



efficient  
LIVING

## NatHERS and BASIX Assessment



### Modularium Proposed Residential Development

To be built at 195-197 Sydney Rd, FAIRLIGHT NSW

Issue	File Ref	Description	Author	Date
A	18-1017	NatHERS and BASIX Assessment	DH/JC	12/10/18

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



**Sustainable Building Consultants**

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[www.efficientliving.com.au](http://www.efficientliving.com.au)



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Email: [daniel@efficientliving.com.au](mailto:daniel@efficientliving.com.au)

**License Holder:** Tracey Cools

Accreditation Number: VIC/BDAV/12/1473

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**Prepared For:**

Modularium	67/168 Goulburn St
Marko Damic	SYDNEY NSW 2010
mdamic@modularium.org	0414 755 620

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**Introduction**

Efficient Living has investigated the estimated thermal comfort, water and energy usage of the proposed development to be built at 195-197 Sydney Rd, FAIRLIGHT.

Heating and cooling loads for the development have been determined using BERS Pro Plus 4.3 thermal comfort simulation software. The report is based on the architectural drawings provided by Modularium. For further details, refer to the individual BASIX certificates(s) and Efficient Living's inclusions summary respectively.

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**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 pass or fail is required for the thermal comfort section and a minimum required target of 25% for the energy section.

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**Water**

The proposed development has achieved the BASIX Water target of 50%.

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 can have a significant impact on your water score as does the area of gardens and lawns and whether or not low water plant species are incorporated.

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**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 Pro Plus V4.3 thermal comfort simulation software. This calculates the expected level of energy required to heat and cool each dwelling per annum, expressed in MJ (megajoules) per square meter of floor area.



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Each unit has individual heating and cooling caps applied. Accompanying these individual caps are average heating and cooling caps applied to the whole development. The average caps are lower, or harder to comply with, than the individual unit caps.

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## Energy

The proposed development has achieved the energy target of 32% 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.

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## Thermal Comfort Inclusions

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### Glazing Doors/Windows

Timber or uPVC double clear glazing:

Sliding doors/windows + fixed glazing + louvres windows

U-Value: 2.30 (equal to or lower than) SHGC: 0.32 ( $\pm 10\%$ )

Given values are AFRC, total window system values (glass and frame)

NOTE: Openability modelled as per BASIX Thermal Protocol - 4.14.2 and NatHERS Technical Note 1.2 - 10.11 with regard to restricted openings.

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### Roof

Metal roof construction

Metal roof construction with roof-top gardens/green roof above

### External Colour

Default colour modelled

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### Ceiling

Plasterboard ceiling, R2.5 insulation (insulation only value) to all ceiling spaces

### Ceiling Penetrations

Loss of ceiling insulation has been accounted for in accordance with BASIX Thermal Protocol 4.13.1 and NatHERS Technical Note 1.2



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### External Wall

Metal external wall surface, internally lined with studwork framed walls with a minimum R2.5 insulation (insulation only value) and plasterboard lining

### External Colour

Light colour modelled

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### Inter tenancy walls

Double studwork cavity, with R2.5 insulation to each stud (insulation only value) and plasterboard lining internally.

Minimum 150mm concrete with furring channel with R2.5 insulation (insulation only value) and plasterboard lining to all walls adjacent to lift shafts and fire stairs.

### Walls within dwellings

Plasterboard on studs - no insulation

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### Floors

Floating timber floor construction with R2.5 insulation (insulation only value) above metal external layer above concrete garage roof structure below.

Floating timber floor construction with R2.5 insulation (insulation only value) between neighbouring unit floors.

### Floor coverings

Default floor coverings modelled as per NatHERS Technical Note 1.2 - 10.5

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### BASIX water inclusions

Score 50/40

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### Fixtures within units

Showerheads: Mid flow (>4.5L but <=6 L/min)

Toilets: 4.0 star WELS rating

Kitchen taps: 5.0 star WELS rating

Bathroom vanity taps: 5.0 star WELS rating

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### Fixtures within common areas

Toilets: 4.0 star WELS rating

Taps: 5.0 star WELS rating



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### Appliances within units

Not provided

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### Appliances within communal space

Clotheswashers: 4.0 star WELS rating

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### Central rainwater storage

Tank size: 5,000L

Collecting from 364m<sup>2</sup> roof area (50%)

