efficient LIVING

NatHERS and BASIX Assessment

Mirvac
Proposed Residential Development

To be built at **Western Sydney University, Milperra Site 01**

2, Bullecourt Avenue, Milperra NSW 2214

Issue	File Ref	Description	Author	Date
A	24-5716R	NatHERS Thermal Comfort and BASIX Assessment	JF/SS	09/09/2024

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

If there is a change to this specification during design or construction phases, please contact Efficient Living and quote the above file reference for advice, and to obtain an updated Certificate if required.

Sustainable Building Consultants
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Thermal Comfort Inclusions

Floors

Waffle pod slab 85mm concrete and 300mm waffle pods

Timber frame between levels, no insulation required between conditioned areas.

Suspended timber frame, with an R4.0 insulation lined below

External Walls

75mm Hebel on framed walls with R2.5 insulation (insulation only value)

50mm Hebel on framed walls with R2.5 insulation (insulation only value)

Brick veneer with R2.5 insulation (insulation only value

Lightweight cladding on framed walls with R2.5 insulation (insulation only value)

Note: No insulation is required to external Garage walls

External Colour:

Default medium colour modelled.

Walls within dwellings

Plasterboard on studs, no insulation required.

R2.5 insulation to internal garage walls shared with habitable rooms.

R2.5 insulation to walls between conditioned and unconditioned zones.

Glazing Doors/Windows

Glazing upgrade - SEM double-glazed, single low-e

Awning: U 3.8 and SHGC 0.52

Fixed: U 3.1 and SHGC 0.67

Sliding door: U 3.9 and SHGC 0.58

Circular solartube modelled with 250mm diameter. (where applicable)

Note: U 6.7 and SHGC 0.57 are proxy for entry door glazing.

Window frame colour

Dark (SA > 0.7)

Roof and Ceilings

Metal roof with anticon blanket (R_u1.3 and R_d1.3)

R5.0 ceiling insulation and plasterboard lining, where metal roof above

Garage ceiling with R4.0 insulation and plasterboard lining, where conditioned area above

No insulation to garage ceiling where roof above.

External Colour

Dark (SA > 0.7) Monument

Ceiling Penetrations

Sealed and insulated LED downlights as per the lighting plan

Sealed and insulated exhaust fans as per plans

Floor coverings

As per plans

External Shading

Shading as per stamped drawings

Ventilation

All external doors have weather seals, all exhaust fans and chimneys have dampers, and down lights proposed will have capped fittings

Thermal comfort upgrades as per below - See NatHERS certificate for details.

Lot number	Upgrades required
1001	1. 75mm Hebel on framed walls with R2.7 insulation (insulation only value) Lightweight cladding on framed walls with R2.7 insulation (insulation only value) 2. R2.7 insulation to internal garage walls shared with habitable rooms. No insulation to walls between conditioned and unconditioned zones. 3. Window upgrade 3 - SEM double-glazed, double low-e Awning: U 2.9 and SHGC 0.35 Fixed: U 2.0 and SHGC 0.44 Sliding door: U 2.8 and SHGC 0.39 4. R4.0 ceiling insulation and plasterboard lining, where metal roof above Garage ceiling with R6.0 insulation and plasterboard lining to where conditioned area above and between conditioned and unconditioned areas. 5. 1300mm ceiling fan to living, family, sitting and bedrooms.

1002	1. 75mm Hebel on framed walls with R2.7 insulation (insulation only value) 50mm Hebel on framed walls with R2.7 insulation (insulation only value) 2. R2.7 insulation to internal garage walls shared with habitable rooms. No insulation to walls between conditioned and unconditioned zones. 3. Window upgrade 3 - SEM double-glazed, double low-e Awning: U 2.9 and SHGC 0.35 Fixed: U 2.0 and SHGC 0.44 Sliding door: U 2.8 and SHGC 0.39 4. R4.0 ceiling insulation and plasterboard lining, where metal roof above. Garage ceiling with R6.0 insulation and plasterboard lining, where conditioned area above.
1003	1. 75mm Hebel on framed walls with R2.7 insulation (insulation only value) 50mm Hebel on framed walls with R2.7 insulation (insulation only value) 2. R2.7 insulation to internal garage walls shared with habitable rooms. R2.7 insulation to walls between conditioned and unconditioned zones. 3. Window upgrade 3 - SEM double-glazed, double low-e Awning: U 2.9 and SHGC 0.35 Fixed: U 2.0 and SHGC 0.44 Sliding door: U 2.8 and SHGC 0.39 4. R4.0 ceiling insulation and plasterboard lining, where metal roof above. Garage ceiling with R6.0 insulation and plasterboard lining, where conditioned area above. 5. 1300mm ceiling fan to living, family, sitting and bedrooms.
1004	1. 75mm Hebel on framed walls with R2.7 insulation (insulation only value) 2. R2.7 insulation to internal garage walls shared with habitable rooms. R2.7 insulation to walls between conditioned and unconditioned zones.

