efficient LIVING

Thermal Comfort & BASIX Assessment

BUILDING
SUSTAINABILITY
CONSULTANTS

FRIENDLY INFORMATIVE EFFICIENT KNOWLEDGEABLE

Ausbao Pty Ltd
Proposed Residential Development

To be built at:

1, 1A & 5 Avon Road and 4 & 8 Beechworth Road
Pymble NSW 2073

Issue	File Ref	Description	Author	Date
A	8729	DRAFT Thermal and BASIX Assessment	PV	18/05/15
B	8729	Thermal and BASIX Assessment - FINAL	PV	10/08/15
C	9882	Update to Thermal and BASIX Assessment: Window changes building 4 and layout changes building 3	HE	22/12/15
D	16-0440	Update to Thermal and BASIX Assessment: Window changes building W and Unit number changes	KH	14/07/16
E	16-0609	Update to Thermal and BASIX Assessment: update carpark and removed skylight	DO	17/08/16

This report has been prepared by Efficient Living Pty Ltd on behalf of our client Ausbao Pty Ltd. 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.

P: 02 9970 6181
www.efficientliving.com.au
admin@efficientliving.com.au

Prepared for	Ausbao Pty Ltd
Contact	Moses Rubal Phone: (02) 0430 141 308 Email: moses.rubal@mainway.com.au
Introduction	Efficient Living has investigated the estimated thermal comfort, water and energy usage of the proposed development to be built at Avon Road & Beechworth Road, Pymble. Heating and cooling loads for the development have been determined using BERS thermal simulation software. The report is based on the architectural drawings provided by Mainway Project Management. For further details, refer to the individual BASIX certificates and Efficient Living inclusions summary respectively.
Analysis	The BASIX assessment is divided into three sections, each independently measuring the efficiency of the development. These are Water, Thermal Comfort and Energy. BASIX requires a minimum target of 40% for the Water section. A BERS pass or fail is required for the thermal comfort section and a minimum required target of 20% 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 toilets, the dish washer and clothes washing machine. The size of the rain tank and number of connections has a huge impact on your water score as does the area of gardens and lawns and 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 is measured using BERS thermal performance assessment tools. This equates an expected level of energy consumption to heat and cool each dwelling per annum expressed in MJ (megajoules) per square meter of floor area. Each unit has individual heating and cooling caps and a weighted average heating and cooling load for the whole development. The weighted average caps are a lot harder to achieve than the individual unit caps.
Energy	The proposed development has achieved the energy target of 20% 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 in the table below have been incorporated in each unit to allow them to reach their environmental sustainability targets.
Thermal comfort	Average heating loads are exactly the allowable BASIX target Average cooling loads are 22% below all allowable BASIX targets
Glazing Doors/windows	Aluminium framed Low-E clear glazing to units listed in the thermal comfort results table: U-Value: 4.7 (equal to or lower than) SHGC: 0.63 (+ or – 10%) Aluminium framed single clear glazing to all other units: U-Value: 6.57 (equal to or lower than) SHGC: 0.74 (+ or – 10%) For further details refer back to BASIX thermal comfort results table. Given values are NFRC, total window values Window sashes: Windows adjacent to balconies have a minimum of 45% operability Light grey hatching to windows on elevations indicates minimum of 10% operability
Skylight	Double glazed skylights in aluminium frames throughout.
Roof	Concrete roof with R2.7 bulk insulation to unit listed in the thermal comfort results table R2.2 bulk insulation to all other units with roof above Default colour modelled
Ceiling	Plasterboard ceiling, no insulation Note: Loss of ceiling insulation due to penetrations from down lights have been accounted for in accordance with NatHERS Technical Note and assume non-ventilated LED down lights.
External wall	150mm Precast wall with R1.0 insulation Colour backed glass, plasterboard lined internally with R2.0 insulation between studs shown in dark grey hatching on elevations Default medium colour
Inter tenancy walls	Hebel wall, with R1.0 insulation to walls shared with hallways and/or services No insulation between units Where required insulation can be removed from structural columns or walls adjacent to fire stairs or lift shafts.

Walls with-in dwellings	Plasterboard on studs - no insulation
Floors	Concrete, R0.9 insulation to areas of open sub-floor as listed in the thermal comfort table Concrete - No insulation where neighbouring units, common areas or enclosed car parks are below Default floor coverings modelled
BASIX water inclusions	Score 41/40
Fixtures within common area	Showerheads: High flow (>7.5L but <=9 L/min) Toilets: 4 star Bathroom vanity taps: 4 star
Fixtures within units	Showerheads: High flow (>7.5L but <=9 L/min) Toilets: 4 star Kitchen taps: 4 star Bathroom vanity taps: 4 star
Appliances within units	Dishwashers: 3 star Clothes washer: 3 star
Central rainwater storage	Tank size 45,000L Collecting from 758m2 roof Connected to irrigation of common landscape area
BASIX energy inclusions	Score 20/20
Central hot water system	Central gas-fired boiler with R0.6 (~25mm) insulation to ring main and supply risers
Lift motors	All lifts to have gearless traction with VVVF motor
Appliances & other efficiency measures within units	Gas cooktop & electric oven Dishwashers: 2.5 star Clothes dryers: 2 star Well ventilated fridge space

Heating & cooling within units	All units to have individual, single phase, reverse cycle air conditioning to living areas and at least 1 bedroom. A minimum of 2.5 stars is required in heating and cooling mode.
Artificial lighting within units	At least 80% of all light fittings with-in each room are to have fluorescent or LED globes. Please note: The BASIX tools does not allow entry of LED's without an alternative assessment. LED's, if requested will be grouped under the fluorescent selection.
Ventilation within units	Bathroom - Individual fan, ducted to roof or façade – manual on / manual off switch Laundry - Individual fan, ducted to roof or façade – manual on / manual off switch Kitchen range hood - Individual fan, ducted to roof or façade – manual on / manual off switch
Artificial lighting to common areas	Gym – Compact fluorescent or LEDs, time clocks Car park - Fluorescent lights with zoned switching and motion sensors Lifts - LED lights connected to lift call button Garbage rooms - Fluorescent lights with motion sensor Cleaners room - Fluorescent lights with manual on / manual off switch Plant or service rooms - Fluorescent lights with manual on / manual off switch Storage - Fluorescent lights with motion sensor Bicycle - Fluorescent lights with motion sensor Toilet – common area – Fluorescent lights, manual on / off Post boxes – Compact fluorescent or LEDs, motion sensor Game room – Compact fluorescent or LEDs, time clock and motion sensors Office / reception – Compact fluorescent or LEDs, time clock and motion sensor Dining room – Compact fluorescent or LEDs, time clocks Heritage lobby – Compact fluorescent or LEDs, zone switching with motion sensor Ground floor lobbies (Maximum of 20%) – Compact fluorescent or LEDs to remain on at all times Ground floor lobbies – Compact fluorescent with zoned switching and motion sensors Hallways for buildings 1, 3 and 4 - Compact fluorescent with zoned switching and motion sensors

Ventilation to common areas	Gym – air conditioning system, time clock or BMS controlled Car park - supply & exhaust air, with a carbon monoxide monitor & VSD fan Garbage rooms - Exhaust air, running continuously Plant or service rooms - Supply air, interlocked to light Storage - Supply air, interlocked to light Cleaners room - Supply air, interlocked to light Bicycle - Supply air, interlocked to light Toilet – common area – Exhaust air, interlocked to light Post boxes – Supply air, running continuously Game room – Supply air, time clock or BMS controlled Office / reception – air conditioning system, time clock or BMS controlled Dining room – Supply air, time clock or BMS controlled Heritage lobby – Supply air, time clock or BMS controlled Natural ventilated hallways to Building 1 First floor, Building 3 Level LG 3, 2, 1 and Building 4 LG 4. – No mechanical ventilation Ground floor lobbies, hallways and common area hallways – Supply air, time clock or BMS controlled
Alternative energy	Not required
Documentation	This report is based upon the NatHERS stamped plans prepared by Marchese Partners
Report Contact	Kristy Harrison & Haylea Edwards Ph: 02 9970 6181 Email: kristy@efficientliving.com.au

Issued in accordance with **BASIX** Thermal Comfort Simulation Method

Certificate # 14733043 **Accreditation # VIC/BDAV/12/1473**

Thermal performance specifications

Old Unit number	Number of Bedrooms	Floor area (M^2)		Predict. loads (MJ/M²/y)		Star Rating	Window in Bathroom	Window in Kitchen	Thermal Comfort Upgrades
		Con.	Uncon.	Heat	Cool (Sens & Lat)				
Building 1									
1.1.01	1	57	0	66	53	3.0	0	Yes	Low-e clear glazing throughout, R0.9 floor insulation and R2.2 roof insulation where balcony is above
1.1.02	1	57	0	62	31	3.5	0	No	Low-e clear glazing throughout
1.1.03	2	90	0	57	29	4.0	0	No	None
1.1.04	1	64	0	59	34	3.5	0	No	None
1.1.05	2	83	0	60	29	3.5	0	No	None
1.1.06	1	67	0	61	33	3.5	0	No	None
1.2.06	3	112	0	52	34	4.0	0	Yes	Low-e clear glazing throughout
1.2.07	2	90	0	47	32	4.0	0	No	None
1.2.08	2	95	0	44	33	4.0	0	No	None
1.2.01	2	93	0	55	16	4.5	0	No	None
1.2.02	2	83	0	52	35	4.0	0	No	None
1.2.03	1	59	0	51	30	4.0	0	No	None
1.2.09	1	51	0	64	45	3.0	0	No	None
1.2.04	2	83	0	55	26	4.0	0	No	None
1.2.05	2	84	0	66	39	3.0	0	Yes	Low-e clear glazing throughout + R0.9 floor insulation throughout
1.3.07	3	112	0	49	37	4.0	0	Yes	Low-e clear glazing throughout
1.3.08	2	90	0	46	32	4.0	0	No	None
1.3.09	2	95	0	41	35	4.0	0	No	None
1.3.01	2	93	0	33	19	5.5	0	No	None
1.3.02	2	83	0	51	35	4.0	0	No	None
1.3.03	1	59	0	49	37	4.0	0	No	None
1.3.04	1	61	0	66	46	3.0	0	No	None
1.3.10	1	51	4	53	49	3.5	0	No	None
1.3.05	2	83	0	45	30	4.5	0	No	None
1.3.06	2	84	0	56	42	3.5	0	Yes	Low-e clear glazing throughout
1.4.07	3	106	0	56	34	3.5	0	No	Low-e clear glazing throughout

