

BESS Report **ADVERTISED COPY**



This BESS report outlines the sustainable design commitments of the proposed development at 15 Marriott Parade Glen Waverley VIC 3150. 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.

15 Marriott Parade, Glen Waverley 3150 Glen Waverley

Site area: 2186 m² · Building Floor Area: 3555 m² ·

Date of Assessment: 30 Jan 2020 ·

Version: V4, 1.6.0-B.254 ·

Applicant: lu@fraterconsultingservices.com.au

Project Identifier

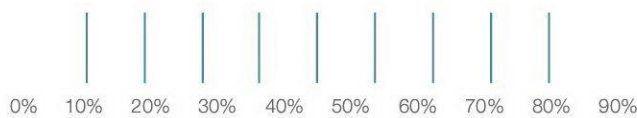
00AFFE2C

Published

<http://bess.net.au/projects/00AFFE2C-V1>

Your BESS score is

+ 51%

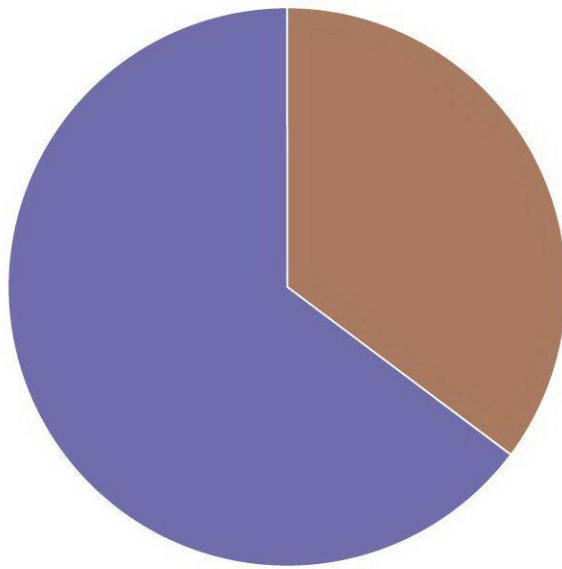


50% +
Best Practice

70% +
Excellence

% of Total	Category	Score	Pass
0 %	Management	9 %	
4 %	Water	50 %	✓
15 %	Energy	53 %	✓
14 %	Stormwater	100 %	✓
12 %	IEQ	70 %	✓
3 %	Transport	31 %	
2 %	Waste	33 %	
2 %	Urban Ecology	35 %	
0 %	Innovation	0 %	

