Sustainable Design Assessment

Example Template | December 2021



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Disclaimer: This document has been produced for the sole purpose of providing an example of a general minimum standard of Sustainable Design Assessment (SDA) from the perspective of Banyule City Council's Development Planning team. It should be noted that council may ask for additional items to be addressed within any SDA that accompanies a planning permit application and may have additional requirements such as the need to provide an ESD plan, WSUD plan, cross-sectional details, Implementation Plans, etc. We strongly encourage you to provide additional information and detail within your SDA including ESD features that you intend to include in your proposed development. We encourage that you seek the assistance of a suitably qualified ESD consultant.

Environmentally Sustainable Development

Sustainable design is a requirement of planning permit applications in Banyule City Council. This report outlines sustainable design features that have been utilised to **address Clause 22.05** – *Environmentally Sustainable Development* of the Banyule Planning Scheme. This report is informed by and relies heavily upon the Built Environment Sustainability Scorecard (BESS). Within BESS, there are 10 key sustainability criteria which address Banyule City Council's 10 key sustainability criteria.

These are detailed within Banyule's SDAPP Explained document and include:

- 1. Indoor Environment Quality
- 2. Energy Efficiency
- 3. Water Efficiency
- 4. Stormwater Management
- 5. Building Materials
- 6. Transport
- 7. Waste Management
- 8. Urban Ecology
- 9. Innovation
- 10. Construction and Building Management

Built Environment Sustainability Scorecard

This Sustainable Design Assessment uses three key tools which legitimise the assessment of the proposed development against industry standards. The guiding document is a BESS assessment for which a minimum overall score of 50% and a pass mark of 50% in four of the nine categories being accepted with a greater score encouraged in all instances. Within the attached BESS Report, there are a number of inputs relied upon to produce a comprehensive assessment. This includes reliance on a Preliminary NatHERS rating for the energy efficiency category and a Melbourne Water STORM or MUSIC report for the Stormwater Management category.

BESS Summary

Project Address:	1 Example Street,
	Greensborough, VIC, 3088
Project Number:	93ED045F
Overall BESS Score:	67%
Pass mark in 4 mandatory categories:	Yes

ESD Initiatives

The following section outlines the 10 key sustainability principles, their objectives as defined by the planning scheme or commitments through SDAPP and the initiatives employed within the proposed development.

Management

Objectives:

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

Pre-Application Meeting	Yes	A Pre-Application Meeting was held and our ESD consultant was in attendance, we discussed with Council's ESD Adviser and Development Planning about the requirements and opportunities for providing high quality ESD features within the proposed development where appropriate.
Preliminary NatHERS Report	Yes	A NatHERS Report for each dwelling is available as an attachment to this Sustainable Design Assessment.
Building User Guide	Yes	A Draft Copy of the Building User Guide is attached in the appendix of this Sustainable Design Assessment. Document to be finalised and provided to council for checking upon completion.

Water

- 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. greywater).

Recycled Water	No	Purple pipe – Class A Recycled Water reticulation on site?
Use	Yes	Rainwater tanks proposed?
	No	Swimming pools proposed?
Rainwater tanks	Yes	 Each proposed dwelling is to have a 3000L slimline rainwater tank provided with reticulation to sanitary flushing systems irrigation systems laundry washing machines.
Water fixtures, fittings and device connections	-	Showerheads – Min. 4 Stars WELS rating Baths – N/A Kitchen taps – Min.5 Stars WELS rating Bathroom taps – Min. 4 Stars WELS rating Dishwashers – Scoped Out Toilets - Min. 5 Stars WELS rating Urinals – N/A Washing machines – Scoped Out
Non-potable water sources		Non-potable water is connected to rainwater tank as demonstrated above.

Energy

- To improve the efficient use of energy, by ensuring development demonstrates design potential for ESD iniatives at the planning stage.
- To reduce total operating greenhouse gas emissions.
- To reduce energy peak demand through particular design measures (eg. appropriate building orientation, shading to glazed surfaces, optimise glazing to exposed surfaces, space allocation for solar panels and external heating and cooling systems).

Renewable	Yes	Solar PV System
Energy		No. Solar panels
		Total amount of kilowatts
		Angle of elevation from the horizon angle
		Direction of panel facing (i.e 3 north-west facing, 11 north-east facing)
NatHERS		Minimum NatHERS Star Rating for Dwelling 1 is 6.4 stars
Summary		Annual Heating Load: 95.9 MJ/sqm
		Annual Cooling Load: 13.8 MJ/sqm
		Minimum NatHERS Star Rating for Dwelling 2 and Dwelling 3 is 6.6 stars
		Annual Heating Load: 90.7 MJ/sqm
		Annual Cooling Load: 13.9 MJ/sqm
Energy Supply	Electric	Electric only (encouraged)
Heating System	Electric	System Type – Electric split system
		ERS – 6 Star Rating
		*To be specified if different for each building unit.
Cooling System	Electric	System Type – Refrigerative cooling (room)
		ERS – 6 Star Rating
	-	*To be specified if different for each building unit.
Hot Water	Electric	System Type – Electric Heat Pump
System		ERS – 6 Star Rating
		* To be specified if different for each building unit.
Solar Hot Water System	No	
Clothes Drying	Yes	Clothes lines provided to each dwelling.
		Clothes line to be installed in secluded private open space of each dwelling with northern solar access.

Stormwater

- 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 the use of water sensitive urban design, including stormwater re-use.

STORM or MUSIC Report %	Melbourne Water STORM Calculator, achieving a rating of 107%.
Rainwater tanks	Each proposed dwelling is to have a 3000L slimline rainwater tank provided with reticulation to:
	sanitary flushing systems
	irrigation systems
	laundry washing machines
Raingardens	Three in-ground raingardens/above-ground raingardens of 1m2 catchment area will receive stormwater runoff from three roof spaces, one on each dwelling.
	Catchment area for Dwelling 1:
	Catchment area for Dwelling 2:
	Catchment area for Dwelling 3:
	The sealed driveway is graded into the raingardens as shown on plans provided.
Permeable Paving	Identify permeable paving areas such as driveway, footpaths, decks that are discounted from impervious stormwater treatments.

Indoor Environmental Quality

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.

Cross Flow Ventilation	Cross-flow ventilation has been designed into the buildings through window placement and internal layout as well as window type and orientation to prevailing wind-rose patterns.
	All cross-flow ventilation is shown on the dedicated ESD Drawing.
Double Glazing	All habitable spaces have Double Glazing provided
External Shading	North, east and west facing windows are shaded with external shading devices that have a device depth to window height ratio of 25% with window height taken from beneath the eave to the window sill.
	Sectional details of the shading devices/eaves are provided on the dedicated ESD plan.
Orientation	The proposed development is positioned so that more than 50% of living areas to each dwelling face north within a 20% allowance of true north.

Transport

Objectives:

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- To ensure that the built environment is designed to promote the use of walking, cycling and public transport, in that order.
- To minimise car dependency.
- To promote the use of low emissions vehicle technologies and supporting infrastructure.

Each dwelling is provided with a single bicycle parking infrastructure in the form of a wall-mounted bicycle rack, in a non-obstructive area of the garage.
Electric Vehicle Charging Infrastructure provided to XX location.

Waste

Objectives:

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

Construction Waste Reduction	Building waste diverted from landfill by retaining at least one third of the buildings on site.
Food and Garden Waste	Compost bins and internal cabinetry for the fitment of min. four waste streams. (Recycle, Red-cycle, Compost/FOGO, Waste).

Urban Ecology

Objectives:

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

Urban Ecology	Proportion of site covered by vegetation, does not include fake grass or non- contributing permeable pavement: 30%, trees, shrubs, tussocks, grasses.
Food Production	Food production area provided to each S.P.O.S area, all northern solar access. Food production areas a minimum of 2 m ² in each dwelling with formed beds of at least 400mm depth
Taps to S.P.O.S or balcony	Each secluded private open space/balcony is equipped with a tap and floor waste system.

