

NatHERS & Section J Report

Macarthur Gardens North R3

Goldsmith Avenue, Campbelltown NSW 2560

Prepared For:

Landcom



Prepared By:

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Executive Summary

BSE has been engaged to undertake a Section J and NatHERS compliance assessment for the proposed residential development located at Goldsmith Avenue, Campbelltown NSW 2560, in accordance with the National Construction Code 2022 requirements for energy efficiency.

This report addresses the compliance requirements for both the residential apartments and the non-residential (common) areas of the development. NatHERS assessments were completed for the residential units using HERO v4.1 software to assess thermal performance in line with protocol. For non-residential spaces, compliance was assessed under the Deemed-to-Satisfy (DtS) provisions of NCC Section J.

NatHERS

In accordance with NCC 2022 Volume 1, Part J3, Class 2 sole occupancy units (SOUs) are required to meet the minimum NatHERS star ratings:

- Minimum 6 star per apartment
- Minimum 7 Star averaged over the entire building

Software HERO V4.1 (Chenath engine 3.23) has been used to determine the class 2 sole occupancy units' compliance against the energy efficiency regulatory requirements for the development. The results below are based on an assessment of all typical unit types. NatHERS Certificates for the assessed units are shown in appendix C.

Table 0-1 Summary of Results

	Minimum Apartment Star Rating	Average Building Star Rating
Minimum Requirements	6 Stars	7 Stars
Project Results	6.1 Stars (Pass)	8.9 Stars (Pass)

As shown in Table 0-1, the assessed units' overall average star rating meets the minimum NatHERS requirements, with no individual apartments below the required 6-star rating.

The report outlines the building fabric performance requirements in Appendix B, to ensure the required star ratings are achieved.

BASIX

The BASIX assessment is divided into three sections. Water, thermal comfort, and energy, each independently measuring the efficiency of the development.

BASIX requires a minimum target of 40% for the water section, a pass for the thermal comfort section and a minimum required target of 25% for the energy section. As shown in Table 1-1 the project score meets the targets for all BASIX sections.

Table 1-1: Summary of BASIX Results

Section	Score	Target
Water	49 (Pass)	40
Thermal Performance	Pass	Pass
Energy	60 (Pass)	58

Subject to satisfaction with the provisions outlined in this report, this development will comply with the requirements of Section J of NCC 2022.

Common Areas (Section J Deemed-to-Satisfy Methodology)

The common areas were assessed under the Deemed-to-Satisfy (DtS) provisions of NCC 2022 Section J. This includes assessment of building fabric, sealing, HVAC, lighting, energy monitoring and provision for electric vehicle charging and solar PV.

Refer to **Appendix B** for the thermal performance markups for further details.

In addition to meeting the minimum building fabric thermal performance, the project is required to meet the following to comply with the DTS requirements of the NCC 2022 Section J

- The project meets the requirements of Part J4D3 Thermal Construction General (**Refer to Appendix A**)
- The project meets the requirements of Part J5 Building Sealing (**Refer to Section 3.3**)
- Compliance with Parts J6, J7, J8 and J9 is demonstrated by Services Consultants and/or Contractors

Subject to satisfaction with the provisions outlined in this report, this development will comply with the requirements of Section J of NCC 2022.

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1. Introduction

BSE has completed a detailed Section J and NatHERS compliance assessment for the residential development Macarthur Gardens North R3, located at Goldsmith Avenue, Campbelltown NSW 2560.

This assessment involved conducting thermal comfort and energy performance modelling in accordance with the National Construction Code (NCC) 2022 requirements. Using HERO v4.1 thermal simulation software, heating and cooling loads for the development were calculated to evaluate energy efficiency and ensure compliance with the relevant standards.

The analysis was based on architectural drawings provided by DKO Architects and was completed for Xavier Knight to ensure alignment with both regulatory requirements and the design intent.

Macarthur Gardens North R3 comprises of a 8-storey residential building, offering 130 apartments in a mix of studio, one-, and two-bedroom units. The project also includes a basement level carparking, a communal open space area and associated landscaping located on ground level as well as on Level 3.

BSE's assessment reflects a thorough and methodical approach to compliance, ensuring the development meets the required standards while supporting sustainable design principles.



