

FRATER

81 Orchard Crescent, Mont Albert North

17/06/2019

Sustainable Design Assessment

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Sustainable Design Assessment (SDA)

Proposed Residential Development

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DOCUMENT VERSION

Version 0: Draft issued on 31/03/2019 for Client review

Version 1: Final issued on 17/06/2019 – No changes



INITIATIVES TO BE MARKED ON DRAWINGS

Water & Stormwater Management

- Mark-up showing roof catchment area to be diverted to the Rainwater tank for the new dwelling – If required, the use of mechanically assisted (pumped) or charged pipe system will be explicitly acknowledged on the drawings and pipes will not be running underneath the building footprint.
- Location and size of Rainwater tank proposed (See Appendix A)
- Note showing connection to the toilets and irrigation systems as required.
- Note showing use of native or drought tolerant species wherever possible. If irrigation required, include drip irrigation and mulch.
- Note showing WELS rating for water fittings/fixtures (refer to report) – Fixtures (e.g. dishwasher) provided as part of base building work have to be chosen within one WELS star of best available at the time of purchase.

Energy Efficiency

- Note showing commitment to 4W/m² lighting density in the dwelling
- Retractable external clothes drying line
- Lighting sensors for external lighting (motion detectors, timers etc.)

Indoor Environment Quality

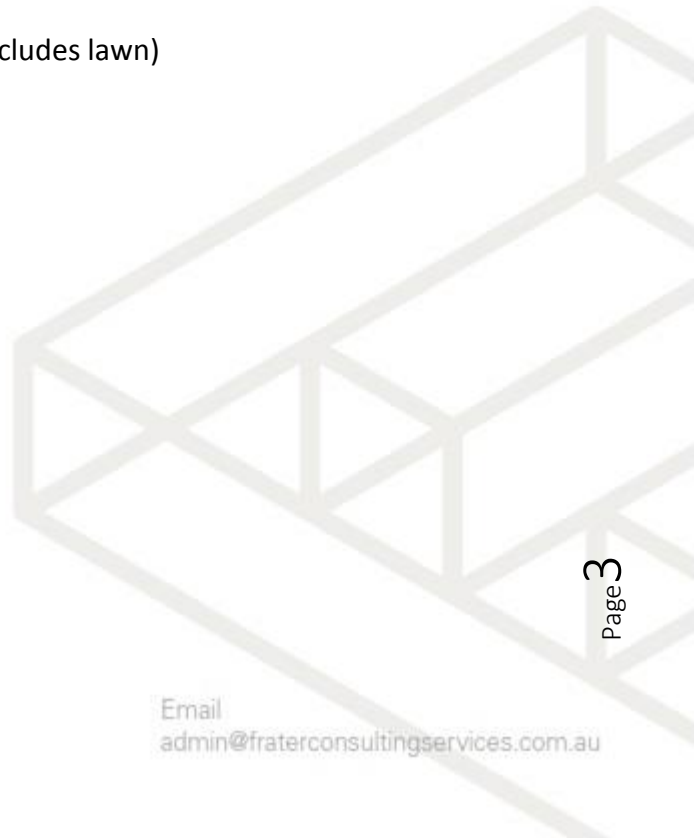
- Note showing double glazing on all habitable rooms (floor plans and elevations)

Transport

- Bike space location for the new dwelling

Urban Ecology

- Show extent of vegetated areas around the site (includes lawn)



INTRODUCTION

Framer Consulting Services have been engaged to undertake a Sustainable Design Assessment for the proposed residential development located at 81 Orchard Crescent, Mont Albert North. This has been prepared to address the Whitehorse City Council's sustainability requirements Planning Policy Clause 22.10 *Environmentally Sustainable Development*.

Within Clause 22.10, the City of Whitehorse has identified the following key categories to be addressed:

- Energy Performance;
- Water Resources;
- Stormwater Management;
- Indoor Environment Quality;
- Construction, Building & Waste Management;
- Building Materials;
- Transport; and
- Urban Ecology.

The site has been assessed using the BESS tool. BESS was developed by association of councils led by Moreland City Council. This tool assesses the energy and water efficiency, thermal comfort and overall environmental sustainability performance of new buildings or alterations. It was created to demonstrate how new development can meet sustainability requirements as part of a planning permit application for the participating council.

Each target area within the BESS tool generally receives a score of between 1% and 100%. A minimum score of 50% is required for the energy, water, stormwater and IEQ areas. An overall score of 50% represents 'Best Practice' while a score over 70% represent 'Excellence'. The result of the BESS assessment is included as Appendix C. **Please note that the BESS assessment will only address the new additional dwelling as no works will occur for the existing front dwelling. All initiatives described in this report will apply to the new dwelling only.**

The Stormwater Treatment Objective – Relative Measure (STORM) calculator which addresses stormwater quality considerations has been used for the development to ensure that stormwater management best practice requirements have been achieved. The result of the STORM assessment is included as Appendix A. **For purpose of the stormwater assessment, only the part of the site where new works will occur will be taken into account as the front dwelling and driveway will be retained and its stormwater impact on the surrounding environment will be unchanged.**



SITE DESCRIPTION

The proposed site is located at 81 Orchard Crescent, Mont Albert North. The 633.59m² site is currently occupied by a house which is proposed to be retained prior to the construction of an additional dwelling at the back. It is located in a residential area approximately 16kms east of the Melbourne CBD.

