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NatHERS and BASIX Assessment

Shed Design
Proposed Residential Development

To be built at **27 Bellevue Avenue, Avalon NSW 2107**

Issue	File Ref	Description	Author	Date
A	20-0219	NatHERS and BASIX Assessment	MP	09/09/20

This report has been prepared by Efficient Living Pty Ltd on behalf of our client Shed Design. Efficient Living prepares all reports in accordance with the BASIX Thermal Comfort Protocol and is backed by professional indemnity insurance. This report takes into account our Client's instructions and preferred building inclusions.

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27 Bellevue Ave, Avalon

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Introduction

Efficient Living has investigated the estimated thermal comfort, water and energy usage of the proposed development to be built at 27 Bellevue Avenue, Avalon

Heating and cooling loads for the development have been determined using BERS Pro Plus 4.4 thermal comfort simulation software. The report is based on the architectural drawings provided by Shed Design. For further details refer to the individual BASIX Certificate(s) and Efficient Living's inclusions summary respectively.

Analysis

The BASIX Assessment is divided into three sections; Water, Thermal Comfort and Energy, each independently measuring the efficiency of the Development.

BASIX requires a minimum target of 40% for the water section, a pass or fail for the thermal comfort section, and a minimum required target of 35% for the energy section.

Water

The proposed Development has achieved the BASIX Water Target of 40%.

The water usage of the Development is calculated based on the number and efficiency of permanent fixtures and appliances such as taps, showerheads and toilet, the dish washer and clothes washing machine.

The size of the rainwater tank and number of connections may have a significant impact on your water score as does the area of gardens and lawns whether or not low water plant species are incorporated.

Thermal Comfort

Thermal Comfort targets are set by the Department of Planning in the form of heating and cooling caps. The buildings thermal physics are measured using BERS Pro Plus V4.4 Thermal Comfort Simulation Software. This calculates the expected level of energy required to heat and cool each dwelling per annum, expressed in megajoules per square metre of floor area (MJ/m^2).

Each unit has individual heating and cooling caps applied. Accompanying these individual caps are average heating and cooling caps applied to the whole development. The average caps are lower, or harder to comply with than the individual unit caps.

Energy

The proposed Development has achieved the Energy target of 35% to pass this section.

The energy usage of the Development is calculated based on the efficiency of fixed appliances that will be used. This includes the air-conditioning system, hot water system, lighting, exhaust fans, cook top, oven, and clothes drying facilities.

Inclusions Summary

The inclusions as outlined below have been incorporated in each unit to allow them to reach their environmental sustainability targets.

Thermal Comfort Scores

Average heating loads are 34% below allowable BASIX targets

Average cooling loads are 20% below allowable BASIX targets

Glazing Doors/Windows

Low E Glazed windows and doors:

U-value: 4.80 (equal to or lower than) SHGC: 0.51 (±10%)

Double glazed high level windows

U-value: 3.10(equal to or lower than) SHGC: 0.27 (±10%)

Given values are AFRC total window system values (glass and frame)

Roof and ceiling

Concrete roof with minimum R2.8 rigid board over (TR27 or equivalent)

Plasterboard ceiling, no insulation

External Colour

Dark (SA > 0.7)

Ceiling Penetrations

Sealed LED downlights at a maximum of one every 2.5m^2

External Wall

Cavity brick and 150mm insitu concrete with K8 Cavity board or equivalent Total system R-value of R_T2.2

Single brick with metal cladding + R2.5 insulation (insulation value only) and plasterboard lining where lightweight cladding is indicated on elevations by green hatch.

External Colour

Default colour modelled

Inter-tenancy walls

Masonry walls adjacent to neighbours, no insulation required

Walls within dwellings

Masonry – no insulation

Floors

Concrete slab on ground, no insulation required

Concrete between levels, no insulation required

Floor coverings

Tiles to wet areas, polished concrete elsewhere

External Shading

Shading as per stamped documentation

Sliding exterior vertical screens as per plans and elevations

BASIX water inclusions

Score 41/40

Fixtures within units

Showerheads: Mid flor (>6L but <=7.5L/min)

Toilets: 4.0 star

Kitchen taps: 5.0 star

Bathroom vanity taps: 5.0 star

Appliances within units

Dishwashers: 3.0 stars

Central rainwater storage

Tank size: 2,000L MIN

Collecting from 521m^2 roof area (100%)

Connected to outdoor tap for irrigation of landscaping and toilets

Private swimming pool- Unit 2

A cover is required

Solar heated

BASIX Energy Inclusions

Score 35/35

Hot water system

Individual Gas instantaneous 6 stars

Lift motors

All lifts to have gearless traction with VVVF motor

Appliances and other efficiency measures within units

Gas cooktop & electric oven

Dishwashers: 3.5 star

Clothes dryers: 5.0 star

Well ventilated fridge space – requires a mechanical vent or ventilation grills installed below the refrigerator and above the refrigerant coils, to allow air flow to pass over the refrigerant coils.

Heating and cooling within units

All units to have individual, single phase, reverse cycle air conditioning to living areas, and at least 1 bedroom

A minimum efficiency of 3.5-4.0 EER is required for cooling; and

A minimum efficiency of 3.5-4.0 EER is required for heating

Zoning required (AC zoning only allows the system to be used in one area at a time. Bedroom and living room cannot be running simultaneously)

Artificial lighting within units

All light fittings within each room are to have sealed LED fixtures installed

Ventilation within units

Bathroom: individual fan, ducted to roof or façade – interlocked to light

Laundry: individual fan, ducted to roof or façade – manual on/off switch

Kitchen range hood: Individual fan, ducted to roof or façade – manual on/timer off

Ventilation to common areas

Car park area – Naturally ventilated

Garbage rooms – Naturally ventilated

Artificial lighting to common areas

Car park area – Light emitting diodes (LEDs) with daylight sensor and motion sensors

Lifts – Light emitting diodes (LEDs) connected to lift call button

Garbage rooms – Light emitting diodes (LEDs) with manual on/ off

Alternative Energy

No BASIX requirement for alternative energy