Figure 1-1 Project Site location (Source: DKO Architects)

1.1. Project Summary

Project Name	Macarthur Gardens North R3
Address	Goldsmith Avenue, Campbelltown NSW 2560
Local Government Area (LGA)	Campbelltown City Council
NCC Climate Zone	6 (Mild Temperate)
NatHERS Climate Zone & Weather File	28

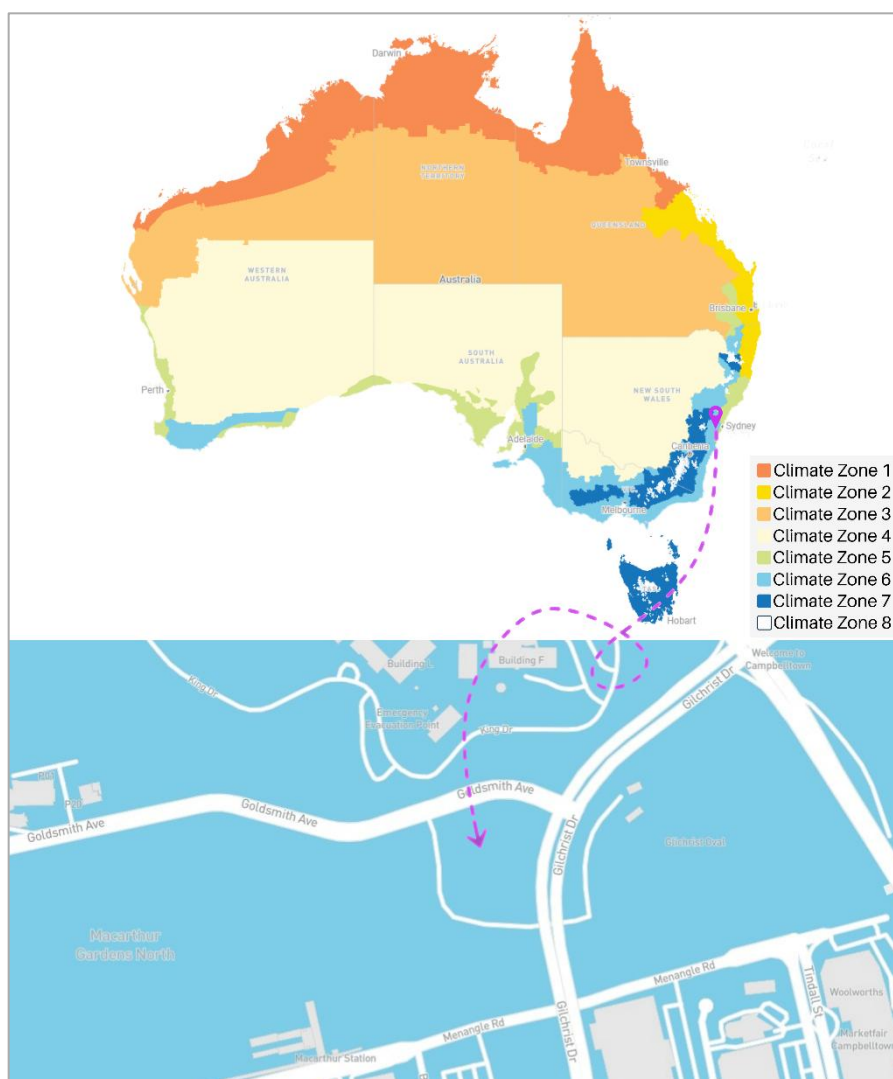


Figure 1-2 Location of Project Site (Source: ABCB Climate Zone Map)

2. Residential Sole Occupancy Units (SOUs)

2.1. Modelling and Inputs (Residential SOUs)

The residential apartments were modelled as per the document drawings (**Appendix D**) in accordance with NatHERS protocols and procedures, using HERO v4.1 software which excludes its services.

2.2. Building Fabric (Residential SOUs)

The apartments were modelled in accordance with NatHERS protocols using the construction details as provided by Landcom and DKO Architects. A summary of typical building fabric and construction details are outlined in Table 2-1, below.

