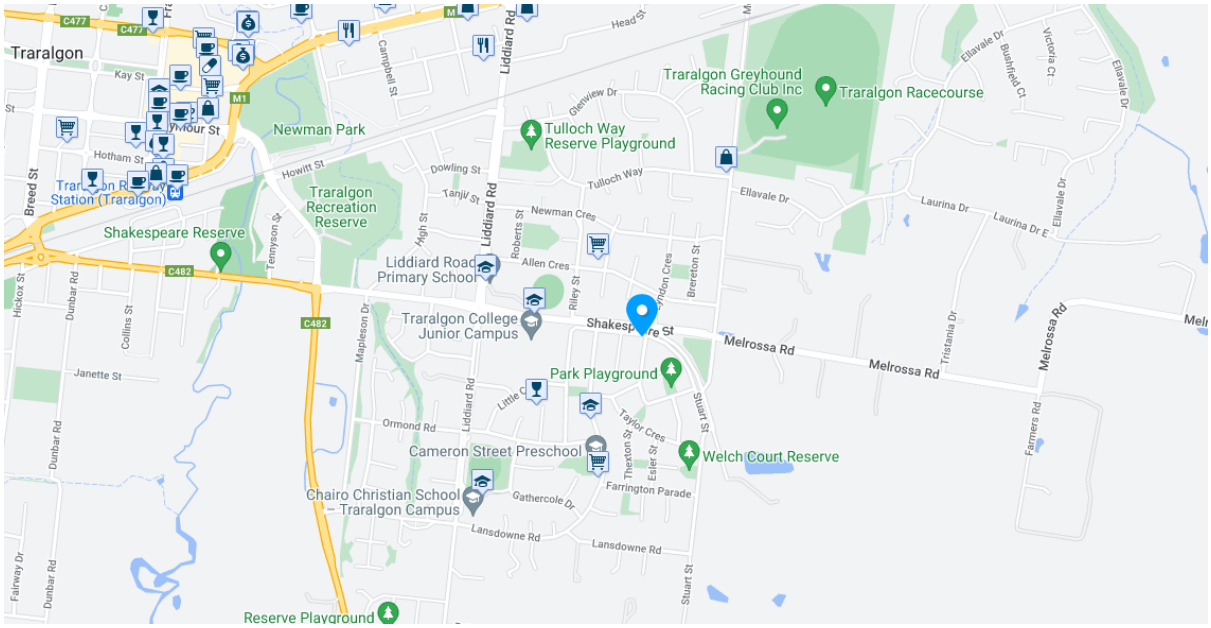
Objectives

- To ensure that the built environment is designed to promote the use of walking, cycling and public transport, in that order and to minimise car dependency.
- To promote the use of low emissions vehicle technologies and supporting infrastructure.
- The Walk Score is a number between 0 and 100 that measures the walkability of any address to shops, restaurant, parks, entertainment etc.

Initiatives

- There is 1 parking spot for bicycles per unit.
- 3 Murphy Crescent has a Walk Score of 29 out of 100. This location is a Car-Dependent neighborhood so most errands require a car.
- This location is in Traralgon. The closest park is Sanctuary Waters.
- The site is situated 2.2km to Traralgon train station.





Waste management

Objectives

- To promote waste avoidance, reuse and recycling during the design construction and operation stages of the development.
- To ensure durability and long term reusability of building materials.
- To ensure sufficient space is allocated for future change in waste management needs, including (where possible) composting and green waste facilities.

Initiatives

- Recycling and waste receptacles to be installed in the kitchen cabinetry.
- The development is to recycle or reuse a minimum of 80% of construction demolition waste.
- Re-use of excavated material on-site and disposal of any excess to an approved site;
- Green waste mulched and re-used in landscaping either on-site or off-site;
- Bricks, tiles, concrete recycled off-site and plasterboard returned to supplier for recycling;
- Framing timber to be recycled elsewhere;
- Windows, doors, joinery, plumbing, fittings and metal elements recycled off-site;
- All asbestos, hazardous and/or intractable wastes are to be disposed of in accordance with Workcover Authority and EPA requirements;
- Locations of on-site storage facilities for material to be reused on-site, or separated for recycling off-site

Materials

Objectives

- To reduce the environmental impact of materials by recycling of existing material or use of environmentally friendly materials and materials with low embodied energy.

