

Nationwide House Energy Rating Scheme* — Class 2 summary



Certificate number: 0004580440

Certificate Date: 11 Feb 2020

★ Average Star rating: 5.8

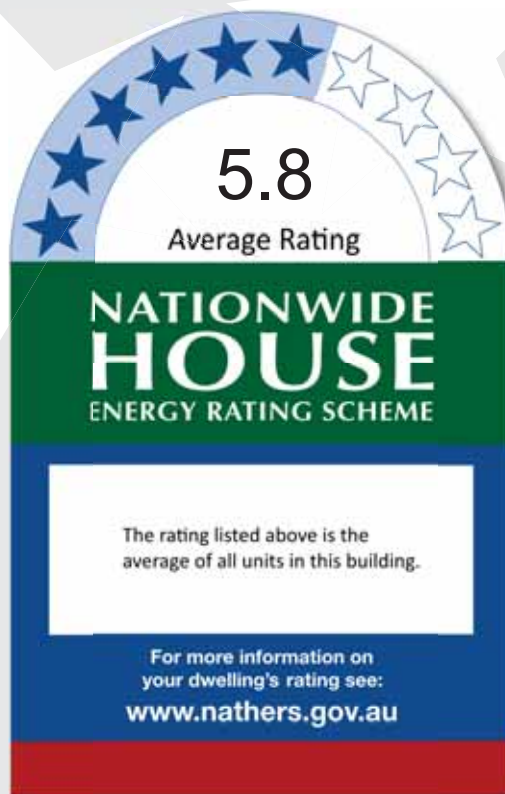
Assessor details

Accreditation number: 20039
Name: David Howard
Organisation: Partners Energy Management
Email: david@partnersenergy.com.au
Phone: 0421381005
Declaration of interest: yes - managed
Software: BERS Pro v4.4.0.0 (3.21)
AAO: ABSA

Dwelling details

Street: 2 Gallagher St
Suburb: Byron Bay
State: NSW
Postcode: 2481

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
0004580346	S5AN01	5.8	40.1	45.9	5.8
0004580379	S5AN02	3.2	40.0	43.2	5.9
0004580403	S5AN03	6.4	39.8	46.2	5.7
0004580429	S5BN01	6.4	40.0	46.5	5.7
0004580338	S5BN02	3.2	40.0	43.2	5.9
0004580361	S5BN03	3.2	40.0	43.2	5.9
0004580387	S5BN04	3.2	40.0	43.2	5.9
0004580411	S5BN05	3.2	40.0	43.2	5.9
0004580437	S5BN06	3.2	40.0	43.2	5.9
0004580320	S5BN07	3.2	40.0	43.2	5.9
0004580353	S5BN08	3.2	40.0	43.2	5.9
0004580395	S5BN09	6.4	39.8	46.2	5.7

Nationwide House Energy Rating Scheme* Certificate

Certificate number: 0004580346

Certificate Date: 11 Feb 2020

★ Star rating: 5.8



Assessor details

Accreditation number: **20039**
Name: **David Howard**
Organisation: **Partners Energy Management**
Email: **david@partnersenergy.com.au**
Phone: **0421381005**
Declaration of interest: **yes - managed**
Software: **BERS Pro v4.4.0.0 (3.21)**
AAO: **ABSA**

Overview

Dwelling details

Street: **Unit S5AN01, 2 Gallagher St**
Suburb: **Byron Bay**
State: **NSW** Postcode: **2481**
Type: **New Dwelling** NCC Class: **2**
NatHERS climate zone: **10**
Lot/DP number: **271119** Exposure: **Suburban**

Key construction and insulation materials

(see following pages for details)

Construction: **Brick Veneer**
Concrete, Plasterboard
Suspended Concrete Slab
Insulation: **R2.0 wall insulation**
No ceiling insulation
No floor insulation
Glazing: **TIM-001-02 W Timber A SG Tint**

Net floor area (m²)

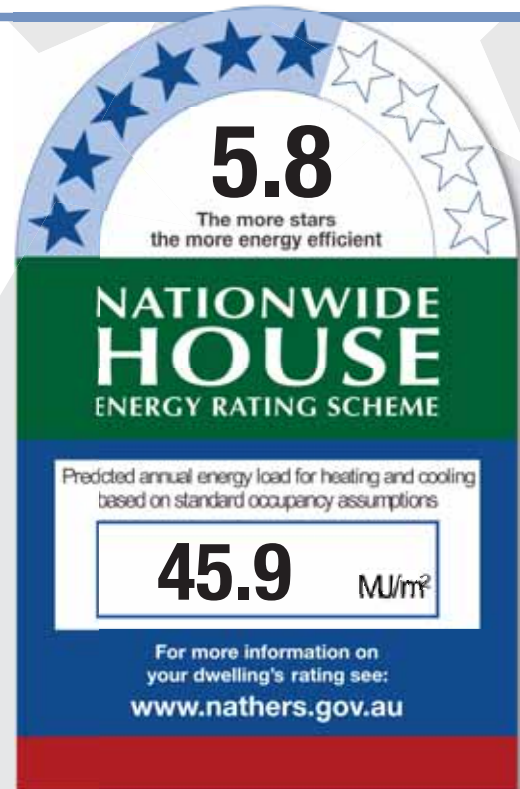
Conditioned: **35.0**
Unconditioned: **0.0**
Garage: **0.0**
TOTAL: **35.0**

Annual thermal performance loads (MJ/m²)

Heating: **5.8**
Cooling: **40.1**
TOTAL: **45.9**

Plan documents

Plan ref/date: **DFJ 102**
Prepared by: **DGJ Architects**



Ceiling penetrations

(see following pages for details)

Sealed: **0**
Unsealed: **0**
TOTAL:** **0**

NOTE: This total is the maximum number of ceiling penetrations allowed to a ceiling (under a roof) for this certificate. **If this number is exceeded in construction then this certificate IS NOT VALID and a new certificate is required. Loss of ceiling insulation for the penetrations listed has been taken into account with the rating.

Principle daylight type: **Unknown**

Window selection - default windows only

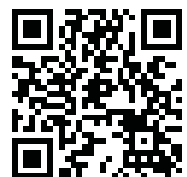
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Nationwide House Energy Rating Scheme* Certificate

BoTR Page 506



Certificate number: **0004580346**

Certificate Date:

11 Feb 2020

★ Star rating:

5.8

Building features

Window type and performance value

Window ID	Window type	U-value	SHGC
TIM-001-02 W	TIM-001-02 W Timber A SG Tint	5.4	0.41

Window schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Orientation	Outdoor shade
Living	TIM-001-02 W	n/a	2800	2800	NE	No Shading

Roof window and skylight type and performance value

ID	Window type	U-value	SHGC
None Present			

Roof window and skylight schedule

Location	ID	Roof window/skylight no.	Area (m²)	Orientation	Outdoor shade	Indoor shade/diffuser
None Present						

External wall type

ID	Wall type	Insulation	Wall wrap or foil
EW-1	Brick Veneer	Anti-glare foil with bulk no gap R2	Yes
EW-2	Fibro Cavity Panel Direct Fix	Anti-glare foil with bulk no gap R2	Yes

External wall schedule

Location	ID	Width (mm)	Height (mm)	Orientation	Fixed Shade	Eaves (mm)
Bath	EW-1	2700	2800	SW	No	3400
Bath	EW-1	900	2800	NW	No	4500
Bath	EW-1	800	2800	SE	No	1800
Entry/Kitchen	EW-1	2595	2800	NW	No	2500
Entry/Kitchen	EW-1	1995	2800	SW	No	4300
Living	EW-1	4595	2800	NW	No	2500
Living	EW-2	4700	2800	NE	No	1500

Internal wall type

Wall type	Area (m²)	Insulation	Wall wrap or foil
IW-1 - Cavity wall, direct fix plasterboard, single gap	37.0	No insulation	No
IW-2 - Concrete Panel/Blocks filled, 20.0 multi plaster layers		No Insulation	No

Floors

Location	Construction	Area (m²)	Sub floor ventilation	Added insulation	Covering
Bath	Suspended Concrete Slab	9.2	Enclosed	No Insulation	Ceramic Tiles

Nationwide House Energy Rating Scheme* Certificate

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Certificate number: **0004580346**

Certificate Date:

11 Feb 2020

★ Star rating:

5.8

Building features continued

	300mm				8mm
Entry/Kitchen	Suspended Concrete Slab 300mm	5.0	Enclosed	No Insulation	Ceramic Tiles 8mm
Living	Suspended Concrete Slab 300mm	12.9	Enclosed	No Insulation	Ceramic Tiles 8mm
Bedroom 1	Suspended Concrete Slab 300mm	8.0	Enclosed	No Insulation	Ceramic Tiles 8mm

Ceiling type

Location	Construction	Added insulation	Roof space above
Bath	Concrete, Plasterboard	No insulation	No
Entry/Kitchen	Concrete, Plasterboard	No insulation	No
Living	Concrete, Plasterboard	No insulation	No
Bedroom 1	Concrete, Plasterboard	No insulation	No

Ceiling penetrations

Location	Number	Type	Diameter (mm)	Sealed/unsealed
None Present				

Ceiling fans

Location	Number	Diameter (mm)
None Present		

Roof type

Construction	Added insulation	Roof colour
None Present		

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Additional information

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Any downlights used must be IC rated and allow for ceiling insulation to be placed directly over the top of them

Explanatory notes

About this report

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While the figures are an indicative guide to energy use, they can be used as a reliable guide for comparative purposes between different house designs and for demonstrating that the design meets the required regulatory compliance.

Homes that are energy efficient use less energy, are warmer in winter, cooler in summer and cost less to run. The higher the star rating the more energy efficient.

This NatHERS House Energy Rating report was carefully prepared by your assessor on the basis of comprehensive modelling using standard procedures to rate your home using the underlying engine developed by the Australian Commonwealth Scientific and Industrial Research Organisation (CSIRO).

All information relating to energy loads presented in this report is based on a range of standard assumptions in order to allow for comparisons with reports prepared for other homes and to demonstrate minimum regulatory compliance.

The standard assumptions include figures for occupancy, indoor air temperature and are based on a unique climate file for your region.

Accredited Assessors

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Contact

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For more information on energy efficient design and insulation visit www.yourhome.gov.au

Nationwide House Energy Rating Scheme* Certificate

Certificate number: 0004580379

Certificate Date: 11 Feb 2020

★ Star rating: 5.9



Assessor details

Accreditation number: **20039**
Name: **David Howard**
Organisation: **Partners Energy Management**
Email: **david@partnersenergy.com.au**
Phone: **0421381005**
Declaration of interest: **yes - managed**
Software: **BERS Pro v4.4.0.0 (3.21)**
AAO: **ABSA**

Overview

Dwelling details

Street: **Unit S5AN02, 2 Gallagher St**
Suburb: **Byron Bay**
State: **NSW** Postcode: **2481**
Type: **New Dwelling** NCC Class: **2**
NatHERS climate zone: **10**
Lot/DP number: **271119** Exposure: **Suburban**

Key construction and insulation materials

☐ see following pages for details

Construction: **Brick Veneer**
Concrete, Plasterboard
Suspended Concrete Slab
Insulation: **R2.0 wall insulation**
No ceiling insulation
No floor insulation
Glazing: **TIM-001-02 W Timber A SG Tint**

Net floor area (m²)

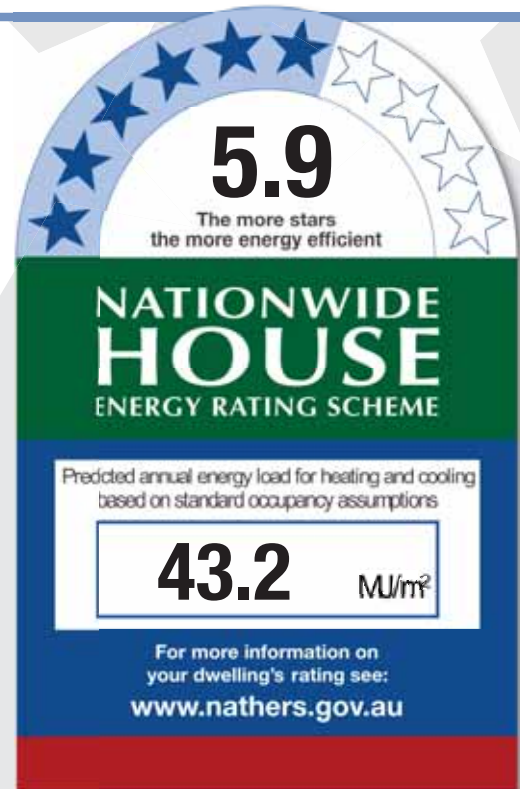
Conditioned: **35.0**
Unconditioned: **0.0**
Garage: **0.0**
TOTAL: **35.0**

Annual thermal performance loads (MJ/m²)

Heating: **3.2**
Cooling: **40.0**
TOTAL: **43.2**

Plan documents

Plan ref/date: **DFJ 102**
Prepared by: **DGJ Architects**



Ceiling penetrations

☐ see following pages for details

Sealed: **0**
Unsealed: **0**
TOTAL: ☐ **0**

****NOTE:** This total is the maximum number of ceiling penetrations allowed to a ceiling (under a roof) for this certificate. **If this number is exceeded in construction then this certificate IS NOT VALID and a new certificate is required.** Loss of ceiling insulation for the penetrations listed has been taken into account with the rating.

Principle daylight type: **Unknown**

Window selection - default windows only

Note on allowable window values:
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Nationwide House Energy Rating Scheme* Certificate

BoTR Page 510



Certificate number **0004580379**

Certificate Date

11 Feb 2020

★ Star rating

5.9

Building features

Window type and performance value

Window ID	Window type	U-value	SHGC
TI00102 W	TI00102 W Timber A SG Tint	5.4	0.41

Window schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Orientation	Outdoor shade
Living	TI00102 W	n/a	2800	2800	N	No Shading

Roof window and skylight type and performance value

ID	Window type	U-value	SHGC
None Present			

Roof window and skylight schedule

Location	ID	Roof window/skylight no.	Area (m²)	Orientation	Outdoor shade	Indoor shade/diffuser
None Present						

External wall type

ID	Wall type	Insulation	Wall wrap or foil
EW1	Brick veneer	Anti-glare foil with bul/no gap 2	Yes
EW2	Fibro Cavity Panel Direct Fi	Anti-glare foil with bul/no gap 2	Yes

External wall schedule

Location	ID	Width (mm)	Height (mm)	Orientation	Fixed Shade	Eaves (mm)
Bath	EW1	2000	2800	SW	No	400
Bath	EW1	1000	2800	NW	No	4500
Entry/Kitchen	EW1	1005	2800	SW	No	4000
Living	EW2	4000	2800	N	No	1500

Internal wall type

Wall type	Area (m²)	Insulation	Wall wrap or foil
IW1 Cavity wall direct fi plasterboard single gap	11.0	No insulation	No
IW2 Concrete Panel blocks filled 400 multi plaster layers		No Insulation	No

Floors

Location	Construction	Area (m²)	Sub floor ventilation	Added insulation	Covering
Bath	Suspended Concrete Slab 100mm	1.2	Enclosed	No Insulation	Ceramic Tiles 8mm
Entry/Kitchen	Suspended Concrete Slab 100mm	5.0	Enclosed	No Insulation	Ceramic Tiles 8mm

Nationwide House Energy Rating Scheme* Certificate

BoTR Page 511



Certificate number **0004580379**

Certificate Date

11 Feb 2020

★ Star rating

5.9

Building features continued

Living	Suspended Concrete Slab 100mm	12.0	Enclosed	No Insulation	Ceramic Tiles 8mm
Bedroom 1	Suspended Concrete Slab 100mm	8.0	Enclosed	No Insulation	Ceramic Tiles 8mm

Ceiling type

Location	Construction	Added insulation	Roof space above
Bath	Concrete/Plasterboard	No insulation	No
Entry/Kitchen	Concrete/Plasterboard	No insulation	No
Living	Concrete/Plasterboard	No insulation	No
Bedroom 1	Concrete/Plasterboard	No insulation	No

Ceiling penetrations

Location	Number	Type	Diameter (mm)	Sealed/unsealed
None Present				

Ceiling fans

Location	Number	Diameter (mm)
None Present		

Roof type

Construction	Added insulation	Roof colour
None Present		

Nationwide House Energy Rating Scheme* Certificate

Certificate number: 0004580□□□

Certificate Date: 11 Feb 2020

★ Star rating: 5.□



Additional information

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Explanatory notes

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Nationwide House Energy Rating Scheme* Certificate

Certificate number: 0004580403

Certificate Date: 11 Feb 2020

★ Star rating: 5.7



Assessor details

Accreditation number: **20039**
Name: **David Howard**
Organisation: **Partners Energy Management**
Email: **david@partnersenergy.com.au**
Phone: **0421381005**
Declaration of interest: **yes - managed**
Software: **BERS Pro v4.4.0.0 (3.21)**
AAO: **ABSA**

Overview

Dwelling details

Street: **Unit S5AN03, 2 Gallagher St**
Suburb: **Byron Bay**
State: **NSW** Postcode: **2481**
Type: **New Dwelling** NCC Class: **2**
NatHERS climate zone: **10**
Lot/DP number: **271119** Exposure: **Suburban**

Key construction and insulation materials

☐ see following pages for details

Construction: **Brick Veneer**
Concrete, Plasterboard
Suspended Concrete Slab
Insulation: **R2.0 wall insulation**
No ceiling insulation
No floor insulation
Glazing: **TIM-001-02 W Timber A SG Tint**

Net floor area (m²)

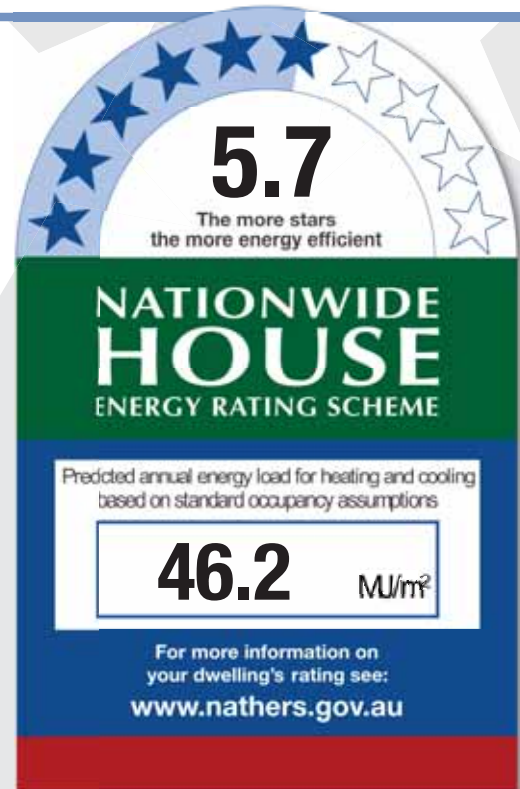
Conditioned: **35.0**
Unconditioned: **0.0**
Garage: **0.0**
TOTAL: **35.0**

Annual thermal performance loads (MJ/m²)

Heating: **6.4**
Cooling: **39.8**
TOTAL: **46.2**

Plan documents

Plan ref/date: **DFJ 102**
Prepared by: **DGJ Architects**



Ceiling penetrations

☐ see following pages for details

Sealed: **0**
Unsealed: **0**
TOTAL: ☐ **0**

****NOTE:** This total is the maximum number of ceiling penetrations allowed to a ceiling (under a roof) for this certificate. **If this number is exceeded in construction then this certificate IS NOT VALID and a new certificate is required.** Loss of ceiling insulation for the penetrations listed has been taken into account with the rating.

Principle daylight type: **Unknown**

Window selection - default windows only

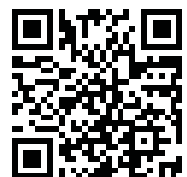
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Nationwide House Energy Rating Scheme* Certificate

BoTR Page 514



Certificate number: **0004580403**

Certificate Date:

11 Feb 2020

★ Star rating:

5.7

Building features

Window type and performance value

Window ID	Window type	U-value	SHGC
TI00102 W	TI00102 W Timber A SG Tint	5.4	0.41

Window schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Orientation	Outdoor shade
Living	TI00102 W	n/a	2800	2800	N	No Shading

Roof window and skylight type and performance value

ID	Window type	U-value	SHGC
None Present			

Roof window and skylight schedule

Location	ID	Roof window/skylight no.	Area (m²)	Orientation	Outdoor shade	Indoor shade/diffuser
None Present						

External wall type

ID	Wall type	Insulation	Wall wrap or foil
EW1	Brick veneer	Anti-glare foil with bul no gap 2	Yes
EW2	Fibro Cavity Panel Direct Fi	Anti-glare foil with bul no gap 2	Yes

External wall schedule

Location	ID	Width (mm)	Height (mm)	Orientation	Fixed Shade	Eaves (mm)
Bath	EW1	200	2800	SW	No	400
Bath	EW1	00	2800	NW	No	4500
Bath	EW1	45	2800	S	No	1800
Entry/Kitchen	EW1	15	2800	SW	No	400
Living	EW2	400	2800	N	No	1500
Living	EW1	145	2800	S	No	1800
Bedroom 1	EW1	00	2800	S	No	1800

Internal wall type

Wall type	Area (m²)	Insulation	Wall wrap or foil
IW1 Cavity wall direct fi plasterboard single gap	0.0	No insulation	No
IW2 Concrete Panel locs filled 20.0 multi plaster layers		No Insulation	No

Floors

Location	Construction	Area (m²)	Sub floor ventilation	Added insulation	Covering
Bath	Suspended Concrete Slab	0.2	Enclosed	No Insulation	Ceramic Tiles

Nationwide House Energy Rating Scheme* Certificate

BoTR Page 515



Certificate number: **0004580403**

Certificate Date:

11 Feb 2020

★ Star rating:

5.7

Building features continued

Entrance	mm	mm	mm	mm	mm
Entrance	Concrete Slab	mm	mm	mm	Ceramic tile
Roof	Concrete Slab	mm	mm	mm	Ceramic tile
Roof	Concrete Slab	mm	mm	mm	Ceramic tile

Ceiling type

Location	Construction	Added insulation	Roof space above
Flat	Concrete slab	mm	mm
Entrance	Concrete slab	mm	mm
Roof	Concrete slab	mm	mm
Roof	Concrete slab	mm	mm

Ceiling penetrations

Location	Number	Type	Diameter (mm)	Sealed/unsealed
Roof				

Ceiling fans

Location	Number	Diameter (mm)
Roof		

Roof type

Construction	Added insulation	Roof colour
Roof		

Nationwide House Energy Rating Scheme* Certificate



Certificate number:

Certificate Date: Feb

★ Star rating:

Additional information

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Nationwide House Energy Rating Scheme* Certificate

Certificate number: 0004580429

Certificate Date: 11 Feb 2020

★ Star rating: 5.7



Assessor details

Accreditation

number: 20039

Name: David Howard

Organisation: Partners Energy Management

Email: david@partnersenergy.com.au

Phone: 0421381005

Declaration of interest: yes - managed

Software: BERS Pro v4.4.0.0 (3.21)

AAO: ABSA

Overview

Dwelling details

Street: Unit S5BN01, 2 Gallagher St

Suburb: Byron Bay

State: NSW

Postcode: 2481

Type: New Dwelling

NCC Class: 2

Plot ID

number: 271119

Plot ID

climate zone: 10

Exposure: Suburban

Key construction and insulation materials

Construction

Construction: Brick Veneer

Concrete, Plasterboard

Suspended Concrete Slab

Insulation:

R2.0 wall insulation

No ceiling insulation

No floor insulation

Glazing:

TIM-001-02 W Timber A SG Tint

Net floor area (m²)

Conditioned: 35.0

Unconditioned: 0.0

Garage: 0.0

TOTAL: 35.0

Annual thermal performance loads (MJ/m²)

Heating: 6.4

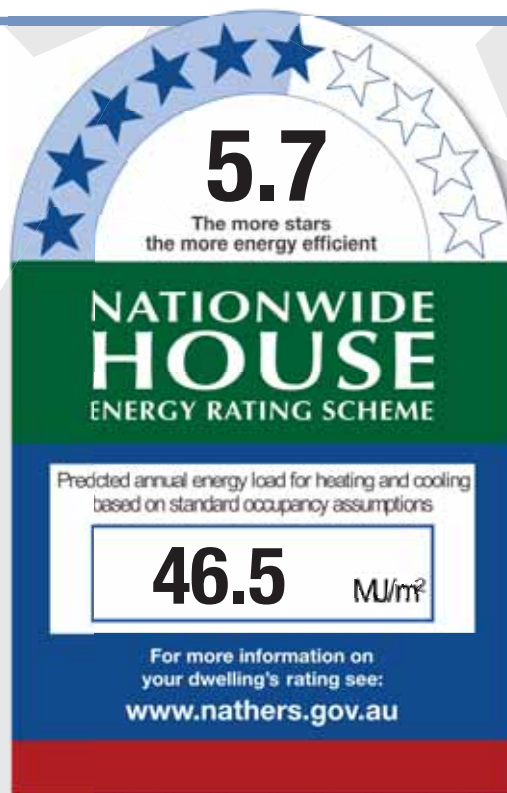
Cooling: 40.0

TOTAL: 46.5

Plan documents

Plan ref/date: DFJ 102

Prepared by: DGJ Architects



Ceiling penetrations

Sealed: 0

Unsealed: 0

TOTAL: 0

****NOTE:** This total is the maximum number of ceiling penetrations allowed to a ceiling (under a roof) for this certificate. **If this number is exceeded in construction then this certificate IS NOT VALID and a new certificate is required.** Loss of ceiling insulation for the penetrations listed has been taken into account with the rating.

Principle daylight type: Unknown

Window selection - default windows only

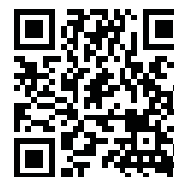
Note on allowable window values: Only a 5% tolerance to the nominated SHGC window values shown on page 2 can be used with this rating.

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NB: This tolerance ONLY applies to SHGC, the U-value can always be lower but not higher than the values stated on page 2.

If any of windows selected are outside the 5% tolerance then this certificate is no longer valid and the dwelling will need to be rerated to confirm compliance.

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



Nationwide House Energy Rating Scheme* Certificate

BoTR Page 518



Certificate number: 0004580429

Certificate Date:

11 Feb 2020

★ Star rating:

5.7

Building features

Window type and performance value

Window ID	Window type	U-value	SHGC
000 0000000 0	000 0000000 0 Timber 0 S 0 int	000	0000

Window schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Orientation	Outdoor shade
Living	000 0000000 0	n/a	0000	0000	00	00 Sealing

Roof window and skylight type and performance value

ID	Window type	U-value	SHGC
00ne 0re0ent			

Roof window and skylight schedule

Location	ID	Roof window/skylight no.	Area (m²)	Orientation	Outdoor shade	Indoor shade/diffuser
00ne 0re0ent						

External wall type

ID	Wall type	Insulation	Wall wrap or foil
00 00	0ric 0eneer	0ntig 0are f 00it 0 bu 0n 0 ga 00	0e 0
00 00	0ibr 0 Ca 0t 0 0ane 0Direct 00	0ntig 0are f 00it 0 bu 0n 0 ga 00	0e 0

External wall schedule

Location	ID	Width (mm)	Height (mm)	Orientation	Fixed Shade	Eaves (mm)
0at 0	00 00	0000	0000	S 0	00	0000
0at 0	00 00	000	0000	00	00	0000
0at 0	00 00	000	0000	S 0	00	0000
0ntr 00it 0en	00 00	0000	0000	00	00	0000
0ntr 00it 0en	00 00	0000	0000	S 0	00	0000
Living	00 00	0000	0000	00	00	0000
Living	00 00	0000	0000	00	00	0000

Internal wall type

Wall type	Area (m²)	Insulation	Wall wrap or foil
00 00 0Ca 0t 0 0a 00direct fi 0	0000	00 insulation	00
0a 0ter 0ar 000ing 0e ga 0			
00 00 0C 0ncrete 0ane 00c 00 fi 0e 00 0000		00 insulation	00
multi 0a 0ter 0a 0er 0			

Floors

Location	Construction	Area (m²)	Sub floor ventilation	Added insulation	Covering
0at 0	Su 00en 0e 0 C 0ncrete S 0ab	000	0nc 00e 0	00 insulation	Ceramic 0ie 0

Nationwide House Energy Rating Scheme* Certificate

BoTR Page 519



Certificate number: **0004580429**

Certificate Date:

11 Feb 2020

★ Star rating:

5.7

Building features continued

Entrance	mm	mm	mm	mm	mm
Entrance	mm	mm	mm	mm	mm
Entrance	mm	mm	mm	mm	mm
Entrance	mm	mm	mm	mm	mm

Ceiling type

Location	Construction	Added insulation	Roof space above
Flat	Concrete slab	Insulation	
Entrance	Concrete slab	Insulation	
Roofing	Concrete slab	Insulation	
Roofing	Concrete slab	Insulation	

Ceiling penetrations

Location	Number	Type	Diameter (mm)	Sealed/unsealed
Roof				

Ceiling fans

Location	Number	Diameter (mm)
Roof		

Roof type

Construction	Added insulation	Roof colour
Roof		

Nationwide House Energy Rating Scheme* Certificate



Certificate number:

Certificate Date: Feb

★ Star rating:

Additional information

If carpet note a floor covering it may be replaced and note

Due to non current in the library the grading description may not match actual product in the and

SoC cause may be considered the grading description or product code

on the night the must be rate and a for ceiling insulation to be placed directly over the top of them

Explanatory notes

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Nationwide House Energy Rating Scheme* Certificate

Certificate number: 0004580338

Certificate Date: 11 Feb 2020

★ Star rating: 5.9



Assessor details

Accreditation number: 20039
Name: David Howard
Organisation: Partners Energy Management
Email: david@partnersenergy.com.au
Phone: 0421381005
Declaration of interest: yes - managed
Software: BERS Pro v4.4.0.0 (3.21)
AAO: ABSA

Overview

Dwelling details

Street: Unit S5BN02, 2 Gallagher St
Suburb: Byron Bay
State: NSW Postcode: 2481
Type: New Dwelling NCC Class: 2
Climate zone: 10
ID number: 271119 Exposure: Suburban

Key construction and insulation materials

Construction: Brick Veneer
Concrete, Plasterboard
Suspended Concrete Slab
Insulation: R2.0 wall insulation
No ceiling insulation
No floor insulation
Glazing: TIM-001-02 W Timber A SG Tint

Net floor area (m²)

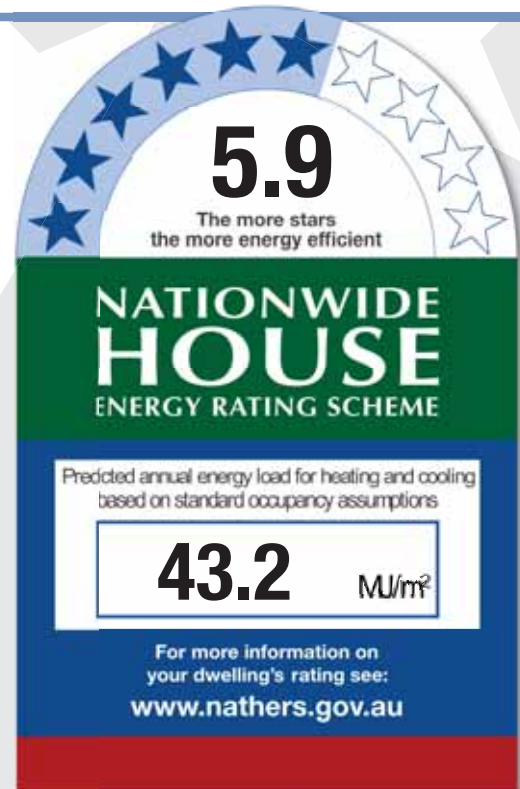
Conditioned: 35.0
Unconditioned: 0.0
Garage: 0.0
TOTAL: 35.0

Annual thermal performance loads (MJ/m²)

Heating: 3.2
Cooling: 40.0
TOTAL: 43.2

Plan documents

Plan ref/date: DFJ 102
Prepared by: DGJ Architects



Ceiling penetrations

Sealed: 0
Unsealed: 0
TOTAL: 0

****NOTE:** This total is the maximum number of ceiling penetrations allowed to a ceiling (under a roof) for this certificate. **If this number is exceeded in construction then this certificate IS NOT VALID and a new certificate is required.** Loss of ceiling insulation for the penetrations listed has been taken into account with the rating.

Principle daylight type: Unknown

Window selection - default windows only

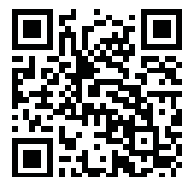
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Nationwide House Energy Rating Scheme* Certificate

BoTR Page 522



Certificate number: **0004580338**

Certificate Date:

11 Feb 2020

★ Star rating:

5.9

Building features

Window type and performance value

Window ID	Window type	U-value	SHGC
TIM-001-02 W	TIM-001-02 W Timber A SG Tint	5.4	0.41

Window schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Orientation	Outdoor shade
Living	TIM-001-02 W	n/a	2800	2800	NE	No Shading

Roof window and skylight type and performance value

ID	Window type	U-value	SHGC
None Present			

Roof window and skylight schedule

Location	ID	Roof window/skylight no.	Area (m²)	Orientation	Outdoor shade	Indoor shade/diffuser
None Present						

External wall type

ID	Wall type	Insulation	Wall wrap or foil
EW-1	Brick Veneer	Anti-glare foil with bulk no gap R2	Yes
EW-2	Fibro Cavity Panel Direct Fix	Anti-glare foil with bulk no gap R2	Yes

External wall schedule

Location	ID	Width (mm)	Height (mm)	Orientation	Fixed Shade	Eaves (mm)
Bath	EW-1	2700	2800	SW	No	3400
Bath	EW-1	900	2800	NW	No	4500
Entry/Kitchen	EW-1	1995	2800	SW	No	4300
Living	EW-2	4700	2800	NE	No	1500

Internal wall type

Wall type	Area (m²)	Insulation	Wall wrap or foil
IW-1 - Cavity wall, direct fix plasterboard, single gap	37.0	No insulation	No
IW-2 - Concrete Panel/Blocks filled, multi plaster layers	43.0	No Insulation	No

Floors

Location	Construction	Area (m²)	Sub floor ventilation	Added insulation	Covering
Bath	Suspended Concrete Slab 300mm	9.2	Enclosed	No Insulation	Ceramic Tiles 8mm
Entry/Kitchen	Suspended Concrete Slab 300mm	5.0	Enclosed	No Insulation	Ceramic Tiles 8mm

Nationwide House Energy Rating Scheme* Certificate

BoTR Page 523

Certificate number: **0004580338**

Certificate Date:

11 Feb 2020

★ Star rating:

5.9

Building features continued

Living	Suspended Concrete Slab 300mm	12.9	Enclosed	No Insulation	Ceramic Tiles 8mm
Bedroom 1	Suspended Concrete Slab 300mm	8.0	Enclosed	No Insulation	Ceramic Tiles 8mm

Ceiling type

Location	Construction	Added insulation	Roof space above
Bath	Concrete, Plasterboard	No insulation	No
Entry/Kitchen	Concrete, Plasterboard	No insulation	No
Living	Concrete, Plasterboard	No insulation	No
Bedroom 1	Concrete, Plasterboard	No insulation	No

Ceiling penetrations

Location	Number	Type	Diameter (mm)	Sealed/unsealed
None Present				

Ceiling fans

Location	Number	Diameter (mm)
None Present		

Roof type

Construction	Added insulation	Roof colour
None Present		

Nationwide House Energy Rating Scheme* Certificate

Certificate number: 0004580338

Certificate Date: 11 Feb 2020

★ Star rating: 5.9



Additional information

If carpet noted as floor covering it may be replaced with any type.

Due to non current Window Library the glazing descriptions may not match actual products. Only the U and SHGC values should be considered NOT the glazing descriptions or product code.

Any downlights used must be IC rated and allow for ceiling insulation to be placed directly over the top of them

Explanatory notes

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Nationwide House Energy Rating Scheme* Certificate

Certificate number: 0004580361

Certificate Date: 11 Feb 2020

★ Star rating: 5.9



Assessor details

Accreditation number: **20039**
Name: **David Howard**
Organisation: **Partners Energy Management**
Email: **david@partnersenergy.com.au**
Phone: **0421381005**
Declaration of interest: **yes - managed**
Software: **BERS Pro v4.4.0.0 (3.21)**
AAO: **ABSA**

Overview

Dwelling details

Street: **Unit S5BN03, 2 Gallagher St**
Suburb: **Byron Bay**
State: **NSW** Postcode: **2481**
Type: **New Dwelling** NCC Class: **2**
NatHERS climate zone: **10**
Lot/DP number: **271119** Exposure: **Suburban**

Key construction and insulation materials

(see following pages for details)

Construction: **Brick Veneer**
Concrete, Plasterboard
Suspended Concrete Slab
Insulation: **R2.0 wall insulation**
No ceiling insulation
No floor insulation
Glazing: **TIM-001-02 W Timber A SG Tint**

Net floor area (m²)

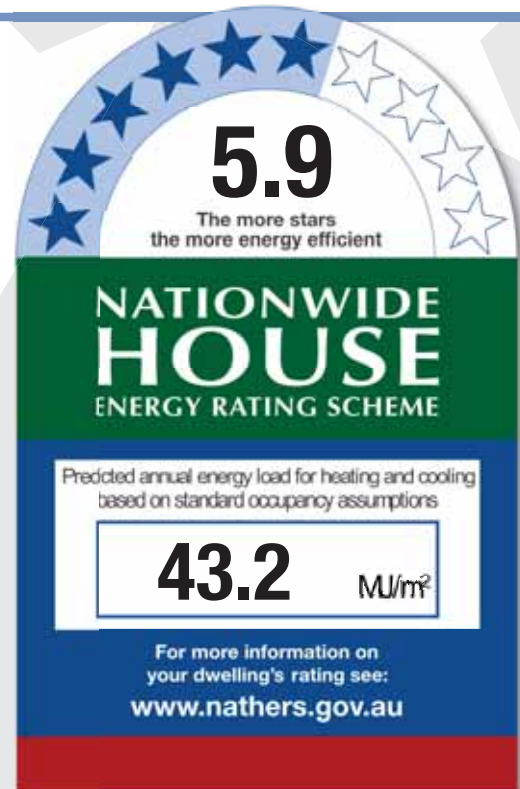
Conditioned: **35.0**
Unconditioned: **0.0**
Garage: **0.0**
TOTAL: **35.0**

Annual thermal performance loads (MJ/m²)

Heating: **3.2**
Cooling: **40.0**
TOTAL: **43.2**

Plan documents

Plan ref/date: **DFJ 102**
Prepared by: **DGJ Architects**



Ceiling penetrations

(see following pages for details)

Sealed: **0**
Unsealed: **0**
TOTAL:** **0**

NOTE: This total is the maximum number of ceiling penetrations allowed to a ceiling (under a roof) for this certificate. **If this number is exceeded in construction then this certificate IS NOT VALID and a new certificate is required. Loss of ceiling insulation for the penetrations listed has been taken into account with the rating.