Table 2-1 Summary of Typical Building Fabric & Elements Proposed to Comply with Energy Efficiency Requirements

Element	Description
Roof / Ceiling	<u>Exposed Roof [Concrete]</u> - Insulation: Minimum R3.5 Rigid board insulation to underside of concrete slab where exposed above - Roof Colour: The outer surface of the roof to be light colour that achieves SA < 0.28 to align with Greenstar requirements. - Waterproofing Membrane - Roof space assumed unventilated, cavity. <u>Ceiling [Suspended Plasterboard]</u> – Between basement and apartment - Insulation: Minimum R2.0 Rigid board insulation laid across the ceiling
Walls (Internal and External)	All building fabric wall elements have been modelled in accordance with the architectural details documented by DKO Architects. <u>External Walls:</u> - Heavyweight walls 200mm Precast Concrete unlined, no additional insulation. - Lightweight walls – FC Cladding on steel studs with minimum R2.50 bulk insulation and R0.2 thermal break lined with plasterboard. <u>Internal Walls:</u> - Party Walls / Corridor Walls / Services – 75mm AAC stud wall with minimum R1.50 bulk insulation on both sides of air gap. - Cores – 200mm Precast Concrete lined with plasterboard and no additional insulation. - Generic Partitions – Cavity steel stud plasterboard wall with no additional insulation. [Wet area walls to have insulation for acoustics purposes]
Colour	External walls colours were typically modelled as medium [Solar Absorptance = 0.50] for all elevations.

Element	Description									
Floors	<u>Floor Construction</u> - Floors are typically 200mm concrete slab. Model accurately reflect the SSP design details. <u>Floor Coverings</u> - Carpets to the Bedrooms - Tiles to Bathrooms / Laundry - Timber to the Kitchen / Living and Study									
Suspended Floors	Additional insulation treatment has been proposed to selective suspended floors: - R2.00 rigid / soffit insulation proposed to all suspended floor areas. Refer Appendix B, for exact location of the proposed insulation.									
External Glazing	The following whole of window performance values (Glazing and Frame) are to be met: <table><tr><th>Glazing Type</th><th>Total U-Value</th><th>Total SHGC</th></tr><tr><td>Group A: Awning / Casement</td><td>≤ 2.91</td><td>0.44 (±5%)</td></tr><tr><td>Group B: Fixed / Sliding doors</td><td>≤ 2.90</td><td>0.51 (±5%)</td></tr></table> This is typically achieved with Double glazed, Argon filled, High solar gain, Low-E Clear glazing system with thermally broken metal frames. However, final product selection and performance pending façade contractor.	Glazing Type	Total U-Value	Total SHGC	Group A: Awning / Casement	≤ 2.91	0.44 (±5%)	Group B: Fixed / Sliding doors	≤ 2.90	0.51 (±5%)
Glazing Type	Total U-Value	Total SHGC								
Group A: Awning / Casement	≤ 2.91	0.44 (±5%)								
Group B: Fixed / Sliding doors	≤ 2.90	0.51 (±5%)								
Openable Windows	Windows have been modelled in accordance with architectural drawings. Window restrictors have been incorporated to the models as drawings demonstrate awning & casement windows in bedrooms (Level 1 onwards). Thus, window restrictors are required (Clause D2.24 of NCC).									

The building is to be constructed accordingly, variation to Table 2-1 would initiate re-modelling as per NatHERS protocols.

2.3. Equipment (Residential SOUs)

The apartments were modelled in accordance with NatHERS protocols using the equipment details outlined in Table 2-2

Table 2-2 Equipment Proposed to Comply with Energy Efficiency Requirements

Element	Description
Ceiling Fans	1200mm diameter Ceiling fans in all Bedrooms and Kitchen / Living rooms.
Downlights	Sealed and insulated downlights are to be incorporated for all light fittings within the residential units. This prevents egress of air from the ceiling cavity to the occupied space.

Element	Description
Exhaust fans	All apartment exhaust fans have been modelled as sealed and insulated. This requires sealing around all penetrations and draughts. Including but not limited to, caulking the gap between the fan and the ceiling / drywall. As well as sealing holes in the fan housing. This prevents the movement of air between the ventilated space and surrounding conditioned zones.

2.4. Discussion (Residential SOUs)

The *Macarthur Gardens North R3* at Goldsmith Avenue, Campbelltown NSW 2560 has been modelled in accordance with architectural floor plans noted in **Appendix D** and NatHERS protocols and procedures.

