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Vipac Engineers & Scientists

Sydney Property Consultancy Pty Ltd

300 Johnston Street Annandale

Report

20E-14-0276-TRP-468588-2

21 Jan 2015

Report Job Title:	
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REVISION HISTORY

Revision No.	Date Issued	Reason/Comments
0	21 Nov 2014	Initial Issue
1	24 Nov 2014	Update Roof/Ceiling
2	21 Jan 2015	Final Issue

DISTRIBUTION

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KEYWORDS:

1 EXECUTIVE SUMMARY

Vipac Engineers & Scientists Ltd. has been commissioned by Sydney Property Consultancy Pty Ltd to assess the interaction of the proposed 300 Johnston Street Annandale development with the local environment in terms of BASIX compliance.

The proposed development comprises of:

22 connected dwellings

Dwellings within the development have been assessed in terms of their passive energy design using the Nationwide House Energy Rating scheme (NatHERS). They have also been assessed in terms of their ability to conserve water and also to minimise energy consumption via appliances and hot water etc. With the recommendations contained within this report we find that the proposed development is able to achieve a BASIX certificate.

While every endeavour has been made to provide a realistic energy rating for the proposed development, we note that the energy calculating process using computer program simulation is not 100% accurate.

The energy efficiency of any building is determined not only by the design but also by the energy consumption requirements and practices of the occupants. Actual energy consumption will not be known until a building is occupied and operational.

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2. INTRODUCTION

BASIX is a NSW State Planning Policy Tool which assesses the environmental performance of new residential premises against a range water, energy and greenhouse gas emissions targets. The assessment has three core components, BASIX Thermal Comfort, BASIX Water and BASIX Energy.

The thermal comfort assessment requires that the thermal performance of dwellings are evaluated and measures put in place to ensure annual heating and cooling loads do not exceed pre-defined limits without compromising the occupants thermal comfort. This assessment uses computer simulation to evaluate the building fabric thermal performance and passive solar design features such as orientation and solar shading.

The energy section evaluates gas and electrical energy used for heating, cooling lighting, ventilation and appliances. The BASIX Energy target requires the development to uses 20% less energy than the NSW average.

The water assessment takes account of landscaping, stormwater management as well as water efficiency performance of fixtures and fitting such as taps and showers. The BASIX target for water requires that potable water consumption is at least 40% lower than the NSW average.

2 BASIX WATER SECTION

The water efficiency performance of the development has been assessed using the online BASIX Tool. The assessment has considers Common Area and Central System features including the landscape design, plant species, water catchment areas, rain water tank size and efficiency of preferred fixtures and fittings in the dwellings.

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. 361042M_04.

Table 1: Water Commitments

Common Areas	
Area of Indigenous or low water species	• Common (non-accessible) planting area of 849.5m2 with a total area of 721.77m2 must be indigenous or low water use species. • Private unit planting areas of 266.6m2 with a total area of 132.75m2 must be indigenous or low water use species.
Private Dwellings	
Fixtures for Units	• 3-star (Water Rating) showerheads with a flow rate > 6L/min & ≤ 7.5L/min • 4-star (Water Rating) toilets • 4-star (Water Rating) kitchen taps • 4-star (Water Rating) bathroom taps

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 following has been assumed for the thermal simulation:

- BERS Pro calculates the transient hourly heat gains and losses for each space inside a building taking into account the building's thermal storage, typical residential occupancy and operational profiles plus hourly weather data for the site
- The "base-case" building fabric and glazing and associated thermal performance specifications are described in Table 2 below: Note these assumptions are based on the nominated preferred construction materials indicated by the architect.