Connected to outdoor tap for irrigation of landscaping common and private and car washing bay

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### Fire sprinkler test water

Fire sprinkler test water must be contained in a closed loop system

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### Indigenous and low water use species

A minimum of 450m<sup>2</sup> (50%) of garden area to be indigenous or low water use species

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## BASIX energy inclusions

Score 35/25

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### Hot water system

Central gas-fired boiler with R1.0(~38mm) insulation to ring main and supply risers

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### Lift motors

All lifts to have gearless traction with VVVF motor

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### Appliances & other efficiency measures within units

Gas cooktop & electric oven

Dishwashers: Not provided within units



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Clothes dryers: Not provided within units

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### **Heating and cooling within units**

Apartments are provided with no active heating or cooling systems

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### **Artificial lighting within units**

All units are to have dedicated LED fixtures installed

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### **Appliances within communal space**

Clothes washers: 4.0 star energy rating

Clothes dryers: 3.5 star energy rating

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### **Ventilation within units**

Bathroom - Individual fan, ducted to roof or facade - manual on / manual off switch

Laundry - No laundry provided within units

Kitchen range hood - Individual fan, recirculating - manual on / manual off switch

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### **Ventilation to common areas**

Car park entry area - naturally ventilated

Car park area - supply & exhaust air with a carbon monoxide monitor & VSD fan

Garbage rooms - exhaust air, running continuously

Plant/storage - naturally ventilated / no mechanical ventilation

Bulky goods store - naturally ventilated / no mechanical ventilation

Communal room - naturally ventilated / no mechanical ventilation

Main plant - no mechanical ventilation

BOH - no mechanical ventilation

Fire hydrant pump room - no mechanical ventilation

Reception / café - ventilation supply only, time clock or BMS controlled

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### **Artificial lighting to common areas**

Car park entry area - LED lights, zoned switching with motion sensors

Car park area - LED lights, zoned switching with motion sensors

Garbage rooms - LED lights, with motion sensors

Plant/storage - LED lights, with motion sensors

Bulky goods store - LED lights, with motion sensors

Communal room - LED lights, zoned switching with motion sensors

Main plant - LED lights, with motion sensors

BOH - LED lights, with motion sensors

Fire hydrant pump room - LED lights, with motion sensors

Reception / café - LED lights, on time clocks

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### **Alternative energy**

No BASIX requirement for alternative energy

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Issued in accordance with BASIX Thermal Comfort Simulation Method

Certificate # 0003246690						Accreditation # VIC/BDAVI/12/1473
Thermal performance specifications						
Unit Numbers	Floor area (M <sup>2</sup> )		Predict. loads (MJ/M <sup>2</sup> /y)		Star Rating	Thermal Comfort Upgrades
	Con.	Uncon.	Heat	Cool (Sens & Lat)		
A-101	23.5	0	19.6	25.1	6.5	None
A-102	22.4	0	17.9	28.8	6.4	None
A-103	22.3	0	19.3	28.2	6.3	None
A-104	22.3	0	18.3	28.8	6.4	None
A-105	22.4	0	18.9	29.5	6.3	None
A-106	22.4	0	26.5	27.7	5.8	None
A-107	26.4	0	33.5	15.9	6.2	None
A-108	18.6	0	26.3	27.3	5.9	None
A-109	18.7	0	33	23.8	5.6	None
A-110	27.2	0	28	17.2	6.4	None
A-201	23.5	0	20.6	29.4	6.1	None
A-202	22.4	0	18.7	29.1	6.3	None
A-203	22.3	0	18.6	27.5	6.4	None
A-204	22.3	0	16.8	29.3	5.9	None
A-205	22.4	0	16.7	29.2	6.4	None
A-206	23.5	0	44.6	27	4.7	None
A-207	24.1	0	37.6	27.8	5.1	None
A-208	18.6	0	34.8	23.3	5.4	None
A-209	18.7	0	40.6	22.1	5.3	None
A-210	24.3	0	39.1	23.6	5.3	None
A-301	23.5	0	21.9	29	6	None
A-302	22.3	0	19	26.4	6.4	None
A-303	22.3	0	28.4	27.7	5.7	None
A-304	22.3	0	29.6	25.7	5.7	None
A-305	22.3	0	18.1	24.8	6.7	None
A-306	23.5	0	29	27.6	5.6	None
A-307	24.1	0	40.5	19.9	5.4	None
A-308	18.6	0	35.2	22.6	5.5	None
A-309	18.6	0	41.1	21.6	5.3	None
A-310	24.3	0	37.5	25.5	5.2	None
A-401	19.6	0	26.1	26.2	5.9	None
A-402	18.4	0	26.4	27.7	5.8	None
A-403	18.4	0	36.4	25.5	5.3	None
A-404	19.6	0	22.5	25.8	6.3	None
A-405	24.1	0	45.1	22.2	4.9	None
A-406	18.7	0	37.3	22.4	5.4	None