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Old Unit number	Number of Bedrooms	Floor area (M^2)		Predict. loads ($MJ/M^2/y$)		Star Rating	Window in Bathroom	Window in Kitchen	Thermal Comfort Upgrades
		Con.	Uncon.	Heat	Cool (Sens & Lat)				
1.4.08	2	85	0	66	18	4.0	0	Yes	Low-e clear glazing throughout
1.4.09	1	57	0	54	18	4.5	0	No	None
1.4.01	2	93	0	39	13	5.5	0	No	None
1.4.02	2	83	0	57	20	4.0	0	No	None
1.4.03	1	59	0	48	21	4.5	0	No	None
1.4.04	2	77	0	46	21	4.5	0	No	None
1.4.10	2	95	0	47	20	4.5	0	No	None
1.4.05	2	83	0	49	26	4.5	0	No	None
1.4.06	1	61	0	44	34	4.0	0	No	None
1.4.07	3	106	0	56	34	3.5	0	No	Low-e clear glazing throughout
1.5.08	2	85	0	66	26	3.5	0	Yes	Low-e clear glazing throughout + R2.7 roof insulation
1.5.09	1	57	0	65	28	3.5	0	No	None
1.5.10	2	95	0	56	23	4.0	0	No	None
1.5.01	2	93	0	57	16	4.5	0	No	None
1.5.02	2	83	0	55	20	4.0	0	No	None
1.5.03	1	59	0	48	20	4.5	0	No	None
1.5.04	2	77	0	41	24	5.0	0	No	None
1.5.05	2	83	0	41	35	4.0	0	No	None
1.5.06	1	61	0	45	33	4.0	0	No	None
1.5.11	1	51	0	63	54	3.0	0	Yes	None
1.5.07	2	89	0	57	21	4.0	0	No	Low-e clear glazing throughout
1.6.01	3	117	0	57	13	4.5	0	Yes	Low-e clear glazing throughout
1.6.02	1	59	0	39	18	5.5	0	No	None
1.6.03	1	59	0	49	19	4.5	0	No	None
1.6.04	2	77	0	64	29	3.5	0	No	None
1.6.05	2	83	0	43	33	4.0	0	No	None
1.6.06	1	61	0	53	27	4.0	0	No	None
1.7.02	3	120	0	57	21	4.0	0	No	Low-e clear glazing throughout
1.7.03	3	105	0	41	44	4.0	0	No	None
1.7.04	1	50	0	37	53	3.5	0	No	None
1.7.01	2	86	0	66	43	3.0	0	Yes	None
Building 2									

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Thermal performance specifications

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		Con.	Uncon.	Heat	Cool (Sens & Lat)				
3.1.01	2	84	0	52	42	3.5	1	No	None
3.1.02	2	81	0	44	19	5.0	0	No	None
3.1.03	1	56	0	45	22	4.5	0	No	None
3.2.01	2	98	0	37	17	5.5	0	No	None
3.2.02	3	100	0	39	35	4.5	0	No	None
3.2.03	2	84	4	52	41	3.5	1	No	None
3.2.04	2	81	0	40	25	5.0	0	No	None
3.2.05	1	61	0	40	30	4.5	0	No	None
3.3.01	2	98	0	31	21	5.5	0	No	None
3.3.02	3	100	0	39	43	4.0	0	No	None
3.3.03	2	84	0	49	51	3.5	1	No	None
3.3.04	2	81	0	38	29	4.5	0	No	None
3.3.05	1	61	0	40	30	4.5	0	No	None
3.4.03	2	84	0	55	30	4.0	1	No	None
3.4.04	2	81	0	44	16	5.0	0	No	None
3.4.05	1	61	0	47	16	5.0	0	No	None
3.4.01	2	98	0	37	13	6.0	0	No	None
3.4.02	3	100	0	43	24	4.5	0	No	None
3.5.03	2	84	0	56	29	4.0	0	No	None
3.5.04	2	81	0	45	15	5.0	0	No	None
3.5.05	1	61	0	62	18	4.0	0	No	None
3.5.06	2	84	0	43	17	3.5	0	No	None
3.5.07	3	100	0	44	23	4.5	0	No	None
3.5.08	2	77	0	65	12	4.0	0	No	Low-e clear glazing throughout
3.5.01	2	82	0	58	14	4.5	0	No	None
3.5.02	2	91	0	66	19	4.0	0	No	Low-e clear glazing throughout and R1.6 floor insulation to enclosed subfloor
3.6.03	3	100	0	44	22	5.0	0	No	None
3.6.04	2	77	0	56	23	4.0	0	No	Low-e clear glazing throughout
3.6.05	2	85	0	59	22	4.0	0	No	Low-e clear glazing throughout
3.6.06	2	84	0	51	24	4.0	0	No	Low-e clear glazing throughout
3.6.07	2	81	0	50	16	4.5	0	No	None
3.6.08	2	84	0	47	14	5.0	0	No	None
3.6.01	2	82	0	43	18	5.0	0	No	None

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		Con.	Uncon.	Heat	Cool (Sens & Lat)				
3.6.02	2	98	0	51	17	4.5	0	No	None
3.7.05	2	80	0	53	17	4.5	0	No	None
3.7.06	1	56	0	53	31	4.0	0	No	None
3.7.02	2	98	0	52	18	4.5	0	No	None
3.7.03	3	100	0	48	17	5.0	0	No	None
3.7.04	2	77	0	52	24	4.0	0	No	Low-e clear glazing throughout
3.7.01	2	82	0	43	19	5.0	0	No	None
3.7.07	1	59	0	62	22	4.0	0	No	Low-e clear glazing throughout
3.8.05	2	80	0	53	17	4.5	0	No	None
3.8.06	1	56	0	54	28	4.0	0	No	R2.2 roof insulation where balcony is above
3.8.02	2	98	0	52	18	4.5	0	No	None
3.8.03	3	100	0	46	18	5.0	0	No	None
3.8.04	2	77	0	51	25	4.0	0	No	Low-e clear glazing throughout
3.8.01	2	82	0	43	19	5.0	0	No	None
3.8.07	1	59	8	65	27	3.5	0	No	Low-e clear glazing throughout
3.9.02	3	115	0	45	29	4.5	0	No	None
3.9.03	3	100	0	44	22	4.5	0	No	None
3.9.04	2	77	0	50	24	4.5	0	No	Low-e clear glazing throughout
3.9.01	3	82	0	43	17	5.0	0	No	None
3.10.02	2	98	0	48	19	4.5	0	No	None
3.10.03	3	100	0	51	24	4.5	0	No	None
3.10.04	2	77	0	63	33	3.5	0	Yes	Low-e clear glazing throughout
3.10.01	2	82	0	57	23	4.0	0	Yes	None
Building 3									
4.1.01	2	79	0	46	50	3.5	0	Yes	None
4.1.02	1	64	0	49	15	5.0	0	No	None
4.2.01	1	63	0	63	30	3.5	0	Yes	None
4.2.02	2	79	0	24	47	4.5	0	Yes	Low-e clear glazing throughout
4.2.03	1	60	0	42	21	5.0	0	No	None
4.3.01	1	63	0	51	34	4.0	1	Yes	None

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Thermal performance specifications

Old Unit number	Number of Bedrooms	Floor area (M^2)		Predict. loads ($MJ/M^2/y$)		Star Rating	Window in Bathroom	Window in Kitchen	Thermal Comfort Upgrades
		Con.	Uncon.	Heat	Cool (Sens & Lat)				
4.3.02	2	79	0	24	47	4.5	0	Yes	low-e clear glazing throughout
4.3.03	1	65	0	38	19	5.5	0	No	None
4.3.04	1	68	0	56	44	3.5	0	No	None
4.3.05	2	84	0	53	46	3.5	0	No	None
4.4.02	1	63	0	52	18	4.5	0	No	Low-e clear glazing to living area
4.4.03	2	79	0	26	41	4.5	0	Yes	None
4.4.04	1	65	0	45	11	5.5	0	No	None
4.4.05	3	114	0	50	22	4.5	0	No	None
4.4.06	3	118	0	46	30	4.0	0	No	None
4.4.01	2	96	0	65	23	4.0	0	No	Low-e clear glazing throughout
4.5.02	1	63	0	52	18	4.5	0	No	Low-e clear glazing to living area
4.5.03	2	79	0	26	41	4.5	0	Yes	None
4.5.04	1	65	0	45	10	5.5	0	No	None
4.5.05	3	114	0	50	22	4.5	0	No	None
4.5.06	3	118	0	46	30	4.0	0	No	None
4.5.07	3	107	0	34	59	3.0	0	Yes	None
4.5.01	2	96	0	60	29	3.5	0	No	None
4.6.06	1	63	0	53	17	4.5	0	Yes	Low-e clear glazing to living area
4.6.07	3	108	0	41	31	4.5	0	Yes	None
4.6.08	2	83	0	35	31	4.5	0	No	Low-e clear glazing throughout
4.6.02	3	122	0	36	12	6.0	0	No	None
4.6.03	1	55	0	48	16	5.0	0	No	None
4.6.04	3	118	0	50	18	4.5	0	No	None
4.6.05	1	61	0	60	30	3.5	0	Yes	None
4.6.01	2	82	0	54	15	4.5	0	No	Low-e clear glazing throughout + R0.9 to exposed subfloor insulation
4.7.07	1	63	0	53	17	4.5	0	Yes	Low-e clear glazing to living area
4.7.08	3	108	0	41	30	4.5	0	Yes	None
4.7.09	2	83	0	66	23	3.5	0	No	Low-e clear glazing throughout
4.7.02	3	122	0	35	11	6.0	0	No	None

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Thermal performance specifications

Old Unit number	Number of Bedrooms	Floor area (M^2)		Predict. loads ($MJ/M^2/y$)		Star Rating	Window in Bathroom	Window in Kitchen	Thermal Comfort Upgrades
		Con.	Uncon.	Heat	Cool (Sens & Lat)				
4.7.03	1	55	0	47	19	5.0	0	No	None
4.7.04	3	118	0	52	18	4.5	0	No	None
4.7.05	1	61	0	61	30	3.5	0	Yes	None
4.7.01	2	82	0	59	20	4.0	0	No	None
4.8.03	1	63	0	54	17	4.5	0	No	Low-e clear glazing to living area
4.8.04	3	108	0	39	35	4.5	0	Yes	None
4.8.05	2	94	0	47	16	5.0	0	No	None
4.8.06	2	77	0	43	16	5.0	0	No	low-e clear glazing throughout
4.8.07	2	77	0	51	29	4.0	0	Yes	Low-e clear glazing throughout
4.8.08	1	61	0	61	30	3.5	0	Yes	None
4.8.01	2	82	0	59	20	4.0	0	No	None
4.8.02	1	65	0	59	15	4.5	0	No	None
4.9.03	1	63	0	66	26	3.0	0	Yes	Low-e clear glazing throughout
4.9.04	3	108	0	58	41	3.5	0	Yes	None
4.9.05	2	94	0	66	16	4.0	0	Yes	Low-e clear glazing throughout
4.9.06	1	77	0	57	17	4.5	0	Yes	Low-e clear glazing throughout
4.9.07	2	77	0	60	30	3.5	0	Yes	Low-e clear glazing throughout
4.9.08	1	61	0	56	29	4.0	0	Yes	Low-e clear glazing throughout
4.9.01	2	82	0	52	20	4.5	0	Yes	None
4.9.02	1	65	0	64	13	4.0	0	Yes	None