Initiatives

- The development will use sustainable timber, where it meets the Australian Forestry Standard(AFS) or Forest Stewardship Council(FSC) standard and will use E1 or E0-grade engineered wood products.
- The development will use 20-35% supplementary cementitious materials(SCM) as a partial cement alternative, subject to the structural engineer's approval.
- Using recyclable and long lifecycle materials, such as steel, concrete and bricks.
- Materials proposed are local and readily available reducing embodied energy from transportation.
- Industry accepted benchmarks and/or third party certified low VOC and non-toxic products will be used for the development.

Urban ecology

Objectives

- To protect and enhance biodiversity with the municipality
- To provide environmentally sustainable landscapes and natural habitats, and minimise the urban heat island effect.
- To encourage the retention of significant trees and the planting of indigenous vegetation,
- To encourage the provision of space for productive gardens.

Initiatives

- The vegetation percentage area to be at least 14.9%.
- The development will include native/indigenous plants.
- Landscape architect to prepare water efficient landscape design.
- Light/medium coloured roofing and/or paving will be used to minimise UHI effect.

NatHERs Ratings

- Energy ratings were modelled in First Rate 5 software version 5.3.2b (3.21).

	Heating	Cooling	Total	Rating
Unit 1	72.4MJ/m2	24.1MJ/m2	96.5MJ/m2	7.0 Stars
Unit 2/4	73.7MJ/m2	23.4MJ/m2	97.1MJ/m2	7.0 Stars
Unit 3/5	76.9MJ/m2	19.8MJ/m2	96.7MJ/m2	7.0 Stars
Unit 6	75.1MJ/m2	22.7MJ/m2	97.8MJ/m2	7.0 Stars

Preliminary Energy Rating Assumptions:

Insulation:		Value	
	Floor	**R2.5**	**R2.5** insulation to the underside of the concrete slab(excluding garage).
		R2.5	**R2.5** insulation installed between all posi-trusses/floor joists.
		R3.0	**R3.0** insulation to the underside of the concrete slab(excluding garage) – Unit 6.
	External Walls	**R2.5**	**R2.5** insulation installed between all external stud walls with anti-glare foil.
		R2.7	**R2.7** insulation installed between all external stud walls with anti-glare foil – Unit 6.
	Internal Walls	**R2.5**	**R2.5** insulation installed between all party walls, garage, WC(Unit 2), PWDR(Unit 1), bathroom internal stud walls.
	Roof	**R6.0**	**R6.0** insulation installed between all roof trusses.
		R7.0	**R7.0** insulation installed between all roof trusses – Unit 6.

Glazing – Unit 1	Type -
	Aluminium framed double-glazed Awning U-Value: 2.13 SHGC: 0.37 Double Hung/Sliding Window U-Value: 2.1 SHGC: 0.32 Fixed U-Value: 1.48 SHGC: 0.47 Sliding Door U-Value: 2.49 SHGC: 0.52
	Location -
	All proposed windows and glazed doors (excluding bath).

Glazing – Unit 2/4	Type -
	Glazing Requirements Aluminium framed double-glazed Double Hung U-Value: 2.94 SHGC: 0.33 Fixed U-Value: 2.06 SHGC: 0.51 Sliding Door U-Value: 2.97 SHGC: 0.49
	Location -
	All proposed windows and glazed doors.

Glazing – Unit 3/5	Type -
	Aluminium framed double-glazed Double Hung U-Value: 2.94 SHGC: 0.33 Fixed U-Value: 2.97 SHGC: 0.43 Sliding Door U-Value: 2.97 SHGC: 0.49

	Location -
	All proposed windows and glazed doors.
Glazing – Unit 6	Type -
	Aluminium framed double-glazed Awning U-Value: 1.57 SHGC: 0.32 Double Hung/Sliding Window U-Value: 1.61 SHGC: 0.43 Fixed U-Value: 1.48 SHGC: 0.47 Sliding Door U-Value: 1.79 SHGC: 0.45
	Location -
	All proposed windows and glazed doors.
Exhaust Fans:	Location – As per working drawings
	Kitchen, ensuite and bathroom. Note: All exhaust fans to be installed with self closing dampers
Weather Protection:	Note -
	Weatherstrip draft protection device to be installed to the bottom of all external doors