The results demonstrate that the building is able to comply with the integration of additional treatments. Specifically,

- All Bedrooms / Kitchen / Living rooms to have 1200mm diameter Ceilings Fan.
- All insulation and building fabric to comply with the performance requirements set out within this report

With these additions; Macarthur Gardens North R3 apartments will achieve a minimum NatHERS result greater than 6.0 Stars (6.1 Stars achieved) and a calculated average NatHERS rating greater than 7.0 Stars (8.9 Stars achieved).

Please see **Appendix C** for NatHERS results for all the apartments.

Thus, the project complies with minimum requirements set out by NCC, provided the treatments noted within this report are incorporated into the design and construction of the building.

3. BASIX

BASIX ensures all residential developments in NSW meet sustainability targets for energy efficiency, water efficiency, and thermal comfort to reduce greenhouse gas emissions and improve occupant comfort.

The project comprises 130 dwellings with common rooms, undercover car park, garbage room, plantrooms, tenant storage, entry lobby and internal corridors.

The project achieves the following BASIX compliance based on the strategy outlined in the sections below.

Table 3-1: Summary of BASIX Results

Section	Score	Target
Water	49 (Pass)	40
Thermal Performance	Pass	Pass
Energy	60 (Pass)	58

3.1. Water

The water usage of the development is calculated based on the number and efficiency of permanent fixtures and appliances as shown below.

Table 3-2: Units Water Efficiency

Element	Specification
Shower heads	4.0 Stars (> 6.0 but <= 7.5 L/min)
Toilet flushing systems	4 Stars
Kitchen Tabs	4 Stars
Bathroom tabs	5 Stars
Clothes washers	4 Stars
Dishwashers	5 Stars
On demand Hot Water Reticulation	No

Table 3-3: Common Areas Water Efficiency

Element	Specification
Shower heads	N/A
Toilet flushing systems	N/A
Kitchen Tabs	N/A
Bathroom tabs	N/A
Common Laundry	N/A
Swimming pool	None
Central Water tank	5kL RWT connected to: Common landscaping and 1 car wash bay
Landscape	Lawn area: 0 m ² Garden area: 1776.6 m ² (100% indigenous or low water use species)

With these specifications the proposed development has achieved the BASIX water target of 40%

3.2. Energy

The energy usage of the development is calculated based on the efficiency of fixed appliances that will be used. This includes the air conditioning systems, hot water system, lighting, exhaust fans, cook top, oven, etc as shown below:

Table 3-4: Units Energy Efficiency

Element	Specification
Hot Water System	Individual Electric Instantaneous
Lighting	Dedicated LED
Air conditioning	Cooling Single Phase, Ducted – an average 3.5 Stars in living room only (minimum) Heating Single Phase, Ducted – an average 3.0 Stars in living room only (minimum)
Unit Mechanical Ventilation	Bathroom: Individual ducted fans to façade or roof Interlocked to light with timer off Kitchen and Laundry: Individual ducted fans to façade or roof Interlocked to light
Clothes Lines	Clotheslines in covered balcony in all apartments other than studio apartments: Level 01: A.1.03, B.1.03, Level 02: A.2.03, B.2.03, Level 06: A.6.03, B.6.03, Level 07: A.7.03, B.7.03,
Kitchen Appliances	Induction Cooktop & Electric Oven

Table 3-5: common Areas Energy Efficiency

Element	Specification
Common Area Lighting	LED Lighting Basement: Carpark – Motion sensors Main Comms room - Motion sensors Main Switch room - Manual on/off Combined pump room - Manual on/off Cold water pump room - Manual on/off Waste room - Motion sensors Bulky Waste - Motion sensors Tenant and Bicycle Storage - Motion sensors GF: Combined bin holding - Motion sensors Lobby – Time clock and motion sensor Common rooms - Motion sensors Internal hallway - Motion sensors L1 - 7: Internal Hallways - Motion sensors Lifts – Connected to Lift call button

Element	Specification
Common Area Ventilation	Basement: Carpark – Supply + Exhaust only, carbon monoxide monitor + VSD fan Main Comms room - AC, Thermostatically controlled Main Switch room – Supply only, Thermostatically controlled Combined pump room - Exhaust only, interlocked to light Cold water pump room - Exhaust only, interlocked to light Waste rooms - Exhaust only, continuous Bulky Waste - Exhaust only, continuous Tenant and Bicycle Storage – Exhaust only, time clock or BMS controlled GF: Combined bin holding - Exhaust only, continuous GF Lobby - Supply only Common rooms - AC, Time clock or BMS controlled Internal hallway - No Mechanical Ventilation L1 - 7: Internal Hallways - No Mechanical Ventilation
Swimming pool heating source	No pool or Spa
Lift	Gearless traction with VVVF motor, load capacity < 1001 kg
Alternative energy supply	33 kWp Photovoltaic System