Building Materials

- To minimize the environmental impacts of materials used by encouraging the use of materials with a favorable lifecycle assessment.
- Reduce embodied energy of materials.
- Use materials with recycled content.

Embodied Energy	Rammed Earth walls used for all stand-alone garage structures.
Recycled timber	Recycled Oregon beams used in main living areas, expressed through the timber sub-floor ceiling.
Recycled brick	Recycled brick used as a finished product on 7/19 facades. Portland cement used in the creation of new bricks contained a high embodied energy so the use of locally sourced recycled bricks is considered to have a reduced embodied carbon footprint.

Innovation

Objective:

• To encourage innovative technology, design and processes in all development, so as to positively influence the sustainability of buildings.

Low VOC materials	Low Volatile Organic Compound paints, sealants, building materials used where possible.
	Product specification sheets to be provided by the Builder.
Formaldehyde in Engineered Timber	E0 or E1 engineered timber products to be used throughout. Product specification sheets to be provided by the Builder.
Vegetated Screening Devices	Deciduous vines and climbers to northern windows to allow for winter sunlight to enter dwelling but for all summer sunlight to be reduced.
Green Roof/Wall	Green Roof/Wall proposed to Dwellings 2 and 3 to help reduce the urban heat island effect on the site.
	See sectional details on the dedicated ESD plan and manufacturers details for more information.

Appendix

Implementation Schedule

Melbourne Water STORM Report

BESS Report

Preliminary NatHERS Rating

Table 1 Example Implementation Schedule

ESD Category	Initiative or Commitment	Delivery Stage(s)	Responsible Party	Comments
General	ESD Drawings WSUD Plan	Design & Permit Application	Building Designer/Architect	Building Designer/Architect to work alongside ESD Consultant to create at least two separate plans – an ESD and WSUD Plan with all ESD features in SDA/SMP visually shown.
General	ESD Compliance Report	Post-construction	Project Manager/Builder ESD Consultant	A report is to be produced with evidence collated and provided to Council to ensure the initiatives of the SDA/SMP Report have been adhered to.
Building Management	Building User Guide	Post-construction	Builder/Project Manager ESD Consultant	Provide Council with copy once complete. Multiple owner copies to be provided to all owners.
Building Management	Supplying Council with Prelim. NatHERS Report	Prior to lodgement of the planning application	ESD Consultant	Must demonstrate how the building can make use of energy efficiency features such as cross-flow ventilations and operable shading devices, including curtains.
Water	High efficiency WELS Ratings for water fixtures	Construction	Plumber Builder/Project Manager	Keep copies of the WELS Ratings and Receipts from the fixture supplier for presentation to Council See Water Section (Page X) for WELS Ratings
Water	Rainwater connected to non-potable water sources	Construction	Builder/Project Manager Plumber	Toilets/Laundry/Irrigation
Water	Water Efficient Landscaping	Design & Landscaping	Landscape Architect Landscape Architect to ensure selection of water-efficient Landscaper landscaping.	
				Landscaper to plant only water-efficient and drought tolerant species.

ESD Category	Initiative or Commitment	Delivery Stage(s)	Responsible Party	Comments
Energy	NatHERS used	Design Construction	Energy Rater/ESD Consultant Builder/Project Manager	Prelim. Energy report to be provided alongside permit application. Finalised energy report at Building Permit stage to meet the committed to star rating for each building.
Energy	(Insert No) kWs Solar Panels to be installed	Design Construction	Building Designer/Architect Solar Electricians	Provide the solar report to Council, confirming the amount of kWs installed
Energy	Clothes line/efficient dryer energy rating (insert star rating)	Design Construction	Building Designer/Architect Builder/Project Manager	Copies of Energy Efficient Dryer energy rating certificate to be kept and provided to council.
Energy	Energy Efficient Cooling & Heating System (insert each x2 star rating)	Design Building material acquisition Construction	Energy Consultant Building Designer/Architect Builder/Project Manager	Cooling & Heating system to be installed with the energy rating (MJ/m ²) no less than that stipulated in the claimed star rating.
Energy	Internal Maximum Illumination of 4W/m ² (energy efficient lighting)	Design (electrical plan) Building material acquisition Construction	Electrician Building Designer/Architect Builder/Project Manager	To be demonstrated on ESD Drawing Evidence to be provided to council
Energy	External motion sensors for accessway lights	Building material acquisition Construction	Electrician Builder/Project Manager	To also be shown on ESD Drawing Evidence to be provided to council
Indoor Environment Quality	Cross-flow ventilation	Design	Building Designer/Architect	Adequate cross-flow ventilation is to be demonstrated on the ESD Drawing to the satisfaction of the Responsible Authority.

ESD Category	Initiative or Commitment	Delivery Stage(s)	Responsible Party	Comments
Indoor Environment Quality	Double/Triple Glazed Windows (Insert R- Value/SHGC)	Design Energy Rating Construction	Energy Rater Building Designer/Architect Builder/Project Manager	To match the approved energy rating reports. Evidence of installation and proof of R/U-Values to be provided to Council in ESD compliance report.
Indoor Environment Quality	Insulation (Insert U/R- Values)	Energy Rating Building Documentation	Energy Rater Builder/Project Manager	To match the approved energy rating reports. Evidence of installation and proof of R/U-Values to be provided to Council in ESD compliance report.
Indoor Environment Quality	External Shading Devices	Design Construction	Building Designer/Architect ESD Consultant Builder/Project Manager	To be shown on ESD Drawings with sectional details and ratios that address YourHome's acceptable ratio for properties south of the Capricorn.
Indoor Environment Quality	Orientation	Design	Building Designer/Architect ESD Consultant	To be demonstrated on all plans. Living rooms to be oriented to gain passive solar heating from northern aspect. To be combined with external shading devices to achieve high quality passive design.
Transport	Bicycle Spaces	Design Construction	Building Designer/Architect ESD Consultant	Bicycle infrastructure must be installed in a lockable and undercover area. If claimed in the garage, infrastructure such as a wall-mounted bicycle rack is to be installed not to hinder the packing space. Actual lockable infrastructure such as a bicycle hoop must be provided.
Transport	Transport EV Charing Facility Construction Electrician I Builder/Project Manager G		If claimed, evidence of install/certificated to be provided in ESD compliance report.	

ESD Category	Initiative or Commitment	Delivery Stage(s)	Responsible Party	Comments
Waste	Food and Garden Waste (compost bin, internal bin compartment)	Design (cabinetry) Construction	Waste/ESD Consultant Building Designer/Architect Builder/Project Manager	Must provide adequate infrastructure for the temporary storage and composting of organic material, including in kitchen cabinetry.
Waste	Construction Waste Diversion *insert initiative*	Project Planning Construction	Builder/Project Manager Building Designer/Architect Waste consultant	Innovative measures to reuse or reduce building material waste on site to be provided to appropriate detail to Council and evidenced in the ESD Compliance Report.
Urban Ecology	Green Walls/Roofs	Landscape Design Construction	Landscape Architect Building Designer/Architect Structural Engineer Builder/Project Manager Landscaper	Details of the proposed green walls/facades/roofs including sectional details to be provided in ESD Drawing. Product info, maintenance, irrigation detail & selected plant species to be provided.
Urban Ecology	Tap & Floor Waste to Balcony/POS	Design Construction	Building Designer/Architect Builder/Project Manager	Evidence to be provided (photographic) in the ESD Compliance Report
Urban Ecology	Vegetated Site Coverage (insert %)	Design Landscaping	Landscape Architect Building Designer/Architect	Percetnage of site (%) to match the landscape plan, all covered areas to be exluded.
Urban Ecology	Food Production Area	Design Landscaping	Builder/Project Manager Landscape Architect Landscaper	Must be provided with adequate topsoil at the cost of the developer. To be available for use by the occupant as soon as they move in.