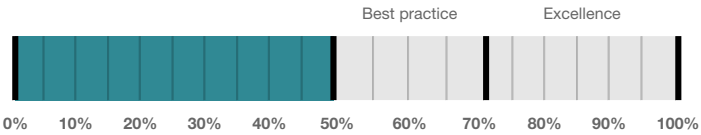
BESS Report

Built Environment Sustainability Scorecard

This BESS report outlines the sustainable design commitments of the proposed development at 1 Murphy Cres Traralgon Victoria 3844. 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 Melbourne 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

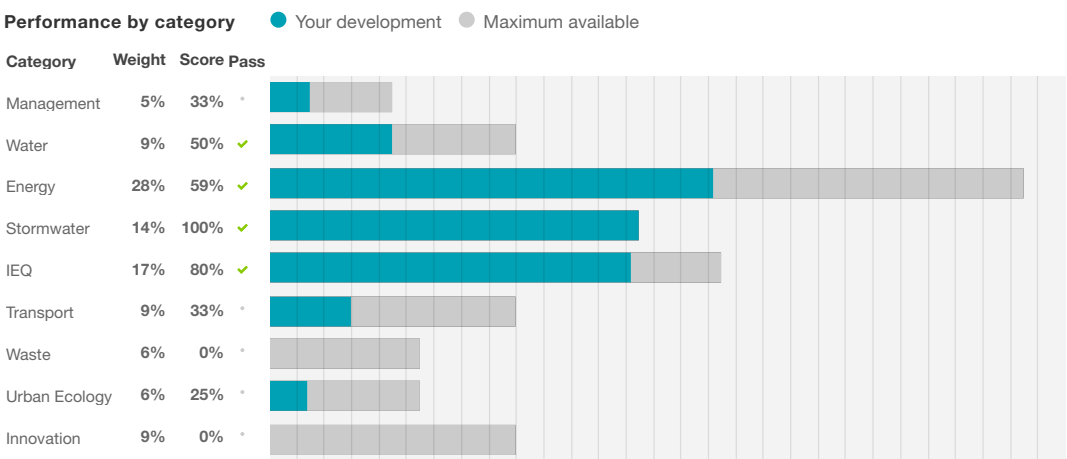


53%

Project details

Address	1 Murphy Cres Traralgon Victoria 3844
Project no	FF6A7177-R2
BESS Version	BESS-7
Site type	Multi dwelling (dual occupancy, townhouse, villa unit etc)
Account	rob@passivenergy.com.au
Application no.	TBC
Site area	826.00 m²
Building floor area	471.60 m²
Date	07 December 2023
Software version	1.8.0-B.405

Performance by category



Dwellings & Non Res Spaces

Dwellings

Name	Quantity	Area	% of total area
Townhouse			
Townhouse 3/5	2	76.0 m^2	32%
Townhouse 2/4	2	76.0 m^2	32%
Townhouse 6	1	89.7 m^2	19%
Townhouse 1	1	77.9 m^2	16%
Total	**6**	**471 m^2**	**100%**

Supporting information

Floorplans & elevation notes

Credit	Requirement	Response	Status
Water 3.1	Annotation: Water efficient garden details		-
Energy 3.3	Annotation: External lighting controlled by motion sensors		-
Energy 3.4	Location of clothes line (if proposed)		-
Stormwater 1.1	Location of any stormwater management systems (rainwater tanks, raingardens, buffer strips)		-
IEQ 2.2	Annotation: Dwellings designed for 'natural cross flow ventilation' (If not all dwellings, include a list of compliant dwellings)		-
IEQ 3.1	Annotation: Glazing specification (U-value, SHGC)		-
IEQ 3.3	North-facing living areas		-
Transport 1.1	Location of residential bicycle parking spaces		-
Urban Ecology 2.1	Location and size of vegetated areas		-

Supporting evidence

Credit	Requirement	Response	Status
Management 2.2	Preliminary NatHERS assessments		-
Energy 3.5	Average lighting power density and lighting type(s) to be used		-
Stormwater 1.1	STORM report or MUSIC model		-
IEQ 2.2	A list of dwellings with natural cross flow ventilation		-
IEQ 3.1	Reference to floor plans or energy modelling showing the glazing specification (U-value and Solar Heat Gain Coefficient, SHGC)		-
IEQ 3.3	Reference to the floor plans showing living areas orientated to the north		-

