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Sustainable Management Plan

52 Golf Road, Oakleigh South

Reference: SH107607_V1

Date: 3 June 2020

Assessment of:

Proposed Townhouse Development
52 Golf Road, Oakleigh South VIC 3167

Report commissioned by:

Golf Road Project Development Pty Ltd

Responsible authority:

Monash City Council

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Applicable:

This document is applicable only for the proposed residential development at 52 Golf Road, Oakleigh South and the following beneficiaries:

- Foundry Projects/Plus architecture/ Property developer
- Consultants engaged by the developer for the traffic and other services
- Planning Permit Authority /Council's internal waste services team

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Executive Summary

SUHO has been engaged by Golf Road Project Development Pty Ltd to provide a **Sustainable Management Plan (SMP)** for the proposed townhouse development at 52 Golf Road, Oakleigh South VIC 3167.

The development is within the jurisdiction of the City of Monash, and for a development of this size, the council requires an SMP to be produced as part of its planning approval process. The requirements for an SMP are detailed on the Monash City Council website.

The BESS (Built Environment Sustainability Scorecard) has been used to quantify all sustainable design criteria, with the exception of building materials. BESS is an online sustainability assessment tool purpose built for Sustainable Design Assessment in the Planning Process (SDAPP). The report summarises the sustainable design initiatives being incorporated in the proposed development and benchmarks them against industry best practice. The following table provides a summary of the BESS assessment targets and results for this project.

Categories	Minimum required	Category score	Weighting	Overall Contribution	Compliance Achieved?
Management	-	83%	4.5%	4%	-
Water	50%	71%	9.0%	6%	YES
Energy	50%	58%	27.5%	16%	YES
Stormwater	100%	100%	13.5%	14%	YES
Indoor Environment Quality (IEQ)	50%	67%	16.5%	8%	YES
Transport	-	66%	9.0%	6%	-
Waste Management	-	50%	5.5%	3%	-
Urban Ecology	-	62%	5.5%	3%	-
Innovation	-	90%	9.0%	8%	-
Overall BESS Score	50%	-	100%	68%	YES

Based on the above results, the project achieves all the requirements under the BESS assessment. This report represents a complete Sustainable Management Plan of the proposed development.

Key sustainable design strategies considered in the development include:

- Gas instantaneous hot water systems to all dwellings;
- 3 star rated efficient reverse cycle air conditioning;
- Installation of efficient water fixtures to minimise potable water consumption;
- Communal garden with composting facilities to manage food and garden organics;
- A 2,000L rainwater harvesting tank for each dwelling (except Type TH04 and TH07) plumbed to all WC's for toilet flushing and landscape irrigation, Type TH04 and TH07 will have communal rainwater tanks plumbed to all WC's for toilet flushing and landscape irrigation. Additionally, a series of stormwater pits providing treatment equivalent to 12m² of raingardens to treat the rainwater collected from the main driveway in the development;
- Low/ultra-low VOC paints, adhesives and sealants, and low formaldehyde wood products (e.g. E0/Super E0 MDF and plywood);
- Resident and visitor bicycle parking spaces, and shared electric bicycle facilities, charging stations, and a public bike repair station (including pump, tire lever, Allen keys and screw drivers); and
- Electric vehicle charging bays for residents and the broader community.



1.0 Project Overview

The proposed townhouse development at 52 Golf Road, Oakleigh South covered by this SMP consists of 86 townhouses comprised of a combination of 2, 3 and 4 bedrooms.

Site Area		18,257 m ²
	Qty	Bedrooms
2 bedroom dwellings	20	40
3 bedroom dwellings	24	72
4 bedroom dwellings	42	168
Total	86	280

The following site plan indicates the location of the site.



Locality view of the subject site

1.1 Assessment and Documentation

This report is based on the following.

- Project discussions and email correspondences with the project team
- The architectural drawing set issued to us dated 01/06/2020
- The following architectural drawing set:

Drawing	Description	Rev	Date
4.01 - 4.03	Updated Master Plans	2	29/05/2020
4.04 - 4.14	TH Types Update	2	29/01/2020

To quantify the project’s sustainability performance against an industry benchmark, this report uses the Built Environment Sustainability Scorecard (BESS), released by CASBE to support the Sustainable Design Assessment in the Planning Process (SDAPP) program.

BESS assesses overall environmental sustainability performance of building projects. It was created to assist builders and developers to demonstrate that they meet sustainability best practice standards as part of planning permit applications.

As part of the BESS assessment, we have used FirstRate5 for the dwellings’ NatHERS ratings and Melbourne Water’s STORM calculator to assess stormwater. Results from both FirstRate5 and STORM were entered into BESS to support the assessment.

1.1 Sustainability Categories

This SMP addresses the 10 sustainability categories in line with the requirements of the Sustainable Design Assessment in the Planning Process (SDAPP) scheme, noted in the table below.

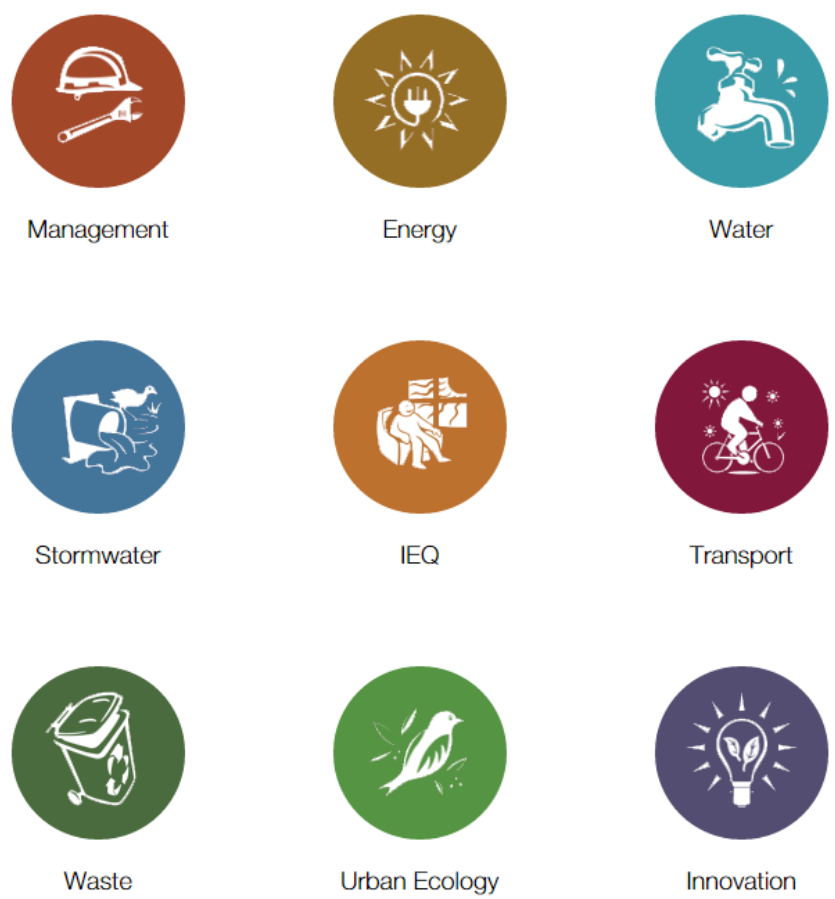
	SDAPP ESD Categories	Benchmark
1	Energy Efficiency	BESS (mandatory 50%)
2	Water Efficiency	BESS (mandatory 50%)
3	Stormwater Management	BESS (mandatory 100%)
4	Indoor Environment Quality (IEQ)	BESS (mandatory 50%)
5	Waste Management	BESS
6	Transport	BESS
7	Innovation	BESS
8	Construction & Building Management	BESS
9	Urban Ecology	BESS
10	Building Materials	Industry Best Practice



For this assessment, categories 1 to 9 have been assessed using the BESS tool while the 10th category, Building Material, has been assessed against industry best practice standards. As noted above, the BESS tool sets out minimum standards to achieve compliance for the four major categories:

- Energy
- Water
- Stormwater (100%)
- Indoor Environment Quality (IEQ)

To comply, the development must achieve a minimum score of 50% in the categories mentioned above.



BESS Categories



2.0 ESD Features

The following is a summary of the ESD initiatives included in each of the BESS benchmark categories, as well as the scores obtained in the rating. Calculations for NatHERS energy ratings and STORM assessment have been undertaken by SUHO.

2.1 Management

The following describes items relating to building management that this project has committed to. These are recognised by the BESS tool as leading to improved environmental sustainability outcomes.

BESS Credit	Management Initiatives	Responsibility
1.1	An ESD professional has been engaged to provide sustainability advice from schematic design to construction.	Builder
2.2	Preliminary NatHERS assessment has been undertaken for all thermally unique dwellings.	ESD Consultant
Final Management Score		83%

2.2 Water Efficiency

The BESS result for mains water use is 71%, which exceeds the minimum required in this category. To achieve this rating, high efficiency fixtures were used throughout the development. The following is a summary of the water efficiency features that lead to this result:

BESS Credit	Water Efficiency Features	Responsibility
1.1	To ensure the efficient use of water and thereby reduce total operating potable water use, fixtures & fittings will have high efficiency WELS ratings:	Builder
	- 3 star WELS showerheads (4.5 – 6.0 L/min)	
	- Medium sized contemporary baths	
	- 6 star WELS kitchen & bathroom taps	
	- 4 star WELS toilets	
2.1	- 5 star WELS dishwashers	Builder
	A 2,000L rainwater harvesting tank for each dwelling (except Type TH04 and TH07) plumbed to all WC's for toilet flushing and landscape irrigation, Type TH04 and TH07 will have communal rainwater tanks (Minimum 36,000L and 34,000L) plumbed to all WC's for toilet flushing and landscape irrigation.	
3.1	Water efficient landscaping will be installed in the development. Drought tolerant or low water demand plants (e.g. native Victorian species) along with water efficient system (e.g. sub-surface drip) will be used.	Builder
Final Water Score		71%



2.3 Energy Efficiency

Below is a summary of the energy efficiency features & specifications for the building. Generally, the strategy includes high efficiency building fabric & design for thermal comfort. The energy consumption is further reduced through selection of efficient building services. The above has yielded a result for 58% for this category.

BESS Credit	Energy Efficiency Features	Responsibility
1.2, 2.1, 2.3, 3.2	- 3-star reverse cycle split systems for heating and cooling	Builder
	- Gas instantaneous hot water systems	
	- Average NatHERS weighted star rating of 6.6 has been modelled for all thermally unique dwellings	ESD Consultant
	- Concrete slab on-ground	Builder
	- Min. R2.5 added insulation to all external walls	
	- Min. R2.0 added insulation to all walls between the conditioned and unconditioned zones	
	- Min. R5.0 (2 x R2.5) to all party walls	
	- Min. R6.0 added insulation to all ceilings and exposed roof	
	- Min. R2.0 added insulation to exposed floors	
	- High performance double glazed clear windows with aluminum frames in the development: Townhouse types 01, 02, 03 U-value ≤ 2.91 and SHGC = $0.58 \pm 10\%$ Townhouse types 04, 05, 06, 07 U value ≤ 2.62 and SHGC = $0.46 \pm 10\%$	
3.3	External lighting throughout the development will be controlled by motion detectors.	
3.4	A private outdoor clothes line will be provided to each dwelling.	
3.5	The development will achieve a maximum illumination power density of 4W/m ² or less.	
Final Energy Score		58%



2.3.1 NatHERS Ratings

As mentioned above, NatHERS ratings have been completed for all thermally similar dwellings. On this occasion, seven townhouses were modelled (one for each type). The building fabric specifications for the dwellings has been summarised in the table above under Energy Efficiency. The dwellings assessed and results entered in the BESS calculator are listed in the table below.

Dwelling Type	No. of dwellings in the group	Heating Load (MJ/m ²)	Cooling Load (MJ/m ²)	Total Load (MJ/m ²)	Star Rating
TH01	10	82.1	14.5	96.6	6.8
TH02	17	79.6	31.6	111.2	6.6
TH03	16	72.2	5.4	77.6	7.4
TH04	18	82.8	38.9	121.7	6.1
TH05	2	94	20.7	114.7	6.3
TH06	7	106	13.9	119.9	6.1
TH07	20	80.7	32.1	112.8	6.4
Average (weighted)					6.6

This indicates that the dwellings will comfortably achieve the required 6.0 stars or better (minimum NCC 2016 Section 3.12 compliance) at the building permit stage.



2.4 Stormwater Management

Melbourne Water has developed the STORM calculator to provide an assessment of the rainwater/stormwater treatment methods and design score. This calculator assesses quality and quantity of the stormwater runoff from the development.

Based on the assumptions in this report, the project achieves a 100% score in this category through the use of rainwater harvesting tanks of 2,000L to each dwelling, plumbed to all toilets. Additionally, a series of stormwater pits providing treatment equivalent to 12m² of 300mm deep raingarden serving a partial area of the driveway (approximately 2100m²) is required. Note that this SMP outlines the minimum performance requirements only. The exact details of impermeable areas (other than roof) that will be treated will be finalised in the next phase of the design once the civil engineers are engaged.

Surface	Area [m ²]	Stormwater Treatment
Combined roof area (of 86 dwellings)	7500	<ul style="list-style-type: none"> A 2,000L rainwater harvesting tank for each dwelling (except Type TH04 and TH07) plumbed to all WC's for toilet flushing and landscape irrigation, Type TH04 and TH07 will have communal rainwater tanks (Minimum 36,000L and 34,000L) plumbed to all WC's for toilet flushing and landscape irrigation.
Hard surface (driveway)	2,100.0	A series of stormwater pits equivalent to 12m ² of raingarden
Hard surface (driveway)	1800.0	None
Balconies	388.0	None
Permeable Area	6127.2	n/a-
Final STORM rating		100%

Please note that the above is subject to final drainage/civil/hydraulic design and location of the legal point of stormwater discharge. The full civil and hydraulic design and drainage plan will be carried out by the engineering consultants at the design development phase.

BESS Credit	Stormwater Management Features	Responsibility
1.1	<p>100% stormwater rating can be achieved through the following treatment:</p> <ul style="list-style-type: none"> A 2,000L rainwater harvesting tank for each dwelling (except Type TH04 and TH07) plumbed to all WC's for toilet flushing and landscape irrigation, Type TH04 and TH07 will have communal rainwater tanks (Minimum 36,000L and 34,000L) plumbed to all WC's for toilet flushing and landscape irrigation. A series of stormwater pits providing treatment equivalent to a total of 12m² of raingarden with 300mm detention depth treating runoff collected from a partial area of driveway (approximately 2,100m²) 	Builder
Final Stormwater Score		100%



The result of the stormwater assessment conducted is as per below:



STORM Rating Report

TransactionID: 968884
 Municipality: MONASH
 Rainfall Station: MONASH
 Address: 52 Golf Road
 Oakleigh South
 VIC 3167
 Assessor: SUHO
 Development Type: Residential - Subdivision
 Allotment Site (m2): 18,257.00
 STORM Rating %: 100

Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
Roof 1	2,500.00	Rainwater Tank	57,000.00	100	129.60	80.50
Roof 2	2,500.00	Rainwater Tank	57,000.00	100	129.60	80.50
Roof 3	2,500.00	Rainwater Tank	57,000.00	100	129.60	80.50
Hard surface	2,100.00	Raingarden 300mm	12.00	0	100.40	0.00
Hard surface untreated	1,800.00	None	0.00	0	0.00	0.00
Balcony	388.00	None	0.00	0	0.00	0.00

Notes:

1. A total roof area of 7,500 m² has been considered for STORM calculation. A 2,000L rainwater harvesting tank for each dwelling (except Type TH04 and TH07) plumbed to all WC's for toilet flushing and landscape irrigation, Type TH04 and TH07 will have communal rainwater tanks (Minimum 36,000L and 34,000L) plumbed to all WC's for toilet flushing and landscape irrigation. This adds up to a combined rainwater tank capacity of minimum 172,000L. This combined roof area and rainwater harvesting tank capacity has been divided in 3 equal parts to suit the STORM calculator.
2. From the total impermeable area of 3,900.0 m² on site, a minimum area of 2,100m² needs to be treated by a series of stormwater pits providing treatment equivalent to 12m² of raingarden with 300mm detention depth. A specific area that will be treated by the proposed treatment method (stormwater pits) has not been marked on the plan at this stage. This will be decided by the drainage engineer at a later stage.



Below is a markup of the relevant areas indicated what has been calculated as permeable/impermeable areas and their treatment:



LEGEND

- Roof - 7500 sqm - to RWT
- Impermeable areas - 3900.0 sqm (partially treated with 12 sqm raingarden or equivalent)
- Vegetation areas

Site permeability of the proposed development

2.4.1 Rain Water Harvesting Maintenance Plan

Implementation of the maintenance program will be the responsibility of the owner's corporation and the requirements are as follows:

1. Roofs to be inspected routinely to ensure they are kept free of debris and leaves. Pruning of surrounding vegetation and overhanging trees may be required to reduce the amount of debris on the roof.
2. If applicable, first flush devices to be inspected and, if required, cleaned every 3 to 6 months.
3. Screens at inlet and overflow points from the tank to be inspected regularly (every 6 months) to ensure they are not blocked and fouling the flow of water into the tank(s).
4. Investigate tank cleaning methods prior to purchase. Generally, water colour and smell is only an issue when tank water levels are low and output water is being drawn from where the sludge level is. Sludge will accumulate in the tanks over time. The sludge layer and biofilms on the tank walls are part of the purification process occurring within the tank, so the sludge should only be removed when it is affecting the colour or smell of the tank output water excessively. Professional tank cleaners can be used if the sludge is affecting operation but cleaning requirements and implications will vary according to tank type.
5. Pumping systems to be maintained according to manufacturers' specifications.

2.4.2 Stormwater Pit Maintenance Plan

Stormwater pits have a low-cost maintenance cycle. Also, their performance does not degrade in the long term.

