



Reform Projects

1102 Barrenjoey Rd, Palm Beach

BASIX Assessment Report

ESD Synergy Pty Ltd
Contact No: +61 497 979 868
+61 413 591 688
Email: info@esdsynergy.com
Web: www.esdsynergy.com

Attention	Cassandra Gleeson
Client	Reform Projects
Author	Adriana Segovia
Reviewer	Henky Mantophani
Date	15/04/2021
Revision	00
Subject	1102 Barrenjoey Rd, Palm Beach – BASIX Assessment Report

1. SITE APPRECIATION

The proposed development is located at 1102 Barrenjoey Rd, Palm Beach and consists of:

- 6 new residential units

2. BASIX WATER SECTION

The proposed development will meet the mandatory BASIX water target of 40% as long as the water commitments detailed in Table 1 are installed. For details of the requirements necessary to achieve this target, please refer to the BASIX Certificate No. 1186733M.

Table 1: BASIX Water Commitments

Common Areas and Central Systems	
<u>Area of Indigenous or low water species</u>	<ul style="list-style-type: none"> • Please refer to Appendix B
<u>Rainwater collection</u>	<ul style="list-style-type: none"> • 4,000L rainwater tank • Roof collection area - 200m² • Rainwater to be used for Common areas and private landscape irrigation
<u>Fire Sprinkler</u>	<ul style="list-style-type: none"> • Test water to be diverted to a closed system
<u>Fixtures</u>	<ul style="list-style-type: none"> • 4-star (Water Rating) toilets • 5-star (Water Rating) taps
Private Dwellings	
<u>Fixtures for apartments</u>	<ul style="list-style-type: none"> • 3-star (Water Rating) showerheads with a flow rate > 4.5L/min & ≤ 6L/min • 4-star (Water Rating) toilets • 5-star (Water Rating) kitchen taps • 5-star (Water Rating) bathroom taps • 4-star (Water Rating) dishwashers

3. BASIX THERMAL COMFORT SECTION

The thermal performance of the development has been evaluated using BERS Pro 2nd Generation software. The BERS Pro computer simulation of residential developments forms part of the Nationwide House Energy Rating Scheme, and is used to assess the potential of a residential development to have low heating and cooling energy requirements once operational.

3.1 MODELLING ASSUMPTIONS

The “base-case” building fabric and glazing and associated thermal performance specifications are described in Table 2 below as these assumptions are based on the nominated preferred construction materials indicated by the architect.

Note: Table 2 must be read in conjunction with Table 3. Table 3 outlines additional thermal enhancements / treatments to meet the mandatory thermal load targets to achieve compliance.

Table 2: Base Case Assumptions on Construction and Fabric

<i>Element</i>	<i>Material</i>	<i>Detail</i>
External walls	Concrete Block, lined	Insulation: See Table 3 Light colour: Absorptance < 0.475
Internal walls	Plasterboard	
Party walls	Concrete Block, lined	Insulation: R1.0 both sides for fire safety Common corridors & Neighbour
	Concrete Block	Fire stairs & lifts
Windows	<u>Type 1 Performance glazing</u>	Total Window System Properties U-value 3.1 & SHGC 0.27 for sliding doors, sliding & fixed windows And Total Window System Properties U-value 3.1 & SHGC 0.27 for bifold doors, awning & casement windows
	Window Operability	Balcony windows: 30% (i.e. sliding) Bedroom windows: 10% (BCA D2.24) All other non-balcony windows: 0% (i.e. fixed)
	Shading device	None
Skylight	<u>Type 1 Double glazed clear glass with aluminium frame</u>	U-value 4.2 & SHGC 0.72
	<u>Type 2 Performance glazing</u>	U-value 2.7 & SHGC 0.24
Roof	Concrete	Insulation: None
		Medium colour: 0.475 < absorptance < 0.70

Element	Material	Detail
Ceilings	Plasterboard	Insulation: See Table 3
Floors	Concrete	Insulation: See Table 3
		Carpet: Bedrooms only
		Tiles: Elsewhere
Common corridors naturally ventilated		Yes
Recessed downlights assessed		No
Exhaust fans (kitchens, bathrooms, laundry)		All assumed to be sealed
Note: Only a ±5% SHGC tolerance to the value stated above & U-value can be greater than or equal to the value stated above		

3.2 BERS PRO RESULTS (THERMAL COMFORT)

The simulated heating and cooling loads per dwelling are summarized in Table 3 below. Where the dwellings have failed to meet the thermal load targets additional thermal enhancements / treatments are provided. This is typically in the form of bulk insulation. These additional thermal treatments are required to pass the BASIX Thermal performance requirements. Please refer to BASIX Certificate No. 1186733M & NatHERS Universal Certificate No. 0005866650 for details.