NatHERS Certificate
New Dwelling

5.5 Stars

Simulation Software

Software Name	BERS Pro 4.2
Software Version	Release 110811/A
Engine Version	CHENATH V2.13

Simulation Details

Project Name	F1-40 - unit 1.3.01 - B1_1
Date	29/04/2015
Location	PYMBLE PC 2073
Climate file	climat56.TXT
Adjusted Star Rating	5.5 Stars
Conditioned Area	92.88 m²
Unconditioned Area	0.00 m²
Adjusted Cooling	18.7 MJ/m²
Adjusted Heating	33.0 MJ/m²
Adjusted Total	51.6 MJ/m²

Energy Rating Certificate Number 14733043

☐ single-dwelling rating — 4.0 stars

☒ multi-unit development (attach listing of ratings) — heating 51 MJ/m² — cooling 26 MJ/m²

If selected, data specified is the average across the entire development

Recessed downlights confirmation: ☒ Rated with ☐ Rated without

Assessor Name/Number Tracey Cools VIC/BDAV/12/1473

Assessor Signature _____ Date 17/08/16

Dwelling Address

DP Number	583803
Unit Number	
Lot Number	1
House Number	
Street Name	Avon Road
Development Name	
Suburb	Pymble NSW 2073

Client Details

Name	Marchese Partners International Pty Ltd
Phone	02 9922 4375 Fax 02 9929 5786
Email	info@marchesepartners.com.au
Postal Address	Level 7, 107 Mount Street, North Sydney, NSW 2060
Street Details	Level 7, 107 Mount Street, North Sydney, NSW 2060

Assessor Details

Name	Tracey Cools
Phone	02 9970 6181 Fax 02 9970 6181
Email	admin@efficientliving.com.au
Postal Address	
Street Details	13/13 Lagoon Street, Narrabeen NSW 2101

Signed by the Assessor.....Date...17.../.08..../.16.....

Tilted roof windows with blinds cannot be modelled using this version of BERSPro.
All windows are modelled with Holland Blinds for regulatory purposes.

Building Element Details

Project F1-40 - unit 1.3.01 - B1 Run 1
PYMBLE PC 2073 Lat -33.80 Long 151.10 Climate File climat56.TXT

Summary

Conditioned Area	92.9 m²
Unconditioned Area	0.0 m²
Total Floor Area	92.9 m²
Total Glazed Area	28.4 m²
Total External Solid door Area	2.9 m²
Glass to Floor Area	30.6 %
Gross External Wall Area	136.3 m²
Net External Wall Area	105.0 m²

Window
28.4 m² GGG-05-001a Generics Uval 6.57 SHGC 0.74
Glass Single Glazed Clear
Frame Aluminium

External Wall
3.2 m² Metal Clad Cavity Panel Bulk Insulation R 2.0
86.7 m² PowerPanel to neighbour No Insulation
15.1 m² Tilt up concrete, lined Bulk Insulation R 1.0
0.0 m² PowerPanel Bulk Insulation R 1.0

Internal Wall
83.5 m² Cavity Panel 70mm gap No Insulation

External Floor
79.6 m² Concrete Slab, Unit Below Carpet+Rubber Underlay 18mm No Insulation
13.3 m² Concrete Slab, Unit Below Ceramic Tiles 8mm No Insulation

External Ceiling
92.9 m² Plasterboard No Insulation Apartment above

Roof (Horizontal area)
92.9 m² Concrete No Insulation, Only an Air Gap 0° slope Skillion roof

Energy Rating Certificate Number 14733043

☐ single-dwelling rating — 4.0 stars

☒ multi-unit development (attach listing of ratings) — heating 51 MJ/m² — cooling 26 MJ/m²
If selected, data specified is the average across the entire development

Recessed downlights confirmation: ☒ Rated with ☐ Rated without

Assessor Name/Number Tracey Cools VIC/BDAV/12/1473

Assessor Signature _____ Date 17/08/16

BASIX® Certificate

Building Sustainability Index www.basix.nsw.gov.au

Multi Dwelling

Certificate number: 628567M_05

This certificate confirms that the proposed development will meet the NSW government's requirements for sustainability, if it is built in accordance with the commitments set out below. Terms used in this certificate, or in the commitments, have the meaning given by the document entitled "BASIX Definitions" dated 18/09/2014 published by the Department. This document is available at www.basix.nsw.gov.au

This certificate is a revision of certificate number 628567M_02 lodged with the consent authority or certifier on 14 January 2016 with application DA0113/16.

It is the responsibility of the applicant to verify with the consent authority that the original, or any revised certificate, complies with the requirements of Schedule 1 Clause 2A, 4A or 6A of the Environmental Planning and Assessment Regulation 2000

Secretary
Date of issue: Wednesday, 17 August 2016
To be valid, this certificate must be lodged within 3 months of the date of issue.

NSW GOVERNMENT | Planning & Environment

Project summary	
Project name	Avon Rd & Beechworth Rd Development_05
Street address	1 Avon Road Pymble 2073
Local Government Area	Ku-ring-gai Council
Plan type and plan number	deposited 583803
Lot no.	1
Section no.	-
No. of residential flat buildings	3
No. of units in residential flat buildings	168
No. of multi-dwelling houses	0
No. of single dwelling houses	0

Project score		
Water	✔ 41	Target 40
Thermal Comfort	✔ Pass	Target Pass
Energy	✔ 20	Target 20

Certificate Prepared by
Name / Company Name: Efficient Living
ABN (if applicable): 82116346082

Description of project

Project address	
Project name	Avon Rd & Beechworth Rd Development_05
Street address	1 Avon Road Pymble 2073
Local Government Area	Ku-ring-gai Council
Plan type and plan number	deposited 583803
Lot no.	1
Section no.	-
Project type	
No. of residential flat buildings	3
No. of units in residential flat buildings	168
No. of multi-dwelling houses	0
No. of single dwelling houses	0
Site details	
Site area (m²)	19952
Roof area (m²)	2818
Non-residential floor area (m²)	0.0
Residential car spaces	244
Non-residential car spaces	42

Common area landscape		
Common area lawn (m²)	931.0	
Common area garden (m²)	13280.0	
Area of indigenous or low water use species (m²)	0.0	
Assessor details		
Assessor number	BDAV/12/1473	
Certificate number	14733043	
Climate zone	56	
Project score		
Water	✔ 41	Target 40
Thermal Comfort	✔ Pass	Target Pass
Energy	✔ 20	Target 20

Description of project

The tables below describe the dwellings and common areas within the project

Residential flat buildings - Building 1, 57 dwellings, 7 storeys above ground

Dwelling no.	No. of bedrooms	Conditioned floor area (m^2)	Unconditioned floor area (m^2)	Area of garden & lawn (m^2)	Indigenous species (min area m^2)
1.01	1	57.0	0.0	0.0	0.0
1.05	2	83.0	0.0	0.0	0.0
2.03	1	59.0	0.0	0.0	0.0
2.07	2	90.0	0.0	0.0	0.0
3.02	2	83.0	0.0	0.0	0.0
3.06	2	84.0	0.0	0.0	0.0
3.10	1	51.0	4.0	0.0	0.0
4.04	2	77.0	0.0	0.0	0.0
4.07	3	106.0	0.0	0.0	0.0
5.01	2	93.0	0.0	0.0	0.0
5.05	2	83.0	0.0	0.0	0.0
5.09	1	57.0	0.0	0.0	0.0
6.02	1	59.0	0.0	30.8	0.0
6.06	1	61.0	0.0	0.0	0.0
7.04	1	50.0	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m^2)	Unconditioned floor area (m^2)	Area of garden & lawn (m^2)	Indigenous species (min area m^2)
1.02	1	57.0	0.0	0.0	0.0
1.06	1	67.0	0.0	0.0	0.0
2.04	2	83.0	0.0	0.0	0.0
2.08	2	95.0	0.0	0.0	0.0
3.03	1	59.0	0.0	0.0	0.0
3.07	3	112.0	0.0	0.0	0.0
4.01	2	93.0	0.0	0.0	0.0
4.05	2	83.0	0.0	0.0	0.0
4.08	2	85.0	0.0	0.0	0.0
5.02	2	83.0	0.0	0.0	0.0
5.06	1	61.0	0.0	0.0	0.0
5.10	2	95.0	0.0	0.0	0.0
6.03	1	53.0	0.0	0.0	0.0
7.01	2	86.0	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m^2)	Unconditioned floor area (m^2)	Area of garden & lawn (m^2)	Indigenous species (min area m^2)
1.03	2	90.0	0.0	0.0	0.0
2.01	2	93.0	0.0	0.0	0.0
2.05	2	84.0	0.0	0.0	0.0
2.09	1	51.0	0.0	0.0	0.0
3.04	1	61.0	0.0	0.0	0.0
3.08	2	90.0	0.0	0.0	0.0
4.02	2	83.0	0.0	0.0	0.0
4.06	1	61.0	0.0	0.0	0.0
4.09	1	57.0	0.0	0.0	0.0
5.03	1	59.0	0.0	0.0	0.0
5.07	2	89.0	0.0	0.0	0.0
5.11	1	51.0	0.0	0.0	0.0
6.04	2	77.0	0.0	0.0	0.0
7.02	3	120.0	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m^2)	Unconditioned floor area (m^2)	Area of garden & lawn (m^2)	Indigenous species (min area m^2)
1.04	1	64.0	0.0	0.0	0.0
2.02	2	83.0	0.0	0.0	0.0
2.06	3	112.0	0.0	0.0	0.0
3.01	2	93.0	0.0	0.0	0.0
3.05	2	83.0	0.0	0.0	0.0
3.09	2	95.0	0.0	0.0	0.0
4.03	1	59.0	0.0	0.0	0.0
4.07	3	106.0	0.0	0.0	0.0
4.10	2	95.0	0.0	0.0	0.0
5.04	2	77.0	0.0	0.0	0.0
5.08	2	85.0	0.0	0.0	0.0
6.01	3	117.0	0.0	22.9	0.0
6.05	2	83.0	0.0	0.0	0.0
7.03	3	105.0	0.0	0.0	0.0