1. Clean grate and sediment trap annually.
2. Replace media cartridge every 4 years.

2.5 Indoor Environment Quality

Below is a summary of the building’s performance against indoor environment quality benchmarks. The dwellings layouts and glazed facades deliver good access to natural light and fresh air. The table below outlines the categories against the BESS benchmark.

BESS Credit	Indoor Environment Quality Performance & Features	Responsibility
3.1	Double glazing will be used to all the habitable rooms in the development.	ESD Consultant & Architect
Final IEQ Score		50%

In addition to the above, the following will be considered in the development to provide an improved indoor environment quality in the dwellings:

- Good levels of daylight by good space layout and appropriately-sized untinted double glazing.
- Acoustic separation between dwellings and within dwellings.
- Good lighting design with the right Colour Rendering Index (CRI), optimum lighting contrast, feature/wall washing lighting, and localised lighting control.
- Low/ultra-low VOC paints, adhesives, sealants and carpets, as well as low formaldehyde wood products (e.g. E0/Super E0 MDF and plywood) will be used in the development. These are also described in detail in Section 2.9 Building materials of this report.

2.6 Transport

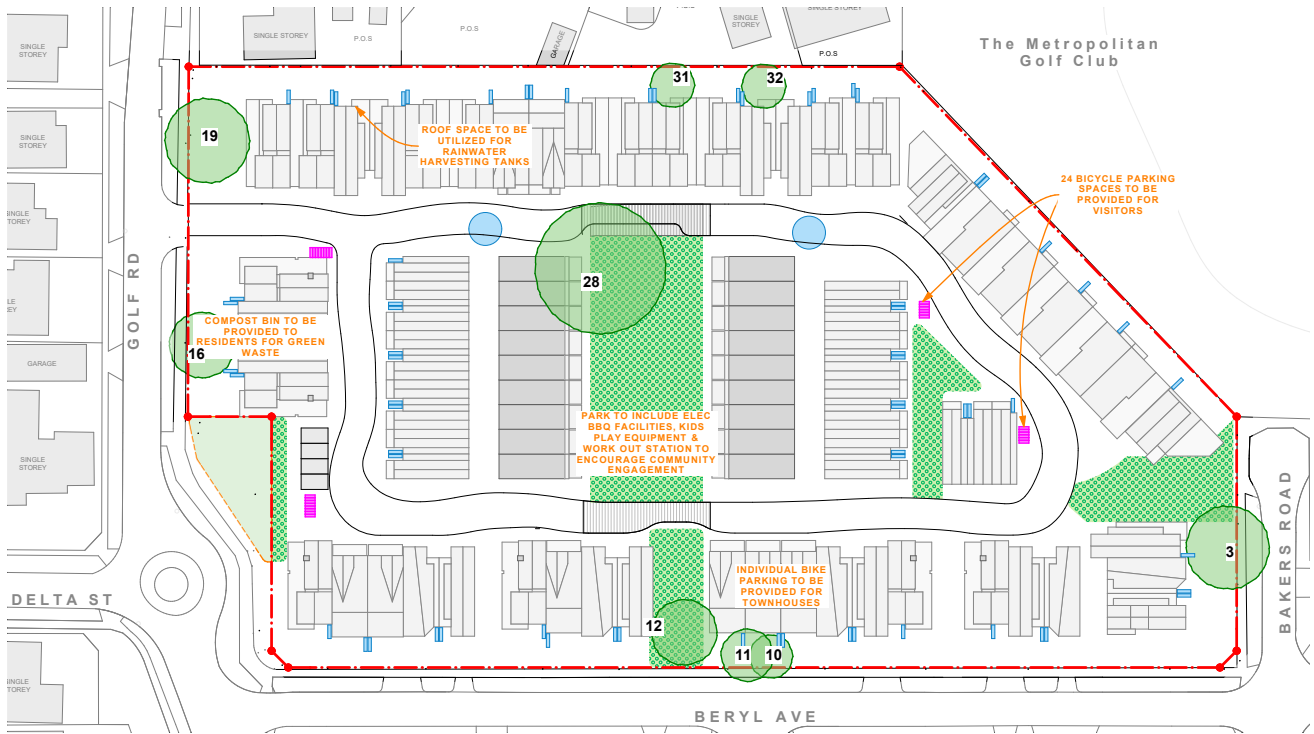
The following credits under Transport category have been targeted for the project.

BESS Credit	Transport Features	Responsibility
1.1	1 bicycle parking space will be provided for each dwelling.	Builder
1.2	24 bicycle parking spaces for the visitors will be provided in the development.	
Final Transport Score		66%

Additionally, the development can include the following to the above:

- Electric bicycles and public bike repair station including pump, tire lever, Allen keys and screwdrivers.
- Electric vehicle charging bay for residents and broader community. This service can be free for residents.





Drawing indicating location of visitor bicycle parking

2.7 Waste Management

The following BESS credits for waste management have been targeted.

BESS Credit	Waste Features	Responsibility
2.1	Facilities are provided for on-site management of food and garden waste. This will be achieved with community garden and composting facilities.	Builder
Final Waste Score		50%

Additionally, the following are considered for better waste management during different stages of the development:

- The development will make a commitment to divert 90% of Construction and Demolition waste from landfill, either through recycling or reusing.
- Waste bins will be provided for each dwelling individually. Bins will be provided for garbage, commingled recycling and green waste for the convenience of residents. This operation waste management has been detailed out in a separate WMP (Waste Management Plan) prepared by SUHO for the development.
- Bins for e-waste including batteries, print cartridges and mobile phone are also considered at this stage.

2.8 Urban Ecology

Below is a summary of the relevant BESS credits:

BESS Credit	Urban Ecology Features	Responsibility
2.1	Over 30% of site area is covered with natural vegetation.	Builder
2.4	A tap and floor waste will be provided to balconies and a tap to the courtyards.	
Final Urban Ecology Score		62%

2.9 Building Materials

BESS does not include a category dealing with sustainable building materials. As such, the project has reverted to the Green Star TVOC Content Limit requirements. The following materials will comply with the TVOC Content specified in table below:

- Low/ ultra-low VOC paints, adhesives and sealants
- Low formaldehyde wood products (e.g. E0/Super E0 MDF and plywood).

Product Category	TVOC Limit [g/L]*
General purpose adhesives	50
Interior wall and ceiling paint, all sheen levels	16
Trim, varnishes and wood stains	75
Primers, sealers and prep coats	65
One and two pack performance coatings for floors	140
Acoustic sealants, architectural sealant, waterproofing membranes and sealant, fire retardant sealants and adhesives	250
Structural glazing adhesive, wood flooring and laminate adhesives and sealants	100

Test Protocol	Emission Limit/ Unit of Measurement
AS/NZS 2269:2004, testing procedure AS/NZS 2098.11:2005 method 10 for Plywood	≤1mg/ L
AS/NZS 1859.1:2004 - Particle Board, with use of testing procedure AS/NZS 4266.16:2004 method 16	≤1.5 mg/L
AS/NZS 1859.2:2004 - MDF, with use of testing procedure AS/NZS 4266.16:2004 method 16	≤1mg/ L
AS/NZS 4357.4 - Laminated Veneer Lumber (LVL)	≤1mg/ L
Japanese Agricultural Standard MAFF Notification No.701 Appendix Clause 3 (11) - LVL	≤1mg/ L
JIS A 5908:2003- Particle Board and Plywood, with use of testing procedure JIS A 1460	≤1mg/ L
JIS A 5905:2003 - MDF, with use of testing procedure JIS A 1460	≤1mg/ L
JIS A1901 (not applicable to Plywood, applicable to high pressure laminates and compact laminates)	≤0.1 mg/m ² hr*



ASTM D5116 (applicable to high pressure laminates and compact laminates)	≤0.1 mg/m ² hr
ISO 16000 part 9, 10 and 11 (also known as EN 13419), applicable to high pressure laminates and compact laminates	≤0.1 mg/m ² hr (at 3 days)
ASTM D6007	≤0.12mg/m ³ **
ASTM E1333	≤0.12mg/m ³ ***
EN 717-1 (also known as DIN EN 717-1)	≤0.12mg/m ³
EN 717-2 (also known as DIN EN 717-2)	≤3.5mg/m ² hr

*mg/m²hr may also be represented as mg/m²/hr.

**The test report must confirm that the conditions of Table 3 comply for the particular wood product type, the final results must be presented in EN 717-1 equivalent (as presented in the table) using the correlation ratio of 0.98.

***The final results must be presented in EN 717-1 equivalent (as presented in the table), using the correlation ratio of 0.98.

Additionally, construction materials to be sourced with the following considerations:

- Reduced Portland cement and virgin aggregate content, and nominate recycled water in all concrete mixes.
- Steel to be sourced from suppliers that are part of the World Steel Association's Climate Action Plan.
- All timber to carry FSC / PEFC certification that recognises sustainable timber practices.
- Where used, PVC should be Best Practice PVC, or be an alternative material (e.g. HDPE etc)
- Use products that are:
 - Manufactured using recycled materials;
 - Carry a "Green" certification (e.g. Weathertex cladding carries a GreenTag rating and is FSC-certified); or
 - Are inherently durable and require minimal maintenance (e.g. tiles vs vinyl flooring or timber or carpet).

2.10 Community Education and Engagement

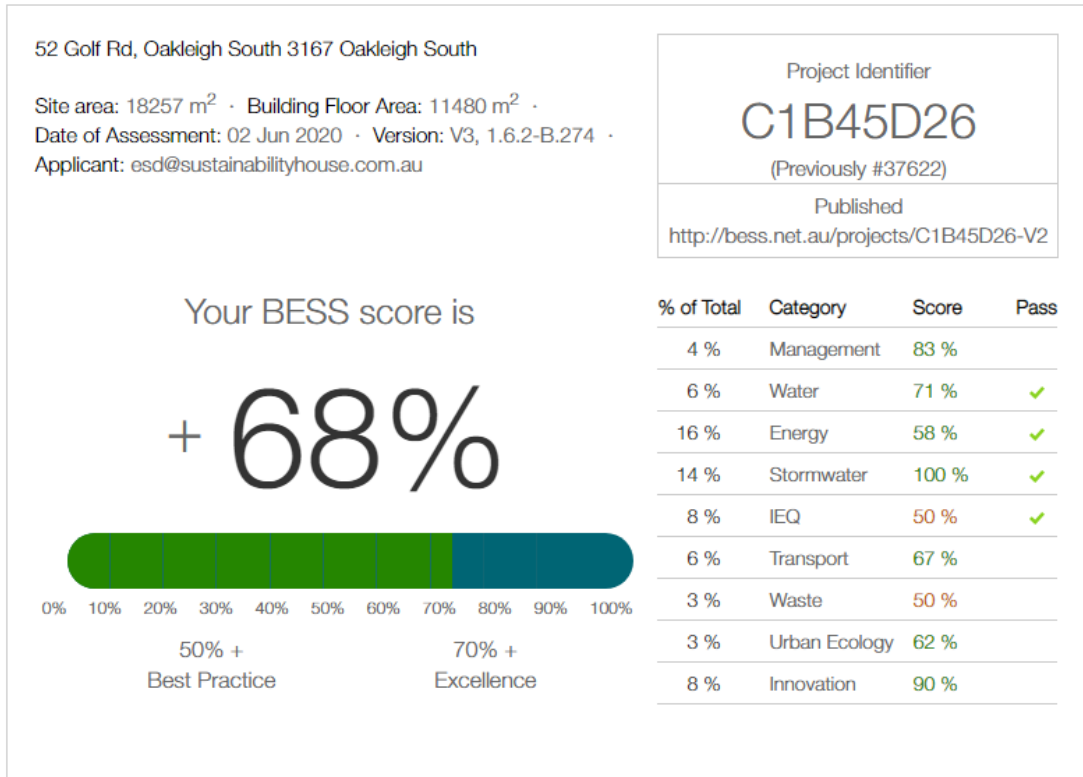
- A Building Users Guide to be developed for the community, outlining the key environmental features of dwellings and shared space, and tips and hints on how to use features in their home to maximise their water/energy consumptions, and reduce waste. This information can be provided via an online portal, where they can see other shared information such as share car/bike bookings, BBQ bookings, and shared energy system generation, and will also provide a platform to encourage social gatherings.
- Park to include public electric BBQ, children's play equipment, workout station to encourage community interaction and engagement with other residents.
- Space allowance for community garden that includes composting facilities. However, this requires community support to be successful.

These additional initiatives have been added under Innovation category of BESS.

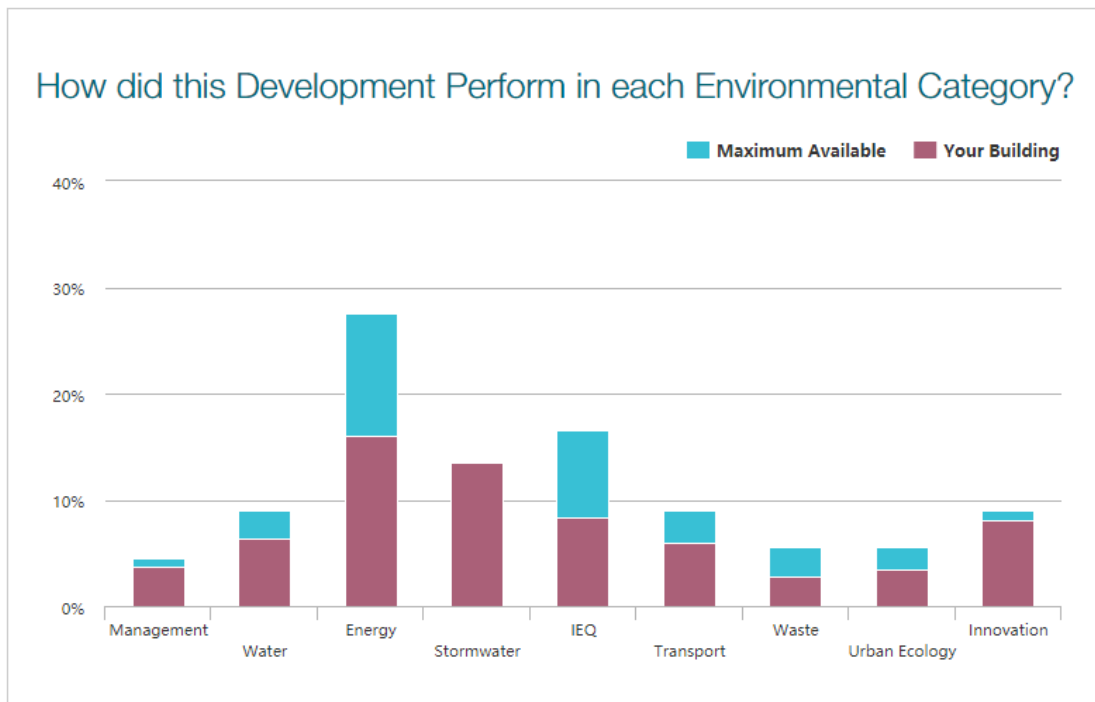


3.0 Conclusion

The project achieves all the minimum requirements under BESS, the new industry ESD best practice benchmark, achieving a rating of 68%.



The proposed development located at 52 Golf Road, Oakleigh South VIC 3167 exceeds minimum scoring under the BESS assessment.



Appendix A – BESS Output Report



BESS Report



This BESS report outlines the sustainable design commitments of the proposed development at 52 Golf Rd Oakleigh South VIC 3167. The BESS report and accompanying documents and evidence are submitted in response to the requirement for a Sustainable Design Assessment or Sustainability Management Plan at Monash City Council.

Note that where a Sustainability Management Plan is required, the BESS report must be accompanied by a report that further demonstrates the development's potential to achieve the relevant environmental performance outcomes and documents the means by which the performance outcomes can be achieved.