Principle daylight type: **Unknown**

Window selection - default windows only

Note on allowable window values: Only a 5% tolerance to the nominated SHGC window values shown on page 2 can be used with this rating.

Note: Only a +/- 5% SHGC tolerance is allowed with this rating.

NB: This tolerance ONLY applies to SHGC, the U-value can always be lower but not higher than the values stated on page 2.

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



Nationwide House Energy Rating Scheme* Certificate

BoTR Page 526



Certificate number: **0004580361**

Certificate Date:

11 Feb 2020

★ Star rating:

5.9

Building features

Window type and performance value

Window ID	Window type	U-value	SHGC
TIM-001-02 W	TIM-001-02 W Timber A SG Tint	5.4	0.41

Window schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Orientation	Outdoor shade
Living	TIM-001-02 W	n/a	2800	2800	NE	No Shading

Roof window and skylight type and performance value

ID	Window type	U-value	SHGC
None Present			

Roof window and skylight schedule

Location	ID	Roof window/skylight no.	Area (m ²)	Orientation	Outdoor shade	Indoor shade/diffuser
None Present						

External wall type

ID	Wall type	Insulation	Wall wrap or foil
EW-1	Brick Veneer	Anti-glare foil with bulk no gap R2	Yes
EW-2	Fibro Cavity Panel Direct Fix	Anti-glare foil with bulk no gap R2	Yes

External wall schedule

Location	ID	Width (mm)	Height (mm)	Orientation	Fixed Shade	Eaves (mm)
Bath	EW-1	2700	2800	SW	No	3400
Bath	EW-1	900	2800	NW	No	4500
Entry/Kitchen	EW-1	1995	2800	SW	No	4300
Living	EW-2	4700	2800	NE	No	1500

Internal wall type

Wall type	Area (m ²)	Insulation	Wall wrap or foil
IW-1 - Cavity wall, direct fix plasterboard, single gap	37.0	No insulation	No
IW-2 - Concrete Panel/Blocks filled, multi plaster layers	43.0	No Insulation	No

Floors

Location	Construction	Area (m ²)	Sub floor ventilation	Added insulation	Covering
Bath	Suspended Concrete Slab 300mm	9.2	Enclosed	No Insulation	Ceramic Tiles 8mm
Entry/Kitchen	Suspended Concrete Slab 300mm	5.0	Enclosed	No Insulation	Ceramic Tiles 8mm

Nationwide House Energy Rating Scheme* Certificate

BoTR Page 527

Certificate number: **0004580361**

Certificate Date:

11 Feb 2020

★ Star rating:

5.9

Building features continued

Living	Suspended Concrete Slab 300mm	12.9	Enclosed	No Insulation	Ceramic Tiles 8mm
Bedroom 1	Suspended Concrete Slab 300mm	8.0	Enclosed	No Insulation	Ceramic Tiles 8mm

Ceiling type

Location	Construction	Added insulation	Roof space above
Bath	Concrete, Plasterboard	No insulation	No
Entry/Kitchen	Concrete, Plasterboard	No insulation	No
Living	Concrete, Plasterboard	No insulation	No
Bedroom 1	Concrete, Plasterboard	No insulation	No

Ceiling penetrations

Location	Number	Type	Diameter (mm)	Sealed/unsealed
None Present				

Ceiling fans

Location	Number	Diameter (mm)
None Present		

Roof type

Construction	Added insulation	Roof colour
None Present		

Nationwide House Energy Rating Scheme* Certificate

Certificate number: 0004580361

Certificate Date: 11 Feb 2020

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Nationwide House Energy Rating Scheme* Certificate

Certificate number: 0004580387

Certificate Date: 11 Feb 2020

★ Star rating: 5.9



Assessor details

Accreditation number: **20039**
Name: **David Howard**
Organisation: **Partners Energy Management**
Email: **david@partnersenergy.com.au**
Phone: **0421381005**
Declaration of interest: **yes - managed**
Software: **BERS Pro v4.4.0.0 (3.21)**
AAO: **ABSA**

Overview

Dwelling details

Street: **Unit S5BN04, 2 Gallagher St**
Suburb: **Byron Bay**
State: **NSW** Postcode: **2481**
Type: **New Dwelling** NCC Class: **2**
NatHERS climate zone: **10**
Lot/DP number: **271119** Exposure: **Suburban**

Key construction and insulation materials

(see following pages for details)

Construction: **Brick Veneer**
Concrete, Plasterboard
Suspended Concrete Slab
Insulation: **R2.0 wall insulation**
No ceiling insulation
No floor insulation
Glazing: **TIM-001-02 W Timber A SG Tint**

Net floor area (m²)

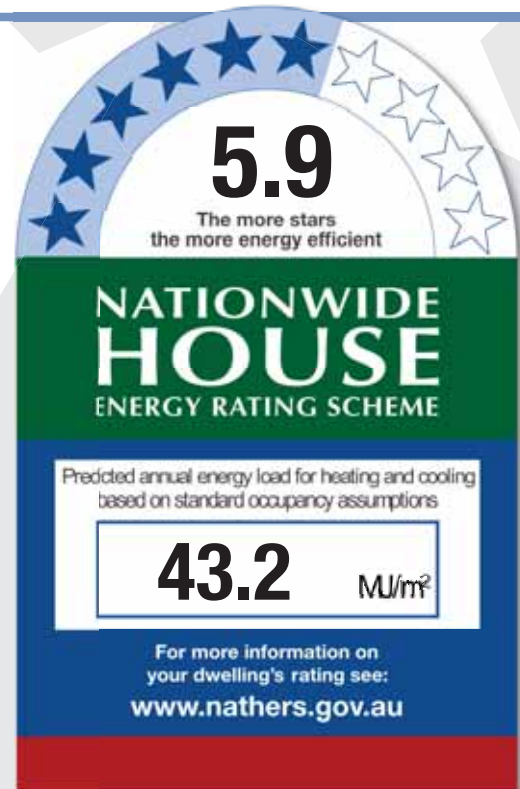
Conditioned: **35.0**
Unconditioned: **0.0**
Garage: **0.0**
TOTAL: **35.0**

Annual thermal performance loads (MJ/m²)

Heating: **3.2**
Cooling: **40.0**
TOTAL: **43.2**

Plan documents

Plan ref/date: **DFJ 102**
Prepared by: **DGJ Architects**



Ceiling penetrations

(see following pages for details)

Sealed: **0**
Unsealed: **0**
TOTAL:** **0**

NOTE: This total is the maximum number of ceiling penetrations allowed to a ceiling (under a roof) for this certificate. **If this number is exceeded in construction then this certificate IS NOT VALID and a new certificate is required. Loss of ceiling insulation for the penetrations listed has been taken into account with the rating.

Principle daylight type: **Unknown**

Window selection - default windows only

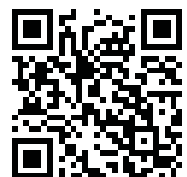
Note on allowable window values:
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If any of windows selected are outside the 5% tolerance then this certificate is no longer valid and the dwelling will need to be rerated to confirm compliance.

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




Certificate number: **0004580387**

Certificate Date:

11 Feb 2020

★ Star rating:

5.9

Building features

Window type and performance value

Window ID	Window type	U-value	SHGC
TIM-001-02 W	TIM-001-02 W Timber A SG Tint	5.4	0.41

Window schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Orientation	Outdoor shade
Living	TIM-001-02 W	n/a	2800	2800	NE	No Shading

Roof window and skylight type and performance value

ID	Window type	U-value	SHGC
None Present			

Roof window and skylight schedule

Location	ID	Roof window/skylight no.	Area (m ²)	Orientation	Outdoor shade	Indoor shade/diffuser
None Present						

External wall type

ID	Wall type	Insulation	Wall wrap or foil
EW-1	Brick Veneer	Anti-glare foil with bulk no gap R2	Yes
EW-2	Fibro Cavity Panel Direct Fix	Anti-glare foil with bulk no gap R2	Yes

External wall schedule

Location	ID	Width (mm)	Height (mm)	Orientation	Fixed Shade	Eaves (mm)
Bath	EW-1	2700	2800	SW	No	3400
Bath	EW-1	900	2800	NW	No	4500
Entry/Kitchen	EW-1	1995	2800	SW	No	4300
Living	EW-2	4700	2800	NE	No	1500

Internal wall type

Wall type	Area (m ²)	Insulation	Wall wrap or foil
IW-1 - Cavity wall, direct fix plasterboard, single gap	37.0	No insulation	No
IW-2 - Concrete Panel/Blocks filled, multi plaster layers	43.0	No Insulation	No

Floors

Location	Construction	Area (m ²)	Sub floor ventilation	Added insulation	Covering
Bath	Suspended Concrete Slab 300mm	9.2	Enclosed	No Insulation	Ceramic Tiles 8mm
Entry/Kitchen	Suspended Concrete Slab 300mm	5.0	Enclosed	No Insulation	Ceramic Tiles 8mm

Nationwide House Energy Rating Scheme* Certificate

BoTR Page 531



Certificate number: **0004580387**

Certificate Date:

11 Feb 2020

★ Star rating:

5.9

Building features continued

Living	Suspended Concrete Slab 300mm	2.9	Enclosed	No Insulation	Ceramic Tiles 8mm
Bedroom	Suspended Concrete Slab 300mm	8.0	Enclosed	No Insulation	Ceramic Tiles 8mm

Ceiling type

Location	Construction	Added insulation	Roof space above
Bath	Concrete, plasterboard	No insulation	No
Entry/Kitchen	Concrete, plasterboard	No insulation	No
Living	Concrete, plasterboard	No insulation	No
Bedroom	Concrete, plasterboard	No insulation	No

Ceiling penetrations

Location	Number	Type	Diameter (mm)	Sealed/unsealed
None	0	resent		

Ceiling fans

Location	Number	Diameter (mm)
None	0	resent

Roof type

Construction	Added insulation	Roof colour
None	0	resent

Nationwide House Energy Rating Scheme* Certificate

Certificate number: 000□58038□

Certificate Date: □□ Feb 2020

★ Star rating: 5.9



Additional information

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Explanatory notes

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Accredited Assessors

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Disclaimer

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Contact

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For more information on energy efficient design and insulation visit www.yourhome.gov.au

Nationwide House Energy Rating Scheme* Certificate

Certificate number: 0004580411

Certificate Date: 11 Feb 2020

★ Star rating: 5.9



Assessor details

Accreditation number: **20039**
Name: **David Howard**
Organisation: **Partners Energy Management**
Email: **david@partnersenergy.com.au**
Phone: **0421381005**
Declaration of interest: **yes - managed**
Software: **BERS Pro v4.4.0.0 (3.21)**
AAO: **ABSA**

Overview

Dwelling details

Street: **Unit S5BN05, 2 Gallagher St**
Suburb: **Byron Bay**
State: **NSW** Postcode: **2481**
Type: **New Dwelling** NCC Class: **2**
NatHERS climate zone: **10**
☐ Not/D number: **271119** Exposure: **Suburban**

Key construction and insulation materials

(see following pages for details)

Construction: **Brick Veneer**
Concrete, Plasterboard
Suspended Concrete Slab
Insulation: **R2.0 wall insulation**
No ceiling insulation
No floor insulation
Glazing: **TIM-001-02 W Timber A SG Tint**

Net floor area (m²)

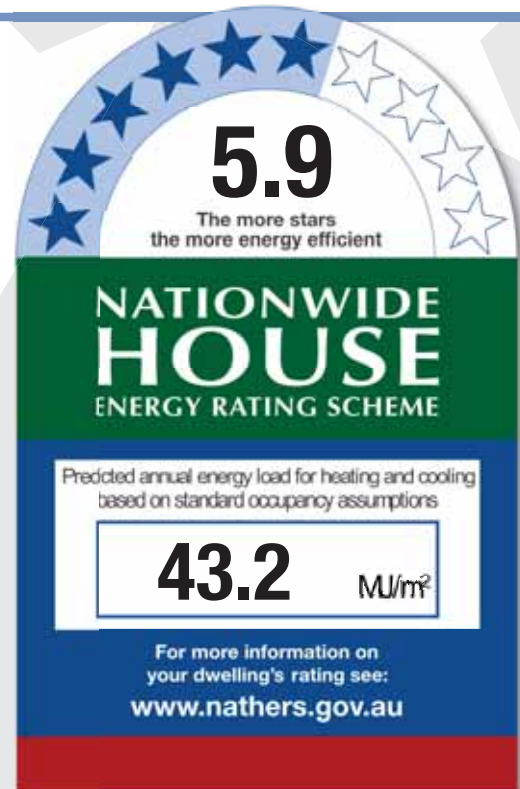
Conditioned: **35.0**
Unconditioned: **0.0**
Garage: **0.0**
TOTAL: **35.0**

Annual thermal performance loads (MJ/m²)

Heating: **3.2**
Cooling: **40.0**
TOTAL: **43.2**

Plan documents

Plan ref/date: **DFJ 102**
Prepared by: **DGJ Architects**



Ceiling penetrations

(see following pages for details)

Sealed: **0**
Unsealed: **0**
TOTAL:** **0**

NOTE: This total is the maximum number of ceiling penetrations allowed to a ceiling (under a roof) for this certificate. **If this number is exceeded in construction then this certificate IS NOT VALID and a new certificate is required. Loss of ceiling insulation for the penetrations listed has been taken into account with the rating.

Principle daylight type: **Unknown**

Window selection - default windows only

Note on allowable window values: Only a 5% tolerance to the nominated SHGC window values shown on page 2 can be used with this rating.

Note: Only a +/- 5% SHGC tolerance is allowed with this rating.

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If any of windows selected are outside the 5% tolerance then this certificate is no longer valid and the dwelling will need to be rerated to confirm compliance.

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



Nationwide House Energy Rating Scheme* Certificate

BoTR Page 534



Certificate number: 0004580411

Certificate Date:

11 Feb 2020

★ Star rating:

5.9

Building features

Window type and performance value

Window ID	Window type	U-value	SHGC
TI0002	TI0002 Timber A S Tint	5.0	0.00

Window schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Orientation	Outdoor shade
Living	TI0002	n/a	2800	2800	NE	No Shading

Roof window and skylight type and performance value

ID	Window type	U-value	SHGC
None	Present		

Roof window and skylight schedule

Location	ID	Roof window/skylight no.	Area (m²)	Orientation	Outdoor shade	Indoor shade/diffuser
None	Present					

External wall type

ID	Wall type	Insulation	Wall wrap or foil
E00	Brick veneer	Anti-glare foil with bul no gap R2	Yes
E02	Fibro Cavity Panel Direct Fi	Anti-glare foil with bul no gap R2	Yes

External wall schedule

Location	ID	Width (mm)	Height (mm)	Orientation	Fixed Shade	Eaves (mm)
Bath	E00	2000	2800	S	No	300
Bath	E00	900	2800	N	No	500
Entry/Kitchen	E00	995	2800	S	No	300
Living	E02	2000	2800	NE	No	500

Internal wall type

Wall type	Area (m²)	Insulation	Wall wrap or foil
I00 Cavity wall, direct fi plasterboard, single gap	3.0	No insulation	No
I02 Concrete Panel/Bloc's filled, multi plaster layers	3.0	No Insulation	No

Floors

Location	Construction	Area (m²)	Sub floor ventilation	Added insulation	Covering
Bath	Suspended Concrete Slab 300mm	9.2	Enclosed	No Insulation	Ceramic Tiles 8mm
Entry/Kitchen	Suspended Concrete Slab 300mm	5.0	Enclosed	No Insulation	Ceramic Tiles 8mm

Nationwide House Energy Rating Scheme* Certificate

BoTR Page 535



Certificate number: **0004580411**

Certificate Date:

11 Feb 2020

★ Star rating:

5.9

Building features continued

Living	Suspended Concrete Slab 300mm	2.9	Enclosed	No Insulation	Ceramic Tiles 8mm
Bedroom	Suspended Concrete Slab 300mm	8.0	Enclosed	No Insulation	Ceramic Tiles 8mm

Ceiling type

Location	Construction	Added insulation	Roof space above
Bath	Concrete, plasterboard	No insulation	No
Entry/Kitchen	Concrete, plasterboard	No insulation	No
Living	Concrete, plasterboard	No insulation	No
Bedroom	Concrete, plasterboard	No insulation	No

Ceiling penetrations

Location	Number	Type	Diameter (mm)	Sealed/unsealed
None	0	resent		

Ceiling fans

Location	Number	Diameter (mm)
None	0	resent

Roof type

Construction	Added insulation	Roof colour
None	0	resent

Nationwide House Energy Rating Scheme* Certificate

Certificate number: 000□580□□□

Certificate Date: □□ Feb 2020

★ Star rating: 5.9



Additional information

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Nationwide House Energy Rating Scheme* Certificate

Certificate number: 0004580437

Certificate Date: 11 Feb 2020

★ Star rating: 5.9



Assessor details

Accreditation number: **20039**
Name: **David Howard**
Organisation: **Partners Energy Management**
Email: **david@partnersenergy.com.au**
Phone: **0421381005**
Declaration of interest: **yes - managed**
Software: **BERS Pro v4.4.0.0 (3.21)**
AAO: **ABSA**

Overview

Dwelling details

Street: **Unit S5BN06, 2 Gallagher St**
Suburb: **Byron Bay**
State: **NSW** Postcode: **2481**
Type: **New Dwelling** NCC Class: **2**
NatHERS climate zone: **10**
☐ Not/D number: **271119** Exposure: **Suburban**

Key construction and insulation materials

(see following pages for details)

Construction: **Brick Veneer**
Concrete, Plasterboard
Suspended Concrete Slab
Insulation: **R2.0 wall insulation**
No ceiling insulation
No floor insulation
Glazing: **TIM-001-02 W Timber A SG Tint**

Net floor area (m²)

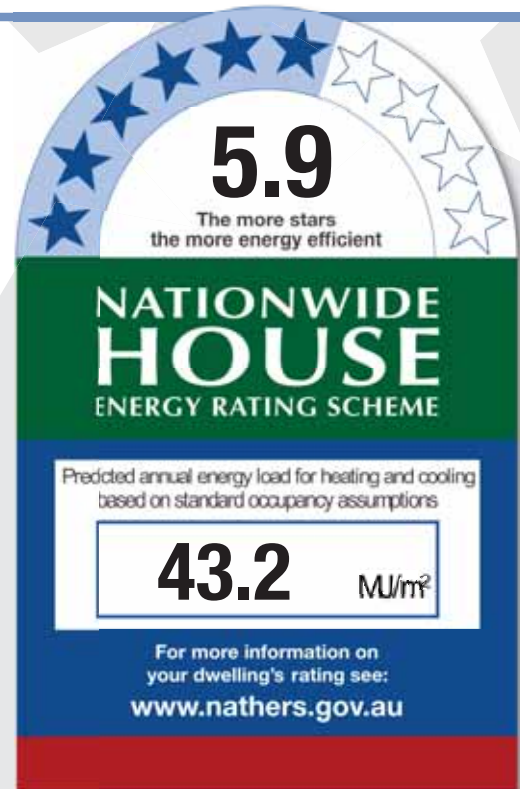
Conditioned: **35.0**
Unconditioned: **0.0**
Garage: **0.0**
TOTAL: **35.0**

Annual thermal performance loads (MJ/m²)

Heating: **3.2**
Cooling: **40.0**
TOTAL: **43.2**

Plan documents

Plan ref/date: **DFJ 102**
Prepared by: **DGJ Architects**



Ceiling penetrations

(see following pages for details)

Sealed: **0**
Unsealed: **0**
TOTAL:** **0**

NOTE: This total is the maximum number of ceiling penetrations allowed to a ceiling (under a roof) for this certificate. **If this number is exceeded in construction then this certificate IS NOT VALID and a new certificate is required. Loss of ceiling insulation for the penetrations listed has been taken into account with the rating.

Principle daylight type: **Unknown**

Window selection - default windows only

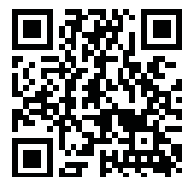
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Scan to access this certificate online and confirm this is valid.




Certificate number: **0004580437**

Certificate Date:

11 Feb 2020

★ Star rating:

5.9

Building features

Window type and performance value

Window ID	Window type	U-value	SHGC
TIM-001-02 W	TIM-001-02 W Timber A SG Tint	5.4	0.41

Window schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Orientation	Outdoor shade
Living	TIM-001-02 W	n/a	2800	2800	NE	No Shading

Roof window and skylight type and performance value

ID	Window type	U-value	SHGC
None Present			

Roof window and skylight schedule

Location	ID	Roof window/skylight no.	Area (m²)	Orientation	Outdoor shade	Indoor shade/diffuser
None Present						

External wall type

ID	Wall type	Insulation	Wall wrap or foil
EW-1	Brick Veneer	Anti-glare foil with bulk no gap R2	Yes
EW-2	Fibro Cavity Panel Direct Fix	Anti-glare foil with bulk no gap R2	Yes

External wall schedule

Location	ID	Width (mm)	Height (mm)	Orientation	Fixed Shade	Eaves (mm)
Bath	EW-1	2700	2800	SW	No	3400
Bath	EW-1	900	2800	NW	No	4500
Entry/Kitchen	EW-1	1995	2800	SW	No	4300
Living	EW-2	4700	2800	NE	No	1500

Internal wall type

Wall type	Area (m²)	Insulation	Wall wrap or foil
IW-1 - Cavity wall, direct fix plasterboard, single gap	37.0	No insulation	No
IW-2 - Concrete Panel/Blocks filled, multi plaster layers	43.0	No Insulation	No

Floors

Location	Construction	Area (m²)	Sub floor ventilation	Added insulation	Covering
Bath	Suspended Concrete Slab 300mm	9.2	Enclosed	No Insulation	Ceramic Tiles 8mm
Entry/Kitchen	Suspended Concrete Slab 300mm	5.0	Enclosed	No Insulation	Ceramic Tiles 8mm

Nationwide House Energy Rating Scheme* Certificate

BoTR Page 539

Certificate number: **0004580437**

Certificate Date:

11 Feb 2020

★ Star rating:

5.9

Building features continued

Living	Suspended Concrete Slab 300mm	12.9	Enclosed	No Insulation	Ceramic Tiles 8mm
Bedroom 1	Suspended Concrete Slab 300mm	8.0	Enclosed	No Insulation	Ceramic Tiles 8mm

Ceiling type

Location	Construction	Added insulation	Roof space above
Bath	Concrete, Plasterboard	No insulation	No
Entry/Kitchen	Concrete, Plasterboard	No insulation	No
Living	Concrete, Plasterboard	No insulation	No
Bedroom 1	Concrete, Plasterboard	No insulation	No

Ceiling penetrations

Location	Number	Type	Diameter (mm)	Sealed/unsealed
None Present				

Ceiling fans

Location	Number	Diameter (mm)
None Present		

Roof type

Construction	Added insulation	Roof colour
None Present		

Nationwide House Energy Rating Scheme* Certificate

Certificate number: 0004580437

Certificate Date: 11 Feb 2020

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Nationwide House Energy Rating Scheme* Certificate

Certificate number: 0004580320

Certificate Date: 11 Feb 2020

★ Star rating: 5.9



Assessor details

Accreditation number: **20039**
Name: **David Howard**
Organisation: **Partners Energy Management**
Email: **david@partnersenergy.com.au**
Phone: **0421381005**
Declaration of interest: **yes - managed**
Software: **BERS Pro v4.4.0.0 (3.21)**
AAO: **ABSA**

Overview

Dwelling details

Street: **Unit S5BN07, 2 Gallagher St**
Suburb: **Byron Bay**
State: **NSW** Postcode: **2481**
Type: **New Dwelling** NCC Class: **2**
NatHERS climate zone: **10**
Lot/DP number: **271119** Exposure: **Suburban**

Key construction and insulation materials

(see following pages for details)

Construction: **Brick Veneer**
Concrete, Plasterboard
Suspended Concrete Slab
Insulation: **R2.0 wall insulation**
No ceiling insulation
No floor insulation
Glazing: **TIM-001-02 W Timber A SG Tint**

Net floor area (m²)

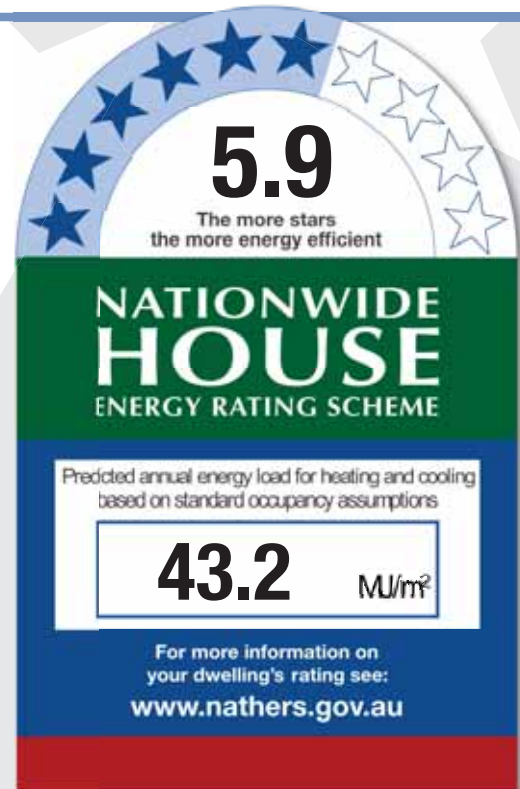
Conditioned: **35.0**
Unconditioned: **0.0**
Garage: **0.0**
TOTAL: **35.0**

Annual thermal performance loads (MJ/m²)

Heating: **3.2**
Cooling: **40.0**
TOTAL: **43.2**

Plan documents

Plan ref/date: **DFJ 102**
Prepared by: **DGJ Architects**



Ceiling penetrations

(see following pages for details)

Sealed: **0**
Unsealed: **0**
TOTAL:** **0**

NOTE: This total is the maximum number of ceiling penetrations allowed to a ceiling (under a roof) for this certificate. **If this number is exceeded in construction then this certificate IS NOT VALID and a new certificate is required. Loss of ceiling insulation for the penetrations listed has been taken into account with the rating.

Principle daylight type: **Unknown**

Window selection - default windows only

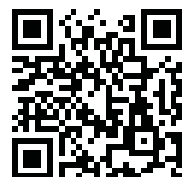
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Certificate number: **0004580320**

Certificate Date:

11 Feb 2020

★ Star rating:

5.9

Building features

Window type and performance value

Window ID	Window type	U-value	SHGC
TIM-001-02 W	TIM-001-02 W Timber A SG Tint	5.4	0.41

Window schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Orientation	Outdoor shade
Living	TIM-001-02 W	n/a	2800	2800	NE	No Shading

Roof window and skylight type and performance value

ID	Window type	U-value	SHGC
None Present			

Roof window and skylight schedule

Location	ID	Roof window/skylight no.	Area (m²)	Orientation	Outdoor shade	Indoor shade/diffuser
None Present						

External wall type

ID	Wall type	Insulation	Wall wrap or foil
EW-1	Brick Veneer	Anti-glare foil with bulk no gap R2	Yes
EW-2	Fibro Cavity Panel Direct Fix	Anti-glare foil with bulk no gap R2	Yes

External wall schedule

Location	ID	Width (mm)	Height (mm)	Orientation	Fixed Shade	Eaves (mm)
Bath	EW-1	2700	2800	SW	No	3400
Bath	EW-1	900	2800	NW	No	4500
Entry/Kitchen	EW-1	1995	2800	SW	No	4300
Living	EW-2	4700	2800	NE	No	1500

Internal wall type

Wall type	Area (m²)	Insulation	Wall wrap or foil
IW-1 - Cavity wall, direct fix plasterboard, single gap	37.0	No insulation	No
IW-2 - Concrete Panel/Blocks filled, multi plaster layers	43.0	No Insulation	No

Floors

Location	Construction	Area (m²)	Sub floor ventilation	Added insulation	Covering
Bath	Suspended Concrete Slab 300mm	9.2	Enclosed	No Insulation	Ceramic Tiles 8mm
Entry/Kitchen	Suspended Concrete Slab 300mm	5.0	Enclosed	No Insulation	Ceramic Tiles 8mm

Nationwide House Energy Rating Scheme* Certificate

BoTR Page 543

Certificate number: **0004580320**

Certificate Date:

11 Feb 2020

★ Star rating:

5.9

Building features continued

Living	Suspended Concrete Slab 300mm	12.9	Enclosed	No Insulation	Ceramic Tiles 8mm
Bedroom 1	Suspended Concrete Slab 300mm	8.0	Enclosed	No Insulation	Ceramic Tiles 8mm

Ceiling type

Location	Construction	Added insulation	Roof space above
Bath	Concrete, Plasterboard	No insulation	No
Entry/Kitchen	Concrete, Plasterboard	No insulation	No
Living	Concrete, Plasterboard	No insulation	No
Bedroom 1	Concrete, Plasterboard	No insulation	No

Ceiling penetrations

Location	Number	Type	Diameter (mm)	Sealed/unsealed
None Present				

Ceiling fans

Location	Number	Diameter (mm)
None Present		

Roof type

Construction	Added insulation	Roof colour
None Present		

Nationwide House Energy Rating Scheme* Certificate

Certificate number: 0004580320

Certificate Date: 11 Feb 2020

★ Star rating: 5.9



Additional information

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Explanatory notes

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Contact

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For more information on energy efficient design and insulation visit www.yourhome.gov.au

Nationwide House Energy Rating Scheme* Certificate

Certificate number: 0004580353

Certificate Date: 11 Feb 2020

★ Star rating: 5.9



Assessor details

Accreditation number: **20039**
Name: **David Howard**
Organisation: **Partners Energy Management**
Email: **david@partnersenergy.com.au**
Phone: **0421381005**
Declaration of interest: **yes - managed**
Software: **BERS Pro v4.4.0.0 (3.21)**
AAO: **ABSA**

Overview

Dwelling details

Street: **Unit S5BN08, 2 Gallagher St**
Suburb: **Byron Bay**
State: **NSW** Postcode: **2481**
Type: **New Dwelling** NCC Class: **2**
NatHERS climate zone: **10**
Lot/DP number: **271119** Exposure: **Suburban**

Key construction and insulation materials

(see following pages for details)

Construction: **Brick Veneer**
Concrete, Plasterboard
Suspended Concrete Slab
Insulation: **R2.0 wall insulation**
No ceiling insulation
No floor insulation
Glazing: **TIM-001-02 W Timber A SG Tint**

Net floor area (m²)

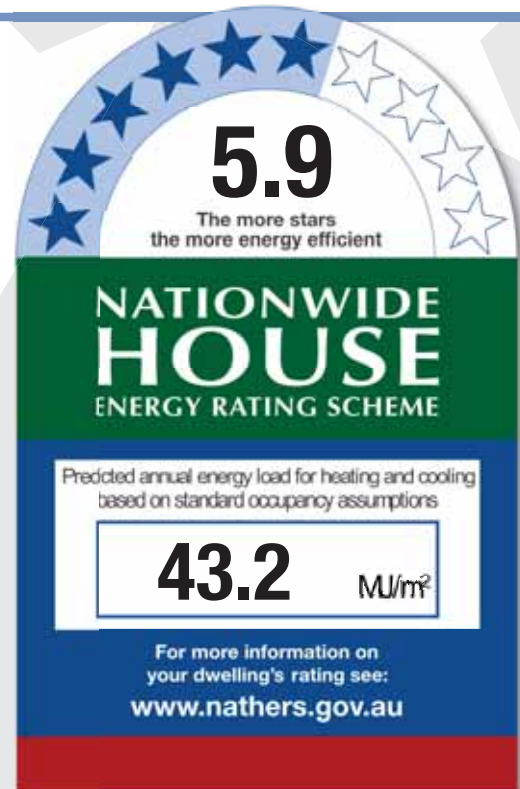
Conditioned: **35.0**
Unconditioned: **0.0**
Garage: **0.0**
TOTAL: **35.0**

Annual thermal performance loads (MJ/m²)

Heating: **3.2**
Cooling: **40.0**
TOTAL: **43.2**

Plan documents

Plan ref/date: **DFJ 102**
Prepared by: **DGJ Architects**



Ceiling penetrations

(see following pages for details)

Sealed: **0**
Unsealed: **0**
TOTAL:** **0**

NOTE: This total is the maximum number of ceiling penetrations allowed to a ceiling (under a roof) for this certificate. **If this number is exceeded in construction then this certificate IS NOT VALID and a new certificate is required. Loss of ceiling insulation for the penetrations listed has been taken into account with the rating.

Principle daylight type: **Unknown**

Window selection - default windows only

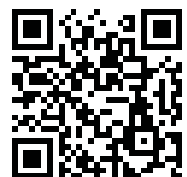
Note on allowable window values:
Only a 5% tolerance to the nominated SHGC window values shown on page 2 can be used with this rating.

Note: Only a +/- 5% SHGC tolerance is allowed with this rating.

NB: This tolerance ONLY applies to SHGC, the U-value can always be lower but not higher than the values stated on page 2.

If any of windows selected are outside the 5% tolerance then this certificate is no longer valid and the dwelling will need to be rerated to confirm compliance.

