Sustainability Design Assessment

Proposed Development of:

31 Corrigan Avenue, Brooklyn VIC 3012

Prepared for:

Hobsons Bay Council

DESIGN
DEVELOPMENT
CONSTRUCTION

XPRESSBUILDING
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Contents

Introduction

Sustainability Design Assessment

This assessment, prepared by Xpress Building Design Group, seeks to outline the design principles implemented with the intention of reducing the impact that this development has on the following:

- Environment
- Energy Consumption
- Water Conservation
- Stormwater Run-Off Pollution
- Use of Sustainable Materials

Tools Used

Built Environment Sustainability Scorecard (BESS)

The Built Environment Sustainability Scorecard (BESS) assesses energy and water efficiency, thermal comfort, and overall environmental sustainability performance of your new building or alteration. It was created to assist builders and developers to demonstrate that they meet sustainability information requirements as part of planning permit applications. BESS can also be used by any member of the community to assess the design of their home and find ways to make it more sustainable.

STORM Calculator

Melbourne Water has developed the Stormwater Treatment Objective- Relative Measure (STORM) Calculator as a method of simplifying the analysis of stormwater treatment methods. The STORM Calculator is designed for the general public to easily assess Water Sensitive Urban Design (WSUD) measures on their property.

The tool has been developed specifically for small residential and industrial developments to rate how well different properties treat stormwater and to compare them against a common measurement system.

The STORM Calculator displays the amount of treatment that is required to meet best practice targets, using WSUD treatment measures. The tool is capable of calculating the performance of a range of commonly implemented treatment measures including:

- Rainwater tanks
- Ponds
- Wetlands
- Rain gardens
- Infiltration systems
- Buffers
- Swales

The STORM Calculator can use rainfall data from any region in Victoria, Australia, by looking at the municipality in which the development is located.

Sustainable Design in the Planning Process

Clause 22.02 – Environmentally Sustainable Development

Hobsons Bay Council is committed to creating an environmentally sustainable city. Critical to achieving this commitment is for development to incorporate appropriate environmentally sustainable design standards. This policy aims to integrate environmental sustainability principles into land-use planning, new developments and redevelopment of existing infrastructure.

The following objectives should be satisfied where applicable:

Energy performance:

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

Water resources:

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

Indoor environment quality:

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

Stormwater management:

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

Transport:

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

Waste management

- To ensure waste avoidance, reuse and recycling during the design, construction and operation stages of development.
- To ensure durability and long-term reusability of building materials.

- To ensure sufficient space is allocated for future change in waste management needs, including (where possible) composting and green waste facilities.

Urban ecology

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

Site Details

Subject Site

The site is currently occupied by a single-storey residence (to be demolished) and located in a general residential zone. The site is approximately 696.77m^2 in size. Located on a quiet residential street, the neighbourhood is largely occupied by single and double-storey dwellings alongside unit developments with potential for future residential growth.

Design Proposal

This report is to be read alongside the application for the use of the land at 31 Corrigan Avenue, Brooklyn for the purpose of a medium density residential development. Our proposal is for three (3) dwellings (two double-storey and one single-storey) to be built on site, taking into consideration adjoining properties, neighbourhood character, available amenities and infrastructure.

The proposed development consists of each dwelling positioned behind-one-another with Dwelling 1 facing Corrigan Avenue. Adequate turning circles are in place to allow for vehicles on site to egress in a forward direction. All dwellings are to be constructed of brickwork to ground-floors with combination render and weatherboard (or similar) finishes to first-floors with colourbond pitched roofs and 450mm eaves. We believe that the design will blend in with the immediate adjoining properties as well as promote diversity and residential growth, as we intend to use specific construction materials, building form and pitched roofs reminiscent of the existing character. We believe the proposal adequately respects the current architectural style of the neighbourhood, and nestles well within the existing streetscape.

Access to all dwellings is via a proposed single-vehicle crossover on Corrigan Avenue that will lead into a shared accessway. All dwellings are accommodated by a single-vehicle garage each, with additional tandem carspaces servicing Dwelling's 1 and 3, providing adequate car space provisions on site. From street level, entrances are identifiable and the development will not interfere with any neighbouring properties. Any issues of overlooking have been addressed by the use of 1800h fences and obscure glazing where required.

The development will not interfere with any neighbouring properties. Any issues of overlooking have been addressed by the use of 1800h fences and obscure glazing where required.

We believe that this proposed development will be a great addition to Brooklyn and its existing properties.

Project Summary

Sustainable Design Assessment

ESD Requirements

This report details measures that address the mandatory Environmentally Sustainable Design (ESD) Requirements for a three-unit development under Hobsons Bay Council.