52 Golf Rd, Oakleigh South 3167 Oakleigh South

Site area: 18257 m² ·
 Building Floor Area: 11480 m² ·
 Date of Assessment: 02 Jun 2020 ·
 Version: V3, 1.6.2-B.274 ·
 Applicant: esd@sustainabilityhouse.com.au

Project Identifier

C1B45D26

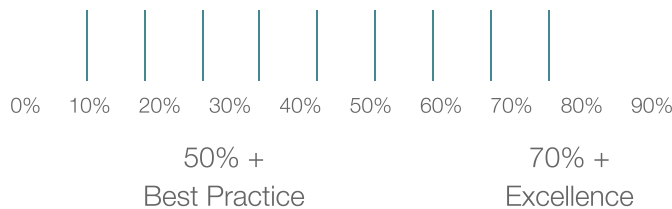
(Previously #37622)

Published

<http://bess.net.au/projects/C1B45D26-V2>

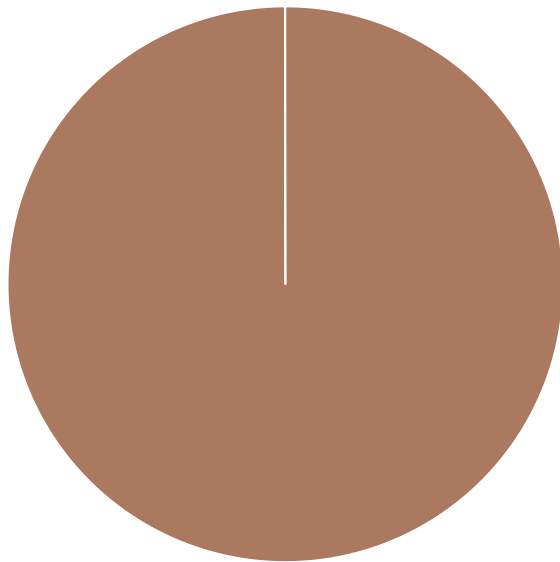
Your BESS score is

+ **68%**



% of Total Category	Category	Score	Pass
4 %	Management	83 %	
6 %	Water	71 %	✓
16 %	Energy	58 %	✓
14 %	Stormwater	100 %	✓
8 %	IEQ	50 %	✓
6 %	Transport	67 %	
3 %	Waste	50 %	
3 %	Urban Ecology	62 %	
8 %	Innovation	90 %	

Building Composition

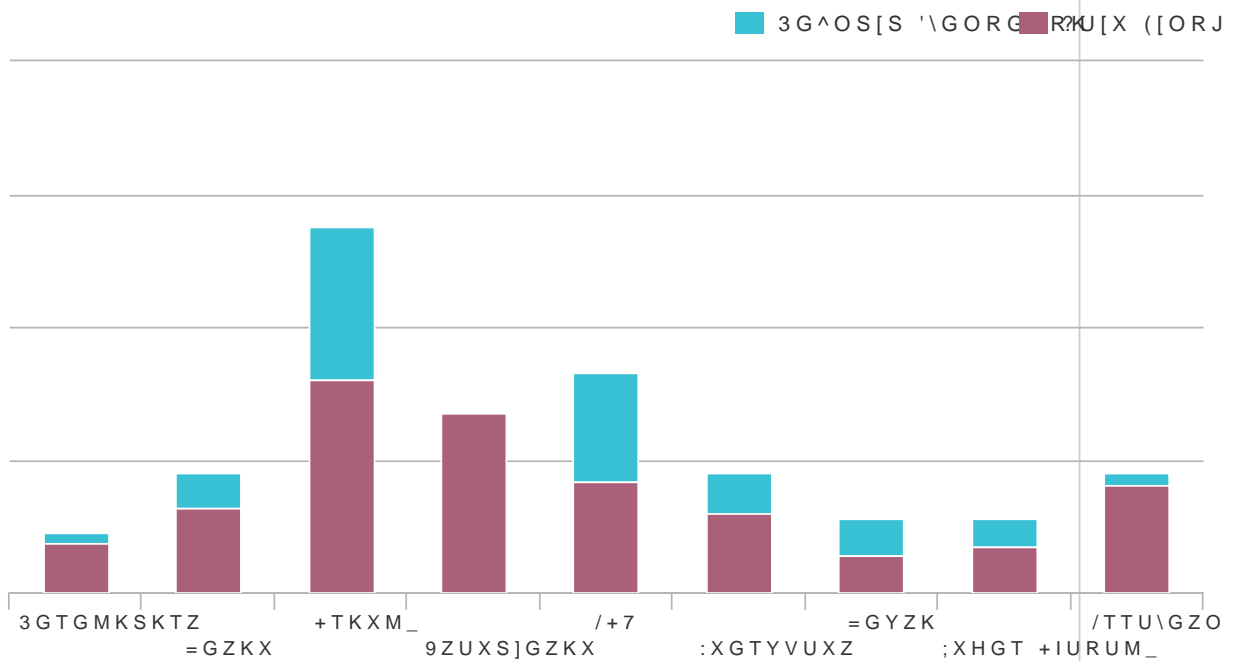


■ :U]TNU[YK

Dwellings

Type	Name	Quantity	Area
Townhouse	TH01	16	165 m ²
Townhouse	TH02	17	149 m ²
Townhouse	TH03	8	153 m ²
Townhouse	TH04	18	124 m ²
Townhouse	TH05	2	158 m ²
Townhouse	TH06	5	167 m ²
Townhouse	TH07	20	85 m ²

How did this Development Perform in each Environmental Category?



The sustainable design commitments for this project are listed below. These are to be incorporated into the design documentation and subsequently implemented.

Management

83% - contributing 4% to overall score

Credit	Disabled	Scoped out	Score
Management 1.1 Pre-Application Meeting			100 %
Management 2.2 Thermal Performance Modelling - Multi-Dwelling Residential			100 %

Management 1.1 Pre-Application Meeting 100%

Score Contribution This credit contributes 50.0% towards this section's score.

Aim To encourage the involvement of suitably qualified ESD professionals in the project team from the early design stage.

Notes ESD features and initiatives have been discussed with Council prior to application.

Questions

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?

Yes

Management 2.2 Thermal Performance Modelling - Multi-Dwelling Residential 100%

Score Contribution This credit contributes 33.3% towards this section's score.

Aim To encourage and recognise developments that have used modelling to inform passive design at the early design stage

Questions

Have preliminary NatHERS ratings been undertaken for all thermally unique dwellings?

Yes

Water

71% - contributing 6% to overall score

Credit	Disabled	Scoped out	Score
Water 1.1 Potable Water Use Reduction (Interior Uses)			50 %
Water 2.1 Rainwater Collection & Reuse (Additional Uses)			100 %
Water 3.1 Water Efficient Landscaping			100 %

Water Approachs

What approach do you want to use Water?	Use the built in calculation tools
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

	TH01	TH02	TH03
Showerhead	3 Star WELS (> 4.5 but <= 6.0)	3 Star WELS (> 4.5 but <= 6.0)	3 Star WELS (> 4.5 but <= 6.0)
Bath	Medium Sized Contemporary Bath	Medium Sized Contemporary Bath	Medium Sized Contemporary Bath
Kitchen Taps	> 6 Star WELS rating	> 6 Star WELS rating	> 6 Star WELS rating
Bathroom Taps	> 6 Star WELS rating	> 6 Star WELS rating	> 6 Star WELS rating
Dishwashers	> 5 Star WELS rating	> 5 Star WELS rating	> 5 Star WELS rating
WC	> 4 Star WELS rating	> 4 Star WELS rating	> 4 Star WELS rating
Urinals	Scope out	Scope out	Scope out
Washing Machine Water Efficiency	Scope out	Scope out	Scope out
Connected to which Tank	RWT	RWT	RWT
Rainwater connected to: Toilets	Yes	Yes	Yes
Rainwater connected to: Laundry (washing machine)	No	No	No
Rainwater connected to: Hot Water System	No	No	No
	TH04	TH05	TH06
Showerhead	3 Star WELS (> 4.5 but <= 6.0)	3 Star WELS (> 4.5 but <= 6.0)	3 Star WELS (> 4.5 but <= 6.0)
Bath	Medium Sized Contemporary Bath	Medium Sized Contemporary Bath	Medium Sized Contemporary Bath
Kitchen Taps	> 6 Star WELS rating	> 6 Star WELS rating	> 6 Star WELS rating
Bathroom Taps	> 6 Star WELS rating	> 6 Star WELS rating	> 6 Star WELS rating
Dishwashers	> 5 Star WELS rating	> 5 Star WELS rating	> 5 Star WELS rating
WC	> 4 Star WELS rating	> 4 Star WELS rating	> 4 Star WELS rating

	TH04	TH05	TH06
Urinals	Scope out	Scope out	Scope out
Washing Machine Water Efficiency	Scope out	Scope out	Scope out
Connected to which Tank	RWT	RWT	RWT
Rainwater connected to: Toilets	Yes	Yes	Yes
Rainwater connected to: Laundry (washing machine)	No	No	No
Rainwater connected to: Hot Water System	No	No	No

TH07

Showerhead	3 Star WELS (> 4.5 but <= 6.0)
Bath	Medium Sized Contemporary Bath
Kitchen Taps	> 6 Star WELS rating
Bathroom Taps	> 6 Star WELS rating
Dishwashers	> 5 Star WELS rating
WC	> 4 Star WELS rating
Urinals	Scope out
Washing Machine Water Efficiency	Scope out
Connected to which Tank	RWT
Rainwater connected to: Toilets	Yes
Rainwater connected to: Laundry (washing machine)	No
Rainwater connected to: Hot Water System	No

Rainwater Tanks

	RWT
Name	RWT
What is the total roof area connected to the rainwater tank? <small>Square Metres</small>	7500.0
Tank Size <small>Litres</small>	172000.0
Irrigation area connected to tank <small>Square Metres</small>	0.0
Is connected irrigation area a water efficient garden?	No

Water 1.1 Potable Water Use Reduction (Interior Uses)

50%

Score Contribution This credit contributes 57.1% towards this section's score.

Aim Water 1.1 Potable water use reduction (interior uses) What is the reduction in total water use due to efficient fixtures, appliances, and rainwater use? To achieve points in this credit there must be >25% potable water reduction. You are using the built in calculation tools. This credit is calculated from information you have entered above.

Criteria Percentage reduction in potable water use

Calculations

Annual Water Consumption (kL) (Reference)

13691

Annual Water Consumption (kL) (Proposed)

7810

% Reduction in Potable Water Consumption Percentage %

42 %

Water 2.1 Rainwater Collection & Reuse (Additional Uses) 100%

Score Contribution This credit contributes 28.6% towards this section's score.

Aim What is the additional reduction in potable (mains) water use due to rainwater harvesting? Additional water uses for rainwater include non-potable demands such as irrigation, pools, commercial process uses and taps for washdown. Note: tank water will only be available for additional uses if it not required for internal uses. If the property uses an alternative water source, the alternative water source is deemed to meet 90% of additional non-potable water use requirements. You are using the built in calculation tools. This credit is calculated from information you have entered above in the rainwater tanks section.

Criteria What is the additional reduction in potable (mains) water use due to using rainwater or an alternative water source?

Calculations

Rainwater collection & reuse (additional uses) Percentage %

100 %

Water 3.1 Water Efficient Landscaping 100%

Score Contribution This credit contributes 14.3% towards this section's score.

Aim

Are water efficiency principles used for landscaped areas? This includes low water use plant selection (e.g. xeriscaping) and specifying water efficient irrigation (e.g. drip irrigation with timers and rain sensors). Note: food producing landscape areas and irrigation areas connected to rainwater or an alternative water source are excluded from this section.

Questions

Will water efficient landscaping be installed?

Yes

Energy

58% - contributing 16% to overall score

Credit	Disabled	Scoped out	Score
Energy 1.2 Thermal Performance Rating - Residential			17 %
Energy 2.1 Greenhouse Gas Emissions			100 %
Energy 2.3 Electricity Consumption			100 %
Energy 2.4 Gas Consumption			100 %
Energy 2.5 Wood Consumption			N/A
Energy 3.2 Hot Water			100 %
Energy 3.3 External Lighting			100 %
Energy 3.4 Clothes Drying			100 %
Energy 3.5 Internal Lighting - Residential Single Dwelling			100 %

Dwellings Energy Approachs

What approach do you want to use for Energy?	Use the built in calculation tools
Are you installing a solar photovoltaic (PV) system?	No
Are you installing any other renewable energy system(s)?	No
Gas Supply	Natural Gas

Dwelling Energy Profiles

	TH01	TH02	TH03
Below the floor is	Ground or Carpark	Ground or Carpark	Ground or Carpark
Above the ceiling is	Outside	Outside	Outside
Exposed sides	3	3	2
NatHERS Annual Energy Loads - Heat MJ/sqm	82.1	79.6	72.2

	TH01	TH02	TH03
NatHERS Annual Energy Loads - Cool MJ/sqm	14.5	31.6	5.4
NatHERS star rating	6.8	6.4	7.4
Type of Heating System	D Reverse cycle space	D Reverse cycle space	D Reverse cycle space
Heating System Efficiency	3 Star	3 Star	3 Star
Type of Cooling System	Refrigerative space	Refrigerative space	Refrigerative space
Cooling System Efficiency	3 Stars	3 Stars	3 Stars
Type of Hot Water System	I Gas Instantaneous 5 star	I Gas Instantaneous 5 star	I Gas Instantaneous 5 star
Clothes Line	D Private outdoor clothesline	D Private outdoor clothesline	D Private outdoor clothesline
Clothes Dryer	A No clothes dryer	A No clothes dryer	A No clothes dryer
	TH04	TH05	TH06
Below the floor is	Ground or Carpark	Ground or Carpark	Ground or Carpark
Above the ceiling is	Outside	Outside	Outside
Exposed sides	2	3	3
NatHERS Annual Energy Loads - Heat MJ/sqm	82.8	94.0	106.0
NatHERS Annual Energy Loads - Cool MJ/sqm	38.9	20.7	13.9
NatHERS star rating	6.1	6.3	6.1
Type of Heating System	D Reverse cycle space	D Reverse cycle space	D Reverse cycle space
Heating System Efficiency	3 Star	3 Star	3 Star
Type of Cooling System	Refrigerative space	Refrigerative space	Refrigerative space
Cooling System Efficiency	3 Stars	3 Stars	3 Stars
Type of Hot Water System	I Gas Instantaneous 5 star	I Gas Instantaneous 5 star	I Gas Instantaneous 5 star
Clothes Line	D Private outdoor clothesline	D Private outdoor clothesline	D Private outdoor clothesline
Clothes Dryer	A No clothes dryer	A No clothes dryer	A No clothes dryer
	TH07		
Below the floor is	Ground or Carpark		
Above the ceiling is	Outside		
Exposed sides	2		
NatHERS Annual Energy Loads - Heat MJ/sqm	80.7		
NatHERS Annual Energy Loads - Cool MJ/sqm	32.1		
NatHERS star rating	6.4		
Type of Heating System	D Reverse cycle space		

TH07

Heating System Efficiency	3 Star
Type of Cooling System	Refrigerative space
Cooling System Efficiency	3 Stars
Type of Hot Water System	I Gas Instantaneous 5 star
Clothes Line	D Private outdoor clothesline
Clothes Dryer	A No clothes dryer

Energy 1.2 Thermal Performance Rating - Residential 17%

Score Contribution	This credit contributes 31.6% towards this section's score.
Aim	Reduce reliance on mechanical systems to achieve thermal comfort in summer and winter - improving comfort, reducing greenhouse gas emissions, energy consumption, and maintenance costs.
Criteria	What is the average NATHERS rating?

Calculations

Average NATHERS Rating (Weighted) Stars

6.5

Energy 2.1 Greenhouse Gas Emissions 100%

Score Contribution	This credit contributes 10.5% towards this section's score.
Aim	Reduce the building's greenhouse gas emissions
Criteria	Are greenhouse gas emissions >10% below the benchmark

Calculations

Reference Building with Reference Services (BCA only) kg CO2

697446.5

Proposed Building with Proposed Services (Actual Building) kg CO2

223591.0

% Reduction in GHG Emissions Percentage %

67 %

Energy 2.3 Electricity Consumption 100%

Score Contribution	This credit contributes 10.5% towards this section's score.
Aim	Reduce consumption of electricity
Criteria	Is the annual electricity consumption >10% below the benchmark

Calculations

Reference kWh

529110.2

Proposed kWh

151776.7

Improvement Percentage %

71 %

Energy 2.4 Gas Consumption 100%

Score Contribution	This credit contributes 10.5% towards this section's score.
Aim	Reduce consumption of gas
Criteria	Is the annual gas consumption >10% below the benchmark?

Calculations

Reference MJ

1320968.1

Proposed MJ

837262.3

Improvement Percentage %

36 %

Energy 2.5 Wood Consumption N/A

This credit was scoped out: No wood heating system present

Aim	Reduce consumption of wood
Criteria	Is the annual wood consumption >10% below the benchmark?

Energy 3.2 Hot Water 100%

Score Contribution	This credit contributes 5.3% towards this section's score.
---------------------------	--

Criteria Does the hot water system use >10% less energy (gas and electricity) than the reference case?

Calculations

Reference kWh

366935.6

Proposed kWh

233172.3

Improvement Percentage %

36 %

Energy 3.3 External Lighting 100%

Score Contribution This credit contributes 5.3% towards this section's score.

Questions

Is the external lighting controlled by a motion detector?

Yes

Energy 3.4 Clothes Drying 100%

Score Contribution This credit contributes 5.3% towards this section's score.

Criteria Does the combination of clothes lines and efficient dryers reduce energy (gas+electricity) consumption by more than 10%?

Calculations

Reference kWh

54239.9

Proposed kWh

10848.0

Improvement Percentage %

80 %

Energy 3.5 Internal Lighting - Residential Single Dwelling 100%

Score Contribution	This credit contributes 5.3% towards this section's score.
Aim	Reduce energy consumption associated with internal lighting

Questions

Does the development achieve a maximum illumination power density of 4W/sqm or less?

Yes

Stormwater

100% - contributing 14% to overall score

Credit	Disabled	Scoped out	Score
Stormwater 1.1 Stormwater Treatment			100 %

Which stormwater modelling are you using?	Melbourne Water STORM tool
---	----------------------------

Stormwater 1.1 Stormwater Treatment	100%
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Score Contribution	This credit contributes 100.0% towards this section's score.
Aim	To achieve best practice stormwater quality objectives through reduction of pollutant load (suspended solids, nitrogen and phosphorus)
Criteria	Has best practice stormwater management been demonstrated?

Questions

STORM score achieved

100

Calculations

Min STORM Score

100

IEQ

50% - contributing 8% to overall score

Credit	Disabled	Scoped out	Score
IEQ 3.1 Thermal comfort - Double Glazing			100 %

IEQ 3.1 Thermal comfort - Double Glazing 100%

Score Contribution This credit contributes 50.0% towards this section's score.

Aim To provide comfortable indoor spaces and reduce energy needed for heating and cooling

Questions

Is double glazing (or better) used to all living areas and bedrooms?

Yes

Transport

67% - contributing 6% to overall score

Credit	Disabled	Scoped out	Score
Transport 1.1 Bicycle Parking - Residential			100 %
Transport 1.2 Bicycle Parking - Residential Visitor			100 %

Notes The development will provide: Shared facilities for electric bicycles and public bike repair station, including pump, tire lever, Allen keys and screwdrivers.

Transport 1.1 Bicycle Parking - Residential 100%

Score Contribution This credit contributes 33.3% towards this section's score.

Aim To encourage and recognise initiatives that facilitate cycling

Criteria Is there at least one secure bicycle space per dwelling?

Questions

Bicycle Spaces Provided ?