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




Certificate number: **0004580353**

Certificate Date:

11 Feb 2020

★ Star rating:

5.9

Building features

Window type and performance value

Window ID	Window type	U-value	SHGC
TIM-001-02 W	TIM-001-02 W Timber A SG Tint	5.4	0.41

Window schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Orientation	Outdoor shade
Living	TIM-001-02 W	n/a	2800	2800	NE	No Shading

Roof window and skylight type and performance value

ID	Window type	U-value	SHGC
None Present			

Roof window and skylight schedule

Location	ID	Roof window/skylight no.	Area (m²)	Orientation	Outdoor shade	Indoor shade/diffuser
None Present						

External wall type

ID	Wall type	Insulation	Wall wrap or foil
EW-1	Brick Veneer	Anti-glare foil with bulk no gap R2	Yes
EW-2	Fibro Cavity Panel Direct Fix	Anti-glare foil with bulk no gap R2	Yes

External wall schedule

Location	ID	Width (mm)	Height (mm)	Orientation	Fixed Shade	Eaves (mm)
Bath	EW-1	2700	2800	SW	No	3400
Bath	EW-1	900	2800	NW	No	4500
Entry/Kitchen	EW-1	1995	2800	SW	No	4300
Living	EW-2	4700	2800	NE	No	1500

Internal wall type

Wall type	Area (m²)	Insulation	Wall wrap or foil
IW-1 - Cavity wall, direct fix plasterboard, single gap	37.0	No insulation	No
IW-2 - Concrete Panel/Blocks filled, multi plaster layers	43.0	No Insulation	No

Floors

Location	Construction	Area (m²)	Sub floor ventilation	Added insulation	Covering
Bath	Suspended Concrete Slab 300mm	9.2	Enclosed	No Insulation	Ceramic Tiles 8mm
Entry/Kitchen	Suspended Concrete Slab 300mm	5.0	Enclosed	No Insulation	Ceramic Tiles 8mm

Nationwide House Energy Rating Scheme* Certificate

BoTR Page 547

Certificate number: **0004580353**

Certificate Date:

11 Feb 2020

★ Star rating:

5.9

Building features continued

Living	Suspended Concrete Slab 300mm	12.9	Enclosed	No Insulation	Ceramic Tiles 8mm
Bedroom 1	Suspended Concrete Slab 300mm	8.0	Enclosed	No Insulation	Ceramic Tiles 8mm

Ceiling type

Location	Construction	Added insulation	Roof space above
Bath	Concrete, Plasterboard	No insulation	No
Entry/Kitchen	Concrete, Plasterboard	No insulation	No
Living	Concrete, Plasterboard	No insulation	No
Bedroom 1	Concrete, Plasterboard	No insulation	No

Ceiling penetrations

Location	Number	Type	Diameter (mm)	Sealed/unsealed
None Present				

Ceiling fans

Location	Number	Diameter (mm)
None Present		

Roof type

Construction	Added insulation	Roof colour
None Present		

Nationwide House Energy Rating Scheme* Certificate

Certificate number: 0004580353

Certificate Date: 11 Feb 2020

★ Star rating: 5.9



Additional information

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Explanatory notes

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Nationwide House Energy Rating Scheme* Certificate

Certificate number: 0004580395

Certificate Date: 11 Feb 2020

★ Star rating: 5.7



Assessor details

Accreditation number: **20039**
Name: **David Howard**
Organisation: **Partners Energy Management**
Email: **david@partnersenergy.com.au**
Phone: **0421381005**
Declaration of interest: **yes - managed**
Software: **BERS Pro v4.4.0.0 (3.21)**
AAO: **ABSA**

Overview

Dwelling details

Street: **Unit S5BN09, 2 Gallagher St**
Suburb: **Byron Bay**
State: **NSW** Postcode: **2481**
Type: **New Dwelling** NCC Class: **2**
NatHERS climate zone: **10**
Lot/DP number: **271119** Exposure: **Suburban**

Key construction and insulation materials

(see following pages for details)

Construction: **Brick Veneer**
Concrete, Plasterboard
Suspended Concrete Slab
Insulation: **R2.0 wall insulation**
No ceiling insulation
No floor insulation
Glazing: **TIM-001-02 W Timber A SG Tint**

Net floor area (m²)

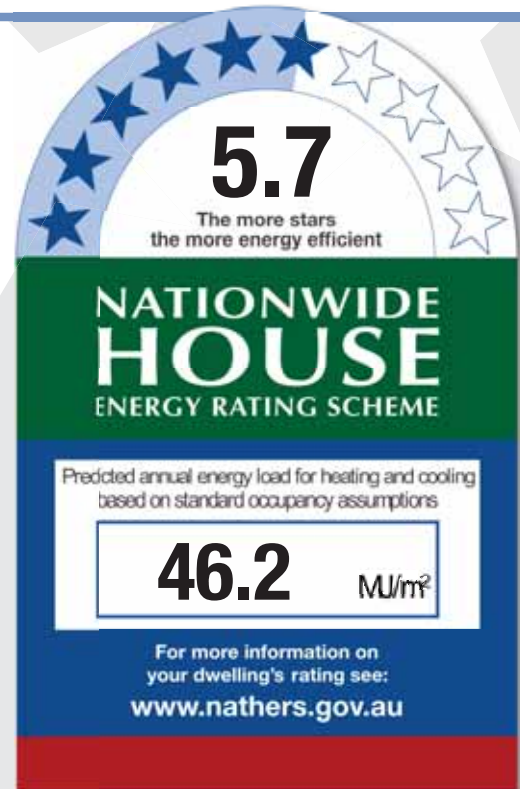
Conditioned: **35.0**
Unconditioned: **0.0**
Garage: **0.0**
TOTAL: **35.0**

Annual thermal performance loads (MJ/m²)

Heating: **6.4**
Cooling: **39.8**
TOTAL: **46.2**

Plan documents

Plan ref/date: **DFJ 102**
Prepared by: **DGJ Architects**



Ceiling penetrations

(see following pages for details)

Sealed: **0**
Unsealed: **0**
TOTAL:** **0**

NOTE: This total is the maximum number of ceiling penetrations allowed to a ceiling (under a roof) for this certificate. **If this number is exceeded in construction then this certificate IS NOT VALID and a new certificate is required. Loss of ceiling insulation for the penetrations listed has been taken into account with the rating.

Principle daylight type: **Unknown**

Window selection - default windows only

Note on allowable window values:
Only a 5% tolerance to the nominated SHGC window values shown on page 2 can be used with this rating.

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Nationwide House Energy Rating Scheme* Certificate

BoTR Page 550



Certificate number: **0004580395**

Certificate Date:

11 Feb 2020

★ Star rating:

5.7

Building features

Window type and performance value

Window ID	Window type	U-value	SHGC
TIM-001-02 W	TIM-001-02 W Timber A SG Tint	5.4	0.41

Window schedule

Location	Window ID	Window no.	Height (mm)	Width (mm)	Orientation	Outdoor shade
Living	TIM-001-02 W	n/a	2800	2800	NE	No Shading

Roof window and skylight type and performance value

ID	Window type	U-value	SHGC
None Present			

Roof window and skylight schedule

Location	ID	Roof window/skylight no.	Area (m²)	Orientation	Outdoor shade	Indoor shade/diffuser
None Present						

External wall type

ID	Wall type	Insulation	Wall wrap or foil
EW-1	Brick Veneer	Anti-glare foil with bulk no gap R2	Yes
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External wall schedule

Location	ID	Width (mm)	Height (mm)	Orientation	Fixed Shade	Eaves (mm)
Bath	EW-1	2700	2800	SW	No	3400
Bath	EW-1	900	2800	NW	No	4500
Bath	EW-1	3495	2800	SE	No	1800
Entry/Kitchen	EW-1	1995	2800	SW	No	4300
Living	EW-2	4700	2800	NE	No	1500
Living	EW-1	1495	2800	SE	No	1800
Bedroom 1	EW-1	3090	2800	SE	No	1800

Internal wall type

Wall type	Area (m²)	Insulation	Wall wrap or foil
IW-1 - Cavity wall, direct fix plasterboard, single gap	37.0	No insulation	No
IW-2 - Concrete Panel/Blocks filled, 20.0 multi plaster layers		No Insulation	No

Floors

Location	Construction	Area (m²)	Sub floor ventilation	Added insulation	Covering
Bath	Suspended Concrete Slab	9.2	Enclosed	No Insulation	Ceramic Tiles

Nationwide House Energy Rating Scheme* Certificate

BoTR Page 551



Certificate number: **0004580395**

Certificate Date:

11 Feb 2020

★ Star rating:

5.7

Building features continued

	300mm				8mm
Entry/Kitchen	Suspended Concrete Slab 300mm	5.0	Enclosed	No Insulation	Ceramic Tiles 8mm
Living	Suspended Concrete Slab 300mm	12.9	Enclosed	No Insulation	Ceramic Tiles 8mm
Bedroom 1	Suspended Concrete Slab 300mm	8.0	Enclosed	No Insulation	Ceramic Tiles 8mm

Ceiling type

Location	Construction	Added insulation	Roof space above
Bath	Concrete, Plasterboard	No insulation	No
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Living	Concrete, Plasterboard	No insulation	No
Bedroom 1	Concrete, Plasterboard	No insulation	No

Ceiling penetrations

Location	Number	Type	Diameter (mm)	Sealed/unsealed
None Present				

Ceiling fans

Location	Number	Diameter (mm)
None Present		

Roof type

Construction	Added insulation	Roof colour
None Present		

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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

Secretary

Date of issue: Tuesday, 11 February 2020

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

Project summary		
Project name	21209	
Street address	2 Gallagher Street Byron Bay 2481	
Local Government Area	Byron Shire Council	
Plan type and plan number	deposited 271119	
Lot no.	10	
Section no.	-	
No. of residential flat buildings	0	
No. of units in residential flat buildings	0	
No. of multi-dwelling houses	12	
No. of single dwelling houses	0	
Project score		
Water	✓ 40	Target 40
Thermal Comfort	✓ Pass	Target Pass
Energy	✓ 58	Target 50

Certificate Prepared by

Name / Company Name: Partners Energy Management

ABN (if applicable): 15418789019

Project address	
Project name	21209
Street address	2 Gallagher Street Byron Bay 2481
Local Government Area	Byron Shire Council
Plan type and plan number	deposited 271119
Lot no.	10
Section no.	-
Project type	
No. of residential flat buildings	0
No. of units in residential flat buildings	0
No. of multi-dwelling houses	12
No. of single dwelling houses	0
Site details	
Site area (m ²)	7301.5
Roof area (m ²)	1150
Non-residential floor area (m ²)	0.0
Residential car spaces	0
Non-residential car spaces	0

Common area landscape	
Common area lawn (m ²)	200.0
Common area garden (m ²)	100.0
Area of indigenous or low water use species (m ²)	0.0
Assessor details	
Assessor number	20039
Certificate number	0004580440
Climate zone	10
Project score	
Water	✓ 40 Target 40
Thermal Comfort	✓ Pass Target Pass
Energy	✓ 58 Target 50

Description of project

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

Multi-dwelling houses

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)	Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)	Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)	Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
S5AN1	1	35.1	0.0	0.0	0.0	S5AN2	1	35.1	0.0	0.0	0.0	S5AN3	1	35.1	0.0	0.0	0.0	S5BN1	1	35.1	0.0	0.0	0.0
S5BN2	1	35.1	0.0	0.0	0.0	S5BN3	1	35.1	0.0	0.0	0.0	S5BN4	1	35.1	0.0	0.0	0.0	S5BN5	1	35.1	0.0	0.0	0.0
S5BN6	1	35.1	0.0	0.0	0.0	S5BN7	1	35.1	0.0	0.0	0.0	S5BN8	1	35.1	0.0	0.0	0.0	S5BN9	1	35.1	0.0	0.0	0.0

No common areas specified.

Schedule of BASIX commitments

1. Commitments for multi-dwelling houses
 - (a) Dwellings
 - (i) Water
 - (ii) Energy
 - (iii) Thermal Comfort
2. Commitments for single dwelling houses
3. 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 multi-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.	✓	✓	✓

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 (> 7.5 but ≤ 9 L/min)	4 star	4 star	4 star	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 dwellings	on-site recycled water system (no. 1)	See central systems	See central systems	no	yes	no	no	no	
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".		✓	
(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.	✓	✓	✓

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	solar (electric boosted) 26 to 30 STCs	individual fan, not ducted	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-phase airconditioning EER 3.5 - 4.0	-	1-phase airconditioning EER 3.5 - 4.0	-	1 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no	

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

Alternative energy	
Dwelling no.	Photovoltaic system (min rated electrical output in peak kW)
All dwellings	0.5

(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.			

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

Thermal loads	
Dwelling no.	Area adjusted heating load (in mJ/m ² /yr)
S5AN1	5.8
S5BN1	6.4
S5AN3, S5BN9	6.4
All other dwellings	3.2

Construction of floors and walls			
Dwelling no.	Concrete slab on ground(m ²)	Suspended floor with open subfloor (m ²)	Suspended floor with enclosed subfloor (m ²)
All dwellings	-	-	35
			Primarily rammed earth or mudbrick walls
			No

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	4 star	no common laundry facility

Central systems	Size	Configuration	Connection (to allow for...)
Central on-site recycled/alternative water supply (No. 1)	To supply at least 100.0 litres of recycled water per day to the development (over and above the system's committed capacity, if any)	-	- Irrigation of 300.0 square metres of common landscape area on the site - car washing in 0 car washing bays on the site

(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	Common area electric/gas clothes dryer rating: 2 star Common area clothes washer rating: 3.5 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).



Planning,
Industry &
Environment

NSW BASIX - New Dwelling

Payment Receipt

Dear Sir/Madam

Please retain this payment receipt issued by Westpac as proof that the payment was received, processed and accepted by Westpac on behalf of Department of Planning, Industry & Environment.

Department of Planning, Industry & Environment will attach a Tax Receipt to your Completed Project file in the BASIX Project Portfolio.

Project name	21209
Request number	WCN 000361605
Payment amount	\$430.00 AUD
Card holder	David Howard
Credit card number	456468...937
Expiry date (mm/yy)	11 / 21
Receipt number	2631760489
Timestamp	11 Feb 2020 18:03

THERMAL PERFORMANCE SPECIFICATIONS: (21209 – SN5 Apartments)

The following specifications take precedence over other plan notations for the construction of this building.

NOTE: In addition to BASIX commitments; building compliance is required to comply with the 'New South Wales Additions' in the current edition of the NCC – Vol. 1, at the time of building.

This includes New South Wales Part J(A). Specifically:

- Building thermal construction is in accordance with part J1.2
- loss of ceiling insulation is compensated for by increased roof insulation in accordance with Part J1.3(c)
- where metal frames are used that thermal breaks are installed in accordance with Part J1.3(d) and J1.5(c)
- Any roof lights, windows, doors and exhaust fans are sealed in accordance Part J3
- Any new air-conditioning system is installed in accordance with Parts J5.2(a), J5.2(b), J5.2(c), J5.2(d), J5.2(f) & J5.2(g)
- Any new mechanical ventilation system is installed in accordance with Part J5.3
- Any new miscellaneous exhaust system is installed in accordance with Part J5.4
- Any new heated water system is installed in accordance Part J7.2
- Energy monitoring equipment is installed in accordance Part J8.3

WINDOWS (total product specification – glass + frame)

U-value 5.40 (or less than) & SHGC 0.51 (+/-5%)(Default: Tinted plain glass in Timber frames)

EXTERNAL WALL (Medium colour)

Brick Veneer – R2.0 bulk insulation with reflective airgap

Cavity Panel – R2.0 bulk insulation with vapour barrier

INTERNAL WALL

Cavity Panel/Concrete – No Insulation

Concrete Partition walls – No thermal insulation required

EXTERNAL FLOOR

ConcSuspended Concrete (above Basement areas) – No insulation

EXTERNAL CEILING/ROOF

Concrete / Plasterboard – No insulation required

RATED either with NO DOWNLIGHTS or with LED downlights which do not penetrate ceiling insulation

Refer to current HERS Certificates to validate these thermal specification details.



Certificate no.: 0004580440
Assessor Name: David Howard
Accreditation no.: 20039
Certificate date: 11 February 2020
Dwelling Address:
2 Gallagher St
Byron Bay, NSW
2481



www.nathers.gov.au

BASIX REQUIREMENTS:

THERMAL:

Thermal loads		
Dwelling no.	Area adjusted heating load (in mJ/m ² /yr)	Area adjusted cooling load (in mJ/m ² /yr)
SB01	5.8	40.1
SB01	5.8	40.1
SB02, SB03	6.4	39.8
All other dwellings	3.2	40.0

Construction of floors and walls		
Dwelling no.	Concrete slab on ground(m ²)	Suspended floor with open surface (m ²)
All dwellings	-	-
Primarily rammed earth or masonry walls		No

THERMAL PERFORMANCE SPECIFICATIONS: (21209 – 8N5 Apartments)

The following specifications take precedence over other plan notations for the construction of this building.

NOTE: In addition to BASIX compliance building compliance with the current edition of the NCC – Vol 1, at the time of building.

This includes New South Wales Part J(A). Specifically:

- Building thermal construction is in accordance with Part J1.2
- loss of ceiling insulation is compensated for by increased ceiling insulation
- where metal frames are used heat thermal breaks are installed in accordance with Part J1.3(d) and J1.5(c)
- Any roof lights, windows, doors and exhaust fans are sealed in accordance Part J3
- Any new air-conditioning system is installed in accordance with Part J2.2(b), J2.2(b), J2.2(c), J2.2(d), J2.2(e), J2.2(f), J2.2(g) and J2.2(h)
- Any new air-conditioning system is installed in accordance with Part J5.3
- Any new miscellaneous exhaust system is installed in accordance with Part J5.4
- Any new heated water system is installed in accordance Part J2
- Energy monitoring equipment is installed in accordance Part J5.3

WINDOWS (total product specification – glass + frame)

U-value 5.40 (or less than) & SHGC 0.51 (+/-5%) (Double, Tinted plain glass in Timber frames)

EXTERNAL WALL, (Medium colour)

Brick Veneer – R2.0 bulk insulation with reflective airgap

Cavity Panel – R2.0 bulk insulation with vapour barrier

INTERNAL WALL

Any new internal walls – No insulation

Concrete Partition walls – No thermal insulation required

EXTERNAL FLOOR

Concrete Slab (above Basement area) – No insulation

EXTERNAL CEILING/ROOF

Concrete / Plasticboard – No insulation required

RATED either with NO DOWNLIGHTS or with LED downlights which do not penetrate ceiling insulation

Refer to current NERS Certificates to validate these thermal specification details.

WATER:

Features			Appliances			Individual pool			Individual spa		
Dwelling no.	All shower- no.	All toilet- no.	All kitchen- no.	All bathroom- no.	All clothes- no.	All dish- no.	Pool cover	Pool location	Pool shielded	Volume (max. volume)	Spa shielded
All dwellings	7.5 bat. (max. 1.5m ²)	4 star	4 star	4 star	-	-	-	-	-	-	-

Alternative water source									
Dwelling no.	Alternative water supply systems	Size	Configuration	Landscape connection	Toilet connection	Laundry connection	Pool top-up	Spa top-up	
All dwellings	On-site recycled water system (no. 1)	See central systems	See central systems	no	yes	no	no	no	
None	-	-	-	-	-	-	-	-	

Commence area			Toilet rating			Toilet rating		
All common areas	See schedule rating	no common facility	4 star	4 star	4 star	3 star	3 star	3 star

Central systems			Configuration			Connection to allow for...		
Central on-site supply (No. 1)	To supply at least 100.0 m ³ per day to the development	See central systems	See central systems	See central systems	See central systems	See central systems	See central systems	See central systems

ENERGY:

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	Each laundry	Operation control	Each laundry	Operation control
All dwellings	See schedule rating	See schedule rating	See schedule rating	See schedule rating	See schedule rating	See schedule rating	See schedule rating	See schedule rating	See schedule rating	See schedule rating	See schedule rating

Cooling			Heating			Artificial lighting			Natural lighting		
Dwelling no.	Living area	Bedroom	Living area	Bedroom	Bedroom	Each kitchen	Each bathroom	Each laundry	Each kitchen	Each bathroom	Each laundry
All dwellings	See schedule rating	See schedule rating	See schedule rating	See schedule rating	See schedule rating	See schedule rating	See schedule rating	See schedule rating	See schedule rating	See schedule rating	See schedule rating

Individual pool			Individual spa			Appliances & other efficiency measures		
Dwelling no.	Pool heating system	Time	Spa heating system	Time	Spa heating system	Refrigerator	Dishwasher	Private bathroom or laundry
All dwellings	See schedule rating	See schedule rating	See schedule rating	See schedule rating	See schedule rating	See schedule rating	See schedule rating	See schedule rating

Central energy systems			Type			Specification		
Other	Common area electricity	See schedule rating	Common area electricity	See schedule rating	Common area electricity	See schedule rating	See schedule rating	See schedule rating



Project: **Proposed Habitat Stage 5**
Part Lot 10 DP 271119 and part Lot 1 DP 271119
Being Penny Lane bounded by Wallum Place,
Gallagher Street, Easy Street and the walkway at
the rear of 2-20 Porter Street
Byron Bay

Report: **Energy Efficiency Evaluation**
Section J of NCC 2019

Date: Revision 2 - 12/2/2020
Revision 1 - 6/2/2020
Revision 0 – 3/2/2020

Reference: 21209

Contact: Michael May
0488129546
michael@partnersenergy.com.au

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SECTION 1 - BASIS OF ASSESSMENT

1.1 THE PROJECT

The proposed Habitat Stage 5 development at 1 Porter Street, Byron Bay is a mixed use development with 6 buildings and several building classifications. This report excludes the serviced apartments on the ground floor which are subject to a separate BASIX assessment.

- The Climate Zone is Climate Zone 2.
- This assessment is based on drawings listed in appendix 7
- This Report addresses ONLY matters relevant to Section 'J' of Volume 1 of BCA 2016 pertaining to building Class 7a for the basement car park, Class 5 & 6 for the commercial and retail spaces and Class 3 for the hotel accommodation areas
- The project is assessed using the Deemed To Satisfy provisions of NCC 2019.

1.2 AUTHOR QUALIFICATION

Michael May is a qualified Electrical Engineer (SAIT – 1980), Certified Energy Manager (CEM)(#92319), Sydney University Training in NCC/BCA - Section 'J' (2007), Member Association of Building Sustainability Assessors, Member Australian Institute of Energy.

1.3 COMPLIANCE

This assessment demonstrates that the project, as specified in the plans and in the recommendations in Section 2 of this report, complies with Section J of the NCC 2019.



Michael May
BEng, Dipl Bus Mgt

SECTION 2 - SUMMARY OF PROVISIONS TO COMPLY

In addition to the information provided in the drawings, the following measures are required to comply with Section J of the NCC 2019. The detailed report includes all supporting information.

2.1 PART J1 – BUILDING FABRIC

Compliance can be met by:

New light coloured metal roof above conditioned spaces

- *Installing 75mm R1.80 reflective insulating blanket or equivalent in the ceiling cavity, giving a **total 'R-value' of R3.34(downwards)**, which exceeds the required minimum of R3.20.*

OR

- *Installing R2.0 Ceiling batts & reflective sarking under the roof, giving a **total 'R-value' of R3.54 (downwards)**, which exceeds the minimum required of R3.20*

New concrete roof above conditioned spaces

- *Adding a R3.0 insulation batt or equivalent to the concrete slab, giving a **total 'R-value' of R3.53**, which exceeds the required minimum of R3.2.*

New external brick or block veneer walls

- *Adding R2.50 wall batts to the brick or block veneer wall system, providing an added R-value of R2.50, giving a **total 'R-value' of R2.89.***

New external cladding walls

- *adding R2.50 wall batts to the cladding wall system, giving a **total 'R-value' of R2.75.***

New External Glazing:

Building A – Ground floor

- *Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 3.5** and a **SHGC-value of 0.52.***

Building A – Level 01 and Level 02

- *Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 3.0** and a **SHGC-value of 0.47.***

Building B – Ground floor

- *Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 5.8** and a **SHGC-value of 0.81** (display glazing).*

Building B – Level 01 and Level 02

- *Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 3.4** and a **SHGC-value of 0.53.***

Building C – ground floor

- *Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 6.2** and a **SHGC-value of 0.75.***

Building C – Level 01 and Level 02

- *Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 3.8** and a **SHGC-value of 0.59.***

Building D – ground floor

- *Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 5.8** and a **SHGC-value of 0.81** (display glazing)*

Building D – Level 01 and Level 02

- *Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 2.3** and a **SHGC-value of 0.31.***

Building E – ground floor Function

- *Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 6.1** and a **SHGC-value of 0.75.***

Building E – ground floor Retail

- Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 5.8** and a **SHGC-value of 0.81** (display glazing).

Building E – Level 01 Networking

- Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 3.45** and a **SHGC-value of 0.62**.

Building E – Level 02 Restaurant

- Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 4.7** and a **SHGC-value of 0.75**.

Building F – ground floor

- Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 7.0** and a **SHGC-value of 0.75**.

New concrete floors of the conditioned spaces above the car park

- Adding a R2.0 insulation batt to the concrete slab, giving a **total 'R-value' of R2.42**, which exceeds the required minimum of R2.0.
- OR
- Adding a 40mm R1.9 polystyrene product or equivalent to the concrete slab, providing an added R-value of R1.9, giving a **total 'R-value' of R2.32**, which exceeds the required minimum of R2.0.

2.2 PART J2 - EXTERNAL GLAZING

The glazing provisions from NCC 2016 are now included in Part J1.

2.3 PART J3 - BUILDING SEALING

Compliance can be met by the following:

- The new entry doors to rooms S5-E 0.16, S5-E 0.8, S5-E 1.13, must be self-closing or interlocked to ensure the air-conditioning system is inactive when these doors are open.
- Any new exhaust fans to have self-closing dampers, including “miscellaneous exhaust fans”.

2.4 PART J5 - A/C & VENTILATION SYSTEMS

Compliance can be met by:

- Certification by a mechanical engineer if any new air-conditioner is greater than **50kW_r**.
- Ensure any new A/C System has the ability to be inactive when the area is not occupied.
- Ensure any new ductwork, should it be installed, is insulated to a minimum R-value of R1.0 for flexible ductwork less than 3m, R1.20 within a conditioned space, R3.0 in direct sunlight, and R2.0 in other locations.
- Ensure any new A/C System greater than 10kW_r has a 7 day time switch installed.
- Ensure any new Mechanical Ventilation system has the ability to be inactive when the area is not occupied.
- Ensure any new Mechanical Ventilation system greater than 1000L/s is controlled by a time switch.
- Ensure any new miscellaneous exhaust system with a flow rate of more than 1000L/s must be capable of stopping the motor when the system is not needed and have a variable speed fan or the like.

2.5 PART J6 - ARTIFICIAL LIGHTING & POWER

Compliance can be met by:

- *Not exceeding the “Max. Lighting Wattage” for any new lighting in each of the areas in the lighting calculations table in **Appendix 2**.*
- *The maximum internal lighting wattage for the basement car park must not exceed **11,346 watts**.*
- *The maximum internal lighting wattage for Level 00 must not exceed **27,172 watts**.*
- *The maximum internal lighting wattage for Level 01 must not exceed **8,697 watts**.*
- *The maximum internal lighting wattage for Level 02 must not exceed **8,964 watts**.*
- *Time switch(s) or motion detector(s) or security card reader(s) must be installed to control at least **95%** of the lighting in the building.*
- *Decorative or display lighting must be controlled separately from general lighting manually and by a time switch in accordance with specification J6 if the lighting exceeds 1kW*
- *External perimeter lighting must be controlled by either a daylight sensor or a time switch in accordance with specification J6, and have a light source efficiency of not less than 60 lumens/watt if the lighting exceeds 100watts.*

2.6 PART J7 – HEATED WATER SUPPLY, SWIMMING AND SPA POOLS

Compliance can be met by:

- *Direct electric resistance heating must not be used*
- *A pool cover must be used when heating with either gas or heat pump*
- *A time switch must be used to control the pool heater and any circulation pumps.*
- *A spa cover must be used when heating with either gas or heat pump*
- *A time switch and push button must be used to control the spa heater*
- *A time switch must be used to operate any circulation pumps if the spa capacity is more than 680L.*

2.7 PART J8 - FACILITIES FOR ENERGY MONITORING

Compliance can be met by:

- *The building must have energy meters for recording time-of-use electricity consumption for air-conditioning, lighting, power, central hot water and lifts*

SECTION 3 - DETAILED REPORT OF PROVISIONS TO COMPLY

3.1 PART J1 - BUILDING FABRIC

J1.1 Application - All new parts of the new building envelope need to comply.

Building Envelope

The building envelope for the purpose of Section J is bound by the new external walls, floor and roof of the proposed buildings as shown in appendix 5.

J1.2 Thermal Construction General - Builder is to ensure compliance, during construction.

- Insulation must comply with AS/NZS 4859.1.
- Insulation must abut or overlap adjoining insulation other than at supporting members such as studs, noggings, joists, furring channels where the insulation must be against the member.
- Insulation must form a continuous barrier with ceilings, walls, bulkheads, floors or the like that contribute to the thermal barrier.
- Insulation must not affect the safe or effective operation of a service or fitting.
- Reflective insulation must be installed with the necessary airspace between the reflective side of the insulation and the lining or cladding.
- Reflective insulation must be installed closely against any penetration, door or window opening.
- Each adjoining sheet of roll membrane being overlapped not less than 50mm or taped together.
- Bulk insulation must be installed so that it maintains its position and thickness, other than when it is compressed between cladding and supporting members, water pipes, electrical cabling or the like.
- When selecting insulation caution should be taken to clearly identify the total R-value of the installed roofing and ceiling system or wall system.

J1.3 Roof & Ceiling Construction

- In this Climate Zone, the minimum total R-value is R3.20 (downwards).
- In this Climate zone the solar absorptance of the upper surface of a roof must be no more than 0.45 (light coloured roof)

Where the roof & ceiling system is a light coloured metal roof with plasterboard ceiling additional insulation is required to achieve a minimum total R-value of R3.2(downwards).

Roof & Ceiling Element	R- Value Unventilated- Down
Outside air film	0.04
Metal roof	0.00
<i>Reflective Blanket</i>	<i>1.66 minimum</i>
Reflective Airspace	1.28
Plasterboard	0.06
Internal air film	0.16
Total R-value	3.20 minimum

Compliance can be met by:

- Installing 75mm R1.80 reflective insulating blanket or equivalent in the ceiling cavity, giving a **total 'R-value' of R3.34(downwards)**, which exceeds the required minimum of R3.20.
- OR
- Installing R2.0 Ceiling batts & reflective sarking under the roof, giving a **total 'R-value' of R3.54 (downwards)**, which exceeds the minimum required of R3.20

Where the roof is concrete suspended slab additional insulation is required to achieve a minimum total R-value of R3.2(downwards).

Roof Element	R- Value
Outdoor air film	0.04
150mm Concrete Slab	0.10
Air gap	0.17
Additional insulation	2.67 minimum
Plasterboard	0.06
Indoor air film	0.16
Total R-value	3.2 minimum

Compliance can therefore be met by the following:

- Adding a R3.0 insulation batt or equivalent to the concrete slab, giving a **total 'R-value' of R3.53**, which exceeds the required minimum of R3.2.

The following table is provided by “Colorbond” to describe their range of roof colours according to the Section J requires. It is reproduced here as a guide.

Colour	Solar Absorptance	BCA Classification	BASIX Classification
Classic Cream™	0.32	L	L
Surfmist®	0.32	L	L
Paperbark®	0.42	M	L
Evening Haze®	0.43	M	L
Shale Grey™	0.43	M	L
Sandbank®	0.46	M	L
Dune®	0.47	M	L
Windspray®	0.58	M	M
Pale Eucalypt®	0.60	M	M
Bushland®	0.62	D	M
Headland®	0.63	D	M
Wilderness®	0.65	D	M
Jasper®	0.68	D	M
Manor Red®	0.69	D	M
Woodland Grey®	0.71	D	D
Loft®	0.71	D	D
Monument®	0.73	D	D
Ironstone®	0.74	D	D
Cottage Green®	0.75	D	D
Deen Ocean®	0.75	D	D

J1.4 Roof lights - Not Applicable

J1.5 Walls-glazing construction

- The total system U-value for the Wall-glazing construction must not be greater than U-value 2.0
- The total system U-value for display glazing must not be greater than U-value 5.8.
- The total system U-value for wall-glazing construction must be calculated in accordance with Specification J1.5a.
- Wall components must achieve a minimum total R-value of R1.0 where the wall area is less than 80% of the total wall-glazing area, and in accordance with Table J1.5a where the wall area is 80% or more of the total wall-glazing area.
- The solar admittance of externally facing wall-glazing construction must not be greater than that specified in Table J1.5b, namely 0.13 for this climate zone.
- The solar admittance of a wall-glazing construction must be calculated in accordance with Specification J1.5a.
- The total system SHGC of Display glazing must not be greater than 0.81 divided by the shading multiplier specified in Specification J1.5a.

In this project the new walls have to achieve a minimum R-value of R1.0.

External Brick or block veneer walls.

Wall Element	R- Value
Outside air film	0.04
Brick or block	0.17
<i>insulation</i>	<i>2.50</i>
Plasterboard	0.06
Internal air film	0.12
Total R-value	2.89

Compliance can be met by:

- Adding R2.50 wall batts to the brick or block veneer wall system, providing an added R-value of R2.50, giving a **total 'R-value' of R2.89.***

External Cladding walls with internal plasterboard.

Wall Element	R- Value
Outside air film	0.04
Cladding	0.03
<i>Additional insulation</i>	<i>2.50</i>
Plasterboard	0.06
Internal air film	0.12
Total R-value	2.75

Compliance can be met by:

- adding R2.50 wall batts to the cladding wall system, giving a **total 'R-value' of R2.75.***

Glazing

Compliance can be met by:

Building A – Ground floor

- Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 3.5** and a **SHGC-value of 0.52.***

Building A – Level 01 and Level 02

- Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 3.0** and a **SHGC-value of 0.47.***

Building B – Ground floor

- Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 5.8** and a **SHGC-value of 0.81** (display glazing concession clause (b) and (g)).

Building B – Level 01 and Level 02

- Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 3.4** and a **SHGC-value of 0.53**.

Building C – ground floor

- Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 6.2** and a **SHGC-value of 0.75**.

Building C – Level 01 and Level 02

- Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 3.8** and a **SHGC-value of 0.59**.

Building D – ground floor

- Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 5.8** and a **SHGC-value of 0.81** (display glazing concession clause (b) and (g))

Building D – Level 01 and Level 02

- Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 2.3** and a **SHGC-value of 0.31**.

Building E – ground floor Function

- Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 6.1** and a **SHGC-value of 0.75**.

Building E – ground floor Retail

- Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 5.8** and a **SHGC-value of 0.81** (display glazing concession clause (b) and (g)).

Building E – Level 01 Networking

- Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 3.5** and a **SHGC-value of 0.62**.

Building E – Level 02 Restaurant

- Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 4.7** and a **SHGC-value of 0.75**.

Building F – ground floor

- Installing all the windows and glazed doors with a characteristic equal to or less than a **U-value of 7.0** and a **SHGC-value of 0.75**.

It is important to note that it is the system U and SHGC characteristics which are the determining factors for compliance NOT the glazing description.

J1.6 Floors

- (a) A floor must achieve a Total R-Value of R2.0

The concrete suspended slab of the conditioned spaces above the car park require additional insulation to achieve a minimum total R-value of R2.0.

Floor Element	R- Value
Indoor air film	0.16
150mm Concrete Slab	0.10
<i>Additional insulation</i>	<i>1.58 minimum</i>
Indoor air film	0.16
Total R-value	2.0 minimum

Compliance can therefore be met by the following:

- *Adding a R2.0 insulation batt to the concrete slab, giving a **total 'R-value' of R2.42**, which exceeds the required minimum of R2.0.*
- OR*
- *Adding a 40mm R1.9 polystyrene product or equivalent to the concrete slab, providing an added R-value of R1.9, giving a **total 'R-value' of R2.32**, which exceeds the required minimum of R2.0.*

3.2 PART J2 - GLAZING

The glazing provisions from NCC 2016 are now included in Part J1.

3.3 PART J3 - BUILDING SEALING

J3.1 Application

Applies to elements forming the envelope of a Class 2 to 9 building other than:

- (a) A building in climate zones 1, 2, 3 and 5 where the only means of air-conditioning is by using an evaporative cooler.
- (b) A permanent building opening, in a space where a gas appliance is located, that is necessary for the safe operation of a gas appliance.
- (c) A building or space where the mechanical ventilation required provides sufficient pressurisation to prevent infiltration.

J3.2 Chimneys and Flues – not applicable

J3.3 Roof Lights – not applicable

J3.4 Windows and doors

All external doors and windows must either have seals to restrict air infiltration or the windows must comply with AS 2047. (fire and smoke doors, roller shutter door or grills are exempt)

A seal for the bottom edge of a swing door must be a draft protection device and for other edges of an external door and openable windows may be a foam or rubber compression strip fibrous seal or the like.

An entrance to a building must have an airlock, self-closing door, revolving door or the like, where the conditioned space has a floor area greater than 50m².

Compliance can be met by the following:

- *The new entry doors to rooms S5-E 0.16, S5-E 0.8, S5-E 1.13, must be self-closing or interlocked to ensure the air-conditioning system is inactive when these doors are open.*

J3.5 Exhaust fans

All exhaust fans fitted in a conditioned space must have a sealing device such as a self-closing damper or the like.

Compliance can be met by:

- *Any new exhaust fans to have self-closing dampers, including “miscellaneous exhaust fans”.*

J3.6 Construction of roofs, walls and floors

Roofs, walls and floors and any opening such as a window or door must be constructed to minimise air leakage by:

- Enclosed or internal lining systems that are close fitting at ceiling, wall and floor *junctions* or
- Sealed by caulking, skirting, architraves, cornices or the like.

3.4 PART J4 - AIR MOVEMENT- Is not included in the current NCC

3.5 PART J5 - A/C & VENTILATION SYSTEMS

Any new air-conditioning system requires certification by a Mechanical Engineer, where the size of the air-conditioner is greater than 65kW_r. For smaller package or split systems the motor efficiency performance is controlled under the Australian Governments Minimum Energy Performance Scheme (MEPS).

Compliance can be met by:

- *Certification by a mechanical engineer if any new air-conditioner is greater than 65kW_r.*

A mechanical ventilation system will require certification by a Mechanical Engineer.

General provisions include:

J5.2 Air-conditioning system control

- (a) An air-conditioning system –
 - i. must be capable of being deactivated when the building or part of a building served by that system is not occupied; and
 - ii. when serving more than one air-conditioning zone or area with different heating or cooling needs, must—
 - (A) thermostatically control the temperature of each zone of area; and
 - (B) not control the temperature by mixing actively heated air and actively cooled air; and
 - (C) limit reheating to not more than—
 - (aa) for a fixed supply air rate, a 7.5 K rise in temperature; and
 - (bb) for a variable supply air rate, a 7.5 K rise in temperature at the nominal supply air rate but increased or decreased at the same rate that the supply air rate is respectively decreased or increased; and
 - iii. which provides the required mechanical ventilation, other than in climate zone 1 or where dehumidification control is needed, must have an outdoor air economy cycle, if the total air flow rate of any airside component of an air-conditioning system capacity is greater than or equal to 2000 l/s; and
 - iv. which contains more than one water heater, chiller or coil, must be capable of stopping the flow of water to those not operating; and

- v. with an airflow of more than 1000L/s, must have a variable speed fan when its supply air quantity is capable of being varied; and
 - vi. when serving a sole-occupancy unit in a Class 3 building, must not operate when any external door of the sole-occupancy unit that opens to a balcony or the like, is open for more than one minute; and
 - vii. must have the ability to use direct signals from the control components responsible for the delivery of comfort conditions in the building to regulate the operation of central plant; and
 - viii. must have a control dead band of no less than 2°C, except where a smaller range is required for specialised applications; and
 - ix. must be provided with balancing dampers and balancing valves that ensure the maximum design air or fluid flow is achieved but not exceeded by more than 15% above design at each component or group of components
 - x. must ensure that each independently operating space of more than 1000m² and every separate floor of the building has provision to terminate airflow independently of the remainder of the system sufficient to allow for different operating times; and
 - xi. when deactivated, must close any motorised outdoor air or return air damper that is not otherwise being actively controlled.
- (b) When two or more air-conditioning systems serve the same space they must use control sequences that prevent the systems from operating in opposing heating and cooling modes.
- (c) Time switches –
- (i) A time switch must be provided to control –
 - (A) an air-conditioning system of more than 2 kW_r; and
 - (B) a heater of more than 1 kW_{heating} used for air-conditioning.
 - (ii) The time switch must be capable of switching electric power on and off at variable pre-programmed times and on variable pre-programmed days
 - (iii) The requirements of (i) and (ii) do not apply to –
 - (A) an air-conditioning system that serves—
 - (aa) only one sole-occupancy unit in a Class 2 or 3 building; or
 - (bb) a Class 4 part of a building; or
 - (cc) only one sole-occupancy unit in a Class 9c building; or
 - (B) a building where air-conditioning is needed for 24 hour occupancy.