Credit summary

Management Overall contribution 4.5%

	33%
1.1 Pre-Application Meeting	0%
2.2 Thermal Performance Modelling - Multi-Dwelling Residential	100%
4.1 Building Users Guide	0%

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%	59%	✔ Pass
1.2 Thermal Performance Rating - Residential		50%	
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	
2.6 Electrification		0%	⊘ Disabled
		Credit is available when project is declared to have no gas connection.	
3.2 Hot Water		100%	
3.3 External Lighting		100%	
3.4 Clothes Drying		100%	
3.5 Internal Lighting - Houses and Townhouses		100%	
4.4 Renewable Energy Systems - Other		0%	⊘ Disabled
		No other (non-solar PV) renewable energy is in use.	
4.5 Solar PV - Houses and Townhouses		0%	⊘ 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%	80%	✔ 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		100%

Transport Overall contribution 9.0%

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

Waste Overall contribution 5.5%

	0%
1.1 - Construction Waste - Building Re-Use	0%
2.1 - Operational Waste - Food & Garden Waste	0%

Urban Ecology Overall contribution 5.5%

	25%
2.1 Vegetation	50%
2.2 Green Roofs	0%
2.3 Green Walls and Facades	0%
2.4 Private Open Space - Balcony / Courtyard Ecology	0%
3.1 Food Production - Residential	0%

Innovation Overall contribution 9.0%

	0%
1.1 Innovation	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		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		0%
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	No	

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: 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
Which non-potable water source is the dwelling/space connected to?: All	RWT 1-6
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 Tank	
What is the total roof area connected to the rainwater tank?: RWT 1-6	330 m^2
Tank Size: RWT 1-6	12,000 Litres
Irrigation area connected to tank: RWT 1-6	-
Is connected irrigation area a water efficient garden?: RWT 1-6	-
Other external water demand connected to tank?: RWT 1-6	-

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	737 kL
Output	Proposed (excluding rainwater and recycled water use)
Project	600 kL
Output	Proposed (including rainwater and recycled water use)
Project	526 kL
Output	% Reduction in Potable Water Consumption
Project	28 %
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	279 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 16% 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
Energy Supply:	Electricity & Natural Gas

Dwelling Energy Profiles	
Below the floor is: All	Ground or Carpark
Above the ceiling is: All	Outside
Exposed sides: All	4
NatHERS Annual Energy Loads - Heat:	
Townhouse 1	72.4 MJ/sqm
Townhouse 2/4	73.7 MJ/sqm
Townhouse 3/5	76.9 MJ/sqm
Townhouse 6	75.1 MJ/sqm
NatHERS Annual Energy Loads - Cool:	
Townhouse 1	24.1 MJ/sqm
Townhouse 2/4	23.4 MJ/sqm
Townhouse 3/5	19.8 MJ/sqm
Townhouse 6	22.7 MJ/sqm
NatHERS star rating: All	7.0
Type of Heating System: All	Reverse cycle space
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	Gas Instantaneous 5 star
Clothes Line: All	Private outdoor clothesline
Clothes Dryer: All	Occupant to Install

1.2 Thermal Performance Rating - Residential 50%

Score Contribution	This credit contributes 27.3% towards the category score.
Criteria	What is the average NatHERS rating?
Output	Average NATHERS Rating (Weighted)
Townhouse	6.9 Stars

2.1 Greenhouse Gas Emissions	100%
Score Contribution	This credit contributes 9.1% towards the category score.
Criteria	What is the % reduction in annual greenhouse gas emissions against the benchmark?
Output	Reference Building with Reference Services (BCA only)
Townhouse	28,808 kg CO2
Output	Proposed Building with Proposed Services (Actual Building)
Townhouse	9,526 kg CO2
Output	% Reduction in GHG Emissions
Townhouse	66 %

2.2 Peak Demand	0%
Score Contribution	This credit contributes 4.5% towards the category score.
Criteria	What is the % reduction in the instantaneous (peak-hour) demand against the benchmark?
Output	Peak Thermal Cooling Load - Baseline
Townhouse	72.9 kW
Output	Peak Thermal Cooling Load - Proposed
Townhouse	70.9 kW
Output	Peak Thermal Cooling Load - % Reduction
Townhouse	2 %