ESD Category	Initiative or Commitment	Delivery Stage(s)	Responsible Party	Comments
Innovation	Low Embodied Energy Material (low environmental/travel/ manufacturing) i.e Rammed Earth	Design Project Planning Building material acquisition Construction	ESD Consultant Engineering Building Designer/Architect Project Manager/Builder	Relevant information about the innovation to be provided here and how it will be evidenced, i.e in the ESD Compliance Report.
Innovation	Low VOC* paint/internal lining materials	Design Project Planning Building material acquisition Construction	Building Scientist Building Designer/Architect	Relevant information about the innovation to be provided here and how it will be evidenced, i.e in the ESD Compliance Report.

Melbourne STORM Rating Report

TransactionID:	1259834			
Municipality:	BANYULE			
Rainfall Station:	BANYULE			
Address:	1 Flintoff Street			
	Greensborough			
	VIC	3088		
Assessor:	Carmelo Sposato			
Development Type:	Residential - Multi	unit		
Allotment Site (m2):	783.00			
STORM Rating %:	107			
Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms
TH1 - Roof Part 1	120.00	Rainwater Tank	3,000.00	3
TH2 - Roof Part 1	111.00	Rainwater Tank	3,000.00	3
TH3 - Roof Part 1	105.00	Rainwater Tank	3,000.00	3
TH1 - Roof Part 2	15.00	Raingarden 100mm	1.00	0
TH2 - Roof Part 2	26.00	Raingarden 100mm	1.00	0
TH3 - Roof Part 3	30.00	Raingarden 100mm	1.00	0
Concrete Driveway	78.00	None	0.00	0

Treatment %

120.70

126.20

131.00

133.70 132.50

132.00

0.00

Tank Water Supply Reliability (%)

96.30

94.90

93.50

0.00

0.00

0.00

0.00

BESS Report

Built Environment Sustainability Scorecard

9% 50%

6%

6%

9%

50%

62%

30%

Transport Waste

Urban Ecology



This BESS report outlines the sustainable design commitments of the proposed development at 1 Example St Greensborough VIC 3088. 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 Banyule 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 Best practice Excellence 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%	67%					
Project detailsAddress1 Example St Greensborough VIC 3088Project no93ED045F-R1BESS VersionBESS-6Site typeMulti dwelling (dual occupancy, townhouse, villa unit etc)Accountdevplan@banyule.vic.gov.auApplication no.P1000/1000Site area783 m²Building floor area405.0 m²Date29 October 2021Software version1.7.0-B.371						
Performance by category • Your development • Maximum available Category Weight Score Pass						
Management 5% 33%						
Water 9% 66% -						
Energy 28% 60% -						
Stormwater 14% 100% -						
IEQ 17% 100% -						

BESS, 1 Example St Greensborough 3088

Dwellings & Non Res Spaces

Dwellings Name Quantity Area % of total area Townhouse Townhouse 3 135 m² 33% 1 135 m² Townhouse 2 33% 1 Townhouse 1 135 m² 33% 1 Total 3 405 m² 100%

Supporting information

Floorplans & elevation notes

Credit	Requirement	Response	Status			
Water 3.1	Water efficient garden annotated		-			
Energy 3.4	Clothes line annotated (if proposed)					
Energy 4.5	Floor plans showing location of photovoltaic panels as described.					
Stormwater 1.1	Location of any stormwater management systems used in STORM or - MUSIC modelling (e.g. Rainwater tanks, raingarden, buffer strips)					
IEQ 2.2	Dwellings meeting the requirements for having 'natural cross flow ventilation' -					
IEQ 3.1	Glazing specification to be annotated					
IEQ 3.2	Adjustable shading systems					
IEQ 3.3	North-facing living areas					
Transport 1.1	All nominated residential bicycle parking spaces		-			
Waste 2.1	Location of food and garden waste facilities		-			
Urban Ecology 2.1	Vegetated areas		-			
Urban Ecology 2.4	Taps and floor waste on balconies / courtyards		-			

Supporting evidence

Requirement	Response	Status
Preliminary NatHERS assessments		-
Provide a written description of the average lighting power density to be installed in the development and specify the lighting type(s) to be used.		-
Specifications of the solar photovoltaic system(s).		-
STORM report or MUSIC model		-
A list of dwellings with natural cross flow ventilation		-
Reference to floor plans or energy modelling showing the glazing specification (U-value and Solar Heat Gain Coefficient, SHGC)		-
Reference to floor plans and elevations showing shading devices		-
Reference to the floor plans showing living areas orientated to the north.		-
	Requirement Preliminary NatHERS assessments Provide a written description of the average lighting power density to be installed in the development and specify the lighting type(s) to be used. Specifications of the solar photovoltaic system(s). STORM report or MUSIC model A list of dwellings with natural cross flow ventilation Reference to floor plans or energy modelling showing the glazing specification (U-value and Solar Heat Gain Coefficient, SHGC) Reference to floor plans and elevations showing shading devices Reference to the floor plans showing living areas orientated to the north.	Requirement Response Preliminary NatHERS assessments Provide a written description of the average lighting power density to be installed in the development and specify the lighting type(s) to be used. Specifications of the solar photovoltaic system(s). STORM report or MUSIC model A list of dwellings with natural cross flow ventilation Reference to floor plans or energy modelling showing the glazing specification (U-value and Solar Heat Gain Coefficient, SHGC) Reference to floor plans and elevations showing shading devices 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%

	Minin	num required 50%	66%	 Pass 	
1.1 Potable water use reduction			60%		
3.1 Water Efficient Landscaping			100%		

Energy Overall contribution 27.5%

	Minimum	required 50%	60%	✓ Pass
1.2 Thermal Performance Rating - Residential			16%	
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	o wood h	neating system present
3.2 Hot Water			100%	
3.3 External Lighting			0%	
3.4 Clothes Drying			100%	
3.5 Internal Lighting - Residential Single Dwelling			100%	
4.4 Renewable Energy Systems - Other			N/A	Ø Disabled
		No other (non-solar	PV) rene	wable energy is in use.
4.5 Solar PV - Houses and Townhouses			100%	

Stormwater Overall contribution 13.5%

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

BESS, 1 Example St Greensborough 3088

IEQ Overall contribution 16.5%

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

Transport Overall contribution 9.0%

	50%	
1.1 Bicycle Parking - Residential	100%	
1.2 Bicycle Parking - Residential Visitor	N/A	Scoped Out
		Not enough dwellings.
2.1 Electric Vehicle Infrastructure	0%	

Waste Overall contribution 5.5%

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

Urban Ecology Overall contribution 5.5%

		62%	
	2.1 Vegetation	100%	
ĺ	2.2 Green Roofs	0%	
	2.3 Green Walls and Facades	0%	
	2.4 Private Open Space - Balcony / Courtyard Ecology	100%	
	3.1 Food Production - Residential	0%	

Innovation Overall contribution 9.0%

			30%	
1.	.1 Innovation		30%	

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 - Residential	- Multi-Dwelling 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

BESS, 1 Example St Greensborough 3088

Water Overall contribution 6% Minimum required 50%

Section Notes; Indigenous and drought tolerant landscaping provided in accordance with the submitted landscape plan.

