

Andrea and Colin Henry

342-348 High St, Penrith

BASIX Assessment Report

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Date	08/10/2021	
Revision	00	
Subject	342-348 High St, Penrith – BASIX Assessment Report	

1. SITE APPRECIATION

The proposed development is located at 342-348 High St, Penrith and consists of:

- Retail & Commercial tenancies over 5 levels in Building A
- 29 new residential units between 2 buildings

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. 1206256M.

To meet a GreenStar rating of 5-stars:

- 1 technical point can be achieved under Section 18B.1 Sanitary Fixture Efficiency where all fixtures are within one star of the WELS rating stated below.
- 1 technical point can be achieved under Section 18B.2 Rainwater use where a rainwater is installed.

Table 1: BASIX Water Commitments

Common Areas and Central	Systems
Area of Indigenous or low water species	Please refer to Appendix B
Rainwater collection	 100,000L rainwater tank ¹ Roof collection area – A minimum area of 300m² Rainwater to be used for Common areas and private landscape irrigation
<u>Fire Sprinkler</u>	Test water must be diverted to a closed system
Private Dwellings	
 4-star (Water Rating) showerheads with a flow rate > 4.5L/min & ≤ 6.0L/min 5-star (Water Rating) toilets 6-star (Water Rating) kitchen taps 	

¹ One GreenStar point awarded for a GFA 10,953.04 m²

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	 6-star (Water Rating) bathroom taps 5-star (Water Rating) clothes washer 6-star (Water Rating) dishwashers
Outdoor spa – Unit 604	8.5 kLSpa will have a cover

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.

To meet a GreenStar rating of 5-stars, **1 technical point** can be achieved under **Section 14.1 Thermal Comfort** where residential spaces achieve an average NatHERS rating of **7-stars**.

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: <u>Table 2 must be read in conjunction with Table 3</u>. 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	Brick Veneer	Insulation: See Table 3
External Walls	Brick veneer	Medium colour: 0.475 <absorptance< 0.70<="" td=""></absorptance<>
Internal walls	Plasterboard	
	Concrete, fixed plasterboard	Insulation: None
	Concrete, fixed plaster board	Common corridors
Darty walls	Concrete, fixed plasterboard	Insulation: None
Party walls	Concrete, fixed plasterboard	Neighbour
	Concrete	Insulation: None
	Concrete	Fire stairs & lifts
		Total Window System Properties U-value 4.3 &
	<u>Type 1</u>	SHGC 0.53 for sliding doors, sliding & fixed
	(Typical Single glazed clear	<u>windows</u>
Windows	glass with aluminium	And
	<u>frame)</u>	Total Window System Properties U-value 4.3 &
		SHGC 0.47 for bifold doors, awning & casement

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Element	Material	Detail		
		windows		
		Balcony windows: 30%, 45% (i.e. sliding)		
	Window Operability	Bedroom windows: 10% (BCA D2.24)		
		All other non-balcony windows: 0% (i.e. fixed)		
	Shading dovice	Balcony windows: 60% opacity		
	Shading device	Non-balcony windows: 60% opacity		
Skylight		N/A		
Roof	Concrete	Insulation: None		
KOOI	Concrete	Dark colour: Absorptance> 0.70		
Ceilings	Plasterboard	Insulation: See Table 3		
		Insulation: See Table 3		
Floors	Concrete	Tiles: Wet areas only		
FIOOIS	Concrete	Carpet: Bedrooms only		
		Timber: Elsewhere		
Common corric	dors naturally ventilated	No		
Recessed down	lights assessed	No		
Exhaust fans (k	itchens, bathrooms, laundry)	All assumed to be sealed		
Note: Only a ±5%	Note: Only a ±5% SHGC tolerance to the value stated above & U-value can be greater than or equal to the			
<u>value stated above</u>				

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. 1206256M & NatHERS Universal Certificate No. 0006659290 for details.

The development achieves an average NatHERS star rating of **7.4 stars.**

Table 3: BERS Pro Thermal Loads - Stage A

Unit No.	Additional Treatments Required	Heating Load (MJ/m².yr)	Cooling Load (MJ/m².yr)	Stars	Pass/Fail
505	R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows, R1.0 Bulk Ceiling Insulation to exposed areas only (total ceiling/roof system R-value Rt1.16), South Bedroom 2 window to have at least 10% ventilation opening, South Bedroom 3 window to have at least 10% ventilation opening	16.5	60.0	6.5	Pass
506	R1.0 Bulk Floor Insulation to exposed floors only (total floor system R-value of R1.2), R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows, R1.0 Bulk Ceiling Insulation to exposed areas only (total ceiling/roof system R-value Rt1.16)	51.0	31.0	6.3	Pass
604	R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows,	23.7	54.6	6.4	Pass