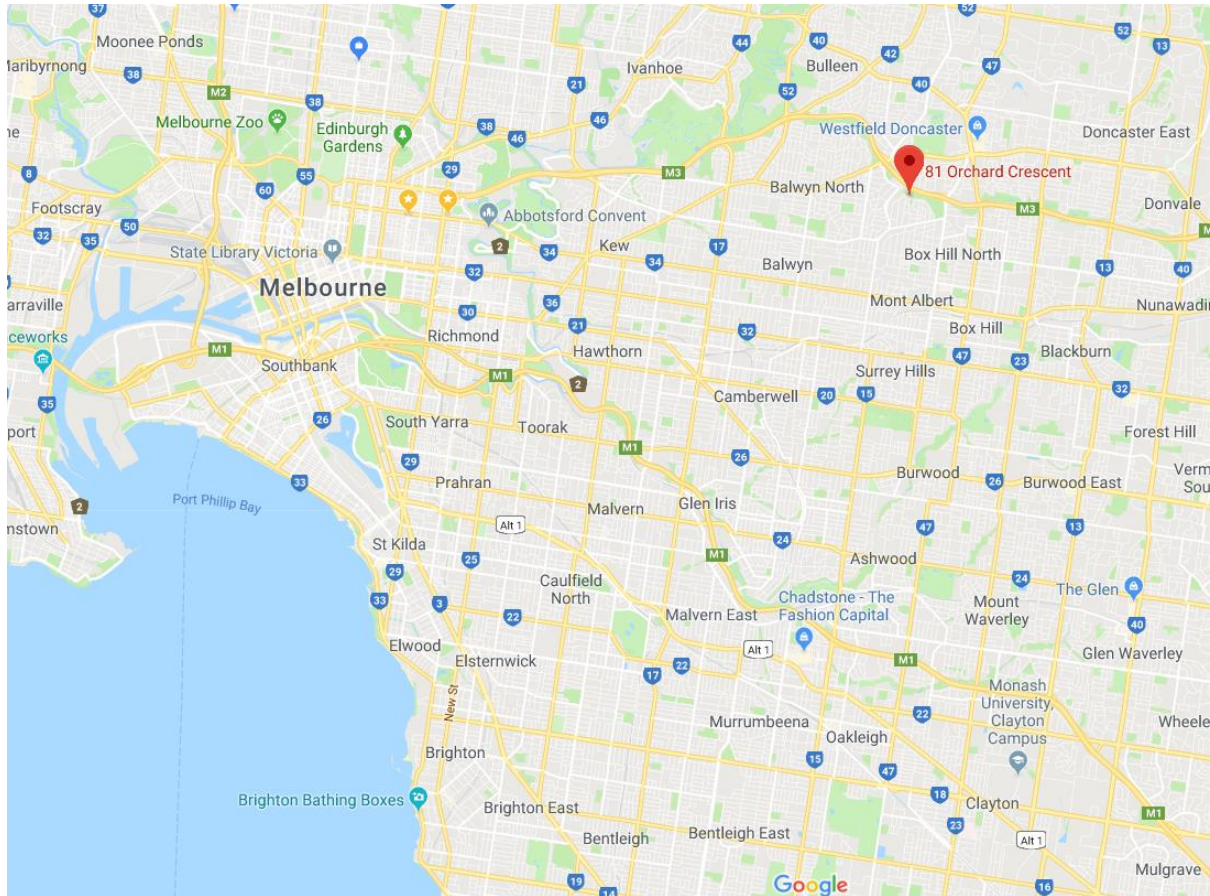


Figure 1: Location of the proposed development in Mont Albert North with relation to Melbourne CBD (Source: Google Maps)

PROPOSED DEVELOPMENT

The proposal consists of the construction of an additional 4-bedroom dwelling at the rear of the site. The existing front residence is proposed to be retained. The total area of the site is 633.59m² and the new dwelling site is 248.97m². The new dwelling will be accessed via a new individual driveway opening on to Jackson Avenue.



ENERGY EFFICIENCY

Energy and its key elements should be integrated into the design of the proposed development. These elements contribute to reducing greenhouse gas emissions by utilising energy efficient appliances, energy conservation measures and renewable energy.

Thermal Performance

Full energy ratings will be carried out at the building approval stage. The new dwelling will achieve 6.0 Stars. This will be achieved using appropriate insulation level in all external walls (minimum R2.0), roof (minimum R4.0) and floors as well as the use of double glazing windows throughout habitable rooms. For the purpose of BESS assessment, minimum compliance figures have been assumed which will be met at the building approval stage.

Heating and Cooling Systems

Heating and cooling systems can account to up to 40% of a household's energy use. Therefore, to reduce the energy consumption heating and cooling will be provided by energy efficient air conditioners (minimum of 4 star or chosen within one star of the best available product in the range at the time of purchase).

Hot Water Heating

Hot water for the new dwelling will be provided with a gas instantaneous hot water unit chosen within one star of the best available.

Internal Lighting

Energy consumption from artificial lighting within the new dwelling will be reduced by using LED lighting. A lighting level of 4W/m² will not be exceeded in the dwelling. The use of light internal colours will improve daylight penetration thus reducing the need for artificial lighting.

External Lighting

External lighting for the new dwelling will be LED and will include controls such as motion detectors or timers to minimise consumption during off-peak times.

Energy Efficient Appliances

All appliances if provided in the development as part of the base building work (e.g. dishwasher) will be chosen within one energy efficiency star of the best available.

Gas Cooking

All cooktops in the development will be gas fired. Gas cooktops generate less greenhouse gas emissions as compared to electric cooktops. Use of gas cooktops decreases peak electricity demand.

Clothes Drying

External retractable clothes drying lines or racks will be provided for the new dwelling within its identified private open space.



WATER EFFICIENCY & STORMWATER MANAGEMENT

Water saving-use and reuse and its key elements should be integrated into the design of the proposed development. These principles contribute to reducing the water demand in addition to promoting water reuse. Stormwater management and its key elements should be integrated into the design of the proposed development. These principles contribute to ensuring natural systems are protected and enhanced whilst promoting on-site retention and aims to reduce runoff or peak flows.