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 (>= 4.5 but <= 6.0)
Bath:	
ScTopenhouse	
out	
Townhouse	
2	
Meowmouse Sized	
Contemporary	
Bath	
Kitchen Taps: All	>= 5 Star WELS rating
Bathroom Taps: All	>= 4 Star WELS rating
Dishwashers: All	Default or unrated
WC: All	>= 5 Star WELS rating
Urinals: All	Scope out
Washing Machine Water Efficiency: All	Default or unrated
Rainwater Tanks	
What is the total roof area connected to the rainwater tank?:	
Townhouse 1 - RWT	120 m ²
Townhouse 2 - RWT	111 m ²
Townhouse 3 - RWT	105 m ²
Tank Size:	
Townhouse 1 - RWT	3,000 Litres
Townhouse 2 - RWT	3,000 Litres
Townhouse 3 - RWT	3,000 Litres
Irrigation area connected to tank:	
Townhouse 1 - RWT	35.0 m ²
Townhouse 2 - RWT	32.0 m ²
Townhouse 3 - RWT	28.0 m ²
Is connected irrigation area a water efficient garden?:	
Townhouse 1 - RWT	Yes
Townhouse 2 - RWT	Yes
Townhouse 3 - RWT	Yes

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

Other external water demand connected	ed to tank?:
Townhouse 1 - RWT	80.0 Litres/Day
Townhouse 2 - RWT	-
Townhouse 3 - RWT	-
1.1 Potable water use reduction	60%
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	606 kL
Output	Proposed (excluding rainwater and recycled water use)
Project	493 kL
Output	Proposed (including rainwater and recycled water use)
Project	311 kL
Output	% Reduction in Potable Water Consumption
Project	48 %
Output	% of connected demand met by rainwater
Project	92 %
Output	How often does the tank overflow?
Project	Often
Output	Opportunity for additional rainwater connection
Project	106 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?
Annotation	Indigenous and drought tolerant landscaping provided in accordance with the
	submitted landscape plan.
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)?:	Yes
Are you installing any other renewable energy system(s)?:	No
Gas supplied into building:	Natural Gas
Divening Energy Promes	
	Ground or Carpark
Above the ceiling is: All	Outside
Exposed sides: All	4
NatHERS	
Annual	
Energy	
Loads	
- Heat:	
M.1/	
sgm	
8718wnhouse	
M.%	
safiownhouse	
3	
NatHERS	
Annual	
Energy	
Loads	
-	
Cool:	
11Townhouse	
/LM	
sqm	
11Townhouse	
M2/	
sqīīnownhouse	
3	
NatHERS	
star	
rating:	
6.4ownhouse	
1	
6.đownhouse	
2	
Townhouse	
3	
Type of Heating System: All	B Gas central ducts

BESS, 1 Example St Greensborough 3088

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		J Gas Instantaneous 6 star
Is the hot water system shared by mult	iple dwellings?: All	No
% Contribution from solar hot water sy	stem: All	-
Clothes Line: All		D Private outdoor clothesline
Clothes Dryer: All		Occupant to Install
Solar Photovoltaic systems		
System Size (lesser of inverter and pan	el capacity):	
TH1		5.0 kW peak
TH2		4.0 kW peak
Orientation (which way is the system fa	cing)?:	
TH1		North-East
TH2		North
Inclination (angle from horizontal):		
TH1		20.0 Angle (degrees)
TH2		20.0 Angle (degrees)
1.2 Thermal Performance Rating - Re	esidential	16%
Score Contribution	This credit contribut	tes 30.0% towards the category score.
Criteria	What is the average	NatHERS rating?
Output	Average NATHERS	Rating (Weighted)
Townhouse	6.5 Stars	
2.1 Greenhouse Gas Emissions		100%
Score Contribution	This credit contribut	tes 10.0% towards the category score.
Criteria	What is the % reduc	ction in annual greenhouse gas emissions against the benchmark?
Output	Reference Building	with Reference Services (BCA only)
Townhouse	13,228 kg CO2	
Output	Proposed Building	with Proposed Services (Actual Building)
Townhouse	7,772 kg CO2	
Output	% Reduction in GH	G Emissions
Townhouse	41 %	
2.2 Peak Demand		0%
Score Contribution	This credit contribut	tes 5.0% towards the category score.
Criteria	What is the % reduc	ction in instantaneous (peak-hour) demand against the benchmark?
Output	Peak Thermal Cooli	ng Load - Baseline
Townhouse	36.5 kW	
Output	Peak Thermal Cooli	ng Load - Proposed
Townhouse	35.5 kW	
Output	Peak Thermal Cooli	ng Load - % Reduction
Townhouse	2 %	

2.3 Electricity Consumption	100%
Score Contribution	This credit contributes 10.0% towards the category score.
Criteria	What is the % reduction in annual electricity consumption against the benchmark?
Output	Reference
Townhouse	5,474 kWh
Output	Proposed
Townhouse	2,870 kWh
Output	Improvement
Townhouse	47 %
2.4 Gas Consumption	100%
Score Contribution	This credit contributes 10.0% towards the category score.
Criteria	What is the % reduction in annual gas consumption against the benchmark?
Output	Reference
Townhouse	148,722 MJ
Output	Proposed
Townhouse	94,251 MJ
Output	Improvement
Townhouse	36 %
2.5 Wood Consumption	N/A 💠 Scoped Out
2.5 Wood Consumption This credit was scoped out	N/A Scoped Out No wood heating system present
2.5 Wood Consumption This credit was scoped out 3.2 Hot Water	N/A Scoped Out No wood heating system present 100%
2.5 Wood Consumption This credit was scoped out 3.2 Hot Water Score Contribution	N/A ◆ Scoped Out No wood heating system present 100% 100%
2.5 Wood Consumption This credit was scoped out 3.2 Hot Water Score Contribution Criteria	N/A Scoped Out No wood heating system present 100% This credit contributes 5.0% towards the category score. Vision What is the % reduction in annual energy consumption (gas and electricity) of the hot
2.5 Wood Consumption This credit was scoped out 3.2 Hot Water Score Contribution Criteria	N/A Scoped Out No wood heating system present 100% 100%
2.5 Wood Consumption This credit was scoped out 3.2 Hot Water Score Contribution Criteria Output	N/A Scoped Out No wood heating system present 100% 100%
2.5 Wood Consumption This credit was scoped out 3.2 Hot Water Score Contribution Criteria Output Townhouse	N/A Scoped Out No wood heating system present 100% This credit contributes 5.0% towards the category score. What is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark? Reference 13,881 kWh
2.5 Wood Consumption This credit was scoped out 3.2 Hot Water Score Contribution Criteria Output Townhouse Output	N/A Scoped Out No wood heating system present 100% This credit contributes 5.0% towards the category score. What is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark? Reference 13,881 kWh Proposed Via the state of the st
2.5 Wood Consumption This credit was scoped out 3.2 Hot Water Score Contribution Criteria Output Townhouse Output Townhouse	N/A ◆ Scoped Out No wood heating system present 100% 100% 100% This credit contributes 5.0% towards the category score. Vhat is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark? Reference 13,881 kWh Proposed 9,529 kWh
2.5 Wood Consumption This credit was scoped out 3.2 Hot Water Score Contribution Criteria Output Townhouse Output Townhouse Output	N/A ◆ Scoped Out No wood heating system present 100% 100% - This credit contributes 5.0% towards the category score. - What is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark? - Reference - 13,881 kWh - Proposed - 9,529 kWh - Improvement -
2.5 Wood Consumption This credit was scoped out 3.2 Hot Water Score Contribution Criteria Output Townhouse Output Townhouse Output Townhouse	N/A ◆ Scoped Out No wood heating system present 100% 100% 100% This credit contributes 5.0% towards the category score. Vhat is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark? Reference 13,881 kWh Proposed 9,529 kWh Improvement 31 %
2.5 Wood Consumption This credit was scoped out 3.2 Hot Water Score Contribution Criteria Output Townhouse Output	N/A ◆ Scoped Out No wood heating system present 100% 100% 100% This credit contributes 5.0% towards the category score. What is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark? Reference 13,881 kWh Proposed 9,529 kWh Improvement 31 %
2.5 Wood Consumption This credit was scoped out 3.2 Hot Water Score Contribution Criteria Output Townhouse Output Townhouse Output Townhouse Output Score Contribution Score Contribution	N/A ◆ Scoped Out No wood heating system present 100% 100% 100% This credit contributes 5.0% towards the category score. What is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark? Reference 13,881 kWh Proposed
2.5 Wood Consumption This credit was scoped out 3.2 Hot Water Score Contribution Criteria Output Townhouse Output Townhouse Output Townhouse Output Score Contribution Criteria	N/A ◆ Scoped Out No wood heating system present 100% This credit contributes 5.0% towards the category score. What is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark? Reference 13,881 kWh Proposed 9,529 kWh Improvement 0% 31 % 0% Stee external lighting controlled by a motion detector?
2.5 Wood Consumption This credit was scoped out 3.2 Hot Water Score Contribution Criteria Output Townhouse Output Townhouse Output Townhouse Output Score Contribution Criteria Question	N/A ◆ Scoped Out No wood heating system present 100% This credit contributes 5.0% towards the category score. What is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark? Reference 13,881 kWh Proposed 9,529 kWh Improvement 31 % 0% Chis credit contributes 5.0% towards the category score. Is the external lighting controlled by a motion detector? Criteria Achieved ?