	1. Window upgrade 3 - SEM double-glazed, double low-e Awning: U 2.9 and SHGC 0.35 Fixed: U 2.0 and SHGC 0.44 Sliding door: U 2.8 and SHGC 0.39 2. R6.0 ceiling insulation and plasterboard lining, where metal roof above 3. R6.0 insulation throughout suspended floor. 4. 1300mm ceiling fan to living, family and sitting and bedrooms.
1005	1. 75mm Hebel on framed walls with R2.7 insulation (insulation only value) 50mm Hebel on framed walls with R2.7 insulation (insulation only value) 2. R2.7 insulation to internal garage walls shared with habitable rooms. No insulation to walls between conditioned and unconditioned zones. 1. Window upgrade 3 - SEM double-glazed, double low-e Awning: U 2.9 and SHGC 0.35 Fixed: U 2.0 and SHGC 0.44 Sliding door: U 2.8 and SHGC 0.39 1. R4.0 ceiling insulation and plasterboard lining, where metal roof above Garage ceiling with R6.0 insulation and plasterboard lining, where conditioned area above. 2. 1300mm ceiling fan to living, family and sitting and bedrooms.
1006	1. 75mm Hebel on framed walls with R2.7 insulation (insulation only value) 50mm Hebel on framed walls with R2.7 insulation (insulation only value) 2. R2.7 insulation to internal garage walls shared with habitable rooms. R2.7 insulation to walls between conditioned and unconditioned zones. 1. Window upgrade 3 - SEM double-glazed, double low-e Awning: U 2.9 and SHGC 0.35 Fixed: U 2.0 and SHGC 0.44 Sliding door: U 2.8 and SHGC 0.39

	1. R6.0 ceiling insulation and plasterboard lining, where metal roof above Garage ceiling with R6.0 insulation and plasterboard lining to where conditioned area above and between conditioned and unconditioned areas 2. R6.0 to suspended open floor. 3. 1300mm ceiling fan to living, family and sitting
1007	1. 75mm Hebel on framed walls with R2.7 insulation (insulation only value) Lightweight cladding on framed walls with R2.7 insulation (insulation only value) 2. R2.7 insulation to internal garage walls shared with habitable rooms. R2.7 insulation to walls between conditioned and unconditioned zones. 3. Window upgrade 3 - SEM double-glazed, double low-e Awning: U 2.9 and SHGC 0.35 Fixed: U 2.0 and SHGC 0.44 Sliding door: U 2.8 and SHGC 0.39 4. R6.0 ceiling insulation and plasterboard lining, where metal roof above. 5. R6.0 insulation throughout suspended floor. 6. 1300mm ceiling fan to living, family, dining, sitting and bedrooms
1008	1. 75mm Hebel on framed walls with R2.7 insulation (insulation only value) 50mm Hebel on framed walls with R2.7 insulation (insulation only value) 2. R2.7 insulation to internal garage walls shared with habitable rooms. No insulation to walls between conditioned and unconditioned zones. 3. Window upgrade 3 - SEM double-glazed, double low-e Awning: U 2.9 and SHGC 0.35 Fixed: U 2.0 and SHGC 0.44 Sliding door: U 2.8 and SHGC 0.39 4. Garage ceiling with R6.0 insulation and plasterboard lining where conditioned area above.

	5. 1300mm ceiling fan to living, family and sitting.
1009	1. 75mm Hebel on framed walls with R2.7 insulation (insulation only value) 50mm Hebel on framed walls with R2.7 insulation (insulation only value) 2. R2.7 insulation to internal garage walls shared with habitable rooms. R2.0 insulation to walls between conditioned and unconditioned zones. 3. Window upgrade 3 - SEM double-glazed, double low-e Awning: U 2.9 and SHGC 0.35 Fixed: U 2.0 and SHGC 0.44 Sliding door: U 2.8 and SHGC 0.39 4. R4.0 ceiling insulation and plasterboard lining, where metal roof above Garage ceiling with R6.0 insulation and plasterboard lining where conditioned area above and between conditioned and unconditioned areas. 5. R6.0 insulation to open suspended floor. 6. 1300mm ceiling fan to living, family and sitting and bedrooms.
1010	1. 75mm Hebel on framed walls with R2.7 insulation (insulation only value) Lightweight cladding on framed walls with R2.7 insulation (insulation only value) 2. R2.7 insulation to internal garage walls shared with habitable rooms. R2.7 insulation to walls between conditioned and unconditioned zones. 3. Window upgrade 3 - SEM double-glazed, double low-e Awning: U 2.9 and SHGC 0.35 Fixed: U 2.0 and SHGC 0.44 Sliding door: U 2.8 and SHGC 0.39 4. R6.0 insulation throughout suspended floor. 5. 1300mm ceiling fan to living, family, dining, sitting and bedrooms.
1011	1. 75mm Hebel on framed walls with R2.7 insulation (insulation only value) 50mm Hebel on framed walls with R2.7 insulation (insulation only value)

	2. R2.7 insulation to internal garage walls shared with habitable rooms. R2.7 insulation to walls between conditioned and unconditioned zones. 3. Window upgrade 3 - SEM double-glazed, double low-e Awning: U 2.9 and SHGC 0.35 Fixed: U 2.0 and SHGC 0.44 Sliding door: U 2.8 and SHGC 0.39 4. R4.0 ceiling insulation and plasterboard lining, where metal roof above. Garage ceiling with R6.0 insulation and plasterboard lining to where conditioned area above and between conditioned and unconditioned areas. 5. 1300mm ceiling fan to living, family, sitting and bedrooms.
1012	1. 75mm Hebel on framed walls with R2.7 insulation (insulation only value) 50mm Hebel on framed walls with R2.7 insulation (insulation only value) 2. R2.7 insulation to internal garage walls shared with habitable rooms. No insulation to walls between conditioned and unconditioned zones. 3. Window upgrade 3 - SEM double-glazed, double low-e Awning: U 2.9 and SHGC 0.35 Fixed: U 2.0 and SHGC 0.44 Sliding door: U 2.8 and SHGC 0.39 4. R4.0 ceiling insulation and plasterboard lining, where metal roof above Garage ceiling with R6.0 insulation and plasterboard lining to where conditioned area above.
1013	1. 75mm Hebel on framed walls with R2.7 insulation (insulation only value) 2. R2.7 insulation to internal garage walls shared with habitable rooms. R2.7 insulation to walls between conditioned and unconditioned zones. 3. Window upgrade 3 - SEM double-glazed, double low-e Awning: U 2.9 and SHGC 0.35 Fixed: U 2.0 and SHGC 0.44 Sliding door: U 2.8 and SHGC 0.39