Compliance can be met by:

- *Ensure any new A/C System has the ability to be inactive when the area is not occupied.*
- *Ensure any new A/C System greater than 2kW_r has a 7 day time switch installed.*

J5.3 Mechanical ventilation systems control

- (a) A mechanical ventilation system, including one that is part of an air-conditioning system, except where the mechanical system serves only one sole-occupancy unit in a Class 2 building or serves only a Class 4 part of a building, must—
- (i) be capable of being deactivated when the building or part of the building served by that system is not occupied; and
 - (ii) when serving a conditioned space
 - (A) where in the outdoor air flow is greater than 500 L/s, have
 - (aa) an energy reclaiming system that preconditions outdoor air at a minimum sensible heat transfer effectiveness of 60%; or

- (bb) demand control ventilation in accordance with AS 1668.2 if appropriate to the application; and
- (B) not exceed the minimum outdoor air quantity required by Part F4 by more than 20%, except where –
 - (aa) additional unconditioned outdoor air is supplied for free cooling; or
 - (bb) additional mechanical ventilation is needed to balance the required exhaust; or
 - (cc) an energy reclaiming system preconditions all the outside air.
- (iii) For an airflow of more than 1000L/s, have a variable speed fan unless the downstream airflow is required by Part F4 to be constant.
- (b) Exhaust Systems – An exhaust system with an air flow rate of more than 1000L/s must be capable of stopping the motor when the system is not needed, except for an exhaust system in a sole-occupancy unit in a Class2,3 or 9c building.
- (c) Carpark exhaust systems – Carpark exhaust systems must have a control system in accordance with 4.11.2 or 4.11.3 of AS 1668.2
- (d) Time switches –
 - (i) A time switch must be provided to a mechanical ventilation system with an air flow rate of more than 1000 L/s
 - (ii) The time switch must be capable of switching electric power on and off at variable pre-programmed times and on variable pre-programmed days
 - (iii) The requirements of (i) and (ii) do not apply to –
 - (C) A mechanical ventilation system that serves—
 - (aa) only one sole-occupancy unit in a Class 2, 3 or 9c building; or
 - (bb) a Class 4 part of a building; or
 - (D) a building where air-conditioning is needed for 24 hour occupancy.

Compliance can be met by:

- *Ensure any new Mechanical Ventilation system has the ability to be inactive when the area is not occupied.*
- *Ensure any new Mechanical Ventilation system greater than 1000L/s is controlled by a time switch.*

J5.4 Fan systems

- (a) Fans, ductwork and duct components that form part of an air-conditioning system or mechanical ventilation system must separately comply with (b), (c), (d) and (e) or achieve a lower fan motor input power per flowrate than when combining (b), (c), (d) and (e).

Clauses J5.4 (b), (c), (d) and (e) are included in appendix 6

J5.5 Ductwork insulation

- (i) Ductwork and fitting in an air-conditioning system must be provided with insulation.
 - i. Complying with AS/NZS 4859.a, and
 - ii. Have an insulation R-value greater than or equal to
 - R1.0 flexible ductwork
 - The same as connecting duct work for cushion boxes
 - R1.20 within a conditioned space
 - R3.0 where exposed to direct sunlight
 - R2.0 all other locations

(ii) Insulation must

- i. Be protected against the effects of weather and sunlight, and
- ii. Be installed so that it abuts joining insulation to form a continuous barrier and maintains its position and thickness
- iii. When conveying cooled air be protected by a vapour barrier on the outside of the insulation.

(iii) These requirements do not apply to:

- Ductwork or fittings located in the last room served, or
- Return air ductwork passing in a conditioned space, or
- Ductwork for outside or exhaust air, or
- The floor of an in-situ air-handling unit, or
- Packaged air-conditioning equipment complying with MEPS, or
- Flexible fan connectors

J5.6 Ductwork sealing

Ductwork in an air-conditioning system with a capacity of 3000 L/s or greater, not located within the only or last room served by the system, must be sealed against air loss in accordance with the duct sealing requirements of AS 4254.1 and AS 4254.2 for the static pressure of the system

J5.7 Pump systems

- (a) Pumps and pipe work that form part of an air-conditioning system must separately comply with (b), (c) and (d) or achieve a lower pump motor input power per flowrate than when combining (b), (c) and (d).

Clauses J5.7 (b), (c) and (d) are included in appendix 6

J5.8 Pipework insulation

- (a) Piping, vessels, heat exchangers and tanks containing heating or cooling fluid, where the fluid is held at a heated or cooled temperature, that are part of an air-conditioning system, other than in appliances covered by MEPS, must be provided with insulation.
- (i) Complying with AS/NZS 4859.1, and
 - (ii) Have an insulation in accordance with Table J5.8a and J5.8b below

Table J5.8a - Piping

Fluid temp range	Min R-value Nom Pipe <40mm	Min R-value Nom Pipe 40-80 mm	Min R-value Nom Pipe 80-150mm	Min R-value Nom Pipe >150mm
Low Temp Chilled <2°C	1.3	1.7	2.0	2.7
Chilled 2°C - 20°C	1.0	1.5	2.0	2.0
Heated 30°C - 85°C	1.7	1.7	1.7	1.7
High Temp heated >85°C	2.7	2.7	2.7	2.7

The minimum R-value may be halved for piping penetrating a structural member

Table J5.8b – Vessels, heat exchangers and tanks

Fluid temp range	Min R-value Nom Pipe <40mm
Low Temp Chilled <2°C	2.7
Chilled 2°C - 20°C	1.8
Heated 30°C - 85°C	3.0
High Temp heated >85°C	3.0

- (b) Insulation must-
 - (i) Be protected against the effects of weather and sunlight, and
 - (ii) Be able to withstand the temperatures within the piping, vessel, heat exchanger or tank.
- (c) These requirements do not apply to piping, vessels or heat exchangers
 - located in the last room served and downstream of the control device for the regulation of heating or cooling service to that room, or
 - encased within a concrete slab or panel which is part of the heating or cooling system, or
 - supplied as an integral part of a chiller, boiler or unitary air-conditioner, or
 - inside an air- handling unit, fan-coil unit, or the like.

J5.9 Space Heating

- (d) A Heater used for air-conditioning or as part of an air-conditioning system must be-
 - (i) A solar heater; or
 - (ii) A gas heater; or
 - (iii) A heat pump heater; or
 - (iv) A heater using reclaimed heats from another process such as reject heat from a refrigeration plant; or
 - (v) An electric heater if_
 - (A) The heater capacity is not more than-
 - (aa) 10 W/m² of the floor area of the conditioned space in climate zone 1; or
 - (bb) 40 W/m² of the floor area of the conditioned space in climate zone 2; or
 - (cc) In this climate zone <500m² – 65W/m² or >500m² – 55W/m²; or
 - (B) The annual energy consumption of the heating is not more than 15 kWh/m² of the floor area of the conditioned space in climate zones 1,2,3,4 and 5; or
 - (C) The in-duct heater complies with J5.2(a)(ii)(C); or
 - (vi) Any combination of (i) to (v).
- (e) An electric heater may be used for heating a bathroom in a class 2,3,9a or 9c building if the heating capacity is not more than 1.2 kW and the heater has a timer.
- (f) A fixed heating or cooling appliance that moderates the temperature of an outdoor space must be configured to automatically shut down when-
 - (i) There are no occupants in the space served; or
 - (ii) A period of one hour has elapsed since the last activation of the heater; or
 - (iii) The space served has reached a design temperature.
- (g) A gas water heater, that is used as part of an air-conditioning system, must-
 - (i) If rated to consume 500MJ/hour of gas or less, achieve a minimum gross thermal efficiency of 86%; or
 - (ii) If rated to consume more than 500MJ/hour of gas or less, achieve a minimum gross thermal efficiency of 90.

J5.10 Refrigerant chillers

Refer appendix 6.

J5.11 Unitary air-conditioning equipment

Refer appendix 6.

J5.12 Heat rejection equipment

Refer appendix 6.

3.6 PART J6 - ARTIFICIAL LIGHTING & POWER

J6.1 Application

Parts J6.2, J6.3 and J6.5 (a)(ii) do not apply to a Class 8 electricity network substation.

J6.2 Interior artificial lighting

- (b) All artificial lighting for the whole building must not exceed the aggregated maximum Illumination Power Density (IPD) specified in Table J6.2a.(refer Appendix 3).

Compliance can be met by:

- *Not exceeding the “Max. Lighting Wattage” for any new lighting in each of the areas in the lighting calculations table in Appendix 2.*
- *The maximum internal lighting wattage for the basement car park must not exceed **11,346 watts**.*
- *The maximum internal lighting wattage for Level 00 must not exceed **27,172 watts**.*
- *The maximum internal lighting wattage for Level 01 must not exceed **8,697 watts**.*
- *The maximum internal lighting wattage for Level 02 must not exceed **8,964 watts**.*

- (c) The lighting limits do not apply to the following:
- Emergency Lighting
 - Signage and display lighting
 - A heater where it emits light
 - Lighting for a specialised process nature
 - Lighting for performances such as theatrical or sporting
 - Lighting of permanent displays in museums or galleries
 - Lighting installed solely to provide Photosynthetically active radiation for plant growth

J6.3 Interior artificial lighting and power control

- (a) Artificial lighting of a room or space must be individually operated by a switch or other control device.
- (b) An occupant activated device must be provided in the sole-occupancy unit of a class 3 building, other than where providing accommodation for people with disability or the aged, to cut power to the artificial lighting, air-conditioning, local exhaust fans and bathroom heater when the sole-occupancy unit is unoccupied.

Compliance can be met by:

- *Occupant activated devices must be provided to the class 3 accommodation units to cut power to the lighting, air-conditioning, exhaust fans and bathroom heater when the unit is unoccupied.*
- (c) An artificial lighting switch must:
- (i) Be located in a visible position in the room being switched or in an adjacent room or space from where 90% of the lighting being switched is visible,

- (ii) for other than a single function space such as an auditorium, theatre or sporting stadium, not operate lighting for an area greater than 250m² if in a Class 5 or Class 8 building, or.
 - (ii) not operate lighting for an area greater than 250m² for a space up to 2000m² or up to 1000m² for a space greater than 2000m²
- (d) 95% of artificial lighting in a building or storey of a building, other than a Class 2 or 3 building or a Class 4 part, of more than 250m² must be controlled by:
 - (i) A time switch in accordance with Specification J6; or
 - (ii) An occupant sensing device such as a security key card reader or a motion detector in accordance with Specification J6.

Compliance can be met by:

- *Time switch(s) or motion detector(s) or security card reader(s) must be installed to control at least 95% of the lighting in the building.*
- (i) These lighting requirements do not apply to Emergency lighting requirements or where lighting is required for 24 hours occupancy situations.
- (j) The requirements of (d) do not apply to the following:
 - (i) Artificial lighting in a space where the sudden loss of artificial lighting would cause an unsafe situation such as in a patient care area in a Class 9a building or in a Class 9c aged care building.
 - (ii) A heater where the heater also emits light, such as in bathrooms.

J6.4 Interior decorative and display lighting

- (a) Interior decorative and display lighting, such as for a foyer mural or art display, must be controlled:
 - (i) Separately from other artificial lighting; and
 - (ii) By a manual switch for each area other than when the operating times of the displays are the same in a number of areas such as in a museum, art gallery or the like, in which case they may be combined; and
 - (iii) By a time switch in accordance with Specification J6 where display lighting exceeds 1 kW.
- (b) Window display lighting must be controlled separately from other display lighting.

Compliance can be met by:

- *Decorative or display lighting must be controlled separately from general lighting manually and by a time switch in accordance with specification J6 if the lighting exceeds 1kW*

J6.5 External artificial lighting

- (a) External artificial lighting attached to or directed at the façade of a building, must:
 - (i) Be controlled by either a daylight sensor or a time switch that is capable of switching on and off electric power to the system at variable pre-programmed times and on variable pre-programmed days; and

- (ii) When the total perimeter lighting load exceeds 100W, use LED luminaires for 90% of the total lighting load, or be controlled by a motion detector in accordance with Specification J6, or when used for decorative purposes, such as façade lighting or signage lighting, have a separate time switch in accordance with Specification J6.
- (b) The requirements of (a)(ii) do not apply to the following:
 - (i) Emergency lighting in accordance with Part E4.
 - (ii) Lighting around a detention centre.

Compliance can be met by:

- *External perimeter lighting must be controlled by either a daylight sensor or a time switch in accordance with specification J6, and have a light source efficiency of not less than 60 lumens/watt if the lighting exceeds 100 watts.*

NOTE:

- That for smaller rooms a greater Illumination Power Density can be achieved by using a Motion Detector.
- All areas have had the Room Aspect Ratio applied.
- For stairwells and corridors the provisions of Part E4 override this Section.

J6.6 Boiling water & chilled water storage units

Power supply to a boiling water or chilled water storage unit must be controlled by a time switch in accordance with Specification J6.

J6.7 Lifts

Lifts must be configured to ensure the lighting and ventilation in the car are turned off when unused for 15 minutes, and achieve the idle and standby energy performance level of 2 for rated load less than 800kg, 3 for 801kg to 2000kg, 4 for 2001kg to 4000kg, 5 for greater than 4000kg, and achieve the energy efficiency class C for usage categories 1 to 4 and Energy Class D for usage categories greater than 5, or energy class d for dedicated goods lifts.

J6.8 Escalators and moving walkways

Escalators and moving walkways must have the ability to slow to between 0.2m/s and 0.05 m/s when unused for more than 15 minutes,

Specification J6

This section contains the requirements for lighting control devices should they be used in the building.

Spec J6.3 Time switch

- (a) A time switch must be capable of switching on and off electric power at variable pre-programmed times and on variable pre-programmed days

- (b) A time switch for internal lighting must be capable of being overridden by
 - a means of turning the lights on
 - by a manual switch or occupant sensing device for a period of 2 hours after which the time switch must resume control or
 - an occupant sensing device that overrides the time switch upon a person's entry and returns control to the time switch on the person's exit (eg security card reader), and
 - a manual "off" switch
- (c) A time switch for external lighting must be capable of
 - Limiting the period the system is switched on to between 30 minutes before sunset and 30 minutes after sunrise is determined or detected including any pre-programming period between these times, and
 - Being overridden by a manual switch or a security access system for a period of up to 30 minutes, after which the time switch must resume control.
- (d) A time switch for boiling water and chilled water storage units must be capable of being overridden by a manual switch or a security access system that senses a person's presence, overrides for a period of up to 2 hours, after which if there is no further presence detected, the time switch must resume control.

Spec J6.4 Motion Detectors

- (b) In a Class 5, 6, 7, 8, 9a or 9b building, a motion detector must:
 - (i) Be capable of sensing movement such as by infra-red, ultrasonic or microwave detection or by a combination of these means; and
 - (ii) Be capable of detecting a person before they have entered 1 m into the space, and movement of 500mm within the useable part of the space; and
 - (iii) Not control more than, in other than a car park, an area of 500m² with a single sensor or group of parallel sensors and 75% of the lights in spaces using high intensity discharge; and
 - (iv) Be capable of maintaining the artificial lighting when activated for a maximum of 30 minutes unless it is reset, and without interruption if the motion detector is reset by movement; and
 - (v) Not be overridden by a manual switch to permanently leave the lights on.
- (c) When outside a building, a motion detector must:
 - (i) Be capable of sensing movement such as by infra-red, ultrasonic or microwave detection or by a combination of these means; and
 - (ii) Be capable of detecting a person within a distance of twice the mounting height or 80% of the ground area covered by the lights beam, and
 - (iii) Not control more than 5 lights and
 - (iv) Be operated in series with a photoelectric cell or astronomical time switch so that the lights will not operate in daylight hours, and
 - (v) Be capable of maintaining the artificial lighting when the switch is turned on for a maximum of 10 minutes unless it is reset, and
 - (vi) Have a manual override switch which is reset after a maximum period of 4 hours.

Spec J6.5 Daylight sensor and dynamic lighting control device

- (a) A daylight sensor and dynamic lighting control device for artificial lighting must:

For switching on and off, be capable of having the switching level set point adjusted between 50 and 10000 lux; and have a delay of more than 2 minutes or a differential of more than 50 lux, and

For dimming or stepped switching, be capable of reducing the power consumed by the controlled lighting in proportion to the incident daylight on the working plane either continuously down or in no less than 4 steps down to a power consumption that is less than 50% of full power.

- (b) Where a daylight sensor and dynamic control device has a manual override switch, the manual override switch must not be able to switch the lights permanently on or bypass the lighting controls.

3.7 PART J7 – HEATED WATER SUPPLY, SWIMMING POOL, SPA POOL**J7.2 Heated Water Supply**

A heated water supply for food preparation and sanitary purposes must be designed and installed in accordance with Part B2 of the NCC Volume Three – Plumbing Code of Australia.

J7.3 Swimming Pool Heating and Pumping

- (a) Heating for a swimming pool must be by a solar heater not boosted by electric resistance heating, a heater using reclaimed energy, a gas heater, a heat pump or a combination of any of these.
- (b) Where some or all of the heating is provided by a gas heater or heat pump the swimming pool must have a cover (other than when located in a conditioned space) and a time switch in accordance with Specification J6 to control the heater.
- (c) A time switch in accordance with Specification J6 must be provided to operate any circulation pump for a swimming pool.

Compliance can be met by:

- *Direct electric resistance heating must not be used*
- *A pool cover must be used when heating with either gas or heat pump*
- *A time switch must be used to control the pool heater and any circulation pumps.*

J7.4 Spa Pool Heating and Pumping

- (a) Heating for a spa pool having a capacity of more than 680L must be by a solar heater, a heater using reclaimed energy, a gas heater, a heat pump or a combination of any of these.
- (b) Where some or all of the heating is provided by a gas heater or heat pump the spa must have a cover and a push button and time switch in accordance with Specification J6 to control the heater.
- (c) A time switch in accordance with Specification J6 must be provided to operate any circulation pump for a spa pool of more than 680L.

Compliance can be met by:

- *Direct electric resistance heating must not be used*
- *A spa cover must be used when heating with either gas or heat pump*
- *A time switch and push button must be used to control the pool heater*
- *A time switch must be used to operate any circulation pumps if the capacity is more than 680L.*

3.8 PART J8 - FACILITIES FOR ENERGY MONITORING

J8.1 Application

The provisions of this part apply to all buildings except:

- the sole-occupancy of a Class 2 building,
- a Class 4 part of a building or
- a Class 8 electricity network substation.

J8.2 Not included in current NCC

J8.3 Facilities for Energy Monitoring

- (a) A building with a floor area greater than 500m² must have an energy meter to record time-of-use consumption of gas and electricity.
- (b) A building with a floor area greater than 2500m² must have energy meters to record time-of-use energy consumption of air-conditioning plant, artificial lighting, appliance power, central hot water supply, internal transport devices, and other ancillary plant.
- (c) Energy meters required by (b) must be interlinked by a communication system that collates the time-of-use energy consumption data to a single interface monitoring system where it can be stored, analysed and reviewed.
- (d) the provision of (b) do not apply to a Class 2 Building with a floor of more than 2500m² where the total area of common areas is less the 500m²

Compliance can be met by:

- *The building must have energy meters for recording time-of-use electricity consumption for air-conditioning, lighting, power, central hot water and lifts*

SECTION 4 - APPENDICES

APPENDIX 1 – WALL-GLAZING CONSTRUCTION

NCC 2019 Glazing calculator								
Project Name	Habitat Stage 5 Building A							
Building Class	5	Class 2,3,5,6,7,8,9a,9b,ward						
Climate Zone	2							
Storey	ground							
Wall U-value limit	2.0							
Proposed wall R-value	2.80	2.80	2.80	2.80	or U-value of 0.36			
	N	E	S	W				
	Method 1				Method 2			
	North	East	South	West	Combined			
Façade area	24.3	0	0	29.4	53.7			
Glazing area	5.67	0	0	21.84	27.51			
percentage	23%	0%	0%	74%	51%			
Proposed Wall U-value	0.36	0.36	0.36	0.36	0.36			
Total Façade U-value	1.09	0.00	0.00	2.69		1.97		
Total Façade Solar Admit	0.121	0.000	0.000	0.135				
Combined Reference SHGC Energy Value						12.58		
CombinedProposed SHGC Energy Value						12.43		
Element	Facing	Height	Width	Area	U-value	SHGC	P	H
window	n	2.10	2.70	5.7	3.50	0.52		
window	w	2.10	1.20	2.5	3.50	0.52	device	
window	w	2.80	3.90	10.9	3.50	0.52	device	
window	w	2.80	1.80	5.0	3.50	0.52	device	
door	w	2.80	1.20	3.4	3.50	0.52	device	

NCC 2019 Glazing calculator

Project Name	Habitat Stage 5 Building A						
Building Class	3	Class 2,3,5,6,7,8,9a,9b,ward					
Climate Zone	2						
Storey	level 01						
Wall U-value limit	2.0						
Proposed wall R-value	2.80	2.80	2.80	2.80	or U-value of 0.36		

	N	E	S	W		
	Method 1				Method 2	
	North	East	South	West	Combined	
Façade area	56.4	45.9	0	40.8	143.1	
Glazing area	36.45	37.26	0	12.42	86.13	
percentage	65%	81%	0%	30%	60%	
Proposed Wall U-value	0.36	0.36	0.36	0.36	0.36	
Total Façade U-value	2.07	2.50	0.00	1.16		1.95
Total Façade Solar Admit	0.106	0.134	0.000	0.050		
Combined Reference SHGC Energy Value						23.11
CombinedProposed SHGC Energy Value						22.89

Element	Facing	Height	Width	Area	U-value	SHGC	P	H
window	e	2.70	13.80	37.3	3.00	0.47	2.7	2.7
window	n	2.70	13.50	36.5	3.00	0.47	2.7	2.7
window	w	2.70	4.60	12.4	3.00	0.47	device	
				0.0				
				0.0				

NCC 2019 Glazing calculator

Project Name	Habitat Stage 5 Building A							
Building Class	3	Class 2,3,5,6,7,8,9a,9b,ward						
Climate Zone	2							
Storey	level 02							
Wall U-value limit	2.0							
Proposed wall R-value	2.80	2.80	2.80	2.80	or U-value of 0.36			
	N	E	S	W				
	Method 1				Method 2			
	North	East	South	West	Combined			
Façade area	56.4	45.9	0	40.8	143.1			
Glazing area	36.45	37.26	0	12.42	86.13			
percentage	65%	81%	0%	30%	60%			
Proposed Wall U-value	0.36	0.36	0.36	0.36	0.36			
Total Façade U-value	2.07	2.50	0.00	1.16		1.95		
Total Façade Solar Admit	0.106	0.134	0.000	0.050				
	Combined Reference SHGC Energy Value					23.11		
	CombinedProposed SHGC Energy Value					22.89		
Element	Facing	Height	Width	Area	U-value	SHGC	P	H
window	e	2.70	13.80	37.3	3.00	0.47	2.7	2.7
window	n	2.70	13.50	36.5	3.00	0.47	2.7	2.7
window	w	2.70	4.60	12.4	3.00	0.47	2.7	2.7
				0.0				
				0.0				

NCC 2019 Glazing calculator

Project Name	Habitat Stage 5 Building B							
Building Class	3	Class 2,3,5,6,7,8,9a,9b,ward						
Climate Zone	2							
Storey	Level 01 & 02							
Wall U-value limit	2.0							
Proposed wall R-value	2.80	2.80	2.80	2.80	or U-value of			0.36
	N	E	S	W				
	Method 1				Method 2			
	North	East	South	West	Combined			
Façade area		136	0	113	249			
Glazing area	0	45.36	0	87.75	133.11			
percentage	0%	33%	0%	78%	53%			
Proposed Wall U-value	0.36	0.36	0.36	0.36	0.36			
Total Façade U-value	0.00	1.37	0.00	2.72		1.98		
Total Façade Solar Admit	0.000	0.062	0.000	0.144				
	Combined Reference SHGC Energy Value					37.67		
	CombinedProposed SHGC Energy Value					37.60		
Element	Facing	Height	Width	Area	U-value	SHGC	P	H
window	e	2.70	16.80	45.4	3.40	0.53	device	
window	w	2.70	32.50	87.8	3.40	0.53	2.7	2.7
				0.0				
				0.0				
				0.0				

NCC 2019 Glazing calculator

Project Name	Habitat Stage 5 Building C							
Building Class	5	Class 2,3,5,6,7,8,9a,9b,ward						
Climate Zone	2							
Storey	ground							
Wall U-value limit	2.0							
Proposed wall R-value	2.80	2.80	2.80	2.80	or U-value of 0.36			
	N	E	S	W				
	Method 1				Method 2			
	North	East	South	West	Combined			
Façade area	55.2	45.6	0	45.6	146.4			
Glazing area	10.86	15.12	0	15.12	41.1			
percentage	20%	33%	0%	33%	28%			
Proposed Wall U-value	0.36	0.36	0.36	0.36	0.36			
Total Façade U-value	1.51	2.29	0.00	2.29		2.00		
Total Façade Solar Admit	0.064	0.087	0.000	0.118				
	Combined Reference SHGC Energy Value					19.33		
	Combined Proposed SHGC Energy Value					15.33		
Element	Facing	Height	Width	Area	U-value	SHGC	P	H
entry wind	e	1.80	4.80	8.6	6.20	0.75	device	
entry doors	e	2.70	2.40	6.5	6.20	0.75	device	
entry wind	w	1.80	4.80	8.6	6.20	0.75	2.7	2.7
entry doors	w	2.70	2.40	6.5	6.20	0.75	2.7	2.7
windows	n	1.50	1.50	2.3	6.20	0.75	2.7	2
windows	n	2.10	4.10	8.6	6.20	0.75	2.7	2.3

NCC 2019 Glazing calculator

Project Name	Habitat Stage 5 Building C						
Building Class	3	Class 2,3,5,6,7,8,9a,9b,ward					
Climate Zone	2						
Storey	Level 1						
Wall U-value limit	2.0						
Proposed wall R-value	2.80	2.80	2.80	2.80	or U-value of 0.36		

	N	E	S	W		
	Method 1				Method 2	
	North	East	South	West	Combined	
Façade area	56.4	40.8	0	86.1	183.3	
Glazing area	36.45	12.42	0	37.26	86.13	
percentage	65%	30%	0%	43%	47%	
Proposed Wall U-value	0.36	0.36	0.36	0.36	0.36	
Total Façade U-value	2.58	1.41	0.00	1.85		1.97
Total Façade Solar Admit	0.133	0.063	0.000	0.089		
Combined Reference SHGC Energy Value						29.32
CombinedProposed SHGC Energy Value						28.99

Element	Facing	Height	Width	Area	U-value	SHGC	P	H
windows	w	2.70	13.80	37.3	3.80	0.59	2.7	2.7
windows	n	2.70	13.50	36.5	3.80	0.59	2.7	2.7
windows	e	2.70	4.60	12.4	3.80	0.59	2.7	2.7
				0.0				
				0.0				

NCC 2019 Glazing calculator

Project Name	Habitat Stage 5 Building C						
Building Class	3	Class 2,3,5,6,7,8,9a,9b,ward					
Climate Zone	2						
Storey	2						
Wall U-value limit	2.0						
Proposed wall R-value	2.80	2.80	2.80	2.80	or U-value of		0.36

	N	E	S	W		
	Method 1				Method 2	
	North	East	South	West	Combined	
Façade area	56.4	40.8	0	86.1	183.3	
Glazing area	36.45	12.42	0	37.26	86.13	
percentage	65%	30%	0%	43%	47%	
Proposed Wall U-value	0.36	0.36	0.36	0.36	0.36	
Total Façade U-value	2.58	1.41	0.00	1.85		1.97
Total Façade Solar Admit	0.133	0.063	0.000	0.089		
Combined Reference SHGC Energy Value						29.32
CombinedProposed SHGC Energy Value						28.99

Element	Facing	Height	Width	Area	U-value	SHGC	P	H
windows	w	2.70	13.80	37.3	3.80	0.59	2.7	2.7
windows	n	2.70	13.50	36.5	3.80	0.59	2.7	2.7
windows	e	2.70	4.60	12.4	3.80	0.59	2.7	2.7
				0.0				
				0.0				

NCC 2019 Glazing calculator

Project Name	Habitat Stage 5 Building D							
Building Class	3	Class 2,3,5,6,7,8,9a,9b,ward						
Climate Zone	2							
Storey	Level 01 & 02							
Wall U-value limit	2.0							
Proposed wall R-value	2.80	2.80	2.80	2.80	or U-value of 0.36			

	N	E	S	W				
	Method 1				Method 2			
	North	East	South	West	Combined			
Façade area		113		136	249			
Glazing area	0	91.8	0	111.78	203.58			
percentage	0%	81%	0%	82%	82%			
Proposed Wall U-value	0.36	0.36	0.36	0.36	0.36			
Total Façade U-value	0.00	1.94	0.00	1.95		1.95		
Total Façade Solar Admit	0.000	0.099	0.000	0.100				
Combined Reference SHGC Energy Value						37.78		
Combined Proposed SHGC Energy Value						37.77		

Element	Facing	Height	Width	Area	U-value	SHGC	P	H
windows	W	2.70	41.40	111.8	2.30	0.31	2.3	2.7
windows	E	2.70	34.00	91.8	2.30	0.31	2.3	2.7

NCC 2019 Glazing calculator								
Project Name	Habitat Stage 5 Building E Function							
Building Class	9	Class 2,3,5,6,7,8,9a,9b,ward						
Climate Zone	2							
Storey	ground							
Wall U-value limit	2.0							
Proposed wall R-value	2.80	2.80	2.80	2.80	or U-value of 0.36			
	N	E	S	W				
	Method 1				Method 2			
	North	East	South	West	Combined			
Façade area	106				106			
Glazing area	30.24	0	0	0	30.24			
percentage	29%	0%	0%	0%	29%			
Proposed Wall U-value	0.36	0.36	0.36	0.36	0.36			
Total Façade U-value	2.00	0.00	0.00	0.00		2.00		
Total Façade Solar Admit	0.075	0.000	0.000	0.000				
	Combined Reference SHGC Energy Value					26.87		
	CombinedProposed SHGC Energy Value					15.48		
Element	Facing	Height	Width	Area	U-value	SHGC	P	H
wind doors	n	2.70	11.20	30.2	6.10	0.75	device	

NCC 2019 Glazing calculator

Project Name	Habitat Stage 5 Building E networking						
Building Class	9	Class 2,3,5,6,7,8,9a,9b,ward					
Climate Zone	2						
Storey	Level 1						
Wall U-value limit	2.0						
Proposed wall R-value	2.80	2.80	2.80	2.80	or U-value of		0.36

	N	E	S	W		
	Method 1				Method 2	
	North	East	South	West	Combined	
Façade area		61.8		61.8	123.6	
Glazing area	0	18.63	0	46.44	65.07	
percentage	0%	30%	0%	75%	53%	
Proposed Wall U-value	0.36	0.36	0.36	0.36	0.36	
Total Façade U-value	0.00	1.29	0.00	2.68		1.99
Total Façade Solar Admit	0.000	0.065	0.000	0.189		
Combined Reference SHGC Energy Value						26.19
CombinedProposed SHGC Energy Value						26.00

Element	Facing	Height	Width	Area	U-value	SHGC	P	H
wind/door	w	2.70	17.20	46.4	3.45	0.62	2.2	2.7
wind/door	e	2.70	6.90	18.6	3.45	0.62	device	

NCC 2019 Glazing calculator

Project Name	Habitat Stage 5 Building E Restaurant					
Building Class	6	Class 2,3,5,6,7,8,9a,9b,ward				
Climate Zone	2					
Storey	2					
Wall U-value limit	2.0					
Proposed wall R-value	2.80	2.80	2.80	2.80	or U-value of 0.36	

	N	E	S	W		
	Method 1				Method 2	
	North	East	South	West	Combined	
Façade area	54	50		56.4	160.4	
Glazing area	20.52	22.95	0	16.8	60.27	
percentage	38%	46%	0%	30%	38%	
Proposed Wall U-value	0.36	0.36	0.36	0.36	0.36	
Total Façade U-value	2.01	2.35	0.00	1.65		1.99
Total Façade Solar Admit	0.173	0.120	0.000	0.078		
Combined Reference SHGC Energy Value						36.28
CombinedProposed SHGC Energy Value						35.13

Element	Facing	Height	Width	Area	U-value	SHGC	P	H
windows	w	2.10	8.00	16.8	4.70	0.75	device	
windows	n	1.50	5.40	8.1	4.70	0.75		
door	n	2.70	4.60	12.4	4.70	0.75	device	
door	e	2.70	8.50	23.0	4.70	0.75	device	

NCC 2019 Glazing calculator								
Project Name	Habitat Stage 5 Building F							
Building Class	6	Class 2,3,5,6,7,8,9a,9b,ward						
Climate Zone	2							
Storey	ground							
Wall U-value limit	2.0							
Proposed wall R-value	2.80	2.80	2.80	2.80	or U-value of 0.36			
	N	E	S	W				
	Method 1				Method 2			
	North	East	South	West	Combined			
Façade area	34.8	57.4	34.8	57.4	184.4			
Glazing area	11	8.75	10.85	14	44.6			
percentage	32%	15%	31%	24%	24%			
Proposed Wall U-value	0.36	0.36	0.36	0.36	0.36			
Total Façade U-value	2.46	1.37	2.43	1.98		1.96		
Total Façade Solar Admit	0.199	0.040	0.082	0.064				
	Combined Reference SHGC Energy Value					25.88		
	CombinedProposed SHGC Energy Value					22.53		
Element	Facing	Height	Width	Area	U-value	SHGC	P	H
windows	n	1.50	1.50	2.3	7.00	0.75	0.4	2.5
windows	n	3.50	2.50	8.8	7.00	0.75	0.7	3.5
windows	e	3.50	2.50	8.8	7.00	0.75	device	
windows	w	3.50	1.50	5.3	7.00	0.75	device	
door	w	3.50	2.50	8.8	7.00	0.75	device	
door	s	3.50	2.50	8.8	7.00	0.75	device	
windows	s	3.50	0.60	2.1	7.00	0.75	device	

APPENDIX 2 - LIGHTING CALCULATIONS TABLES

AREA DESCRIPTION	FLOOR DIMENSIONS		AREA (m ²)	LIGHT ALLOW (W/m ²)	MAX. LIGHTING WATTAGE (W)
	L	B			
Level 00 - rooms					
A/S 0.1	9.3	7.5	70.0	14	1242
toilets	5.1	7.7	39.1	3	165
B 0.1 Serv	2.7	2.6	7.0	4.5	53
B/S 0.1 - 0.10	7.8	35.9	280.2	14	4151
F 0.1 Studio	8.8	15.0	132.2	4.5	672
C/N 0.1 and S 0.1	17.9	14.3	255.7	14	3580
D/N 0.1 to 0.6	8.9	28.8	256.0	14	3687
D/S 0.0 to 0.6	8.9	33.7	300.1	14	4248
D0.1	3	2.7	8.1	4.5	61
D0.2	3	2.7	8.1	4.5	61
D0.3	3	3.4	10.1	4.5	74
D0.4	3.2	1.5	4.7	4.5	37
D0.5	3.2	2.9	9.3	4.5	69
D0.6	3.9	1.5	5.9	1.5	15
D0.7	10.1	5.5	55.8	9	671
D Corridor	1.5	16.6	24.9	5	209
D0.1 store	2.8	4.8	13.5	1.5	33
E0.01 pump	2.6	4.4	11.5	4	75
E0.2 gen	4.1	8.1	33.4	4	194
E0.3 Comms	4.4	2.7	11.9	4.5	87
E0.4 loading	8.3	16.5	136.8	4	619
E0.5 bin	5.8	3.8	21.8	4	132
E-0.6 Engineering	5.8	3.8	21.8	4	132
E0.7 Store	6.5	5.1	33.0	1.5	71
corridor	2.1	52.0	109.2	5	853
E0.8 Function	18.6	16.7	310.4	8	2483
E0.9 store	3.7	6.3	23.3	1.5	53
E0.10 store	3.7	5.1	19.0	1.5	44
E0.14 kitchen	7.4	8.6	63.7	4	328
E0.11,12,13	6.5	8.7	56.5	3	224
E0.15 cold room	2.8	3.6	10.1	1.5	25
E0.16 retail	11.5	16.7	191.9	14	2762
E0.17 store	11.5	2.2	25.7	1.5	61
Total Sum					27172

AREA DESCRIPTION	FLOOR DIMENSIONS		AREA (m ²)	LIGHT ALLOW (W/m ²)	MAX. LIGHTING WATTAGE (W)
	L	B			
Level 01 - rooms					
T1 rooms x 26	8.1	116.2	941.2	3	2824
T3 rooms x 2	8.1	18.7	151.4	3	509
T2 rooms x 18	7.8	61.6	480.6	3	1470
T2 room large	7.8	5.7	44.2	3	182
h keeping	3.4	2.7	9.3	1.5	23
Comms	2.5	1.8	4.5	4.5	35
networking	17.4	10.2	177.4	8	1500
store	7.2	2.4	17.2	1.5	41
Bar	7.7	2.9	22.5	14	487
Store	4	6.0	23.9	1.5	54
PWD	2.7	2.3	6.2	3	32
Toilets	3.8	7.1	26.8	3	120
Staff	5.8	7.7	44.7	3	184
Toilets	3.7	4.3	16.0	3	75
H Keeping	5.9	7.6	45.0	1.5	92
Pool filter	10.5	6.2	65.6	4	340
Corridor	28.3	3.5	99.4	5	693
Comms	2	1.8	3.6	4.5	29
H Keeping	1	3.0	3.0	1.5	8
Total Sum					8697

AREA DESCRIPTION	FLOOR DIMENSIONS		AREA (m2)	LIGHT ALLOW	MAX. LIGHTING WATTAGE
	L	B			
Level 02 - rooms				(W/m ²)	(W)
T1 rooms x 26	8.1	116.2	941.2	3	2824
T3 rooms x 2	8.1	18.7	151.4	3	509
T2 rooms x 18	7.8	61.6	480.6	3	1470
T2 room large	7.8	5.7	44.2	3	182
h keeping	1.4	5.0	7.0	1.5	18
Comms	1.8	3.0	5.4	4.5	42
H Keeping	2.7	3.4	9.3	1.5	23
Restaurant	17.4	9.8	171.0	14	2557
Kitchen	8.3	13.0	107.9	4	507
Toilets	2.8	7.5	21.1	3	99
corridor	1.7	7.8	13.2	5	111
Sauna	9.7	3.0	29.4	1.5	67
Gym	4	9.0	35.8	8	414
Comms	1.6	2.6	4.1	4.5	32
H Keeping	1	3.0	3.0	1.5	8
Change rooms	3	7.3	22.0	3	102
Total Sum					8964

AREA DESCRIPTION	FLOOR DIMENSIONS		AREA (m2)	LIGHT ALLOW	MAX. LIGHTING WATTAGE
	L	B			
Basement				(W/m ²)	(W)
car park	62.7	90.5	5673.0	2	11346
Total Sum					11346

APPENDIX 3 - TABLE OF MAXIMUM ILLUMINATION POWER DENSITY

Space	Maximum illumination power density (W/m ²)
Auditorium, church and public hall	8
Board room and conference room	5
Car park - general	2
Car park - entry zone (first 20 m of travel)	11.5
Common rooms spaces and corridors	4.5
Control room, switch room, and the like	3
Corridors	5
Courtroom	4.5
Entry lobby	9
Health-care - Children's ward	4
Health-care - examination room	4.5
Health-care - patient ward	2.5
Health-care - all patient care	2.5
Kitchen and food preparation area	4
Laboratory	6
Library - stack and shelving	2.5
Library - reading room	4.5
Museum and gallery - circulation, cleaning and service lighting	2.5
Office - artificially lit to an ambient level of 200 lux or more	4.5
Office - artificially lit to an ambient level of less than 200 lux	2.5
Plant room	4
Restaurant, café, bar, hotel lounge and a space for the serving and consumption of food or drinks	14
Retail space including a museum and gallery whose purpose is the sale of objects	14
School - general purpose learning area	4.5
Storage with shelving no higher than 75% of the height of the aisle lighting	1.5
Service area, locker room, staff room, cleaner's room, rest room and the like	1.5
Toilet, locker room, staff room, rest room and the like	3
Wholesale storage and display area	4

Notes:

1. In areas not listed above, the maximum *illumination power density* is:
 - a) For an illuminance of less than 80 Lux, 2 W/m²
 - b) For an illuminance of less than 80 to 160 Lux, 2.5 W/m²
 - c) For an illuminance of less than 160 to 240 Lux, 3 W/m²
 - d) For an illuminance of less than 240 to 320 Lux, 4.5 W/m²
 - e) For an illuminance of less than 320 to 400 Lux, 6 W/m²
 - f) For an illuminance of less than 400 to 600 Lux, 10 W/m²
 - g) For an illuminance of less than 600 to 800 Lux, 11.5 W/m²

APPENDIX 4 - EVIDENCE OF COMPLIANCE CHECKLIST

The purpose of this checklist is to itemise the evidence that should be collected during the construction phase of the project that will demonstrate how the final building complies with the Energy Efficiency requirements of Section J of the NCC that were identified during the design phase. Generally, evidence should take the form of delivery receipts, photographs, or signed and dated statements from installers. This following check list is a generic list and some elements may not be applicable to a particular project.

