IGS INTEGRATED GROUP SERVICES

Thornton Lot 3008
Lord Sheffield Circuit Penrith NSW 2750

BASIX Assessment Report

March 2018

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1. EXECUTIVE SUMMARY

IGS Engineers & Scientists Ltd. has been commissioned by GJ Building and Contracting to assess the interaction of the proposed development at 73-89 Ebley Street Bondi Junction, with the local environment in terms of BASIX compliance.

A BASIX Certificate is a regulatory requirement and demonstrates compliance with the NSW Government's sustainability targets. BASIX assessment and certification has been completed for this project (Certificate No. 910375M_02).
Dwellings within the development have been assessed in terms of their passive energy design using the BASIX Thermal Comfort protocol. 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 provided in the BASIX certificate the development meets and exceeds the minimum requirements for all following areas.

- Energy Efficiency
- Water Efficiency
- Thermal Comfort

This development achieves the following targets:

- Energy Efficiency: 28% reduction (minimum requirements under BASIX: 25%)
- Water Efficiency: 41% reduction (minimum requirements under BASIX: 40%)
- Thermal Comfort: Will pass the thermal performance requirements under BASIX.

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 is 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 estimated 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 25% 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.

Note: this report is only a guide to the BASIX certificate, for full details of BASIX requirements please refer to the BASIX certificate, thermal modelling details.

3. BUILDING DESCRIPTION

The proposed residential development is located at Lot 3008, Lord Sheffield Circuit Penrith NSW 2750. The building consists of the following main areas:

- Basement carparks
- Residential units
- Common areas including corridors and the ground floor lobby
- Plantrooms

Information Used in Review

Our review is based on the following architectural drawings provided by DKO Architects in March 2018.

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4. BASIX WATER SECTION

The water efficiency performance of the development has been assessed using the online BASIX Tool. The assessment has considered the 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. 910375M_02.

Table 1: Water Commitments

Common Areas and Central Systems	
Common areas	• 3-star (water rated) taps
Central systems	• Rainwater tank with capacity of 5000L, collecting run-off from minimum 400 m2 of roof area, used for irrigation of common area landscape with minimum area of 106.
Private Dwellings	
Fixtures for apartments	• 3-star (Water Rating) showerheads with a flow rate > 4.5 but <= 6 L/min • 4-star (Water Rating) toilets • 6-star (Water Rating) kitchen taps • 6-star (Water Rating) bathroom taps • 4.5-star (Water Rating) dishwashers

5. BASIX THERMAL COMFORT SECTION

The thermal performance of the development has been evaluated using BERS Pro software; this computer simulation of residential developments is used to assess the potential of a residential development to have low heating and cooling energy requirements once operational.

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
- Building geometry and orientation were modelled according to supplied drawings
- 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

Thermal performance specifications			
External wall Construction		**Insulation**	**Colour**
Brick veneer		R1.5	Medium
Internal wall Construction		**Insulation**	
Plasterboard / Shafliner to fire walls		R1.5 to fire walls	
Ceiling Construction		**Insulation**	
Plasterboard		R3.0 to level 8 units	
Roof Construction		**Insulation**	**Colour**
Suspended slab		Nil	Light
Floor Construction		**Insulation**	
Suspended slab		Nil	
Windows	**Glass & frame type**	**Max total U-Value**	**SHGC**
Generic	Low-e, Aluminium	5.4	0.49
Unit 302, 402, 403, 502, 503, 602, 603, 702, 703, 805	Double glazed, Aluminium	4.8	0.59
Unit 804	Low-e double glazed, Aluminium	4.9	0.53
Unit 803	Low-e argon double glazed, aluminum	4.1	0.52
Unit 802	Argon double glazed, fibreglass	2.6	0.53
External window cover			
As drawn			
Fixed shading- Eaves	**Width includes guttering, offset is distance above windows**		
Width: as drawn	Offset: as drawn		
Fixed shading- Other	**Verandahs, Pergolas (type & description)**		
Shaded areas & devices as drawn			
For construction in NSW the NCC Vol 1 & 2 must be complied with regarding class 2 building, in particular the following: - Thermal construction in accordance with Vol 1 section J1.2 or Vol 2 part 3.12.1.1 - Thermal breaks in accordance with section J1.3(d) & 1.5(c) or part 3.12.1.2(c) & 3.12.1.4(b) - Compensation for loss of ceiling insulation in accordance with section J1.3(C) or Part 3.12.1.2(e) - Floor insulation in accordance with Section J1.6(c) &(d) or Part 3.12.1.5(a)(ii) or (c) & (d) - Building sealing in accordance with Section J3 or Part 3.12.3.1 to 3.12.3.6			

