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BASIX Commitment Report for **23-29 Harvey Avenue, Moorebank, NSW**

Prepared by

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1. Introduction

Loka Consulting Engineers Pty Ltd has been engaged by Pagano Architects to provide NatHERS Certificate and BASIX Certificate for the site at 23-29 Harvey Avenue, Moorebank NSW (DP23605) which consists of a 58 units residential flat building with a total area of 2745.2m².

This report summarises some key commitments for Water, Thermal and Energy sections of the BASIX Report, which are mandatory for the proposed development to comply with the BASIX requirements.

For further details of the BASIX requirement of the proposed development, please refer to its official BASIX Report (Certificate number: **944928M**), and NatHERS Thermal Group Performance Report for all dwellings (Certificate number for each dwelling can be obtained from Group Certificate number: **4BAWHK5UKO**).

2. Basix Water Section

The proposed development will meet the mandatory BASIX water 40% target as long as the key water commitments in the table below are applied.

Common Areas and Central System		
Landscape	Common area of lawn	899.6 m²
	Common area of garden	0 m²
	Area of indigenous or low water use species	0 m²
Fixtures For Common Area	Toilets	3 star
	Taps	
	Showerheads	Not proposed
	Clothes washers	
Individual Dwellings		
Fixtures For Apartments	Showerheads	3 star (> 4.5 but <= 6 L/min)
	Toilets	4 star
	Kitchen taps	
	Bathroom taps	
	Dishwasher	Not proposed
	Clothes washer	
	Hot water recirculation or diversion system	
Alternative Water Supply		Not proposed

3. Basix Thermal Comfort Performance

The thermal performance of each unit in this development has been evaluated using FirstRate5: 5.2.8a (3.13) software. For the complete selection of construction and insulation materials of each dwelling, please refer to its corresponding NatHERS Certificate.

3.1. Simulation Assumptions

Based on the construction materials that are nominated by the clients, the “base model” of the proposed development fabric and associated thermal performance specifications are summarised in Table 1 below:

Table 1 Base model on construction materials

Element	Nominated Materials	Details
External Wall	Brick Cavity	Insulation: See Table 2
		Colour: Medium
Party Wall	AAC Block 200	
Internal Wall	Internal Plasterboard Stud Wall	-
Floor covering	Tiles & Carpet	Carpet – Bedroom Tiles - Others
Floor	Suspended slab	Insulation: See Table 2
Roof/Ceiling	Suspended slab	Insulation: See Table 2
Windows	Alumimium	

3.2. Additional Insulation Requirement

The proposed development will meet the mandatory BASIX thermal loading requirements as long as the key commitments in the table below are applied.

Unit No.	Additional Treatments Required	Heating Load (MJ/m ² .yr)	Cooling Load (MJ/m ² .yr)	Condition Area	Uncondition Area	Stars	Pass/Fail
G01	External Wall - BC - R 2.0 Floor - R4.0 + SS foil Window type - Single Glazed Alm Framed Clear	22.2	27.4	62.5	7.2	7.7	PASS
G02	External Wall - BC - R 2.0 Floor - R4.0 + SS foil Window type - Single Glazed Alm Framed Clear	53.7	40.0	91.4	2.7	5.7	PASS
G03	External Wall - BC - R 2.0 Floor - R4.0 + SS foil Window type - Double Glazed Alm Framed Hi-Solar Low-E	54.2	22.3	53.1	3.5	6.5	PASS
G04	External Wall - BC - R 2.0 - R 4.0 at Kitchen/Living Walls Floor - R4.0 + SS foil Window type - Double Glazed Alm Framed Hi-	62.6	21.4	72.8	2.8	6.2	PASS
G05	External Wall - BC - R 2.0 Floor - R4.0 + SS foil Window type - Single Glazed Alm Framed Clear	32.5	30.6	69.1	2.7	7.1	PASS
G06	External Wall - BC - R 2.0 Floor - R4.0 + SS foil Window type - Single Glazed Alm Framed Clear	21.4	27	87.9	3.3	7.8	PASS
G07	External Wall - BC - R 2.0 Floor - R4.0 + SS foil Window type - Single Glazed Alm Framed Hi-Solar Low-E	61.1	23.5	51.7	5.5	6.1	PASS
G08	External Wall - BC - R 2.0 Floor - R4.0 + SS foil Window type - Double Glazed Alm Framed Hi-Solar Low-E	54.2	20.2	52.9	3.4	6.6	PASS
G09	External Wall - BC - R 2.0 Floor - R4.0 + SS foil at Suspended Slab - CSOG no insulation Window type - Single Glazed Alm Framed Clear	61.9	29.9	72.2	4.6	5.8	PASS
G10	External Wall - BC - R 2.0 Floor - R4.0 + SS foil Window type - Single Glazed Alm Framed Clear	55.2	42.6	64.6	4.3	5.5	PASS