	4. Garage ceiling with R6.0 insulation and plasterboard lining to where conditioned area above and between conditioned and unconditioned areas.
1014	1. Brick veneer with R2.7 insulation (insulation only value Lightweight cladding on framed walls with R2.7 insulation (insulation only value) 1. R2.7 insulation to internal garage walls shared with habitable rooms. R2.7 insulation to walls between conditioned and unconditioned zones. 2. Window upgrade 3 - SEM double-glazed, double low-e Awning: U 2.9 and SHGC 0.35 Fixed: U 2.0 and SHGC 0.44 Sliding door: U 2.8 and SHGC 0.39 3. R4.0 ceiling insulation and plasterboard lining, where metal roof above Garage ceiling with R6.0 insulation and plasterboard lining to where conditioned area above.
1015	1. No insulation to internal walls between conditioned and unconditioned areas. 2. R4.0 ceiling insulation and plasterboard lining, where metal roof above. 3. Window upgrade 2 - SEM double-glazed, single low-e Awning: U 3.3 and SHGC 0.38 Fixed: U 2.4 and SHGC 0.48 Sliding door: U 3.2 and SHGC 0.42
1016	6. 75mm Hebel on framed walls with R2.7 insulation (insulation only value) 50mm Hebel on framed walls with R2.7 insulation (insulation only value) 7. R2.7 insulation to internal garage walls shared with habitable rooms. R2.7 insulation to walls between conditioned and unconditioned zones. 8. Window upgrade 3 - SEM double-glazed, double low-e Awning: U 2.9 and SHGC 0.35 Fixed: U 2.0 and SHGC 0.44 Sliding door: U 2.8 and SHGC 0.39 9. R6.0 ceiling insulation and plasterboard lining, where metal roof above Garage ceiling with R6.0 insulation and plasterboard lining to where conditioned area above and between conditioned and unconditioned areas.

	10. 1300mm ceiling fan to living, family, sitting and bedrooms.

Nationwide House Energy Rating Scheme®
Class 1 Summary
NatHERS® Certificate No. #HR-MUVPB0-18

Generated on 29 Aug 2024 using Hero 4.1

Property

Address	2 BULLECOURT AVENUE, MILPERRA, NSW, 2214
Lot/DP	2/DP1291984
NatHERS climate zone	56 - Mascot AMO

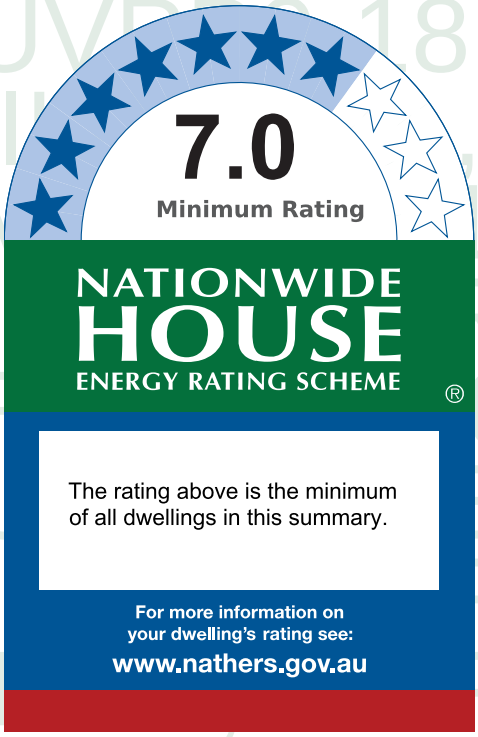
Accredited assessor

Name	Stefanie Simpson
Business name	Efficient Living
Email	stefanie@efficientliving.com.au
Phone	+61 299706181
Accreditation No.	10035
Assessor Accrediting Organisation	HERA

Verification

To verify this certificate, scan the QR code or visit http://www.hero-software.com.au/pdf/HR-MUVPB0-18. When using either link, ensure you are visiting http://www.hero-software.com.au

Thermal performance Star rating



National Construction Code (NCC) requirements

The NCC allows the use of NatHERS accredited software to comply with the energy efficiency requirements for houses (Class 1 buildings) and apartments (Class 2 sole-occupancy units and Class 4 parts of buildings). The applicable requirements for houses are detailed in Specification 42 of NCC Volume Two. For apartments the requirements are detailed in clauses J3D3 and J3D15 of NCC Volume One.

NCC 2022 includes enhanced thermal performance requirements for houses and apartments. It also includes a new whole-of-home annual energy use budget which applies to the major equipment in the home.

The NCC, and associated ABCB Standards and support material, can be accessed at www.abcb.gov.au.

Note, variations and additions to the NCC energy efficiency requirements may apply in some states and territories.

Whole of Home performance rating

No Whole of Home performance rating generated for this certificate or not completed for all dwellings.