Table 3: BERS Pro Thermal Loads

Unit No.	Additional Treatments Required	Heating Load (MJ/m².yr)	Cooling Load (MJ/m².yr)	Stars	Pass/Fail
A1	R1.0 Bulk Floor Insulation to exposed floors only (total floor system R-value Rt1.11), R2.5 Bulk External Wall Insulation (total wall system R-value of R2.69), Type 1 windows	19.0	16.3	7.3	Pass
A2	R1.0 Bulk Floor Insulation to exposed floors only (total floor system R-value Rt1.11), R2.5 Bulk External Wall Insulation (total wall system R-value of R2.69), Type 1 windows	19.0	16.2	7.3	Pass
A3	R1.0 Bulk Floor Insulation to exposed floors only (total floor system R-value Rt1.11), R2.5 Bulk External Wall Insulation (total wall system R-value of R2.69), Type 1 windows	38.3	13.3	5.9	Pass
A4	R2.5 Bulk External Wall Insulation (total wall system R-value of R2.69), Type 1 windows, R2.5 Bulk Ceiling Insulation (total ceiling/roof system R-value Rt2.56), Type 2 skylights	27.5	21.0	6.3	Pass
A5	R2.5 Bulk External Wall Insulation (total wall system R-value of R2.69), Type 1 windows, R2.5 Bulk Ceiling Insulation (total ceiling/roof system R-value Rt2.56), Type 2 skylights	24.1	26.8	6.0	Pass
A6	R2.5 Bulk External Wall Insulation (total wall system R-value of R2.69), Type 1 windows, R2.5 Bulk Ceiling Insulation (total ceiling/roof system R-value Rt2.56), Type 2 skylights	31.2	23.4	5.8	Pass

4. BASIX ENERGY SECTION

The proposed development will meet the mandatory BASIX Energy target of 20% as long as the energy commitments detailed in Table 4 are installed.

Table 4: BASIX Energy Commitments

<i>Component</i>		<i>Commitment</i>
Common Areas and Central Systems	<u>Hot Water System</u>	<ul style="list-style-type: none"> Centralised Gas-fired boiler with internal piping insulation of R1.0 (~38mm)
	<u>Lifts</u>	<ul style="list-style-type: none"> All lifts to use Gearless traction with VVVF motor servicing all levels
	<u>Ventilation</u>	<ul style="list-style-type: none"> Car park: Ventilation (supply & exhaust) with a CO monoxide monitor & VSD fan Garbage Rooms: Ventilation (exhaust only), continuous Plant/Service Rooms: Ventilation (exhaust only), thermostatically controlled Hallways & lobbies: No mechanical ventilation
	<u>Lighting</u>	<ul style="list-style-type: none"> Car park: Fluorescent lighting with time clocks and motion sensors Lift Cars: LED lighting connected to lift call button Garbage Rooms: LED lighting with motion sensors Plant/Service Room: LED lighting with manual on/off switch Hallways & lobbies: LED lighting with motion sensors + time clock
	<u>Alternative Energy Supply</u>	<ul style="list-style-type: none"> Photovoltaic system of minimum rated electrical output of 3.35kW peak
Private Dwellings	<u>Hot Water System</u>	<ul style="list-style-type: none"> Individual Instantaneous Gas Hot Water System with 6 Stars Rating
	<u>Ventilation</u>	<ul style="list-style-type: none"> Kitchen, Bathroom & Laundry Exhaust: Individual fan, ducted to roof or façade, with manual on/off switch
	<u>Heating & Cooling</u>	<ul style="list-style-type: none"> Heating: Living & Beds to have individual 3-star (average zone) 1-phase air-conditioning Cooling: Living & Beds to have individual 3-star (average zone) 1-phase air-conditioning Must be day/night zoned
	<u>Lighting</u>	<ul style="list-style-type: none"> At least 80% of light fittings (including the main light fitting) in all hallways, laundries, bathrooms, kitchens, bedrooms and living areas to use Fluorescent or LED lights with dedicated fittings¹

¹ Definition of dedicated fittings is a light fitting that is only capable of accepting fluorescent or LED (Light Emitting Diode) lamps. It will not accept incandescent, halogen or any other non-fluorescent or non-LED lamps.

Component	Commitment
	<ul style="list-style-type: none"> • Gas cook top and electric oven • Well ventilated fridge space • Install a 4-star (energy rating) dishwashers • Install a 2-star (energy rating) dryers
	<ul style="list-style-type: none"> • <u>Other</u>

5. CONCLUSION

The proposed development has been assessed to optimise its thermal performance (passive and fabric design) using the Nationwide House Energy Rating scheme (NatHERS) and also been assessed in terms of its ability to conserve water and minimise energy consumption through BASIX Tool.