Comprising of a BESS Report, WSUD Plan, STORM Report and accompanying report, a summary of the initiatives the relevant stakeholder/developer will commit to is listed below:

Energy

- Dwellings that meet the minimum 6.5-star energy-rating requirement
- Inclusion of double-glazed windows throughout to improve energy efficiency
- Heating and cooling systems within one star of the best available to improve energy efficiency

Water

- On-site water uses and measures to meet best practice and Water Sensitive Urban Design Requirements
- Rainwater tanks at 2000L each connected to all toilets
- Water saving measures with systems within one star of the best available

Indoor Environment Quality

- Reduction in materials that cause pollution, with the use and implementation of low VOC paints, carpets, adhesives etc.

Sustainable Materials

- Implementation and use of sustainable materials, including but not limited to PEFC or FSC certified timbers, recycled content and Portland cement substitutes for all concrete used on site (subject to structural engineer's approval)

Urban Ecology

- Retention and further inclusion of significant vegetation

The proposed development at 20 Angourie Crescent, Taylors Lakes will address ESD Requirements within the relevant planning scheme provisions. In conjunction with the above initiatives, the development was assessed in accordance with the BESS Scorecard, resulting in a total score of **51%,** with categories such as Water, Energy, Stormwater and IEQ scoring at a minimum 50% also.

Commitment

Documentation on Plans

ESD Initiatives relevant to each section (as applicable) will be noted on the plans, with this report and all supporting documents to be read in conjunction with the drawings.

Where applicable, the plans will document the following:

- External Lighting Sensors
- Rainwater Tanks
- Water Efficient Gardens
- Stormwater Management Systems
- Double-glazed windows
- Bicycle Spaces

STORM Report

Dwellings 1, 2 & 3

Introduction

For the purpose of demonstrating a 45% reduction in the typical annual load of total nitrogen and achieved best practice objectives, we have used Melbourne Water's STORM Calculator. Results indicate that we have met best practice water quality objectives by achieving a minimum 100% STORM Rating.

Site Details

Overall lot size: 696.770m^2

Total Treated Areas: 323.67m^2

Dwelling 1: 114.73m^2 of treated roof area
Dwelling 2: 87.60m^2 of treated roof area
Dwelling 3: 121.34m^2 of treated roof area

Total Untreated Areas: 0.00m^2

Dwelling 1: 0.00m^2 of untreated roof area
Dwelling 2: 0.00m^2 of untreated roof area
Dwelling 3: 0.00m^2 of untreated roof area

Dwelling Delineation

Roof Catchment Area to Rainwater Tank:

Dwelling 1: 51.52m^2 of roof area treated to 2000L RWT
Dwelling 2: 49.26m^2 of roof area treated to 2000L RWT
Dwelling 3: 87.00m^2 of roof area treated to 2000L RWT

Roof Catchment Area to Raingarden:

Dwelling 1: 53.21m^2 of roof area treated to 1x 1.0m^2 above-ground raingarden
Dwelling 2: 38.34m^2 of roof area treated to 1x 1.0m^2 above-ground raingarden
Dwelling 3: 34.34m^2 of roof area treated to 1x 1.0m^2 above-ground raingarden

Concrete Driveway

Untreated: 144.07m^2 of driveway

Storm Report

Refer to Appendix 1.0

Treatment Details & Sections

Rainwater Tanks

Rainwater tanks provide environmental benefits (reduction in pollutant loads and runoff volume) as well as reducing household water bills. Rainwater tanks are particularly effective where the harvesting demand is high relative to the roof area. A larger tank may be needed to ensure optimal water harvesting and/or comply with Part 3.12 of Volume Two of the National Construction Code (NCC). The NCC requires new residential buildings to have a rainwater tank or a solar hot water system. If a rainwater tank is used to comply with the NCC, it must be at least 2,000 L, receive runoff from at least 50 m2 of roof and supply all toilets in the building.