Summary of all dwellings

Certificate number and link	Unit Number	Heating load (load limit) (MJ/m².yr)	Cooling load (load limit) (MJ/m².yr)	Total load (MJ/m².yr)	Star Rating	Whole of Home Rating
HR-H5CM0D-02	1001	13.0 (25)	16.6 (18)	29.7	7.0	n/a
HR-ZLHT7C-02	1002	16.8 (25)	13.1 (18)	29.8	7.0	n/a
HR-W8XDSZ-02	1003	13.4 (25)	16.4 (18)	29.8	7.0	n/a
HR-36H5MC-02	1004	13.8 (25)	16.1 (18)	29.9	7.0	n/a
HR-XZ7WNZ-02	1005	14.4 (25)	14.6 (18)	29.0	7.1	n/a

Summary of all dwellings

Certificate number and link	Unit Number	Heating load (load limit) (MJ/m².yr)	Cooling load (load limit) (MJ/m².yr)	Total load (MJ/m².yr)	Star Rating	Whole of Home Rating
HR-OBOXPM-02	1006	13.5 (25)	16.4 (18)	29.9	7.0	n/a
HR-OJHS1M-02	1007	13.6 (25)	16.0 (18)	29.5	7.0	n/a
HR-LBPVUX-02	1008	17.3 (25)	12.6 (18)	29.9	7.0	n/a
HR-R50RVS-04	1009	13.6 (25)	16.1 (18)	29.7	7.0	n/a
HR-VHF5H9-02	1010	14.0 (25)	15.8 (18)	29.8	7.0	n/a
HR-T2JRGX-02	1011	18.7 (25)	11.1 (18)	29.8	7.0	n/a
HR-U7I8Z5-02	1012	12.7 (25)	17.1 (18)	29.8	7.0	n/a
HR-FMEVC9-02	1013	12.2 (25)	17.7 (18)	30.0	7.0	n/a
HR-3Q770R-02	1014	14.3 (25)	15.3 (18)	29.6	7.0	n/a
HR-WI74I0-02	1015	14.6 (25)	14.8 (18)	29.5	7.1	n/a
HR-ADMU6O-02	1016	14.0 (25)	15.9 (18)	29.9	7.0	n/a

Explanatory notes

About the ratings

This is a summary of NCC Class 1 dwellings in a development. For more details of each dwelling refer to the individual dwelling's certificate using the certificate number in summary of all dwellings table.
NatHERS ratings use computer modelling to evaluate a home's energy efficiency and performance. They use localised climate data and standard assumptions on how people use their home to predict the energy loads and societal cost. The thermal performance star rating uses the home's building specifications, layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings) to predict the heating and cooling energy loads. The Whole of Home performance rating uses information about the home's appliances and onsite energy production and storage to estimate the homes societal cost.
For more details about an individual dwelling's assessment, refer to the individual dwelling's NatHERS Certificate (accessible via link).

Accredited Assessors

For high quality NatHERS Certificates, always use an accredited or licenced assessor registered with an Assessor Accrediting Organisation (AAO). AAOs have strict quality assurance processes, and professional development requirements ensuring consistently high standards for assessments.

Non-accredited assessors (Raters) have no ongoing training requirements and are not quality assured.

Licensed assessors in the Australian Capital Territory (ACT) can produce assessments for regulatory purposes only, using endorsed software, as listed on the ACT licensing register.

Any queries about this report should be directed to the assessor. If the assessor is unable to address questions or concerns, contact the AAO specified on the front of this certificate.

Disclaimer

The NatHERS Certificate format is developed by the NatHERS Administrator. However, the content in certificates is entered by the assessor. It is the assessor's responsibility to use NatHERS accredited software correctly and follow the NatHERS Technical Note to produce a NatHERS Certificate.

The predicted annual energy use, cost and greenhouse gas emissions in this NatHERS Certificate are an estimate based on an assessment of the dwelling's design by the assessor. It is not a prediction of actual energy use, cost or emissions. The information and ratings may be used to compare how other dwellings are likely to perform when used in a similar way.

Information presented in this report relies on a range of standard assumptions (both embedded in NatHERS accredited software and made by the assessor who prepared this report), including assumptions about occupancy, behaviour, appliance performance, indoor air temperature and local climate.

Not all assumptions made by the assessor while using the NatHERS accredited software tool are presented in this report and further details or data files may be available from the assessor.

BASIX® Certificate

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

Multi Dwelling

Certificate number: 1763491M

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 10/09/2020 published by the Department. This document is available at www.basix.nsw.gov.au

Secretary
Date of issue: Monday, 09 September 2024
To be valid, this certificate must be submitted with a development application or lodged with a complying development certificate application within 3 months of the date of issue.

Project summary	
Project name	Stage1/WSU- 2 Bullecourt Avenue, Milperra NSW 2214
Street address	2 BULLECOURT AVENUE MILPERRA 2214
Local Government Area	CANTERBURY-BANKSTOWN
Plan type and plan number	Deposited Plan 1291984
Lot No.	2
Section no.	-
No. of residential flat buildings	0
Residential flat buildings: no. of dwellings	0
Multi-dwelling housing: no. of dwellings	0
No. of single dwelling houses	16

Project score			
Water	✔	44	Target 40
Thermal Performance	✔	Pass	Target Pass
Energy	✔	100	Target 72
Materials	✔	-100	Target n/a