3.4 Clothes Drying		100%			
Score Contribution	This credit contributes 5.0% towards the cate	gory score.			
Criteria	What is the % reduction in annual energy cons	sumption (gas and elec	tricity) from a		
	combination of clothes lines and efficient drier	combination of clothes lines and efficient driers against the benchmark?			
Output	Reference				
Townhouse	1,928 kWh				
Output	Proposed				
Townhouse	386 kWh				
Output	Improvement				
Townhouse	80 %				
3.5 Internal Lighting - Residen	tial Single Dwelling	100%			
Score Contribution	This credit contributes 5.0% towards the cate	gory score.			
Criteria	Does the development achieve a maximum illu	imination power densit	y of 4W/sqm or		
	less?				
Question	Criteria Achieved?				
Townhouse	Yes				
4.4 Renewable Energy System	s - Other	N/A	Ø Disabled		
This credit is disabled	No other (non-solar PV) renewable energy is in	use.			
4.5 Solar PV - Houses and Tow	nhouses	100%			
Score Contribution	This credit contributes 10.0% towards the cate	egory 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	11,167 kWh				
Output	% of Building's Energy				
Townhouse	38 %				

Stormwater Overall contribution 14% Minimum required 100%

Which stormwater modelling are you us	sing?: 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	107
Output	Min STORM Score
Project	100

IEQ

Overall contribution 16% 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 Shadi	ng 100%
3.2 Thermal Comfort - External Shadi Score Contribution	ng 100% This credit contributes 20.0% towards the category score.
3.2 Thermal Comfort - External Shadi Score Contribution Criteria	ng 100% This credit contributes 20.0% towards the category score. Is appropriate external shading provided to east, west and north facing glazing?
3.2 Thermal Comfort - External Shadi Score Contribution Criteria Question	ng 100% This credit contributes 20.0% towards the category score. Is appropriate external shading provided to east, west and north facing glazing? Criteria Achieved ?
3.2 Thermal Comfort - External Shadi Score Contribution Criteria Question Townhouse	ng 100% This credit contributes 20.0% towards the category score. Is appropriate external shading provided to east, west and north facing glazing? Criteria Achieved ? Yes
3.2 Thermal Comfort - External Shadi Score Contribution Criteria Question Townhouse 3.3 Thermal Comfort - Orientation	ng 100% This credit contributes 20.0% towards the category score. Is appropriate external shading provided to east, west and north facing glazing? Criteria Achieved ? Yes 100%
3.2 Thermal Comfort - External Shadi Score Contribution Criteria Question Townhouse 3.3 Thermal Comfort - Orientation Score Contribution	ng 100% This credit contributes 20.0% towards the category score. Is appropriate external shading provided to east, west and north facing glazing? Criteria Achieved ? Yes 100% This credit contributes 20.0% towards the category score.
3.2 Thermal Comfort - External Shadi Score Contribution Criteria Question Townhouse 3.3 Thermal Comfort - Orientation Score Contribution Criteria	ng 100% This credit contributes 20.0% towards the category score. Is appropriate external shading provided to east, west and north facing glazing? Criteria Achieved ? Yes 100% This credit contributes 20.0% towards the category score. Are at least 50% of living areas orientated to the north?
3.2 Thermal Comfort - External Shadi Score Contribution Criteria Question Townhouse 3.3 Thermal Comfort - Orientation Score Contribution Criteria Question	ng 100% This credit contributes 20.0% towards the category score. Is appropriate external shading provided to east, west and north facing glazing? Criteria Achieved ? Yes 100% This credit contributes 20.0% towards the category score. Are at least 50% of living areas orientated to the north? Criteria Achieved ?

Transport Overall contribution 4%

1.1 Bicycle Parking - Residential		100%		
Score Contribution	This credit contributes 50.0% towards the category score).		
Criteria	How many secure and undercover bicycle spaces are the	re per dwe	lling fo	or residents?
Question	Bicycle Spaces Provided ?			
Townhouse	3			
Output	Min Bicycle Spaces Required			
Townhouse	3			
1.2 Bicycle Parking - Residential Visit	tor	N/A	¢	Scoped Out
1.2 Bicycle Parking - Residential Visit This credit was scoped out	tor Not enough dwellings.	N/A	¢	Scoped Out
1.2 Bicycle Parking - Residential Visit This credit was scoped out 2.1 Electric Vehicle Infrastructure	tor Not enough dwellings.	N/A 0%	¢	Scoped Out
 1.2 Bicycle Parking - Residential Visit This credit was scoped out 2.1 Electric Vehicle Infrastructure Score Contribution 	Not enough dwellings. This credit contributes 50.0% towards the category score	N/A 0%	\$	Scoped Out
1.2 Bicycle Parking - Residential Visit This credit was scoped out 2.1 Electric Vehicle Infrastructure Score Contribution Criteria	Not enough dwellings. This credit contributes 50.0% towards the category score Are facilities provided for the charging of electric vehicles	N/A 0% ?	\$	Scoped Out
1.2 Bicycle Parking - Residential Visit This credit was scoped out 2.1 Electric Vehicle Infrastructure Score Contribution Criteria Question	This credit contributes 50.0% towards the category score Are facilities provided for the charging of electric vehicles Criteria Achieved ?	N/A 0% 2. ?	\$ 	Scoped Out

Waste Overall contribution 3%

1.1 - Construction Waste - Building F	Re-Use	0%
Score Contribution	ire.	
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 & Ga	rden Waste	100%
Score Contribution	This credit contributes 50.0% towards the category sco	ire.
Criteria	Are facilities provided for on-site management of food a	and garden waste?
Annotation	Compost bins and internal cabinetry for the fitment of m	nin. four waste streams.
	(Recycle, Red-cycle, Compost/FOGO, Waste)	
Question	Criteria Achieved ?	
Project	Yes	

Urban Ecology Overall contribution 3%

2.1 Vegetation	100%
Score Contribution	This credit contributes 50.0% towards the category score.
Criteria	How much of the site is covered with vegetation, expressed as a percentage of the
	total site area?
Question	Percentage Achieved ?
Project	30 %
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 / C	Courtyard Ecology 100%
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	Yes
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	3 m ²

Innovation Overall contribution 3%

Innovations	
Description:	
Low VOC paint	Low VOC internal and external paint - specified within SDA Report.
Low Embodied Energy Materials	AAC Blocks Post-tensioned concrete slab FSC Approved - Timber frame and structural supports
Points Targeted:	
Low VOC paint	1
Low Embodied Energy Materials	2
1.1 Innovation	30%
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.

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Nationwide House Energy Rating Scheme NatHERS Certificate No.

Generated on 28 Aug 2020 using FirstRate5: 5.3.0a (3.21)

Property

Address Lot/DP NCC Class* Type

Class 1a New Home

Plans

Main plan Prepared by 14566|08.2020 IDS

Construction and environment

Assessed floor area (m³)* Conditioned* 138.5 Unconditioned* 7.1 Total Garage Exposure type suburban NatHERS climate zone 62, GREENSBOROUGH



Accredited assessor

Name Business name Email Phone Accreditation No. Assessor Accrediting Organisation DMN Declaration of interest Decla

Declaration completed: no conflicts

109.7 MJ/m²

more energy efficient

Predicted annual energy load for heating and cooling based on standard occupancy assumptions.