Building Composition

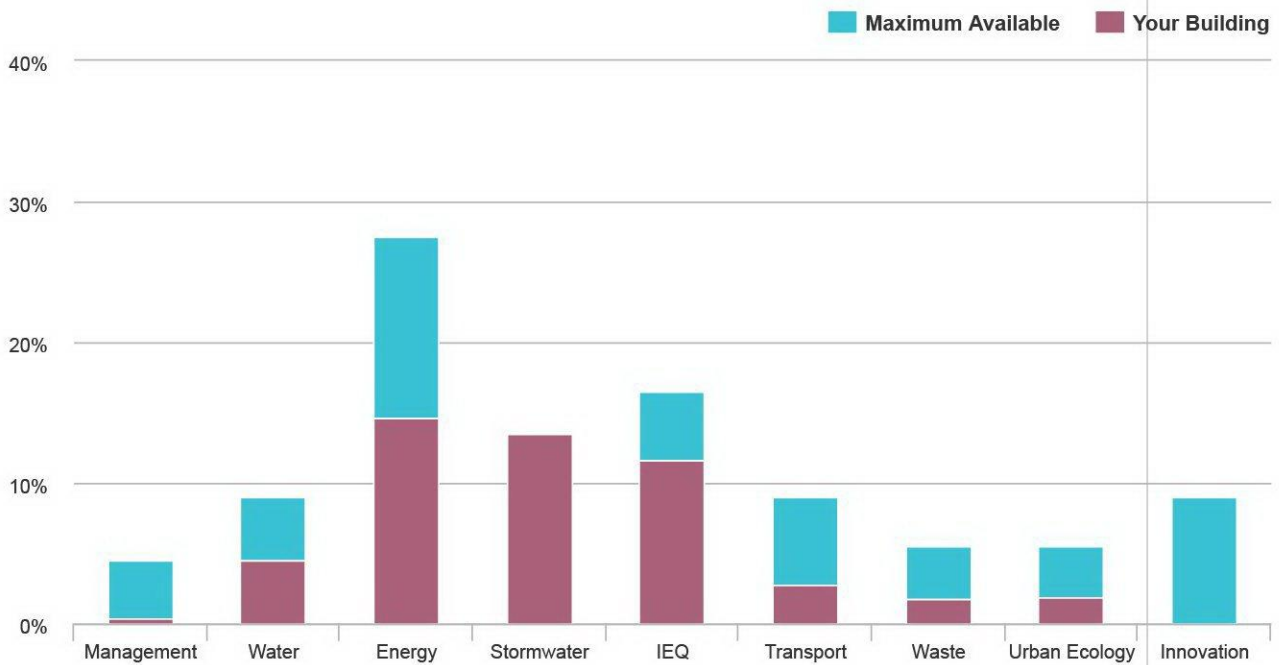


■ Townhouse ■ Apartment

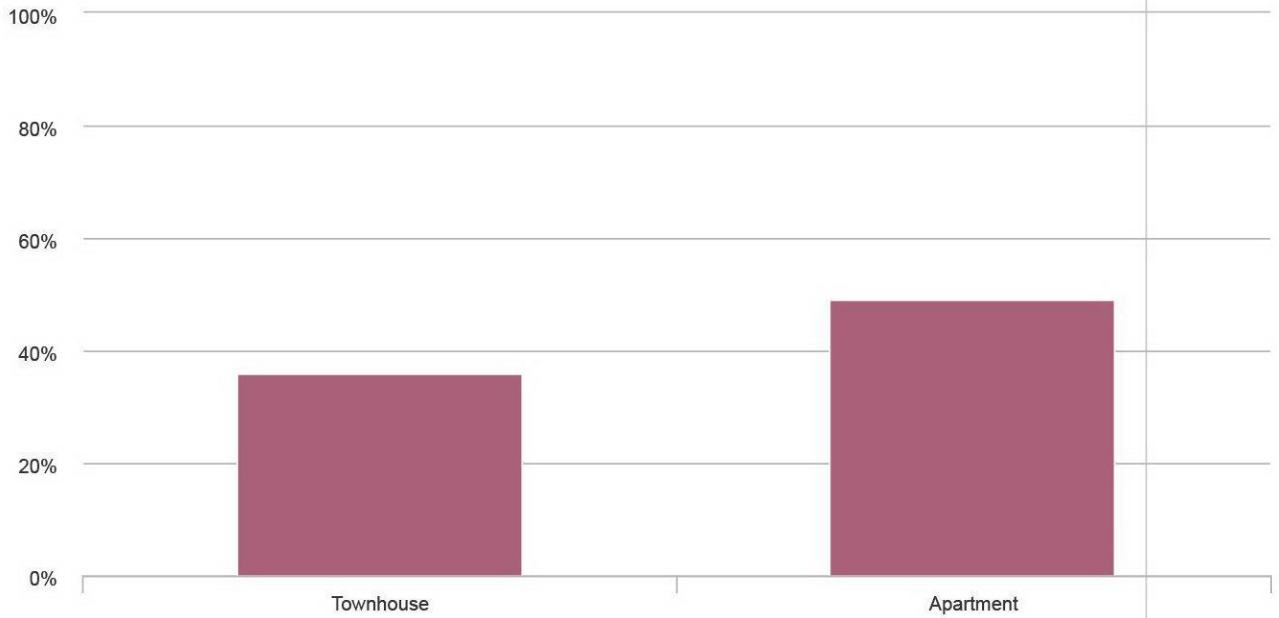
Dwellings

Type	Name	Quantity	Area
Townhouse	TH 1	1	273 m ²
Townhouse	TH2 & TH3	2	244 m ²
Townhouse	TH4	1	243 m ²
Townhouse	TH5	1	246 m ²
Apartment	Apartment Ground Floor	3	204 m ²
Apartment	Apartment First Floor	3	211 m ²
Apartment	Apartment Second Floor	3	203 m ²
Apartment	Apartment Third Floor	2	221 m ²

How did this Development Perform in each Environmental Category?