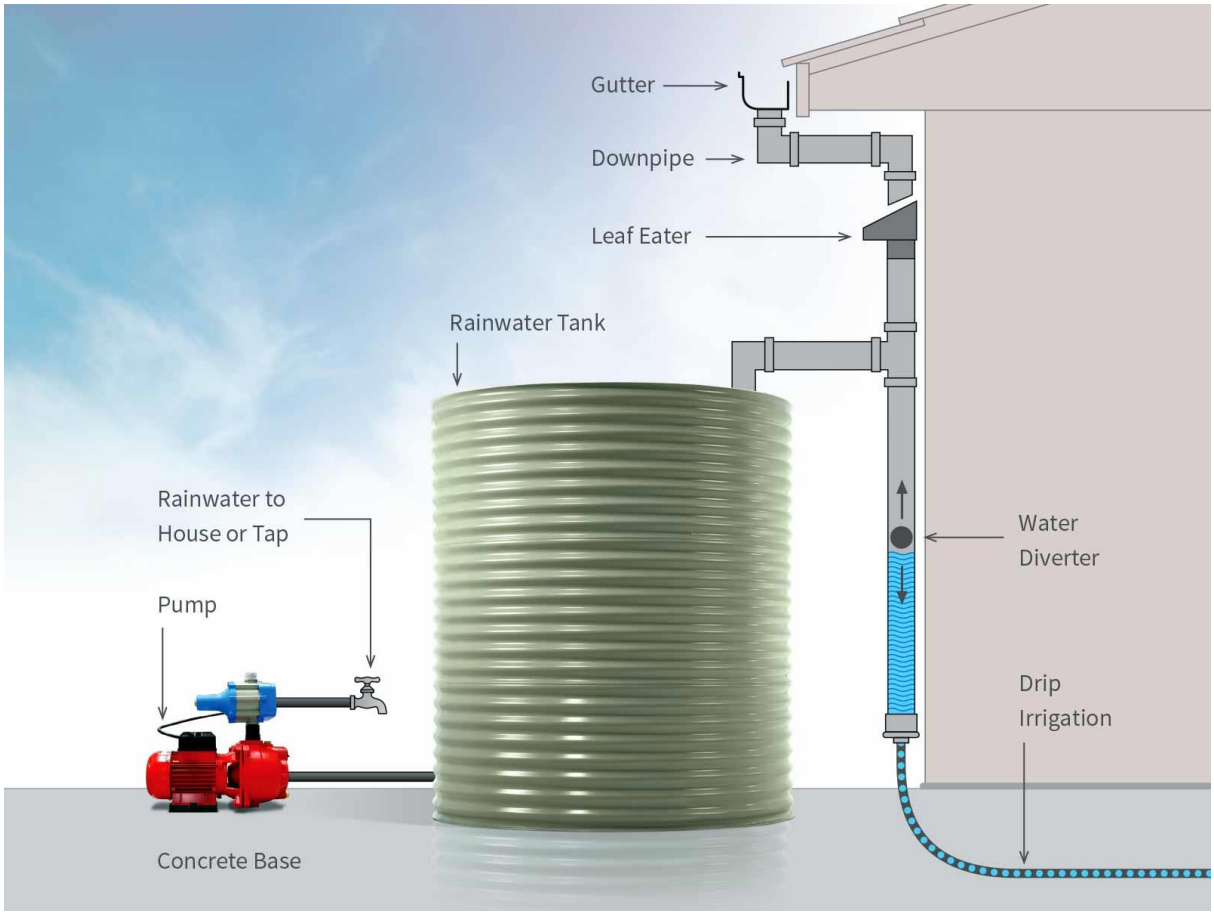

Figure 1.0 – Typical Rainwater Tank – Stratco

Above-Ground Raingardens

Build your planter box as close as possible to the water source whether it be a downpipe or rainwater tank overflow. This will help minimise the additional plumbing needed to bring water to the raingarden. Your raingarden needs to sit at least 300mm away from your house. Having decided on a location, it is important to determine the proximity of the existing stormwater pipe to make sure your raingarden is connected properly. Your local plumber can help with this and also how and when to disconnect your downpipe so that the area doesn't flood during construction.