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Unit No.	Additional Treatments Required	Heating Load (MJ/m².yr)	Cooling Load (MJ/m².yr)	Stars	Pass/Fail
	R2.5 Bulk Ceiling Insulation to exposed areas only (total ceiling/roof system R-value Rt2.66), East Study window to have at least 20% ventilation opening, South Bedroom 3 window to have at least 10% ventilation opening, East Bedroom 4 window to have at least 10% ventilation opening,				

Table 4: BERS Pro Thermal Loads – Stage B

Unit No.	Additional Treatments Required	Heating Load (MJ/m².yr)	Cooling Load (MJ/m²·yr)	Stars	Pass/Fail
101	R1.5 Bulk Floor Insulation to carpark & exposed areas only (total floor system R-value of Rt1.88), R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows	31.8	18.4	7.7	Pass
102	R1.5 Bulk Floor Insulation to carpark (total floor system R-value of Rt1.88), R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows, North Bedroom 1 window to have at least 10% ventilation opening	4.3	19.8	8.9	Pass
103	R1.5 Bulk Floor Insulation to carpark (total floor system R-value of Rt1.88), R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows	57.0	30.8	5.9	Pass
104	R1.5 Bulk Floor Insulation to carpark (total floor system R-value of Rt1.88), R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows	42.6	26.2	6.9	Pass
105	R1.5 Bulk Floor Insulation to carpark (total floor system R-value of Rt1.88), R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows	50.6	23.9	6.6	Pass
201	R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows	15.7	21.1	8.4	Pass
202	R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows, North Bedroom 1 window to have at least 10% ventilation opening	0.8	22.0	9.0	Pass
203	R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows	41.0	33.6	6.6	Pass
204	R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows	21.9	31.2	7.6	Pass
205	R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows	26.6	26.5	7.6	Pass
301	R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows	17.0	19.5	8.4	Pass
302	R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows, North Bedroom 1 window to have at least 10% ventilation opening	1.1	21.0	9.1	Pass
303	R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows, R1.0 Bulk Ceiling Insulation to exposed areas only (total ceiling/roof system R-value Rt1.16)	46.4	31.4	6.4	Pass
304	R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows, R1.0 Bulk Ceiling Insulation to exposed areas only (total	30.1	28.6	7.3	Pass

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Unit No.	Additional Treatments Required	Heating Load (MJ/m².yr)	Cooling Load (MJ/m²·yr)	Stars	Pass/Fail
	ceiling/roof system R-value Rt1.16)				
305	R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows, R1.0 Bulk Ceiling Insulation to exposed areas only (total ceiling/roof system R-value Rt1.16)	39.7	27.4	6.9	Pass
401	R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows	16.3	17.8	8.4	Pass
402	R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows, North Bedroom 1 window to have at least 10% ventilation opening	1.3	18.8	9.2	Pass
403	R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows, South Bedroom 1, 2 & 3 windows to have at least 10% ventilation opening	26.1	30.4	7.4	Pass
404	R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows, South Bedroom 1, 2 windows to have at least 10% ventilation opening	29.0	22.5	7.7	Pass
501	R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows, R1.0 Bulk Ceiling Insulation to exposed areas only (total ceiling/roof system R-value Rt1.16)	21.6	19.3	8.2	Pass
502	R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows, R1.0 Bulk Ceiling Insulation to exposed areas only (total ceiling/roof system R-value Rt1.16)	5.4	20.1	8.9	Pass
503	R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows, R1.0 Bulk Ceiling Insulation to exposed areas only (total ceiling/roof system R-value Rt1.16)	31.2	32.6	7.1	Pass
504	R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows, R1.0 Bulk Ceiling Insulation to exposed areas only (total ceiling/roof system R-value Rt1.16)	41.9	25.0	6.9	Pass
601	R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows, R2.5 Bulk Ceiling Insulation to exposed areas only (total ceiling/roof system R-value Rt2.66)	48.5	30.8	6.4	Pass
602	R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows, R2.0 Bulk Ceiling Insulation to exposed areas only (total ceiling/roof system R-value Rt2.16)	16.4	40.1	7.4	Pass
603	R2.0 Bulk External Wall Insulation with vapour barrier (total wall system R-value of Rt2.52), Type 1 windows, R2.0 Bulk Ceiling Insulation to exposed areas only (total ceiling/roof system R-value Rt2.16)	39.7	44.3	6.1	Pass

4. BASIX ENERGY SECTION

The proposed development will meet the mandatory BASIX Energy target of 25% as long as the energy commitments detailed in Table 5 are installed.