How does each Dwelling or Non-Residential Space type perform?



Sustainable design commitments by category

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

Management

9% - contributing 0% to overall score

Credit	Disabled	Scoped out	Score
Management 3.1 Metering			100 %

Management 3.1 Metering 100%

Score Contribution This credit contributes 8.9% towards this section's score.

Aim To provide building users with information that allows monitoring of energy and water consumption

Questions

Have utility meters been provided for all individual dwellings?

Apartment

Yes

Water

50% - contributing 4% to overall score

Credit	Disabled	Scoped out	Score
Water 1.1 Potable water use reduction			40 %
Water 3.1 Water Efficient Landscaping			100 %
Water 4.1 Building Systems Water Use Reduction			N/A

Water Approachs

What approach do you want to use Water?	Use the built in calculation tools
Are you installing a rainwater tank?	Yes

Water fixtures, fittings and connections

	TH 1	TH2 & TH3	TH4
Showerhead	3 Star WELS (>= 6.0 but <= 7.5)	3 Star WELS (>= 6.0 but <= 7.5)	3 Star WELS (>= 6.0 but <= 7.5)
Bath	Scope out	Scope out	Scope out
Kitchen Taps	>= 5 Star WELS rating	>= 5 Star WELS rating	>= 5 Star WELS rating
Bathroom Taps	>= 5 Star WELS rating	>= 5 Star WELS rating	>= 5 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	Default or unrated	Default or unrated	Default or unrated
Which non-potable water source is the dwelling/space connected to?	RWT TH 1	RWT TH 2& 3	RWT TH 4
Non-potable water source connected to Toilets	Yes	Yes	Yes
	TH5	Apartment Ground Floor	Apartment First Floor
Showerhead	3 Star WELS (>= 6.0 but <= 7.5)	3 Star WELS (>= 6.0 but <= 7.5)	3 Star WELS (>= 6.0 but <= 7.5)
Bath	Scope out	Medium Sized Contemporary Bath	Medium Sized Contemporary Bath
Kitchen Taps	>= 5 Star WELS rating	>= 5 Star WELS rating	>= 5 Star WELS rating
Bathroom Taps	>= 5 Star WELS rating	>= 5 Star WELS rating	>= 5 Star WELS rating

	TH5	Apartment Ground Floor	Apartment First Floor
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	Default or unrated	Default or unrated	Default or unrated
Which non-potable water source is the dwelling/space connected to?	RWT TH 5	RWT Apartment	RWT Apartment
Non-potable water source connected to Toilets	Yes	Yes	Yes

	Apartment Second Floor	Apartment Third Floor
Showerhead	3 Star WELS (>= 6.0 but <= 7.5)	3 Star WELS (>= 6.0 but <= 7.5)
Bath	Medium Sized Contemporary Bath	Medium Sized Contemporary Bath
Kitchen Taps	>= 5 Star WELS rating	>= 5 Star WELS rating
Bathroom Taps	>= 5 Star WELS rating	>= 5 Star WELS rating
Dishwashers	>= 5 Star WELS rating	>= 5 Star WELS rating
WC	>= 4 Star WELS rating	>= 4 Star WELS rating
Urinals	Scope out	Scope out
Washing Machine Water Efficiency	Default or unrated	Default or unrated
Which non-potable water source is the dwelling/space connected to?	RWT Apartment	-1
Non-potable water source connected to Toilets	Yes	No