Water Efficient Fittings

The new dwelling will include efficient fittings and fixtures to reduce the volume of mains water used in the development. The following WELS star ratings will be specified;

- Toilets – 4 Star;
- Taps (bathroom and kitchen) – 5 Star; and
- Showerhead – 3 Star with aeration device (6.0-7.5L/min).

Rainwater Collection & Use

Rainwater runoff from part of the roof area of the new dwelling will be collected and stored in rainwater tank(s)¹. The new dwelling will be provided with a 3,500L tank.

If required, a charged pipe system or mechanically assisted system (pumped) will be installed to collect water from part of the roof of the new dwelling dwelling.

In the case of a charged pipe system, the pipes will not be running underneath the building footprint (slab) and the stakeholders (builder/developer/architect) will be required to explicitly acknowledge this solution and have the capacity to install it.

Rainwater collected will be used for toilet flushing in the new dwelling as well as for irrigation (as required). These initiatives will reduce significantly the stormwater impacts of the development and help achieve compliance with the STORM calculator (See Appendix A).

Water Efficient Appliances

All appliances if provided in the development as part of the base building work (e.g. dishwasher) will be chosen within one WELS star of the best available.

Landscape Irrigation

Native or drought-tolerant plants will be preferred for the landscaped areas on site. If irrigation is required, the proposed landscaping will be provided with drip irrigation and mulch to help minimise water requirements.

¹ Please note that any stormwater detention volume requirement for the site will be in addition to the proposed rainwater retention and that the proposed tank will not be directly topped up by mains water.



INDOOR ENVIRONMENT QUALITY

Indoor Environment Quality and its key elements should be integrated into the design of the proposed development. These elements play a significant role in the health, wellbeing and satisfaction of the development occupants. Facilitating a good (IEQ) design provides a naturally comfortable indoor environment and less dependence on building services such as, artificial lighting, mechanical ventilation and heating and cooling device.

Volatile Organic Compounds

All paints, adhesives and sealants and flooring will have low VOC content. Alternatively products will be selected with no VOCs. Paints such as eColour, or equivalent should be considered. Please refer to Appendix B for VOC limits.

Formaldehyde Minimisation

All engineered wood products will have 'low' formaldehyde emissions, certified as E0 or better. Alternatively products will be specified with no Formaldehyde. Products such as ecological panel – 100% post-consumer recycled wood (or similar) will be considered for use within the development. Please refer to Appendix B for formaldehyde limits.

Daylight Levels

Daylight penetration will be enhanced with the use of light internal colours to improve daylight reflection. All bedrooms and living rooms will be provided with windows to allow for natural sunlight and ventilation. There are no bedrooms which rely on borrowed daylight. Installation of mirrored wardrobe doors could improve even further the daylight spread within the bedrooms.

Double Glazing

Glazing will be chosen in accordance with the energy rating requirements at the building approval stage. However, as a minimum double glazing will be provided to all living areas and bedrooms. This will provide better thermal performance and reduce condensation which helps prevent the formation of mould within the dwellings.

Task Lighting

A higher illuminance level (300Lux) will be provided for all task areas (e.g. kitchen bench, bathroom basin) to ensure appropriate light is provided to do any tasks in these areas.

Ventilation

All kitchens will have a separate dedicated exhaust fan (range-hood) which will be directly exhausted out of the building.

All townhouses will have access to effective cross flow ventilation. It will provide fresh air to the occupants and reduce the need for mechanical cooling. Window locks and door catches will be included to encourage and improve natural ventilation in the dwellings.

CONSTRUCTION, BUILDING & WASTE MANAGEMENT

Building Management and its key elements should be integrated into the design of the proposed development. These principles contribute to ensuring efficient and effective on-going building performance. Waste management and its key elements should be integrated into the design of the proposed development. These principles contribute to ensuring minimal waste is transported to landfill by means of disposal, recycling and on-site waste storage and/or collection methods.

Metering and Monitoring

Separate utility meters (water, gas and electricity) will be provided for each townhouse. This will allow residents to monitor and reduce their consumption.

Construction Waste Management

A waste management plan will be introduced to all on-site staff at a site orientation session to ensure that the waste generated on site is minimised and disposed of correctly. A minimum 80% of all construction and demolition waste generated on site will be reused or recycled.

Construction Environmental Management

The builder will identify environmental risks related to construction and include management strategies such as maintaining effective erosion and sediment control measures during construction and operation and ensure that appropriate staging of earthworks (e.g. avoid bare earthworks in high risk areas of the site during dominant rainfall period).

Operational Waste

Each townhouse will be provided with bins for both general and recycling waste. Recycling bins will be provided next to general waste bins in the kitchen.



Figure 2: Examples of kitchen receptacles for general waste and recycling.

TRANSPORT

Bicycle Parking

Residents will be able to securely park their bicycle within the new townhouse's garage or POS. This will provide for a total of at least one bicycle space provided for residents and their visitors.

BUILDING MATERIALS

Materials selection should be integrated into the design of the proposed development. The criteria for appropriate materials used are based on economic and environmental cost.

Timber

All timber used in the development will be Forest Stewardship Council (FSC) or Program for the Endorsement of Forest Certification (PEFC) certified, or recycled / reused.

Flooring

The use of timber flooring will be preferred for all living areas and bedrooms. Wherever possible, flooring will be selected from products/materials certified under any of the following:

- Carpet Institute of Australia Limited, Environmental Certification Scheme (ECS) v1.2;
- Ecospecifier GreenTag GreenRate V3.2; and/or
- Good Environmental Choice (GECA).