Residential flat buildings - Building 3, 56 dwellings, 10 storeys above ground

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
1.01	2	84.0	0.0	0.0	0.0
2.02	3	100.0	0.0	0.0	0.0
3.01	2	98.0	0.0	0.0	0.0
3.06	3	100.0	0.0	0.0	0.0
4.04	2	81.0	0.0	0.0	0.0
5.03	2	84.0	0.0	0.0	0.0
5.07	3	100.0	0.0	0.0	0.0
6.03	3	100.0	0.0	0.0	0.0
6.07	2	81.0	0.0	0.0	0.0
7.03	3	100.0	0.0	0.0	0.0
7.07	1	59.0	0.0	0.0	0.0
8.04	2	77.0	0.0	0.0	0.0
9.01	3	82.0	0.0	0.0	0.0
10.01	2	82.0	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
1.02	2	81.0	0.0	0.0	0.0
2.03	2	84.0	4.0	0.0	0.0
3.03	2	84.0	0.0	0.0	0.0
4.01	2	98.0	0.0	0.0	0.0
4.05	1	61.0	0.0	0.0	0.0
5.04	2	81.0	0.0	0.0	0.0
5.08	2	77.0	0.0	0.0	0.0
6.04	2	77.0	0.0	0.0	0.0
6.08	2	84.0	0.0	0.0	0.0
7.04	2	77.0	0.0	0.0	0.0
8.01	2	80.0	0.0	0.0	0.0
8.05	2	80.0	0.0	0.0	0.0
9.02	3	115.0	0.0	0.0	0.0
10.02	2	98.0	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
1.03	1	56.0	0.0	0.0	0.0
2.04	2	81.0	0.0	0.0	0.0
3.04	2	81.0	0.0	0.0	0.0
4.02	3	100.0	0.0	0.0	0.0
5.01	2	82.0	0.0	0.0	0.0
5.05	1	61.0	0.0	0.0	0.0
6.01	2	82.0	0.0	0.0	0.0
6.05	2	85.0	0.0	0.0	0.0
7.01	2	82.0	0.0	88.9	0.0
7.05	2	80.0	0.0	0.0	0.0
8.02	2	98.0	0.0	0.0	0.0
8.06	1	56.0	0.0	0.0	0.0
9.03	3	100.0	0.0	0.0	0.0
10.03	3	100.0	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
2.01	2	98.0	0.0	0.0	0.0
2.05	1	61.0	0.0	0.0	0.0
3.05	1	61.0	0.0	0.0	0.0
4.03	2	84.0	0.0	0.0	0.0
5.02	2	91.0	0.0	0.0	0.0
5.06	2	84.0	0.0	0.0	0.0
6.02	2	98.0	0.0	0.0	0.0
6.06	2	84.0	0.0	0.0	0.0
7.02	2	98.0	0.0	0.0	0.0
7.06	1	56.0	0.0	0.0	0.0
8.03	3	100.0	0.0	0.0	0.0
8.07	1	59.0	8.0	0.0	0.0
9.04	2	77.0	0.0	87.0	0.0
10.04	2	77.0	0.0	0.0	0.0

Residential flat buildings - Building 4, 55 dwellings, 9 storeys above ground

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
1.01	2	79.0	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
1.02	1	64.0	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
2.01	1	63.0	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
2.02	2	79.0	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
2.03	1	60.0	0.0	0.0	0.0
3.04	1	68.0	0.0	0.0	0.0
4.03	2	79.0	0.0	0.0	0.0
5.01	3	107.0	0.0	0.0	0.0
5.05	3	114.0	0.0	0.0	0.0
6.02	3	122.0	0.0	0.0	0.0
6.06	1	63.0	0.0	0.0	0.0
7.02	3	122.0	0.0	0.0	0.0
7.07	1	63.0	0.0	0.0	0.0
8.02	1	65.0	0.0	0.0	0.0
8.06	2	77.0	0.0	0.0	0.0
9.02	1	65.0	0.0	0.0	0.0
9.06	1	77.0	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
3.01	1	63.0	0.0	0.0	0.0
3.05	2	84.0	0.0	0.0	0.0
4.04	1	65.0	0.0	0.0	0.0
5.02	1	63.0	0.0	0.0	0.0
5.06	3	118.0	0.0	0.0	0.0
6.03	1	68.0	0.0	0.0	0.0
6.07	3	108.0	0.0	0.0	0.0
7.03	1	68.0	0.0	0.0	0.0
7.08	3	108.0	0.0	0.0	0.0
8.03	1	63.0	0.0	0.0	0.0
8.07	2	77.0	0.0	0.0	0.0
9.03	1	63.0	0.0	0.0	0.0
9.07	2	77.0	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
3.02	2	79.0	0.0	0.0	0.0
4.01	2	96.0	0.0	0.0	0.0
4.05	3	114.0	0.0	0.0	0.0
5.03	2	79.0	0.0	0.0	0.0
5.07	1	61.0	0.0	0.0	0.0
6.04	3	99.0	0.0	0.0	0.0
6.08	2	83.0	0.0	0.0	0.0
7.04	3	99.0	0.0	0.0	0.0
7.09	2	83.0	0.0	0.0	0.0
8.04	3	108.0	0.0	0.0	0.0
8.08	1	61.0	0.0	0.0	0.0
9.04	3	108.0	0.0	0.0	0.0
9.08	1	61.0	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
3.03	1	65.0	0.0	0.0	0.0
4.02	1	63.0	0.0	0.0	0.0
4.06	3	118.0	0.0	0.0	0.0
5.04	1	65.0	0.0	0.0	0.0
6.01	2	82.0	0.0	0.0	0.0
6.05	1	61.0	0.0	0.0	0.0
7.01	2	82.0	0.0	0.0	0.0
7.05	1	61.0	0.0	0.0	0.0
8.01	2	82.0	0.0	0.0	0.0
8.05	2	94.0	0.0	0.0	0.0
9.01	2	82.0	0.0	0.0	0.0
9.05	2	94.0	0.0	0.0	0.0

Description of project

The tables below describe the dwellings and common areas within the project

Common areas of unit building - Building 1

Common area	Floor area (m²)
Lift car (No. 1)	-
Building 1 - Ground floor lobby (80%)	151.0

Common area	Floor area (m²)
Lift car (No. 2)	-
Building 1 - Hallways	159.0

Common area	Floor area (m²)
Building 1 - Ground floor lobby (20%)	38.0

Common areas of unit building - Building 3

Common area	Floor area (m²)
Lift car (No. 3)	-
Building 3 - Ground floor lobby (80%)	72.0

Common area	Floor area (m²)
Lift car (No. 4)	-
Building 3 - Hallways	232.0

Common area	Floor area (m²)
Building 3 - Ground floor lobby (20%)	18.0

Common areas of unit building - Building 4

Common area	Floor area (m²)
Lift car (No. 5)	-
Building 4 - Ground floor lobby (80%)	52.0

Common area	Floor area (m²)
Lift car (No. 6)	-
Building 4 - Hallways	299.0

Common area	Floor area (m²)
Building 4 - Ground floor lobby (20%)	14.0

Common areas of the development (non-building specific)

Common area	Floor area (m²)
Gym	52.0
Plant or service rooms	811.0
Toilets - common area	26.0
Game room	74.0
Lobby - Heritage curtilage	88.0

Common area	Floor area (m²)
Car park areas	9160.0
Storage	762.0
Post boxes	17.0
Office / reception	45.0
Nat ventilated hallways	190.0

Common area	Floor area (m²)
Garbage rooms	191.0
Bicycle	114.0
Cleaners room	6.5
Dinning room	121.0

Schedule of BASIX commitments

1. Commitments for Residential flat buildings - Building 1
    - (a) Dwellings
        - (i) Water
        - (ii) Energy
        - (iii) Thermal Comfort
    - (b) Common areas and central systems/facilities
        - (i) Water
        - (ii) Energy

2. Commitments for Residential flat buildings - Building 3
    - (a) Dwellings
        - (i) Water
        - (ii) Energy
        - (iii) Thermal Comfort
    - (b) Common areas and central systems/facilities
        - (i) Water
        - (ii) Energy

3. Commitments for Residential flat buildings - Building 4
    - (a) Dwellings
        - (i) Water
        - (ii) Energy
        - (iii) Thermal Comfort
    - (b) Common areas and central systems/facilities
        - (i) Water
        - (ii) Energy

4. Commitments for multi-dwelling houses

5. Commitments for single dwelling houses

6. Commitments for common areas and central systems/facilities for the development (non-building specific)

(i) Water

(ii) Energy

Schedule of BASIX commitments

The commitments set out below regulate how the proposed development is to be carried out. It is a condition of any development consent granted, or complying development certificate issued, for the proposed development, that BASIX commitments be complied with.