Unit No.	Additional Treatments Required	Heating Load (MJ/m ² .yr)	Cooling Load (MJ/m ² .yr)	Condition Area	Uncondition Area	Stars	Pass/Fail
101	External Wall - BC - R 2.0 Floor - R4.0 + SS foil Window type - Single Glazed Alm Framed Clear	26	46.5	49.9	3.4	6.7	PASS
102	External Wall - BC - R 2.0 Window type - Single Glazed Alm Framed Clear	52.6	42.8	91.6	2.7	5.6	PASS
103	External Wall - BC - R 2.0 Window type - Single Glazed Alm Framed Clear	39	28.8	48.7	3.4	6.9	PASS
104	External Wall - BC - R 2.0 Window type - Single Glazed Alm Framed Hi-Solar Low-E	62.4	27.7	53.1	3.5	5.9	PASS
105	External Wall - BC - R 2.0 Window type - Single Glazed Alm Framed Clear	30.3	29.9	69.4	2.8	7.3	PASS
106	External Wall - BC - R 2.0 - R 4.0 at Kitchen/Living Walls Window type - Double Glazed Alm Framed Hi-Solar Low-E	54.9	23.5	72.8	2.8	6.4	PASS
107	External Wall - BC - R 2.0 - R 4.0 at Kitchen/Living Walls Window type - Double Glazed Alm Framed Hi-Solar Low-E	57	26	72.8	2.8	6.2	PASS
108	External Wall - BC - R 2.0 Window type - Single Glazed Alm Framed Clear	26.8	27.4	68.2	3.4	7.5	PASS
109	External Wall - BC - R 2.0 Window type - Bedroom Door - Double Glazed Alm Framed Hi-Solar Low-E - Other - Single Glazed Alm Framed Hi-Solar Low-E	58.6	23.4	52.9	3.4	6.2	PASS
110	External Wall - BC - R 2.0 Floor - R4.0 + SS foil Window type - Single Glazed Alm Framed Clear	39.1	41.3	35.3	5	6.3	PASS
111	External Wall - BC - R 2.0 Window type - Single Glazed Alm Framed Clear	53.3	34.3	72.2	4.6	5.9	PASS
112	External Wall - BC - R 2.0 Window type - Single Glazed Alm Framed Clear	45.9	50.3	63.4	4.3	5.6	PASS

Unit No.	Additional Treatments Required	Heating Load (MJ/m ² .yr)	Cooling Load (MJ/m ² .yr)	Conditioned Area	Unconditioned Area	Stars	Pass/Fail
201	External Wall - BC - R2.0 Ceiling - R2.0 at exposed roof Roof - Reflective foil Window type - Single Glazed Alm Framed Hi-Solar Low-E	61.6	26.5	49.9	3.4	5.9	PASS
202	External Wall - BC - R2.0 Ceiling - R2.0 at exposed roof Roof - Reflective foil Window type - Single Glazed Alm Framed Clear	56	44.3	91.6	2.7	5.4	PASS
203	External Wall - BC - R2.0 Window type - Single Glazed Alm Framed Clear	21.5	30.7	48.7	3.4	7.6	PASS
204	External Wall - BC - R2.0 Ceiling - R2.0 at exposed roof Roof - Reflective foil Window type - Bedroom Door - Double Glazed Alm Framed Hi-Solar Low-E - Other - Single Glazed Alm Framed Hi-Solar Low-E	61.4	27.9	53.1	3.5	5.9	PASS
205	External Wall - BC - R2.0 Window type - Single Glazed Alm Framed Clear	27.3	32.5	69.4	2.8	7.3	PASS
206	External Wall - BC - R2.0 - R4.0 at Kitchen/Living walls Ceiling - R4.0 at exposed roof Roof - Reflective foil / Dark roof colour Window type - Double Glazed Alm Framed Hi-Solar Low-E	60.4	29.6	72.8	2.8	5.9	PASS
207	External Wall - BC - R2.0 - R4.0 at Kitchen/Living walls Ceiling - R4.0 at exposed roof Roof - Reflective foil / Dark roof colour Window type - North facing door - Double Glazed Alm Framed Hi-Solar Low-E - Others - Single Glazed Alm Framed Hi-Solar Low-E	62.8	38.2	72.8	2.8	5.4	PASS
208	External Wall - BC - R2.0 Window type - Single Glazed Alm Framed Clear	25.2	28.7	68.2	3.4	7.6	PASS
209	External Wall - BC - R2.0 Ceiling - R2.0 at exposed roof Roof - Reflective foil Window type - Bedroom Door - Double Glazed Alm Framed Hi-Solar Low-E - Other - Single Glazed Alm Framed Hi-Solar Low-E	60.9	24.7	52.9	3.4	6.1	PASS
210	External Wall - BC - R2.0 Window type - Single Glazed Alm Framed Clear	41.1	41.4	35.3	5	6.2	PASS
211	External Wall - BC - R2.0 Ceiling - R2.0 at exposed roof Roof - Reflective foil Window type - Single Glazed Alm Framed Clear	60.5	34.8	72.2	4.6	5.7	PASS
212	External Wall - BC - R2.0 Ceiling - R2.0 at exposed roof Roof - Reflective foil Window type - Single Glazed Alm Framed Clear	48.3	52.7	63.4	4.3	5.4	PASS