Alternatively, flooring must be durable, include some eco-preferred content, be modular and/or come from a manufacturer with a product stewardship program and ISO 14001 certification.

Joinery

Wherever possible, joinery will be manufactured from materials/products certified under any of the following:

- Ecospecifier GreenTag GreenRate V3.1;
- Good Environmental Choice (GECA); and/or
- The Institute for Market Transformation to Sustainability (MTS) Sustainable Materials Rating Technology standard Version 4.0 – SmaRT 4.0.

The use of Ecological Panel (or equivalent) will be investigated, which is created from 100% post-consumer recycled products.

Non-toxic and Durable External Materials

All external materials used to construct the building will be long lasting and will be non-toxic.

Steel

Wherever possible, steel for the development will be sourced from a Responsible Steel Maker². Reinforcing steel for the project will be manufactured using energy reducing processes commonly used by large manufacturers such as Bluescope or OneSteel.

² A Responsible Steel Maker must have facilities with a currently valid and certified ISO 14001 Environmental Management System (EMS) in place, and be a member of the World Steel Association's (WSA) Climate Action Program (CAP).



URBAN ECOLOGY

In highly urbanised environments, such as metropolitan Melbourne, it is important to recognise the importance of maintaining and increasing the health of our urban ecosystems to improve living conditions not only for the fauna but also ourselves. We can improve our urban ecosystem through the incorporation of vegetation through landscaping for both new and existing developments.

Vegetation

Large landscaped area will be provided around the site and within the private open spaces. It will provide the occupants with a pleasant surrounding environment. The design will incorporate a mix of native species to help maintain local biodiversity.

Insulant ODP

All thermal insulation used in the development will not contain any ozone-depleting substances and will not use any in its manufacturing.

IMPLEMENTATION & MONITORING

The proposed Orchard Crescent development will meet the best practice requirement of the City of Whitehorse through the different initiatives describe in this SDA such as thermally efficient building envelope, efficient air conditioning and hot water system and sustainable materials. An appropriate implementation and monitoring of the initiatives outlined within this SDA will be required.

Implementation of the ESD initiatives outlined in this report requires the following processes:

- Full integration with architectural plans and specifications
- Full integration with building services design drawings and specifications
- Endorsement of the ESD Report with town planning drawings
- ESD initiatives to be included in plans and specifications for building approval



APPENDIX A – WSUD REPORT / STORM ASSESSMENT

New development must comply with the best practice performance targets for suspended solids, total phosphorous and total nitrogen, as set out in the Urban Stormwater Best Practice Environmental Management Guidelines, Victoria Stormwater Committee 1999. Currently, these water quality performance targets require:

- Suspended Solids - 80% retention of typical urban annual load.
- Total Nitrogen - 45% retention of typical urban annual load.
- Total Phosphorus - 45% retention of typical urban annual load.
- Litter - 70% reduction of typical urban annual load.

The STORM tool, an industry accepted tool, was used to assess the development and ensure that the best practice targets described above are met. A minimum compliance score of 100% is required to achieve for the development.

Site Delineation

For the purpose of the assessment, the development has been delineated into the following surface types:

- Site area of the new dwelling of 248.97m²;
- Part of the roof area runoff of the new dwelling of 104.5m² which will be diverted into rainwater tank(s);
- Permeable area of 99.1m² comprised of landscaped area, permeable decking and other pervious surfaces in the backyards;
- Remainder of impervious areas of 45.37m² comprised of unconnected roof areas, driveway and other impervious areas around the site.



Figure 3: Roof catchment area for new dwelling to RWT (blue) and permeable areas (green).

Stormwater initiatives

Rainwater Tank

(3,500L Rainwater tank for toilet flushing for each dwelling)

The roof catchment area of the new dwelling (as described above) will be diverted to a 3,500L rainwater tanks for the new dwelling. The rainwater collected will be used for toilet flushing and irrigation (as required) in the new dwelling.

If required, a charged pipe system or mechanically assisted system (pumped) will be installed to collect water from part of the roof of each dwelling.

In the case of a charged pipe system, the pipes will not be running underneath the slab and the stakeholders (builder/developer/architect) will be required to explicitly acknowledge this solution and have the capacity to install it.

The remainder of impervious areas will directly be released at the legal point of discharge on site.

Permeable areas are excluded from the STORM assessment.



Stormwater Results

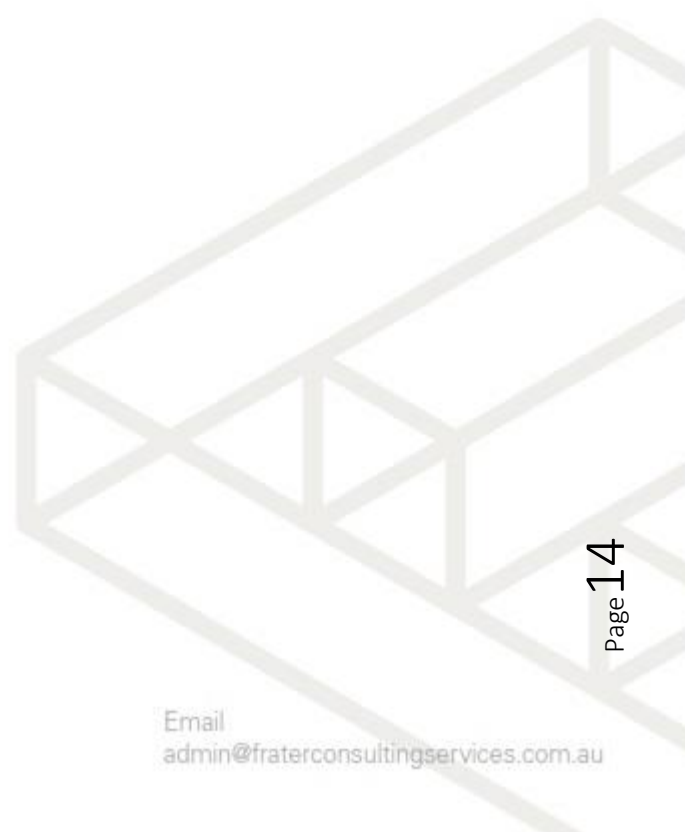
The initiatives and areas described above have been applied to the STORM calculator and the proposed development has achieved a score of 100%.