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

Description of project

Project address	
Project name	Stage1/WSU- 2 Bullecourt Avenue, Milperra NSW 2214
Street address	2 BULLECOURT AVENUE MILPERRA 2214
Local Government Area	CANTERBURY-BANKSTOWN
Plan type and plan number	Deposited Plan 1291984
Lot No.	2
Section no.	-

Project type	
No. of residential flat buildings	0
Residential flat buildings: no. of dwellings	0
Multi-dwelling housing: no. of dwellings	0
No. of single dwelling houses	16

Site details	
Site area (m²)	6030
Roof area (m²)	2593.11
Non-residential floor area (m²)	0.00
Residential car spaces	30
Non-residential car spaces	0

Common area landscape	
Common area lawn (m²)	0
Common area garden (m²)	0.00
Area of indigenous or low water use species (m²)	0.00

Assessor details and thermal loads	
Assessor number	HERA10035
Certificate number	HR-MUVPB0-18
Climate zone	56

Project score			
Water	✔	44	Target 40
Thermal Performance	✔	Pass	Target Pass
Energy	✔	100	Target 72
Materials	✔	-100	Target n/a

Description of project

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

Single dwelling houses

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
1001	4+	168.2	15.5	184.66	0
1005	4+	166.6	13	185	0
1009	4+	166.8	13	185.08	0
1013	4+	131	14.8	175.08	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
1002	4+	165.4	13	183.09	0
1006	4+	165.4	13	184.83	0
1010	4+	168.2	15.5	184.71	0
1014	4+	154.8	15.5	180.98	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
1003	4+	166.6	13	185.1	0
1007	4+	169.3	15.5	185.19	0
1011	4+	165.3	13	183.3	0
1015	4+	154.8	15.5	180.94	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
1004	4+	168.2	15.5	185.22	0
1008	4+	165.4	13	183.18	0
1012	4+	130.6	14.8	175.67	0
1016	4+	166.8	13	175.8	0

No common areas specified.

Schedule of BASIX commitments

1. Commitments for multi-dwelling housing

(a) Dwellings

(i) Water

(ii) Energy

(iii) Thermal Performance and Materials

2. Commitments for single dwelling houses

(a) Dwellings

(i) Water

(ii) Energy

(iii) Thermal Performance and Materials

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

(b) Common areas and central systems/facilities

(i) Water

(ii) Energy

Schedule of BASIX commitments

The commitments set out below regulate how the proposed development is to be carriedout. 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 multi-dwelling housing

(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.	✔	✔	✔

(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.			

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(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.		✔	✔
(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".		✔	
(j) The applicant must install the photovoltaic system specified for the dwelling under the "Photovoltaic system" heading of the "Alternative energy" column of the table below, and connect the system to that dwelling's electrical system.	✔	✔	✔

(iii) Thermal Performance and Materials	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.	✔	✔	✔
(i) The applicant must show on The plans accompanying The development application for The proposed development, The locations of ceiling fans set out in The Assessor Certificate.	✔		
(j) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), the locations of ceiling fans set out in the Assessor Certificate.		✔	

2. Commitments for single dwelling houses

(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	4 star (> 6 but <= 7.5 L/min)	4 star	5 star	5 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**
1006	Individual water tank (No. 1)	Tank size (min) 2000 liters	To collect run-off from at least: 125 square metres of roof area; 0 square metres of impervious area; 0 square metres of garden and lawn area; and 0 square metres of planter box area.	yes	yes	yes	no	no
1007	Individual water tank (No. 1)	Tank size (min) 2000 liters	To collect run-off from at least: 109 square metres of roof area; 0 square metres of impervious area; 0 square metres of garden and lawn area; and 0 square metres of planter box area.	yes	yes	yes	no	no
1011	Individual water tank (No. 1)	Tank size (min) 2000 liters	To collect run-off from at least: 120 square metres of roof area; 0 square metres of impervious area; 0 square metres of garden and lawn area; and 0 square metres of planter box area.	yes	yes	yes	no	no
1012	Individual water tank (No. 1)	Tank size (min) 2000 liters	To collect run-off from at least: 98 square metres of roof area; 0 square metres of impervious area; 0 square metres of garden and lawn area; and 0 square metres of planter box area.	yes	yes	yes	no	no
1013	Individual water tank (No. 1)	Tank size (min) 2000 liters	To collect run-off from at least: 85 square metres of roof area; 0 square metres of impervious area; 0 square metres of garden and lawn area; and 0 square metres of planter box area.	yes	yes	yes	no	no
1002, 1008	Individual water tank (No. 1)	Tank size (min) 2000 liters	To collect run-off from at least: 126 square metres of roof area; 0 square metres of impervious area; 0 square metres of garden and lawn area; and 0 square metres of planter box area.	yes	yes	yes	no	no
1004, 1014, 1015	Individual water tank (No. 1)	Tank size (min) 2000 liters	To collect run-off from at least: 115 square metres of roof area; 0 square metres of impervious area; 0 square metres of garden and lawn area; and 0 square metres of planter box area.	yes	yes	yes	no	no

	Alternative water source							
Dwelling no.	**Alternative water supply systems**	**Size**	**Configuration**	**Landscape connection**	**Toilet connection (s)**	**Laundry connection**	**Pool top-up**	**Spa top-up**
All other dwellings	Individual water tank (No. 1)	Tank size (min) 2000 liters	To collect run-off from at least: 110 square metres of roof area; 0 square metres of impervious area; 0 square metres of garden and lawn area; and 0 square metres of planter box area.	yes	yes	yes	no	no

(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.		✔	✔
(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:			

