0272

## Reform Projects

# 1102 Barrenjoey Rd, Palm Beach

# BASIX Assessment Report

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| | |
|---|---|
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| **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:

- 5 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_05.

**Table 1: BASIX Water Commitments**

| | |
|---|---|
| ***Common Areas and Central Systems*** | |
| Area of Indigenous or low water species | • Please refer to Appendix B |
| Rainwater collection | • 4,000L rainwater tank<br>• Roof collection area - 200m$^2$<br>• Rainwater to be used for Common areas and private landscape irrigation |
| Fire Sprinkler | • **Test water to be diverted to a closed system** |
| Fixtures | • 4-star (Water Rating) toilets<br>• 5-star (Water Rating) taps |
| ***Private Dwellings*** | |
| Fixtures for apartments | • 4-star (Water Rating) showerheads with a flow rate > 6.0L/min & ≤ 7.5L/min<br>• 4-star (Water Rating) toilets<br>• 5-star (Water Rating) kitchen taps<br>• 5-star (Water Rating) bathroom taps<br>• 4-star (Water Rating) washing machines<br>• 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**

| *Element* | *Material* | *Detail* |
|---|---|---|
| External walls | Concrete Block, lined | **Insulation: See Table 3** |
| | | Light colour: Absorptance< 0.475 |
| | CFC, lined | **Walls adjacent to roof space**<br>**Insulation: See Table 3** |
| | | Dark colour: Absorptance> 0.70 |
| Internal walls | Plasterboard | |
| Party walls | Concrete Block, lined | Common corridors & Neighbour |
| | Concrete Block | Fire stairs & lifts |
| Windows | **Type 1** | Total Window System Properties **U-value 3.1 & SHGC 0.27 for sliding doors, sliding & fixed windows**<br>**And**<br>Total Window System Properties **U-value 3.1 & SHGC 0.27 for bifold doors, awning & casement windows** |
| | **Note: Only a ±10% SHGC tolerance to the value stated above & U-value can be NO greater than or equal to the value stated above**[1] | |
| | Window Operability | Balcony windows: **As per markups**<br>Bedroom windows: **10% (BCA D2.24) as per plans & elevations**<br>All other non-balcony windows: **As per markups** |
| | Vertical shading device | Balcony windows: **As per plans & elevations**<br>Non-balcony windows: **As per plans & elevations** |
| | Horizontal shading device | Eaves: **As per plans & elevations** |
| Clerestory windows | **Type 1** | **U-value 3.1 & SHGC 0.27** |
| Skylight | **Type 1** | **U-value 2.6 & SHGC 0.21** |
| Roof | Partial Concrete & Partial light structure | **Insulation: None** |
| | | Medium colour: 0.475<absorptance< 0.70 |
| Ceilings | Plasterboard | **Insulation: See Table 3** |
| | | Cavity: Unventilated Cavity |
| Floors | Concrete | **Insulation: See Table 3** |
| | | Carpet: Bedrooms only |

[1] As per BASIX Thermal Comfort Protocol Part 6, Table 2, Windows part (g)

| Element | Material | Detail |
|---|---|---|
| | | Tiles: Wet areas only |
| | | Timber: Elsewhere |
| Common corridors naturally ventilated | | Yes |
| Recessed downlights assessed | | No lighting plan provided. Project will be updated once lighting plan is available. |
| Exhaust fans (kitchens, bathrooms, laundry) | | **All assumed to be sealed** |