STORM Rating Report

TransactionID: 779732
 Municipality: WHITEHORSE
 Rainfall Station: WHITEHORSE
 Address: 81 Orchard Crescent
 Mont Albert North
 VIC 3129
 Assessor: Frater Consulting Services
 Development Type: Residential - Multiunit
 Allotment Site (m2): 248.97
 STORM Rating %: 100

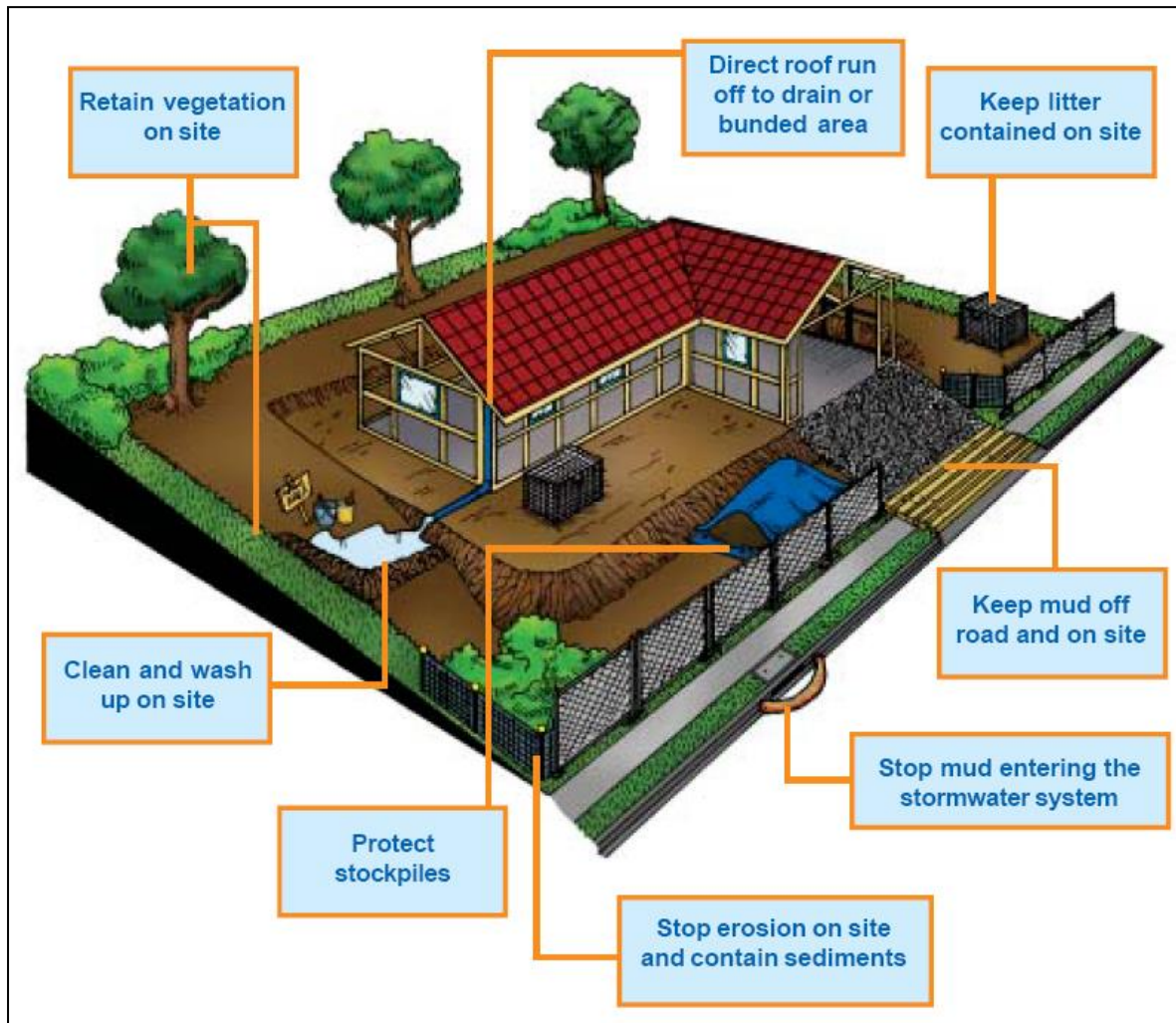
Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
Roof Catchment	104.50	Rainwater Tank	3,500.00	4	143.80	86.00
Remainder of Impervious Areas	45.37	None	0.00	0	0.00	0.00





Stormwater Management at Construction Site

To manage stormwater management in the construction stage, measures will be put in place to minimise the likelihood of contaminating stormwater. This will mean ensuring buffer strips are in place, sediment traps are installed, and the site will be kept clean from any loose rubbish. The builder will follow the process outlined in “Keeping Our Stormwater Clean – A Builder’s Guide” by Melbourne Water.