Issued in accordance with BASIX Thermal Comfort Simulation Method

Certificate # 0003246690						Accreditation # VIC/BDAVI/12/1473
Thermal performance specifications						
Unit Numbers	Floor area (M <sup>2</sup> )		Predict. loads (MJ/M <sup>2</sup> /y)		Star Rating	Thermal Comfort Upgrades
	Con.	Uncon.	Heat	Cool (Sens & Lat)		
A-407	18.7	0	33.5	22.7	5.7	None
A-408	24.3	0	38.8	26	5.1	None
B-201	23.2	0	18.4	25	6.7	None
B-202	22.3	0	22.1	26.9	6.2	None
B-203	22.3	0	22.1	26.9	6.2	None
B-204	22.3	0	27.1	27.5	5.8	None
B-205	22.3	0	24.3	27.9	5.9	None
B-206	22.3	0	22.1	26.9	6.2	None
B-207	22.3	0	25.7	24.7	6.1	None
B-301	22.3	0	17.6	28.7	6.4	None
B-302	22.3	0	18.9	28.1	6.4	None
B-303	22.3	0	18.9	28.1	6.4	None
B-304	22.3	0	24.2	27	5.9	None
B-305	22.3	0	21.7	27.4	6.2	None
B-306	22.3	0	18.9	28.1	6.4	None
B-307	22.3	0	37.7	23.3	5.4	None
B-308	26.4	0	26.8	22.4	6.2	None
B-309	18.6	0	22.3	26.7	6.2	None
B-310	18.6	0	30.1	22.2	5.9	None
B-311	26.8	0	34.5	18.9	5.9	None
B-401	22.3	0	20.8	22.8	6.7	None
B-402	22.3	0	22.1	24.7	6.4	None
B-403	22.3	0	22.1	24.7	6.4	None
B-404	22.3	0	29.5	26.5	5.7	None
B-405	22.3	0	27	26.3	5.9	None
B-406	22.3	0	22.1	24.7	6.4	None
B-407	23.2	0	42.6	21.4	5.2	None
B-408	18.6	0	30.2	24	5.8	None
B-409	18.6	0	36.2	22.7	5.4	None
B-501	23.6	0	34.6	28.5	5.2	None
B-502	18.7	0	26.5	23.1	6.2	None
B-503	18.6	0	39.5	21.8	5.3	None
B-504	23.6	0	43.7	22.9	4.9	None
B-505	25.8	0	45.4	23.8	4.9	None
B-506	24	0	25.5	28.3	5.8	None
B-507	18.6	0	40.1	22	5.3	None

Issued in accordance with BASIX Thermal Comfort Simulation Method

Certificate # 0003246690		Accreditation # VIC/BDAVI/12/1473				
Thermal performance specifications						
Unit Numbers	Floor area (M <sup>2</sup> )		Predict. loads (MJ/M <sup>2</sup> /y)		Star Rating	Thermal Comfort Upgrades
	Con.	Uncon.	Heat	Cool (Sens & Lat)		
B-508	18.6	0	42.5	20.1	5.3	None
B-509	24	0	25.5	28.3	5.8	None
B-510	25.6	0	45	21.5	4.9	None