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To meet a GreenStar rating of 5-stars, **3 technical points** can be achieved under **Section 15C BASIX Pathway** where the greenhouse gas emissions reduction meets **20%** (i.e. 30% BASIX Energy).

Table 5: BASIX Energy Commitments

	Component	Commitment
	Hot Water System	 Centralised Gas-fired boiler with internal piping insulation of R1.0 (~38mm)
	<u>Lifts</u>	All lifts to use Gearless traction with VVVF motor and regenerative drive servicing all levels
tems	Alternative Energy Supply	Photovoltaic system of rated electrical output 8kW peak
Common Areas and Central Systems	<u>Ventilation</u>	 Car park: Ventilation (supply & exhaust) with a CO monoxide monitor & VSD fan Switch Room: Ventilation (supply only), thermostatically controlled Garbage Rooms: Ventilation (exhaust only), continuous Plant/Service Rooms: Ventilation (supply only), thermostatically controlled Hallways & lobbies: Ventilation (supply only) connected to time clock or BMS controlled Car park: LED lighting with time clocks and motion sensors
0	<u>Lighting</u>	 Lift Cars: LED lighting connected to lift call button Switch Room: LED lighting with manual on/off switch 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
	Hot Water System	See Central systems
	<u>Ventilation</u>	Kitchen, Bathroom & Laundry Exhaust: Individual fan, ducted to roof or façade, with manual on/off switch
Private Dwellings	Heating & Cooling	 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 Air conditioning to be day-night zoned between bedrooms and living areas
	<u>Lighting</u>	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
	Outdoor spa	Heating system: GasPump will be controlled by a timer

 $^{^2}$ 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.

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Component		Commitment
<u>Other</u>	•	Gas cook top and electric oven Well-ventilated fridge space. Install a 3.5-star (energy rating) dishwashers Install a 3-star (energy rating) clothes washer Install a 2-star (energy rating) dryers Install an indoor clothes drying line (e.g. line over bath or a screened line on balconies)

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. 1206256M provided.

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APPENDIX A - ARCHITECTURAL DRAWINGS

The building sustainability performance assessment carried out in this report was based on the following architectural drawings supplied by Integrated Design Group received on 8th October 2021.

NUMBER NAME REVISION 0001 COVERPAGE 8 0002 GENERAL NOTES 8 0003 ALEX COMMITMENTS A 0000 SITE PLAN J 0000 DEMOLITION PLAN 8 0000 NOC COMPLIANCE PLANS 8 0000 AREACALCULATIONS 8 0000 SEPP 65 ANALYSIS 8 0000 VIGSTE MANAGEMENT DETAILS 8 1000 BASEMENT OF PLAN 5 1001 BASEMENT OF PLAN 5 1100 GROUND LEVEL PLAN 5 1101 LEVEL 2 PLAN 5 1102 LEVEL 2 PLAN 5 1103 LEVEL 3 PLAN 5 1104 LEVEL 4 PLAN 5 1105 LEVEL 5 PLAN 7 1106 LEVEL 6 PLAN T 1107 ROOF PLAN J 2001 ELEVITIONS BUILDING B J 2001 ELEVITIONS BUILDING B J	DA DRAWING SET				
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	9600	EXTERNAL FINSHES SCHEDULE	В		

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APPENDIX B – Landscaping Areas

COS:

Lawn= 0 sq.m

Garden beds: GF external: 179 sq.m (could make about 90 sq.m Indigenous/ LWU if required)

GF Internal planters: 22.7 sq.m

Stage A atrium planters: 17.4 sq.m (3 x 5.8 sq.m) Stage B Level 6 (south side planter): 24.8 sq.m

POS:

STAGE A Level 3 Commercial: Garden beds= 190 sq.m

Lawn= 17 sq.m

STAGE A Level 6 Private: Garden bed= 64.6 sq.m

Lawn= 0 sq.m

STAGE B Private (Garden beds only, no lawn):

1.03= 1.6 sq.m

2.03= 1.6 sq.m

3.03= 1.6 sq.m

4.01= 5.4 sq.m

4.02= 3.3 sq.m

4.03= 11.2 sq.m

4.04= 4 sq.m

5.01= 5.4 sq.m

5.02= 3.3 sq.m

5.03= 11.2 sq.m

5.04= 4 sq.m

6.01= 9.6 sq.m

6.02= 7.14 sq.m

6.03= 20.3 sq.m

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