With these specifications the proposed development has achieved the BASIX energy target of 58. For more details about the building equipment, fixtures, and appliances please refer to the BASIX Certificate in **Appendix E**

4. Non-Residential Areas

4.1. Section J for Class 2 Common Areas

4.1.1. Assessment Methodology (Non-Residential Area)

The common areas, specifically the residential communal areas / common areas must comply with the requirement defined in Volume 1 of the NCC under Section J Energy Efficiency. There are nine subsections, J1 to J9, which focus on separate aspects of energy efficiency. J1 to J3 sets out the performance and application, J4 and J5 relate to the building's fabric and envelope and J6 to J9 relate to building services.

Compliance can be demonstrated by meeting the Deemed-to-Satisfy provisions or by applying one of the Verification Methods outlined in the NCC. The Verification Methods are generally applied to buildings to which the Deemed-to-Satisfy provisions are not immediately applicable.

The purpose of this section of the report is to assess the building in accordance with the Deemed-to-Satisfy (DtS) provisions of the NCC 2022 Section J, Parts J4 and J5. This report outlines the minimum thermal performance requirements of the thermal envelope for the non-residential (common) areas of the project.

4.1.2. Deemed to Satisfy Provisions

NCC 2022 requires that Class 2 to 9 buildings to achieve efficient use of energy. This requirement is defined in Volume 1 of the NCC 2022 under Section J and is titled "Energy Efficiency". There are eight Deemed-to-Satisfy subsections, J1 to J9, which focus on separate aspects of energy efficiency. These are:

- Part J1: Focuses on the energy efficiency performance requirements across all buildings, introducing new metrics and models for energy assessment.
- Part J2: This part deals with the management of energy usage, emphasizing sustainable and efficient practices tailored to various building types.
- Part J3: Covers the thermal performance for sole-occupancy units in Class 2 buildings or Class 4 parts of buildings, adapting requirements for individual living spaces.
- Part J4: Pertains to building fabric requirements, specifying materials and construction techniques that contribute to thermal efficiency and overall energy performance.
- Part J5: Addresses building sealing, detailing methods to prevent air leakage, which is crucial for maintaining energy efficiency in heated or cooled spaces.
- Part J6: This part governs air-conditioning and ventilation systems, specifying design and operation standards to optimise energy use and indoor air quality.
- Part J7: Outlines requirements for artificial lighting and power, including the use of energy-efficient fixtures and automation to reduce electricity consumption.
- Part J8: Related to heated water supply and systems, focusing on the efficiency of water heating methods including solar and heat pump technologies.
- Part J9: Concentrates on energy monitoring and the integration of on-site distributed energy resources, promoting the use of renewable energy within buildings

4.1.3. Definitions

Conditioned Space

A space within a building, including a ceiling or under-floor supply air plenum or return air plenum, where the environment is likely, by the intended use of the space, to have its temperature controlled by air-conditioning.

Envelope

The parts of a building's fabric that separate a conditioned space or habitable room from the exterior of the building, or a non-conditioned space (such as the floor of a rooftop plant room, lift-machine room or the like; or the floor above a carpark or warehouse; or the common wall with a carpark, warehouse or the like)

4.2. Part J3: Elemental Provisions for a Sole-occupancy unit in Class 2 buildings

As per NCC2022, thermal bridging must be accounted for in the Total R-value calculations in accordance with AS/NZS4214. Insulation material R-values noted in the following sections are estimates only and should be verified prior to installation and construction.

4.2.1. J5D5: Roof thermal breaks

A roof that has metal sheet roofing directly fixed to metal purlins, metal rafters or metal battens; and does not have a ceiling lining or has a ceiling lining fixed directly to those metal purlins, metal rafters or metal battens, must have a thermal break, consisting of a material with an R-Value of greater than or equal to R0.2, installed between the metal sheet roofing and its supporting metal purlins, metal rafters or metal battens.

The requirements above do not apply to roofs constructed using insulated sandwich panels.