1. Commitments for Residential flat buildings - Building 1

(a) Dwellings

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must plant indigenous or low water use species of vegetation throughout the area of land specified for the dwelling in the "Indigenous species" column of the table below, as private landscaping for that dwelling. (This area of indigenous vegetation is to be contained within the "Area of garden and lawn" for the dwelling specified in the "Description of Project" table).	✔	✔	
(c) If a rating is specified in the table below for a fixture or appliance to be installed in the dwelling, the applicant must ensure that each such fixture and appliance meets the rating specified for it.		✔	✔
(d) The applicant must install an on demand hot water recirculation system which regulates all hot water use throughout the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below.		✔	✔
(e) The applicant must install:			
(aa) a hot water diversion system to all showers, kitchen sinks and all basins in the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below; and		✔	✔
(bb) a separate diversion tank (or tanks) connected to the hot water diversion systems of at least 100 litres. The applicant must connect the hot water diversion tank to all toilets in the dwelling.		✔	✔
(e) The applicant must not install a private swimming pool or spa for the dwelling, with a volume exceeding that specified for it in the table below.	✔	✔	
(f) If specified in the table, that pool or spa (or both) must have a pool cover or shading (or both).		✔	
(g) The pool or spa must be located as specified in the table.	✔	✔	
(h) The applicant must install, for the dwelling, each alternative water supply system, with the specified size, listed for that dwelling in the table below. Each system must be configured to collect run-off from the areas specified (excluding any area which supplies any other alternative water supply system), and to divert overflow as specified. Each system must be connected as specified.	✔	✔	✔

	Fixtures					Appliances		Individual pool				Individual spa		
Dwelling no.	All shower-heads	All toilet flushing systems	All kitchen taps	All bathroom taps	HW recirculation or diversion	All clothes washers	All dish-washers	Volume (max volume)	Pool cover	Pool location	Pool shaded	Volume (max volume)	Spa cover	Spa shaded
All dwellings	3 star (> 7.5 but <= 9 L/min)	4 star	4 star	4 star	-	3 star	3 star	-	-	-	-	-	-	-

	Alternative water source							
Dwelling no.	Alternative water supply systems	Size	Configuration	Landscape connection	Toilet connection (s)	Laundry connection	Pool top-up	Spa top-up
None	-	-	-	-	-	-	-	-

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must install each hot water system specified for the dwelling in the table below, so that the dwelling's hot water is supplied by that system. If the table specifies a central hot water system for the dwelling, then the applicant must connect that central system to the dwelling, so that the dwelling's hot water is supplied by that central system.	✔	✔	✔
(c) The applicant must install, in each bathroom, kitchen and laundry of the dwelling, the ventilation system specified for that room in the table below. Each such ventilation system must have the operation control specified for it in the table.		✔	✔
(d) The applicant must install the cooling and heating system/s specified for the dwelling under the "Living areas" and "Bedroom areas" headings of the "Cooling" and "Heating" columns in the table below, in/for at least 1 living/bedroom area of the dwelling. If no cooling or heating system is specified in the table for "Living areas" or "Bedroom areas", then no systems may be installed in any such areas. If the term "zoned" is specified beside an air conditioning system, then the system must provide for day/night zoning between living areas and bedrooms.		✔	✔
(e) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Artificial lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that the "primary type of artificial lighting" for each such room in the dwelling is fluorescent lighting or light emitting diode (LED) lighting. If the term "dedicated" is specified for a particular room or area, then the light fittings in that room or area must only be capable of being used for fluorescent lighting or light emitting diode (LED) lighting.		✔	✔

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(f) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Natural lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that each such room or area is fitted with a window and/or skylight.	✔	✔	✔
(g) This commitment applies if the applicant installs a water heating system for the dwelling's pool or spa. The applicant must:			
(aa) install the system specified for the pool in the "Individual Pool" column of the table below (or alternatively must not install any system for the pool). If specified, the applicant must install a timer, to control the pool's pump; and		✔	
(bb) install the system specified for the spa in the "Individual Spa" column of the table below (or alternatively must not install any system for the spa). If specified, the applicant must install a timer to control the spa's pump.		✔	
(h) The applicant must install in the dwelling:			
(aa) the kitchen cook-top and oven specified for that dwelling in the "Appliances & other efficiency measures" column of the table below;		✔	
(bb) each appliance for which a rating is specified for that dwelling in the "Appliances & other efficiency measures" column of the table, and ensure that the appliance has that minimum rating; and		✔	✔
(cc) any clothes drying line specified for the dwelling in the "Appliances & other efficiency measures" column of the table.		✔	
(i) If specified in the table, the applicant must carry out the development so that each refrigerator space in the dwelling is "well ventilated".		✔	

	Hot water	Bathroom ventilation system		Kitchen ventilation system		Laundry ventilation system	
Dwelling no.	Hot water system	Each bathroom	Operation control	Each kitchen	Operation control	Each laundry	Operation control
All dwellings	central hot water system 1	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual switch on/off

	Cooling		Heating		Artificial lighting						Natural lighting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/ toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
5.10, 6.03	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1	1	yes	yes	yes	yes	0	yes
1.04, 2.04, 5.01	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	3	1	yes	yes	yes	yes	0	yes
3.05, 5.07, 6.01	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	3	1	yes	yes	yes	yes	0	no
1.03, 2.09, 3.06, 4.07, 5.11	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	2	1	yes	yes	yes	yes	0	yes
1.01, 2.01, 2.02, 2.06, 3.02, 3.08, 3.10, 4.03, 4.05, 4.07, 4.09, 5.02, 5.03, 5.06, 5.08, 6.02, 6.04, 6.06, 7.03	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1	1	yes	yes	yes	yes	0	no

	Cooling		Heating		Artificial lighting						Natural lighting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/ toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
1.02, 1.05, 1.06, 2.03, 2.05, 2.07, 2.08, 3.01, 3.03, 3.04, 3.07, 3.09, 4.01, 4.02, 4.04, 4.06, 4.08, 4.10, 5.04, 5.05, 5.09, 6.05, 7.01, 7.02, 7.04	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	2	1	yes	yes	yes	yes	0	no

	Individual pool		Individual spa		Appliances & other efficiency measures							
Dwelling no.	Pool heating system	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Refrigerator	Well ventilated fridge space	Dishwasher	Clothes washer	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	gas cooktop & electric oven	-	yes	2.5 star	-	2 star	-	-

(iii) Thermal Comfort	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must attach the certificate referred to under "Assessor details" on the front page of this BASIX certificate (the "Assessor Certificate") to the development application and construction certificate application for the proposed development (or, if the applicant is applying for a complying development certificate for the proposed development, to that application). The applicant must also attach the Assessor Certificate to the application for a final occupation certificate for the proposed development.			
(b) The Assessor Certificate must have been issued by an Accredited Assessor in accordance with the Thermal Comfort Protocol.			
(c) The details of the proposed development on the Assessor Certificate must be consistent with the details shown in this BASIX Certificate, including the details shown in the "Thermal Loads" table below.			
(d) The applicant must show on the plans accompanying the development application for the proposed development, all matters which the Thermal Comfort Protocol requires to be shown on those plans. Those plans must bear a stamp of endorsement from the Accredited Assessor, to certify that this is the case.			
(e) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all thermal performance specifications set out in the Assessor Certificate, and all aspects of the proposed development which were used to calculate those specifications.			
(f) The applicant must construct the development in accordance with all thermal performance specifications set out in the Assessor Certificate, and in accordance with those aspects of the development application or application for a complying development certificate which were used to calculate those specifications.		✔	✔
(g) Where there is an in-slab heating or cooling system, the applicant must: (aa) Install insulation with an R-value of not less than 1.0 around the vertical edges of the perimeter of the slab; or (bb) On a suspended floor, install insulation with an R-value of not less than 1.0 underneath the slab and around the vertical edges of the perimeter of the slab.	✔	✔	✔
(h) The applicant must construct the floors and walls of the development in accordance with the specifications listed in the table below.	✔	✔	✔

	Thermal loads	
Dwelling no.	Area adjusted heating load (in mJ/m²/yr)	Area adjusted cooling load (in mJ/m²/yr)
1.01	66.0	53.0
1.02	62.0	31.0
1.03	57.0	29.0
1.04	59.0	34.0
1.05	60.0	29.0

	Thermal loads	
Dwelling no.	Area adjusted heating load (in mJ/m²/yr)	Area adjusted cooling load (in mJ/m²/yr)
1.06	61.0	33.0
2.01	55.0	16.0
2.02	52.0	35.0
2.03	51.0	30.0
2.04	55.0	26.0
2.05	66.0	39.0
2.06	52.0	34.0
2.07	47.0	32.0
2.08	44.0	33.0
2.09	64.0	45.0
3.01	33.0	19.0
3.02	51.0	35.0
3.04	66.0	46.0
3.05	45.0	30.0
3.06	56.0	42.0
3.08	46.0	32.0
3.10	53.0	49.0
4.01	39.0	13.0
4.02	57.0	20.0
4.03	48.0	21.0
4.04	46.0	21.0
4.05	49.0	26.0
4.06	44.0	34.0
4.08	66.0	18.0
4.09	54.0	18.0
4.10	47.0	20.0
5.01	57.0	16.0

	Thermal loads	
Dwelling no.	**Area adjusted heating load (in mJ/m²/yr)**	**Area adjusted cooling load (in mJ/m²/yr)**
5.02	55.0	20.0
5.03	48.0	20.0
5.04	41.0	24.0
5.06	45.0	33.0
5.08	66.0	26.0
5.09	65.0	28.0
5.10	56.0	23.0
5.11	63.0	54.0
6.01	57.0	13.0
6.02	39.0	18.0
6.03	49.0	19.0
6.04	64.0	29.0
6.05	43.0	33.0
6.06	53.0	27.0
7.01	66.0	43.0
7.03	41.0	44.0
7.04	37.0	53.0
3.03, 3.07	49.0	37.0
3.09, 5.05	41.0	35.0
4.07, 4.07	56.0	34.0
All other dwellings	57.0	21.0

(b) Common areas and central systems/facilities

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a showerhead, toilet, tap or clothes washer into a common area, then that item must meet the specifications listed for it in the table.		✔	✔
(b) The applicant must install (or ensure that the development is serviced by) the alternative water supply system(s) specified in the "Central systems" column of the table below. In each case, the system must be sized, be configured, and be connected, as specified in the table.	✔	✔	✔
(c) A swimming pool or spa listed in the table must not have a volume (in kLs) greater than that specified for the pool or spa in the table.	✔	✔	
(d) A pool or spa listed in the table must have a cover or shading if specified for the pool or spa in the table.		✔	
(e) The applicant must install each fire sprinkler system listed in the table so that the system is configured as specified in the table.		✔	✔
(f) The applicant must ensure that the central cooling system for a cooling tower is configured as specified in the table.		✔	✔

Common area	Showerheads rating	Toilets rating	Taps rating	Clothes washers rating
All common areas	3 star (> 7.5 but <= 9 L/min)	4 star	4 star	no common laundry facility

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a ventilation system to service a common area specified in the table below, then that ventilation system must be of the type specified for that common area, and must meet the efficiency measure specified.		✔	✔
(b) In carrying out the development, the applicant must install, as the "primary type of artificial lighting" for each common area specified in the table below, the lighting specified for that common area. This lighting must meet the efficiency measure specified. The applicant must also install a centralised lighting control system or Building Management System (BMS) for the common area, where specified.		✔	✔
(c) The applicant must install the systems and fixtures specified in the "Central energy systems" column of the table below. In each case, the system or fixture must be of the type, and meet the specifications, listed for it in the table.	✔	✔	✔

	Common area ventilation system		Common area lighting		
Common area	**Ventilation system type**	**Ventilation efficiency measure**	**Primary type of artificial lighting**	**Lighting efficiency measure**	**Lighting control system/BMS**
Lift car (No. 1)	-	-	light-emitting diode	connected to lift call button	No
Lift car (No. 2)	-	-	light-emitting diode	connected to lift call button	No
Building 1 - Ground floor lobby (20%)	ventilation supply only	time clock or BMS controlled	compact fluorescent	none	No
Building 1 - Ground floor lobby (80%)	ventilation supply only	time clock or BMS controlled	compact fluorescent	motion sensors	No
Building 1 - Hallways	ventilation supply only	time clock or BMS controlled	compact fluorescent	zoned switching with motion sensor	No