Unit No.	Additional Treatments Required	Heating Load (MJ/m ² .yr)	Cooling Load (MJ/m ² .yr)	Condition Area	Uncondition Area	Stars	Pass/Fail
301	External Wall - BC - R 2.0 Window type - Single Glazed Alm Framed Clear	34.3	24.6	74.2	2.8	7.3	PASS
302	External Wall - BC - R 2.0 Window type - Single Glazed Alm Framed Clear	49.6	62	62.8	7.4	5	PASS
303	External Wall - BC - R 2.0 Window type - Single Glazed Alm Framed Clear	31.8	28.6	69.4	2.8	7.3	PASS
304	External Wall - BC - R 2.0 Window type - Single Glazed Alm Framed Clear	59.8	28.5	86.6	2.2	5.9	PASS
305	External Wall - BC - R 2.0 Window type - Single Glazed Alm Framed Clear	27.2	27.1	68.2	3.4	7.5	PASS
306	External Wall - BC - R 3.0 Window type - Single Glazed Alm Framed Clear	58.1	21.5	71.3	2.6	6.4	PASS
307	External Wall - BC - R 2.0 Window type - Single Glazed Alm Framed Clear	27.6	31.3	69.4	2.8	7.3	PASS
308	External Wall - BC - R 3.0 Window type - Single Glazed Alm Framed Hi-Solar Low-E	60.2	31.1	45.2	5.3	5.8	PASS

Unit No.	Additional Treatments Required	Heating Load (MJ/m ² .yr)	Cooling Load (MJ/m ² .yr)	Condition Area	Uncondition Area	Stars	Pass/Fail
401	External Wall - BC - R 2.0 Window type - Single Glazed Alm Framed Clear	36.5	25.2	74.2	2.8	7.2	PASS
402	External Wall - BC - R 2.0 Window type - Single Glazed Alm Framed Hi-Solar Low-E	40.3	54.4	62.8	7.4	5.7	PASS
403	External Wall - BC - R 2.0 Window type - Single Glazed Alm Framed Clear	31.8	29.3	69.4	2.8	7.2	PASS
404	External Wall - BC - R 2.0 Window type - Single Glazed Alm Framed Clear	58.5	27.6	86.6	2.2	6	PASS
405	External Wall - BC - R 2.0 Window type - Single Glazed Alm Framed Clear	27.4	27.5	68.2	3.4	7.5	PASS
406	External Wall - BC - R 3.0 Window type - Single Glazed Alm Framed Clear	58.7	21.3	71.3	2.6	6.4	PASS
407	External Wall - BC - R 2.0 Window type - Single Glazed Alm Framed Clear	28.1	30.8	69.4	2.8	7.3	PASS
408	External Wall - BC - R 3.0 Window type - Single Glazed Alm Framed Hi-Solar Low-E	60.9	30.7	45.2	5.3	5.8	PASS