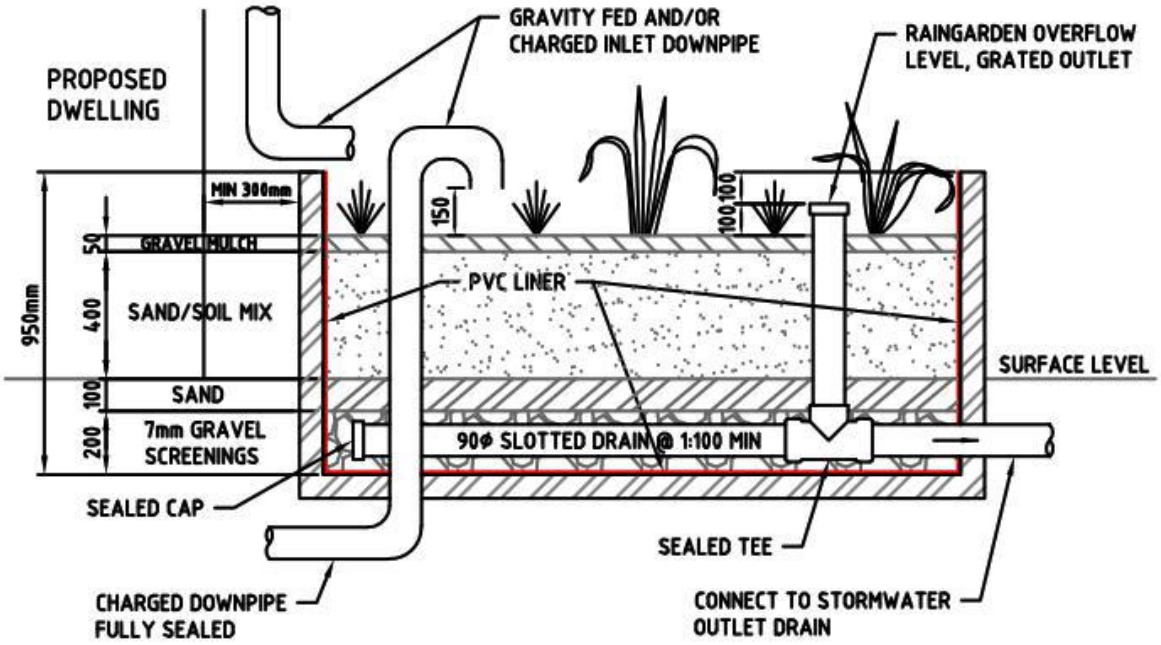

Figure 2.0 – Typical Above-Ground Raingarden – Melbourne Water

BESS Report & Plan

Management Summary

- No pre-application meeting has been held with Council to discuss the project
- Energy Ratings will be carried out and completed prior to the issuing of a Building Permit. The development will commit to meet minimum energy efficiency requirements with all dwellings to rate no less than 6.5 Stars. For the purpose of this assessment, a 6.5 Star average result has been assumed.
- A Building Users Guide will be issued to occupants

Water Summary

- Rainwater Tanks will be installed on site servicing each individual dwelling
- Water efficient fittings are proposed for installation to each dwelling as a means of reducing the use of water
- Dwellings will achieve the following WELS Ratings when installing water efficient fixtures:

  Showerheads – 4 Star WELS

  Baths – Medium Sized Contemporary Bath

  Kitchen Taps – > 5 Star WELS

  Bathroom Taps – > 5 Star WELS

  Dishwashers – > Default

  WCs – > 3 Star WELS

  Washing Machine - > 3 Star WELS

  The developer will commit to ensuring that water efficient fixtures are installed on site.

- Water efficient landscaping will be installed on site

Energy Summary

- No solar photovoltaic (PV) system is being installed on site
- For the purpose of this report, an average NatHERS rating of 6.5 Stars is assumed
- The developer will commit to ensuring that air-conditioning units installed on site are within 1 star of the best system available on the market – for the purpose of this report, rating is assumed to be 5 Stars
- External lighting is controlled by a motion detector
- The development achieves a maximum illumination power density of 4W/sqm or less
- Double-glazed windows have been noted on the BESS Plan included as part of the Town Planning Drawings to demonstrate the habitable room windows and doors (at minimum) to be double-glazed

Stormwater Summary

- Melbourne Water STORM Tool has been used to incorporate water sensitive urban design strategies into the development
- The minimum STORM Score of 100% has been achieved
- Roof catchment areas will be harvested into rainwater tanks which is connected to all toilets for toilet flushing
- The WSUD Plan completed as part of this Sustainable Design Assessment has been included as part of this submission, documenting the catchment areas being treated by a Rainwater Tank and/or Raingarden.
- A Raingarden Maintenance Manual has been included as part of this submission
- Roof catchment areas will be harvested into rainwater tanks which is connected to all toilets for toilet flushing
- Species selection and maintenance manuals will be considered prior to construction between the Developer and Builder to ensure that Melbourne Water Information Sheets and recommendations are taken into account

IEQ Summary

- Double-glazing (or better) has been used for all habitable room windows
- All habitable room windows will have adequate and sufficient access to natural daylight
- All habitable rooms will have access to natural ventilation, with operable windows meeting BCA window opening sizes and requirements
- Dwellings will have sufficient cross-flow ventilation, and internal painted surfaces will meet relevant TVOC Requirements
- Developers will be committed to using paints and internal finishes that are rated low in terms of Volatile Organic Compounds (VOC), ensuring that future residents are not exposed to highly-toxic materials
- External Standards measuring maximum VOC ratings for items used will be implemented and used as a guide, with the use of (or similar to) the GBCA's Green Star Rating Tool that encourages and welcomes the use of low-VOC emitting materials.
- To achieve natural ventilation and optimum thermal comfort levels, the developer will be committed to the implementation and use of windows that incorporate sashes that can be locked in ajar positions to allow for a reduced reliance on mechanical heating
- We have taken measures to increase natural daylight to key areas of each dwelling, with translucent door panels to garages reducing any reliance on artificial systems