Central energy systems	Type	Specification
Lift (No. 1)	gearless traction with V V V F motor	Number of levels (including basement): 10
Lift (No. 2)	gearless traction with V V V F motor	Number of levels (including basement): 12

2. Commitments for Residential flat buildings - Building 3

(a) Dwellings

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must plant indigenous or low water use species of vegetation throughout the area of land specified for the dwelling in the "Indigenous species" column of the table below, as private landscaping for that dwelling. (This area of indigenous vegetation is to be contained within the "Area of garden and lawn" for the dwelling specified in the "Description of Project" table).	✔	✔	
(c) If a rating is specified in the table below for a fixture or appliance to be installed in the dwelling, the applicant must ensure that each such fixture and appliance meets the rating specified for it.		✔	✔
(d) The applicant must install an on demand hot water recirculation system which regulates all hot water use throughout the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below.		✔	✔
(e) The applicant must install:			
(aa) a hot water diversion system to all showers, kitchen sinks and all basins in the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below; and		✔	✔
(bb) a separate diversion tank (or tanks) connected to the hot water diversion systems of at least 100 litres. The applicant must connect the hot water diversion tank to all toilets in the dwelling.		✔	✔
(e) The applicant must not install a private swimming pool or spa for the dwelling, with a volume exceeding that specified for it in the table below.	✔	✔	
(f) If specified in the table, that pool or spa (or both) must have a pool cover or shading (or both).		✔	
(g) The pool or spa must be located as specified in the table.	✔	✔	
(h) The applicant must install, for the dwelling, each alternative water supply system, with the specified size, listed for that dwelling in the table below. Each system must be configured to collect run-off from the areas specified (excluding any area which supplies any other alternative water supply system), and to divert overflow as specified. Each system must be connected as specified.	✔	✔	✔

	Fixtures					Appliances		Individual pool				Individual spa		
Dwelling no.	All shower-heads	All toilet flushing systems	All kitchen taps	All bathroom taps	HW recirculation or diversion	All clothes washers	All dish-washers	Volume (max volume)	Pool cover	Pool location	Pool shaded	Volume (max volume)	Spa cover	Spa shaded
All dwellings	3 star (> 7.5 but <= 9 L/min)	4 star	4 star	4 star	-	3 star	3 star	-	-	-	-	-	-	-

	Alternative water source							
Dwelling no.	Alternative water supply systems	Size	Configuration	Landscape connection	Toilet connection (s)	Laundry connection	Pool top-up	Spa top-up
None	-	-	-	-	-	-	-	-

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must install each hot water system specified for the dwelling in the table below, so that the dwelling's hot water is supplied by that system. If the table specifies a central hot water system for the dwelling, then the applicant must connect that central system to the dwelling, so that the dwelling's hot water is supplied by that central system.	✔	✔	✔
(c) The applicant must install, in each bathroom, kitchen and laundry of the dwelling, the ventilation system specified for that room in the table below. Each such ventilation system must have the operation control specified for it in the table.		✔	✔
(d) The applicant must install the cooling and heating system/s specified for the dwelling under the "Living areas" and "Bedroom areas" headings of the "Cooling" and "Heating" columns in the table below, in/for at least 1 living/bedroom area of the dwelling. If no cooling or heating system is specified in the table for "Living areas" or "Bedroom areas", then no systems may be installed in any such areas. If the term "zoned" is specified beside an air conditioning system, then the system must provide for day/night zoning between living areas and bedrooms.		✔	✔
(e) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Artificial lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that the "primary type of artificial lighting" for each such room in the dwelling is fluorescent lighting or light emitting diode (LED) lighting. If the term "dedicated" is specified for a particular room or area, then the light fittings in that room or area must only be capable of being used for fluorescent lighting or light emitting diode (LED) lighting.		✔	✔

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(f) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Natural lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that each such room or area is fitted with a window and/or skylight.	✔	✔	✔
(g) This commitment applies if the applicant installs a water heating system for the dwelling's pool or spa. The applicant must:			
(aa) install the system specified for the pool in the "Individual Pool" column of the table below (or alternatively must not install any system for the pool). If specified, the applicant must install a timer, to control the pool's pump; and		✔	
(bb) install the system specified for the spa in the "Individual Spa" column of the table below (or alternatively must not install any system for the spa). If specified, the applicant must install a timer to control the spa's pump.		✔	
(h) The applicant must install in the dwelling:			
(aa) the kitchen cook-top and oven specified for that dwelling in the "Appliances & other efficiency measures" column of the table below;		✔	
(bb) each appliance for which a rating is specified for that dwelling in the "Appliances & other efficiency measures" column of the table, and ensure that the appliance has that minimum rating; and		✔	✔
(cc) any clothes drying line specified for the dwelling in the "Appliances & other efficiency measures" column of the table.		✔	
(i) If specified in the table, the applicant must carry out the development so that each refrigerator space in the dwelling is "well ventilated".		✔	

	Hot water	Bathroom ventilation system		Kitchen ventilation system		Laundry ventilation system	
Dwelling no.	Hot water system	Each bathroom	Operation control	Each kitchen	Operation control	Each laundry	Operation control
All dwellings	central hot water system 1	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual switch on/off

	Cooling		Heating		Artificial lighting						Natural lighting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/ toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
5.01, 10.03	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	2	1	yes	yes	yes	yes	0	yes
1.01, 2.05, 3.05, 4.05	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	2	1	yes	yes	yes	yes	1	no
1.03, 2.02, 3.06, 4.02, 5.07, 7.07, 8.05, 8.07, 9.02	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1	1	yes	yes	yes	yes	0	no
2.04, 3.04, 4.04, 5.02, 6.06, 7.03, 8.03, 9.01, 9.03, 9.04, 10.01	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	3	1	yes	yes	yes	yes	0	no

	Cooling		Heating		Artificial lighting						Natural lighting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/ toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
1.02, 2.01, 2.03, 3.01, 3.03, 4.01, 4.03, 5.03, 5.04, 5.05, 5.06, 5.08, 6.01, 6.02, 6.03, 6.04, 6.05, 6.07, 6.08, 7.01, 7.02, 7.04, 7.05, 7.06, 8.01, 8.02, 8.04, 8.06, 10.02, 10.04	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	2	1	yes	yes	yes	yes	0	no

	Individual pool		Individual spa		Appliances & other efficiency measures							
Dwelling no.	Pool heating system	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Refrigerator	Well ventilated fridge space	Dishwasher	Clothes washer	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	gas cooktop & electric oven	-	yes	2.5 star	-	2 star	-	-

(iii) Thermal Comfort	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must attach the certificate referred to under "Assessor details" on the front page of this BASIX certificate (the "Assessor Certificate") to the development application and construction certificate application for the proposed development (or, if the applicant is applying for a complying development certificate for the proposed development, to that application). The applicant must also attach the Assessor Certificate to the application for a final occupation certificate for the proposed development.			
(b) The Assessor Certificate must have been issued by an Accredited Assessor in accordance with the Thermal Comfort Protocol.			
(c) The details of the proposed development on the Assessor Certificate must be consistent with the details shown in this BASIX Certificate, including the details shown in the "Thermal Loads" table below.			
(d) The applicant must show on the plans accompanying the development application for the proposed development, all matters which the Thermal Comfort Protocol requires to be shown on those plans. Those plans must bear a stamp of endorsement from the Accredited Assessor, to certify that this is the case.			
(e) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all thermal performance specifications set out in the Assessor Certificate, and all aspects of the proposed development which were used to calculate those specifications.			
(f) The applicant must construct the development in accordance with all thermal performance specifications set out in the Assessor Certificate, and in accordance with those aspects of the development application or application for a complying development certificate which were used to calculate those specifications.		✔	✔
(g) Where there is an in-slab heating or cooling system, the applicant must: (aa) Install insulation with an R-value of not less than 1.0 around the vertical edges of the perimeter of the slab; or (bb) On a suspended floor, install insulation with an R-value of not less than 1.0 underneath the slab and around the vertical edges of the perimeter of the slab.	✔	✔	✔
(h) The applicant must construct the floors and walls of the development in accordance with the specifications listed in the table below.	✔	✔	✔

	Thermal loads	
Dwelling no.	Area adjusted heating load (in mJ/m²/yr)	Area adjusted cooling load (in mJ/m²/yr)
1.01	52.0	42.0
1.02	44.0	19.0
1.03	45.0	22.0
2.01	37.0	17.0
2.02	39.0	35.0
2.03	52.0	41.0
2.04	40.0	25.0
3.01	31.0	21.0
3.03	49.0	51.0
3.04	38.0	29.0
3.06	39.0	23.0
4.01	37.0	13.0
4.02	43.0	24.0
4.03	55.0	30.0
4.04	44.0	16.0
4.05	47.0	16.0
5.01	58.0	14.0
5.02	66.0	19.0
5.03	56.0	29.0
5.04	45.0	15.0
5.05	62.0	18.0
5.08	65.0	12.0
6.01	43.0	18.0
6.02	51.0	17.0
6.04	56.0	23.0
6.05	59.0	22.0
6.07	50.0	16.0

	Thermal loads	
Dwelling no.	**Area adjusted heating load (in mJ/m²/yr)**	**Area adjusted cooling load (in mJ/m²/yr)**
6.08	47.0	14.0
7.03	48.0	17.0
7.04	52.0	24.0
7.06	53.0	31.0
7.07	62.0	22.0
8.03	46.0	18.0
8.04	51.0	25.0
8.06	54.0	28.0
8.07	65.0	27.0
9.02	45.0	29.0
9.03	44.0	24.0
9.04	50.0	24.0
10.01	57.0	23.0
10.02	48.0	19.0
10.04	63.0	33.0
2.05, 3.05	40.0	30.0
5.06, 9.01	43.0	17.0
5.07, 6.03	44.0	22.0
7.01, 8.01	43.0	19.0
7.02, 8.02	52.0	18.0
7.05, 8.05	53.0	17.0
All other dwellings	51.0	24.0