Copies of “Keeping Our Stormwater Clean – A Builder’s Guide” booklet can be obtained from Melbourne Water by ringing on 131 722 or can be downloaded from the following website.

http://www.melbournewater.com.au/content/library/rivers_and_creeks/keeping_our_stormwater_clean-a_builders_guide.pdf

APPENDIX B – VOC & FORMALDEHYDE EMISSION LIMITS

The following table are an extract of the Green Star Design and as built submission guidelines:

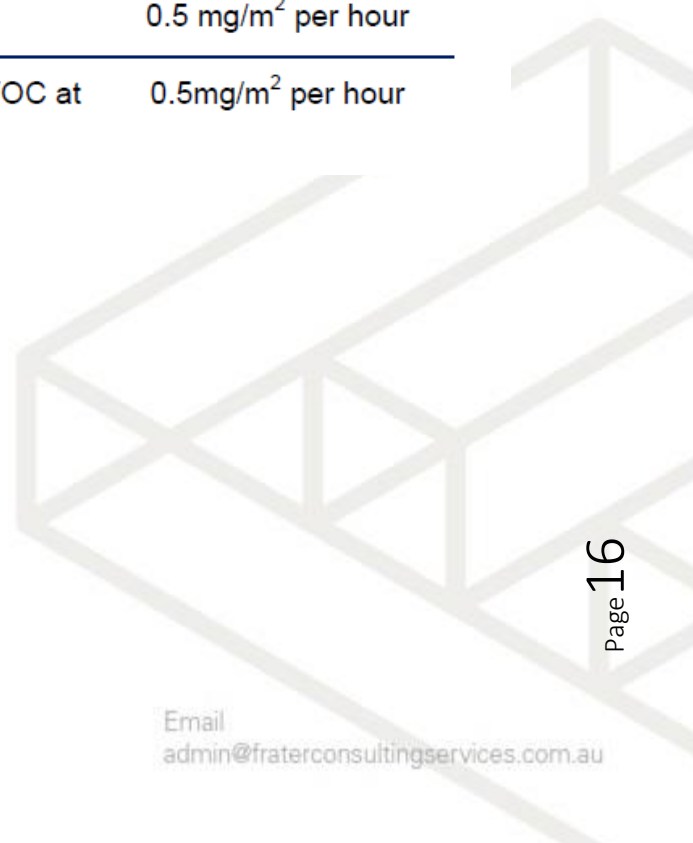
Table 13.1.1: Maximum TVOC Limits for Paints, Adhesives and Sealants

Product Category	Max TVOC content in grams per litre (g/L) of ready to use product.
General purpose adhesives and sealants	50
Interior wall and ceiling paint, all sheen levels	16
Trim, varnishes and wood stains	75
Primers, sealers and prep coats	65
One and two pack performance coatings for floors	140
Acoustic sealants, architectural sealant, waterproofing membranes and sealant, fire retardant sealants and adhesives	250
Structural glazing adhesive, wood flooring and laminate adhesives and sealants	100

The product complies with the Total VOC (TVOC) limits specified in the Table below.

Carpet Test Standards and TVOC Emissions Limits

Test protocol	Limit
ASTM D5116 - Total VOC limit	0.5mg/m ² per hour
ASTM D5116 - 4-PC (4-Phenylcyclohexene)	0.05mg/m ² per hour
ISO 16000 / EN 13419 - TVOC at three days	0.5 mg/m ² per hour
ISO 10580 / ISO/TC 219 (Document N238) - TVOC at 24 hours	0.5mg/m ² per hour



**Table 13.2: Formaldehyde Emission Limit Values for Engineered Wood Products**

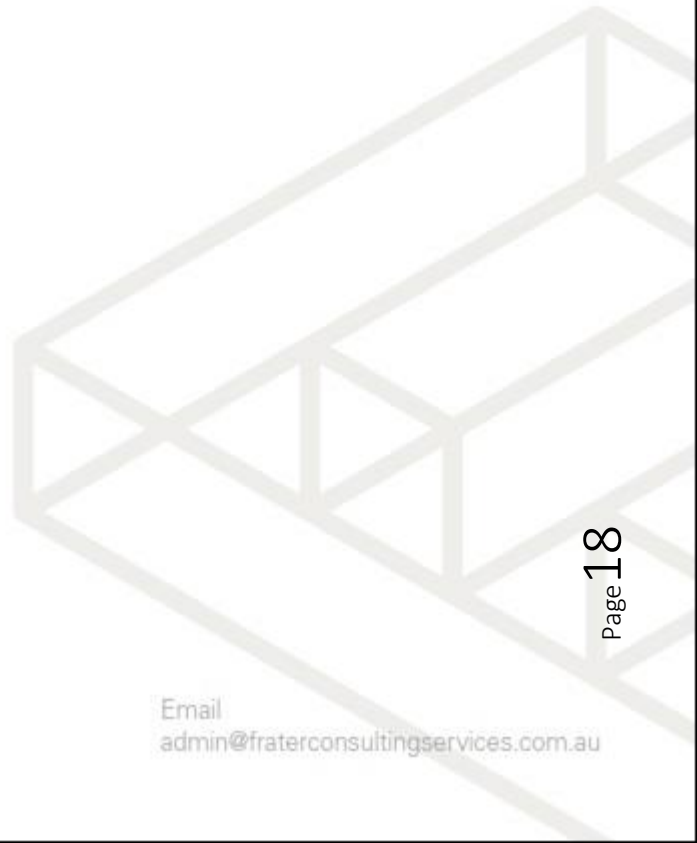
Test Protocol	Emission Limit/ Unit of Measurement
AS/NZS 2269:2004, testing procedure AS/NZS 2098.11:2005 method 10 for Plywood	≤1mg/ L
AS/NZS 1859.1:2004 - Particle Board, with use of testing procedure AS/NZS 4266.16:2004 method 16	≤1.5 mg/L
AS/NZS 1859.2:2004 - MDF, with use of testing procedure AS/NZS 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.