PART J1 - BUILDING FABRIC

Element	Applicable (Y or N)	Evidence
Roof & ceiling insulation		Delivery receipts for roof/ceiling insulation type and rating and/or pictures of insulation installation and the R rating of the insulation.
Roof Colour		Delivery receipts for roof material and colour or pictures of the roof colour naming the roof colour.
Wall insulation		Delivery receipts for wall insulation type and rating and/or pictures of insulation installation and the R rating of the insulation.
Floor		Delivery receipts for floor insulation type and rating and/or pictures of insulation installation and the R rating of the insulation.

Or a signed and dated statement from the builder/contractor that the Building Fabric insulation was installed as per the authorised plans and the Energy Efficiency Report.

PART J2 - GLAZING

Element	Applicable (Y or N)	Evidence
Glazing		Delivery receipts for the glazing installed on site including the thermal characteristics of the glazing (U-value and SHGC- value).

Or a signed and dated statement from the builder/contractor that the Glazing was installed with the thermal characteristics as per the authorised plans and the Energy Efficiency Report.

PART J3 - BUILDING SEALING

Element	Applicable (Y or N)	Evidence
Infiltration prevention		Delivery receipts for the number of self closing doors installed.
Exhaust fans		Delivery receipts for the self closing dampers on exhaust fans or pictures showing their installation.

Or a signed and dated statement from the builder/contractor that the self closing doors and/or A/C outlet next to the open shop front was installed as per the authorised plans, specifications and the Energy Efficiency Report.

PART J5 - A/C & VENTILATION SYSTEMS

A signed and dated statement from the A/C installer that the A/C system complies with MEPS and complies with all the requirements of Section J of the BCA 2016.

PART J6 - ARTIFICIAL LIGHTING AND POWER

Element	Applicable (Y or N)	Evidence
Internal Lighting		Delivery receipts for the number and wattage of all the internal lights installed.
External lighting		Delivery receipts for the number and wattage of all the external lights installed.

Or a signed and dated statement from the lighting installer that the lighting was installed as per the authorised plans, specifications and the Energy Efficiency Report.

PART J7 - HOT WATER SUPPLY, SWIMMING POOL, SPA POOL

Element	Applicable (Y or N)	Evidence
Time clocks		Delivery receipts for the number and type of time clocks installed to control the hot water systems.

Or a signed and dated statement from the hot water installer that the hot water system fitting and time clocks were installed as per the authorised plans, specifications and the Energy Efficiency Report.

APPENDIX 5 – BUILDING ENVELOPE

The Building Envelope surrounds the areas shaded in red



**The Building Envelope
surrounds the areas
shaded in red**



**The Building Envelope
surrounds the areas
shaded in red**



APPENDIX 6 – NCC 2019 ADDITIONAL CLAUSES

J5.4 Fan systems

- (a) Fans, ductwork and duct components that form part of an *air-conditioning* system or mechanical ventilation system must—
- (i) separately comply with (b), (c), (d) and (e); or
 - (ii) achieve a fan motor input power per unit of flowrate lower than the fan motor input power per unit of flowrate achieved when applying (b), (c), (d) and (e) together.
- (b) **Fans—**
- (i) Fans in systems that have a static pressure of not more than 200 Pa must have an efficiency at the full load operating point not less than the efficiency calculated with the following formula:

$$\eta_{min} = 13 \times \ln(p) - 30$$
 where—
 η_{min} = the minimum *required* system static efficiency for installation type A or C or the minimum *required* system total efficiency for installation type B or D; and
 p = the static pressure of the system (Pa).
 - (ii) Fans in systems that have a static pressure above 200 Pa must have an efficiency at the full load operating point not less than the efficiency calculated with the following formula:

$$\eta_{min} = 0.85 \times (a \times \ln(P) - b + N) / 100$$
 where—
 η_{min} = the minimum *required* system static efficiency for installation type A or C or the minimum *required* system total efficiency for installation type B or D; and
 P = the motor input power of the fan (kW); and
 N = the minimum performance grade obtained from Table J5.4a; and
 a = regression coefficient a, obtained from Table J5.4b; and
 b = regression coefficient b, obtained from Table J5.4c; and
 $\ln$ = natural logarithm.
 - (iii) The requirements of (i) and (ii) do not apply to fans that need to be explosion proof.

Table J5.4a Minimum fan performance grade

Fan type	Installation type A or C	Installation type B or D
Axial — as a component of an air handling unit or fan coil unit	46.0	51.5
Axial — other	42.0	61.0
Mixed flow — as a component of an air handling unit or fan coil unit	46.0	51.5
Mixed flow – other	52.5	65.0
Centrifugal forward-curved	46.0	51.5
Centrifugal radial bladed	46.0	51.5
Centrifugal backward-curved	64.0	64.0

Notes to Table J5.4a:

1. **Installation type A** means an arrangement where the fan is installed with free inlet and outlet conditions.
2. **Installation type B** means an arrangement where the fan is installed with a free inlet and a duct at its outlet.
3. **Installation type C** means an arrangement where the fan is installed with a duct fitted to its inlet and with free outlet conditions.
4. **Installation type D** means an arrangement where the fan is installed with a duct fitted to its inlet and outlet.

Table J5.4b Fan regression coefficient a

Fan type	Fan motor input power < 10 kW	Fan motor input power ≥ 10 kW
Axial	2.74	0.78
Mixed flow	4.56	1.1
Centrifugal forward-curved	2.74	0.78
Centrifugal radial bladed	2.74	0.78
Centrifugal backward-curved	4.56	1.1

Table J5.4c Fan regression coefficient b

Fan type	Fan motor input power < 10 kW	Fan motor input power ≥ 10 kW
Axial	6.33	1.88
Mixed flow	10.5	2.6
Centrifugal forward-curved	6.33	1.88
Centrifugal radial bladed	6.33	1.88
Centrifugal backward-curved	10.5	2.6

(c) Ductwork—

- (i) The pressure drop in the index run across all straight sections of rigid ductwork and all sections of flexible ductwork must not exceed 1 Pa/m when averaged over the entire length of straight rigid duct and flexible duct. The pressure drop of flexible ductwork sections may be calculated as if the flexible ductwork is laid straight.
- (ii) Flexible ductwork must not account for more than 6 m in length in any duct run.
- (iii) The upstream connection to ductwork bends, elbows and tees in the index run must have an equivalent diameter to the connected duct.
- (iv) Turning vanes must be included in all rigid ductwork elbows of 90° or more acute than 90° in the index run except where—
 - (A) the inclusion of turning vanes presents a fouling risk; or
 - (B) a long radius bend in accordance with AS 4254.2 is used.

(d) Ductwork components in the index run—

- (i) The pressure drop across a coil must not exceed the value specified in [Table J5.4d](#).

Table J5.4d Maximum coil pressure drop

Number of rows	Maximum pressure drop (Pa)
1	30
2	50
4	90
6	130
8	175
10	220

- (ii) A high efficiency particulate arrestance (HEPA) air filter must not exceed the higher of—
 - (A) a pressure drop of 200 Pa when clean; or
 - (B) the filter design pressure drop when clean at an air velocity of 1.5 m/s.
- (iii) Any other air filter must not exceed—
 - (A) the pressure drop specified in [Table J5.4e](#) when clean; or
 - (B) the filter design pressure drop when clean at an air velocity of 2.5 m/s.

Table J5.4e Maximum clean filter pressure drop

Filter minimum efficiency reporting value	Maximum pressure drop (Pa)
9	55
11	65
13	95
14	110

- (iv) The pressure drop across intake louvres must not exceed the higher of—
 - (A) for single stage louvres, 30 Pa; and
 - (B) for two stage louvres, 60 Pa; and
 - (C) for acoustic louvres, 50 Pa; and
 - (D) for other non-weatherproof louvres, 30 Pa.
- (v) The pressure drop across a variable air volume box, with the damper in the fully open position, must not exceed—
 - (A) for units with electric reheat, 100 Pa; and
 - (B) for other units, 25 Pa not including coil pressure losses.
- (vi) Rooftop cowls must not exceed a pressure drop of 30 Pa.
- (vii) Attenuators must not exceed a pressure drop of 40 Pa.
- (viii) Fire dampers must not exceed a pressure drop of 15 Pa when open.
- (ix) Balancing and control dampers in the index run must not exceed a pressure drop of 25 Pa when in the fully open position.
- (x) Supply air diffusers and grilles must not exceed a pressure drop of 40 Pa.
- (xi) Exhaust grilles must not exceed a pressure drop of 30 Pa.
- (xii) Transfer ducts must not exceed a pressure drop of 12 Pa.
- (xiii) Door grilles must not exceed a pressure drop of 12 Pa.
- (xiv) Active chilled beams must not exceed a pressure drop of 150 Pa.
- (e) The requirements of (a), (b), (c) and (d) do not apply to—
 - (i) fans in unducted *air-conditioning* systems with a supply air capacity of less than 1000 L/s; and
 - (ii) smoke spill fans, except where also used for *air-conditioning* or ventilation; and
 - (iii) the power for process-related components; and
 - (iv) kitchen exhaust systems.

J5.7 Pump systems

- (a) **General** — Pumps and pipework that form part of an *air-conditioning* system must either—
- (i) separately comply with (b), (c) and (d); or
 - (ii) achieve a pump motor power per unit of flowrate lower than the pump motor power per unit of flowrate achieved when applying (b), (c) and (d) together.
- (b) **Circulator pumps** — A glandless impeller pump, with a rated hydraulic power output of less than 2.5 kW and that is used in closed loop systems must have an energy efficiency index (EEI) not more than 0.27 calculated in accordance with European Union Commission Regulation No. 622/2012.
- (c) **Other pumps** — Pumps that are in accordance with Articles 1 and 2 of European Union Commission Regulation No. 547/2012 must have a minimum efficiency index (MEI) of 0.4 or more when calculated in accordance with European Union Commission Regulation No. 547/2012.
- (d) **Pipework** — Straight segments of pipework along the index run, forming part of an *air-conditioning* system—
- (i) in pipework systems that do not have branches and have the same flow rate throughout the entire pipe network, must achieve an average pressure drop of not more than—
 - (A) for constant speed systems, the values nominated in Table J5.7a; or
 - (B) for variable speed systems, the values nominated in Table J5.7b; or
 - (ii) in any other pipework system, must achieve an average pressure drop of not more than—
 - (A) for constant speed systems, the values nominated in Table J5.7c; or
 - (B) for variable speed systems, the values nominated in Table J5.7d.
- (e) the requirements of (d) do not apply—
- (i) to valves and fittings; or
 - (ii) where the smallest pipe size compliant with (d) results in a velocity of 0.7 m/s or less at design flow.

Table J5.7a Maximum pipework pressure drop - Non-distributive constant speed systems

Nominal pipe diameter (mm)	Maximum pressure drop in systems operating 5000 hours/annum or less (Pa/m)	Maximum pressure drop in systems operating more than 5000 hours/annum (Pa/m)
Not more than 20	400	400
25	400	400
32	400	400
40	400	400
50	400	350
65	400	350
80	400	350
100	400	200
125	400	200
150 or more	400	200

Table J5.7b Maximum pipework pressure drop - Non-distributive variable speed systems

Nominal pipe diameter (mm)	Maximum pressure drop in systems operating 5000 hours/annum or less (Pa/m)	Maximum pressure drop in systems operating more than 5000 hours/annum (Pa/m)
Not more than 20	400	400
25	400	400
32	400	400
40	400	400
50	400	400
65	400	400
80	400	400
100	400	300
125	400	300
150 or more	400	300

Table J5.7c Maximum pipework pressure drop - Distributive constant speed systems

Nominal pipe diameter (mm)	Maximum pressure drop in systems operating 2000 hours/annum or less (Pa/m)	Maximum pressure drop in systems operating between 2000 hours/annum and 5000 hours/annum (Pa/m)	Maximum pressure drop in systems operating more than 5000 hours/annum (Pa/m)
Not more than 20	400	300	150
25	400	220	100
32	400	220	100
40	400	220	100
50	400	220	100
65	400	400	170
80	400	400	170
100	400	400	170
125	400	400	170
150 or more	400	400	170

Table J5.7d Maximum pipework pressure drop - Distributive variable speed systems

Nominal pipe diameter (mm)	Maximum pressure drop in systems operating 5000 hours/annum or less (Pa/m)	Maximum pressure drop in systems operating more than 5000 hours/annum (Pa/m)
Not more than 20	400	250
25	400	180
32	400	180
40	400	180
50	400	180
65	400	300
80	400	300
100	400	300
125	400	300
150 or more	400	300

J5.10 Refrigerant chillers

An *air-conditioning* system refrigerant chiller must comply with *MEPS* and the full load operation energy efficiency ratio and integrated part load energy efficiency ratio in [Table J5.10a](#) or [Table J5.10b](#) when determined in accordance with AHRI 551/591.

Table J5.10a Minimum energy efficiency ratio for refrigerant chillers — Option 1

Chiller type	Full load operation ($W_r / W_{\text{input power}}$)	Integrated part load ($W_r / W_{\text{input power}}$)
Air-cooled chiller with a capacity ≤ 528 kW _r	2.985	4.048
Air-cooled chiller with a capacity > 528 kW _r	2.985	4.137
Water-cooled positive displacement chiller with a capacity ≤ 264 kW _r	4.694	5.867
Water-cooled positive displacement chiller with a capacity > 264 kW _r but ≤ 528 kW _r	4.889	6.286
Water-cooled positive displacement chiller with a capacity > 528 kW _r but ≤ 1055 kW _r	5.334	6.519
Water-cooled positive displacement chiller with a capacity > 1055 kW _r but ≤ 2110 kW _r	5.800	6.770
Water-cooled positive displacement chiller with a capacity > 2110 kW _r	6.286	7.041
Water-cooled centrifugal chiller with a capacity ≤ 528 kW _r	5.771	6.401
Water-cooled centrifugal chiller with a capacity > 528 kW _r but ≤ 1055 kW _r	5.771	6.519
Water-cooled centrifugal chiller with a capacity > 1055 kW _r but ≤ 1407 kW _r	6.286	6.770
Water-cooled centrifugal chiller with a capacity > 1407 kW _r	6.286	7.041

Table J5.10b Minimum energy efficiency ratio for refrigerant chillers — Option 2

Chiller type	Full load operation ($W_r / W_{\text{input power}}$)	Integrated part load ($W_r / W_{\text{input power}}$)
Air-cooled chiller with a capacity ≤ 528 kW _r	2.866	4.669
Air-cooled chiller with a capacity > 528 kW _r	2.866	4.758
Water-cooled positive displacement chiller with a capacity ≤ 264 kW _r	4.513	7.041
Water-cooled positive displacement chiller with a capacity > 264 kW _r but ≤ 528 kW _r	4.694	7.184
Water-cooled positive displacement chiller with a capacity > 528 kW _r but ≤ 1055 kW _r	5.177	8.001
Water-cooled positive displacement chiller with a capacity > 1055 kW _r but ≤ 2110 kW _r	5.633	8.586
Water-cooled positive displacement chiller with a capacity > 2110 kW _r	6.018	9.264
Water-cooled centrifugal chiller with a capacity ≤ 528 kW _r	5.065	8.001
Water-cooled centrifugal chiller with a capacity > 528 kW _r but ≤ 1055 kW _r	5.544	8.001
Water-cooled centrifugal chiller with a capacity > 1055 kW _r but ≤ 1407 kW _r	5.917	9.027
Water-cooled centrifugal chiller with a capacity > 1407 kW _r	6.018	9.264

J5.11 Unitary air-conditioning equipment

Unitary *air-conditioning* equipment including packaged air-conditioners, split systems, and variable refrigerant flow systems must comply with *MEPS* and for a capacity greater than or equal to 65 kW_r—

- (a) where water cooled, have a minimum energy efficiency ratio of $4.0 W_r / W_{\text{input power}}$ for cooling when tested in accordance with AS/NZS 3823.1.2 at test condition T1, where input power includes both compressor and fan input power; or
- (b) where air cooled, have a minimum energy efficiency ratio of $2.9 W_r / W_{\text{input power}}$ for cooling when tested in accordance with AS/NZS 3823.1.2 at test condition T1, where input power includes both compressor and fan input power.

J5.12 Heat rejection equipment

- (a) The motor rated power of a fan in a cooling tower, closed circuit cooler or evaporative condenser must not exceed the allowances in [Table J5.12](#).
- (b) The fan in an air-cooled condenser must have a motor rated power of not more than 42 W for each kW of heat rejected from the refrigerant, when determined in accordance with AHRI 460 except for—
 - (i) a refrigerant chiller in an *air-conditioning* system that complies with the energy efficiency ratios in [J5.10](#); or
 - (ii) packaged air-conditioners, split systems, and variable refrigerant flow *air-conditioning* equipment that complies with the energy efficiency ratios in [J5.11](#).

Table J5.12 Maximum fan motor power — Cooling towers, closed circuit coolers and evaporative condensers

Type	Cooling tower maximum fan motor input power (W/kW _{rej})	Closed circuit cooler maximum fan motor input power (W/kW _{rej})	Evaporative condenser maximum fan motor input power (W/kW _{rej})
Induced draft	10.4	16.9	11.0
Forced draft	19.5	Note	11.0

Note to Table J5.12: A closed circuit, forced draft cooling tower must not be used.

APPENDIX 7 – DRAWINGS

DRAWING ID / NAME + STATUS

DA 010	MASTERPLAN	DA	01	01	01		02
DA 025	CARPARKING POSITION	DA	01	02	03		04
DA 100	EXISTING SITE PLAN	DA	01	01	02		03
DA 105	DEMOLITION SITE PLAN	DA					01
DA 110	SITE PLAN	DA		01	02		03
DA 150	EXTERNAL WORKS	DA			01		02
DA 200	LEVEL BASEMENT	DA		01	02		03
DA 201	LEVEL 00 PLAN	DA	01	02	03		04
DA 202	LEVEL 01 PLAN	DA	01	02	03		04
DA 203	LEVEL 02 PLAN	DA	01	02	03		04
DA 204	ROOF PLAN	DA	01	02	03		04
DA 210	BUILDING HEIGHT RELATIVE TO EXISTI...	DA	01	02	02		02
DA 280	BASEMENT COMPLIANCE PLAN	DA		01		02	03
DA 281	LEVEL 00 COMPLIANCE PLAN	DA		01		02	03
DA 282	LEVEL 01 COMPLIANCE PLAN	DA		01		02	03
DA 283	LEVEL 02 COMPLIANCE PLAN	DA	01	01		02	03
DA 284	ACCESSIBLE ROOMS PLAN	DA				01	01
DA 300	ELEVATIONS	DA	01	02	03		04
DA 301	ELEVATIONS	DA	01	02	03		04
DA 302	ELEVATIONS	DA	01	02	03		04
DA 303	ELEVATIONS	DA	01	02	03		04
DA 304	ELEVATIONS	DA		02	03		03
DA 305	ELEVATIONS	DA		01	02		03
DA 306	ELEVATIONS	DA			01		01
DA 307	ELEVATIONS	DA			01		01
DA 308	ELEVATIONS	DA			01		01
DA 309	ELEVATIONS	DA					01
DA 310	ELEVATIONS	DA					01
DA 311	ELEVATIONS	DA					01
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DA 403	SECTIONS	DA		01	02		02
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DA 406	SECTIONS	DA		01	01		01
DA 407	SECTIONS	DA		01	01		01
DA 408	SECTIONS	DA		01	01		01
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DA 410	SECTIONS	DA					01
DA 411	SECTIONS						01
DA 412	SECTIONS						01
DA 730	MATERIAL FINISHES SCHEDULE	DA					01
DA 731	MATERIAL FINISHES IMAGES	DA					01
DA 740	FIXTURE & FITTINGS SCHEDULE	DA					01
DA 800	S5 - GFA SCHEDULE	DA	01	02	03		04
DA 825	S5 - CONS SCHEDULE	DA		01			01
DA 826	S5 - CONS SCHEDULE	DA		01			01
DA 850	S5 - NLA SCHEDULE	DA		01			01
DA 900	RESTAURANT CAPACITY LAYOUT	DA					01
DA 925	WINTER SHADOW DIAGRAMS	DA			01		01
DA 926	SUMMER SHADOW DIAGRAMS	DA			01		01
DA 927	WINTER SHADOW DIAGRAMS (CURRE...	DA			01		01
DA 928	WINTER SHADOW DIAGRAM (STAGE 05)				01		01
DA 929	SUMMER SHADOW DIAGRAMS (CURR...	DA			01		01
DA 930	SUMMER SHADOW DIAGRAM (STAGE 05)				01		01
DA 940	WINTER SHADOW SECTION (CURRENT...				01		01
DA 941	WINTER SHADOW SECTION (STAGE 05)	DA			01		01

THERMAL PERFORMANCE SPECIFICATIONS: (21209 – SN5 Apartments)

The following specifications take precedence over other plan notations for the construction of this building.

NOTE: In addition to BASIX commitments; building compliance is required to comply with the 'New South Wales Additions' in the current edition of the NCC – Vol. 1, at the time of building.

This includes New South Wales Part J(A). Specifically:

- Building thermal construction is in accordance with part J1.2
- loss of ceiling insulation is compensated for by increased roof insulation in accordance with Part J1.3(c)
- where metal frames are used that thermal breaks are installed in accordance with Part J1.3(d) and J1.5(c)
- Any roof lights, windows, doors and exhaust fans are sealed in accordance Part J3
- Any new air-conditioning system is installed in accordance with Parts J5.2(a), J5.2(b), J5.2(c), J5.2(d), J5.2(f) & J5.2(g)
- Any new mechanical ventilation system is installed in accordance with Part J5.3
- Any new miscellaneous exhaust system is installed in accordance with Part J5.4
- Any new heated water system is installed in accordance Part J7.2
- Energy monitoring equipment is installed in accordance Part J8.3

WINDOWS (total product specification – glass + frame)

U-value 5.40 (or less than) & SHGC 0.51 (+/-5%)(Default: Tinted plain glass in Timber frames)

EXTERNAL WALL (Medium colour)

Brick Veneer – R2.0 bulk insulation with reflective airgap

INTERNAL WALL

Cavity Panel/Concrete – No Insulation

Concrete Partition walls – No thermal insulation required

EXTERNAL FLOOR

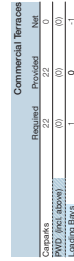
ConcSuspended Concrete (above Basement areas) – No insulation

EXTERNAL CEILING/ROOF

Concrete / Plasterboard – No insulation required

RATED either with NO DOWNLIGHTS or with LED downlights which do not penetrate ceiling insulation

Refer to current HERS Certificates to validate these thermal specification details.



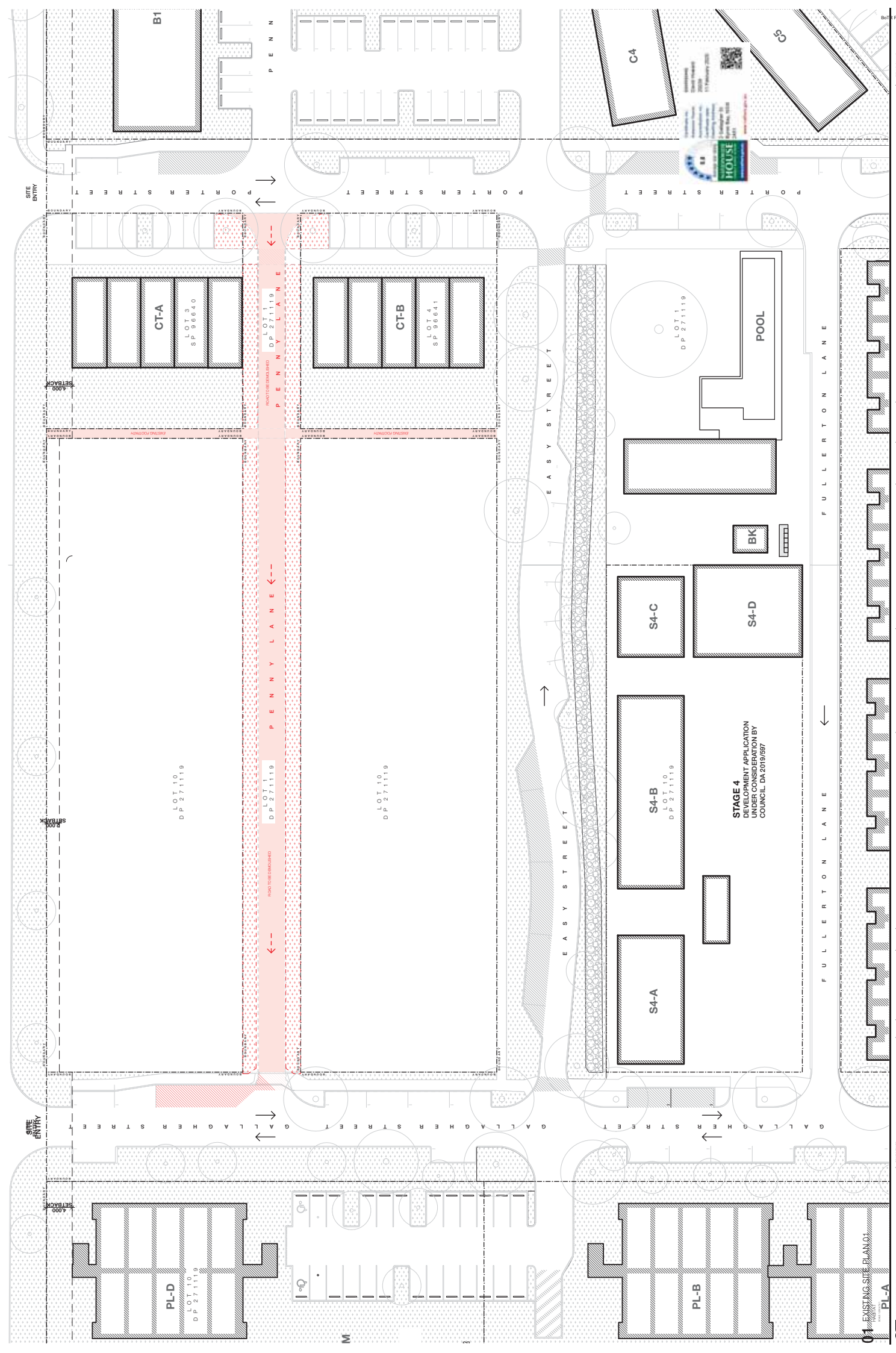
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LOADING PROVIDED	2
NET POSITION	0 DB

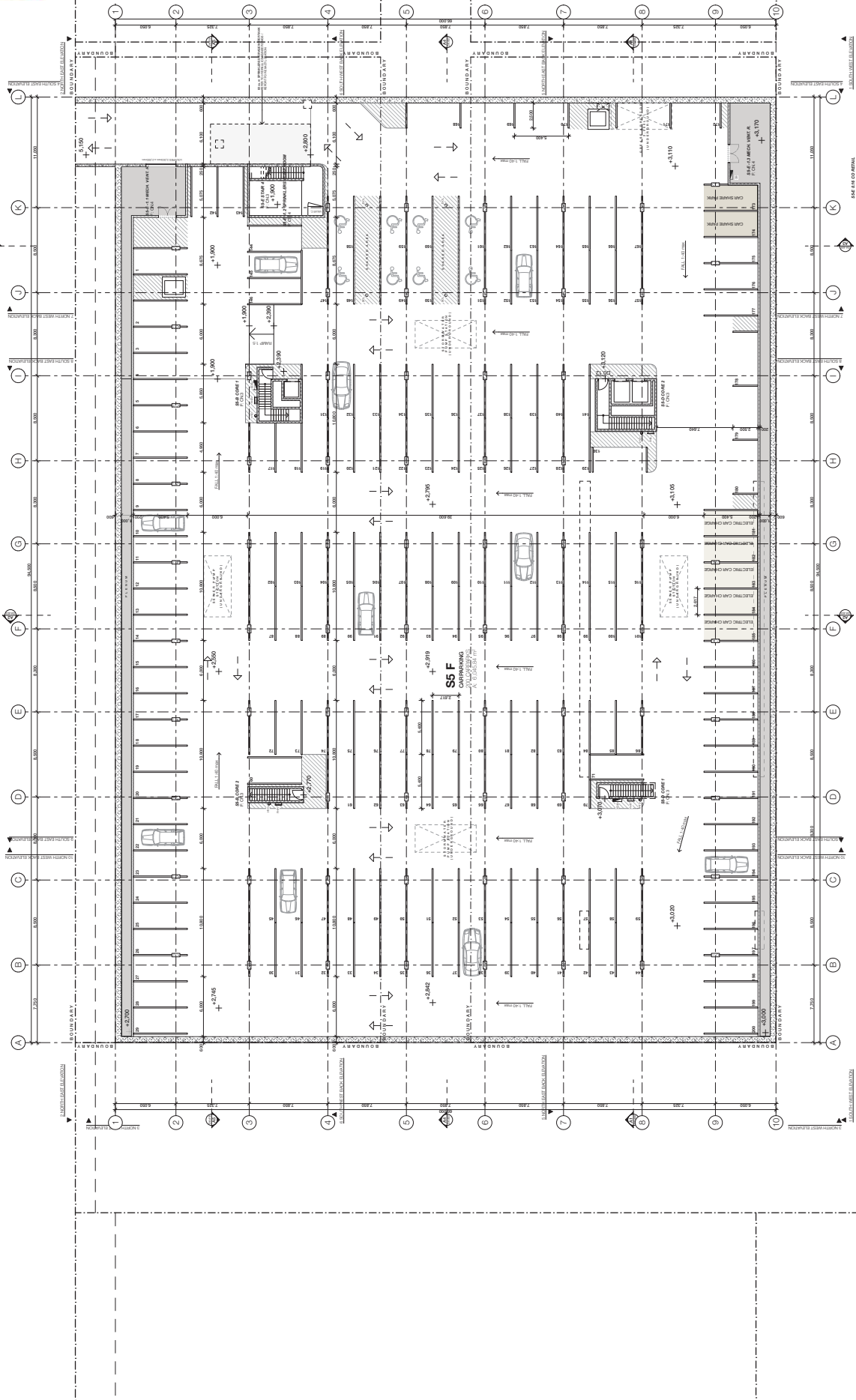
025 CARPARKING	REVISION NO.	Page 6/23
CARPARKING POSITION	04	
DEVELOPMENT APPLICATION	DRAWING NO.	DA 025

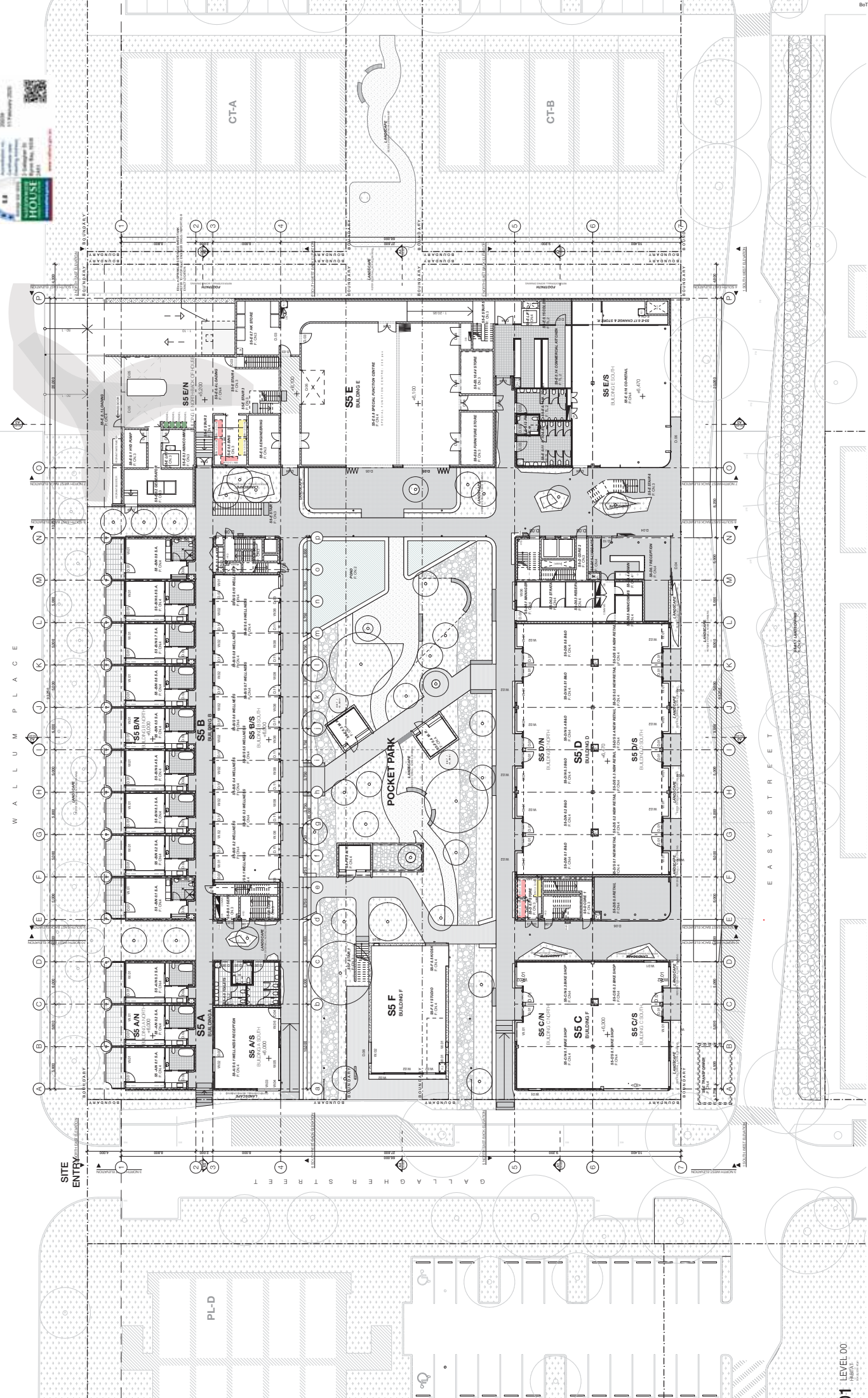
PROJECT:	BAYSHORE DEVELOPMENT PTY LTD		
HABITAT:	CLIMATE		
CLIENT:	BAYSHORE DEVELOPMENT PTY LTD		
JOHN:	DF102	SCALE AT:	1:500
		CHECKED:	PWM
DRAWING TITLE: PROJECT STATUS: DRAWN BY: DATE: PROJECT ADDRESS: The 2 Community Title blocks bounded by William Place, Glatheir Street, Enay Street and the railway at the rear of 1-20 Port Street			