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(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".		✔	
(j) The applicant must install the photovoltaic system specified for the dwelling under the “Photovoltaic system” heading of the “Alternative energy” column of the table below, and connect the system to that dwelling’s electrical system.	✔	✔	✔

	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	heat pump - 21 to 25 STCs	individual fan, ducted to façade or roof	interlocked to light with timer 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		Natural lighting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bathrooms or toilets	Main kitchen
1014, 1015	3-phase airconditioning / EER 3.0 - 3.5	3-phase airconditioning / EER 3.0 - 3.5	3-phase airconditioning / EER 3.5 - 4.0	3-phase airconditioning / EER 3.5 - 4.0	3	no
1001, 1004, 1007, 1010, 1012, 1013	3-phase airconditioning / EER 3.0 - 3.5	3-phase airconditioning / EER 3.0 - 3.5	3-phase airconditioning / EER 3.5 - 4.0	3-phase airconditioning / EER 3.5 - 4.0	3	yes

	Cooling		Heating		Natural lighting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bathrooms or toilets	Main kitchen
All other dwellings	3-phase airconditioning / EER 3.0 - 3.5	3-phase airconditioning / EER 3.0 - 3.5	3-phase airconditioning / EER 3.5 - 4.0	3-phase airconditioning / EER 3.5 - 4.0	2	yes

	Individual pool			Individual spa		Appliances other efficiency measures				
Dwelling no.	Pool heating system	Pool Pump	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Dishwasher	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	-	electric cooktop & electric oven	-	-	no	yes

	Alternative energy		
Dwelling no.	Photovoltaic system (min rated electrical output in peak kW)	Photovoltaic collector installation	Orientation inputs
1002, 1006, 1008, 1011, 1012	between >10° to <=25° degree to the horizontal	5	N
All other dwellings	between >0° to <=10° degree to the horizontal	5.0	E

(iii) Thermal Performance and Materials	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.	✔		

(iii) Thermal Performance and Materials	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(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.	✔	✔	✔
(i) The applicant must show on The plans accompanying The development application for The proposed development, The locations of ceiling fans set out in The Assessor Certificate.	✔		
(j) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), the locations of ceiling fans set out in the Assessor Certificate.		✔	

	Thermal loads		
Dwelling no.	Area adjusted heating load (in MJ/m²/yr)	Area adjusted cooling load (in MJ/m²/yr)	Area adjusted total load (in MJ/m²/yr)
1001	13	16.6	29.600
1002	16.8	13.1	29.900
1003	13.4	16.4	29.800
1004	13.8	16.1	29.900
1005	14.4	14.6	29.000
1006	13.5	16.4	29.900
1007	13.6	16	29.600
1008	17.3	12.6	29.900
1009	13.6	16.1	29.700
1010	14	15.8	29.800
1011	18.7	11.1	29.800
1012	12.7	17.1	29.800
1013	12.2	17.7	29.900

	Thermal loads		
Dwelling no.	Area adjusted heating load (in MJ/m²/yr)	Area adjusted cooling load (in MJ/m²/yr)	Area adjusted total load (in MJ/m²/yr)
1014	14.3	15.3	29.600
1015	14.6	14.8	29.400
All other dwellings	14	15.9	29.900

	Construction of floors and walls				
Dwelling no.	Concrete slab on ground (m²)	Suspended floor with open subfloor (m²)	Suspended floor with enclosed subfloor (m²)	Suspended floor above garage (m²)	Primarily rammed earth or mudbrick walls
1007	76.9	1.1	-	32.4	no
1009	77.4	2.4	-	25.2	no
1012	68.6	1.8	-	9.0	no
1013	68.6	2.1	-	9	no
1016	77.3	2.4	-	25.2	no
1002, 1008	77.4	1	-	25.2	no
1003, 1005	77.3	2.3	-	25.2	no
1006, 1011	77.3	1	-	25.2	no
1014, 1015	78.7	6	-	26.6	no
All other dwellings	76.9	-	-	32.4	no

	Floor types									
	Concrete slab on ground				Suspended floor above enclosed subfloor			Suspended floor above open subfloor		
Dwelling no.	Area (m²)	Insulation	Low emissions option	Dematerialisation	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation
1007	76.9	-	-	waffle pod slab	-	-	-	treated softwood, frame: timber - H2 treated softwood	1.1	-
1012, 1013	68.6	-	-	waffle pod slab	-	-	-	treated softwood, frame: timber - H2 treated softwood	1.8	-

	Floor types									
	Concrete slab on ground				Suspended floor above enclosed subfloor			Suspended floor above open subfloor		
Dwelling no.	Area (m²)	Insulation	Low emissions option	Dematerialisation	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation
1014, 1015	78.7	-	-	waffle pod slab	-	-	-	treated softwood, frame: timber - H2 treated softwood	6	-
1001, 1004, 1010	76.9	-	-	waffle pod slab	-	-	-	-	-	-
1002, 1008, 1009	77.4	-	-	waffle pod slab	-	-	-	treated softwood, frame: timber - H2 treated softwood	1	-
All other dwellings	77.3	-	-	waffle pod slab	-	-	-	treated softwood, frame: timber - H2 treated softwood	2.3	-

	Floor types										
	First floor above habitable rooms or mezzanine			Suspended floor above garage			Garage floor				
Dwelling no.	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation	Low emissions option	Dematerialisation
1007	treated softwood, frame: timber - H2 treated softwood	74.40	-	treated softwood, frame: timber - H2 treated softwood	32.4	-	concrete slab on ground, frame: timber - H2 treated softwood	34.4	-	-	waffle pod slab
1009	treated softwood, frame: timber - H2 treated softwood	78.7	-	treated softwood, frame: timber - H2 treated softwood	25.2	-	concrete slab on ground, frame: timber - H2 treated softwood	34.1	-	-	waffle pod slab