FRATER

APPENDIX C – BESS ASSESSMENT



BESS Report



This BESS report outlines the sustainable design commitments of the proposed development at 81 Orchard Cres Mont Albert North VIC 3129. 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 Whitehorse 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.

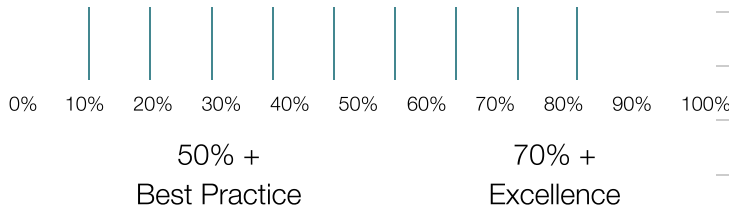
81 Orchard Cres, Mont Albert North 3129 Mont Albert North

Site area: 248 m² · Site type: Single dwelling m² ·
 Building Floor Area: 1 m² ·
 Date of Assessment: 17 Jun 2019 ·
 Version: V3, 1.5.1-B157 ·
 Applicant: denis@fraterconsultingservices.com.au

Project number 22397
Published http://bess.net.au/projects/22397

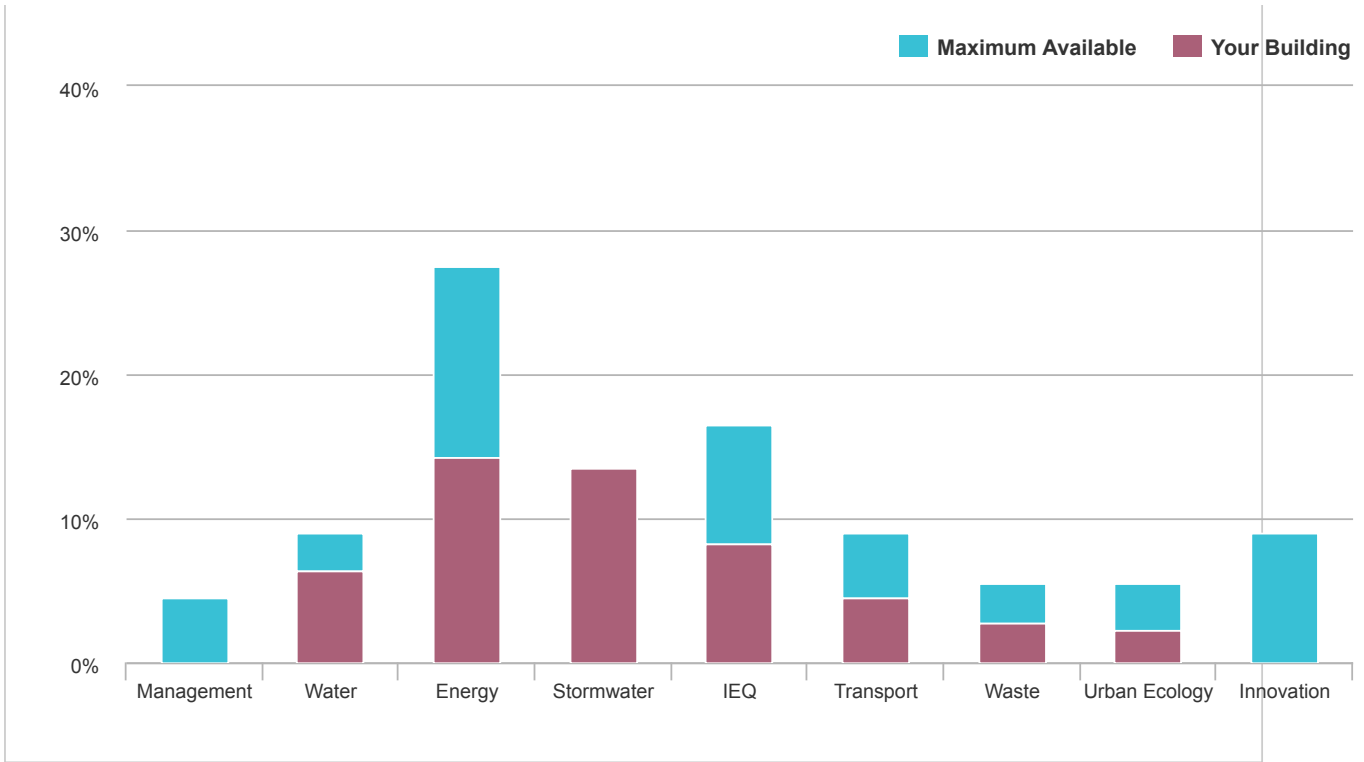
Your BESS score is

+ **52%**



% of Total	Category	Score	Pass
0 %	Management	0 %	
6 %	Water	71 %	✓
14 %	Energy	52 %	✓
13 %	Stormwater	100 %	✓
8 %	IEQ	50 %	✓
4 %	Transport	50 %	
2 %	Waste	50 %	
2 %	Urban Ecology	42 %	
0 %	Innovation	0 %	

How did this Development Perform in each Environmental Category?



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	0% - contributing 0% to overall score
	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
	Project Water Profile Questions	
	Are you installing a rainwater tank?	Yes

Water fixtures, fittings and connections

	Dwelling
Showerhead	3 Star WELS (> 6.0 but <= 7.5)
Bath	Medium Sized Contemporary Bath
Kitchen Taps	> 5 Star WELS rating
Bathroom Taps	> 5 Star WELS rating
Dishwashers	> 5 Star WELS rating
WC	> 4 Star WELS rating
Urinals	Scope out
Washing Machine Water Efficiency	Scope out
Rainwater connected to: Toilets	Yes

Rainwater Tanks

	RWT
What is the total roof area connected to the rainwater tank? <small>Square Metres</small>	104.5
Tank Size <small>Litres</small>	3500.0

Water 1.1 Potable Water Use Reduction (Interior Uses) 50%

Score Contribution	This credit contributes 57% 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

Questions

Percentage Achieved ? Percentage %

%

Calculations

Annual Water Consumption (kL) (Reference)

57

Annual Water Consumption (kL) (Proposed)

39

% Reduction in Potable Water Consumption Percentage %

31 %

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

Score Contribution This credit contributes 28% 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?