2.3 Electricity Consumption	100%
Score Contribution	This credit contributes 9.1% towards the category score.
Criteria	What is the % reduction in annual electricity consumption against the benchmark?
Output	Reference
Townhouse	24,140 kWh
Output	Proposed
Townhouse	6,580 kWh
Output	Improvement
Townhouse	72 %

2.4 Gas Consumption	100%
Score Contribution	This credit contributes 9.1% towards the category score.
Criteria	What is the % reduction in annual gas consumption against the benchmark?
Output	Reference
Townhouse	81,427 MJ
Output	Proposed
Townhouse	54,763 MJ
Output	Improvement
Townhouse	32 %

2.5 Wood Consumption	N/A ✧ Scoped Out
This credit was scoped out	No wood heating system present

2.6 Electrification		0%	⊘ Disabled
This credit is disabled	Credit is available when project is declared to have no gas connection.		

3.2 Hot Water		100%
Score Contribution	This credit contributes 4.5% towards the category score.	
Criteria	What is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark?	
Output	Reference	
Townhouse	81,427 MJ	
Output	Proposed	
Townhouse	56,043 MJ	
Output	Improvement	
Townhouse	31 %	

3.3 External Lighting		100%
Score Contribution	This credit contributes 4.5% 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 4.5% 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	2,906 kWh	
Output	Proposed	
Townhouse	581 kWh	
Output	Improvement	
Townhouse	80 %	

3.5 Internal Lighting - Houses and Townhouses		100%
Score Contribution	This credit contributes 4.5% 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%	⊘ Disabled
This credit is disabled	No other (non-solar PV) renewable energy is in use.		

4.5 Solar PV - Houses and Townhouses		0%	⊘ 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	141
Output	Min STORM Score
Project	100

IEQ

Overall contribution 13% Minimum required 50%

2.2 Cross Flow Ventilation	100%
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	Yes

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 3%

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	6
Output	Min Bicycle Spaces Required
Townhouse	6

1.2 Bicycle Parking - Residential Visitor	0%
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	-

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 0%

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	0%
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	No

Urban Ecology Overall contribution 1%

2.1 Vegetation		50%
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	14 %	

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	-	
Output	Min Food Production Area	
Townhouse	4 m^2	

Innovation Overall contribution 0%

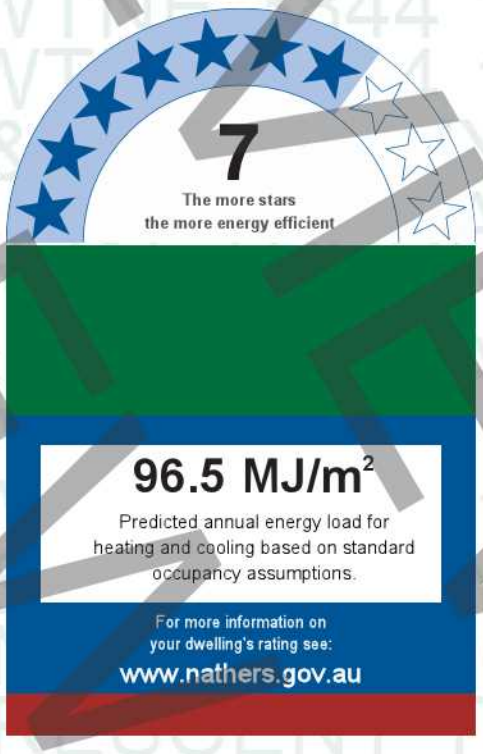
1.1 Innovation		0%
Score Contribution	This credit contributes 100.0% towards the category score.	
Criteria	What percentage of the Innovation points have been claimed (10 points maximum)?	

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.

Nationwide House Energy Rating Scheme
NatHERS Certificate

Generated on 8 Nov 2023 using FirstRate5: 5.3.2b (3.21)



Property

Address	1, 1 & 3 Murphy Crescent, Traralgon, VIC, 3844
Lot/DP	-
NCC Class*	Class 1a
Type	New Home

Plans

Main plan	25/08/2023
Prepared by	Latrobe Valley Drafting

Construction and environment

Assessed floor area (m²)*	
Conditioned*	76.7
Unconditioned*	3.8
Total	80.5
Garage	-

Exposure type
suburban

NatHERS climate zone
22 East Sale AMO

Thermal performance

Heating	Cooling
72.4 MJ/m²	24.1 MJ/m²

About the rating
NatHERS software models the expected thermal energy loads using information about the design and construction, climate and common patterns of household use. The software does not take into account appliances, apart from the airflow impacts from ceiling fans.