## 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_05 & NatHERS Universal Certificate No. 0005866650 for details.

**Table 3: BERS Pro Thermal Loads**

| Unit No. | Additional Treatments Required | Heating Load ($MJ/m^2.yr$) | Cooling Load ($MJ/m^2.yr$) | Stars | Pass/Fail |
|---|---|---|---|---|---|
| A1 | - R1.0 Bulk Floor Insulation to exposed floors only (total floor system R-value Rt1.11)<br>- R2.5 Bulk External Wall Insulation (total wall system R-value Rt2.69)<br>- R1.0 Bulk Ceiling Insulation to exposed areas only (total ceiling/roof system R-value Rt1.07)<br>- Type 1 windows<br>- Window operability as per markups | 19.9 | 17.1 | 7.1 | Pass |
| A2 | R1.0 Bulk Floor Insulation to exposed floors only (total floor system R-value Rt1.11)<br>- R2.5 Bulk External Wall Insulation (total wall system R-value Rt2.69)<br>- R1.0 Bulk Ceiling Insulation to exposed areas only (total ceiling/roof system R-value Rt1.07)<br>- Type 1 windows<br>- Window operability as per markups | 16.3 | 24.8 | 6.8 | Pass |
| A3 | R1.0 Bulk Floor Insulation to exposed floors only (total floor system R-value Rt1.11)<br>- R2.5 Bulk External Wall Insulation (total wall system R-value Rt2.69)<br>- R1.0 Bulk Ceiling Insulation to exposed areas only (total ceiling/roof system R-value Rt1.07)<br>- Type 1 windows<br>- Window operability as per markups | 33.5 | 19.6 | 5.9 | Pass |
| A4 | - R2.5 Bulk External Wall Insulation (total wall system R-value Rt2.69)<br>- R2.5 Bulk External Wall Insulation to walls adjacent to roofspace (total wall system R-value Rt2.58)<br>- R2.0 Bulk Ceiling Insulation to exposed areas only (total ceiling/roof system R-value Rt2.16)<br>- Type 1 windows<br>- Type 1 clerestory windows<br>- Type 1 skylights<br>- Window operability as per markups | 27.8 | 21.1 | 6.2 | Pass |
| A5 | - R2.5 Bulk External Wall Insulation (total wall system R-value Rt2.69) | 36.2 | 26.8 | 5.2 | Pass |

| Unit No. | Additional Treatments Required | Heating Load ($MJ/m^2.yr$) | Cooling Load ($MJ/m^2.yr$) | Stars | Pass/Fail |
|---|---|---|---|---|---|
| | - R2.5 Bulk External Wall Insulation to walls adjacent to roofspace (total wall system R-value Rt2.58)<br>- R2.0 Bulk Ceiling Insulation to exposed areas only (total ceiling/roof system R-value Rt2.16)<br>- Type 1 windows<br>- Type 1 clerestory windows<br>- Type 1 skylights<br>- Window operability as per markups<br>- East Entry window to have at least 10% ventilation opening<br>- North Bedroom 4 window to have at least 10% ventilation opening | | | | |

## 4. BASIX ENERGY SECTION

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

**Table 4: BASIX Energy Commitments**

| Component | | Commitment |
|---|---|---|
| Common Areas and Central Systems | Hot Water System | • Individual HWS below |
| | Lifts | • All lifts to use Gearless traction with VVVF motor servicing all levels |
| | Ventilation | • Car park: Ventilation (supply & exhaust) with a CO monitor & VSD fan<br>• Garbage Rooms: Ventilation (exhaust only), continuous<br>• Plant/Service Rooms: Ventilation (exhaust only), thermostatically controlled<br>• Hallways & lobbies: No mechanical ventilation |
| | Lighting | • Car park: Fluorescent lighting with time clocks and motion sensors<br>• Lift Cars: LED lighting connected to lift call button<br>• Garbage Rooms: LED lighting with motion sensors<br>• Plant/Service Room: LED lighting with manual on/off switch<br>• Hallways & lobbies: LED lighting with motion sensors + time clock |
| | Alternative Energy Supply | • **Photovoltaic system of minimum rated electrical output of 3.2kW peak** |
| Private Dwellings | Hot Water System | • Individual Instantaneous Gas Hot Water System with 6 Stars Rating |
| | Ventilation | • Kitchen, Bathroom & Laundry Exhaust: Individual fan, ducted to roof or façade, with manual on/off switch |
| | Heating & Cooling | • Heating: Living & Beds to have individual 3-star (average zone) 1-phase air-conditioning<br>• Cooling: Living & Beds to have individual 3-star (average zone) 1-phase air-conditioning<br>• **Must be day/night zoned** |

| Component | | Commitment |
|---|---|---|
| | Lighting | • 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 fittings[2] |
| | Other | • Gas cook top and electric oven<br>• Well ventilated fridge space<br>• Install 4-star (energy rating) dishwashers<br>• Install 2-star (energy rating) dryers |

[2] 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.

## 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_05 provided.

# APPENDIX A - ARCHITECTURAL DRAWINGS

The building sustainability performance assessment carried out in this report was based on the following architectural drawings supplied by Innovate Architects received on 19th June 2024.