Note:

The thermal insulation and glazing performance requirements outlined in this report nominate the estimated minimum BASIX requirements only. The specified performance values therefore do not consider requirements for any other disciplines such as Acoustics, Fire or Safety compliance.
Where required, the development shall comply with any additional requirements related to the local council or other design disciplines in addition to the compliance requirements detailed in this report. Compliance with the minimum BASIX requirements does not warrant thermal comfort. All services consultants and contractors shall design and construct the development based on the relevant NCC Section J requirements.

6. 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 20% as long as the energy commitments detailed in
Table are installed.

Table 3: Energy Commitments

Component		Commitment
Common Areas	Lifts	• Quantity: 1, Geared traction with VVVF
	Swimming pool / Sauna	• N/A
	Ventilation	• Carpark: Ventilation exhaust only with a CO monoxide monitor & VSD fan • Switch Room: Air conditioning, continuous • Garbage: ventilation exhaust only. Continuous. • Plant or service rooms: ventilation (supply & exhaust). Thermostatically controlled. • Other internal common areas: ventilation exhaust only. Time clock or BMS controlled. • Ground floor lobby type: Air conditioning, Time clock or BMS controlled. • Corridors: no mechanical ventilation
	Lighting	• Carpark: LED lighting with time clock and motion sensors • Switch Room: LED lighting with manual on / manual off. • Garbage: LED with motion sensors. • Plant or service rooms: LED lighting with manual on / manual off. • Other internal common areas: LED with motion sensors. • Ground floor lobby type: LED lighting with time clock and motion sensors • Corridors: LED lighting with time clock and motion sensors
	Hot Water	• Gas instantaneous
Private Dwellings	Ventilation	• Kitchen Exhaust: Individual fan, ducted to façade or roof, manual on/off switch. • Bathroom & Laundry Exhaust: Individual fan, ducted to façade or roof, interlocked to light.
	Heating & Cooling To bedrooms and living areas	• Heating: 1-phase air-conditioning 4 Star (new rating) • Cooling: 1-phase air-conditioning 4 Star (new rating)
	Lighting	• Fluorescent or LED lights with dedicated fittings
	Other	• Gas cooktops and electric ovens • 4-star (energy rating) dishwashers and clothes dryers.

7. DISCLAIMER

This report is prepared using the information described above and inputs from other consultants. Whilst IGS has endeavoured to ensure the information used is accurate, no responsibility or liability to any third party is accepted for any loss or damage arising out of the use of this report by any third party. Any third party wishing to act upon any material contained in this report should first contact IGS for detailed advice which will take into account that party's particular requirements.

Computer performance assessment provides an estimate of building performance. This estimate is based on a necessarily simplified and idealised version of the building that does not and cannot fully represent all the intricacies of the building once built. As a result, simulation results only represent an interpretation of the potential performance of the building. Although great care has been taken to prepare this report, IGS does not make any representations or give any warranties or assurances as to the accuracy or completeness of the information contained in the report or that the report is free from errors or omission. IGS and its employees and agents shall not be liable for any loss arising because of, any person using or relying on the report and whether caused by reason or error, negligent act or omission in the report. The BASIX assessment and certification has been prepared based on the preliminary architectural and building services design with the view to conduct a detailed assessment once the design is further developed.

Performance of the completed building may be significantly affected by the quality of construction; commissioning, ongoing management of the building, and the way the building is operated, monitored and maintained. Building fabric inputs require verifiable manufacturer data to confirm thermal properties.

This report is intended as a guide to assist with the application of BASIX. It should be read in conjunction with the BASIX and the NCC 2016; specific applications may vary during the design development of the project.

8. SUMMARY & CONCLUSION

The proposed development has been assessed in terms of its ability to conserve water and minimise energy consumption. Furthermore, the thermal performance (passive and fabric design) of the development will comply with the BASIX thermal comfort requirements.

With the recommendations contained within this report the proposed development is able to achieve the BASIX requirements. For further details, please refer to the BASIX Certificate 910375M_02 provided.