Table 2: Base Case Construction and Fabric

Element	Material	Detail
External walls	Reinforced concrete, plasterboard lined, sandstone cladding	Insulation: None required
		Medium colour: 0.7<absorptance< 0.475
Internal walls	Plasterboard	
Party walls	Reinforced concrete, plasterboard lined	
Windows	Single glazed, clear	Holland Blinds to all glazing except bathrooms
	Aluminium frame	U-value 6.57 & SHGC 0.74
Roof/Ceilings	Concrete, plasterboard	None
Floors	Concrete	Ground floor Concrete garage on ground
		First floor: Carpet & tiles
		Second floor: Carpet & tiles
Downlights	As per BASIX thermal protocol, "If no recessed luminaries are to be installed or the decision on lighting arrangement have not been made, the defaults specified in the NatHERS Technical Notes do not need to be considered. However, the Assessor Stamp needs to indicate that the dwelling is rated without downlights, as required by	

	the NatHERS Technical Notes". As no lighting plans were available at the time completing this assessment, the thermal heating/cooling load presented in this report and the issued BASIX certificate for the proposed assumed that no downlights will be installed for the proposed development. If downlights are proposed at a later stage, a revised thermal modelling incorporating the number of proposed downlights will be required.

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 (Max BASIX Heat Load 72.1 MJ/m2.yr and Max BASIX Cool Load 63.6 MJ/m2.yr)

Table 3: BERS Pro Thermal Loads

Unit	*Heating Load (MJ/m2.yr)*	*Cooling Load (MJ/m2.yr)*	*Floor Area – Conditioned (m^2)*	*Floor Area – Unconditioned (m^2)*	*Star Rating*	*Additional Treatments Required*
1	33.1	40.9	76	48	4.5	R1.5 bulk insulation for roof
2	25.4	39.8	199	92	5.0	R1.5 bulk insulation for roof
4	28.7	18.8	94	41	6.0	R1.5 bulk insulation for roof
5	45.0	29.4	81	49	4.5	R1.5 bulk insulation for roof
6, 11, 15, 19	41.3	24.4	91	37	5.0	R1.5 bulk insulation for roof
7, 8, 9, 12, 13, 16, 17, 20, 21	28.2	17.9	91	37	6.0	R1.5 bulk insulation for roof
10, 14,18	56.0	25.9	91	37	4.0	R1.5 bulk insulation for roof
22	38.0	18.8	91	37	5.5	R1.5 bulk insulation for roof
23	63.4	39.1	71	34	3.5	R1.5 bulk insulation for roof

4 BASIX ENERGY SECTION

The Energy performance of the development has been assessed using the online BASIX Tool. The assessment has considered Common Area and Central System features including the lifts, ventilation and lighting for common areas (corridors, lobbies, car park etc), centralised domestic hot water and the efficiency of preferred lighting and appliances in the dwellings.

The proposed development will meet the mandatory BASIX Energy target of 40% as long as the energy commitments detailed in Table 4 are installed.

Table 4: Energy Commitments

Component		Commitment
Common Area	Lifts	• Lift to use hydraulic system type
	Ventilation	• Carpark: Ventilation (supply & exhaust) with a CO monoxide monitor & VSD fan
	Lighting	• Carpark: Fluorescent lighting with time clocks & motion sensors • Lift Cars: Fluorescent lighting
Private Dwellings	Ventilation	• Bathroom & Laundry Exhaust: Individual fan, ducted to roof or façade, with manual on/off switch. • Kitchen Exhaust: Individual fan, not ducted, with manual on/off switch
	Heating & Cooling	• Heating & Cooling system to both living and bedrooms: 1-phase air-conditioner with minimum 2-star Heating & 2-star Cooling (new rating)[1].
	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]
	Hot Water	• All dwellings must install 4.5-star gas-instantaneous hot-water system
	Other	• Gas cooktop and electric oven • Well-ventilated fridge space

[1] Changes in energy labelling standards for air conditioners and refrigerators came into effect as of April 1st 2010. For more information, please see http://www.basix.nsw.gov.au/docs/energy/newStarRating.pdf

[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 SUMMARY & CONCLUSION

The proposed development has been assessed to optimise its thermal performance (passive and fabric design) using the Nationwide House Energy Rating scheme (NatHERS).

The proposed development has also been assessed in terms of its ability to conserve water and minimise energy consumption.

With the recommendations contained within this report the proposed development is able to achieve the BASIX requirements and is eligible for BASIX certification.

For further details, please refer to the BASIX Certificate No. 361042M_04 provided.

Appendix A ARCHITECTURAL DRAWINGS

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