For more information on your dwelling's rating see: www.nathers.gov.au

Thermal performanceHeatingCooling95.913.8MJ/m²MJ/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.

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

The NCC's requirements for NatHERS-rated houses are detailed in 3 12 0(a)(i) and 3 12.5 of the NCC Volume Two. For apartments the requirements are detailed in J0.2 and J5 to J8 of the NCC Volume One.

In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied include, but are not limited to insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply.

* Refer to glossary. Generated on 28 Aug 2020 using FirstRate5: 5.3.0a (3.21) for

Certificate Check

Ensure the dwelling is designed and then built as per the NatHERS Certificate. While you need to check the accuracy of the whole Certificate, the following spot check covers some important items impacting the dwelling's rating.

Genuine certificate

Does this Certificate match the one available at the web address or QR code in the verification box on the front page? Does the set of NatHERS-stamped plans for the dwelling have a Certificate number on the stamp that matches this Certificate?

Ceiling penetrations*

Does the 'number' and 'type' of ceiling penetrations (e.g. downlights, exhaust fans, etc) shown on the stamped plans or installed, match what is shown in this Certificate?

Windows

Does the installed window meet the substitution tolerances (SHGC and U-value) and window type, of the window shown on this Certificate?

Apartment entrance doors

Does the 'External Door Schedule' show apartment entrance doors? Please note that an "external door" between the modelled dwelling and a shared space, such as an enclosed corridor or foyer, should not be included in the assessment (because it overstates the possible ventilation) and would invalidate the Certificate.

Exposure*

Has the appropriate exposure level (terrain) been applied? For example, it is unlikely that a ground-floor apartment is "exposed" or a top floor high-rise apartment is "protected".

Provisional* values

Have provisional values been used in the assessment and, if so, noted in "additional notes" below?

Additional Notes

Window and glazed door type and performance

Default* windows

			and the second	Substitution to	lerance ranges
Window ID	Window description	Maximum U-value*	SHGC*	SHGC lower limit	SHGC upper limit
No Data Availa	ble			4	

Custom* windows

				Substitution tolerance ranges		
Window ID	Window description	Maximum U-value*	SHGC*	SHGC lower limit	SHGC upper limit	
DOW-005-01 A	Manor Awning Window DG 3/12/3	3.9	0.58			
DOW-007-01 A	Sliding Door DG 5-6-5	4.23	0.59			
DOW-015-01 A	Aluminium Fixed Light Window DG 4/12/4	3.59	0.66			

Window and glazed door Schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	shading device*
Bedroom 1	DOW-005-01 A	Opening 1	1800	730	awning	60.0	S	No
Bedroom 1	DOW-005-01 A	Opening 2	1800	730	awning	60.0	s	No
Bedroom 1	DOW-005-01 A	Opening 3	1800	730	awning	60.0	S	No

* Refer to glossary.

Generated on 28 Aug 2020 using FirstRate5: 5.3.0a (3.21) for

6.4 Star Rating as of 28 Aug 2020

Mitch and Mitching	DOUNLOOF OL A	0	4000	700	and the second se	00.0	144	M.
Kitchen/Living	DOV-005-01 A	Opening /	1800	730	awning	60.0	VV	NO
Kitchen/Living	DOW-007-01 A	Opening 6	2400	1810	sliding	30.0	N	No
Kitchen/Living	DOW-005-01 A	Opening 5	1800	3010	awning	20.0	S	No
Kitchen/Living	DOW-015-01 A	Opening 4	2400	600	fixed	0.0	S	No
Bedroom 2	DOW-005-01 A	Opening 30	1540	2410	awning	30.0	w 🧹	No
ENSUITE 2	DOW-005-01 A	Opening 22	1370	730	awning	90.0	E	No
τv	DOW-015-01 A	Opening 23	1340	1210	fixed	0.0	E 1	No
TV	DOW-005-01 A	Opening 29	1540	2410	awning	30.0	w	No
BATH	DOW-005-01 A	Opening 24	1340	730	awning	90.0	E	No
Bedroom 3	DOW-005-01 A	Opening 25	1370	730	awning	90.0	S	No
Bedroom 3	DOW-005-01 A	Opening 26	1370	730	awning	90.0	S	No
Bedroom 3	DOW-005-01 A	Opening 27	1370	730	awning	90.0	S	No
Bedroom 4	DOW-005-01 A	Opening 28	1370	2650	awning	45.0	S	No

Roof window type and performance value

Default*	roof	wind	ows
----------	------	------	-----

		-			Substitution tolerance ranges		
Window ID	Window descriptio	'n	Maximum U-value*	SHGC*	SHGC lov	ver limit S	HGC upper limit
No Data Available					1		
Custom* roof windows					Substi	tution tole	rance ranges
Window ID	Window descriptio	'n	Maximum U-value*	SHGC*	SHGC lov	ver limit	HGC upper limit
No Data Available			-	1			
Location No Data Available	Window ID	Window no.	Opening %	Area 6 (m²)	Orientation	Outdoor shade	Indoor shade
Skylight type a skylight ID	and performance	e	Skylight des	cription	\cup		
No Data Available			-				
Skylight sched	Skylight ID	Skylight No.	Skylight shaft /	Area Orie (m²) atior	nt- Outdoor n shade	Diffuser	Skylight shaft reflectance
No Data Available							
External door Location Kitchen/Living	schedule Heigi 2	ht (mm) 1400	Width (mm) 855		Opening %	Orienta	ation
Garage	2	400	5103		100.0	E	

* Refer to glossary.

Generated on 28 Aug 2020 using FirstRate5: 5.3.0a (3.21) for

Garage		2400	885		100.0 W	
Exteri Wall ID	Mall type		Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap'
1	GENERIC - 75mm HEBEL PANEL	R2.5+	0.5	Medium	Rockwool batt (k = 0.033) (R2.5)	Yes
2	GENERIC - 75mm HEBEL PANEL	RF	0,5	Medium		Yes
And the second sec	and the second se	100		The second se		

External wall schedule

Location	Wall	Height (mm)	Width (mm)	Orientation	feature* maximum	Vertical shading feature (ves/no)
Bedroom 1	1	2700	463	W	2583	Yes
Bedroom 1	1	2700	3714	S	1491	No
Bedroom 1	1	2700	3238	E	496	No
WIR 1	1	2700	2683	E	495	No
WIR 1	1	2700	1309	N	450	Yes
STAIRS	1	2700	1987	E	502	Yes
STAIRS	1	2700	1371	N	502	Yes
Kitchen/Living	1	2700	2495	W	490	Yes
Kitchen/Living	1	2700	2155	N	485	Yes
Kitchen/Living	1	2700	5608	W	450	No
Kitchen/Living	1	2700	5161	S	481 🦿	No
Kitchen/Living	1	2700	461	E	0	Yes
Kitchen/Living	1	2700	1893	S	1955	No
Garage	2	2700	5485	E	478	Yes
Garage	2	2700	6024	Ν	474	No
Garage	2	2700	5485	w	489	Yes
Bedroom 2	3	2550	3489	N	454	No
Bedroom 2	3	2550	4482	W	417	Yes
ENSUITE 2	3	2550	2475	E	449	Yes
ENSUITE 2	3	2550	1872	N	450	No
TV	3	2550	1987	E	450	Yes
TV	3	2550	1685	N	450	Yes
TV	3	2550	995	E	450	Yes
TV	3	2550	2912	w	416	Yes
BATH	3	2550	2381	E	450	No
BATH	3	2550	765	N	450	Yes
Bedroom 3	3	2550	601	w	450	Yes
Bedroom 3	3	2550	4739	S	450	No
Bedroom 3	3	2550	3051	E	450	No

* Refer to glossary. Generated on 28 Aug 2020 using FirstRate5: 5.3.0a (3.21) for