90

Calculations

Min Bicycle Spaces Required

86

Transport 1.2 Bicycle Parking - Residential Visitor 100%

Score Contribution This credit contributes 33.3% towards this section's score.

Aim	To encourage and recognise initiatives that facilitate cycling
Criteria	Is there at least one visitor bicycle space per 4 dwellings?

Questions

Visitor Bicycle Spaces Provided ?

24

Calculations

Min Visitor Bicycle Spaces Required

22

Waste

50% - contributing 3% to overall score

Credit	Disabled	Scoped out	Score
Waste 2.1 - Operational Waste - Food & Garden Waste			100 %

Notes Communal food and garden organic (FOGO) waste will be treated onsite with community garden and composting facilities.

Waste 2.1 - Operational Waste - Food & Garden Waste 100%

Score Contribution This credit contributes 50.0% towards this section's score.

Aim To minimise organic waste going to landfill

Questions

Are facilities provided for on-site management of food and garden waste?

Yes

Urban Ecology

62% - contributing 3% to overall score

Credit	Disabled	Scoped out	Score
Urban Ecology 2.1 Vegetation			100 %
Urban Ecology 2.4 Private Open Space - Balcony / Courtyard Ecology			100 %

Urban Ecology 2.1 Vegetation 100%

Score Contribution	This credit contributes 50.0% towards this section's score.
Aim	To encourage and recognise the use of vegetation and landscaping within and around developments
Criteria	How much of the site is covered with vegetation, expressed as a percentage of the total site area.

Questions

Percentage Achieved ? Percentage %

30 %

Urban Ecology 2.4 Private Open Space - Balcony / Courtyard Ecology 100%

Score Contribution	This credit contributes 12.5% towards this section's score.
Aim	Encourage plants to be grown on balconies and courtyards

Questions

Is there a tap and floor waste on every balcony / in every courtyard?

Yes

Innovation 90% - contributing 8% to overall score

Credit	Disabled	Scoped out	Score
Innovation 1.1 Innovation			90 %

Innovations

	Sustainable Materials	Sustainable Materials	Construction Phase
Name	Sustainable Materials	Sustainable Materials	Construction Phase

	Sustainable Materials	Sustainable Materials	Construction Phase
Description	Construction materials to be sourced with the following considerations: <ul style="list-style-type: none"> • Reduced Portland Cement and virgin aggregate content, and nominate recycled water in all concrete mixes. • Steel to be sourced from suppliers that are part of the World Steel Association's Climate Action Plan. • All timber to carry FSC / PEFC certification that recognises sustainable timber practices. • Where used, PVC should be Best Practice PVC, or be an alternative material (e.g. HDPE etc) • Use products that are: <ul style="list-style-type: none"> o Manufactured using recycled materials; o Carry a "Green" certification (e.g. Weathertex cladding carries a GreenTag rating and is FSC-certified); or o Are inherently durable and require minimal maintenance (e.g. tiles vs vinyl flooring or timber or carpet). 	Low/ultra-low VOC paints, adhesives, sealants and carpets, as well as low formaldehyde wood products (e.g. E0/Super E0 MDF and plywood) will be used in the development.	To ensure the development has a reduced environmental impact during construction, the following initiatives are recommended: <ul style="list-style-type: none"> • Contractor to develop site-specific Environmental Management Plan and carry ISO14001 accreditation; and • 90% of Construction and Demolition Waste to be diverted from landfill, either through recycling or reusing.
Points Targeted	1	1	1
	Operational e-waste	Transport	Community Education and Engagement - A
Name	Operational e-waste	Transport	Community Education and Engagement - A
Description	Bins for e-waste including batteries, print cartridges and mobile phone will be considered if suitable.	<ul style="list-style-type: none"> • Electric bicycles and public bike repair station including Pump, tire lever, Allen keys and screw drivers • Electric vehicle charging bay for residents and broader community. This service can be free for residents. 	Park to include public electric BBQ, children's play equipment, workout station to encourage community interaction and engagement with other residents.
Points Targeted	1	2	1
	Community Education and Engagement - B	Community Education and Engagement - C	
Name	Community Education and Engagement - B	Community Education and Engagement - C	
Description	Space allowance for community garden that includes composting facilities. However, this requires community support to be successful.	A Building Users Guide to be developed for the community, outlining the key environmental features of dwellings and shared space, and tips and hints on how to use features in their home to maximise their water/energy consumptions, and reduce waste. This information can be provided via an online portal, where they can see other shared information such as share car/bike bookings, BBQ bookings, and shared energy system generation, and will also provide a platform to encourage social gatherings.	
Points Targeted	1	1	

Innovation 1.1 Innovation

90%

Score Contribution	This credit contributes 100.0% towards this section's score.
Criteria	What percentage of the Innovation points have been claimed (10 points maximum)?

Items to be marked on floorplans

9 / 10 floorplans & elevation notes complete.

Water 2.1: Location of rainwater tanks as described	Incomplete
Water 3.1: Water efficient garden annotated	To be printed
Floorplans & elevations - Refer to the drawings	
Energy 3.4: External lighting sensors annotated	To be printed
Floorplans & elevations - Refer to the drawings	
Stormwater 1.1: Location of any stormwater management systems used in STORM or MUSIC modelling (e.g. Rainwater tanks, raingarden, buffer strips)	To be printed
Floorplans & elevations - Refer to the drawings	
IEQ 3.1: Glazing specification to be annotated	To be printed
Floorplans & elevations - Refer to the drawings	
Transport 1.1: All nominated residential bicycle parking spaces	To be printed
Floorplans & elevations - Refer to the drawings	
Transport 1.2: All nominated residential visitor bicycle parking spaces	To be printed
Floorplans & elevations - Refer to the drawings	
Waste 2.1: Location of food and garden waste facilities	To be printed
Floorplans & elevations - Refer to the drawings	
Urban Ecology 2.1: Vegetated areas	To be printed
Floorplans & elevations - Refer to the drawings	
Urban Ecology 2.4: Taps and floor waste on balconies / courtyards	To be printed
Floorplans & elevations - Refer to the drawings	

Documents and evidence

Management 2.2: Preliminary NatHERS assessments ? - Refer to Appendix B of SMP	To be printed
Energy 3.5: Provide a written description of the average lighting power density to be installed in the development and specify the lighting type(s) to be used. ? - Refer to the drawings	To be printed
Stormwater 1.1: STORM report or MUSIC model ? - Refer to Section 2.4 of SMP	To be printed
IEQ 3.1: Reference to floor plans or energy modelling showing the glazing specification (U-value and Solar Heat Gain Coefficient, SHGC) ? - Refer to the drawings	To be printed

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Appendix B – NatHERS Preliminary Results



Nationwide House Energy Rating Scheme* Certificate

Certificate Number: ZZOMHWM80I

Date of Certificate: 19 Dec 2018

★ Star rating: 6.8

Assessor details

Accreditation number: **VIC/BDAV/11/1278**
Name: **Jim Woolcock**
Organisation: **Sustainability House**
Email: **fr5@sustainabilityhouse.com.au**
Phone: **1300308525**
Declaration of interest: **No potential conflicts of interest to declare**
Software: **FirstRate5: 5.2.9 (3.13)**
AAO: **BDAV**

Overview

Dwelling details

Address: **52 Golf road**
Suburb: **Oakleigh South**
State: **VIC** Postcode: **3167**
Type: **New Home** NCC Class: **Class 1a**
Lot/DP number: **-** NatHERS climate zone: **62**
Exposure: **suburban**

Key construction and insulation materials

(see following pages for details)

Construction: Wall:
Roof:
Floor:
Insulation: Wall:
Roof:
Floor:
Glazing:

Net floor area (m²)

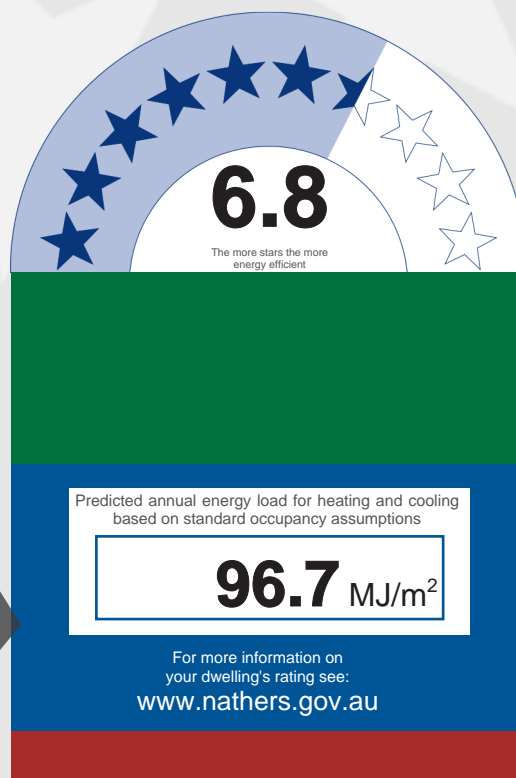
Conditioned:	138.2
Unconditioned:	2
Garage:	20.8
TOTAL:	161

Annual thermal performance loads (MJ/m²)

Heating:	82.2
Cooling:	14.5
TOTAL:	96.7

Plan documents

Plan ref/date: -
Prepared by: -



Ceiling penetrations

(see following pages for details)

Sealed: 6
Unsealed: 0
TOTAL: 6

Principal downlight type: **Compact fluorescent**

****NOTE:** This total is the maximum number of ceiling penetrations allowed to a ceiling (under a roof) for this certificate. **If this number is exceeded in construction then this certificate IS NOT VALID and a new certificate is required.** Loss of ceiling insulation for the penetrations listed has been taken into account with the rating.

Window selection - default windows only

Note on allowable window values: Only a 5% tolerance to the nominated SHGC window values shown on page 2 can be used with this rating.

Note: Only a +/-5% SHGC tolerance is allowed with this rating.

NB: This tolerance ONLY applies to SHGC, the U-value can always be lower but not higher than the values stated on page 2.

If any of the windows selected are outside the 5% tolerance then this certificate is no longer valid and the dwelling will need to be rerated to confirm compliance.

Scan to access this certificate online and confirm this is valid.

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: ZZOMHWM80I

Date of Certificate: 19 Dec 2018

★ Star rating: 6.8

Building Features

Windows type and performance value

Window ID	Window type	U-value	SHGC
CAP-055-18 A	Capral 419 Flushline Fixed Window DG 6/12/6EA	2.91	0.58

Windows schedule

Window ID	Window no.	Height (mm)	Width (mm)	Orientation	Zone name	Outdoor shade
CAP-055-18 A	Dining_SD	2500	1700	S	Kitchen/Living	No
CAP-055-18 A	Living_SD	2700	3600	S	Kitchen/Living	No
CAP-055-18 A	Guest Bed_SD	2500	1500	N	Bedroom 4	No
CAP-055-18 A	Bed 1_AW1	1600	1500	N	Bedroom 1	No
CAP-055-18 A	Bed 1_AW2	1600	900	E	Bedroom 1	No
CAP-055-18 A	Bed 3_AW	1600	2000	E	Bedroom 3	No
CAP-055-18 A	Bed 2_AW	1600	1700	S	Bedroom 2	No
CAP-055-18 A	Study_AW1	1600	900	N	Lobby	No
CAP-055-18 A	Lobby_AW	1600	2000	E	Lobby	No

Roof windows and skylight type and performance value

ID	Window type	U-value	SHGC
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Roof window and skylight schedule

ID	Roof window/ skylight no.	Area (m ²)	Orientation	Zone name	Outdoor shade	Indoor shade/diffuser
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External wall type

Type	Insulation	Wall wrap
1 : FR5 - Brick Veneer	Rockwool batt: R2.5 (R2.5)	No
2 : Parti Wall	Rockwool batt: R2.5 (R2.5);Rockwool batt: R2.5 (R2.5)	No
3 : FR5 - Metal Clad Framed	Rockwool batt: R2.5 (R2.5)	No

External wall schedule

Wall type	Area (m ²)	Orientation	Zone name	Fixed shade	Eaves
1 : FR5 - Brick Veneer	9.9	N	Garage	Yes	No
1 : FR5 - Brick Veneer	18	E	Garage	No	No
2 : Parti Wall	16.7	W	Kitchen/Living	No	No
1 : FR5 - Brick Veneer	9.8	S	Kitchen/Living	Yes	No

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: ZZOMHWM80I

Date of Certificate: 19 Dec 2018

★ Star rating: 6.8

Building Features

1 : FR5 - Brick Veneer	3	W	Kitchen/Living	Yes	No
1 : FR5 - Brick Veneer	13.3	S	Kitchen/Living	Yes	No
1 : FR5 - Brick Veneer	14.9	E	Kitchen/Living	No	No
1 : FR5 - Brick Veneer	9.4	N	Bedroom 4	Yes	No
2 : Parti Wall	10.8	W	Bedroom 4	No	No
1 : FR5 - Brick Veneer	5	E	Bedroom 4	Yes	Yes
2 : Parti Wall	4.6	W	ENS - Guest	No	No
2 : Parti Wall	4.8	W	Pwdr	No	No
1 : FR5 - Brick Veneer	3.3	N	Entry Way	Yes	Yes
2 : Parti Wall	6.2	W	Entry Way	No	No
1 : FR5 - Brick Veneer	8.6	E	Entry Way	Yes	Yes
3 : FR5 - Metal Clad Framed	14.1	N	Bedroom 1	No	No
2 : Parti Wall	10.1	W	Bedroom 1	No	No
3 : FR5 - Metal Clad Framed	15.7	E	Bedroom 1	Yes	No
2 : Parti Wall	5.2	W	ENS - M.Bed	No	No
2 : Parti Wall	9.5	W	Bath	No	No
3 : FR5 - Metal Clad Framed	9	S	Bedroom 3	No	No
3 : FR5 - Metal Clad Framed	10.7	E	Bedroom 3	No	No
2 : Parti Wall	12.3	W	Bedroom 2	No	No
3 : FR5 - Metal Clad Framed	9	S	Bedroom 2	No	No
3 : FR5 - Metal Clad Framed	5.6	E	Lobby	No	No
3 : FR5 - Metal Clad Framed	4.1	N	Lobby	Yes	No
3 : FR5 - Metal Clad Framed	11.7	E	Lobby	Yes	No
2 : Parti Wall	5.9	W	Lobby	No	No

Internal wall type

Type	Area (m ²)	Insulation
1 : FR5 - Internal Plasterboard Stud Wall	40.8	Rockwool batt: R2.0 (R2.0)
2 : FR5 - Internal Plasterboard Stud Wall	122.9	

Floors

Location	Construction	Area (m ²)	Sub floor ventilation	Added insulation	Covering
Garage	CSOG: Slab on Ground	6.4	Enclosed	0.0	none
Garage	CSOG: Slab on Ground	14.4	Enclosed	0.0	none

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: ZZOMHWM80I

Date of Certificate: 19 Dec 2018

★ Star rating: 6.8

Building Features

Kitchen/Living	CSOG: Slab on Ground	32.2	Enclosed	0.0	floattimber
Kitchen/Living	CSOG: Slab on Ground	9.3	Enclosed	0.0	floattimber
Bedroom 4	CSOG: Slab on Ground	11.3	Enclosed	0.0	Carpet
ENS - Guest	CSOG: Slab on Ground	4.4	Enclosed	0.0	Tiles
Laundry	CSOG: Slab on Ground	2.5	Enclosed	0.0	Tiles
Pwdr	CSOG: Slab on Ground	2	Enclosed	0.0	Tiles
Entry Way	CSOG: Slab on Ground	14.5	Enclosed	0.0	floattimber
Bedroom 1	Timber	16.5	Enclosed Disconnected	0.0	Carpet
Bedroom 1	Timber	2.3	Elevated	2.0	Carpet
ENS - M.Bed	Timber	5.2	Enclosed Disconnected	0.0	Tiles
Bath	Timber	9.5	Enclosed Disconnected	0.0	Tiles
Bedroom 3	Timber	10	Enclosed Disconnected	0.0	Carpet
Bedroom 2	Timber	12.2	Enclosed Disconnected	0.0	Carpet
Lobby	Timber	18.5	Enclosed Disconnected	0.0	floattimber

Ceiling type

Location	Material	Added insulation	Roof space above
Garage	Plasterboard	0.0	No
Garage	Plasterboard	2.0	No
Garage	Plasterboard	0.0	No
Garage	Plasterboard	3.0	No
Garage	Plasterboard	3.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	6.0	No
Bedroom 4	Plasterboard	0.0	No
Bedroom 4	Plasterboard	0.0	No
ENS - Guest	Plasterboard	0.0	No

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: ZZOMHWM80I

Date of Certificate: 19 Dec 2018

★ Star rating: 6.8

Building Features

Laundry	Plasterboard	0.0	No
Pwdr	Plasterboard	0.0	No
Entry Way	Plasterboard	0.0	No
Entry Way	Plasterboard	0.0	No
Entry Way	Plasterboard	0.0	No
Bedroom 1	Plasterboard	6.0	No
Bedroom 1	Plasterboard	6.0	No
ENS - M.Bed	Plasterboard	6.0	No
Bath	Plasterboard	6.0	No
Bedroom 3	Plasterboard	6.0	No
Bedroom 2	Plasterboard	6.0	No
Lobby	Plasterboard	6.0	No

Ceiling penetrations

Location	Number	Type	Width (mm)	Length (mm)	Seal/ unsealed
Kitchen/Living	1	Exhaust Fans	200	500	Sealed
ENS - Guest	1	Exhaust Fans	200	500	Sealed
Laundry	1	Exhaust Fans	200	500	Sealed
Pwdr	1	Exhaust Fans	200	500	Sealed
ENS - M.Bed	1	Exhaust Fans	200	500	Sealed
Bath	1	Exhaust Fans	200	500	Sealed

Ceiling fans

Location	Number	Diameter (mm)
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Roof type

Material	Added insulation	Roof colour
Ceil: Ceiling	0.0	medium
Framed:Flat - Flat Framed (Metal Deck)	0.0	light

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: ZZOMHWM80I

Date of Certificate: 19 Dec 2018

★ Star rating: 6.8

Additional information

Explanatory notes

About this report

Residential energy ratings address the quality of the building fabric i.e. walls, windows, floors and roof/ceilings. Ratings do not cover the energy or water efficiency of appliances including heating and cooling, hot water, dishwashers, ovens, fridges, TVs etc. or solar panel or water tank requirements. The efficiency or specification of these items is generally covered by other regulations, standards or guidelines.