DRAWING LEGEND

| | | |
|---|---|---|
| DA.01 | SITE PLAN ANALYSIS | D |
| DA.02a | MASSING HEIGHT CONTROL | D |
| DA.03 | DEMOLITION PLAN | D |
| DA.04 | SITE PLAN | D |
| DA.05 | PROPOSED BASEMENT PLAN | D |
| DA.06 | PROPOSED GROUND FLOOR PLAN | E |
| DA.07 | PROPOSED FIRST FLOOR PLAN | D |
| DA.08 | PROPOSED SECOND FLOOR PLAN | D |
| DA.10 | PROPOSED WEST ELEVATION | D |
| DA.11 | PROPOSED ELEVATION - NORTH, SOUTH & EAST | D |
| DA.15 | SECTIONS | D |
| DA.16 | SECTIONS | D |
| DA.50 | SHADOW STUDIES_9AM 21ST JUNE | D |
| DA.50.B | SHADOW STUDIES_9AM 21ST JUNE | D |
| DA.51 | SHADOW STUDIES_12PM 21ST JUNE | D |
| DA.51.B | SHADOW STUDIES_12PM 21ST JUNE | D |
| DA.52 | SHADOW STUDIES_3PM 21ST JUNE | D |
| DA.52.B | SHADOW STUDIES_3PM 21ST JUNE | D |
| DA.60 | MATERIALS AND FINISHES | D |
| DA.70 | GFA & LANDSCAPE CALCULATIONS | E |
| DA.71.1 | SUN EYE DIAGRAM - WINTER SOLSTICE 9AM-3PM (ONE HOUR APART) | D |
| DA.71.2 | SUN EYE DIAGRAM - WINTER SOLSTICE 1PM-2PM (15 MINUTES APART) | D |
| DA.71.3 | SUN EYE DIAGRAM - WINTER SOLSTICE 3PM-4PM (30 MINUTES APART) | D |
| DA.71.4 | SUN EYE DIAGRAM - WINTER SOLSTICE 8AM-12PM (30 MINS APART) | D |
| DA.71.5 | SUN EYE DIAGRAM - EQUINOX 9AM-3PM (ONE HOUR APART) | D |
| DA.71.6 | SUN EYE DIAGRAM - EQUINOX 8AM-12PM (30 MINS APART) | D |
| DA.71.7 | SUN EYE DIAGRAM - SUMMER SOLSTICE 9AM-3PM (ONE HOUR APART) | D |
| DA.71.8 | SUN EYE DIAGRAM - SUMMER SOLSTICE 8AM-12PM (30 MINUTES APART) | D |
| DA.73 | OVERLOOKING ANALYSIS | D |
| DA.74 | NATURAL VENTILATION DIAGRAMS & ADAPTABLE HOUSING | D |
| DA.76 | VIEW ANALYSIS | C |
| DA.77 | SUN EYE DIAGRAM - WINTER SOLSTICE 2PM-4.30PM (15 MINUTES APART) | C |
| DA.78 | 3D PERSPECTIVES | C |
| DA.80 | A4 & A5 CLERESTORY IMAGERY | C |
| DA.81 | WASTE MANAGEMENT ACCESS PLAN | B |

# APPENDIX B – LANDSCAPING AREAS

**BASIX for Multi Dwellings - Landscape Checklist**

**WATER - Central systems and common areas**

**Common area landscape**

**Please fill out mandatory fields marked in a ***

Notes for assessor

Number of Unit-Buildings

| | |
|---|---|
| Building Name(s) | "Building 1" |
| Common area of lawn (m²) * | 312.1 |
| Common area of garden (exlcuding lawn) (m²) * | 94.6 |
| Common area of indigenous species (m²) * | 251.7 |

**WATER - dwellings**

**Private area landscape**

Notes for assessor

**For *each dwelling*, gather the following information:**

How many units have private garden & lawn. Please list these separately below: 5

| Unit No. | Total area of Private garden (m²) | Total area of Private lawn (m²) | Area of indigenous species (m²) |
|---|---|---|---|
| A1 | 50.7 | 23.3 | 9.32 |
| A2 | 26.8 | 4 | 1.6 |
| A3 | 58.1 | 36.8 | 14.8 |
| A4 | 38.1 | 0 | 0 |
| A5 | 36.1 | 0 | 0 |

BASIX Landscape