6.4 Star Rating as of 28 Aug 2020

Bedroom 4	3	2550	761	N	450	Yes
Bedroom 4	3	2550	3028	W	450	No
Bedroom 4	3	2550	3813	S	375	Yes

Internal wall type

Wall ID	Wall type	Area (m ²) Bulk insulation	
1	FR5 - Internal Plasterboard Stud Wall	86.3	
2	FR5 - Internal Plasterboard Stud Wall	39.8 Glass fibre batt: R2.5 (R2.5)	

Floor type

Location	Construction	Area (m²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Bedroom 1	KASS - CSOG: Slab on Ground	9.3	Enclosed	R0.0	Carpet
Bedroom 1	KASS - CSOG: Slab on Ground	2.7	Enclosed	R0.0	Carpet
WIR 1	KASS - CSOG: Slab on Ground	2.7	Enclosed	R0.0	Carpet
WIR 1	KASS - CSOG: Slab on Ground	1.2	Enclosed	R0.0	Carpet
BATH	KASS - CSOG: Slab on Ground	5.7	Enclosed	R0.0	Tiles
STAIRS	KASS - CSOG: Slab on Ground	4.4	Enclosed	R0.0	Timber
Kitchen/Living	KASS - CSOG: Slab on Ground	14	Enclosed	R0.0	Timber
Kitchen/Living	KASS - CSOG: Slab on Ground	35.2	Enclosed	R0.0	Timber
Garage	KASS - CSOG: Slab on Ground	22	Enclosed	R0.0	none
Garage	KASS - CSOG: Slab on Ground	13	Enclosed	R0.0	none
Bedroom 2	FR5 - Timber Lined	15.6	Enclosed	R2.5	Carpet
ENSUITE 2	FR5 - Timber Lined	4.6	Enclosed	R2.5	Tiles
TV	FR5 - Timber Lined	3	Enclosed	R2.5	Carpet
TV	FR5 - Timber Lined	19.4	Enclosed	R0.0	Carpet
BATH	FR5 - Timber Lined	7.1	Enclosed	R0.0	Tiles
Bedroom 3	FR5 - Timber Lined	14.5	Enclosed	R0.0	Carpet
Bedroom 4	FR5 - Timber Lined	11.8	Enclosed	R0.0	Carpet

Ceiling type

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Bedroom 1	FR5 - Timber Lined	R0.0	No
Bedroom 1	Plasterboard	R5.0	No
WIR 1	FR5 - Timber Lined	R0.0	No
WIR 1	Plasterboard	R5.0	No
BATH	FR5 - Timber Lined	R0.0	No
STAIRS	FR5 - Timber Lined	R0.0	No
Kitchen/Living	Plasterboard	R5.0	No
Kitchen/Living	FR5 - Timber Lined	R2.5	No
Kitchen/Living	FR5 - Timber Lined	R0.0	No
Garage	FR5 - Timber Lined	R2.5	No

* Refer to glossary.

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6.4 Star Rating as of 28 Aug 2020

Garage	Plasterboard		R5.0	No
Bedroom 2	Plasterboard		R5.0	No
ENSUITE 2	Plasterboard	-	R5.0	No
TV	Plasterboard		R5.0	No
TV	Plasterboard		R5.0	No
BATH	Plasterboard		R5.0	No
Bedroom 3	Plasterboard		R5.0	No
Bedroom 4	Plasterboard		R5.0	No

Ceiling penetrations*

Location	Quantity	Туре	Diameter (mm)	Sealed/unsealed
BATH	1	Exhaust Fans	150	Sealed
Kitchen/Living	2	Exhaust Fans	150	Sealed
ENSUITE 2	1	Exhaust Fans	150	Sealed
BATH	1	Exhaust Fans	150	Sealed

Ceiling fans

Location	Quantity	Diameter (mm)
No Data Available		

Roof type

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
Disc:Attic-Discontinuous	0.0	0.8	Dark

6.4 Star Rating as of 28 Aug 2020

Explanatory Notes

About this report

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Roof window	for NatHERS this is typically an operable window (i.e. can be opened), will have a plaster or similar light well if there is an attic space, and generally does not have a diffuser.
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Skylight (also known as roof lights)	for NatHERS this is typically a moulded unit with flexible reflective tubing (light well) and a diffuser at ceiling level.
U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
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Nationwide House Energy Rating Scheme NatHERS Certificate No.

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Property

Address Lot/DP NCC Class* Type

Class 1a New Home

Plans

Main plan Prepared by 14566j08.2020

Construction and environment

Assessed floor area (m²)* Conditioned* 116.4 Unconditioned* 9.1 Total 160.6 Garage 35.1 Exposure type suburban NatHERS climate zone 62, GREENSBOROUGH



Accredited assessor

Name Business name Email Phone Accreditation No. Assessor Accrediting Organisation DMN Declaration of interest Decla

Declaration completed: no conflicts

104.6 MJ/m²

the more energy efficien

Predicted annual energy load for heating and cooling based on standard occupancy assumptions

For more information on your dwelling's rating see: www.nathers.gov.au

Thermal performanceHeatingCooling90.713.9MJ/m²MJ/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.

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

The NCC's requirements for NatHERS-rated houses are detailed in 3 12.0(a)(i) and 3 12.5 of the NCC Volume Two. For apartments the requirements are detailed in J0.2 and J5 to J8 of the NCC Volume One.

In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied include, but are not limited to insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply

* Refer to glossary. Generated on 28 Aug 2020 using FirstRate5: 5.3.0a (3.21) for

Certificate Check

Ensure the dwelling is designed and then built as per the NatHERS Certificate. While you need to check the accuracy of the whole Certificate, the following spot check covers some important items impacting the dwelling's rating.

Genuine certificate

Does this Certificate match the one available at the web address or QR code in the verification box on the front page? Does the set of NatHERS-stamped plans for the dwelling have a Certificate number on the stamp that matches this Certificate?

Ceiling penetrations*

Does the 'number' and 'type' of ceiling penetrations (e.g. downlights, exhaust fans, etc) shown on the stamped plans or installed, match what is shown in this Certificate?

Windows

Does the installed window meet the substitution tolerances (SHGC and U-value) and window type, of the window shown on this Certificate?

Apartment entrance doors

Does the 'External Door Schedule' show apartment entrance doors? Please note that an "external door" between the modelled dwelling and a shared space, such as an enclosed corridor or foyer, should not be included in the assessment (because it overstates the possible ventilation) and would invalidate the Certificate.

Exposure*

Has the appropriate exposure level (terrain) been applied? For example, it is unlikely that a ground-floor apartment is "exposed" or a top floor high-rise apartment is "protected".

Provisional* values

Have provisional values been used in the assessment and, if so, noted in "additional notes" below?

Additional Notes

Window and glazed door type and performance

Default* windows

h			and the second	Substitution tolerance ranges		
Window ID	ow ID Window description U-value* S		SHGC*	SHGC lower limit	SHGC upper limit	
No Data Availa	able			4		

Custom* windows

				Substitution tolerance ranges		
Window ID	Window description	Maximum U-value*	SHGC*	SHGC lower limit	SHGC upper limit	
DOW-007-01 A	Sliding Door DG 5-6-5	4.23	0.59			
DOW-005-01 A	Manor Awning Window DG 3/12/3	3.9	0.58			
DOW-018-01 A	Aluminium Sliding Window DG 4/8/4	4.2	0.62			
DOW-015-01 A	Aluminium Fixed Light Window DG 4/12/4	3.59	0.66			

Window and glazed door Schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	shading device*	
Kitchen/Living	DOW-007-01 A	Opening 9	2400	1810	sliding	30.0	N	No	À
Kitchen/Living	DOW-005-01 A	Opening 8	1800	3010	awning	20.0	E	No	1

* Refer to glossary.