# Nationwide House Energy Rating Scheme\* — Class 2 summary



Certificate number: **0003246690**

Certificate Date: **12 Oct 2018**

★ Average Star rating: **5.9**

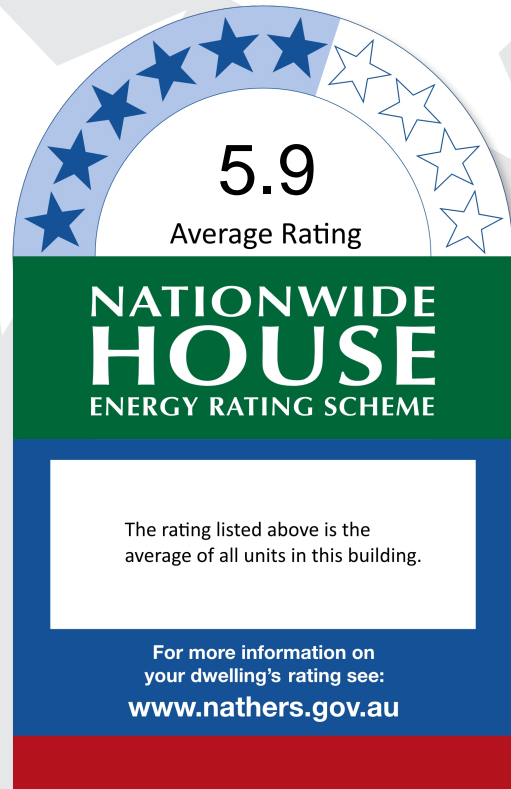
## Assessor details

Accreditation number: **VIC/BDAV/12/1473**  
Name: **Tracey Cools**  
Organisation: **Efficient Living**  
Email: **admin@efficientliving.com.au**  
Phone: **(02) 9970 6181**  
Declaration of interest: **None**  
Software: **BERS Pro v4.3.0.2c (3.13)**  
  
AAO: **BDAV**

## Dwelling details

Street: **195-197 Sydney Road**  
Suburb: **Fairlight**  
State: **NSW**  
Postcode: **2094**

Scan to access this certificate online and confirm this is valid.



## Summary of all dwellings

### Certificate Details

Certificate number	Unit number	Heating load	Cooling load	Total load	Star Rating
0003246642	A101	19.6	25.1	44.8	6.5
0003246659	A102	17.5	30.9	48.4	6.3
0003246634	A103	19.3	28.2	47.5	6.3
0003245883	A104	18.3	28.8	47.0	6.4
0003245909	A105	18.9	29.5	48.4	6.3
0003245933	A106	26.5	27.7	54.2	5.8
0003245966	A107	33.5	15.9	49.3	6.2
0003245990	A108	26.3	27.3	53.6	5.9
0003246022	A109	33.0	23.8	56.8	5.6
0003246055	A110	28.0	17.2	45.1	6.4
0003246105	A201	20.6	29.4	50.0	6.1
0003246113	A202	18.7	29.1	47.8	6.3
0003246154	A203	18.6	27.5	46.1	6.4
0003246170	A204	16.8	29.3	46.1	6.4
0003246204	A205	16.7	29.2	45.9	6.4

# Nationwide House Energy Rating Scheme\* - Class 2 summary



Certificate number: **0003246690**

Certificate Date:

**12 Oct 2018**

★ Average Star rating: **5.9**

## Summary of all dwellings continued

### Certificate Details

Certificate number	Unit number	Heating load	Cooling load	Total load	Star Rating
0003246253	A206	44.6	27.0	71.6	4.7
0003246261	A207	37.6	27.8	65.3	5.1
0003246295	A208	34.8	23.3	58.1	5.4
0003246329	A209	40.6	22.1	62.7	5.3
0003246352	A210	39.1	23.6	62.7	5.3
0003246386	A301	21.9	29.0	51.0	6
0003246428	A302	19.0	26.4	45.4	6.4
0003246451	A303	28.4	27.7	56.1	5.7
0003246493	A304	29.6	25.7	55.3	5.7
0003246519	A305	18.1	24.8	43.0	6.7
0003246550	A306	29.0	27.6	56.7	5.6
0003246584	A307	40.5	19.9	60.4	5.4
0003245891	A308	35.2	22.6	57.8	5.5
0003245917	A309	41.1	21.6	62.7	5.3
0003245941	A310	37.5	25.5	63.0	5.2
0003245974	A401	26.1	26.2	52.3	5.9
0003246014	A402	26.4	27.7	54.1	5.8
0003246030	A403	36.4	25.5	61.9	5.3
0003246063	A404	22.5	25.8	48.3	6.3
0003246089	A405	45.1	22.2	67.3	4.9
0003246121	A406	37.3	22.4	59.7	5.4
0003246147	A407	33.5	22.7	56.2	5.7
0003246196	A408	38.8	26.0	64.8	5.1
0003246212	B201	18.4	25.0	43.3	6.7
0003246246	B202	22.1	26.9	49.0	6.2
0003246287	B203	22.1	26.9	49.0	6.2
0003246311	B204	27.1	27.5	54.6	5.8
0003246337	B205	24.3	27.9	52.2	5.9
0003246378	B206	22.1	26.9	49.0	6.2
0003246394	B207	25.7	24.7	50.4	6.1
0003246410	B301	17.6	28.7	46.3	6.4
0003246444	B302	18.9	28.1	47.0	6.4
0003246477	B303	18.9	28.1	47.0	6.4
0003246501	B304	24.2	27.0	51.2	5.9
0003246535	B305	21.7	27.4	49.1	6.2
0003246568	B306	18.9	28.1	47.0	6.4
0003245875	B307	37.7	23.3	60.9	5.4
0003245925	B308	26.8	22.4	49.2	6.2
0003245958	B309	22.3	26.7	49.0	6.2
0003245982	B310	30.1	22.2	52.3	5.9
0003246006	B311	34.5	18.9	53.4	5.9
0003246048	B401	20.8	22.8	43.6	6.7
0003246071	B402	22.1	24.7	46.7	6.4