General Information

A NatHERS House Energy Rating is a comprehensive, dynamic computer modelling evaluation of the floorplans, elevations and specifications to predict an energy load of a home. Not all of us use our homes in the same way, so ratings are generated using standard assumptions. This means homes can be compared across the country.

The actual energy consumption of your home may vary significantly from the predicted energy load figures in this report depending on issues such as the size of your household and your personal preferences, e.g. in terms of heating or cooling.

While the figures are an indicative guide to energy use, they can be used as a reliable guide for comparative purposes between different house designs and for demonstrating that the design meets the required regulatory compliance.

Homes that are energy efficient use less energy, are warmer in winter, cooler in summer and cost less to run. The higher the star rating the more energy efficient.

This NatHERS House Energy Rating report was carefully prepared by your assessor on the basis of comprehensive modelling using standard procedures to rate your home using an underlying engine developed by the Australian Commonwealth Scientific and Industrial Research Organisation (CSIRO).

All information relating to energy loads presented in this report is based on a range of standard assumptions in order to allow for comparisons with reports prepared for other homes and to demonstrate minimum regulatory compliance. The standard assumptions include figures for occupancy, indoor air temperature and are based on a unique climate file for your region.

Accredited Assessors

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AAOs have specific quality assurance processes in place and continuing professional development requirements to maintain a high and consistent standard of assessments across the country. Non-accredited assessors do not have this level of quality assurance or any on-going training requirements.

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If your assessor is unable to address your questions or concerns, please contact their AAO listed under 'assessor details'. You can also find a range of information about accredited assessors on the AAO websites.

Disclaimer

The energy values quoted are for comparison purposes only; they are not a prediction of actual energy use. This rating only applies to the floor plan, construction details, orientation and climate as submitted and included in the attached drawing set that bears a stamp with the same number as this certificate. Changes to any of these details could affect the rating.

Contact

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For more information on energy efficient design and insulation visit www.yourhome.gov.au

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: 9YFDLECVAS

Date of Certificate: 19 Dec 2018

★ Star rating: 6.6

Assessor details

Accreditation number: **VIC/BDAV/11/1278**
Name: **Jim Woolcock**
Organisation: **Sustainability House**
Email: **fr5@sustainabilityhouse.com.au**
Phone: **1300308525**
Declaration of interest: **No potential conflicts of interest to declare**
Software: **FirstRate5: 5.2.9 (3.13)**
AAO: **BDAV**

Overview

Dwelling details

Address: **52 Golf road**
Suburb: **Oakleigh South**
State: **VIC** Postcode: **3167**
Type: **New Home** NCC Class: **Class 1a**
Lot/DP number: **-** NatHERS climate zone: **62**
Exposure: **suburban**

Key construction and insulation materials

(see following pages for details)

Construction: Wall:
Roof:
Floor:
Insulation: Wall:
Roof:
Floor:
Glazing:

Net floor area (m²)

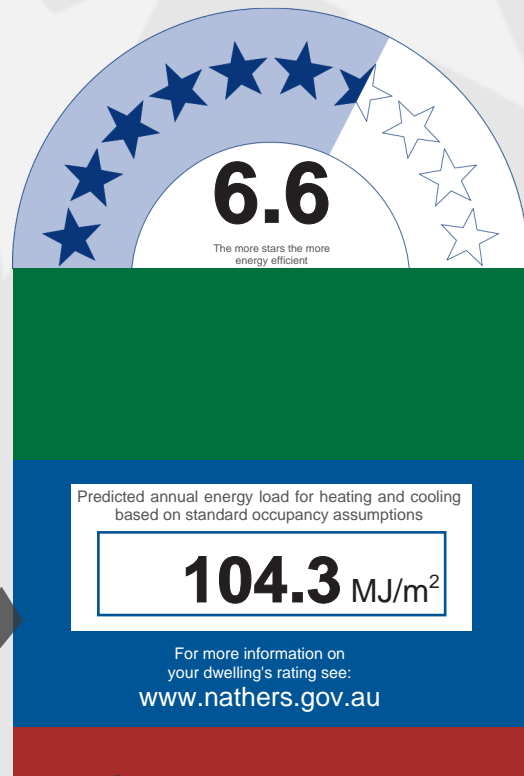
Conditioned: **124.8**
Unconditioned: **2.3**
Garage: **20.8**
TOTAL: **147.9**

Annual thermal performance loads (MJ/m²)

Heating: **96.3**
Cooling: **8**
TOTAL: **104.3**

Plan documents

Plan ref/date: **-**
Prepared by: **-**



Ceiling penetrations

(see following pages for details)

Sealed: **4**
Unsealed: **0**
TOTAL: **4**

Principal downlight type: **Compact fluorescent**

****NOTE:** This total is the maximum number of ceiling penetrations allowed to a ceiling (under a roof) for this certificate. **If this number is exceeded in construction then this certificate IS NOT VALID and a new certificate is required.** Loss of ceiling insulation for the penetrations listed has been taken into account with the rating.

Window selection - default windows only

Note on allowable window values: Only a 5% tolerance to the nominated SHGC window values shown on page 2 can be used with this rating.

Note: Only a +/-5% SHGC tolerance is allowed with this rating.

NB: This tolerance ONLY applies to SHGC, the U-value can always be lower but not higher than the values stated on page 2.

If any of the windows selected are outside the 5% tolerance then this certificate is no longer valid and the dwelling will need to be rerated to confirm compliance.

Scan to access this certificate online and confirm this is valid.



Nationwide House Energy Rating Scheme* Certificate

Certificate Number: 9YFDLECVAS

Date of Certificate: 19 Dec 2018

★ Star rating: 6.6

Building Features

Windows type and performance value

Window ID	Window type	U-value	SHGC
CAP-055-18 A	Capral 419 Flushline Fixed Window DG 6/12/6EA	2.91	0.58

Windows schedule

Window ID	Window no.	Height (mm)	Width (mm)	Orientation	Zone name	Outdoor shade
CAP-055-18 A	Entry_Way_FW	2700	900	S	Entry Way	No
CAP-055-18 A	Living_SD	2700	1800	N	Kitchen/Living	No
CAP-055-18 A	Opening 29	1600	886	E	Kitchen/Living	No
CAP-055-18 A	Opening 30	1600	673	N	Kitchen/Living	No
CAP-055-18 A	Bed 2_AW	1600	1500	S	Bedroom 2	No
CAP-055-18 A	Bed 4_AW	1600	900	N	Bedroom 4	No
CAP-055-18 A	Bed 1_AW	1600	900	N	Bedroom 1	No
CAP-055-18 A	Bed 3_AW	1600	900	S	Bedroom 3	No

Roof windows and skylight type and performance value

ID	Window type	U-value	SHGC
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Roof window and skylight schedule

ID	Roof window/ skylight no.	Area (m ²)	Orientation	Zone name	Outdoor shade	Indoor shade/diffuser
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External wall type

Type	Insulation	Wall wrap
1 : Parti Wall	Rockwool batt: R2.5 (R2.5);Rockwool batt: R2.5 (R2.5)	No
2 : FR5 - Brick Veneer	Rockwool batt: R2.5 (R2.5)	No
3 : FR5 - Metal Clad Framed	Rockwool batt: R2.5 (R2.5)	No

External wall schedule

Wall type	Area (m ²)	Orientation	Zone name	Fixed shade	Eaves
1 : Parti Wall	17.9	W	Garage	No	No
2 : FR5 - Brick Veneer	10.4	S	Garage	No	Yes
2 : FR5 - Brick Veneer	5.8	E	Pwdr	No	No
2 : FR5 - Brick Veneer	3.8	E	Entry Way	No	No
2 : FR5 - Brick Veneer	10	W	Entry Way	Yes	Yes

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: 9YFDLECVAS

Date of Certificate: 19 Dec 2018

★ Star rating: 6.6

Building Features

2 : FR5 - Brick Veneer	7.8	S	Entry Way	Yes	Yes
2 : FR5 - Brick Veneer	34.7	E	Kitchen/Living	No	No
2 : FR5 - Brick Veneer	9.6	N	Kitchen/Living	No	No
2 : FR5 - Brick Veneer	3.6	E	Kitchen/Living	No	No
2 : FR5 - Brick Veneer	9	N	Kitchen/Living	Yes	No
1 : Parti Wall	19.4	W	Kitchen/Living	No	No
2 : FR5 - Brick Veneer	0.6	W	Kitchen/Living	Yes	No
3 : FR5 - Metal Clad Framed	8.9	E	Bedroom 2	No	No
3 : FR5 - Metal Clad Framed	8.9	W	Bedroom 2	Yes	No
3 : FR5 - Metal Clad Framed	12	S	Bedroom 2	No	No
3 : FR5 - Metal Clad Framed	8.9	E	Bedroom 4	No	No
3 : FR5 - Metal Clad Framed	11.9	N	Bedroom 4	No	No
3 : FR5 - Metal Clad Framed	8.9	W	Bedroom 4	Yes	No
3 : FR5 - Metal Clad Framed	3.9	N	Bedroom 1	Yes	No
3 : FR5 - Metal Clad Framed	10.1	W	Bedroom 1	No	No
3 : FR5 - Metal Clad Framed	9.6	W	ENS	No	No
3 : FR5 - Metal Clad Framed	8.9	W	Bedroom 3	No	No
3 : FR5 - Metal Clad Framed	3.9	S	Bedroom 3	Yes	No
3 : FR5 - Metal Clad Framed	29.3	E	Lobby	No	No

Internal wall type

Type	Area (m ²)	Insulation
1 : FR5 - Internal Plasterboard Stud Wall	41.6	Rockwool batts R2.0 (R2.0)
2 : FR5 - Internal Plasterboard Stud Wall	85	

Floors

Location	Construction	Area (m ²)	Sub floor ventilation	Added insulation	Covering
Garage	CSOG: Slab on Ground	4.2	Enclosed	0.0	none
Garage	CSOG: Slab on Ground	16.6	Enclosed	0.0	none
Pwdr	CSOG: Slab on Ground	2.3	Enclosed	0.0	Tiles
Entry Way	CSOG: Slab on Ground	5.9	Enclosed	0.0	floattimber
Kitchen/Living	CSOG: Slab on Ground	10.9	Enclosed	0.0	floattimber
Kitchen/Living	CSOG: Slab on Ground	41.6	Enclosed	0.0	floattimber
Bedroom 2	Timber	6.2	Enclosed Disconnected	0.0	Carpet

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: 9YFDLECVAS

Date of Certificate: 19 Dec 2018

★ Star rating: 6.6

Building Features

Bedroom 2	Timber	5.6	Elevated	2.0	Carpet
Bedroom 4	Timber	11.8	Enclosed Disconnected	0.0	Carpet
Bedroom 1	Timber	11.6	Enclosed Disconnected	0.0	Carpet
Bath	Timber	5	Enclosed Disconnected	0.0	Tiles
ENS	Timber	4.6	Enclosed Disconnected	0.0	Tiles
Bedroom 3	Timber	3.2	Elevated	2.0	Carpet
Bedroom 3	Timber	6.9	Enclosed Disconnected	0.0	Carpet
Lobby	Timber	18.2	Enclosed Disconnected	0.0	floattimber

Ceiling type

Location	Material	Added insulation	Roof space above
Garage	Plasterboard	3.0	No
Garage	Plasterboard	0.0	No
Garage	Plasterboard	0.0	No
Garage	Plasterboard	0.0	No
Garage	Plasterboard	0.0	No
Pwdr	Plasterboard	0.0	No
Pwdr	Plasterboard	0.0	No
Entry Way	Plasterboard	0.0	No
Entry Way	Plasterboard	0.0	No
Entry Way	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	6.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Bedroom 2	Plasterboard	6.0	No
Bedroom 2	Plasterboard	6.0	No
Bedroom 4	Plasterboard	6.0	No

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: 9YFDLECVAS

Date of Certificate: 19 Dec 2018

★ Star rating: 6.6

Building Features

Bedroom 1	Plasterboard	6.0	No
Bath	Plasterboard	6.0	No
ENS	Plasterboard	6.0	No
Bedroom 3	Plasterboard	6.0	No
Bedroom 3	Plasterboard	6.0	No
Lobby	Plasterboard	6.0	No

Ceiling penetrations

Location	Number	Type	Width (mm)	Length (mm)	Seal/ unsealed
Pwdr	1	Exhaust Fans	200	500	Sealed
Kitchen/Living	1	Exhaust Fans	200	500	Sealed
Bath	1	Exhaust Fans	200	500	Sealed
ENS	1	Exhaust Fans	200	500	Sealed

Ceiling fans

Location	Number	Diameter (mm)
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Roof type

Material	Added insulation	Roof colour
Framed:Flat - Flat Framed (Metal Deck)	0.0	medium
Framed:Flat - Flat Framed (Metal Deck)	0.0	light
Ceil: Ceiling	0.0	medium

Nationwide House Energy Rating Scheme* Certificate

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Date of Certificate: 19 Dec 2018

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Additional information

Explanatory notes

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Nationwide House Energy Rating Scheme* Certificate

Certificate Number: RRQ7J3Z0DN

Date of Certificate: 19 Dec 2018

★ Star rating: 7.4

Assessor details

Accreditation number: **VIC/BDAV/11/1278**
Name: **Jim Woolcock**
Organisation: **Sustainability House**
Email: **fr5@sustainabilityhouse.com.au**
Phone: **1300308525**
Declaration of interest: **No potential conflicts of interest to declare**
Software: **FirstRate5: 5.2.9 (3.13)**
AAO: **BDAV**

Overview

Dwelling details

Address: **52 Golf road**
Suburb: **Oakleigh South**
State: **VIC** Postcode: **3167**
Type: **New Home** NCC Class: **Class 1a**
Lot/DP number: **-** NatHERS climate zone: **62**
Exposure: **suburban**

Key construction and insulation materials

(see following pages for details)

Construction: Wall:
Roof:
Floor:
Insulation: Wall:
Roof:
Floor:
Glazing:

Net floor area (m²)

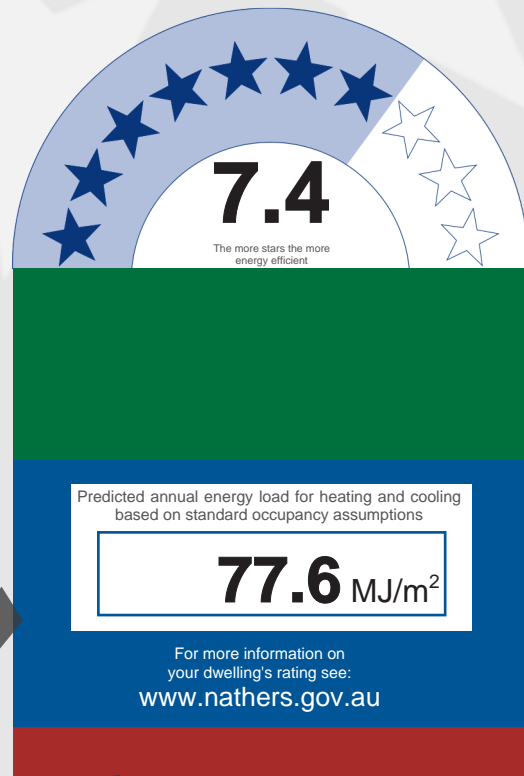
Conditioned: **128**
Unconditioned: **2.3**
Garage: **40.3**
TOTAL: **170.6**

Annual thermal performance loads (MJ/m²)

Heating: **72.2**
Cooling: **5.4**
TOTAL: **77.6**

Plan documents

Plan ref/date: **-**
Prepared by: **-**



Ceiling penetrations

(see following pages for details)

Sealed: **3**
Unsealed: **0**
TOTAL: **3**
Principal downlight type: **Compact fluorescent**

****NOTE:** This total is the maximum number of ceiling penetrations allowed to a ceiling (under a roof) for this certificate. **If this number is exceeded in construction then this certificate IS NOT VALID and a new certificate is required.** Loss of ceiling insulation for the penetrations listed has been taken into account with the rating.

Window selection - default windows only

Note on allowable window values: Only a 5% tolerance to the nominated SHGC window values shown on page 2 can be used with this rating.

Note: Only a +/-5% SHGC tolerance is allowed with this rating.

NB: This tolerance ONLY applies to SHGC, the U-value can always be lower but not higher than the values stated on page 2.