Accredited assessor

Name	Rob Iacono
Business name	PassivEnergy
Email	rob@passivenergy.com.au
Phone	0401 248 348
Accreditation No.	DMN/11/1259
Assessor Accrediting Organisation	Design Matters National
Declaration of interest	Declaration completed: no conflicts

Verification

To verify this certificate, scan the QR code or visit When using either link, ensure you are visiting www.FR5.com.au.

National Construction Code (NCC) requirements

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* Refer to glossary.

Nationwide House Energy Rating Scheme
NatHERS Certificate

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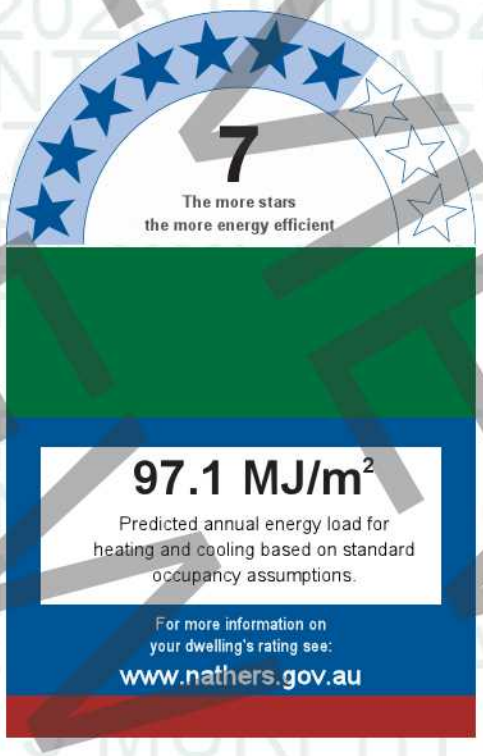

Property

Address	2, 1 & 3 Murphy Crescent, Traralgon, VIC, 3844
Lot/DP	-
NCC Class*	Class 1a
Type	New Home

Plans

Main plan	25/08/2023
Prepared by	Latrobe Valley Drafting

Construction and environment

Assessed floor area (m²)*	
Conditioned*	64
Unconditioned*	1.1
Total	65.1
Garage	-

Exposure type
suburban

NatHERS climate zone
22 East Sale AMO

Thermal performance

Heating	Cooling
73.7 MJ/m²	23.4 MJ/m²

About the rating
NatHERS software models the expected thermal energy loads using information about the design and construction, climate and common patterns of household use. The software does not take into account appliances, apart from the airflow impacts from ceiling fans.

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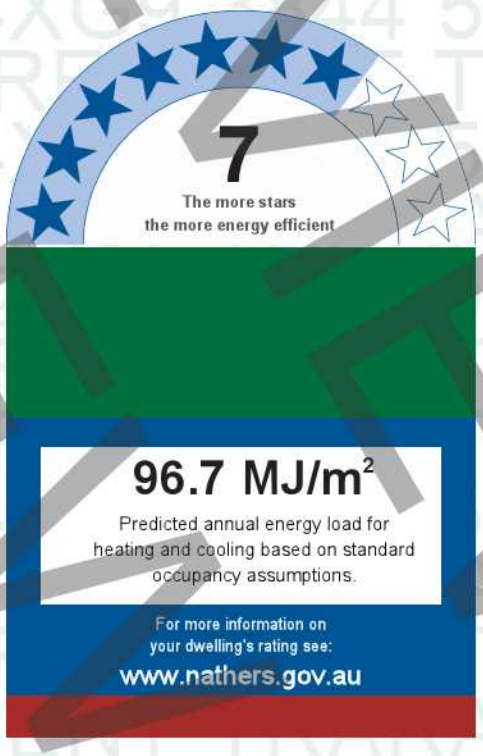

Property

Address	5, 1 & 3 Murphy Crescent, Traralgon, VIC, 3844
Lot/DP	-
NCC Class*	Class 1a
Type	New Home

Plans

Main plan	25/08/2023
Prepared by	Latrobe Valley Drafting

Construction and environment

Assessed floor area (m²)*	
Conditioned*	64
Unconditioned*	1.1
Total	65.1
Garage	-

Exposure type
suburban

NatHERS climate zone
22 East Sale AMO

Thermal performance

Heating	Cooling
76.9 MJ/m²	19.8 MJ/m²

About the rating
NatHERS software models the expected thermal energy loads using information about the design and construction, climate and common patterns of household use. The software does not take into account appliances, apart from the airflow impacts from ceiling fans.