4.2.2. J5D6: Wall thermal breaks

(1) A metal-framed wall that forms part of the building envelope must have a thermal break, consisting of a material with an R-Value of not less than R0.2, installed at all points of contact between the external cladding and the metal frame if the wall does not have a wall lining or has a wall lining that is fixed directly to the same metal frame; and is clad with weatherboards, fibre-cement or the like, or metal sheeting fixed to a metal frame

(2) The requirements of (1) do not apply to walls constructed using insulated sandwich panels.

All other requirements of Part J3 of NCC 2022 Vol 1 are superseded and satisfied by BASIX in NSW.

4.3. Part J4: Building Fabric – Class 2 Conditioned Common areas

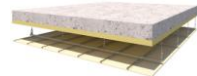
As per NCC2022, thermal bridging must be accounted for in the Total R-value calculations in accordance with AS/NZS4214. Insulation material R-values noted in the following sections are estimates only and should be verified prior to installation and construction.

4.3.1. J4D4: Roof and Ceiling

For roof and ceiling construction that form part of the building envelope of the conditioned space, NCC Section J Compliance shall be achieved with minimum total of R3.2 thermal performance. The minimum performance values of the ceiling may be found in Table 4-1.

Refer to **Appendix B** for the thermal markups which will provide further detail on the relevant elements.

Table 4-1 Ceiling Thermal Performance Summary.

Element	Performance Requirement	Comments	Example Image
Roof / Ceiling	$R_t \geq 3.20$ $SA < 0.45$	200mm concrete, insulation, ceiling space and ceiling lining Requires insulation: Minimum R2.5 PIR insulation or similar	

4.3.2. J4D5 Roof Lights

Part J4D5 of NCC outlines the performance requirements for the roof lights. There are no roof lights present in the proposed buildings. Thus, this clause is not applicable.

4.3.3. J4D6 Walls and Glazing

The walls that separate conditioned spaces from open or non-conditioned spaces must meet a minimum total R-value, including adjustments for thermal bridging, as calculated in accordance with NCC 2022 Specification 37. The required R-value varies depending on factors such as the building's location, class, and the wall-to-window ratio.

The façade calculator is used to determine the average U-values and solar admittance values per aspect, which should be referenced alongside the thermal performance envelope markup.

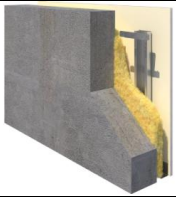
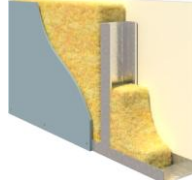
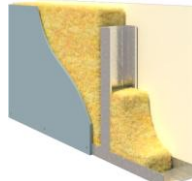
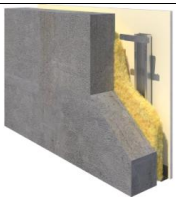
The minimum performance values for the external and internal envelope walls and new glazing may be found in Table 4-2.

Refer to **Appendix B** for the thermal markups which will provide further detail on the relevant elements.

The glazing total system performance requirements are for the combined effect of glass and frame in accordance with Australian Fenestration Rating Council (AFRC) requirements. These are 'whole of window' properties and include the glass and frame combined. For Section J purposes, the final glazing selection must (as a minimum) comply with the performance limits set by the 'whole of window' Total System U-Value and Total System SHGC.

Table 4-2 Façade Thermal Performance Summary.

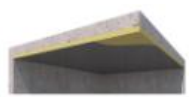
Element	Performance Requirements	Comments	Example Image
External Glazing	$U_{TOT} \leq 4.34$ $SHGC_{TOT} \leq 0.45$	Typically, tinted low-e single glazing or Clear/Clear air-filled double glazing	-

Element	Performance Requirements	Comments	Example Image
External Wall - Heavyweight	$R_t 1.4$	190 Concrete Blockwork Requires insulation: - Generally, minimum continuous R1.0 insulation required - Plasterboard lining on furring channel	
External Wall - Lightweight	$R_t 1.4$	FC Cladding, Stud and Plasterboard lining Requires insulation: - Generally, minimum R2.5 insulation required - R0.2 thermal break required between stud frame and lining	
External Wall - Brick	$R_t 1.4$	110mm Brick, 92mm Stud and 13mm Plasterboard Requires insulation: Generally, minimum R2.5 insulation required	
Internal Walls - Lightweight	$R_t 1.4$	Plasterboard, Stud and Plasterboard lining Requires insulation: - Generally, minimum R2.5 insulation required - R0.2 thermal break required between stud frame and lining	
Internal Wall - Heavyweight	$R_t 1.4$	190 Concrete Blockwork, Plasterboard lining on furring channel. Requires insulation: Generally, minimum continuous R1.0 insulation required	

4.3.4. J4D7 Floors

For a building located in Climate Zone 6, the minimum total R-value of the floor construction shall be R2.0 downwards heat flow.