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Nationwide House Energy Rating Scheme* Certificate

Certificate Number: RRQ7J3Z0DN

Date of Certificate: 19 Dec 2018

★ Star rating: 7.4

Building Features

Windows type and performance value

Window ID	Window type	U-value	SHGC
CAP-055-18 A	Capral 419 Flushline Fixed Window DG 6/12/6EA	2.91	0.58

Windows schedule

Window ID	Window no.	Height (mm)	Width (mm)	Orientation	Zone name	Outdoor shade
CAP-055-18 A	Entrt_Way_FW	2700	600	N	Entry Way	No
CAP-055-18 A	Living_SD	2100	2000	S	Kitchen/Living	No
CAP-055-18 A	Bed 4_AW	1600	1000	N	Bedroom 4	No
CAP-055-18 A	Bed 4_FW	1600	600	N	Bedroom 4	No
CAP-055-18 A	Bed 2_AW	1600	1200	S	Bedroom 2	No
CAP-055-18 A	Bed 2_AW	1600	1200	S	Bedroom 1	No
CAP-055-18 A	Bed 3_AW	1600	1600	N	Bedroom 3	No

Roof windows and skylight type and performance value

ID	Window type	U-value	SHGC
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Roof window and skylight schedule

ID	Roof window/ skylight no.	Area (m ²)	Orientation	Zone name	Outdoor shade	Indoor shade/diffuser
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External wall type

Type	Insulation	Wall wrap
1 : FR5 - Brick Veneer	Rockwool batt: R2.5 (R2.5)	No
2 : Parti Wall	Rockwool batt: R2.5 (R2.5);Rockwool batt: R2.5 (R2.5)	No
3 : FR5 - Metal Clad Framed	Rockwool batt: R2.5 (R2.5)	No

External wall schedule

Wall type	Area (m ²)	Orientation	Zone name	Fixed shade	Eaves
1 : FR5 - Brick Veneer	0.6	N	Garage	Yes	No
1 : FR5 - Brick Veneer	3.4	E	Garage	Yes	No
1 : FR5 - Brick Veneer	10.6	N	Garage	Yes	No
2 : Parti Wall	32.6	W	Garage	No	No
2 : Parti Wall	5.8	E	Pwdr	No	No
1 : FR5 - Brick Veneer	7	N	Entry Way	Yes	No

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: RRQ7J3Z0DN

Date of Certificate: 19 Dec 2018

★ Star rating: 7.4

Building Features

2 : Parti Wall	4.2	E	Entry Way	No	No
2 : Parti Wall	17.2	E	Passage	No	No
2 : Parti Wall	17.8	W	Kitchen/Living	No	No
1 : FR5 - Brick Veneer	18.6	S	Kitchen/Living	Yes	No
2 : Parti Wall	19.2	E	Kitchen/Living	No	No
3 : FR5 - Metal Clad Framed	9	N	Bedroom 4	No	No
2 : Parti Wall	11.7	E	Bedroom 4	No	No
3 : FR5 - Metal Clad Framed	9	S	Bedroom 2	No	No
2 : Parti Wall	10.7	E	Bedroom 2	No	No
2 : Parti Wall	10.2	W	Bedroom 1	No	No
3 : FR5 - Metal Clad Framed	9.4	S	Bedroom 1	No	No
2 : Parti Wall	8.7	W	ENS	No	No
2 : Parti Wall	7.7	W	Bath	No	No
3 : FR5 - Metal Clad Framed	1.7	N	Bedroom 3	No	No
3 : FR5 - Metal Clad Framed	1.8	W	Bedroom 3	Yes	No
3 : FR5 - Metal Clad Framed	7.6	N	Bedroom 3	Yes	No
2 : Parti Wall	11	W	Bedroom 3	No	No
2 : Parti Wall	17.1	E	Lobby	No	No

Internal wall type

Type	Area (m ²)	Insulation
1 : FR5 - Internal Plasterboard Stud Wall	53.2	Rockwool batt: R2.0 (R2.0)
2 : FR5 - Internal Plasterboard Stud Wall	106.6	

Floors

Location	Construction	Area (m ²)	Sub floor ventilation	Added insulation	Covering
Garage	CSOG: Slab on Ground	4.6	Enclosed	0.0	none
Garage	CSOG: Slab on Ground	35.6	Enclosed	0.0	none
Pwdr	CSOG: Slab on Ground	2.3	Enclosed	0.0	Tiles
Entry Way	CSOG: Slab on Ground	5.4	Enclosed	0.0	floattimber
Passage	CSOG: Slab on Ground	13.4	Enclosed	0.0	floattimber
Kitchen/Living	CSOG: Slab on Ground	13.9	Enclosed	0.0	floattimber
Kitchen/Living	CSOG: Slab on Ground	24.2	Enclosed	0.0	floattimber
Bedroom 4	Timber	11.7	Enclosed Disconnected	0.0	Carpet

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: RRQ7J3Z0DN

Date of Certificate: 19 Dec 2018

★ Star rating: 7.4

Building Features

Bedroom 2	Timber	10.1	Enclosed Disconnected	0.0	Carpet
Bedroom 1	Timber	11.6	Enclosed Disconnected	0.0	Carpet
ENS	Timber	4.4	Enclosed Disconnected	0.0	Tiles
Bath	Timber	6.9	Enclosed Disconnected	0.0	Tiles
Bedroom 3	Timber	12.8	Enclosed Disconnected	0.0	Carpet
WIR	Timber	3.2	Enclosed Disconnected	0.0	floattimber
Lobby	Timber	17.8	Enclosed Disconnected	0.0	none

Ceiling type

Location	Material	Added insulation	Roof space above
Garage	Plasterboard	3.0	No
Garage	Plasterboard	0.0	No
Garage	Plasterboard	0.0	No
Garage	Plasterboard	0.0	No
Garage	Plasterboard	0.0	No
Garage	Plasterboard	0.0	No
Garage	Plasterboard	0.0	No
Garage	Plasterboard	0.0	No
Pwdr	Plasterboard	0.0	No
Entry Way	Plasterboard	0.0	No
Passage	Plasterboard	0.0	No
Passage	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	6.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Bedroom 4	Plasterboard	6.0	No
Bedroom 2	Plasterboard	6.0	No
Bedroom 1	Plasterboard	6.0	No

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: RRQ7J3Z0DN

Date of Certificate: 19 Dec 2018

★ Star rating: 7.4

Building Features

ENS	Plasterboard	6.0	No
Bath	Plasterboard	6.0	No
Bedroom 3	Plasterboard	6.0	No
WIR	Plasterboard	6.0	No
Lobby	Plasterboard	6.0	No

Ceiling penetrations

Location	Number	Type	Width (mm)	Length (mm)	Seal/ unsealed
Pwdr	1	Exhaust Fans	200	500	Sealed
ENS	1	Exhaust Fans	200	500	Sealed
Bath	1	Exhaust Fans	200	500	Sealed

Ceiling fans

Location	Number	Diameter (mm)
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Roof type

Material	Added insulation	Roof colour
Framed:Flat - Flat Framed (Metal Deck)	0.0	light
Ceil: Ceiling	0.0	medium

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: RRQ7J3Z0DN

Date of Certificate: 19 Dec 2018

★ Star rating: 7.4

Additional information

Explanatory notes

About this report

Residential energy ratings address the quality of the building fabric i.e. walls, windows, floors and roof/ceilings. Ratings do not cover the energy or water efficiency of appliances including heating and cooling, hot water, dishwashers, ovens, fridges, TVs etc. or solar panel or water tank requirements. The efficiency or specification of these items is generally covered by other regulations, standards or guidelines.

General Information

A NatHERS House Energy Rating is a comprehensive, dynamic computer modelling evaluation of the floorplans, elevations and specifications to predict an energy load of a home. Not all of us use our homes in the same way, so ratings are generated using standard assumptions. This means homes can be compared across the country.

The actual energy consumption of your home may vary significantly from the predicted energy load figures in this report depending on issues such as the size of your household and your personal preferences, e.g. in terms of heating or cooling.

While the figures are an indicative guide to energy use, they can be used as a reliable guide for comparative purposes between different house designs and for demonstrating that the design meets the required regulatory compliance.

Homes that are energy efficient use less energy, are warmer in winter, cooler in summer and cost less to run. The higher the star rating the more energy efficient.

This NatHERS House Energy Rating report was carefully prepared by your assessor on the basis of comprehensive modelling using standard procedures to rate your home using an underlying engine developed by the Australian Commonwealth Scientific and Industrial Research Organisation (CSIRO).

All information relating to energy loads presented in this report is based on a range of standard assumptions in order to allow for comparisons with reports prepared for other homes and to demonstrate minimum regulatory compliance. The standard assumptions include figures for occupancy, indoor air temperature and are based on a unique climate file for your region.

Accredited Assessors

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If your assessor is unable to address your questions or concerns, please contact their AAO listed under 'assessor details'. You can also find a range of information about accredited assessors on the AAO websites.

Disclaimer

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Contact

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For more information on energy efficient design and insulation visit www.yourhome.gov.au

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: 2DTSQ8X988

Date of Certificate: 19 Dec 2018

★ Star rating: 6.1

Assessor details

Accreditation number: **VIC/BDAV/11/1278**
Name: **Jim Woolcock**
Organisation: **Sustainability House**
Email: **fr5@sustainabilityhouse.com.au**
Phone: **1300308525**
Declaration of interest: **No potential conflicts of interest to declare**
Software: **FirstRate5: 5.2.9 (3.13)**
AAO: **BDAV**

Overview

Dwelling details

Address: **52 Golf road**
Suburb: **Oakleigh South**
State: **VIC** Postcode: **3167**
Type: **New Home** NCC Class: **Class 1a**
Lot/DP number: **-** NatHERS climate zone: **62**
Exposure: **suburban**

Key construction and insulation materials

(see following pages for details)

Construction: Wall:
Roof:
Floor:
Insulation: Wall:
Roof:
Floor:
Glazing:

Net floor area (m²)

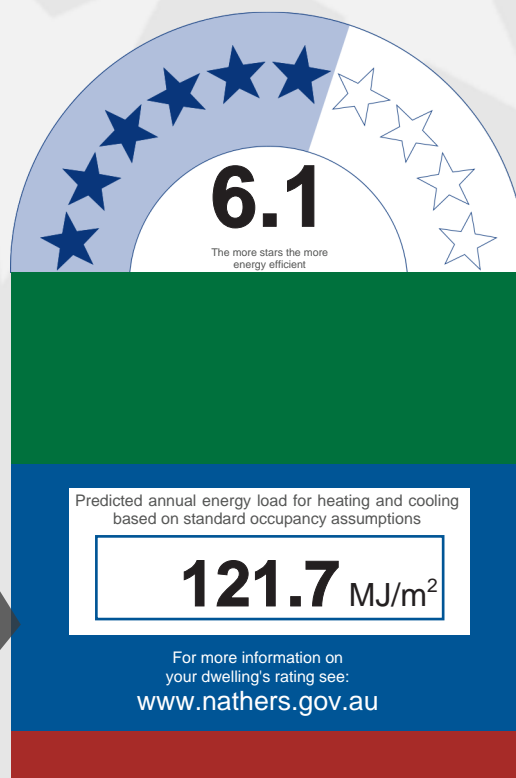
Conditioned: **92.2**
Unconditioned: **2.4**
Garage: **40.1**
TOTAL: **134.7**

Annual thermal performance loads (MJ/m²)

Heating: **82.8**
Cooling: **38.9**
TOTAL: **121.7**

Plan documents

Plan ref/date: **-**
Prepared by: **-**



Ceiling penetrations

(see following pages for details)

Sealed: **4**
Unsealed: **0**
TOTAL: **4**

Principal downlight type: **Compact fluorescent**

****NOTE:** This total is the maximum number of ceiling penetrations allowed to a ceiling (under a roof) for this certificate. **If this number is exceeded in construction then this certificate IS NOT VALID and a new certificate is required.** Loss of ceiling insulation for the penetrations listed has been taken into account with the rating.

Window selection - default windows only

Note on allowable window values: Only a 5% tolerance to the nominated SHGC window values shown on page 2 can be used with this rating.

Note: Only a +/-5% SHGC tolerance is allowed with this rating.

NB: This tolerance ONLY applies to SHGC, the U-value can always be lower but not higher than the values stated on page 2.

If any of the windows selected are outside the 5% tolerance then this certificate is no longer valid and the dwelling will need to be rerated to confirm compliance.

Scan to access this certificate online and confirm this is valid.

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: 2DTSQ8X988

Date of Certificate: 19 Dec 2018

★ Star rating: 6.1

Building Features

Windows type and performance value

Window ID	Window type	U-value	SHGC
CAP-055-64 A	Capral 419 Flushline Fixed Window DG 6EcAd/12Ar/6EA	2.62	0.46

Windows schedule

Window ID	Window no.	Height (mm)	Width (mm)	Orientation	Zone name	Outdoor shade
CAP-055-64 A	Study_AW	2700	2000	W	Study	No
CAP-055-64 A	Bed 3_AW	1600	1600	E	Bedroom 3	No
CAP-055-64 A	Bed 3_FW	1600	800	E	Bedroom 3	No
CAP-055-64 A	Living_SD	2700	3000	W	Kitchen/Living	No
CAP-055-64 A	Bed 1_SD	2700	3000	W	Bedroom 1	No
CAP-055-64 A	Bed 3_AW	1600	2400	E	Bedroom 3	No

Roof windows and skylight type and performance value

ID	Window type	U-value	SHGC
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Roof window and skylight schedule

ID	Roof window/ skylight no.	Area (m ²)	Orientation	Zone name	Outdoor shade	Indoor shade/diffuser
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External wall type

Type	Insulation	Wall wrap
1 : Parti Wall	Rockwool batt: R2.5 (R2.5);Rockwool batt: R2.5 (R2.5)	No
2 : FR5 - Brick Veneer	Rockwool batt: R2.5 (R2.5)	No
3 : FR5 - Metal Clad Framed	Rockwool batt: R2.5 (R2.5)	No

External wall schedule

Wall type	Area (m ²)	Orientation	Zone name	Fixed shade	Eaves
1 : Parti Wall	32.6	S	Garage	No	No
2 : FR5 - Brick Veneer	12.6	E	Garage	No	No
1 : Parti Wall	17.7	N	Garage	No	No
1 : Parti Wall	19.7	N	Entry Way	No	No
2 : FR5 - Brick Veneer	3.6	W	Entry Way	Yes	No
2 : FR5 - Brick Veneer	8.8	W	Study	No	No
1 : Parti Wall	4.8	S	Study	No	No

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: 2DTSQ8X988

Date of Certificate: 19 Dec 2018

★ Star rating: 6.1

Building Features

3 : FR5 - Metal Clad Framed	3	E	Pwdr	No	No
1 : Parti Wall	7.3	N	Pwdr	No	No
1 : Parti Wall	10.8	S	Bedroom 3	No	No
3 : FR5 - Metal Clad Framed	9.2	E	Bedroom 3	No	No
3 : FR5 - Metal Clad Framed	12.6	W	Kitchen/Living	No	No
1 : Parti Wall	25.5	S	Kitchen/Living	No	No
1 : Parti Wall	29	N	Kitchen/Living	No	No
3 : FR5 - Metal Clad Framed	12.6	W	Bedroom 1	Yes	No
1 : Parti Wall	9	S	Bedroom 1	No	No
1 : Parti Wall	9	N	Bedroom 1	No	No
1 : Parti Wall	7.5	S	ENS	No	No
1 : Parti Wall	5.8	S	Bath	No	No
1 : Parti Wall	9	S	Bedroom 3	No	No
3 : FR5 - Metal Clad Framed	12.6	E	Bedroom 3	No	No
1 : Parti Wall	9	N	Bedroom 3	No	No
1 : Parti Wall	13.5	N	Lobby	No	No

Internal wall type

Type	Area (m ²)	Insulation
1 : FR5 - Internal Plasterboard Stud Wall	37.4	Rockwool batt: R2.0 (R2.0)
2 : FR5 - Internal Plasterboard Stud Wall	4.8	
3 : FR5 - Internal Plasterboard Stud Wall	56.3	

Floors

Location	Construction	Area (m ²)	Sub floor ventilation	Added insulation	Covering
Garage	CSOG: Slab on Ground	40.1	Enclosed	0.0	none
Entry Way	CSOG: Slab on Ground	7	Enclosed	0.0	floattimber
Study	CSOG: Slab on Ground	4.7	Enclosed	0.0	floattimber
Pwdr	Timber	2.4	Enclosed Disconnected	0.0	Tiles
Bedroom 3	Timber	11.1	Enclosed Disconnected	0.0	Carpet
Kitchen/Living	Timber	31.3	Enclosed Disconnected	0.0	floattimber
Kitchen/Living	Timber	5.6	Enclosed Disconnected	0.0	floattimber

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: 2DTSQ8X988

Date of Certificate: 19 Dec 2018

★ Star rating: 6.1

Building Features

Bedroom 1	Timber	12.5	Enclosed Disconnected	0.0	Carpet
ENS	Timber	4	Enclosed Disconnected	0.0	Tiles
Bath	Timber	3.9	Enclosed Disconnected	0.0	Tiles
Bedroom 3	Timber	12.5	Enclosed Disconnected	0.0	Carpet
Lobby	Timber	10.5	Enclosed Disconnected	0.0	floattimber

Ceiling type

Location	Material	Added insulation	Roof space above
Garage	Plasterboard	0.0	No
Garage	Plasterboard	0.0	No
Garage	Plasterboard	0.0	No
Entry Way	Plasterboard	0.0	No
Entry Way	Plasterboard	0.0	No
Study	Plasterboard	0.0	No
Study	Plasterboard	0.0	No
Pwdr	Plasterboard	0.0	No
Bedroom 3	Plasterboard	0.0	No
Bedroom 3	Plasterboard	0.0	No
Bedroom 3	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	6.0	No
Bedroom 1	Plasterboard	6.0	No
ENS	Plasterboard	6.0	No
Bath	Plasterboard	6.0	No
Bedroom 3	Plasterboard	6.0	No
Lobby	Plasterboard	6.0	No

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: 2DTSQ8X988

Date of Certificate: 19 Dec 2018

★ Star rating: 6.1

Building Features

Ceiling penetrations

Location	Number	Type	Width (mm)	Length (mm)	Seal/ unsealed
Pwdr	1	Exhaust Fans	200	500	Sealed
Kitchen/Living	1	Exhaust Fans	200	500	Sealed
ENS	1	Exhaust Fans	200	500	Sealed
Bath	1	Exhaust Fans	200	500	Sealed

Ceiling fans

Location	Number	Diameter (mm)
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Roof type

Material	Added insulation	Roof colour
Ceil: Ceiling	0.0	medium
Framed:Flat - Flat Framed (Metal Deck)	0.0	light