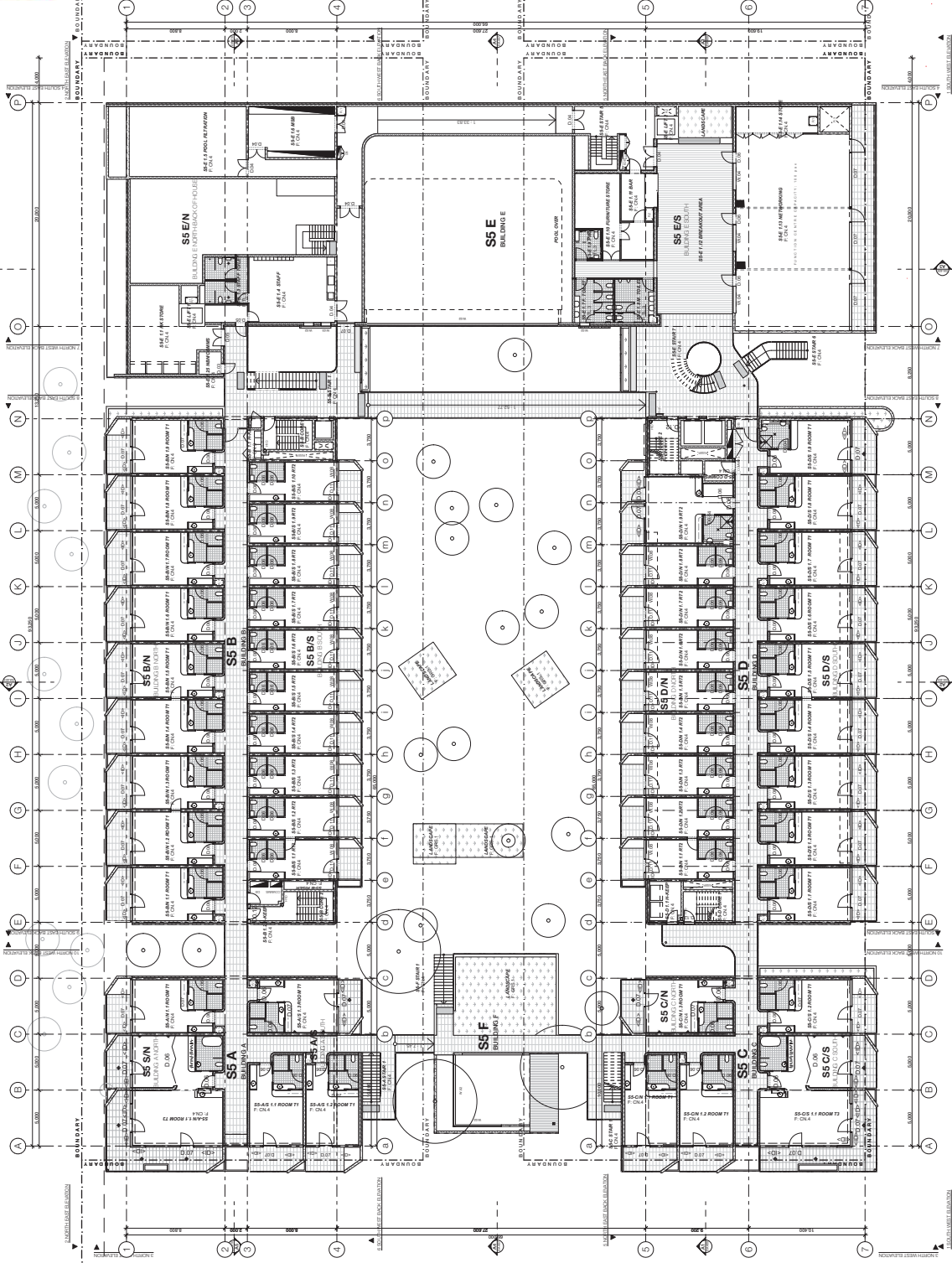
[illegible]











01 LEVEL 01
H0102



01 LEVEL 01
H0102

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H0102

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H0102

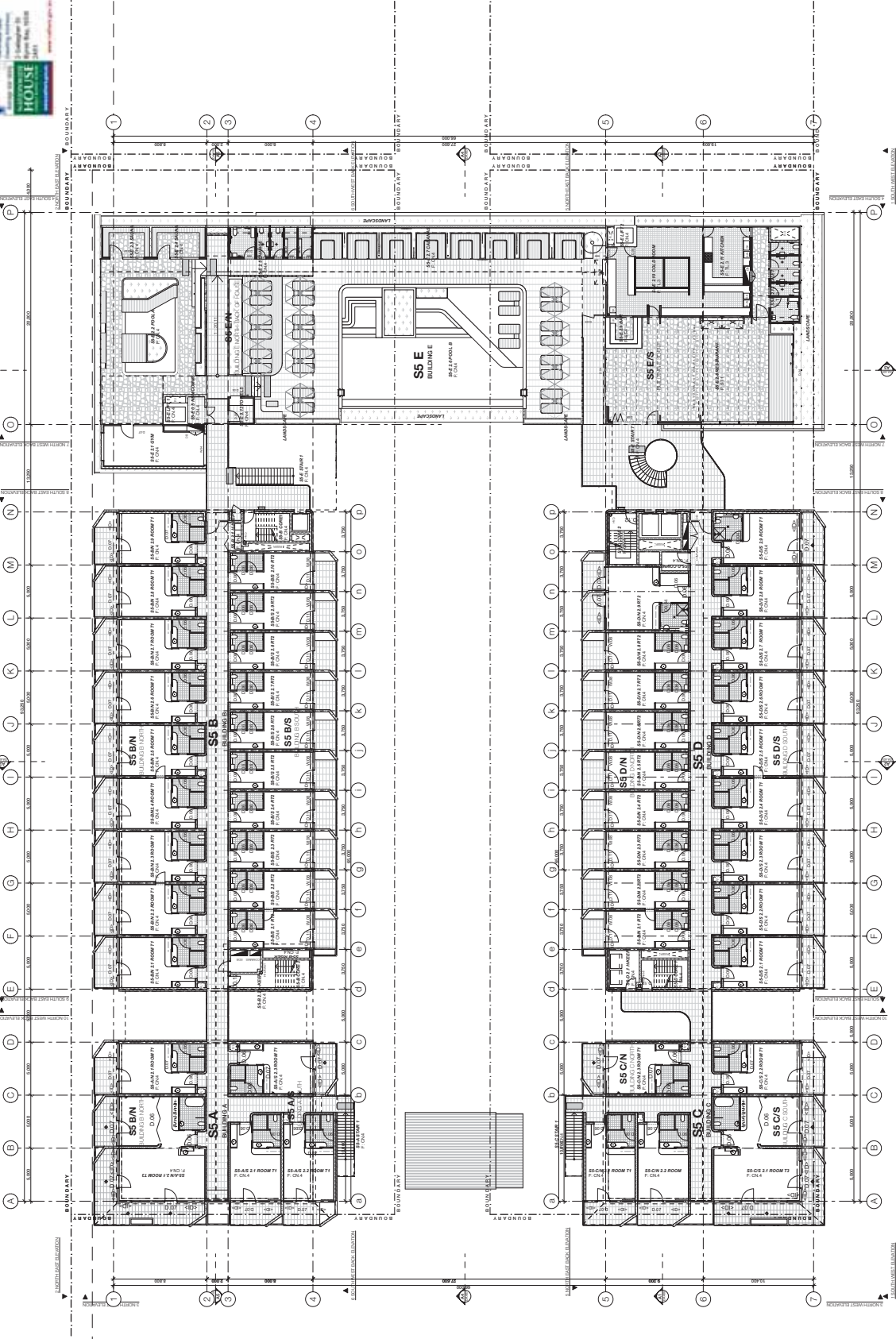
01 LEVEL 01
H0102

01 LEVEL 01
H0102

01 LEVEL 01
H0102

01 LEVEL 01
H0102

01 LEVEL 01
H0102



DEVELOPMENT APPLICATION

DRAWING TITLE :

200 FLOOR PLANS
ROOF PLAN

JOBS NO : **DFJ102**

SCALE AT A1: 1:200

DRAWN: _____ LG
 CHECKED: _____ PM

1. **NAME OF THE COMPANY:** **DEANES FINANCIAL SERVICES INC.**
 2. **DATE OF THE REPORT:** **11/11/2014**

PROJECT :
HABITAT
CLIENT :

BAY SHORE DEVELOPMENT PTY LTD

PROJECT ADDRESS :
The 2 Community Title blocks bounded

Charge ID	Charge Name
-----------	-------------

0.00	0.00
------	------

CONTRA VENTS

IC
DFZ ARCHITECTS PVT. LTD.

- PROJECT MANAGER - ABEL EAST
- BUILDER - TBC
- CERTIFIER - MARK SPINTER

DISCOUNTS OR CHARGES BASED ON CREDIT RISK SHALL NOT BE USED TO

VERIFY ALL DIMENSIONS AND LEVELS ON SITE PRIOR TO BEGINNING CONSTRUCTION. PROVIDE WRITTEN DIMENSIONS TO THE ARCHITECT PRIOR TO WRITING DIMENSIONS TO THE CONTRACT.

- PLANNING CONSULTANT - STEVE CONNELLY
- STRUCTURAL ENGINEER - RYAN DE AVEZ
- MECHANICAL ENGINEER - JAMES M O'BRYEN

DESIGN BY CPJ ARCHITECTS AND ISLANDERES AND CONTEMPORARY ARCHITECTURES RESPONSIBILITY TO

CONSTRUCTION PURPOSES UNLESS ISSUED FOR OTHER PURPOSES. THIS DOCUMENT IS NOT TO BE USED FOR WORK WHEN AUTHORIZED BY THE ENGINEER. ALL LEVELS TO BE SUBJECT TO SURVEY DRAWING.

[illegible]

ON SITE. ALL DOCUMENTS HERE
ARCHITECT AND SHALL NOT BE
OF THE ARCHITECT.

CONFORMAL MEASUREMENTS ON SITE AND LOGS
WITHIN ARE SUBJECT TO AUSTRALIAN COPYRIGHT
REPRODUCED OR CIRCLED IN ANY FORM OR BY ANY

Refer BCA Check BCA Report for detailed review of BCA requirements.
Sprinklers as required, refer to FER/ PS by I-Fire
Refer **FER** for confirmation & details of all Performance Solutions applicable to this development.

Building S5 – A (Type 4 Construction)
 Building A is to comply with BCA specification C1.1 and table 4 BCA Spec C.1.1

Level 02:	- Serviced Apartments: Class 3
	- Office & Medical Centre: Class 5 & 6
Level 01:	- Hotel: Class 3
Level 02:	- Hotel: Class 3

Building B is to comply with BCA specification C1.1 and table 4 BCA Spec C1.1

Level 02:	
- Serviced Apartments: Class 3	
- Office & Medical Centre: Class 5 & 6	
Level 01:	
- Hotel: Class 3	
Level 02:	
- Hotel: Class 3	

Building 0 is to comply with BCA specification C1.1 and table 4 BCA Spec C1.1

<u>Level 02:</u>	- Office & Retail: Class 5 & 6
<u>Level 01:</u>	- Hotel: Class 3
<u>Level 02:</u>	- Hotel: Class 3

Building D is to comply with BCA specification C.1.1 and table 4 BCA Spec C.1.1

Level 02:

- Office: Class 5
- Office & Retail: Class 5 & 6
- Retail: Class 6

Level 01:

- Hotel: Class 3

Level 02:

- Hotel: Class 3

Building Dis to comply with BCA specification C.1.1 and table 4 BCA Spec C.1.1

Level 00:

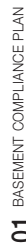
- Retail: Class 6
- Recreation Facility Indoor: Class 9 b

Level 01:

- Recreation Facility Indoor: Class 9 b
- Hotel Amenities: Class 3

Level 02:

- Restaurant: Class 6
- Pool: Class 10 b
- Hotel Amenities: Class 3



NOTES:

Refer BCA Check-BCA Report for detailed review of BCA requirements.
Should any queries arise, please refer to EPR PS by the relevant authority.
Refer to FER for confirmation of details of all Performance Solutions applicable to this development.

SUMMARY

Building S5 - A (Type A Construction)
Building A is to comply with BCA specification C1.1 and table 4 BCA Spec C1.1

- Level 02:
 - Office & Medical Centres: Class 3
 - Office & Medical Centres: Class 5 & 6
- Level 01:
 - Office & Medical Centres: Class 3
- Level 02:
 - Hotel: Class 3

Building S5 - B (Type A Construction)

Building B is to comply with BCA specification C1.1 and table 4 BCA Spec C1.1

- Level 02:
 - Serviced Apartments: Class 3
 - Office & Medical Centres: Class 5 & 6
- Level 01:
 - Office & Medical Centres: Class 3
- Level 02:
 - Hotel: Class 3

Building S5 - C (Type A Construction)

Building C is to comply with BCA specification C1.1 and table 4 BCA Spec C1.1

- Level 02:
 - Office & Retail: Class 5 & 6
- Level 01:
 - Hotel: Class 3
- Level 02:
 - Hotel: Class 3

Building S5 - D (Type A Construction)

Building D is to comply with BCA specification C1.1 and table 4 BCA Spec C1.1

- Level 02:
 - Office Class 5
 - Office & Retail: Class 5 & 6
- Level 01:
 - Retail: Class 6
- Level 02:
 - Office & Medical Centres: Class 3
- Level 02:
 - Hotel: Class 3

Building S5 - E (Type A Construction)

Building E is to comply with BCA specification C1.1 and table 4 BCA Spec C1.1

- Level 02:
 - Retail: Class 6
 - Recreation Facility Indoor: Class 9.b
- Level 01:
 - Recreation Facility Indoor: Class 9.b
 - Hotel Amenities: Class 3
- Level 02:
 - Restaurant: Class 6
 - Hotel: Class 3
 - Hotel Amenities: Class 3

NOTES

Escape distance

Distance between exits

Worst case escape scenario (<60m) → 9.8m

Exit

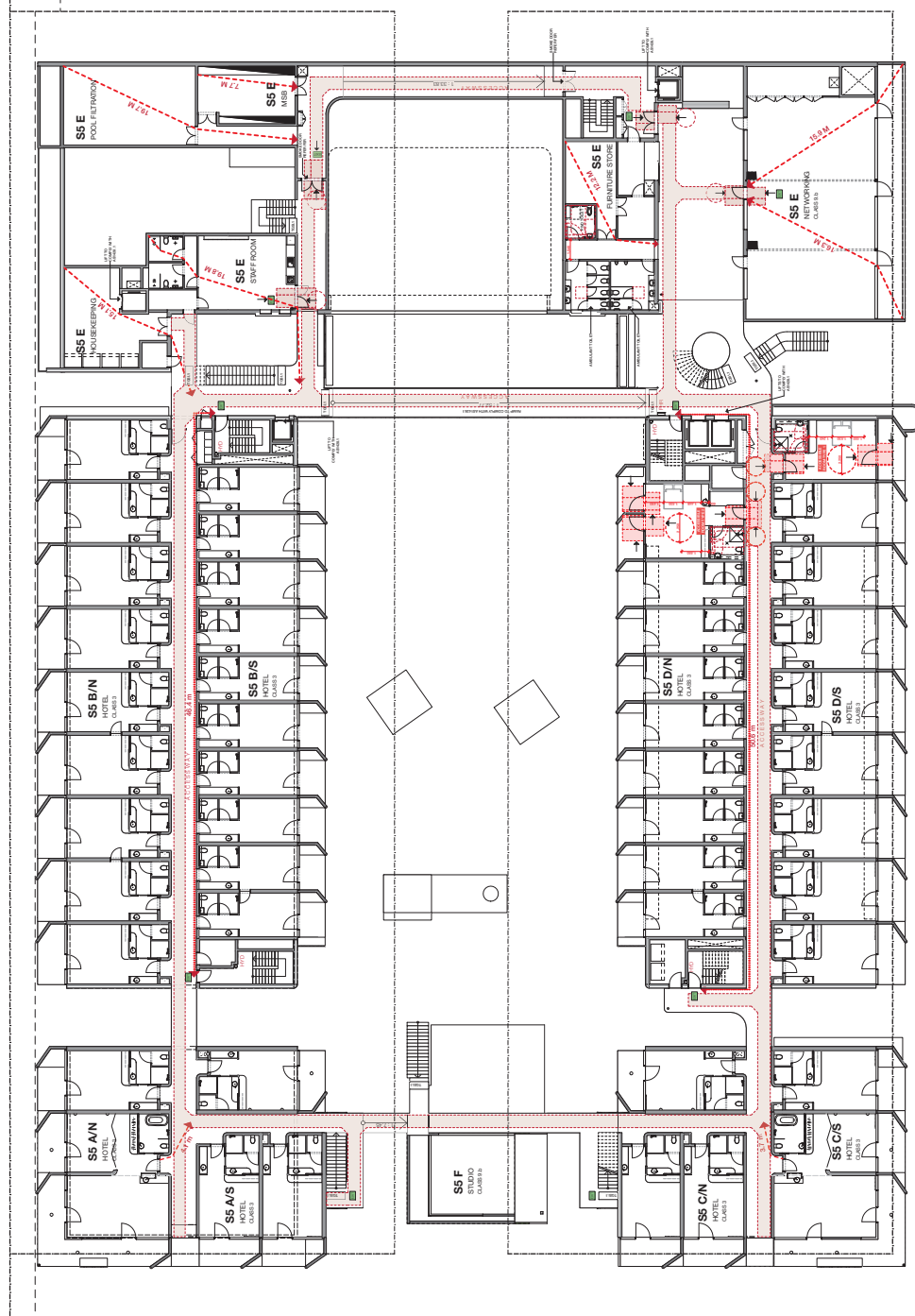
Direction of approach

Portable Fire Extinguisher

Turning Circle

Circulation at entries

Path of Travel



01 LEVEL 01 COMPLIANCE PLAN

HB01AT

01/01/2024

GENERAL NOTES	
1. THIS PLAN IS TO BE USED IN CONJUNCTION WITH THE OTHER DOCUMENTS OF THE PROJECT.	
2. THE DESIGNER HAS CONDUCTED VISUAL VERIFICATION OF THE PLAN AND HAS FOUND IT TO BE IN CONFORMANCE WITH THE REQUIREMENTS OF THE BCA.	
3. THE DESIGNER HAS CONDUCTED VISUAL VERIFICATION OF THE PLAN AND HAS FOUND IT TO BE IN CONFORMANCE WITH THE REQUIREMENTS OF THE BCA.	
4. THE DESIGNER HAS CONDUCTED VISUAL VERIFICATION OF THE PLAN AND HAS FOUND IT TO BE IN CONFORMANCE WITH THE REQUIREMENTS OF THE BCA.	
5. THE DESIGNER HAS CONDUCTED VISUAL VERIFICATION OF THE PLAN AND HAS FOUND IT TO BE IN CONFORMANCE WITH THE REQUIREMENTS OF THE BCA.	
6. THE DESIGNER HAS CONDUCTED VISUAL VERIFICATION OF THE PLAN AND HAS FOUND IT TO BE IN CONFORMANCE WITH THE REQUIREMENTS OF THE BCA.	
7. THE DESIGNER HAS CONDUCTED VISUAL VERIFICATION OF THE PLAN AND HAS FOUND IT TO BE IN CONFORMANCE WITH THE REQUIREMENTS OF THE BCA.	
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10. THE DESIGNER HAS CONDUCTED VISUAL VERIFICATION OF THE PLAN AND HAS FOUND IT TO BE IN CONFORMANCE WITH THE REQUIREMENTS OF THE BCA.	

REVISIONS	
NO.	DESCRIPTION
01	ISSUED FOR PERMIT
02	ISSUED FOR PERMIT
03	ISSUED FOR PERMIT
04	ISSUED FOR PERMIT
05	ISSUED FOR PERMIT
06	ISSUED FOR PERMIT
07	ISSUED FOR PERMIT
08	ISSUED FOR PERMIT
09	ISSUED FOR PERMIT
10	ISSUED FOR PERMIT

PROJECT INFORMATION	
PROJECT NAME	THE 280 COMPLIANCE PLAN
CLIENT	THE 280 COMPLIANCE PLAN
PROJECT ADDRESS	THE 280 COMPLIANCE PLAN
PROJECT NO.	THE 280 COMPLIANCE PLAN
PROJECT STATUS	THE 280 COMPLIANCE PLAN

DRAWING INFORMATION	
DRAWING NO.	03
DRAWING TITLE	LEVEL 01 COMPLIANCE PLAN
DRAWING DATE	11 February 2024
DRAWING BY	DA 282
DRAWING CHECKED	DA 282

PROJECT INFORMATION	
PROJECT NAME	THE 280 COMPLIANCE PLAN
CLIENT	THE 280 COMPLIANCE PLAN
PROJECT ADDRESS	THE 280 COMPLIANCE PLAN
PROJECT NO.	THE 280 COMPLIANCE PLAN
PROJECT STATUS	THE 280 COMPLIANCE PLAN

DRAWING INFORMATION	
DRAWING NO.	03
DRAWING TITLE	LEVEL 01 COMPLIANCE PLAN
DRAWING DATE	11 February 2024
DRAWING BY	DA 282
DRAWING CHECKED	DA 282



NOTES:

Refer BCA Check-BCA Report for detailed review of BCA requirements.
Refer as required, refer to EEP/PS by the
Refer **FER** confirmation & details of all Performance Solutions applicable to this
development.

SUMMARY

Building S5 - A (Type A Construction)
Building A is to comply with BCA specification C1.1 and table 4 BCA Spec C1.1

- Serviced Apartments: Class 3
- Office & Medical Centre: Class 5 & 6
- Level 01:
- Level 02:
- Hotel: Class 3

Building S5 - B (Type A Construction)

Building B is to comply with BCA specification C1.1 and table 4 BCA Spec C1.1

- Level 02:
- Office & Medical Centre: Class 5 & 6
- Level 01:
- Hotel: Class 3
- Level 02:
- Hotel: Class 3

Building S5 - C (Type A Construction)

Building C is to comply with BCA specification C1.1 and table 4 BCA Spec C1.1

- Level 02:
- Office & Retail: Class 5 & 6
- Level 01:
- Hotel: Class 3
- Level 02:
- Hotel: Class 3

Building S5 - D (Type A Construction)

Building D is to comply with BCA specification C1.1 and table 4 BCA Spec C1.1

- Level 02:
- Office Class 5
- Office & Retail: Class 5 & 6
- Retail: Class 6
- Level 01:
- Hotel: Class 3
- Level 02:
- Hotel: Class 3

Building S5 - E (Type A Construction)

Building E is to comply with BCA specification C1.1 and table 4 BCA Spec C1.1

- Level 02:
- Retail: Class 6
- Recreation Facility Indoor: Class 9.b
- Level 01:
- Recreation Facility Indoor: Class 9.b
- Hotel Amenities: Class 3
- Level 02:
- Restaurant: Class 6
- Hotel: Class 3
- Hotel Amenities: Class 3

NOTES

Escape distance

Distance between exits

Worst case escape scenario (<60m) = 9.6m

Exit

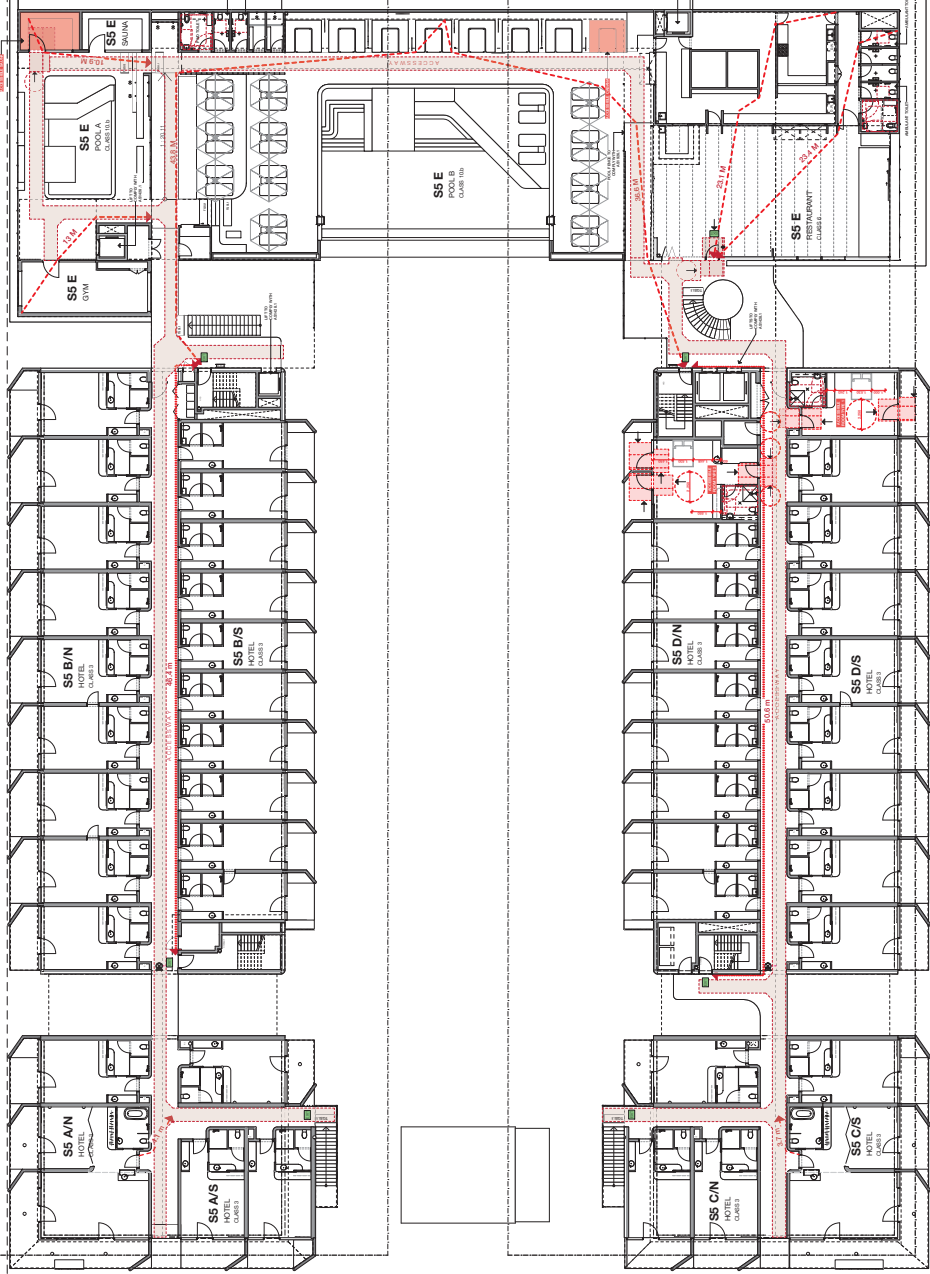
Direction of approach

Portable Fire Extinguisher

Turning Circle

Circulation at entries

Path of Travel



01 LEVEL 02 COMPLIANCE PLAN

HBENT

01/01/2023

PROJECT INFORMATION
PROJECT NAME: 280 COMPLIANCE PLAN
PROJECT ADDRESS: 280 COMPLIANCE PLAN
PROJECT STATUS: DEVELOPMENT APPLICATION
PROJECT NO: DA 283
DRAWING NO: 03
DATE: 11 February 2023
DRAWN BY: [Name]
CHECKED BY: [Name]
APPROVED BY: [Name]

NO.	REVISION	DATE
1	ISSUED FOR PERMIT	11/02/2023
2	FOR COMMENTS	
3	FOR COMMENTS	
4	FOR COMMENTS	
5	FOR COMMENTS	
6	FOR COMMENTS	
7	FOR COMMENTS	
8	FOR COMMENTS	
9	FOR COMMENTS	
10	FOR COMMENTS	

PROJECT INFORMATION
PROJECT NAME: 280 COMPLIANCE PLAN
PROJECT ADDRESS: 280 COMPLIANCE PLAN
PROJECT STATUS: DEVELOPMENT APPLICATION
PROJECT NO: DA 283
DRAWING NO: 03
DATE: 11 February 2023
DRAWN BY: [Name]
CHECKED BY: [Name]
APPROVED BY: [Name]

PROJECT INFORMATION
PROJECT NAME: 280 COMPLIANCE PLAN
PROJECT ADDRESS: 280 COMPLIANCE PLAN
PROJECT STATUS: DEVELOPMENT APPLICATION
PROJECT NO: DA 283
DRAWING NO: 03
DATE: 11 February 2023
DRAWN BY: [Name]
CHECKED BY: [Name]
APPROVED BY: [Name]

NOTES:

Refer BCA Check-BCA Report for detailed review of BCA requirements.
Signatures as required, refer to PER/PS by the
Refer **PER** for Confirmation & details of all Performance Solutions applicable to this
development.

SUMMARY

Building S5 - A (Type A Construction)
Building A is to comply with BCA specification C1.1 and table 4 BCA Spec C1.1

- Serviced Apartments: Class 3
- Office & Medical Centre: Class 5 & 6

Level 01:
- Retail: Class 3

Level 02:
- Hotel: Class 3

Building S5 - B (Type A Construction)
Building B is to comply with BCA specification C1.1 and table 4 BCA Spec C1.1

- Serviced Apartments: Class 3
- Office & Medical Centre: Class 5 & 6

Level 01:
- Hotel: Class 3

Level 02:
- Hotel: Class 3

Building S5 - C (Type A Construction)
Building C is to comply with BCA specification C1.1 and table 4 BCA Spec C1.1

- Office & Retail: Class 5 & 6

Level 01:
- Hotel: Class 3

Level 02:
- Hotel: Class 3

Building S5 - D (Type A Construction)
Building D is to comply with BCA specification C1.1 and table 4 BCA Spec C1.1

- Office Class 5
- Office & Retail: Class 5 & 6

Level 01:
- Retail: Class 3

Level 02:
- Hotel: Class 3

- Office & Retail: Class 5 & 6

Level 01:
- Retail: Class 3

Level 02:
- Hotel: Class 3

Building S5 - E (Type A Construction)
Building E is to comply with BCA specification C1.1 and table 4 BCA Spec C1.1

- Retail: Class 6

Level 01:
- Recreation Facility Indoor: Class 9.b

Level 02:
- Hotel Amenities: Class 3

Level 02:
- Restaurant: Class 6

Level 02:
- Hotel: Class 3

Level 02:
- Hotel Amenities: Class 3

NOTES

Escape distance

Distance between exits

Worst case escape scenario (<60m)

Exit

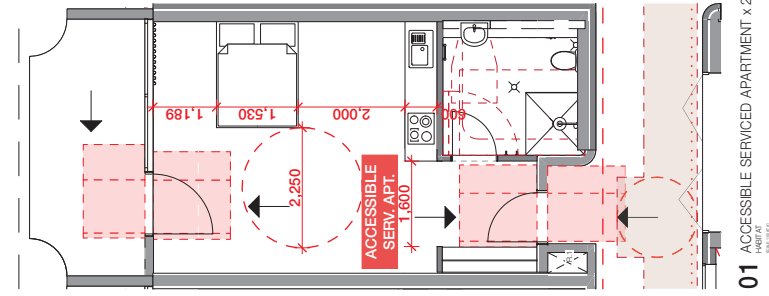
Direction of approach

Portable Fire Extinguisher

Turning Circle

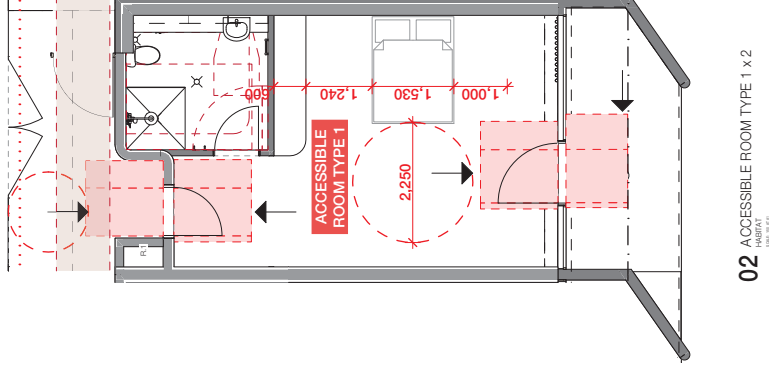
Circulation at entries

Path of Travel



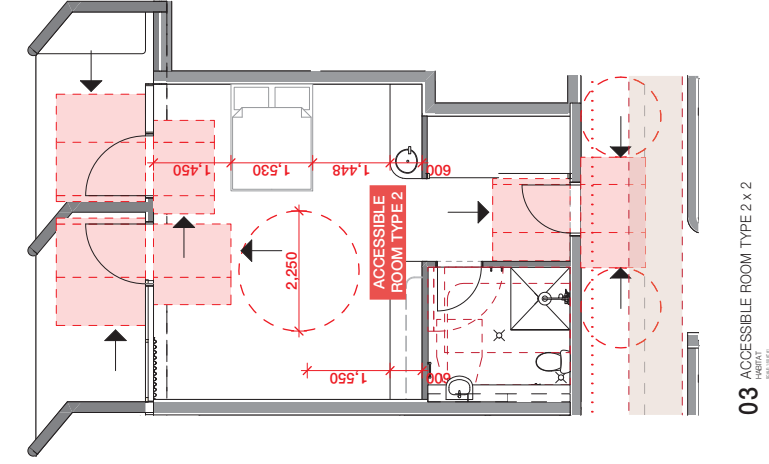
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DATE: 10/07/24



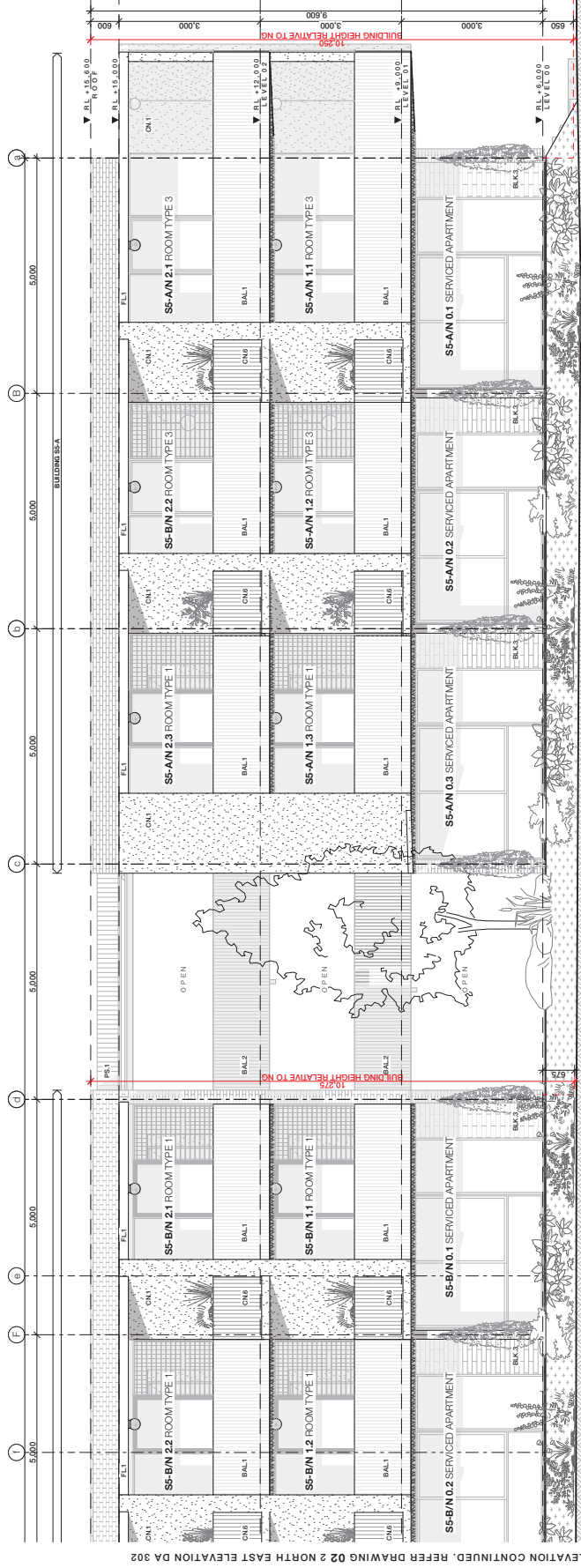
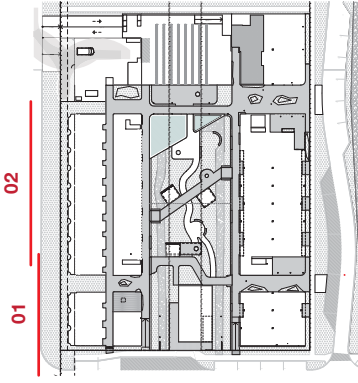
02 ACCESSIBLE ROOM TYPE 1 x 2