	Floor types										
	First floor above habitable rooms or mezzanine			Suspended floor above garage			Garage floor				
Dwelling no.	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation	Low emissions option	Dematerialisation
1012	treated softwood, frame: timber - H2 treated softwood	66	-	treated softwood, frame: timber - H2 treated softwood	9.0	-	concrete slab on ground, frame: timber - H2 treated softwood	18.9	-	-	waffle pod slab
1013	treated softwood, frame: timber - H2 treated softwood	66.1	-	treated softwood, frame: timber - H2 treated softwood	9	-	concrete slab on ground, frame: timber - H2 treated softwood	18.9	-	-	waffle pod slab
1006, 1016	treated softwood, frame: timber - H2 treated softwood	74.9	-	treated softwood, frame: timber - H2 treated softwood	25.2	-	concrete slab on ground, frame: timber - H2 treated softwood	34.1	-	-	waffle pod slab
1014, 1015	treated softwood, frame: timber - H2 treated softwood	59	-	treated softwood, frame: timber - H2 treated softwood	26.6	-	concrete slab on ground, frame: timber - H2 treated softwood	37.9	-	-	waffle pod slab
1001, 1004, 1010	treated softwood, frame: timber - H2 treated softwood	74.4	-	treated softwood, frame: timber - H2 treated softwood	32.4	-	concrete slab on ground, frame: timber - H2 treated softwood	34.1	-	-	waffle pod slab
All other dwellings	treated softwood, frame: timber - H2 treated softwood	74.8	-	treated softwood, frame: timber - H2 treated softwood	25.2	-	concrete slab on ground, frame: timber - H2 treated softwood	34.1	-	-	waffle pod slab

	External walls							
	External wall type 1				External wall type 2			
Dwelling no.	Wall type	Area (m²)	Insulation	Low emissions option	Wall type	Area (m²)	Insulation	Low emissions option
1001	AAC veneer, frame : timber - H2 treated softwood	186.8	-	none	framed (fibre cement sheet or boards), frame : timber - H2 treated softwood	9.1	-	none
1004	AAC veneer, frame : timber - H2 treated softwood	195.9	-	-	-	-	-	-
1006	AAC veneer, frame : timber - H2 treated softwood	189.8	-	-	-	-	-	-
1007	AAC veneer, frame : timber - H2 treated softwood	178.3	-	none	framed (fibre cement sheet or boards), frame : timber - H2 treated softwood	17.6	-	none
1010	AAC veneer, frame : timber - H2 treated softwood	186.9	-	none	framed (fibre cement sheet or boards), frame : timber - H2 treated softwood	9.1	-	none
1014	brick veneer, frame : timber - H2 treated softwood	107.2	-	none	framed (fibre cement sheet or boards), frame : timber - H2 treated softwood	80.9	-	none
1015	brick veneer, frame : timber - H2 treated softwood	107.6	-	none	framed (fibre cement sheet or boards), frame : timber - H2 treated softwood	80.6	-	none
1016	AAC veneer, frame : timber	190.1	-	-	-	-	-	-

	External walls							
	External wall type 1				External wall type 2			
Dwelling no.	Wall type	Area (m²)	Insulation	Low emissions option	Wall type	Area (m²)	Insulation	Low emissions option
	- H2 treated softwood							
1003, 1005	AAC veneer, frame : timber - H2 treated softwood	190	-	-	-	-	-	-
1012, 1013	AAC veneer, frame : timber - H2 treated softwood	184.2	-	-	-	-	-	-
All other dwellings	AAC veneer, frame : timber - H2 treated softwood	190.2	-	-	-	-	-	-

	External walls							
	External wall type 3				External wall type 4			
Dwelling no.	Wall type	Area (m²)	Insulation	Low emissions option	Wall type	Area (m²)	Insulation	Low emissions option
All dwellings	-	-	-	-	-	-	-	-

	Internal walls								
	Internal walls shared with garage			Internal wall type 1			Internal wall type 2		
Dwelling no.	Wall type	Area (m²)	Insulation	Wall type	Area (m²)	Insulation	Wall type	Area (m²)	Insulation
1005	plasterboard, frame: timber - H2 treated softwood	29	-	plasterboard, frame: timber - H2 treated softwood	154	-	-	-	-
1007	plasterboard, frame: timber - H2 treated softwood	29.1	-	plasterboard, frame: timber - H2 treated softwood	169.1	-	-	-	-

	Internal walls								
	Internal walls shared with garage			Internal wall type 1			Internal wall type 2		
Dwelling no.	Wall type	Area (m²)	Insulation	Wall type	Area (m²)	Insulation	Wall type	Area (m²)	Insulation
1012	plasterboard, frame: timber - H2 treated softwood	19.1	-	plasterboard, frame: timber - H2 treated softwood	129.2	-	-	-	-
1013	plasterboard, frame: timber - H2 treated softwood	19.1	-	plasterboard, frame: timber - H2 treated softwood	129.8	-	-	-	-
1014	plasterboard, frame: timber - H2 treated softwood	32	-	plasterboard, frame: timber - H2 treated softwood	140.6	-	-	-	-
1015	plasterboard, frame: timber - H2 treated softwood	34.4	-	plasterboard, frame: timber - H2 treated softwood	138.2	-	-	-	-
1001, 1004, 1010	plasterboard, frame: timber - H2 treated softwood	29.1	-	plasterboard, frame: timber - H2 treated softwood	168.1	-	-	-	-
1003, 1009, 1016	plasterboard, frame: timber - H2 treated softwood	29	-	plasterboard, frame: timber - H2 treated softwood	154.1	-	-	-	-
All other dwellings	plasterboard, frame: timber - H2 treated softwood	29	-	plasterboard, frame: timber - H2 treated softwood	153.3	-	-	-	-