Nationwide House Energy Rating Scheme* Certificate

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Nationwide House Energy Rating Scheme* Certificate

Certificate Number: **MHSJ6XORHK**

Date of Certificate: **19 Dec 2018**

★ Star rating: **6.3**

Assessor details

Accreditation number: **VIC/BDAV/11/1278**
Name: **Jim Woolcock**
Organisation: **Sustainability House**
Email: **fr5@sustainabilityhouse.com.au**
Phone: **1300308525**
Declaration of interest: **No potential conflicts of interest to declare**
Software: **FirstRate5: 5.2.9 (3.13)**
AAO: **BDAV**

Overview

Dwelling details

Address: **52 Golf road**
Suburb: **Oakleigh South**
State: **VIC** Postcode: **3167**
Type: **New Home** NCC Class: **Class 1a**
Lot/DP number: **-** NatHERS climate zone: **62**
Exposure: **suburban**

Key construction and insulation materials

(see following pages for details)

Construction: Wall:
Roof:
Floor:
Insulation: Wall:
Roof:
Floor:
Glazing:

Net floor area (m²)

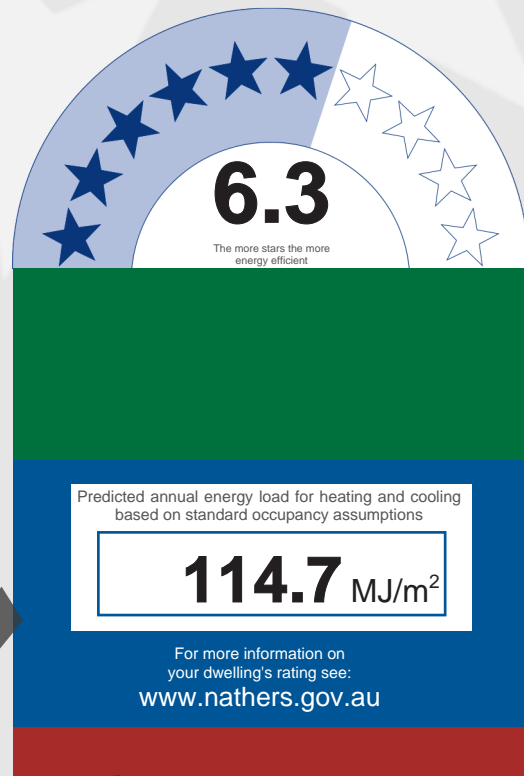
Conditioned: **142.3**
Unconditioned: **2.3**
Garage: **32.7**
TOTAL: **177.3**

Annual thermal performance loads (MJ/m²)

Heating: **94**
Cooling: **20.7**
TOTAL: **114.7**

Plan documents

Plan ref/date: **-**
Prepared by: **-**



Ceiling penetrations

(see following pages for details)

Sealed: **4**
Unsealed: **0**
TOTAL: **4**

Principal downlight type: **Compact fluorescent**

****NOTE:** This total is the maximum number of ceiling penetrations allowed to a ceiling (under a roof) for this certificate. **If this number is exceeded in construction then this certificate IS NOT VALID and a new certificate is required.** Loss of ceiling insulation for the penetrations listed has been taken into account with the rating.

Window selection - default windows only

Note on allowable window values: Only a 5% tolerance to the nominated SHGC window values shown on page 2 can be used with this rating.

Note: Only a +/-5% SHGC tolerance is allowed with this rating.

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Nationwide House Energy Rating Scheme* Certificate

Certificate Number: **MHSJ6XORHK**

Date of Certificate: **19 Dec 2018**

★ Star rating: **6.3**

Building Features

Windows type and performance value

Window ID	Window type	U-value	SHGC
CAP-055-64 A	Capral 419 Flushline Fixed Window DG 6EcAd/12Ar/6EA	2.62	0.46

Windows schedule

Window ID	Window no.	Height (mm)	Width (mm)	Orientation	Zone name	Outdoor shade
CAP-055-64 A	Kitchen_SD	2700	1800	E	Kitchen/Living	No
CAP-055-64 A	Living_SD	2700	2700	N	Kitchen/Living	No
CAP-055-64 A	Dining_SD	2700	2400	N	Kitchen/Living	No
CAP-055-64 A	Bed 4_SD	2700	1800	E	Bedroom 4	No
CAP-055-64 A	WIR_FW	2700	900	N	WIR	No
CAP-055-64 A	Bed 3_AW	1600	2400	N	Bedroom 3	No
CAP-055-64 A	Bed 1_AW	1600	2400	E	Bedroom 1	No
CAP-055-64 A	Living_AW	1600	1800	NW	Living 2	No
CAP-055-64 A	Bed 2_AW	1600	2400	W	Bedroom 2	No

Roof windows and skylight type and performance value

ID	Window type	U-value	SHGC
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Roof window and skylight schedule

ID	Roof window/ skylight no.	Area (m ²)	Orientation	Zone name	Outdoor shade	Indoor shade/diffuser
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External wall type

Type	Insulation	Wall wrap
1 : FR5 - Brick Veneer	Rockwool batt: R2.5 (R2.5)	No
2 : Parti Wall	Rockwool batt: R2.5 (R2.5);Rockwool batt: R2.5 (R2.5)	No
3 : FR5 - Metal Clad Framed	Rockwool batt: R2.5 (R2.5)	No

External wall schedule

Wall type	Area (m ²)	Orientation	Zone name	Fixed shade	Eaves
1 : FR5 - Brick Veneer	16.4	W	Garage	No	No
2 : Parti Wall	17.9	S	Garage	No	No
1 : FR5 - Brick Veneer	10.8	N	Garage	Yes	No
1 : FR5 - Brick Veneer	4.8	W	Kitchen/Living	Yes	Yes

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: **MHSJ6XORHK**

Date of Certificate: **19 Dec 2018**

★ Star rating: **6.3**

Building Features

1 : FR5 - Brick Veneer	18.4	E	Kitchen/Living	Yes	No
1 : FR5 - Brick Veneer	22.7	N	Kitchen/Living	Yes	No
1 : FR5 - Brick Veneer	8.7	NW	Kitchen/Living	No	No
2 : Parti Wall	10.7	S	Bedroom 4	No	No
1 : FR5 - Brick Veneer	9	E	Bedroom 4	Yes	No
2 : Parti Wall	3.7	S	Pwdr	No	No
2 : Parti Wall	6.1	S	Staircase GF	No	No
3 : FR5 - Metal Clad Framed	8.9	E	WIR	Yes	No
3 : FR5 - Metal Clad Framed	6.3	N	WIR	No	No
3 : FR5 - Metal Clad Framed	11.7	N	Bedroom 3	No	No
2 : Parti Wall	9.6	S	Bedroom 1	No	No
3 : FR5 - Metal Clad Framed	12	E	Bedroom 1	No	No
3 : FR5 - Metal Clad Framed	3	N	Bedroom 1	Yes	No
2 : Parti Wall	4.8	S	ENS	No	No
3 : FR5 - Metal Clad Framed	7.3	N	Living 2	No	No
3 : FR5 - Metal Clad Framed	6.9	NW	Living 2	Yes	No
3 : FR5 - Metal Clad Framed	5.9	N	Living 2	Yes	No
3 : FR5 - Metal Clad Framed	7.1	W	Living 2	No	No
3 : FR5 - Metal Clad Framed	9	W	Bedroom 2	No	No
2 : Parti Wall	12.2	S	Bedroom 2	No	No
2 : Parti Wall	5.3	S	Bath	No	No
2 : Parti Wall	6.2	S	Staircase FF	No	No

Internal wall type

Type	Area (m ²)	Insulation
1 : FR5 - Internal Plasterboard Stud Wall	38.9	Rockwool batt: R2.0 (R2.0)
2 : FR5 - Internal Plasterboard Stud Wall	129.5	

Floors

Location	Construction	Area (m ²)	Sub floor ventilation	Added insulation	Covering
Garage	CSOG: Slab on Ground	32.7	Enclosed	0.0	none
Kitchen/Living	CSOG: Slab on Ground	19.5	Enclosed	0.0	floattimber
Kitchen/Living	CSOG: Slab on Ground	27.1	Enclosed	0.0	floattimber
Bedroom 4	CSOG: Slab on Ground	10.7	Enclosed	0.0	Carpet

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: **MHSJ6XORHK**

Date of Certificate: **19 Dec 2018**

★ Star rating: **6.3**

Building Features

Pwdr	CSOG: Slab on Ground	2.3	Enclosed	0.0	Tiles
Staircase GF	CSOG: Slab on Ground	11.2	Enclosed	0.0	floattimber
WIR	Timber	6.2	Enclosed Disconnected	0.0	floattimber
Bedroom 3	Timber	11.7	Enclosed Disconnected	0.0	Carpet
Bedroom 1	Timber	14.5	Enclosed Disconnected	0.0	Carpet
ENS	Timber	4.6	Enclosed Disconnected	0.0	Tiles
Living 2	Timber	19.4	Enclosed Disconnected	0.0	floattimber
Bedroom 2	Timber	12.2	Enclosed Disconnected	0.0	Carpet
Bath	Timber	5.4	Enclosed Disconnected	0.0	Tiles
Staircase FF	Timber	8.3	Enclosed Disconnected	0.0	floattimber

Ceiling type

Location	Material	Added insulation	Roof space above
Garage	Plasterboard	0.0	No
Garage	Plasterboard	0.0	No
Garage	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	6.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Bedroom 4	Plasterboard	0.0	No
Bedroom 4	Plasterboard	0.0	No
Pwdr	Plasterboard	0.0	No
Staircase GF	Plasterboard	0.0	No
Staircase GF	Plasterboard	0.0	No
WIR	Plasterboard	6.0	No
Bedroom 3	Plasterboard	6.0	No

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: **MHSJ6XORHK**

Date of Certificate: **19 Dec 2018**

★ Star rating: **6.3**

Building Features

Bedroom 1	Plasterboard	6.0	No
ENS	Plasterboard	6.0	No
Living 2	Plasterboard	6.0	No
Bedroom 2	Plasterboard	6.0	No
Bath	Plasterboard	6.0	No
Staircase FF	Plasterboard	6.0	No

Ceiling penetrations

Location	Number	Type	Width (mm)	Length (mm)	Seal/ unsealed
Kitchen/Living	1	Exhaust Fans	200	500	Sealed
Pwdr	1	Exhaust Fans	200	500	Sealed
ENS	1	Exhaust Fans	200	500	Sealed
Bath	1	Exhaust Fans	200	500	Sealed

Ceiling fans

Location	Number	Diameter (mm)
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Roof type

Material	Added insulation	Roof colour
Framed:Flat - Flat Framed (Metal Deck)	0.0	light
Ceil: Ceiling	0.0	medium

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: **MHSJ6XORHK**

Date of Certificate: **19 Dec 2018**

★ Star rating: **6.3**

Additional information

Explanatory notes

About this report

Residential energy ratings address the quality of the building fabric i.e. walls, windows, floors and roof/ceilings. Ratings do not cover the energy or water efficiency of appliances including heating and cooling, hot water, dishwashers, ovens, fridges, TVs etc. or solar panel or water tank requirements. The efficiency or specification of these items is generally covered by other regulations, standards or guidelines.

General Information

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The actual energy consumption of your home may vary significantly from the predicted energy load figures in this report depending on issues such as the size of your household and your personal preferences, e.g. in terms of heating or cooling.

While the figures are an indicative guide to energy use, they can be used as a reliable guide for comparative purposes between different house designs and for demonstrating that the design meets the required regulatory compliance.

Homes that are energy efficient use less energy, are warmer in winter, cooler in summer and cost less to run. The higher the star rating the more energy efficient.

This NatHERS House Energy Rating report was carefully prepared by your assessor on the basis of comprehensive modelling using standard procedures to rate your home using an underlying engine developed by the Australian Commonwealth Scientific and Industrial Research Organisation (CSIRO).

All information relating to energy loads presented in this report is based on a range of standard assumptions in order to allow for comparisons with reports prepared for other homes and to demonstrate minimum regulatory compliance. The standard assumptions include figures for occupancy, indoor air temperature and are based on a unique climate file for your region.

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Disclaimer

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Contact

For more information on the Nationwide House Energy Rating Scheme (NatHERS), visit www.nathers.gov.au

For more information on energy efficient design and insulation visit www.yourhome.gov.au

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: VEPJFIJRCN

Date of Certificate: 19 Dec 2018

★ Star rating: 6.1

Assessor details

Accreditation number: **VIC/BDAV/11/1278**
Name: **Jim Woolcock**
Organisation: **Sustainability House**
Email: **fr5@sustainabilityhouse.com.au**
Phone: **1300308525**
Declaration of interest: **No potential conflicts of interest to declare**
Software: **FirstRate5: 5.2.9 (3.13)**
AAO: **BDAV**

Overview

Dwelling details

Address: **52 Golf road**
Suburb: **Oakleigh South**
State: **VIC** Postcode: **3167**
Type: **New Home** NCC Class: **Class 1a**
Lot/DP number: **-** NatHERS climate zone: **62**
Exposure: **suburban**

Key construction and insulation materials

(see following pages for details)

Construction: Wall:
Roof:
Floor:
Insulation: Wall:
Roof:
Floor:
Glazing:

Net floor area (m²)

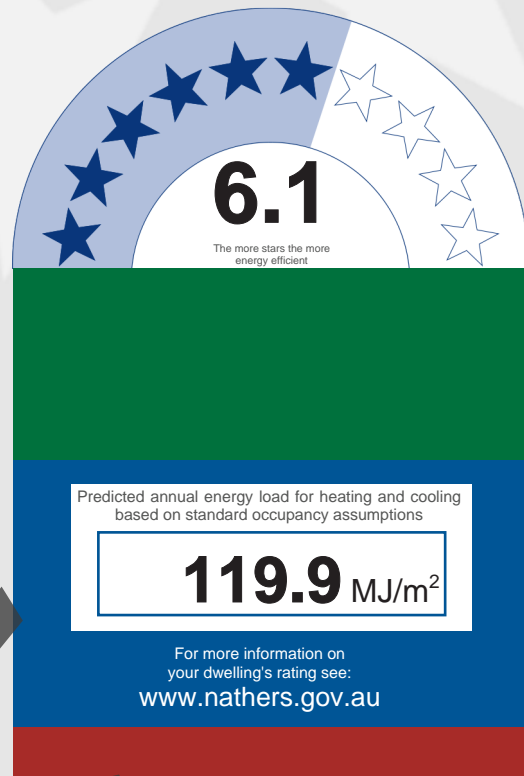
Conditioned: **144.5**
Unconditioned: **4.5**
Garage: **32.8**
TOTAL: **181.8**

Annual thermal performance loads (MJ/m²)

Heating: **106.1**
Cooling: **13.8**
TOTAL: **119.9**

Plan documents

Plan ref/date: **-**
Prepared by: **-**



Ceiling penetrations

(see following pages for details)

Sealed: **5**
Unsealed: **0**
TOTAL: **5**
Principal downlight type: **LED**

NOTE: This total is the maximum number of ceiling penetrations allowed to a ceiling (under a roof) for this certificate. **If this number is exceeded in construction then this certificate is NOT VALID and a new certificate is required. Loss of ceiling insulation for the penetrations listed has been taken into account with the rating.

Window selection - default windows only

Note on allowable window values: Only a 5% tolerance to the nominated SHGC window values shown on page 2 can be used with this rating.

Note: Only a +/-5% SHGC tolerance is allowed with this rating.

NB: This tolerance ONLY applies to SHGC, the U-value can always be lower but not higher than the values stated on page 2.

If any of the windows selected are outside the 5% tolerance then this certificate is no longer valid and the dwelling will need to be rerated to confirm compliance.

Scan to access this certificate online and confirm this is valid.