Rainwater Tanks

	RWT TH 1	RWT TH 2& 3	RWT TH 4
What is the total roof area connected to the rainwater tank? <small>Square Metres</small>	150.8	180.0	85.1
Tank Size <small>Litres</small>	2000.0	4000.0	2000.0

	RWT TH 5	RWT Apartment
What is the total roof area connected to the rainwater tank? <small>Square Metres</small>	93.7	768.1
Tank Size <small>Litres</small>	2000.0	12000.0

Water 1.1 Potable water use reduction 40%

Score Contribution This credit contributes 83.3% 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	What is the reduction in total potable water use due to efficient fixtures, appliances, rainwater use and recycled water use? To achieve points in this credit there must be >25% potable water reduction.

Questions

Percentage Achieved ? Percentage %

Project wide

%

Calculations

Reference (kL)

Project wide

3734

Proposed (excluding rainwater and recycled water use) (kL)

Project wide

3049

Rainwater or recycled water supplied (Internal + External) (kL)

Project wide

300

Proposed (including rainwater and recycled water use) (kL)

Project wide

2748

% Reduction in Potable Water Consumption Percentage %

Project wide

26 %

Water 3.1 Water Efficient Landscaping 100%

Score Contribution	This credit contributes 16.7% towards this section's score.
Aim	Are water efficiency principles used for landscaped areas? This includes low water use plant selection (e.g. xeriscaping). 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?

Project wide

Yes

Water 4.1 Building Systems Water Use Reduction

N/A

This credit was scoped out: No sprinkler system

Aim

Will the project minimise water use for building systems such as evaporative cooling and fire testing systems?

Energy

53% - contributing 15% to overall score

Credit	Disabled	Scoped out	Score
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 3.1 Carpark Ventilation			100 %
Energy 3.2 Hot Water			100 %
Energy 3.3 External Lighting			100 %
Energy 3.4 Clothes Drying			35 %
Energy 3.5 Internal Lighting - Residential Single Dwelling			100 %
Energy 3.6 Internal Lighting - Residential Multiple Dwellings			100 %

Dwellings Energy Approaches

What approach do you want to use for Energy?

Use the built in calculation tools

Gas supplied into building

Natural Gas

Dwelling Energy Profiles

	TH 1	TH2 & TH3	TH4
Below the floor is	Ground or Carpark	Ground or Carpark	Ground or Carpark
Above the ceiling is	Outside	Outside	Outside
Exposed sides	2	2	2

	TH 1	TH2 & TH3	TH4
NatHERS Annual Energy Loads - Heat <small>MJ/sqm</small>	113.0	113.0	113.0
NatHERS Annual Energy Loads - Cool <small>MJ/sqm</small>	25.0	25.0	25.0
NatHERS star rating	6.0	6.0	6.0
Type of Heating System	D Reverse cycle space	D Reverse cycle space	D Reverse cycle space
Heating System Efficiency	4 Star	4 Star	4 Star
Type of Cooling System	Refrigerative space	Refrigerative space	Refrigerative space
Cooling System Efficiency	4 Stars	4 Stars	4 Stars
Type of Hot Water System	J Gas Instantaneous 6 star	6 J Gas Instantaneous 6 star	6 J Gas Instantaneous 6 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
	TH5	Apartment Ground Floor	Apartment First Floor
Below the floor is	Ground or Carpark	Ground or Carpark	Another Occupancy
Above the ceiling is	Outside	Another Occupancy	Another Occupancy
Exposed sides	2	2	2
NatHERS Annual Energy Loads - Heat <small>MJ/sqm</small>	113.0	113.0	113.0
NatHERS Annual Energy Loads - Cool <small>MJ/sqm</small>	25.0	25.0	25.0
NatHERS star rating	6.0	6.0	6.0
Type of Heating System	D Reverse cycle space	D Reverse cycle space	D Reverse cycle space
Heating System Efficiency	4 Star	4 Star	4 Star
Type of Cooling System	Refrigerative space	Refrigerative space	Refrigerative space
Cooling System Efficiency	4 Stars	4 Stars	4 Stars
Type of Hot Water System	J Gas Instantaneous 6 star	6 J Gas Instantaneous 6 star	J Gas Instantaneous 6 star
Clothes Line	D Private outdoor clothesline	A No drying facilities	A No drying facilities
Clothes Dryer	A No clothes dryer	A No clothes dryer	A No clothes dryer
	Apartment Second Floor	Apartment Third Floor	
Below the floor is	Another Occupancy	Another Occupancy	
Above the ceiling is	Another Occupancy	Outside	
Exposed sides	2	2	
NatHERS Annual Energy Loads - Heat <small>MJ/sqm</small>	113.0	113.0	