	Ceiling and roof								
	Flat ceiling / pitched roof			Raked ceiling / pitched or skillion roof			Flat ceiling / flat roof		
Dwelling no.	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation
1001	-	-	Ceiling:,Roof:	-	-	Ceiling:,Roof:	framed - metal roof,	162.55	Ceiling:,Roof:

	Ceiling and roof								
	Flat ceiling / pitched roof			Raked ceiling / pitched or skillion roof			Flat ceiling / flat roof		
Dwelling no.	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation
							frame: timber - H2 treated softwood		
1002	framed - metal roof, frame: timber - H2 treated softwood	180.74	Ceiling:,Roof:	-	-	Ceiling:,Roof:	-	-	Ceiling:,Roof:
1003	-	-	Ceiling:,Roof:	-	-	Ceiling:,Roof:	framed - metal roof, frame: timber - H2 treated softwood	157.59	Ceiling:,Roof:
1004	-	-	Ceiling:,Roof:	-	-	Ceiling:,Roof:	framed - metal roof, frame: timber - H2 treated softwood	162.46	Ceiling:,Roof:
1005	-	-	Ceiling:,Roof:	-	-	Ceiling:,Roof:	framed - metal roof, frame: timber - H2 treated softwood	158.2	Ceiling:,Roof:
1006	framed - metal roof, frame: timber - H2 treated softwood	178.9	Ceiling:,Roof:	-	-	Ceiling:,Roof:	-	-	Ceiling:,Roof:
1007	-	-	Ceiling:,Roof:	-	-	Ceiling:,Roof:	framed - metal roof, frame: timber - H2 treated softwood	157.21	Ceiling:,Roof:
1008	framed - metal roof, frame: timber	180.17	Ceiling:,Roof:	-	-	Ceiling:,Roof:	-	-	Ceiling:,Roof:

	Ceiling and roof								
	Flat ceiling / pitched roof			Raked ceiling / pitched or skillion roof			Flat ceiling / flat roof		
Dwelling no.	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation
	- H2 treated softwood								
1009	-	-	Ceiling:,Roof:	-	-	Ceiling:,Roof:	framed - metal roof, frame: timber - H2 treated softwood	157.92	Ceiling:,Roof:
1010	-	-	Ceiling:,Roof:	-	-	Ceiling:,Roof:	framed - metal roof, frame: timber - H2 treated softwood	162.28	Ceiling:,Roof:
1011	framed - metal roof, frame: timber - H2 treated softwood	178.61	Ceiling:,Roof:	-	-	Ceiling:,Roof:	-	-	Ceiling:,Roof:
1012	framed - metal roof, frame: timber - H2 treated softwood	141.68	Ceiling:,Roof:	-	-	Ceiling:,Roof:	-	-	Ceiling:,Roof:
1013	-	-	Ceiling:,Roof:	-	-	Ceiling:,Roof:	framed - metal roof, frame: timber - H2 treated softwood	124.19	Ceiling:,Roof:
1014	-	-	Ceiling:,Roof:	-	-	Ceiling:,Roof:	framed - metal roof, frame: timber - H2 treated softwood	167.31	Ceiling:,Roof:
1015	-	-	Ceiling:,Roof:	-	-	Ceiling:,Roof:	framed - metal roof, frame: timber - H2 treated softwood	167.3	Ceiling:,Roof:

	Ceiling and roof								
	Flat ceiling / pitched roof			Raked ceiling / pitched or skillion roof			Flat ceiling / flat roof		
Dwelling no.	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation	Construction type	Area (m²)	Insulation
All other dwellings	-	-	Ceiling:,Roof:	-	-	Ceiling:,Roof:	framed - metal roof, frame: timber - H2 treated softwood	156.29	Ceiling:,Roof:

	Glazing type			Frame types				
Dwelling no.	Single glazing (m²)	Double glazing (m²)	Triple glazing (m²)	Aluminium frames (m²)	Timber frames (m²)	uPVC frames (m²)	Steel frames (m²)	Composite frames (m²)
1004	0.9	55.2	-	56.1	-	-	-	-
1005	1	51.9	-	52.9	-	-	-	-
1006	1	54.5	-	55.5	-	-	-	-
1007	0.9	54.5	-	55.4	-	-	-	-
1008	0.8	55.1	-	55.9	-	-	-	-
1012	1	41.3	-	42.3	-	-	-	-
1013	0.7	40.8	-	41.5	-	-	-	-
1014	2.8	40.9	-	43.7	-	-	-	-
1015	2.6	40.6	-	43.2	-	-	-	-
1016	1	51.3	-	52.3	-	-	-	-
1001, 1009, 1010	0.9	55.5	-	56.4	-	-	-	-
All other dwellings	1	55.1	-	56.1	-	-	-	-

3. 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	no common facility	no common facility	no common facility	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.	✔	✔	✔

Central energy systems	Type	Specification
Other	-	-

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).