## Nationwide House Energy Rating Scheme\* - Class 2 summary

Certificate number: **0003246690**

Certificate Date:

**12 Oct 2018**

★ Average Star rating: **5.9**



### Summary of all dwellings continued

#### Certificate Details

Certificate number	Unit number	Heating load	Cooling load	Total load	Star Rating
0003246097	B403	22.1	24.7	46.7	6.4
0003246139	B404	29.5	26.5	55.9	5.7
0003246162	B405	27.0	26.3	53.3	5.9
0003246188	B406	22.1	24.7	46.7	6.4
0003246220	B407	42.6	21.4	64.0	5.2
0003246238	B408	30.2	24.0	54.2	5.8
0003246279	B409	36.2	22.7	58.9	5.4
0003246303	B501	34.6	28.5	63.2	5.2
0003246345	B502	26.5	23.1	49.6	6.2
0003246360	B503	39.5	21.8	61.3	5.3
0003246402	B504	43.7	22.9	66.6	4.9
0003246436	B505	45.4	23.8	69.2	4.9
0003246469	B506	25.5	28.3	53.8	5.8
0003246485	B507	40.1	22.0	62.1	5.3
0003246527	B508	42.5	20.1	62.7	5.3
0003246543	B509	25.5	28.3	53.8	5.8
0003246576	B510	45.0	21.5	66.5	4.9

# BASIX<sup>®</sup>Certificate

Building Sustainability Index [www.basix.nsw.gov.au](http://www.basix.nsw.gov.au)

## Multi Dwelling

Certificate number: 968134M

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 06/10/2017 published by the Department. This document is available at [www.basix.nsw.gov.au](http://www.basix.nsw.gov.au)

Secretary

Date of issue: Friday, 12 October 2018

To be valid, this certificate must be lodged within 3 months of the date of issue.






Project summary		
Project name	195-197 Sydney Road	
Street address	195-197 Sydney Road FAIRLIGHT 2094	
Local Government Area	Northern Beaches Council	
Plan type and plan number	deposited 589654	
Lot no.	2	
Section no.	-	
No. of residential flat buildings	1	
No. of units in residential flat buildings	75	
No. of multi-dwelling houses	0	
No. of single dwelling houses	0	
Project score		
Water	✔ 50	Target 40
Thermal Comfort	✔ Pass	Target Pass
Energy	✔ 35	Target 25

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

# Description of project

Project address	
Project name	195-197 Sydney Road
Street address	195-197 Sydney Road FAIRLIGHT 2094
Local Government Area	Northern Beaches Council
Plan type and plan number	deposited 589654
Lot no.	2
Section no.	-
Project type	
No. of residential flat buildings	1
No. of units in residential flat buildings	75
No. of multi-dwelling houses	0
No. of single dwelling houses	0
Site details	
Site area (m <sup>2</sup> )	1789
Roof area (m <sup>2</sup> )	729
Non-residential floor area (m <sup>2</sup> )	28.0
Residential car spaces	40
Non-residential car spaces	1