DATE: 10/07/24

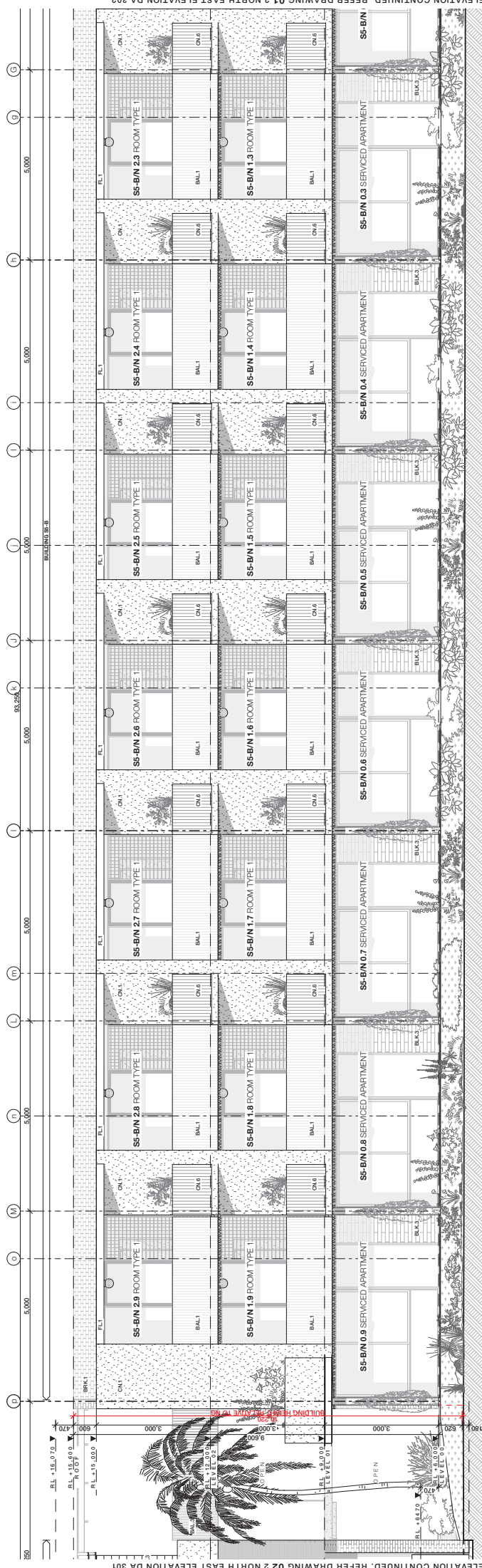


03 ACCESSIBLE ROOM TYPE 2 x 2

DATE: 10/07/24

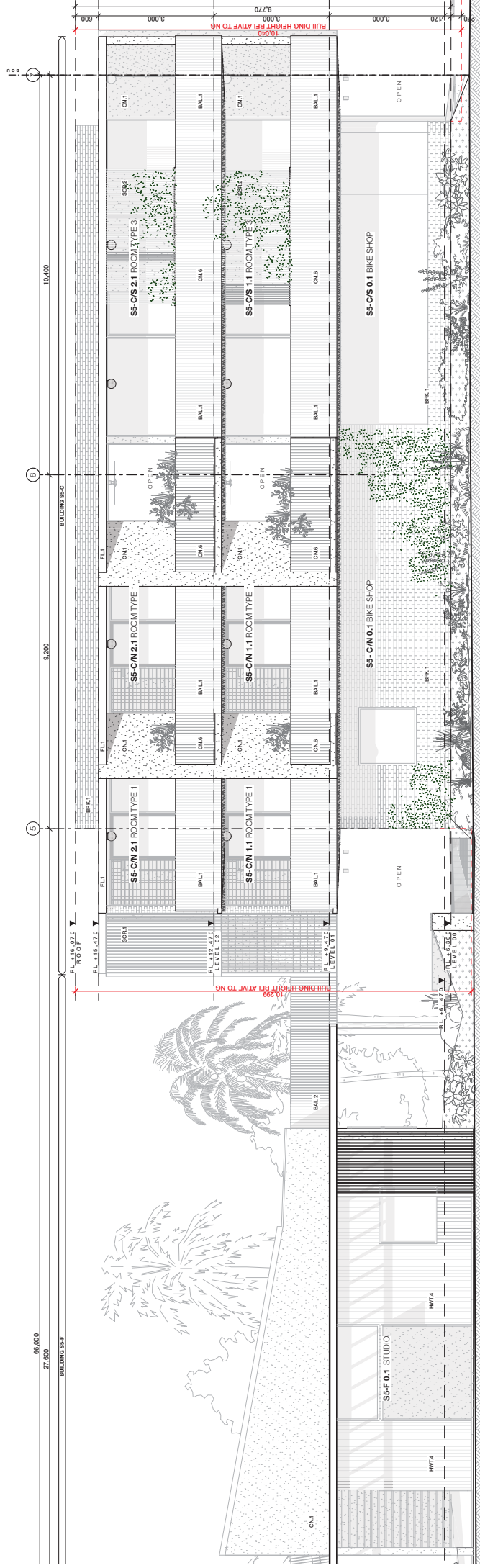


01 2 NORTH EAST ELEVATION

02 2 NORTH EAST ELEVATION
LJAD77A7



66,000
27,600
BUILDING S5-F

[illegible]

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54	2022-03-03 11:11		
55	2022-03-03 11:11		
56	2022-03-03 11:11		
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97	2022-03-03 11:11		
98	2022-03-03 11:11		
99	2022-03-03 11:11		
100	2022-03-03 11:11		

PROJECT :
HABITAT

CLIENT :
BAYSHORE DEVELOPMENT PTY LTD

PROJECT ADDRESS :
The 2 Community Title blocks bounded by
Street 1, Easy Street and the railway at
Penny Lane BYRON BAY NSW 2484

PROJECT: The 2 Community Title blocks bounded by William Place, Glasgow Street, Easy Street and the railway at the near of 1/20 Porter Street and Penny Lane BYRON BAY NSW 2481 AUSTRALIA

HABITAT:

CLIENT: BAYSHORE DEVELOPMENT PTY LTD

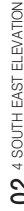
PROJECT ADDRESS:

JOB NO: **DFJ102**

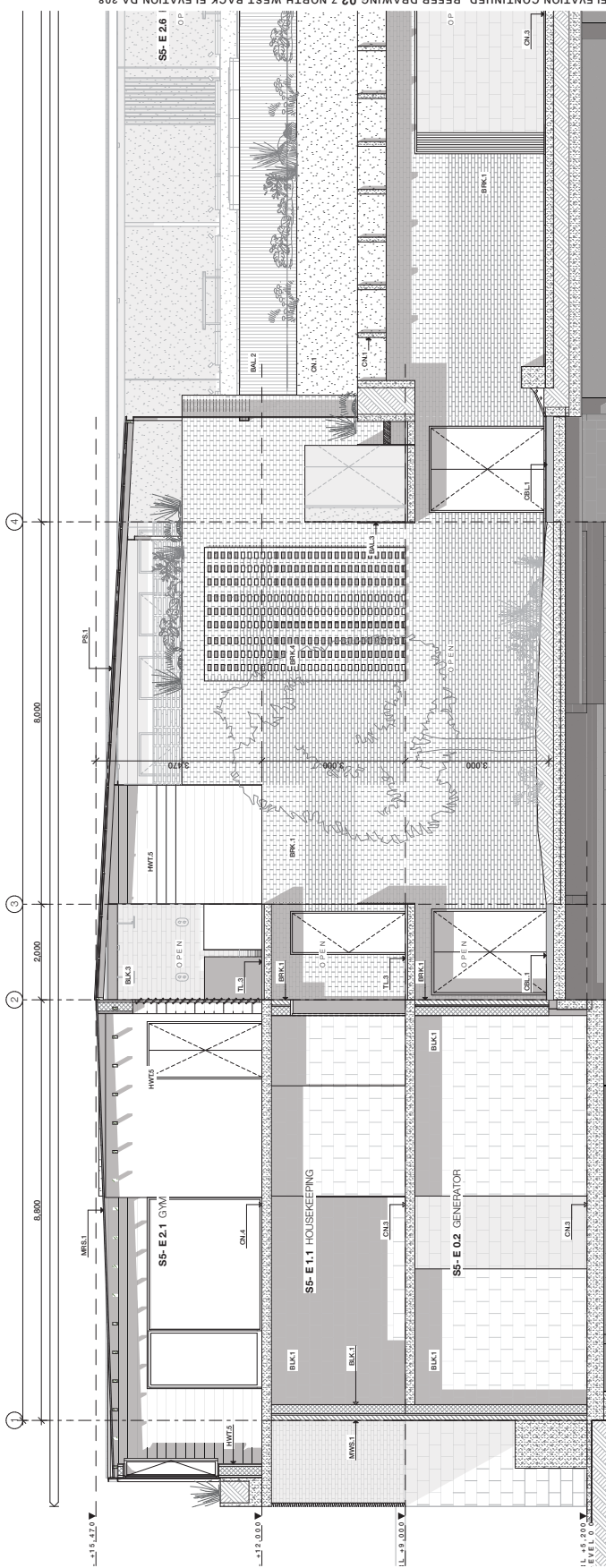
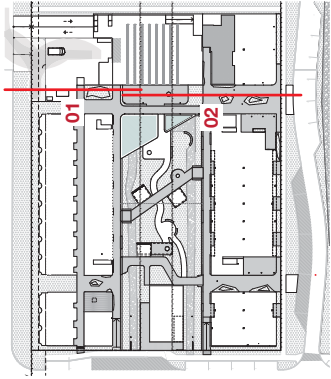
SCALE AT 1: **1:50**
DRAWN: **LQ**
CHECKED: **FWM**

MEASURED BY: **CHEN CH** / **DEANNE PALMA JONAS SINGH PILL**

300 ELEVATIONS ELEVATIONS

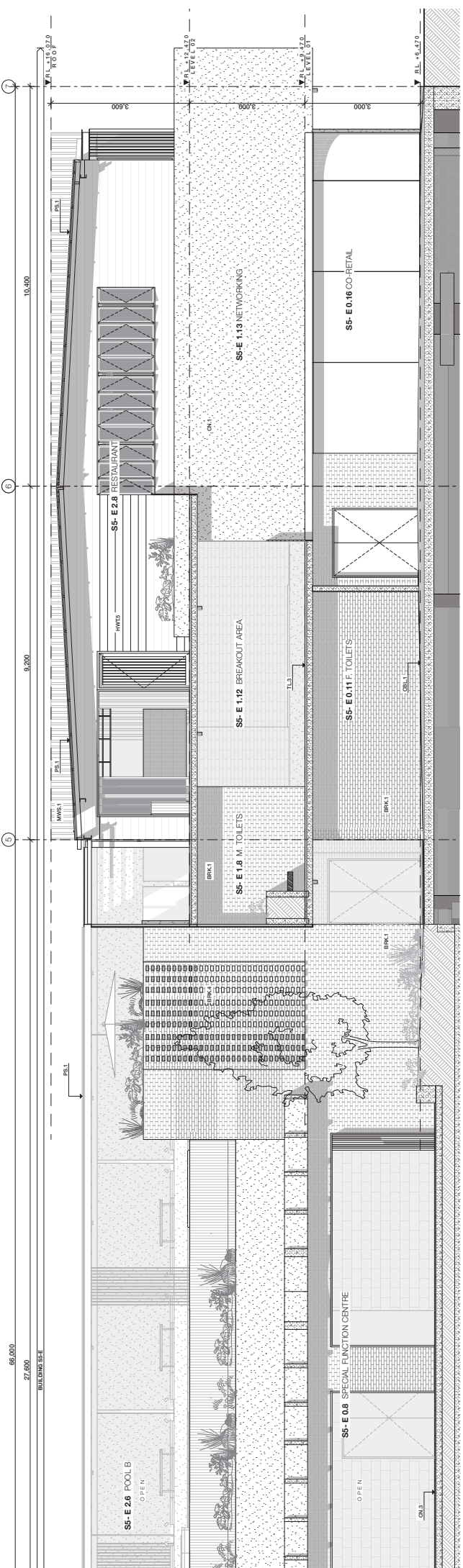






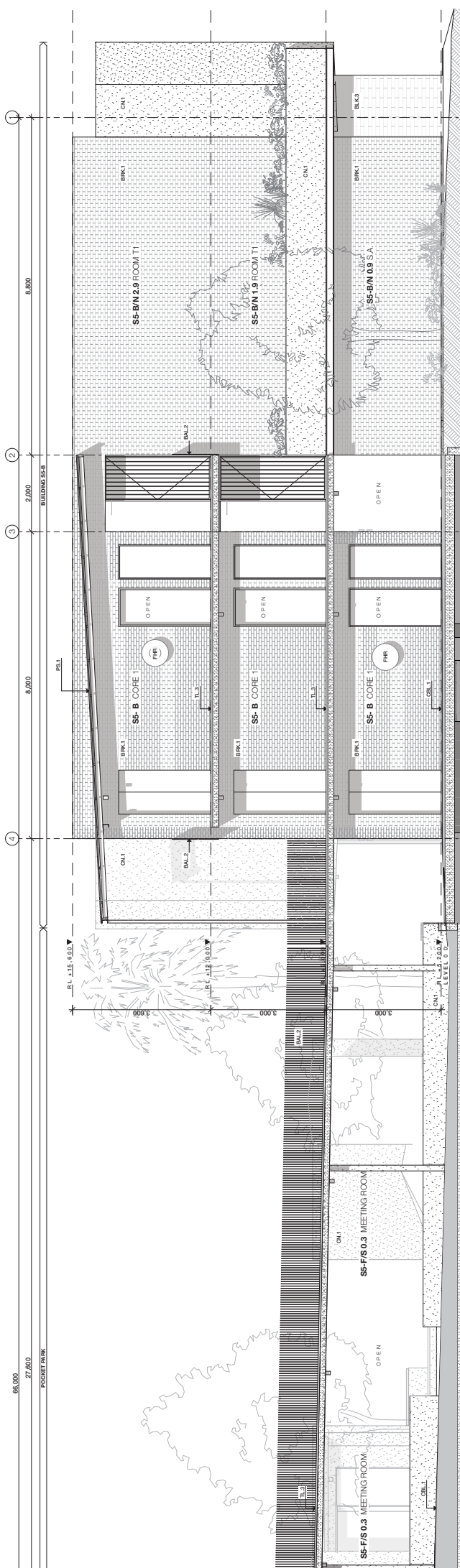
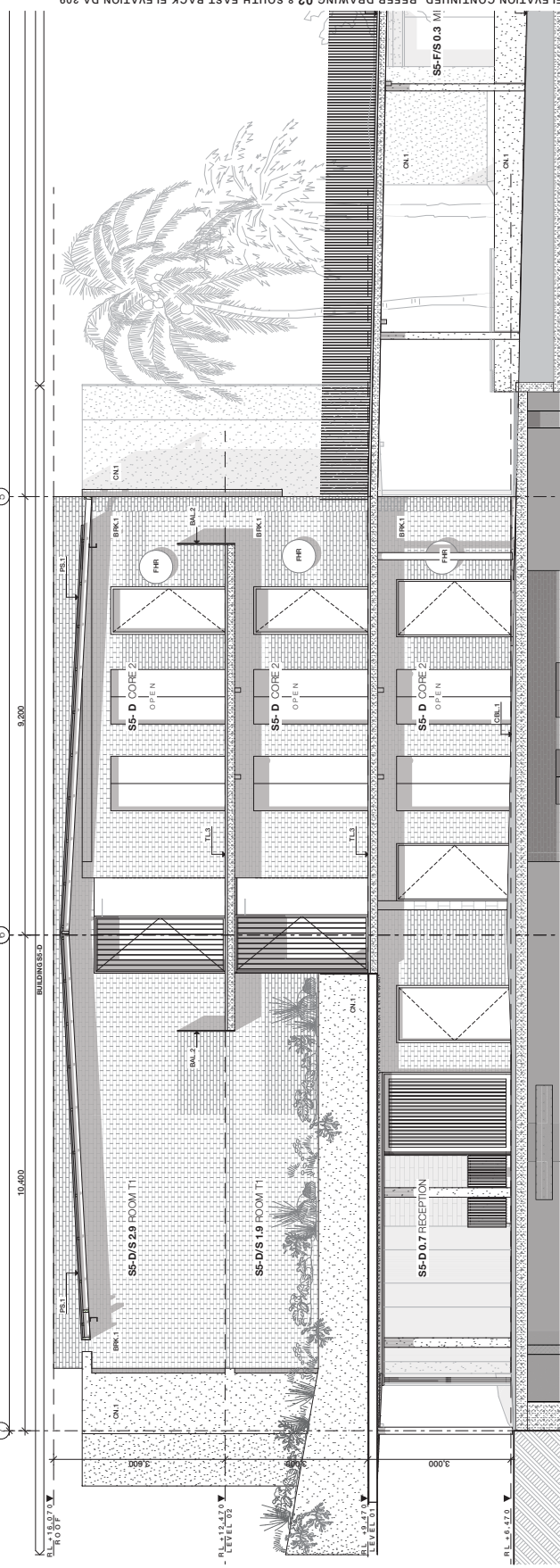
01 7 NORTH WEST BACK ELEVATION

66,800
27,600
BUILDING S5-E

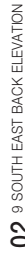
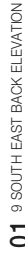


02 7 NORTH WEST BACK ELEVATION

ELEVATION CONTINUED, REFER DRAWING 01 7 WEST BACK ELEVATION DA 308



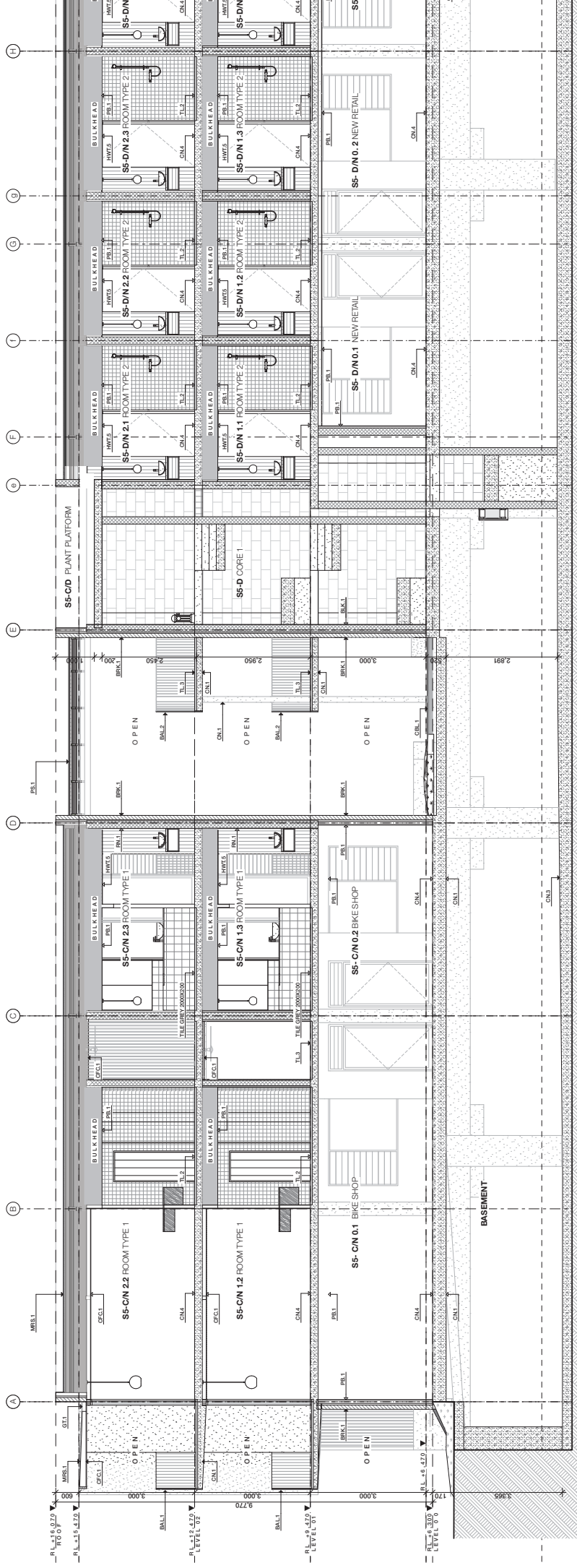
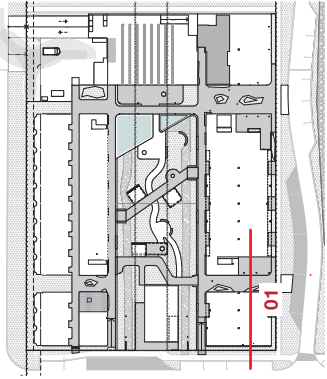
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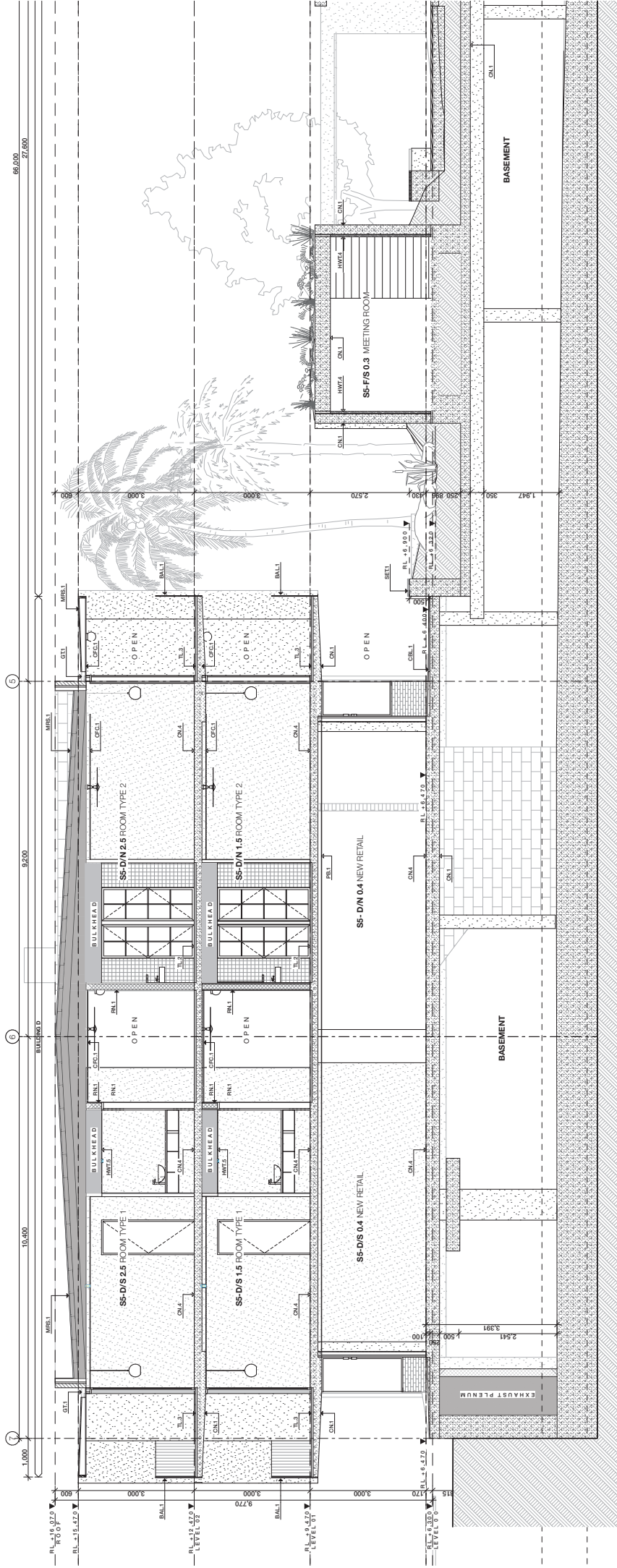
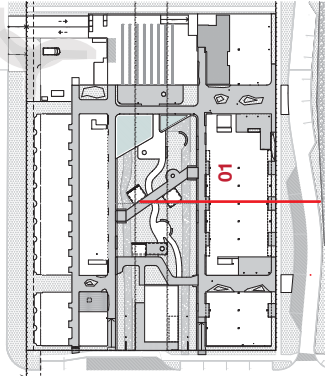


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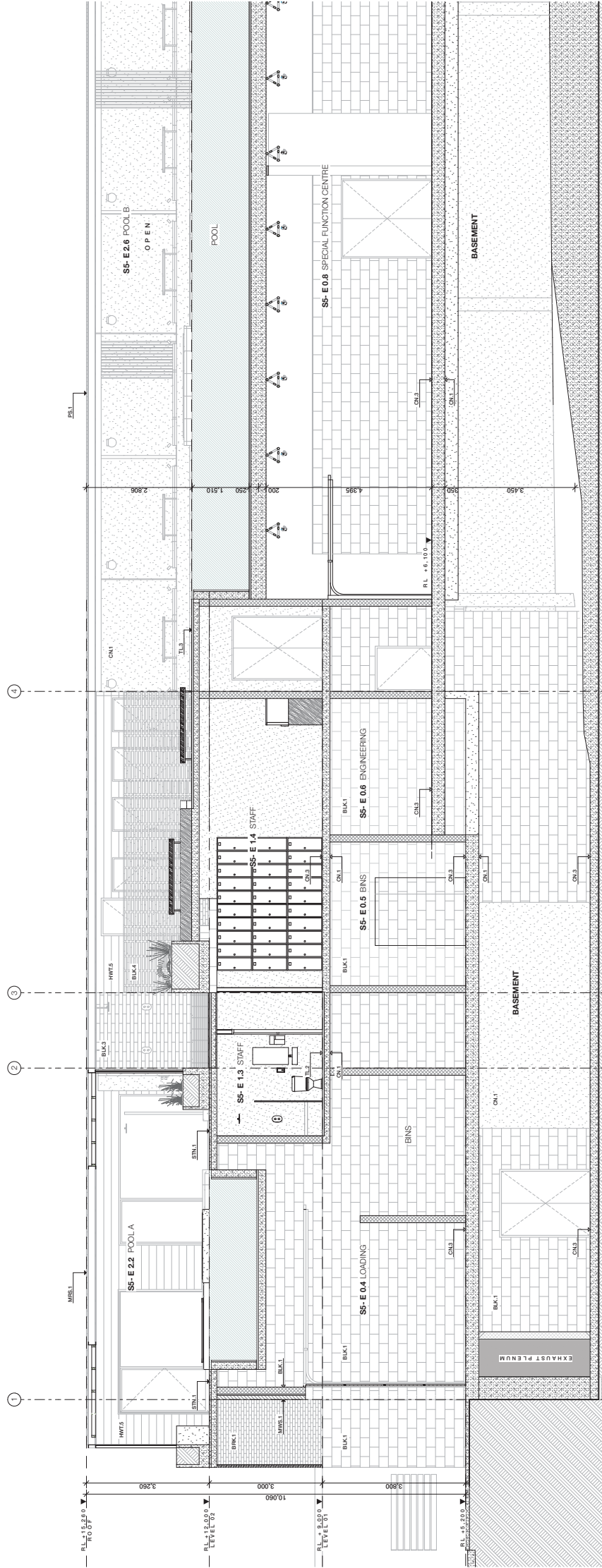
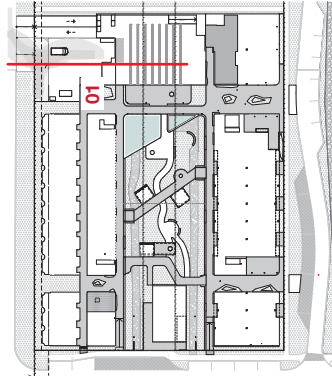




01 A1 BUILDING SECTION



01 A2 BUILDING SECTION
HABITAT

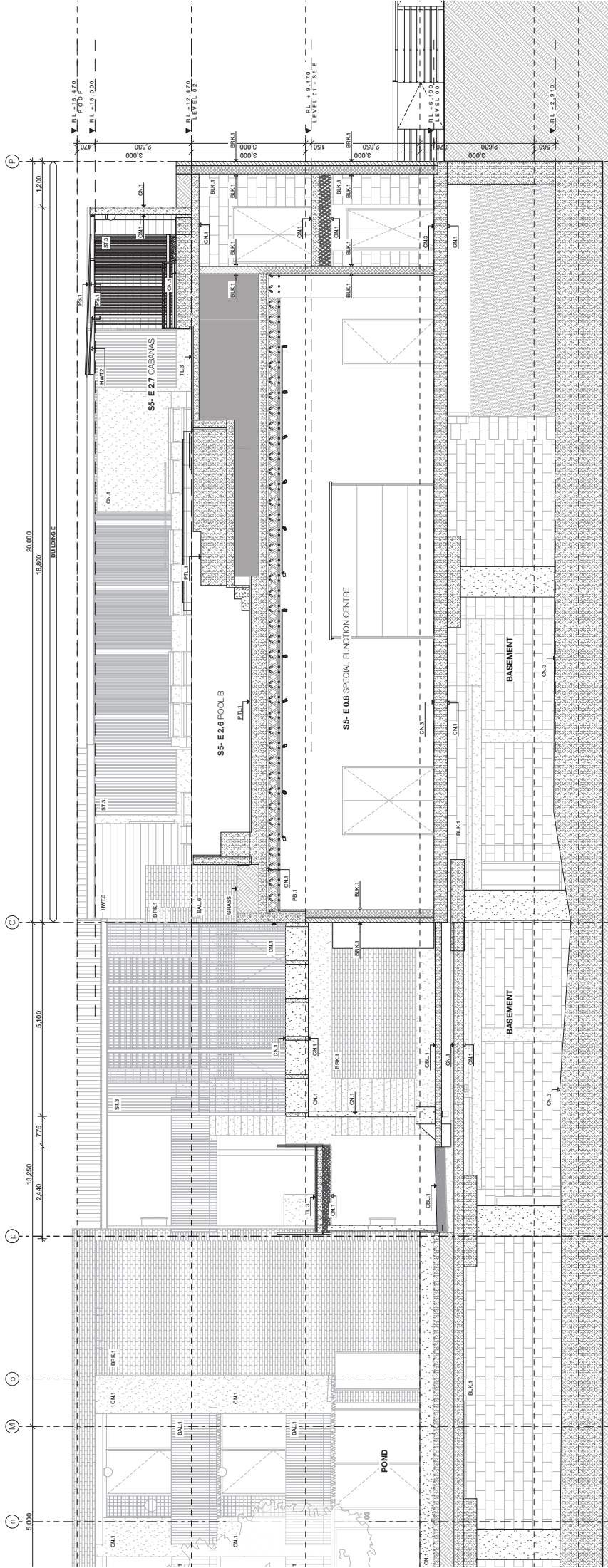
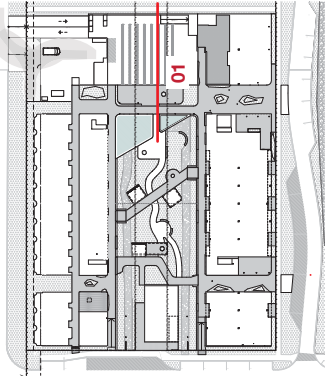


01 A3 BUILDING SECTION

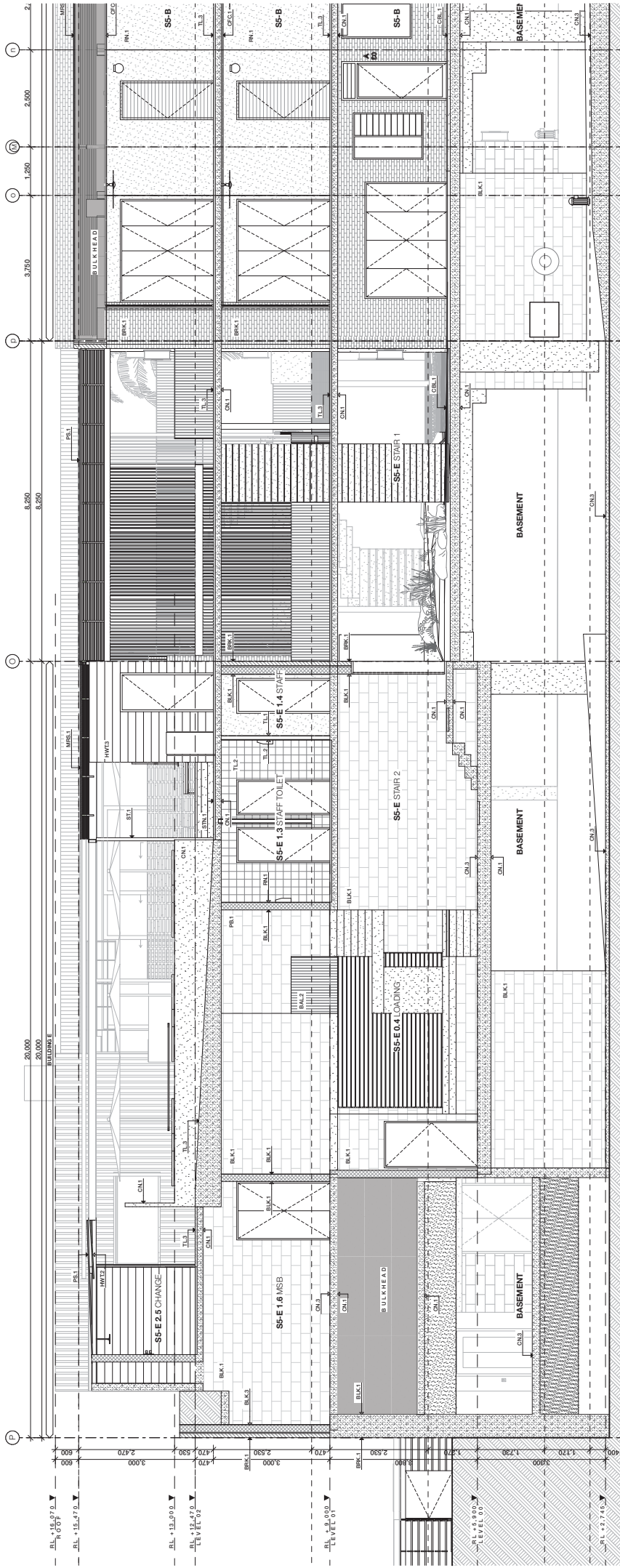
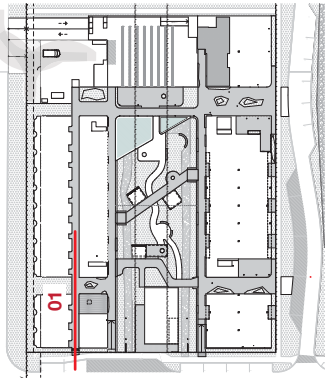