(b) Common areas and central systems/facilities

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a showerhead, toilet, tap or clothes washer into a common area, then that item must meet the specifications listed for it in the table.		✔	✔
(b) The applicant must install (or ensure that the development is serviced by) the alternative water supply system(s) specified in the "Central systems" column of the table below. In each case, the system must be sized, be configured, and be connected, as specified in the table.	✔	✔	✔
(c) A swimming pool or spa listed in the table must not have a volume (in kLs) greater than that specified for the pool or spa in the table.	✔	✔	
(d) A pool or spa listed in the table must have a cover or shading if specified for the pool or spa in the table.		✔	
(e) The applicant must install each fire sprinkler system listed in the table so that the system is configured as specified in the table.		✔	✔
(f) The applicant must ensure that the central cooling system for a cooling tower is configured as specified in the table.		✔	✔

Common area	Showerheads rating	Toilets rating	Taps rating	Clothes washers rating
All common areas	3 star (> 7.5 but <= 9 L/min)	4 star	4 star	no common laundry facility

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a ventilation system to service a common area specified in the table below, then that ventilation system must be of the type specified for that common area, and must meet the efficiency measure specified.		✔	✔
(b) In carrying out the development, the applicant must install, as the "primary type of artificial lighting" for each common area specified in the table below, the lighting specified for that common area. This lighting must meet the efficiency measure specified. The applicant must also install a centralised lighting control system or Building Management System (BMS) for the common area, where specified.		✔	✔
(c) The applicant must install the systems and fixtures specified in the "Central energy systems" column of the table below. In each case, the system or fixture must be of the type, and meet the specifications, listed for it in the table.	✔	✔	✔

	Common area ventilation system		Common area lighting		
Common area	**Ventilation system type**	**Ventilation efficiency measure**	**Primary type of artificial lighting**	**Lighting efficiency measure**	**Lighting control system/BMS**
Lift car (No. 3)	-	-	light-emitting diode	connected to lift call button	No
Lift car (No. 4)	-	-	light-emitting diode	connected to lift call button	No
Building 3 - Ground floor lobby (20%)	ventilation supply only	time clock or BMS controlled	compact fluorescent	none	No
Building 3 - Ground floor lobby (80%)	ventilation supply only	time clock or BMS controlled	compact fluorescent	motion sensors	No
Building 3 - Hallways	ventilation supply only	time clock or BMS controlled	compact fluorescent	zoned switching with motion sensor	No

Central energy systems	Type	Specification
Lift (No. 3)	gearless traction with V V V F motor	Number of levels (including basement): 9
Lift (No. 4)	gearless traction with V V V F motor	Number of levels (including basement): 11

3. Commitments for Residential flat buildings - Building 4

(a) Dwellings

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must plant indigenous or low water use species of vegetation throughout the area of land specified for the dwelling in the "Indigenous species" column of the table below, as private landscaping for that dwelling. (This area of indigenous vegetation is to be contained within the "Area of garden and lawn" for the dwelling specified in the "Description of Project" table).	✔	✔	
(c) If a rating is specified in the table below for a fixture or appliance to be installed in the dwelling, the applicant must ensure that each such fixture and appliance meets the rating specified for it.		✔	✔
(d) The applicant must install an on demand hot water recirculation system which regulates all hot water use throughout the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below.		✔	✔
(e) The applicant must install:			
(aa) a hot water diversion system to all showers, kitchen sinks and all basins in the dwelling, where indicated for a dwelling in the "HW recirculation or diversion" column of the table below; and		✔	✔
(bb) a separate diversion tank (or tanks) connected to the hot water diversion systems of at least 100 litres. The applicant must connect the hot water diversion tank to all toilets in the dwelling.		✔	✔
(e) The applicant must not install a private swimming pool or spa for the dwelling, with a volume exceeding that specified for it in the table below.	✔	✔	
(f) If specified in the table, that pool or spa (or both) must have a pool cover or shading (or both).		✔	
(g) The pool or spa must be located as specified in the table.	✔	✔	
(h) The applicant must install, for the dwelling, each alternative water supply system, with the specified size, listed for that dwelling in the table below. Each system must be configured to collect run-off from the areas specified (excluding any area which supplies any other alternative water supply system), and to divert overflow as specified. Each system must be connected as specified.	✔	✔	✔

	Fixtures					Appliances		Individual pool				Individual spa		
Dwelling no.	All shower-heads	All toilet flushing systems	All kitchen taps	All bathroom taps	HW recirculation or diversion	All clothes washers	All dish-washers	Volume (max volume)	Pool cover	Pool location	Pool shaded	Volume (max volume)	Spa cover	Spa shaded
All dwellings	3 star (> 7.5 but <= 9 L/min)	4 star	4 star	4 star	-	3 star	3 star	-	-	-	-	-	-	-

	Alternative water source							
Dwelling no.	Alternative water supply systems	Size	Configuration	Landscape connection	Toilet connection (s)	Laundry connection	Pool top-up	Spa top-up
None	-	-	-	-	-	-	-	-

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must install each hot water system specified for the dwelling in the table below, so that the dwelling's hot water is supplied by that system. If the table specifies a central hot water system for the dwelling, then the applicant must connect that central system to the dwelling, so that the dwelling's hot water is supplied by that central system.	✔	✔	✔
(c) The applicant must install, in each bathroom, kitchen and laundry of the dwelling, the ventilation system specified for that room in the table below. Each such ventilation system must have the operation control specified for it in the table.		✔	✔
(d) The applicant must install the cooling and heating system/s specified for the dwelling under the "Living areas" and "Bedroom areas" headings of the "Cooling" and "Heating" columns in the table below, in/for at least 1 living/bedroom area of the dwelling. If no cooling or heating system is specified in the table for "Living areas" or "Bedroom areas", then no systems may be installed in any such areas. If the term "zoned" is specified beside an air conditioning system, then the system must provide for day/night zoning between living areas and bedrooms.		✔	✔
(e) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Artificial lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that the "primary type of artificial lighting" for each such room in the dwelling is fluorescent lighting or light emitting diode (LED) lighting. If the term "dedicated" is specified for a particular room or area, then the light fittings in that room or area must only be capable of being used for fluorescent lighting or light emitting diode (LED) lighting.		✔	✔

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(f) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Natural lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that each such room or area is fitted with a window and/or skylight.	✔	✔	✔
(g) This commitment applies if the applicant installs a water heating system for the dwelling's pool or spa. The applicant must:			
(aa) install the system specified for the pool in the "Individual Pool" column of the table below (or alternatively must not install any system for the pool). If specified, the applicant must install a timer, to control the pool's pump; and		✔	
(bb) install the system specified for the spa in the "Individual Spa" column of the table below (or alternatively must not install any system for the spa). If specified, the applicant must install a timer to control the spa's pump.		✔	
(h) The applicant must install in the dwelling:			
(aa) the kitchen cook-top and oven specified for that dwelling in the "Appliances & other efficiency measures" column of the table below;		✔	
(bb) each appliance for which a rating is specified for that dwelling in the "Appliances & other efficiency measures" column of the table, and ensure that the appliance has that minimum rating; and		✔	✔
(cc) any clothes drying line specified for the dwelling in the "Appliances & other efficiency measures" column of the table.		✔	
(i) If specified in the table, the applicant must carry out the development so that each refrigerator space in the dwelling is "well ventilated".		✔	

	Hot water	Bathroom ventilation system		Kitchen ventilation system		Laundry ventilation system	
Dwelling no.	Hot water system	Each bathroom	Operation control	Each kitchen	Operation control	Each laundry	Operation control
All dwellings	central hot water system 1	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual switch on/off

	Cooling		Heating		Artificial lighting						Natural lighting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/ toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
3.01	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1	1	yes	yes	yes	yes	1	yes
6.04, 7.05	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	3	1	yes	yes	yes	yes	0	no
6.02, 7.02, 8.07, 9.03	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	3	1	yes	yes	yes	yes	0	yes
1.01, 2.02, 3.02, 4.04, 5.06, 9.06, 9.08	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	2	1	yes	yes	yes	yes	0	yes
3.05, 4.02, 5.04, 6.03, 7.03, 7.04, 8.01, 8.08, 9.04, 9.05	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	2	1	yes	yes	yes	yes	0	no

	Cooling		Heating		Artificial lighting						Natural lighting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/ toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
2.01, 5.03, 5.07, 6.08, 7.07, 7.08, 7.09, 8.04, 8.05, 9.01, 9.02, 9.07	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1	1	yes	yes	yes	yes	0	yes
1.02, 2.03, 3.03, 3.04, 4.01, 4.03, 4.05, 4.06, 5.01, 5.02, 5.05, 6.01, 6.05, 6.06, 6.07, 7.01, 8.02, 8.03, 8.06	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1-phase airconditioning 2.5 Star (new rating)	1	1	yes	yes	yes	yes	0	no

	Individual pool		Individual spa		Appliances & other efficiency measures							
Dwelling no.	Pool heating system	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Refrigerator	Well ventilated fridge space	Dishwasher	Clothes washer	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	gas cooktop & electric oven	-	yes	2.5 star	-	2 star	-	-

(iii) Thermal Comfort	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must attach the certificate referred to under "Assessor details" on the front page of this BASIX certificate (the "Assessor Certificate") to the development application and construction certificate application for the proposed development (or, if the applicant is applying for a complying development certificate for the proposed development, to that application). The applicant must also attach the Assessor Certificate to the application for a final occupation certificate for the proposed development.			
(b) The Assessor Certificate must have been issued by an Accredited Assessor in accordance with the Thermal Comfort Protocol.			
(c) The details of the proposed development on the Assessor Certificate must be consistent with the details shown in this BASIX Certificate, including the details shown in the "Thermal Loads" table below.			
(d) The applicant must show on the plans accompanying the development application for the proposed development, all matters which the Thermal Comfort Protocol requires to be shown on those plans. Those plans must bear a stamp of endorsement from the Accredited Assessor, to certify that this is the case.			
(e) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all thermal performance specifications set out in the Assessor Certificate, and all aspects of the proposed development which were used to calculate those specifications.			
(f) The applicant must construct the development in accordance with all thermal performance specifications set out in the Assessor Certificate, and in accordance with those aspects of the development application or application for a complying development certificate which were used to calculate those specifications.		✔	✔
(g) Where there is an in-slab heating or cooling system, the applicant must: (aa) Install insulation with an R-value of not less than 1.0 around the vertical edges of the perimeter of the slab; or (bb) On a suspended floor, install insulation with an R-value of not less than 1.0 underneath the slab and around the vertical edges of the perimeter of the slab.	✔	✔	✔
(h) The applicant must construct the floors and walls of the development in accordance with the specifications listed in the table below.	✔	✔	✔