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PDR	DOW-005-01 A	Opening 10	1800	730	awning	60.0	w	No
Bedroom 1	DOW-005-01 A	Opening 19	1370	2650	awning	45.0	E	No
Bedroom 1	DOW-018-01 A	Opening 18	600	2170	sliding	45.0	N	No
WIR 1	DOW-005-01 A	Opening 17	1540	730	awning	60.0	w	No
ENSUITE	DOW-005-01 A	Opening 16	1540	730	awning	60.0	w 🧹	No
BATH	DOW-005-01 A	Opening 15	1540	730	awning	60.0	w	No
Bedroom 2	DOW-005-01 A	Opening 14	1540	2650	awning	30.0	w	No
Bedroom 2	DOW-018-01 A	Opening 13	600	2170	sliding	45.0	S	No
Bedroom 3	DOW-005-01 A	Opening 11	1340	730	awning	90.0	E	No
Bedroom 3	DOW-005-01 A	Opening 12	1340	730	awning	90.0	E	No
WIR 3	DOW-005-01 A	Opening 21	1340	730	awning	90.0	E	No
LANDING	DOW-015-01 A	Opening 20	1340	730	fixed	0.0	E	No

Roof window type and performance value

Default* roof windows

		substitution tolerance ranges
Window ID Window description	Maximum U-value* SHGC	SHGC lower limit SHGC upper limit
No Data Available		
Custom* roof windows		Substitution tolerance ranges
Window ID Window description	Maximum U-value* SHGC	SHGC lower limit SHGC upper limit
No Data Available		
Roof window schedule	Area	Outdoor Indoor
Location Window ID Window	v no Opening % (m²)	Orientation shade shade

Louisen	and the second s	thind of the	opening /e	()	enemation	onnado	_
No Data Available							
-	100 Dill	10					_

Skylight type and performance

Skylight ID	Skylight description	
No Data Available		

Skylight schedule

		Skylight	Skylight shaft	Area Orient-	Outdoor		Skylight shaft
Location	Skylight ID	No.	length (mm)	(m²) ation	shade	Diffuser	reflectance
No Data Available		1000					

External door schedule

Location	Height (mm)	Width (mm)	Opening %	Orientation
Kitchen/Living	2400	968	100.0	E
Garage	2400	5110	100.0	E
Garage	2400	857	100.0	W

* Refer to glossary.

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External wall type

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	GENERIC - 75mm HEBEL PANEL R2	2.5+ 0.5	Medium	Rockwool batt (k = 0.033) (R2.5)	Yes
2	GENERIC - 75mm HEBEL PANEL RF	= 0.5	Medium		Yes
3	GENERIC - Weatherboard R2.0	0.5	Medium	Glass fibre batt: R2.5 (R2.5)	Yes

External wall schedule

Location	Wali ID	Height (mm)	Width (mm)	Orientation	feature* maximum projection (mm)	Vertical shading feature (yes/no)
Kitchen/Living	1	2700	2143	N	492	Yes
Kitchen/Living	1	2700	5484	W	450	No
Kitchen/Living	1	2700	9121	S	450	No
Kitchen/Living	1	2700	4007	E	1350	No
Kitchen/Living	1	2700	372	Ν	2487	Yes
Kitchen/Living	1	2700	1478	E	1722	No
STAIRS	1	2700	1991	E	543	No
STAIRS	1	2700	570	N	450	Yes
PDR	1	2700	1989	W	452	Yes
Garage	2	2700	5484	E	450	Yes
Garage	2	2700	6040	N	450	No
Garage	2	2700	5485	W	450	Yes
Bedroom 1	3	2550	4485	E	450	Yes
Bedroom 1	3	2550	3373	N	450	No
WIR 1	3	2550	1874	N	0	No
WIR 1	3	2550	1989	w	450	Yes
ENSUITE	3	2550	2381	w	450	Yes
BATH	3	2550	2430	W	451	Yes
Bedroom 2	3	2550	714	N	450	Yes
Bedroom 2	3	2550	4323	w	450	No
Bedroom 2	3	2550	3579	S	450	Yes
Bedroom 3	3	2550	3328	S	451	Yes
Bedroom 3	3	2550	3236	E	450	Yes
WIR 3	3	2550	1434	E	452	Yes
LANDING	3	2550	1991	E	453	Yes
LANDING	3	2550	945	N	450	Yes

Internal wall type

Wall ID	Wall type	Area (m ²) Bulk insulation	
1	FR5 - Internal Plasterboard Stud Wall	67.7	

6.6 Star Rating as of 28 Aug 2020

2 FR5 - Internal Plasterboard Stud Wall

49.5 Glass fibre batt: R2.5 (R2.5)

FI	0	0	r	ty	/p	е

Location	Construction	Area (m²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Kitchen/Living	KASS - CSOG: Slab on Ground	14.9	Enclosed	R0.0	Timber
Kitchen/Living	KASS - CSOG: Slab on Ground	34.6	Enclosed	R0.0	Timber
STAIRS	KASS - CSOG: Slab on Ground	4.5	Enclosed	R0.0	Timber
LDRY	KASS - CSOG: Slab on Ground	4	Enclosed	R0.0	Tiles
PDR	KASS - CSOG: Slab on Ground	0.4	Enclosed	R0.0	Tiles
PDR	KASS - CSOG: Slab on Ground	1.8	Enclosed	R0.0	Tiles
Garage	KASS - CSOG: Slab on Ground	27.2	Enclosed	R0.0	none
Garage	KASS - CSOG: Slab on Ground	7.9	Enclosed	R0.0	none
Bedroom 1	FR5 - Timber Lined	15.1	Enclosed	R2.5	Carpet
WIR 1	FR5 - Timber Lined	3.7	Enclosed	R2.5	Carpet
ENSUITE	FR5 - Timber Lined	4.5	Enclosed	R2.5	Tiles
BATH	FR5 - Timber Lined	7	Enclosed	R0.0	Tiles
Bedroom 2	FR5 - Timber Lined	15.5	Enclosed	R0.0	Carpet
Bedroom 3	FR5 - Timber Lined	10.8	Enclosed	R0.0	Carpet
WIR 3	FR5 - Timber Lined	3.2	Enclosed	R0.0	Carpet
LANDING	FR5 - Timber Lined	8.1	Enclosed	R0.0	Carpet

Ceiling type

Location	Construction material/type	Bulk insulation R-value (ma include edge batt values)	y Reflective wrap*
Kitchen/Living	Plasterboard	R5.0	No
Kitchen/Living	FR5 - Timber Lined	R0.0	No
STAIRS	FR5 - Timber Lined	R0.0	No
LDRY	FR5 - Timber Lined	R0.0	No
PDR	FR5 - Timber Lined	R0.0	No
Garage	FR5 - Timber Lined	R2.5	No
Garage	FR5 - Timber Lined	R0.0	No
Garage	Plasterboard	R5.0	No
Bedroom 1	Plasterboard	R5.0	No
WIR 1	Plasterboard	R5.0	No
ENSUITE	Plasterboard	R5.0	No
BATH	Plasterboard	R5.0	No
Bedroom 2	Plasterboard	R5.0	No
Bedroom 3	Plasterboard	R5.0	No
WIR 3	Plasterboard	R5.0	No
	Plasterboard	R5.0	No

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Ceiling penetrations*	Quantity	Type	Diameter (mn	a) Sealed/unsealed
Kitchen/Living	1	Exhaust Fans	150	Sealed
LDRY	1	Exhaust Fans	150	Sealed
PDR		Exhaust Fans	150	Sealed
INSUITE	1	Exhaust Fans	150	Sealed
АТН		Exhaust Fans	150	Sealed
		Exhaustrans	150	ocalcu
eiling fans				
ocation	Quantity	1	Diam	eter (mm)
lo Data Available				
				1
loof type				-
onstruction	Added insulation (R-	value) Sola	r absorptance	Roof shade
isc:Attic-Discontinuous	0.0		0.8	Dark
				$\mathbf{\nabla}$
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	6			1
		-		
				-
Refer to glossary.				Page 6 of

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