01 A4 BUILDING SECTION

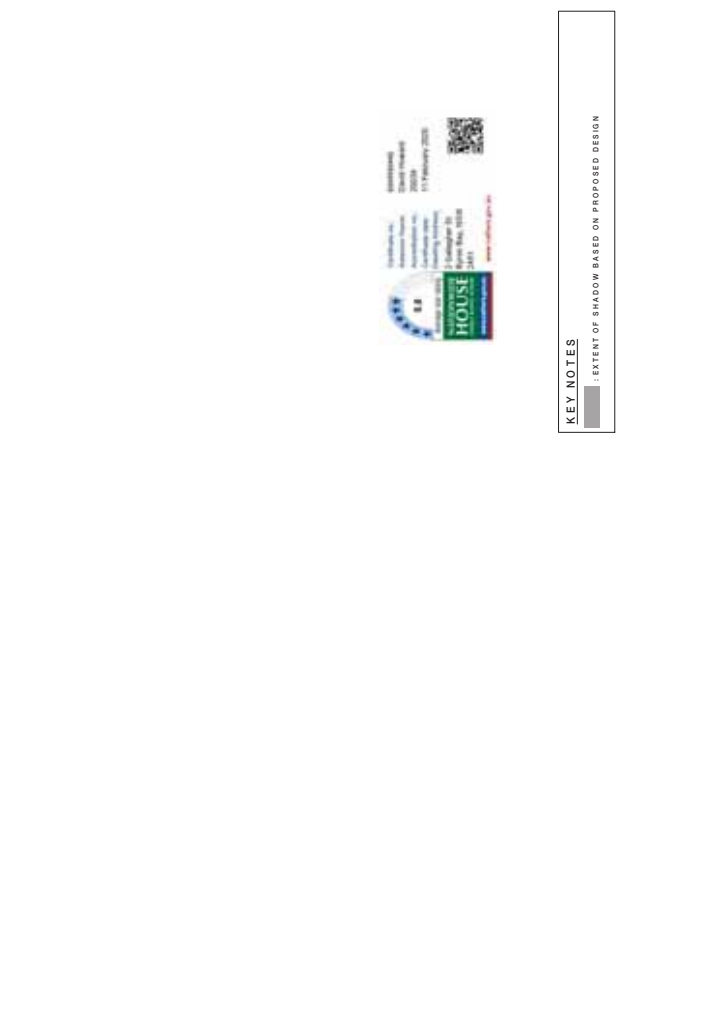
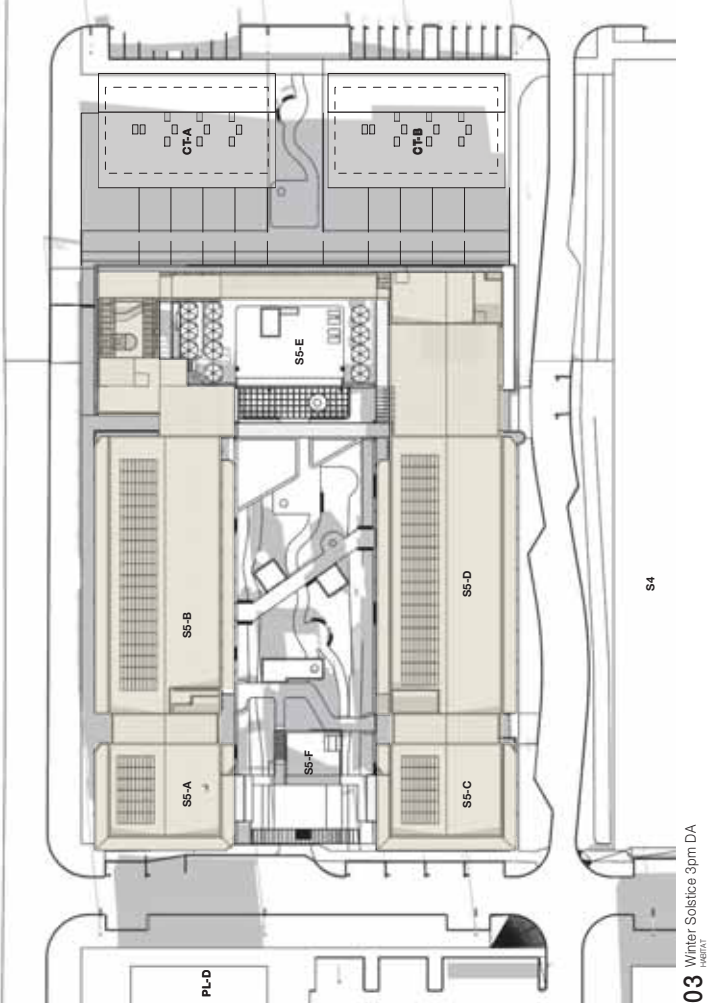
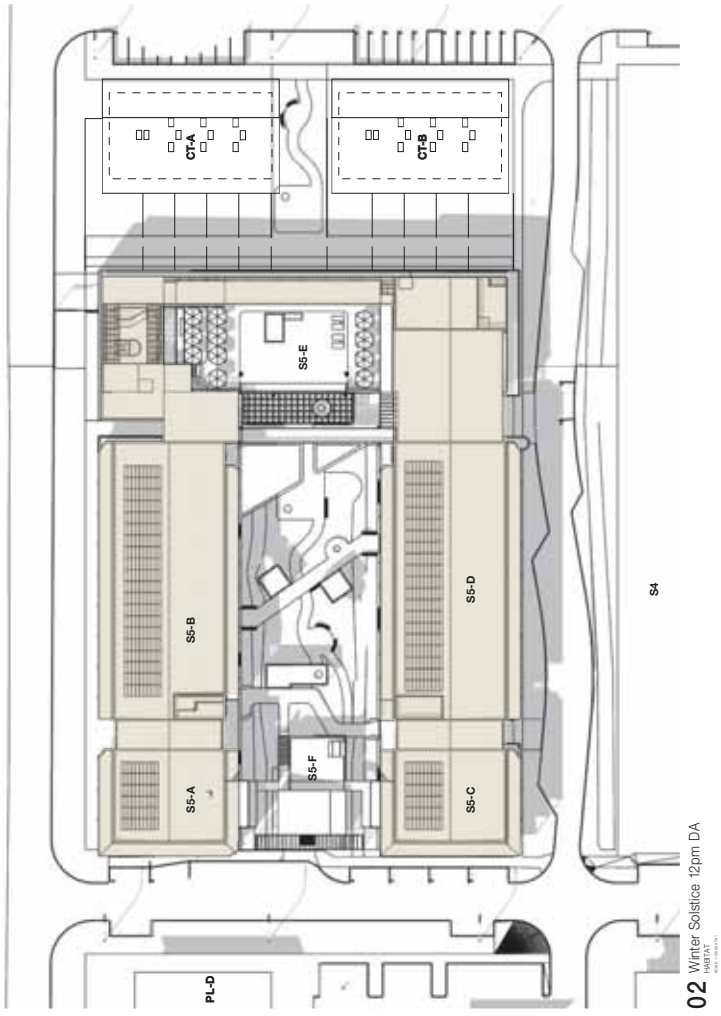
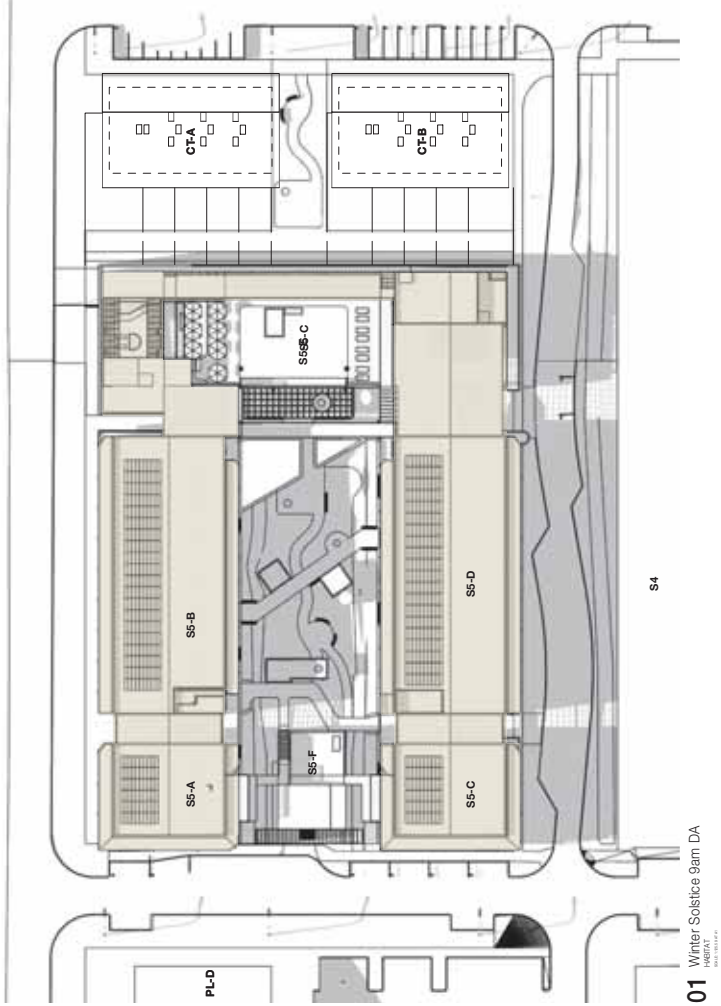


01 A5 BUILDING SECTION
1:50





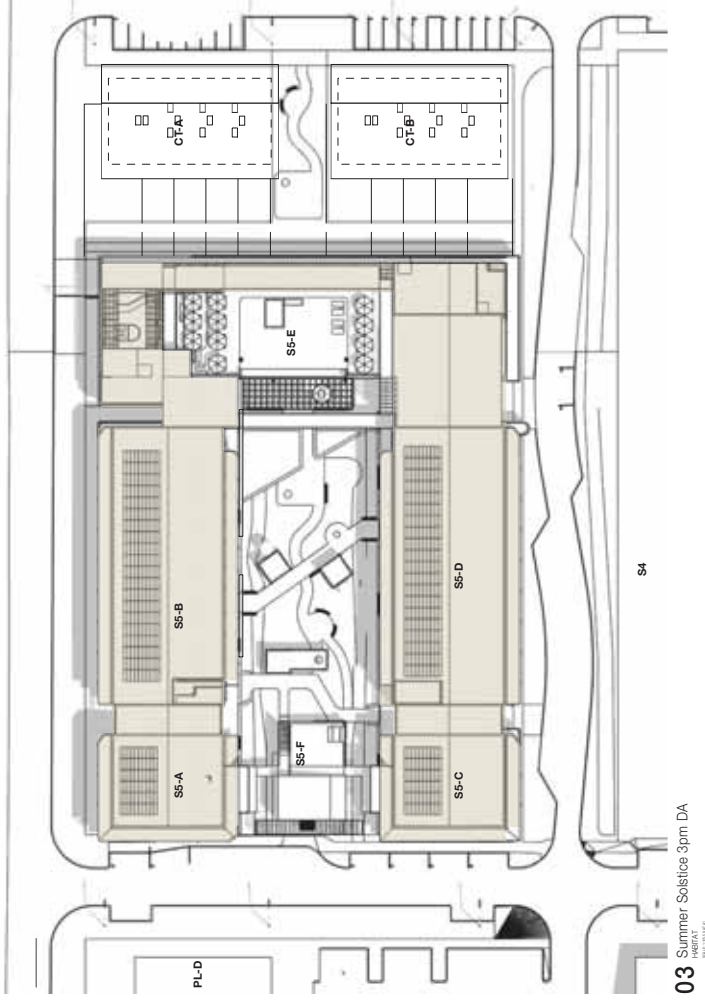
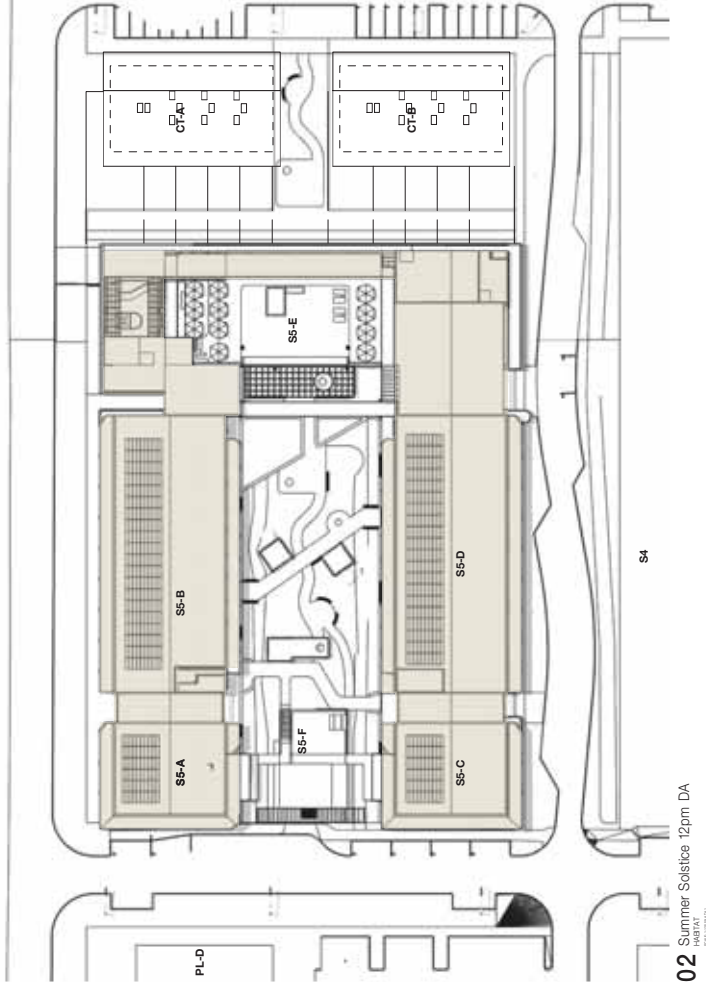
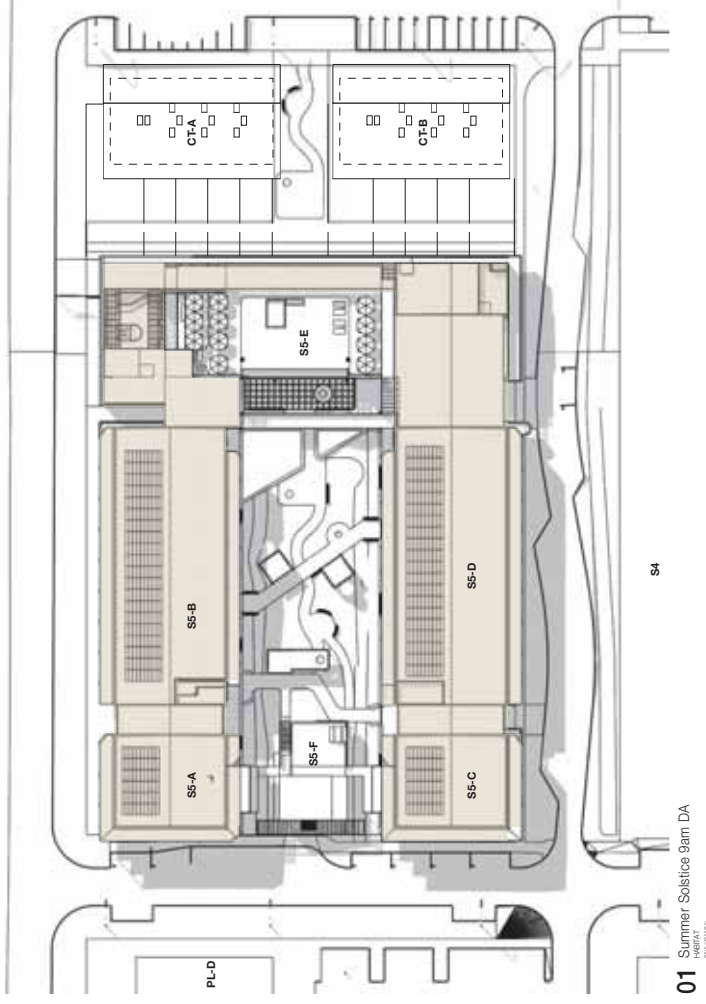
USE	COLOUR	CLASS	LEVEL 00	LEVEL 01	LEVEL 02	TOTAL
AMENITIES			93.78	101.46	21.89	217.13
BACK OF HOUSE			17.28	93.14	12.87	123.29
BIKE SHOP		CLASS 5 & 6	259.65			259.65
CO-RETAIL		CLASS 6	220.68			220.68
COMMERCIAL KITCHEN		CLASS 6	59.87			59.87
GYM			33.45			33.45
HOTEL		CLASS 3		1,627.11	1,627.11	3,254.22
NETWORKING		CLASS 9b		208.53		208.53
NEW RETAIL		CLASS 5 & 6	508.58			508.58
OFFICE		CLASS 5	165.06			165.06
RESTAURANT		CLASS 6		312.17		312.17
RETAIL		CLASS 6	44.95			44.95
SAUNA				27.44		27.44
SERVICED APARTMENT		CLASS 3	434.96			434.96
SPECIAL FUNCTION CENTRE		CLASS 5, 8 & 9b	369.44			369.44
STUDIO		CLASS 9.b	132.00			132.00
WELLNESS		CLASS 5 & 97	344.67			344.67
						6,716.09 m²



KEY NOTES

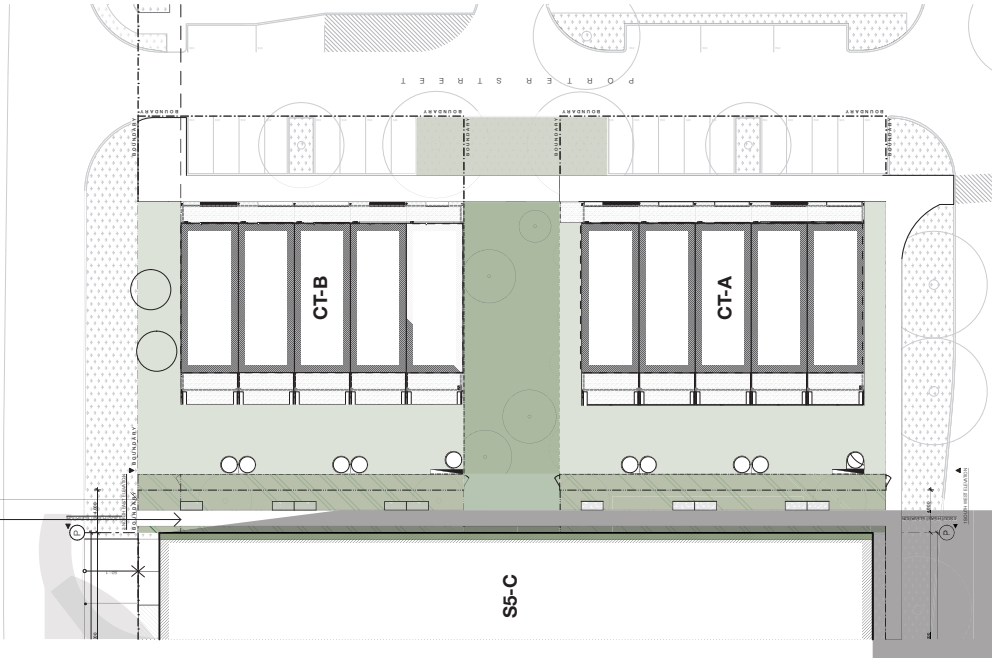
■ : EXTENT OF SHADOW BASED ON PROPOSED DESIGN



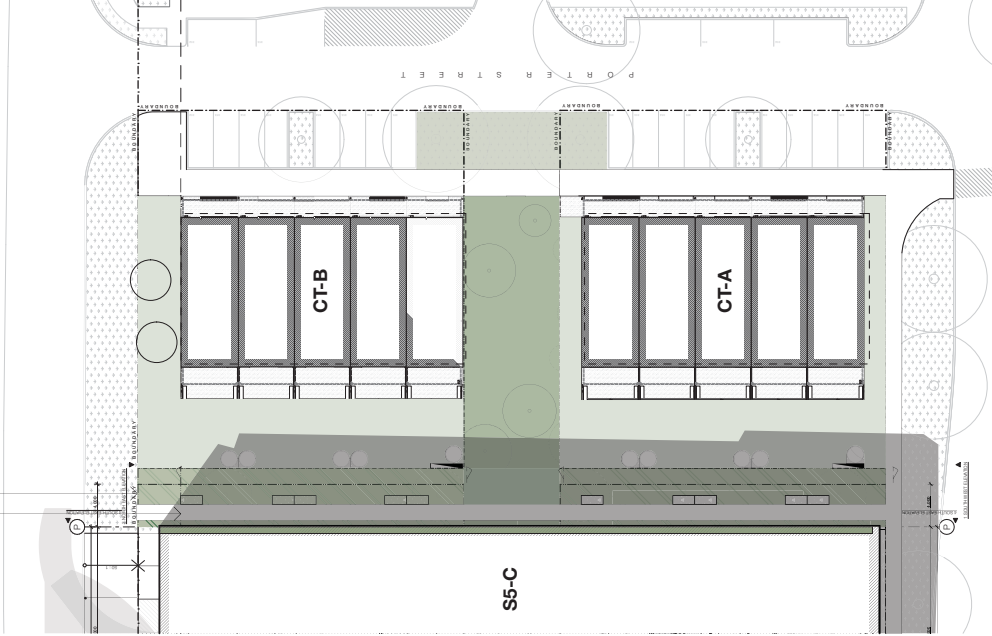


KEY NOTES

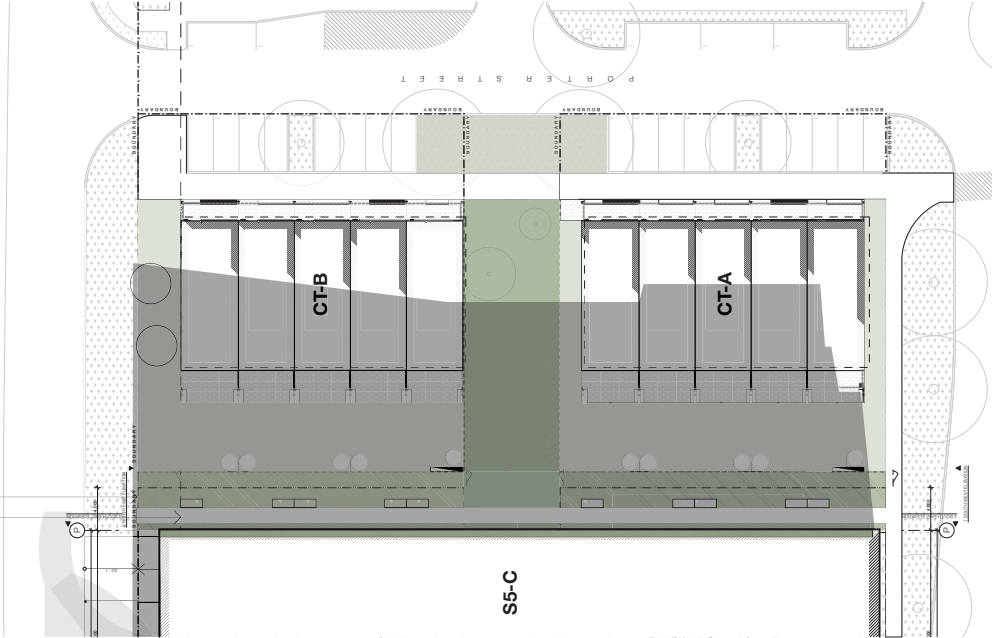
PROPOSED PATHWAY
4M GARDEN EXTENSION

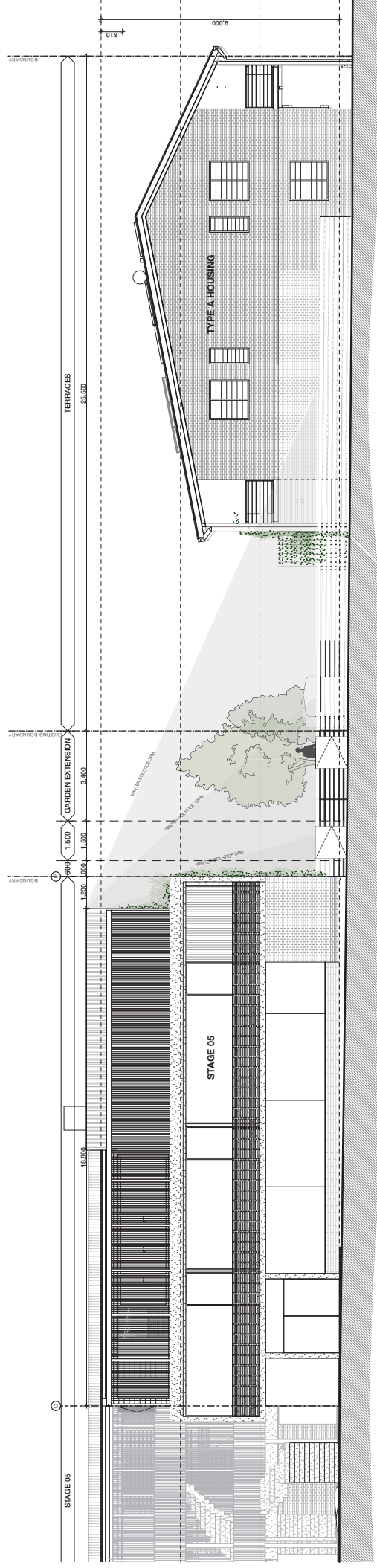


PROPOSED PATHWAY
4M GARDEN EXTENSION



PROPOSED PATHWAY
4M GARDEN EXTENSION





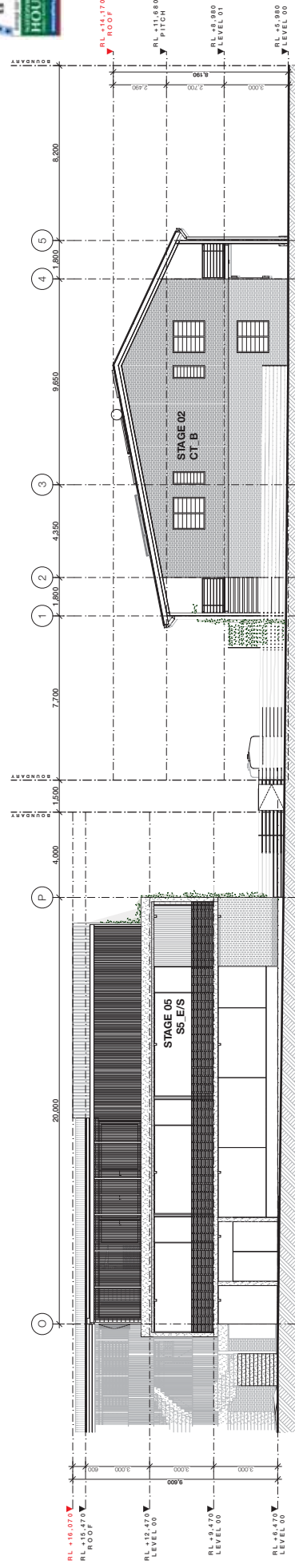
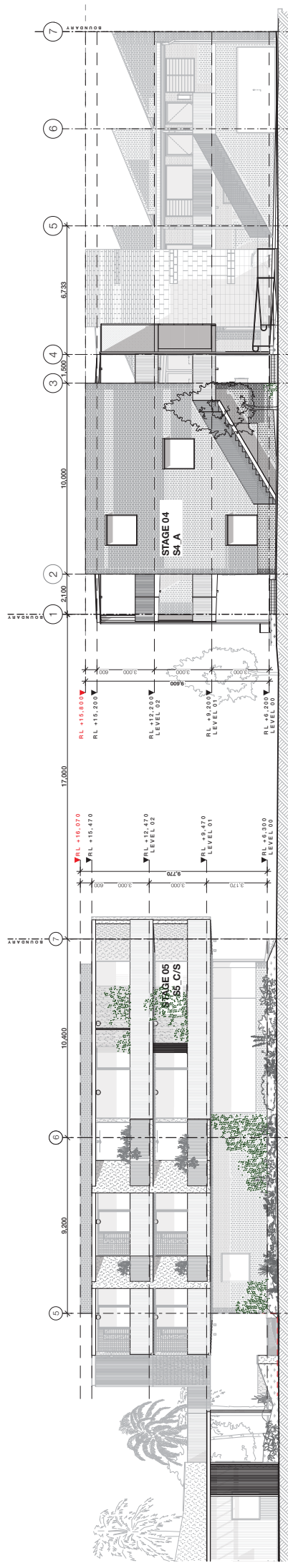
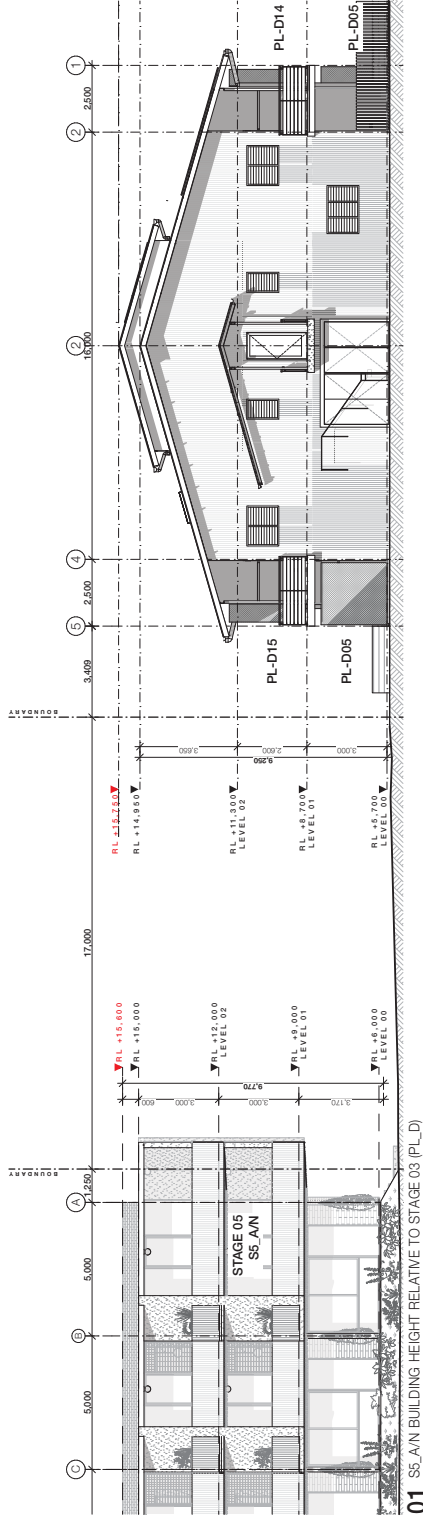
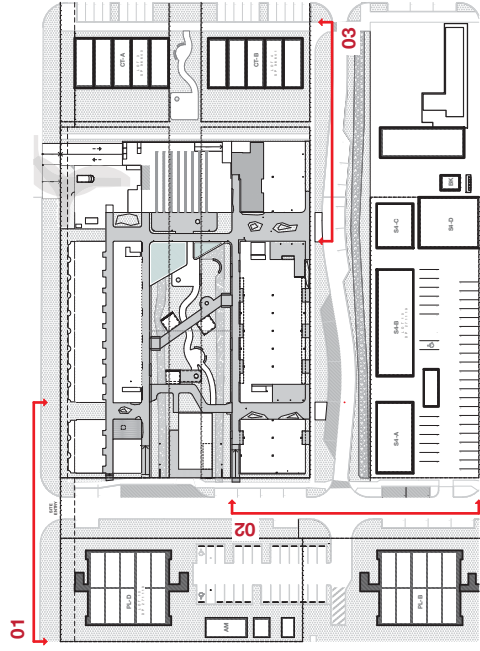


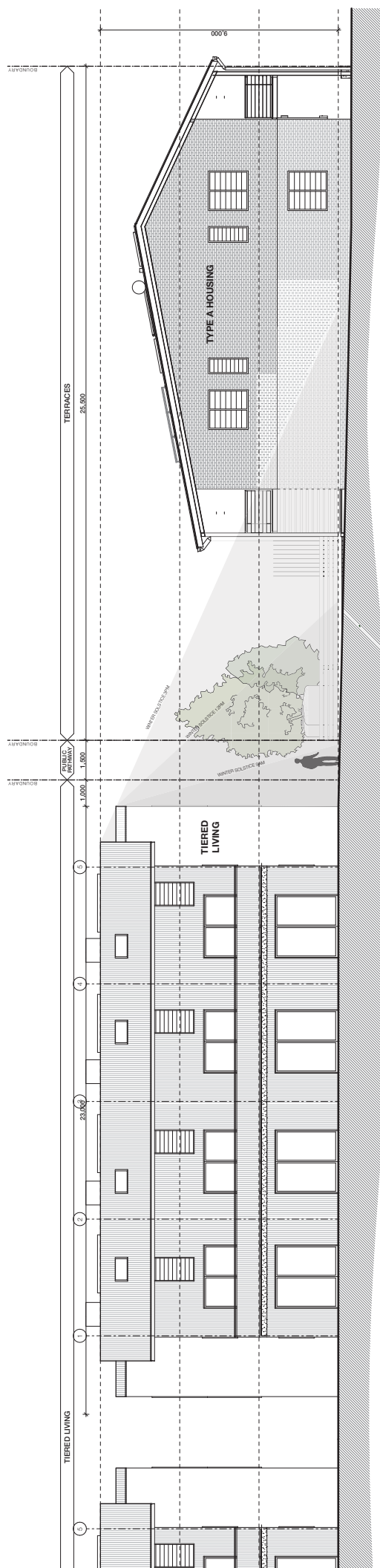
01 SS_B VIEW FROM POCKET PARK



02 SS_F VIEW POCKET PARK







01 WINTER SECTION_ TIERED LIVING

STAT, STAGE 06

35







Crime considerations have been considered and integrated into the design of Stage 5 Development Application. Key features are:

- The buildings have been designed to eliminate dead ends and ensure clear sight-lines through the development. All points of entry and exit are open, well connected to public space and clearly visible to surrounding road networks and Lots.
- Passive surveillance: Stage 5 is overlooked by existing residential dwellings, passively monitored by the Stage 4 to the SW, the Pocket Living units to the NW and the Commercial Terraces to the SE.

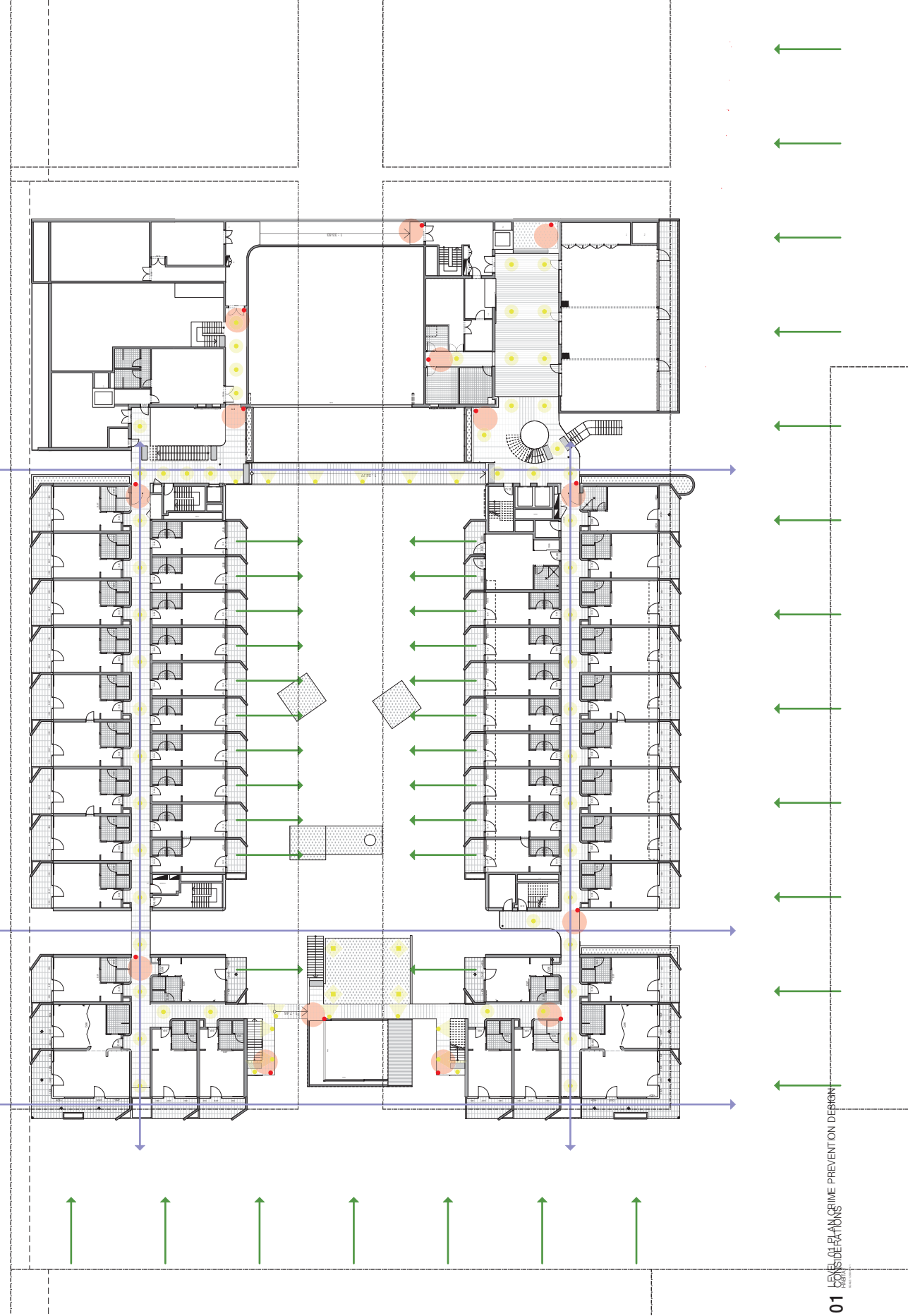
From within Stage 5 care has been taken to eliminate dead ends and maximise passive surveillance from the occupants (tenants / guests / staff) within this stage development.

- Street lighting along Easy and Gallagher Street will ensure high visibility of people accessing the site outside of daylight hours.
- A mix of wall lights, bollards and in-ground uplights will be selected depending on location. These external lightings will be installed throughout the precinct, ensuring coverage to all external spaces.

- CCTV will be installed throughout the precinct. Cameras will be placed in strategic locations to ensure all public areas have coverage and are well monitored (covered terraces / walkways / toilet block entry / meeting rooms)

- A private security company will be engaged to undertake perimeter security checks throughout the night by walking or driving around Stage 05.

Note: Locations and numbers of CCTV and external lights indicative only. Final layout and numbers to be determined by suitably qualified electrical engineer and security specialist.



01 LEVEL PLANS CRIME PREVENTION DESIGN

Crime considerations have been considered and integrated into the design of Stage 5 Development Application. Key features are:

- The buildings have been designed to eliminate dead ends and ensure clear sight-lines through the development. All points of entry and exit are open, well connected to public space and clearly visible to surrounding road networks and Lots.
- Passive surveillance: Stage 5 is overlooked by existing residential dwellings, passively monitored by the Stage 4 to the SW, the Pocket Living units to the NW and the Commercial Terraces to the SE.
From within Stage 5 care has been taken to eliminate dead ends and maximise passive surveillance from the occupants (tenants / guests / staff) within this stage development.
- Street lighting along Easy and Gallagher Street will ensure high visibility of people accessing the site outside of daylight hours.

- A mix of wall lights, bollards and in-ground uplights will be selected depending on location. These external lightings will be installed throughout the precinct, ensuring coverage to all external spaces.

- CCTV will be installed throughout the precinct. Cameras will be placed in strategic locations to ensure all public areas have coverage and are well monitored (covered terraces / walkways / toilet block entry / meeting rooms)

- A private security company will be engaged to undertake perimeter security checks throughout the night by walking or driving around Stage 05.

Note: Locations and numbers of CCTV and external lights indicative only. Final layout and numbers to be determined by suitably qualified electrical engineer and security specialist.