Unit No.	Additional Treatments Required	Heating Load (MJ/m ² .yr)	Cooling Load (MJ/m ² .yr)	Condition Area	Uncondition Area	Stars	Pass/Fail
501	External Wall - BC - R 2.0 Ceiling - R2.0 Roof - Reflective foil Window type - Single Glazed Alm Framed Clear	51.9	29.5	74.2	2.8	6.3	PASS
502	External Wall - BC - R 2.0 Ceiling - R2.0 Roof - Reflective foil Window type - Single Glazed Alm Framed Hi-Solar Low-E	48.9	59.9	62.8	7.4	5.1	PASS
503	External Wall - BC - R 2.0 Ceiling - R2.0 Roof - Reflective foil Window type - Single Glazed Alm Framed Clear	43.9	34	69.4	2.8	6.4	PASS
504	External Wall - BC - R 2.0 Ceiling - R4.0 Roof - Reflective foil Window type - Single Glazed Alm Framed Hi-Solar Low-E	59.6	27.1	86.6	2.2	6	PASS
505	External Wall - BC - R 2.0 Ceiling - R2.0 Roof - Reflective foil Window type - Single Glazed Alm Framed Clear	38.7	32.3	68.2	3.4	6.8	PASS
506	External Wall - BC - R 3.0 Ceiling - R4.0 Roof - Reflective foil Window type - Single Glazed Alm Framed Hi-Solar Low-E	60.2	20.9	71.3	2.6	6.3	PASS
507	External Wall - BC - R 2.0 Ceiling - R2.0 Roof - Reflective foil Window type - Single Glazed Alm Framed Clear	40.5	35.7	69.4	2.8	6.5	PASS
508	External Wall - BC - R 3.0 Ceiling - R4.0 Roof - Reflective foil Window type - Door - Single Glazed Alm Framed Hi-Solar Low-E - Windows - Double Glazed Alm Framed Hi-Solar Low-E	62.8	31.6	45.2	5.3	5.7	PASS

***All roof treatment will have additional reflective foil at roof level.**

4. BASIX Energy Section

The proposed development will meet the mandatory BASIX energy 50% target as long as the key energy commitments in the table below are applied.

Central Systems			
Hot Water	Central hot water system		Gas instantaneous Piping insulation (ringmain & supply risers): Piping external and internal to building: R0.3 (~13 mm)
Air Conditioning	Central cooling system		Not proposed
	Central heating system		
Alternative Energy Supply	Cogeneration system		
	Photovoltaic system		
Lifts	System type		Gearless traction with VVVF motor
Pool and Spa	Pool heating system		Not proposed
	Pump controlled by timer		
Others	Building Management System (BMS)		
	Active power factor correction (PFC)		
	Common area clothes drying line		
	Common area electric/gas clothes dryer		
	Common area clothes washer		
Common areas			
Ventilation	Car park area	Ventilation supply + exhaust	
	Garbage room	Exhaust only	n/a
	Plant or service room	Exhaust only	Interlocked to light
	Hallway/lobby	Natural ventilation	n.a.
Lighting	Car park area	Compact Fluorescent	Time clock and motion sensor
	Lift	Light-emiting Diode	Connected to lift call botton
	Garbage room	Compact Fluorescent	Manual on/off
	Plant or service room		
	Hallway/lobby	Compact Fluorescent	Time clock and motion sensor
Individual Dwellings			
Hot water system	Gas instantaneous		Not proposed
Ventilation	Bathroom exhaust	Individual fan	Ducted to façade or roof
	Kitchen exhaust		
	Laundry exhaust	Natural ventilated	
Air Conditioning	Cooling system	1- phase A/C	3 star
	Heating system		
Lighting	Naturally lit by either window or skylight	Bathroom/toilet	No
		Kitchen	Yes
	Primarily lit by either fluorescent or LED	Bedroom/study	Yes
		Living/dinning	
		Kitchen	
		Bathrooms/toilets	
		Laundry	
Hallways			

Apliances	Cooktop/oven	Gas cooktop & electric oven	
	Refrigerator	Well ventilated fridge space	
	Dishwasher	Not specified	
	Clothes washer		
	Clothes dryer		
Others	Clothes drying line	Indoor	No
		Private outdoor	No

5. Conclusion

The proposed development has been assessed to optimise the thermal performance of each dwelling under the Nationwide House Energy Rating Scheme (NatHERS) and has been assessed to meet the requirements of water and energy consumption using BASIX online Tool.

With the installation of commitment contained within this report, the proposed development is able to comply with BASIX requirement.

For further details of the BASIX requirement of the proposed development, please refer to its official BASIX Report (Certificate number: **944928M**), and NatHERS Thermal Performance Report for each of its individual dwelling (Certificate number for each dwelling can be obtained from Group Certificate number: **4BAWHK5UKO**).