Common area landscape		
Common area lawn (m <sup>2</sup> )	55.0	
Common area garden (m <sup>2</sup> )	900.0	
Area of indigenous or low water use species (m <sup>2</sup> )	450.0	
Assessor details		
Assessor number	BDAV/12/1473	
Certificate number	0003246690	
Climate zone	56	
Project score		
Water	 50	Target 40
Thermal Comfort	 Pass	Target Pass
Energy	 35	Target 25

## Description of project

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

### Residential flat buildings - 195-197 Sydney Road, 75 dwellings, 6 storeys above ground

Dwelling no.	No. of bedrooms	Conditioned floor area (m <sup>2</sup> )	Unconditioned floor area (m <sup>2</sup> )	Area of garden & lawn (m <sup>2</sup> )	Indigenous species (min area m <sup>2</sup> )
A101	1	23.5	0.0	0.0	0.0
A105	1	22.4	0.0	0.0	0.0
A109	1	18.7	0.0	0.0	0.0
A203	1	22.3	0.0	0.0	0.0
A207	1	24.1	0.0	0.0	0.0
A301	1	23.5	0.0	0.0	0.0
A305	1	22.3	0.0	0.0	0.0
A309	1	18.6	0.0	0.0	0.0
A403	1	18.4	0.0	0.0	0.0
A407	1	18.7	0.0	0.0	0.0
B203	1	22.3	0.0	0.0	0.0
B207	1	22.3	0.0	0.0	0.0
B304	1	22.3	0.0	0.0	0.0
B308	1	26.4	0.0	0.0	0.0
B401	1	22.3	0.0	0.0	0.0
B405	1	22.3	0.0	0.0	0.0
B409	1	18.6	0.0	0.0	0.0
B504	1	23.6	0.0	0.0	0.0
A102	1	22.4	0.0	0.0	0.0
A106	1	22.4	0.0	0.0	0.0
A110	1	27.2	0.0	0.0	0.0
A204	1	22.3	0.0	0.0	0.0
A208	1	18.6	0.0	0.0	0.0
A302	1	22.3	0.0	0.0	0.0
A306	1	23.5	0.0	0.0	0.0
A310	1	24.3	0.0	0.0	0.0
A404	1	19.6	0.0	0.0	0.0
A408	1	24.3	0.0	0.0	0.0
B204	1	22.3	0.0	0.0	0.0
B301	1	22.3	0.0	0.0	0.0
B305	1	22.3	0.0	0.0	0.0
B309	1	18.6	0.0	0.0	0.0
B402	1	22.3	0.0	0.0	0.0
B406	1	22.3	0.0	0.0	0.0
B501	1	23.6	0.0	0.0	0.0
B505	1	25.8	0.0	0.0	0.0
A103	1	22.3	0.0	0.0	0.0
A107	1	26.4	0.0	0.0	0.0
A201	1	23.5	0.0	0.0	0.0
A205	1	22.4	0.0	0.0	0.0
A209	1	18.7	0.0	0.0	0.0
A303	1	22.3	0.0	0.0	0.0
A307	1	24.1	0.0	0.0	0.0
A401	1	19.6	0.0	0.0	0.0
A405	1	24.1	0.0	0.0	0.0
B201	1	23.2	0.0	0.0	0.0
B205	1	22.3	0.0	0.0	0.0
B302	1	22.3	0.0	0.0	0.0
B306	1	22.3	0.0	0.0	0.0
B310	1	18.6	0.0	0.0	0.0
B403	1	22.3	0.0	0.0	0.0
B407	1	23.2	0.0	0.0	0.0
B502	1	18.7	0.0	0.0	0.0
B506	1	24.0	0.0	0.0	0.0
A104	1	22.3	0.0	0.0	0.0
A108	1	18.6	0.0	0.0	0.0
A202	1	22.4	0.0	0.0	0.0
A206	1	23.5	0.0	0.0	0.0
A210	1	24.3	0.0	0.0	0.0
A304	1	22.3	0.0	0.0	0.0
A308	1	18.6	0.0	0.0	0.0
A402	1	18.4	0.0	0.0	0.0
A406	1	18.7	0.0	0.0	0.0
B202	1	22.3	0.0	0.0	0.0
B206	1	22.3	0.0	0.0	0.0
B303	1	22.3	0.0	0.0	0.0
B307	1	22.3	0.0	0.0	0.0
B311	1	26.8	0.0	0.0	0.0
B404	1	22.3	0.0	0.0	0.0
B408	1	18.6	0.0	0.0	0.0
B503	1	18.6	0.0	0.0	0.0
B507	1	18.6	0.0	0.0	0.0