With the commitment recommendations contained within this report the proposed development is able to meet BASIX requirements and is BASIX compliant.

For further details, please refer to the BASIX Certificate No. 1186733M provided.

APPENDIX A - ARCHITECTURAL DRAWINGS

The building sustainability performance assessment carried out in this report was based on the following architectural drawings supplied by Rob Mills Architecture & Interiors received on 15th April 2021.

ARCHITECTURAL DRAWING LIST		
Sheet No.	Sheet Name	Current Rev.
DA.00	COVER PAGE	1
DA.01	SITE PLAN ANALYSIS	1
DA.02	MASSING ENVELOPE PREVIOUS DA	1
DA.02a	MASSING ENVELOPE PROPOSED	1
DA.02b	MASSING ENVELOPE COMBINED	1
DA.03	DEMOLITION PLAN	1
DA.04	PROPOSED SITE PLAN / ROOF PLAN	1
DA.05	PROPOSED BASEMENT PLAN	1
DA.06	PROPOSED GROUND FLOOR PLAN	1
DA.07	PROPOSED FIRST FLOOR PLAN	1
DA.08	PROPOSED SECOND FLOOR PLAN	1
DA.10	PROPOSED ELEVATION - EAST & WEST	1

ARCHITECTURAL DRAWING LIST		
Sheet No.	Sheet Name	Current Rev.
DA.11	PROPOSED ELEVATION - NORTH & SOUTH	1
DA.15	SECTION	1
DA.16	SECTION - DRIVEWAY	1
DA.50	SHADOW STUDIES	1
DA.51	SHADOW STUDIES	1
DA.52	SHADOW STUDIES	1
DA.60	MATERIALS AND FINISHES	1
DA.70	GFA & LANDSCAPE CALCULATIONS	1
DA.71	LANDSCAPE DIAGRAM	1
DA.72	SOLAR ACCESS ANALYSIS - PROPOSED	1
DA.73	OVERLOOKING ANALYSIS	1
DA.74	NATURAL VENTILATION DIAGRAMS	1

APPENDIX B – Landscaping Areas

BASIX for Multi Dwellings - Landscape Checklist																																	
WATER - Central systems and common areas																																	
<p>Common area landscape</p> <p>Please fill out mandatory fields marked n a *</p> <p>Number of Unit-Buildings <input style="width: 100px;" type="text"/></p> <p style="text-align: center;">Building Name(s) "Building 1"</p> <p>Common area of lawn (m²) * <input style="width: 100px;" type="text" value="0"/></p> <p>Common area of garden (excluding lawn) (m²) * <input style="width: 100px;" type="text" value="312"/></p> <p>Common area of indigenous species (m²) * <input style="width: 100px;" type="text" value="295"/></p>	<p>Notes for assessor</p>																																
WATER - dwellings																																	
<p>Private area landscape</p> <p><u>For each dwelling, gather the following information:</u></p> <p>How many units have private garden & lawn. Please list these separately below <input style="width: 100px;" type="text" value="6"/></p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="text-align: center;">Unit No.</th> <th style="text-align: center;">Total area of Private garden (m²)</th> <th style="text-align: center;">Total area of Private lawn (m²)</th> <th style="text-align: center;">Area of indigenous species (m²)</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">A1</td><td style="text-align: center;">31</td><td style="text-align: center;">0</td><td style="text-align: center;">30</td></tr> <tr><td style="text-align: center;">A2</td><td style="text-align: center;">17.7</td><td style="text-align: center;">0</td><td style="text-align: center;">16</td></tr> <tr><td style="text-align: center;">A3</td><td style="text-align: center;">81</td><td style="text-align: center;">0</td><td style="text-align: center;">76</td></tr> <tr><td style="text-align: center;">A4</td><td style="text-align: center;">4</td><td style="text-align: center;">0</td><td style="text-align: center;">3.5</td></tr> <tr><td style="text-align: center;">A5</td><td style="text-align: center;">16</td><td style="text-align: center;">0</td><td style="text-align: center;">15</td></tr> <tr><td style="text-align: center;">A6</td><td style="text-align: center;">11</td><td style="text-align: center;">0</td><td style="text-align: center;">9.5</td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	Unit No.	Total area of Private garden (m ²)	Total area of Private lawn (m ²)	Area of indigenous species (m ²)	A1	31	0	30	A2	17.7	0	16	A3	81	0	76	A4	4	0	3.5	A5	16	0	15	A6	11	0	9.5					<p>Notes for assessor</p>
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