Questions

Percentage Achieved ? Percentage %

%

Calculations

Rainwater collection & reuse (additional uses) Percentage %

100 %

Water 3.1 Water Efficient Landscaping 100%

Score Contribution This credit contributes 14% 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

52% - contributing 14% 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 3.2 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

Project Energy Profile Questions

Gas Supply Natural Gas

Dwelling Energy Profiles

	Dwelling
Below the floor is	Ground or Carpark
Above the ceiling is	Outside
Exposed sides	4
NatHERS Annual Energy Loads - Heat MJ/sqm	100.0
NatHERS Annual Energy Loads - Cool MJ/sqm	25.0
NatHERS star rating	6.0
Type of Heating System	D Reverse cycle space
Heating System Efficiency	4 Star
Type of Cooling System	Refrigerative space
Cooling System Efficiency	4 Stars
Type of Hot Water System	J Gas Instantaneous 6 star
Clothes Line	D Private outdoor clothesline
Clothes Dryer	F Clothes dryer 1 stars

Energy 2.1 Greenhouse Gas Emissions 100%

Score Contribution	This credit contributes 10% 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

831.9

Proposed Building with Proposed Services (Actual Building) kg CO2

264.7

% Reduction in GHG Emissions Percentage %

68 %

Energy 2.3 Electricity Consumption 100%

Score Contribution	This credit contributes 10% 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

291.0

Proposed kWh

58.5

Improvement Percentage %

79 %

Energy 2.4 Gas Consumption

100%

Score Contribution	This credit contributes 10% towards this section's score.
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Aim	Reduce consumption of electricity
-----	-----------------------------------

Criteria	Is the annual gas consumption >10% below the benchmark?
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Questions

Criteria Achieved ?

-

Calculations

Reference MJ

9462.3

Proposed MJ

3798.8

Improvement Percentage %

59 %

Energy 2.5 Wood Consumption

N/A

This credit was scoped out: No wood heating system present

Aim	Reduce consumption of wood
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Criteria	Is the annual wood consumption >10% below the benchmark?
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Energy 3.2 Hot Water

100%

Score Contribution	This credit contributes 5% towards this section's score.
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Criteria	Does the hot water system use >10% less energy (gas and electricity) than the reference case?
----------	---

Questions

Criteria Achieved ?

-

Calculations

Reference MJ

2628.4

Proposed MJ

1058.3

Improvement Percentage %

59 %

Energy 3.3 External Lighting

100%

Score Contribution This credit contributes 5% 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% 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

277.5

Proposed kWh

55.5

Improvement Percentage %

80 %

Energy 3.5 Internal Lighting - Residential Single Dwelling 100%

Score Contribution This credit contributes 5% 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 13% to overall score

Credit	Disabled	Scoped out	Score
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Stormwater 1.1 Stormwater Treatment			100 %
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Which stormwater modelling are you using? Melbourne Water STORM tool

Stormwater 1.1 Stormwater Treatment 100%

Score Contribution This credit contributes 100% 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

Flow (ML/year) % Reduction

-

Total Suspended Solids (kg/year) % Reduction

-

Total Phosphorus (kg/year) % Reduction

-

Total Nitrogen (kg/year) % Reduction

-

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% 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

50% - contributing 4% to overall score

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

Transport 1.1 Bicycle Parking - Residential 100%

Score Contribution This credit contributes 50% 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 ?

1

Calculations

Min Bicycle Spaces Required

1

Waste

50% - contributing 2% to overall score

Credit	Disabled	Scoped out	Score
Waste 1.1 - Construction Waste - Building Re-Use			100 %

Waste 1.1 - Construction Waste - Building Re-Use 100%

Score Contribution	This credit contributes 50% towards this section's score.		
Aim	To recognise developments that re-use materials on-site		
Notes	Existing dwelling is retained		

Questions

If the development is on a site that has been previously developed, has at least 30% of the existing building been re-used?

Yes

Urban Ecology

42% - 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 57% 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 50sqm of the new dwelling site (20%) will be covered with vegetation
Questions	
Percentage Achieved ?	Percentage %
	20 %

Innovation

0% - contributing 0% to overall score

Items to be marked on floorplans

0 / 7 floorplans & elevation notes complete.

Energy 3.4: External lighting sensors annotated	Incomplete
Water 2.1: Location of rainwater tanks as described	Incomplete
Water 3.1: Water efficient garden annotated	Incomplete
Stormwater 1.1: Location of any stormwater management systems used in STORM or MUSIC modelling (e.g. Rainwater tanks, raingarden, buffer strips)	Incomplete
IEQ 3.1: Glazing specification to be annotated	Incomplete
Transport 1.1: All nominated residential bicycle parking spaces	Incomplete
Urban Ecology 2.1: Vegetated areas	Incomplete

Documents and evidence

0 / 4 supporting evidence documentation complete.

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
Stormwater 1.1: STORM report or MUSIC model	Incomplete
IEQ 3.1: Reference to floor plans or energy modelling showing the glazing specification (U-value and Solar Heat Gain Coefficient, SHGC)	Incomplete
Waste 1.1: Report detailing how the existing building is being reused on-site	Incomplete

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