Dwelling no.	No. of bedrooms	Conditioned floor area (m <sup>2</sup> )	Unconditioned floor area (m <sup>2</sup> )	Area of garden & lawn (m <sup>2</sup> )	Indigenous species (min area m <sup>2</sup> )
B508	1	18.6	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m <sup>2</sup> )	Unconditioned floor area (m <sup>2</sup> )	Area of garden & lawn (m <sup>2</sup> )	Indigenous species (min area m <sup>2</sup> )
B509	1	24.0	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m <sup>2</sup> )	Unconditioned floor area (m <sup>2</sup> )	Area of garden & lawn (m <sup>2</sup> )	Indigenous species (min area m <sup>2</sup> )
B510	1	25.6	0.0	0.0	0.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m <sup>2</sup> )	Unconditioned floor area (m <sup>2</sup> )	Area of garden & lawn (m <sup>2</sup> )	Indigenous species (min area m <sup>2</sup> )

## Description of project

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

### Common areas of unit building - 195-197 Sydney Road

Common area	Floor area (m <sup>2</sup> )
Car Park Area	1000.0
Lift car (No.2)	-
Communal Room	91.0
Plant / Storage	24.0

Common area	Floor area (m <sup>2</sup> )
Car Park Entry Area	430.0
BOH	5.0
Main Plant	100.0
Bulky Goods Store	18.0

Common area	Floor area (m <sup>2</sup> )
Lift car (No.1)	-
Garbage Room	30.0
Fire Hydrant Pump Room	29.0
Reception / Cafe	28.0

# Schedule of BASIX commitments

## 1. Commitments for Residential flat buildings - 195-197 Sydney Road

### (a) Dwellings

- (i) Water
- (ii) Energy
- (iii) Thermal Comfort

### (b) Common areas and central systems/facilities

- (i) Water
- (ii) Energy

## 2. Commitments for multi-dwelling houses

## 3. Commitments for single dwelling houses

## 4. 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 - 195-197 Sydney Road

#### (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: <ul style="list-style-type: none"> <li>(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</li> <li>(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.</li> </ul>		✓ ✓	✓ ✓
(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.	✓	✓	✓

Dwelling no.	Fixtures					Appliances		Individual pool				Individual spa		
	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 (> 4.5 but <= 6 L/min)	4 star	5 star	5 star	no	no washing machine taps	-	-	-	-	-	-	-	-

Dwelling no.	Alternative water source							
	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".		✓	

Dwelling no.	Hot water	Bathroom ventilation system		Kitchen ventilation system		Laundry ventilation system	
	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, not ducted	manual switch on/off	natural ventilation only, or no laundry	-

Dwelling no.	Cooling		Heating		Artificial lighting					Natural lighting		
	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
All dwellings	-	-			1 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no

Dwelling no.	Individual pool		Individual spa		Appliances & other efficiency measures							
	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	-	no	-	no washing machine taps	-	-	-

(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.	✓	✓	✓

Dwelling no.	Thermal loads	
	Area adjusted heating load (in mJ/m <sup>2</sup> /yr)	Area adjusted cooling load (in mJ/m <sup>2</sup> /yr)
A101	19.6	25.1
A102	17.9	28.8
A103	19.3	28.2
A104	18.3	28.8
A105	18.9	29.5
A106	26.5	27.7
A107	33.5	15.9
A108	26.3	27.3
A109	33.0	23.8
A110	28.0	17.2
A201	20.6	29.4
A202	18.7	29.1
A203	18.6	27.5
A204	16.8	29.3
A205	16.7	29.2
A206	44.6	27.0
A207	37.6	27.8
A208	34.8	23.3
A209	40.6	22.1
A210	39.1	23.6
A301	21.9	29.0
A302	19.0	26.4
A303	28.4	27.7
A304	29.6	25.7
A305	18.1	24.8
A306	29.0	27.6
A307	40.5	19.9