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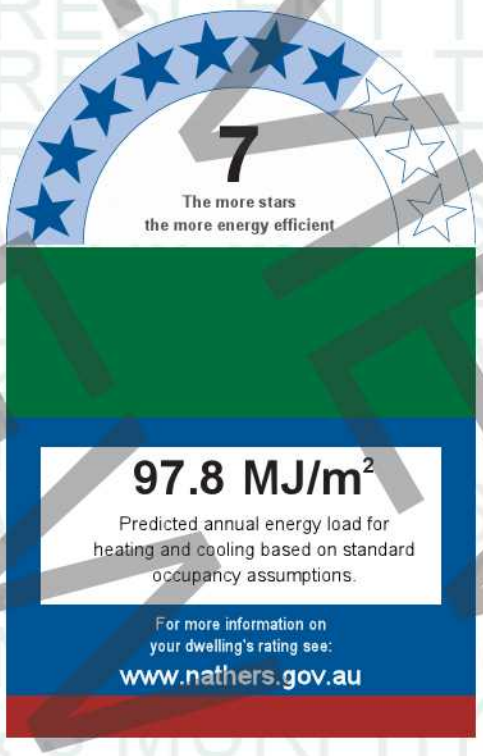

Property

Address	6, 1 & 3 Murphy Crescent, Traralgon, VIC, 3844
Lot/DP	-
NCC Class*	Class 1a
Type	New Home

Plans

Main plan	25/08/2023
Prepared by	Latrobe Valley Drafting

Construction and environment

Assessed floor area (m²)*	
Conditioned*	62.1
Unconditioned*	4.9
Total	67
Garage	-

Exposure type
suburban

NatHERS climate zone
22 East Sale AMO

Thermal performance

Heating	Cooling
75.1 MJ/m²	22.7 MJ/m²

About the rating
NatHERS software models the expected thermal energy loads using information about the design and construction, climate and common patterns of household use. The software does not take into account appliances, apart from the airflow impacts from ceiling fans.

Accredited assessor

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STORM Rating Report

TransactionID: 0

Municipality: LA TROBE

Rainfall Station: TRARALGON

Address: 1 & 3 Murphy Crescent

Traralgon

VIC 3844

Assessor:

Development Type: Residential - Multiunit

Allotment Site (m2): 826.19

STORM Rating %: 141

Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
Unit 1-6 RWT roof area	300.00	Rainwater Tank	10,000.00	10	140.80	90.70
Unit 1-6 RWT roof area	29.60	Rainwater Tank	2,000.00	1	143.00	90.70

Date Generated: 07-Dec-2023

Program Version: 1.0.0

Rainwater Tanks

Stormwater Sensitive Homes

How does a rainwater tank help protect our local streams?

Most people install a rainwater tank primarily to harvest stormwater from their roof and conserve their mains water use. In addition to conserving water, a rainwater tank also helps treat stormwater and protect local streams from high storm flows by reducing the volume of stormwater and quantity of pollutants coming from a house block that would otherwise be delivered to the local stream.

What do I use my tank water for?

Garden irrigation, laundry and toilet flushing consume much of our home water use. In most cases these uses do not require the water to be of drinking quality standard that is provided by mains water. By plumbing your rainwater tank to your toilet or laundry and substituting these mains water needs with the rainwater harvested from your roof, you can conserve mains water whilst reducing the amount of stormwater that enters our streams.

A typical home uses approximately 250,000 litres of water each year.

MelbourneWater

Melbourne Water 131772
Melbourne Water Corporation, PO Box 4342, Melbourne Victoria 3001

Rainwater Tanks

Stormwater Sensitive Homes

Why can't I use my rainwater tank for my garden alone?

So that your tank is not too full to collect rainwater when it rains, you need to be consistently using your tank water all year round.

If tank water is used for your garden alone, your tank will remain full and unused during the winter months when your garden does not require watering. With a full tank, your capacity to capture and store the regular winter rainfall and thus benefit the local waterway is significantly reduced.