	Apartment Second Floor	Apartment Third Floor
NatHERS Annual Energy Loads - Cool MJ/sqm	25.0	25.0
NatHERS star rating	6.0	6.0
Type of Heating System	D Reverse cycle space	D Reverse cycle space
Heating System Efficiency	4 Star	4 Star
Type of Cooling System	Refrigerative space	Refrigerative space
Cooling System Efficiency	4 Stars	4 Stars
Type of Hot Water System	J Gas Instantaneous 6 star	J Gas Instantaneous 6 star
Clothes Line	A No drying facilities	A No drying facilities
Clothes Dryer	A No clothes dryer	A No clothes dryer

Energy 2.1 Greenhouse Gas Emissions 100%

Score Contribution	This credit contributes 9.4% towards this section's score.
Aim	Reduce the building's greenhouse gas emissions
Criteria	Are greenhouse gas emissions >10% below the benchmark?

Questions

Criteria Achieved ?

Calculations

Reference Building with Reference Services (BCA only) ^{kg CO2}

Townhouse	Apartment
57728.0	114725.4

Proposed Building with Proposed Services (Actual Building) ^{kg CO2}

Townhouse	Apartment
19707.1	47293.4

% Reduction in GHG Emissions ^{Percentage %}

Townhouse	Apartment
65 %	58 %

Energy 2.3 Electricity Consumption 100%

Score Contribution	This credit contributes 9.4% towards this section's score.
Aim	Reduce consumption of electricity
Criteria	Is the annual electricity consumption >10% below the benchmark?

Questions

Criteria Achieved ?

Calculations

Reference kWh

Townhouse	Apartment
49308.2	96485.4

Proposed kWh

Townhouse	Apartment
14991.7	36072.1

Improvement Percentage %

Townhouse	Apartment
69 %	62 %

Energy 2.4 Gas Consumption 100%

Score Contribution	This credit contributes 9.4% towards this section's score.
Aim	Reduce consumption of electricity
Criteria	Is the annual gas consumption >10% below the benchmark?

Questions

Criteria Achieved ?

Calculations

Reference MJ

Townhouse	Apartment
96659.1	223463.3

Proposed MJ

Townhouse	Apartment
71320.9	169188.1

Improvement Percentage %

Townhouse	Apartment
26 %	24 %

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 3.1 Carpark Ventilation 100%

Score Contribution This credit contributes 9.4% towards this section's score.

Questions

If you have a basement carpark, is it either: (a) fully naturally ventilated (no mechanical ventilation system), or (b) use Carbon Monoxide monitoring to control the operation and speed of the ventilation fans?

Project wide

Yes

Energy 3.2 Hot Water 100%

Score Contribution This credit contributes 4.7% towards this section's score.

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

Criteria Achieved ?

Calculations

Reference kWh

Townhouse	Apartment
26849.8	62073.1

Proposed kWh

Townhouse	Apartment
19872.8	47146.7

Improvement Percentage %

Townhouse	Apartment
25 %	24 %

Energy 3.3 External Lighting 100%

Score Contribution This credit contributes 1.7% towards this section's score.

Questions

Is the external lighting controlled by a motion detector?

Townhouse

Yes

Energy 3.4 Clothes Drying 35%

Score Contribution This credit contributes 4.7% towards this section's score.