Dwelling no.	Thermal loads	
	Area adjusted heating load (in mJ/m <sup>2</sup> /yr)	Area adjusted cooling load (in mJ/m <sup>2</sup> /yr)
A308	35.2	22.6
A309	41.1	21.6
A310	37.5	25.5
A401	26.1	26.2
A402	26.4	27.7
A403	36.4	25.5
A404	22.5	25.8
A405	45.1	22.2
A406	37.3	22.4
A407	33.5	22.7
A408	38.8	26.0
B201	18.4	25.0
B204	27.1	27.5
B205	24.3	27.9
B207	25.7	24.7
B301	17.6	28.7
B304	24.2	27.0
B305	21.7	27.4
B307	37.7	23.3
B308	26.8	22.4
B309	22.3	26.7
B310	30.1	22.2
B311	34.5	18.9
B401	20.8	22.8
B404	29.5	26.5
B405	27.0	26.3
B407	42.6	21.4

Dwelling no.	Thermal loads	
	Area adjusted heating load (in mJ/m <sup>2</sup> /yr)	Area adjusted cooling load (in mJ/m <sup>2</sup> /yr)
B408	30.2	24.0
B409	36.2	22.7
B501	34.6	28.5
B502	26.5	23.1
B503	39.5	21.8
B504	43.7	22.9
B505	45.4	23.8
B507	40.1	22.0
B508	42.5	20.1
B510	45.0	21.5
B506, B509	25.5	28.3
B202, B203, B206	22.1	26.9
B302, B303, B306	18.9	28.1
All other dwellings	22.1	24.7

**(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 (> 4.5 but ≤ 6 L/min)	4 star	5 star	4 star

Central systems	Size	Configuration	Connection (to allow for...)
Central water tank - rainwater or stormwater (No. 1)	5000.0	To collect run-off from at least: - 364.0 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 900.0 square metres of common landscaped area on the site - car washing in 1 car washing bays on the site
Fire sprinkler system (No. 1)	-	So that fire sprinkler test water is contained within the fire sprinkler system for re-use, rather than disposed.	-

<b>(ii) Energy</b>	<b>Show on DA plans</b>	<b>Show on CC/CDC plans &amp; specs</b>	<b>Certifier check</b>
(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.	✔	✔	✔

	<b>Common area ventilation system</b>		<b>Common area lighting</b>		
<b>Common area</b>	<b>Ventilation system type</b>	<b>Ventilation efficiency measure</b>	<b>Primary type of artificial lighting</b>	<b>Lighting efficiency measure</b>	<b>Lighting control system/BMS</b>
Car Park Area	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	light-emitting diode	zoned switching with motion sensor	Yes
Car Park Entry Area	no mechanical ventilation	-	light-emitting diode	zoned switching with motion sensor	Yes
Lift car (No.1)	-	-	light-emitting diode	connected to lift call button	Yes
Lift car (No.2)	-	-	light-emitting diode	connected to lift call button	Yes
BOH	no mechanical ventilation	-	light-emitting diode	motion sensors	Yes
Garbage Room	ventilation exhaust only	-	light-emitting diode	motion sensors	Yes
Communal Room	no mechanical ventilation	-	light-emitting diode	zoned switching with motion sensor	Yes
Main Plant	no mechanical ventilation	-	light-emitting diode	motion sensors	Yes
Fire Hydrant Pump Room	ventilation supply only	interlocked to light	light-emitting diode	motion sensors	Yes
Plant / Storage	no mechanical ventilation	-	light-emitting diode	motion sensors	Yes
Bulky Goods Store	no mechanical ventilation	-	light-emitting diode	motion sensors	Yes
Reception / Cafe	ventilation supply only	time clock or BMS controlled	light-emitting diode	time clocks	Yes

Central energy systems	Type	Specification
Central hot water system (No. 1)	gas-fired boiler	Piping insulation (ringmain & supply risers): (b) Piping internal to building: R1.0 (~38 mm)
Lift (No. 1)	gearless traction with V V V F motor	Number of levels (including basement): 5
Lift (No. 2)	gearless traction with V V V F motor	Number of levels (including basement): 6

#### 4. 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 (> 4.5 but ≤ 6 L/min)	4 star	5 star	4 star

(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.	✓	✓	✓

Central energy systems	Type	Specification
Other	Building management system installed?: yes Common area clothes drying line installed?: yes Common area electric/gas clothes dryer rating: 3.5 star Common area clothes washer rating: 4 star	-

## 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).