Transport Summary

- One (1) bicycle space has been provided within the garage space of each dwelling on site
- No facilities on site are provided for the charging of electric vehicles

Waste Summary

- All new dwellings are proposed on site, and therefore there is no opportunity for the re-use of the site
- Should future occupants decide to implement a composting bin, whilst encouraged, it will be at the owner's discretion

- Developers will aim to recycle demolition and construction waste where possible
- During the construction stage of the project, waste minimisation strategies will be enforced and will align with the builder's methods
- Developers will commit to ensuring that a minimum 70% is achieved in the recycling of construction and demolition waste, with demolition companies – if engaged – also committed to recycling materials such as:
    - Crushed rock, masonry
    - Aluminium, stainless steel, copper
    - Hardwood timbers
    - Plastics
    - Soil

Urban Ecology Summary

- Private open space to each dwelling will contribute to the extent of vegetation on the subject site
- Each dwelling will provision for taps in backyard areas to accommodate floor waste
- A landscape plan will be provided (should the development receive Planning Approval) which will look to incorporate native or indigenous plantings suitable to the subject site whilst enhancing biodiversity
- Paving materials and sun-exposed roofing will be installed accordingly with the intention of minimising glare and reducing the UHI Effect

Innovation Summary

- N/A

Materials

- The Developer will commit to implementing sustainable materials, including but not limited to PEFC or FSC certified timbers, recycled content and Portland cement substitutes for all concrete used on site (subject to structural engineer's approval). The developer is clearly committed to incorporate building materials that are sustainable, made of reused or recycled materials, is sustainably-sourced and made in line with relevant and certified Environmental management systems. As a means of increasing the life-cycle of the product and its overall environmental-impact over this time, products will be used that are durable and non-toxic.

WSUD Plan

Refer to *Xpress Building Design Group TP Drawings*

BESS Report

Refer to Appendix 2.0

BESS Plan

Refer to *Xpress Building Design Group TP Drawings*

WSUD Maintenance Plan

Refer to *Melbourne Water WSUD Maintenance Guidelines submitted alongside this report*

Appendix 1.0 - STORM Report

STORM Rating Report

TransactionID:	950328
Municipality:	HOBSON BAY
Rainfall Station:	HOBSON BAY
Address:	31 Corrigan Avenue
	Brooklyn
	VIC 3012
Assessor:	Xpress Building Design
Development Type:	Residential - Multiunit
Allotment Site (m2):	696.77
STORM Rating %:	101

Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
D1 Roof - RWT	61.52	Rainwater Tank	2,000.00	3	170.00	82.00
D1 Roof - Raingarden	53.21	Raingarden 100mm	1.00	0	127.10	0.00
D2 Roof - RWT	49.26	Rainwater Tank	2,000.00	2	163.00	84.40
D2 Roof - Raingarden	38.34	Raingarden 100mm	1.00	0	130.85	0.00
D3 Roof - RWT	87.00	Rainwater Tank	2,000.00	3	142.50	86.20
D3 Roof - Raingarden	34.34	Raingarden 100mm	1.00	0	131.25	0.00
Common Driveway	144.07	None	0.00	0	0.00	0.00

Appendix 2.0 – BESS Report (Front Page)

BESS Report

This BESS report outlines the sustainable design commitments of the proposed development at 31 Corrigan Ave Brooklyn VIC 3012. 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 Hobsons Bay 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.

31 Corrigan Ave, Brooklyn 3012 Brooklyn

Site area: 696 m^2 · Building Floor Area: 320 m^2 ·
Date of Assessment: 24 Apr 2020 ·
Version: V4, 1.6.1-B.268 ·
Applicant: emily@xbdg.com.au

Project Identifier
D33A5C4F

Published
http://bess.net.au/projects/D33A5C4F-V1

Your BESS score is

+51%

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

50% + Best Practice

70% + Excellence

% of Total	Category	Score	Pass
1 %	Management	17 %	
4 %	Water	50 %	✓
15 %	Energy	55 %	✓
14 %	Stormwater	100 %	✓
10 %	IEQ	60 %	✓
4 %	Transport	50 %	
0 %	Waste	0 %	
3 %	Urban Ecology	50 %	
0 %	Innovation	0 %	