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

Questions

Criteria Achieved ?

Calculations

Reference ^{kWh}

Townhouse

4113.7

Apartment

8474.4

Proposed ^{kWh}

Townhouse

822.7

Apartment

8474.4

Improvement ^{Percentage %}

Townhouse

80 %

Apartment

0 %

Energy 3.5 Internal Lighting - Residential Single Dwelling 100%

Score Contribution This credit contributes 1.7% 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?

Townhouse

Yes

Energy 3.6 Internal Lighting - Residential Multiple Dwellings

100%

Score Contribution This credit contributes 6.1% towards this section's score.

Aim Reduce energy consumption associated with internal lighting

Questions

Is the maximum illumination power density (W/m2) in at least 90% of the relevant Building Class at least 20% lower than required by Table J6.2a of the NCC BCA (2013) Volume 1 Section J (Class 2 to 9) and clause 3.12.5.5 NCC BCA (2013) Volume 2 Section J (Class 1 and 10)?

Apartment

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%

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

Project wide

101

Flow (ML/year) % Reduction

Project wide

-

Total Suspended Solids (kg/year) % Reduction

Project wide

-

Total Phosphorus (kg/year) % Reduction

Project wide

-

Total Nitrogen (kg/year) % Reduction

Project wide

-

Calculations

Min STORM Score

Project wide

100

IEQ

70% - contributing 12% to overall score

Credit	Disabled	Scoped out	Score
IEQ 1.1 Daylight Access - Living Areas			100 %
IEQ 1.2 Daylight Access - Bedrooms			100 %
IEQ 1.5 Daylight Access - Minimal Internal Bedrooms			100 %
IEQ 2.1 Effective Natural Ventilation			67 %
IEQ 2.2 Cross Flow Ventilation			100 %

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

Please provide the following room profiling information below.

	TH 1, All bedrooms	TH 1, All living
Room Designation	Bedroom	Living
Quantity	44	11
Auto-Pass	Yes	Yes

IEQ 1.1 Daylight Access - Living Areas 100%

Score Contribution This credit contributes 21.9% towards this section's score.

Aim To provide a high level of amenity and energy efficiency through design for natural light.

Criteria What % of living areas achieve a daylight factor greater than 1%

Questions

Percentage Achieved ? Percentage %

Calculations

Calculated percentage Percentage %

Apartment

100 %

IEQ 1.2 Daylight Access - Bedrooms 100%

Score Contribution This credit contributes 21.9% towards this section's score.

Aim To provide a high level of amenity and energy efficiency through design for natural light.

Criteria What % of bedrooms achieve a daylight factor greater than 0.5%

Questions

Percentage Achieved ? Percentage %

Calculations

Calculated percentage Percentage %

Apartment

100 %

IEQ 1.5 Daylight Access - Minimal Internal Bedrooms 100%

Score Contribution This credit contributes 7.3% towards this section's score.

Aim To provide a high level of amenity and energy efficiency through design for natural light and ventilation.

Questions

Do at least 90% of dwellings have an external window in all bedrooms?

Apartment

Yes

IEQ 2.1 Effective Natural Ventilation 67%

Score Contribution This credit contributes 21.9% towards this section's score.

Aim To provide fresh air and passive cooling opportunities.

Criteria What % of dwellings are effectively naturally ventilated?

Questions

% Achieved ?

Apartment

72 %

IEQ 2.2 Cross Flow Ventilation 100%

Score Contribution This credit contributes 4.0% towards this section's score.

Aim To provide fresh air and passive cooling opportunities.

Questions

Are all habitable rooms designed to achieve natural cross flow ventilation?

Townhouse

Yes

Transport

31% - contributing 3% to overall score

Credit	Disabled	Scoped out	Score
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Transport 1.1 Bicycle Parking - Residential			100 %
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Transport 1.2 Bicycle Parking - Residential Visitor			35 %
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Transport 1.1 Bicycle Parking - Residential			100%
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Score Contribution This credit contributes 23.1% 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?