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: VEPJFIJRCN

Date of Certificate: 19 Dec 2018

★ Star rating: 6.1

Building Features

Windows type and performance value

Window ID	Window type	U-value	SHGC
CAP-055-64 A	Capral 419 Flushline Fixed Window DG 6EcAd/12Ar/6EA	2.62	0.46

Windows schedule

Window ID	Window no.	Height (mm)	Width (mm)	Orientation	Zone name	Outdoor shade
CAP-055-64 A	Living_SD	2700	2300	NE	Kitchen/Living	No
CAP-055-64 A	Bed 2_AW	1600	2300	NE	Bedroom 2	No
CAP-055-64 A	Bed 3_AW	1600	2900	NE	Bedroom 3	No
CAP-055-64 A	Bed 1_AW2	1600	1000	NW	Bedroom 1	No
CAP-055-64 A	Bed 1_AW1	1600	2000	SW	Bedroom 1	No
CAP-055-64 A	Pwdr SF_AW	600	808	SW	Pwdr SF	No
CAP-055-64 A	Bed 4_AW	1600	3000	SW	Bedroom 4	No
CAP-055-64 A	Living SF_AW	600	2900	NE	Living SF	No
CAP-055-64 A	Stairs SF_AW	1600	900	NE	Living SF	No

Roof windows and skylight type and performance value

ID	Window type	U-value	SHGC
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Roof window and skylight schedule

ID	Roof window/ skylight no.	Area (m ²)	Orientation	Zone name	Outdoor shade	Indoor shade/diffuser
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External wall type

Type	Insulation	Wall wrap
1 : FR5 - Brick Veneer	Rockwool batt: R2.5 (R2.5)	No
2 : Parti Wall	Rockwool batt: R2.5 (R2.5);Rockwool batt: R2.5 (R2.5)	No
3 : FR5 - Metal Clad Framed	Rockwool batt: R2.5 (R2.5)	No

External wall schedule

Wall type	Area (m ²)	Orientation	Zone name	Fixed shade	Eaves
1 : FR5 - Brick Veneer	16.4	SW	Garage	Yes	No
2 : Parti Wall	17.9	SE	Garage	No	No
1 : FR5 - Brick Veneer	4.6	NW	Garage	Yes	No
2 : Parti Wall	6.3	SE	Laundry	No	No

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: VEPJFIJRCN

Date of Certificate: 19 Dec 2018

★ Star rating: 6.1

Building Features

2 : Parti Wall	16.1	SE	Kitchen/Living	No	No
1 : FR5 - Brick Veneer	10.4	NE	Kitchen/Living	Yes	No
1 : FR5 - Brick Veneer	2.9	NW	Kitchen/Living	Yes	No
1 : FR5 - Brick Veneer	7.6	NE	Kitchen/Living	Yes	No
1 : FR5 - Brick Veneer	3.6	NE	Kitchen/Living	Yes	No
1 : FR5 - Brick Veneer	16.5	NW	Kitchen/Living	No	No
1 : FR5 - Brick Veneer	4.7	SW	Entry Way	Yes	No
1 : FR5 - Brick Veneer	16.8	NW	Entry Way	No	No
3 : FR5 - Metal Clad Framed	8.6	NW	Bath	No	No
3 : FR5 - Metal Clad Framed	1.8	SW	Bath	Yes	No
3 : FR5 - Metal Clad Framed	3	NW	Bath	Yes	No
3 : FR5 - Metal Clad Framed	8.8	NE	Bedroom 2	Yes	No
3 : FR5 - Metal Clad Framed	10.7	NW	Bedroom 2	No	No
3 : FR5 - Metal Clad Framed	13.1	SE	Bedroom 3	No	No
3 : FR5 - Metal Clad Framed	8.9	NE	Bedroom 3	Yes	No
3 : FR5 - Metal Clad Framed	6.2	SE	Stairs FF	No	No
3 : FR5 - Metal Clad Framed	7.4	SE	WIR	No	No
3 : FR5 - Metal Clad Framed	4.7	SW	ENS	No	No
3 : FR5 - Metal Clad Framed	10.2	SE	ENS	No	No
3 : FR5 - Metal Clad Framed	14.9	NW	Bedroom 1	Yes	No
3 : FR5 - Metal Clad Framed	11.2	SW	Bedroom 1	No	No
3 : FR5 - Metal Clad Framed	3.5	SW	Pwdr SF	No	No
3 : FR5 - Metal Clad Framed	5.7	NW	Pwdr SF	No	No
3 : FR5 - Metal Clad Framed	10.7	SW	Bedroom 4	No	No
3 : FR5 - Metal Clad Framed	9.4	SE	Bedroom 4	No	No
3 : FR5 - Metal Clad Framed	11.8	SE	Living SF	No	No
3 : FR5 - Metal Clad Framed	14.8	NE	Living SF	No	No
3 : FR5 - Metal Clad Framed	15.6	NW	Living SF	No	No

Internal wall type

Type	Area (m ²)	Insulation
1 : FR5 - Internal Plasterboard Stud Wall	129	
2 : FR5 - Internal Plasterboard Stud Wall	44.8	Rockwool batt: R2.0 (R2.0)

Floors

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: VEPJFIJRCN

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Building Features

Location	Construction	Area (m ²)	Sub floor ventilation	Added insulation	Covering
Garage	CSOG: Slab on Ground	32.8	Enclosed	0.0	none
Pwdr	CSOG: Slab on Ground	2.3	Enclosed	0.0	Tiles
Laundry	CSOG: Slab on Ground	6.3	Enclosed	0.0	Tiles
Kitchen/Living	CSOG: Slab on Ground	2.9	Enclosed	0.0	floattimber
Kitchen/Living	CSOG: Slab on Ground	5.1	Enclosed	0.0	floattimber
Kitchen/Living	CSOG: Slab on Ground	31.6	Enclosed	0.0	floattimber
Entry Way	CSOG: Slab on Ground	0.9	Enclosed	0.0	floattimber
Entry Way	CSOG: Slab on Ground	8	Enclosed	0.0	floattimber
Bath	Timber	2.6	Enclosed Disconnected	0.0	Tiles
Bath	Timber	4.2	Enclosed Disconnected	0.0	Tiles
Bedroom 2	Timber	9.8	Enclosed Disconnected	0.0	Carpet
Bedroom 3	Timber	13.1	Enclosed Disconnected	0.0	Carpet
Stairs FF	Timber	6.2	Enclosed Disconnected	0.0	floattimber
WIR	Timber	7.1	Enclosed Disconnected	0.0	floattimber
ENS	Timber	4.1	Enclosed Disconnected	0.0	Tiles
ENS	Timber	1.3	Enclosed Disconnected	0.0	Tiles
Bedroom 1	Timber	3	Enclosed Disconnected	0.0	Carpet
Bedroom 1	Timber	14.5	Enclosed Disconnected	0.0	Carpet
Lobby	Timber	1.2	Enclosed Disconnected	0.0	floattimber
Lobby	Timber	2.1	Enclosed Disconnected	0.0	floattimber
Pwdr SF	Timber	2.2	Enclosed Disconnected	0.0	Tiles
Bedroom 4	Timber	11.2	Enclosed Disconnected	0.0	Carpet
Living SF	Timber	20.9	Enclosed Disconnected	0.0	floattimber

Nationwide House Energy Rating Scheme* Certificate

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Building Features

Ceiling type

Location	Material	Added insulation	Roof space above
Garage	Plasterboard	0.0	No
Garage	Plasterboard	0.0	No
Garage	Plasterboard	0.0	No
Garage	Plasterboard	0.0	No
Garage	Plasterboard	0.0	No
Garage	Plasterboard	0.0	No
Pwdr	Plasterboard	0.0	No
Pwdr	Plasterboard	0.0	No
Laundry	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	6.0	No
Kitchen/Living	Plasterboard	6.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Kitchen/Living	Plasterboard	0.0	No
Entry Way	Plasterboard	0.0	No
Entry Way	Plasterboard	6.0	No
Bath	Plasterboard	6.0	No
Bath	Plasterboard	0.0	No
Bath	Plasterboard	0.0	No
Bedroom 2	Plasterboard	6.0	No
Bedroom 3	Plasterboard	6.0	No
Stairs FF	Plasterboard	0.0	No
WIR	Plasterboard	0.0	No
WIR	Plasterboard	0.0	No
WIR	Plasterboard	0.0	No
ENS	Plasterboard	0.0	No
ENS	Plasterboard	0.0	No
ENS	Plasterboard	6.0	No
Bedroom 1	Plasterboard	6.0	No
Bedroom 1	Plasterboard	0.0	No

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Building Features

Bedroom 1	Plasterboard	0.0	No
Bedroom 1	Plasterboard	0.0	No
Bedroom 1	Plasterboard	0.0	No
Lobby	Plasterboard	6.0	No
Lobby	Plasterboard	0.0	No
Pwdr SF	Plasterboard	6.0	No
Bedroom 4	Plasterboard	6.0	No
Living SF	Plasterboard	6.0	No

Ceiling penetrations

Location	Number	Type	Width (mm)	Length (mm)	Seal/ unsealed
Pwdr	1	Exhaust Fans	200	500	Sealed
Kitchen/Living	1	Exhaust Fans	200	500	Sealed
Bath	1	Exhaust Fans	200	500	Sealed
ENS	1	Exhaust Fans	200	500	Sealed
Pwdr SF	1	Exhaust Fans	200	500	Sealed

Ceiling fans

Location	Number	Diameter (mm)
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Roof type

Material	Added insulation	Roof colour
Framed:Flat - Flat Framed (Metal Deck)	0.0	light
Ceil: Ceiling	0.0	medium

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Nationwide House Energy Rating Scheme* Certificate

Certificate Number: 6V4AP6EXXN

Date of Certificate: 19 Dec 2018

★ Star rating: 6.4

Assessor details

Accreditation number: **VIC/BDAV/11/1278**
Name: **Jim Woolcock**
Organisation: **Sustainability House**
Email: **fr5@sustainabilityhouse.com.au**
Phone: **1300308525**
Declaration of interest: **No potential conflicts of interest to declare**
Software: **FirstRate5: 5.2.9 (3.13)**
AAO: **BDAV**

Overview

Dwelling details

Address: **52 Golf road**
Suburb: **Oakleigh South**
State: **VIC** Postcode: **3167**
Type: **New Home** NCC Class: **Class 1a**
Lot/DP number: **-** NatHERS climate zone: **62**
Exposure: **suburban**

Key construction and insulation materials

(see following pages for details)

Construction: Wall:
Roof:
Floor:
Insulation: Wall:
Roof:
Floor:
Glazing:

Net floor area (m²)

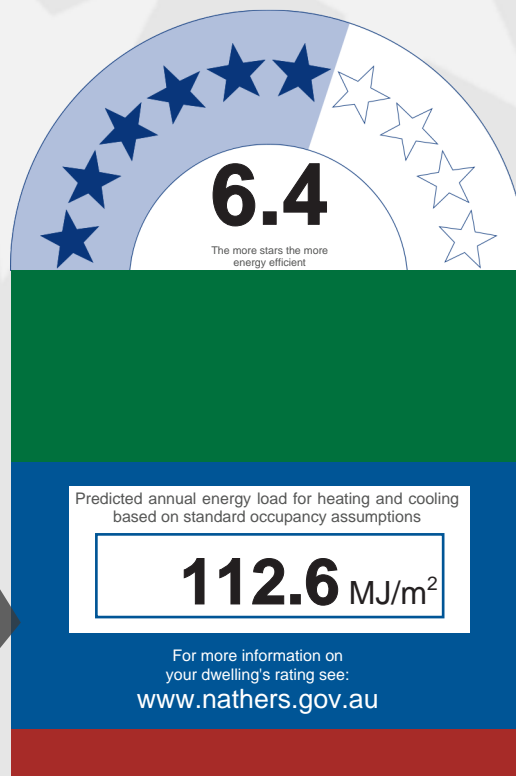
Conditioned: **66.7**
Unconditioned: **3.8**
Garage: **25.2**
TOTAL: **95.7**

Annual thermal performance loads (MJ/m²)

Heating: **80.6**
Cooling: **32**
TOTAL: **112.6**

Plan documents

Plan ref/date: **-**
Prepared by: **-**



Ceiling penetrations

(see following pages for details)

Sealed: **4**
Unsealed: **0**
TOTAL: **4**

Principal downlight type: **LED**

****NOTE:** This total is the maximum number of ceiling penetrations allowed to a ceiling (under a roof) for this certificate. **If this number is exceeded in construction then this certificate is NOT VALID and a new certificate is required.** Loss of ceiling insulation for the penetrations listed has been taken into account with the rating.

Window selection - default windows only

Note on allowable window values: Only a 5% tolerance to the nominated SHGC window values shown on page 2 can be used with this rating.

Note: Only a +/-5% SHGC tolerance is allowed with this rating.

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Nationwide House Energy Rating Scheme* Certificate

Certificate Number: 6V4AP6EXXN

Date of Certificate: 19 Dec 2018

★ Star rating: 6.4

Building Features

Windows type and performance value

Window ID	Window type	U-value	SHGC
CAP-055-64 A	Capral 419 Flushline Fixed Window DG 6EcAd/12Ar/6EA	2.62	0.46

Windows schedule

Window ID	Window no.	Height (mm)	Width (mm)	Orientation	Zone name	Outdoor shade
CAP-055-64 A	Bed 1_SD	2700	2000	W	Bedroom 1	No
CAP-055-64 A	Bed 2_AW	1600	2400	E	Bedroom 2	No
CAP-055-64 A	Living_SD	2700	3000	W	Kitchen/Living	No

Roof windows and skylight type and performance value

ID	Window type	U-value	SHGC
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Roof window and skylight schedule

ID	Roof window/ skylight no.	Area (m ²)	Orientation	Zone name	Outdoor shade	Indoor shade/diffuser
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External wall type

Type	Insulation	Wall wrap
1 : FR5 - Brick Veneer	Rockwool batt: R2.5 (R2.5)	No
2 : Parti Wall	Rockwool batt: R2.5 (R2.5); Rockwool batt: R2.5 (R2.5)	No
3 : FR5 - Metal Clad Framed	Rockwool batt: R2.5 (R2.5)	No

External wall schedule

Wall type	Area (m ²)	Orientation	Zone name	Fixed shade	Eaves
1 : FR5 - Brick Veneer	2.9	N	Bedroom 1	Yes	No
1 : FR5 - Brick Veneer	9.2	W	Bedroom 1	Yes	Yes
2 : Parti Wall	9.5	S	Bedroom 1	No	No
2 : Parti Wall	9.6	S	ENS	No	No
2 : Parti Wall	17.9	S	Garage	No	No
1 : FR5 - Brick Veneer	12.6	E	Garage	No	No
2 : Parti Wall	17.9	N	Garage	No	No
1 : FR5 - Brick Veneer	3.1	W	Entry Way	Yes	Yes
2 : Parti Wall	16.7	N	Entry Way	No	No
2 : Parti Wall	9.4	S	Bedroom 2	No	No

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: 6V4AP6EXXN

Date of Certificate: 19 Dec 2018

★ Star rating: 6.4

Building Features

3 : FR5 - Metal Clad Framed	12.6	E	Bedroom 2	No	No
2 : Parti Wall	8.6	N	Bedroom 2	No	No
2 : Parti Wall	4.5	S	Bath	No	No
3 : FR5 - Metal Clad Framed	12.6	W	Kitchen/Living	No	No
2 : Parti Wall	23.3	S	Kitchen/Living	No	No
2 : Parti Wall	28	N	Kitchen/Living	No	No

Internal wall type

Type	Area (m ²)	Insulation
1 : FR5 - Internal Plasterboard Stud Wall	37.1	
2 : FR5 - Internal Plasterboard Stud Wall	27.7	Rockwool batt: R2.0 (R2.0)
3 : FR5 - Internal Plasterboard Stud Wall	4.4	

Floors

Location	Construction	Area (m ²)	Sub floor ventilation	Added insulation	Covering
Bedroom 1	CSOG: Slab on Ground	11	Enclosed	0.0	Carpet
ENS	CSOG: Slab on Ground	4.4	Enclosed	0.0	Tiles
Laundry	CSOG: Slab on Ground	3.8	Enclosed	0.0	Tiles
Garage	CSOG: Slab on Ground	0.6	Enclosed	0.0	none
Garage	CSOG: Slab on Ground	24.5	Enclosed	0.0	none
Entry Way	CSOG: Slab on Ground	5.6	Enclosed	0.0	floattimber
Bedroom 2	Timber	12.6	Enclosed Disconnected	0.0	Carpet
Bath	Timber	3.2	Enclosed Disconnected	0.0	Tiles
Kitchen/Living	Timber	34.8	Enclosed Disconnected	0.0	floattimber
Kitchen/Living	Timber	0.8	Elevated	2.0	floattimber

Ceiling type

Location	Material	Added insulation	Roof space above
Bedroom 1	Plasterboard	0.0	No
ENS	Plasterboard	0.0	No
Laundry	Plasterboard	0.0	No
Garage	Plasterboard	0.0	No

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: 6V4AP6EXXN

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★ Star rating: 6.4

Building Features

Garage	Plasterboard	0.0	No
Garage	Plasterboard	0.0	No
Garage	Plasterboard	0.0	No
Garage	Plasterboard	3.0	No
Entry Way	Plasterboard	0.0	No
Bedroom 2	Plasterboard	6.0	No
Bath	Plasterboard	6.0	No
Kitchen/Living	Plasterboard	6.0	No
Kitchen/Living	Plasterboard	6.0	No

Ceiling penetrations

Location	Number	Type	Width (mm)	Length (mm)	Seal/ unsealed
ENS	1	Exhaust Fans	200	500	Sealed
Laundry	1	Exhaust Fans	200	500	Sealed
Bath	1	Exhaust Fans	200	500	Sealed
Kitchen/Living	1	Exhaust Fans	200	500	Sealed

Ceiling fans

Location	Number	Diameter (mm)
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Roof type

Material	Added insulation	Roof colour
Ceil: Ceiling	0.0	medium
Framed:Flat - Flat Framed (Metal Deck)	0.0	light

Nationwide House Energy Rating Scheme* Certificate

Certificate Number: **6V4AP6EXXN**

Date of Certificate: **19 Dec 2018**

★ Star rating: **6.4**

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Homes that are energy efficient use less energy, are warmer in winter, cooler in summer and cost less to run. The higher the star rating the more energy efficient.

This NatHERS House Energy Rating report was carefully prepared by your assessor on the basis of comprehensive modelling using standard procedures to rate your home using an underlying engine developed by the Australian Commonwealth Scientific and Industrial Research Organisation (CSIRO).

All information relating to energy loads presented in this report is based on a range of standard assumptions in order to allow for comparisons with reports prepared for other homes and to demonstrate minimum regulatory compliance. The standard assumptions include figures for occupancy, indoor air temperature and are based on a unique climate file for your region.

Accredited Assessors

To ensure you get a high-quality, professional NatHERS House Energy Rating report, you should always use an accredited assessor, accredited assessors are members of a professional body called an Assessor Accrediting Organisation (AAO).

AAOs have specific quality assurance processes in place and continuing professional development requirements to maintain a high and consistent standard of assessments across the country. Non-accredited assessors do not have this level of quality assurance or any on-going training requirements.

If you have any questions or concerns about this report, please direct them to your assessor in the first instance.

If your assessor is unable to address your questions or concerns, please contact their AAO listed under 'assessor details'. You can also find a range of information about accredited assessors on the AAO websites.

Disclaimer

The energy values quoted are for comparison purposes only; they are not a prediction of actual energy use. This rating only applies to the floor plan, construction details, orientation and climate as submitted and included in the attached drawing set that bears a stamp with the same number as this certificate. Changes to any of these details could affect the rating.

Contact

For more information on the Nationwide House Energy Rating Scheme (NatHERS), visit www.nathers.gov.au

For more information on energy efficient design and insulation visit www.yourhome.gov.au