By plumbing your rainwater tank to your toilet or laundry, your tank water is used consistently all year round allowing rainfall to refill the tank more often especially in winter. This ultimately reduces the volume of stormwater that is delivered to the stream and the quantity of pollutants that are washed with it.

The Victorian Government has recognised the importance of plumbing your tank to your toilet and offers a cash rebate for the installation of connected rainwater tanks (www.dse.vic.gov.au). In addition, a 5 star energy standard has been introduced that requires a connected 2000Lt rainwater tank or solar hot water service to be installed in all new houses and apartments (class 1 and 2 buildings). (www.buildingcommission.com.au).

How do I choose a rainwater tank?

The most important thing to consider when choosing a rainwater tank is to first identify what you want from your rainwater tank. The size and type of rainwater tank you choose will vary depending on your homes water needs and the reliability you seek from your rainwater tank supply. There are a number of factors that may influence this and the following questions should be considered when planning your tank installation:

- what is the water demand of your home?
- how many people are living in your home?
- what is your intended use of rainwater?
- what reliability do you want from your tank?
- what is the total area of roof draining into your tank?
- what is average rainfall of your area?
- do you need extras like a pressure pump, the ability to top up your tank with drinking water, a backflow prevention device or a first flush device?
- are the materials used on your roof suitable to collect rainwater?
- are there physical constraints of your property that may influence the type of rainwater tank you need?

Once you know how much water you can collect and how much water you are going to use then a tank size can be selected to provide the reliability of water supply that you need.

Types of rainwater tanks

Rainwater tanks come in a variety of materials, shapes and sizes and can be incorporated into building design so they don't impact on the aesthetics of the development. They can be located above ground, underground, under the house or can even be incorporated into fences or walls.

There are three main tank systems to consider and a variety of materials to choose from. Features of these are outlined below and in the pictures above:

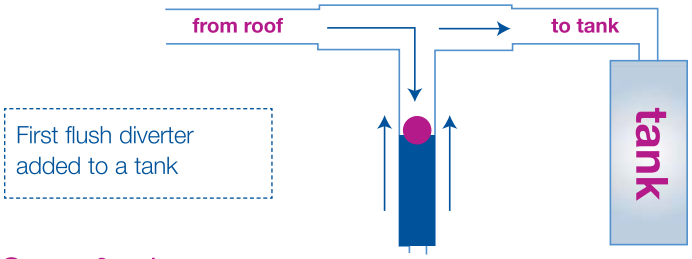
Tank systems:

Gravity Systems - rely on gravity to supply rainwater to the household and the garden by placing the tank on a stand at height.

Dual Supply Systems - top your rainwater tank with mains water when tank level is low ensuring reliable water supply.

Pressure Systems - use a pump to deliver rainwater to household and garden fixtures.

To reduce the amount of sediment and debris entering a tank, mesh screens and 'first flush diverters' can be fitted. A screen will filter large debris such as leaves and sticks while 'first flush diverters' store the 'first flush' of the rainfall that carries the sediment and other pollutants initially washed from your roof (see figure below).



Costs & rebates

Costs of installing a tank vary however a standard 2000Lt tank or bladder will cost around $1000.

Additional plumbing and/ or.....

- Above ground tanks cost approximately $250 for a 500 litre tank.
- Below ground tanks cost between $300-$600 per 1000 litres of storage
- The costs of pumps start from $200.

Additional plumbing and/or excavation costs vary on intended use, pipe layout, materials and site accessibility.

The Victorian Government offers a total rebate of $300 for the installation of a rainwater tank that is plumbed to toilet and connected by a licensed plumber. For further details refer to the Department of Sustainability and Environment website www.dse.vic.gov.au.

For more information:

Melbourne Water's Water Sensitive Urban Design Website: www.wsud.melbournewater.com.au

Municipal Association of Victoria Clearwater Program: www.clearwater.asn.au

Water Sensitive Urban Design in the Sydney Region: www.wsud.org

Urban Stormwater Best Practice Environmental Management Guidelines, Victorian Stormwater Committee, CSIRO publishing, 1999.

WSUD Engineering Procedures: Stormwater, Melbourne Water, 2005.

Delivering Water Sensitive Urban Design: Final Report of Clean Stormwater – a planning framework, ABM, 2004.