Notes Bicycle spaces will be accessible for townhouses residents

Questions

Bicycle Spaces Provided ?

Townhouse	Apartment
11	11

Calculations

Min Bicycle Spaces Required

Townhouse	Apartment
5	11

Transport 1.2 Bicycle Parking - Residential Visitor 35%

Score Contribution	This credit contributes 23.1% towards this section's score.
Aim	To encourage and recognise initiatives that facilitate cycling
Criteria	Is there at least one visitor bicycle space per 5 dwellings?

Questions

Visitor Bicycle Spaces Provided ?

Townhouse
1

Calculations

Min Visitor Bicycle Spaces Required

Townhouse
1

Waste 33% - contributing 2% to overall score

Credit	Disabled	Scoped out	Score
Waste 2.2 - Operational Waste - Convenience of Recycling			100 %

Waste 2.2 - Operational Waste - Convenience of Recycling 100%

Score Contribution	This credit contributes 33.3% towards this section's score.
Aim	To minimise recyclable material going to landfill

Questions

Are the recycling facilities at least as convenient for occupants as facilities for general waste?

Project wide

Yes

Urban Ecology

35% - contributing 2% to overall score

Credit	Disabled	Scoped out	Score
Urban Ecology 2.1 Vegetation			75 %

Urban Ecology 2.1 Vegetation 75%

Score Contribution	This credit contributes 46.3% 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?
Notes	At least 20% (437sqm) of the site area will be covered by vegetatio

Questions

Percentage Achieved ? Percentage %

Project wide

20 %

Innovation

0% - contributing 0% to overall score

Items to be marked on floorplans

0 / 15 floorplans & elevation notes complete.

IEQ 1.1: If using BESS daylight calculator, references to floorplans and elevations showing window sizes and sky angles.

Incomplete

IEQ 1.2: If using BESS daylight calculator, references to floorplans and elevations showing window sizes and sky angles.	Incomplete
IEQ 1.5: Floor plans with compliant bedrooms marked	Incomplete
IEQ 2.1: Dwellings meeting the requirements for being 'naturally ventilated'	Incomplete
IEQ 2.2: Dwellings meeting the requirements for having 'natural cross flow ventilation'	Incomplete
Urban Ecology 2.1: Vegetated areas	Incomplete
Waste 2.2: Location of recycling facilities	Incomplete
Transport 1.1: All nominated residential bicycle parking spaces	Incomplete
Transport 1.2: All nominated residential visitor bicycle parking spaces	Incomplete
Stormwater 1.1: Location of any stormwater management systems used in STORM or MUSIC modelling (e.g. Rainwater tanks, raingarden, buffer strips)	Incomplete
Energy 3.1: Carpark with natural ventilation or CO monitoring system	Incomplete
Energy 3.3: External lighting sensors annotated	Incomplete
Energy 3.4: Clothes line annotated (if proposed)	Incomplete
Water 3.1: Water efficient garden annotated	Incomplete
Management 3.1: Individual utility meters annotated	Incomplete

Documents and evidence

0 / 9 supporting evidence documentation complete.

IEQ 1.1: If using an alternative daylight modelling program, a short report detailing assumptions used and results achieved.	Incomplete
IEQ 1.2: If using an alternative daylight modelling program, a short report detailing assumptions used and results achieved.	Incomplete
IEQ 1.5: A list of compliant bedrooms	Incomplete
IEQ 2.1: A list of naturally ventilated dwellings	Incomplete
IEQ 2.2: A list of dwellings with natural cross flow ventilation	Incomplete
Stormwater 1.1: STORM report or MUSIC model	Incomplete
Energy 3.1: Provide a written explanation of either the fully natural carpark ventilation or carbon monoxide monitoring, describing how these systems will work, what systems are required for them to be fully integrated and who will be responsible for their implementation throughout the design, procurement and operational phases of the building life.	Incomplete
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.	Incomplete
Energy 3.6: 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.	Incomplete

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