	Thermal loads	
Dwelling no.	Area adjusted heating load (in mJ/m²/yr)	Area adjusted cooling load (in mJ/m²/yr)
1.01	46.0	50.0
1.02	49.0	15.0
2.01	63.0	30.0
2.03	42.0	21.0
3.01	51.0	34.0
3.03	38.0	19.0
3.04	56.0	44.0
3.05	53.0	46.0
4.01	65.0	23.0
4.04	45.0	11.0
5.01	60.0	29.0
5.04	45.0	10.0
5.07	34.0	59.0
6.01	54.0	15.0
6.02	36.0	12.0
6.04	50.0	18.0
6.06	41.0	31.0
6.08	35.0	31.0
7.02	35.0	11.0
7.08	41.0	13.0
7.09	66.0	23.0
8.02	59.0	15.0
8.03	54.0	17.0
8.04	39.0	35.0
8.05	47.0	16.0
8.06	43.0	16.0
8.07	51.0	29.0

	Thermal loads	
Dwelling no.	**Area adjusted heating load (in mJ/m²/yr)**	**Area adjusted cooling load (in mJ/m²/yr)**
9.01	52.0	20.0
9.02	64.0	13.0
9.03	66.0	26.0
9.04	58.0	41.0
9.05	66.0	16.0
9.06	57.0	17.0
9.08	56.0	29.0
2.02, 3.02	24.0	47.0
4.03, 5.03	26.0	41.0
4.05, 5.05	50.0	22.0
4.06, 5.06	58.0	31.0
6.03, 7.03	47.0	19.0
6.05, 9.07	60.0	30.0
6.07, 7.07	53.0	17.0
7.01, 8.01	59.0	20.0
7.05, 8.08	61.0	30.0
All other dwellings	52.0	18.0

(b) Common areas and central systems/facilities

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a showerhead, toilet, tap or clothes washer into a common area, then that item must meet the specifications listed for it in the table.		✔	✔
(b) The applicant must install (or ensure that the development is serviced by) the alternative water supply system(s) specified in the "Central systems" column of the table below. In each case, the system must be sized, be configured, and be connected, as specified in the table.	✔	✔	✔
(c) A swimming pool or spa listed in the table must not have a volume (in kLs) greater than that specified for the pool or spa in the table.	✔	✔	
(d) A pool or spa listed in the table must have a cover or shading if specified for the pool or spa in the table.		✔	
(e) The applicant must install each fire sprinkler system listed in the table so that the system is configured as specified in the table.		✔	✔
(f) The applicant must ensure that the central cooling system for a cooling tower is configured as specified in the table.		✔	✔

Common area	Showerheads rating	Toilets rating	Taps rating	Clothes washers rating
All common areas	3 star (> 7.5 but <= 9 L/min)	4 star	4 star	no common laundry facility

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a ventilation system to service a common area specified in the table below, then that ventilation system must be of the type specified for that common area, and must meet the efficiency measure specified.		✔	✔
(b) In carrying out the development, the applicant must install, as the "primary type of artificial lighting" for each common area specified in the table below, the lighting specified for that common area. This lighting must meet the efficiency measure specified. The applicant must also install a centralised lighting control system or Building Management System (BMS) for the common area, where specified.		✔	✔
(c) The applicant must install the systems and fixtures specified in the "Central energy systems" column of the table below. In each case, the system or fixture must be of the type, and meet the specifications, listed for it in the table.	✔	✔	✔

	Common area ventilation system		Common area lighting		
Common area	**Ventilation system type**	**Ventilation efficiency measure**	**Primary type of artificial lighting**	**Lighting efficiency measure**	**Lighting control system/BMS**
Lift car (No. 5)	-	-	light-emitting diode	connected to lift call button	No
Lift car (No. 6)	-	-	light-emitting diode	connected to lift call button	No
Building 4 - Ground floor lobby (20%)	ventilation supply only	time clock or BMS controlled	compact fluorescent	none	No
Building 4 - Ground floor lobby (80%)	ventilation supply only	time clock or BMS controlled	compact fluorescent	motion sensors	No
Building 4 - Hallways	ventilation supply only	time clock or BMS controlled	compact fluorescent	zoned switching with motion sensor	No

Central energy systems	Type	Specification
Lift (No. 5)	gearless traction with V V V F motor	Number of levels (including basement): 10
Lift (No. 6)	gearless traction with V V V F motor	Number of levels (including basement): 10

6. Commitments for common areas and central systems/facilities for the development (non-building specific)

(b) Common areas and central systems/facilities

(i) Water	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a showerhead, toilet, tap or clothes washer into a common area, then that item must meet the specifications listed for it in the table.		✔	✔
(b) The applicant must install (or ensure that the development is serviced by) the alternative water supply system(s) specified in the "Central systems" column of the table below. In each case, the system must be sized, be configured, and be connected, as specified in the table.	✔	✔	✔
(c) A swimming pool or spa listed in the table must not have a volume (in kLs) greater than that specified for the pool or spa in the table.	✔	✔	
(d) A pool or spa listed in the table must have a cover or shading if specified for the pool or spa in the table.		✔	
(e) The applicant must install each fire sprinkler system listed in the table so that the system is configured as specified in the table.		✔	✔
(f) The applicant must ensure that the central cooling system for a cooling tower is configured as specified in the table.		✔	✔

Common area	Showerheads rating	Toilets rating	Taps rating	Clothes washers rating
All common areas	3 star (> 7.5 but <= 9 L/min)	4 star	4 star	no common laundry facility

Central systems	Size	Configuration	Connection (to allow for...)
Central water tank - rainwater or stormwater (No. 1)	45000.0	To collect run-off from at least: - 758.0 square metres of roof area of buildings in the development - 0.0 square metres of impervious area in the development - 0.0 square metres of garden/lawn area in the development - 0.0 square metres of planter box area in the development (excluding, in each case, any area which drains to, or supplies, any other alternative water supply system).	- irrigation of 4000.0 square metres of common landscaped area on the site - car washing in 0 car washing bays on the site

Central systems	Size	Configuration	Connection (to allow for...)
Reticulated alternative water supply	-	Installation of plumbing to make provision for connection to No scheme found reticulated alternative water supply.	
Fire sprinkler system (No. 1)	-	-	-

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) If, in carrying out the development, the applicant installs a ventilation system to service a common area specified in the table below, then that ventilation system must be of the type specified for that common area, and must meet the efficiency measure specified.		✔	✔
(b) In carrying out the development, the applicant must install, as the "primary type of artificial lighting" for each common area specified in the table below, the lighting specified for that common area. This lighting must meet the efficiency measure specified. The applicant must also install a centralised lighting control system or Building Management System (BMS) for the common area, where specified.		✔	✔
(c) The applicant must install the systems and fixtures specified in the "Central energy systems" column of the table below. In each case, the system or fixture must be of the type, and meet the specifications, listed for it in the table.	✔	✔	✔

	Common area ventilation system		Common area lighting		
Common area	Ventilation system type	Ventilation efficiency measure	Primary type of artificial lighting	Lighting efficiency measure	Lighting control system/BMS
Gym	air conditioning system	time clock or BMS controlled	compact fluorescent	time clocks	No
Car park areas	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	fluorescent	zoned switching with motion sensor	No
Garbage rooms	ventilation exhaust only	-	fluorescent	motion sensors	No
Plant or service rooms	ventilation supply only	interlocked to light	fluorescent	manual on / manual off	No
Storage	ventilation supply only	interlocked to light	fluorescent	motion sensors	No
Bicycle	ventilation supply only	interlocked to light	fluorescent	motion sensors	No
Toilets - common area	ventilation exhaust only	interlocked to light	fluorescent	manual on / manual off	No
Post boxes	ventilation supply only	none ie. continuous	compact fluorescent	motion sensors	No
Cleaners room	ventilation supply only	interlocked to light	fluorescent	manual on / manual off	No
Game room	ventilation supply only	time clock or BMS controlled	compact fluorescent	time clock and motion sensors	No

	Common area ventilation system		Common area lighting		
Common area	**Ventilation system type**	**Ventilation efficiency measure**	**Primary type of artificial lighting**	**Lighting efficiency measure**	**Lighting control system/BMS**
Office / reception	air conditioning system	time clock or BMS controlled	compact fluorescent	time clock and motion sensors	No
Dinning room	ventilation supply only	time clock or BMS controlled	compact fluorescent	time clocks	No
Lobby - Heritage curtilage	ventilation supply only	time clock or BMS controlled	compact fluorescent	zoned switching with motion sensor	No
Nat ventilated hallways	no mechanical ventilation	-	compact fluorescent	zoned switching with motion sensor	No

Central energy systems	Type	Specification
Central hot water system (No. 1)	gas-fired boiler	Piping insulation (ringmain & supply risers): (a) Piping external to building: R0.6 (~25 mm); (b) Piping internal to building: R0.6 (~25 mm)

Notes

1. In these commitments, "applicant" means the person carrying out the development.
2. The applicant must identify each dwelling, building and common area listed in this certificate, on the plans accompanying any development application, and on the plans and specifications accompanying the application for a construction certificate / complying development certificate, for the proposed development, using the same identifying letter or reference as is given to that dwelling, building or common area in this certificate.
3. This note applies if the proposed development involves the erection of a building for both residential and non-residential purposes (or the change of use of a building for both residential and non-residential purposes). Commitments in this certificate which are specified to apply to a "common area" of a building or the development, apply only to that part of the building or development to be used for residential purposes.
4. If this certificate lists a central system as a commitment for a dwelling or building, and that system will also service any other dwelling or building within the development, then that system need only be installed once (even if it is separately listed as a commitment for that other dwelling or building).
5. If a star or other rating is specified in a commitment, this is a minimum rating.
6. All alternative water systems to be installed under these commitments (if any), must be installed in accordance with the requirements of all applicable regulatory authorities. NOTE: NSW Health does not recommend that stormwater, recycled water or private dam water be used to irrigate edible plants which are consumed raw, or that rainwater be used for human consumption in areas with potable water supply.

Legend

1. Commitments identified with a "✔" in the "Show on DA plans" column must be shown on the plans accompanying the development application for the proposed development (if a development application is to be lodged for the proposed development).
2. Commitments identified with a "✔" in the "Show on CC/CDC plans and specs" column must be shown in the plans and specifications accompanying the application for a construction certificate / complying development certificate for the proposed development.
3. Commitments identified with a "✔" in the "Certifier check" column must be certified by a certifying authority as having been fulfilled. (Note: a certifying authority must not issue an occupation certificate (either interim or final) for a building listed in this certificate, or for any part of such a building, unless it is satisfied that each of the commitments whose fulfilment it is required to monitor in relation to the building or part, has been fulfilled).