In accordance with J4D7.2, a slab on ground that does not have in-slab heating or cooling is considered to achieve a total R-value of R2.0.

Element	Performance Requirements	Comments	Example Image
Floor	$R_t 2.0$	200mm Concrete, insulation, ceiling space, and ceiling lining Requires insulation: Minimum R1.9 PIR insulation or similar	

4.4. Part J5: Building Sealing

The Deemed-to-Satisfy provisions apply to the project. These provisions include and apply to all new or altered elements:

Table 4-3 Building Sealing summary requirements

Element	Comments
J5D3 Chimneys and Flues	Not applicable. No chimneys or flues identified within the new building works
J5D4 Roof Lights	Not applicable. No roof lights identified within the new building works
J5D5 Windows and Doors	A door, openable window or the like must be sealed with a draft protection device and/or foam or rubber compression strip or the like. Unless the window complies with AS2047, a fire or smoke door, or a security door/device installed only for out-of-hours security
J5D6 Exhaust Fans	Exhaust fans shall be fitted with a sealing device such as a self-closing damper.
J5D7 Construction of Ceilings, Walls and Floors	Ceilings, walls, floors and any opening such as a window frame, door frame, roof light frame or the like must be constructed to minimise air leakage by: - internal lining systems that are close fitting at ceiling, wall and floor junctions; or - sealed at junctions and penetrations with— - close fitting architrave, skirting or cornice; or - expanding foam, rubber compressible strip, caulking or the like
J5D8 Evaporative Coolers	Not applicable. No evaporative coolers identified within the new building works

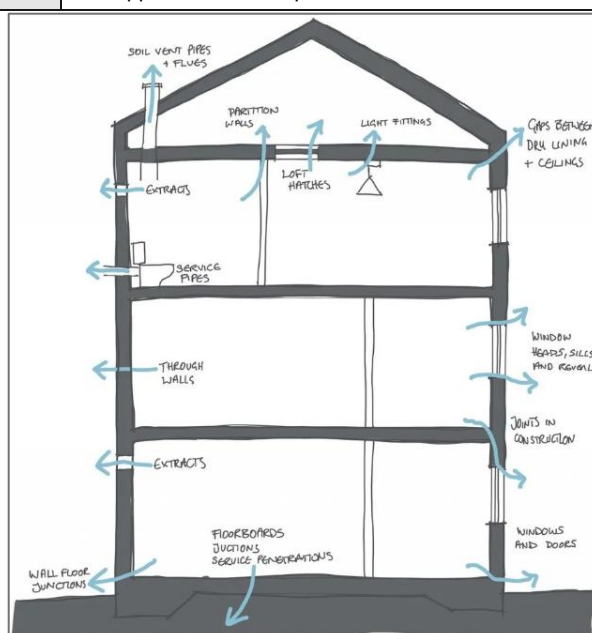


Figure 4-1 Common Air Leakage Paths (Source: First In Architecture)

4.5. Part J6: Air-Conditioning and Ventilation Systems

Part J6 of the NCC outlines the performance requirements for air conditioning and ventilation systems to ensure these services operate in an efficient manner.

All services consultants and contractors shall design the air conditioning and ventilation systems to ensure compliance with Part J6 of the NCC Section J, and all subsections associated therein.

4.6. Part J7: Artificial Lighting and Power

Part J7 of the NCC outlines the performance requirements for the illumination power density and the efficient use of lighting power and controls.

All services consultants and contractors shall design the artificial lighting systems to ensure compliance with Part J7 of the NCC Section J, and all subsections associated therein with regards to artificial lighting and power.

4.7. Part J8: Hot Water Supply

Part J8 of the NCC outlines the provisions for the energy efficient use of hot water supply systems and swimming pool and spa pool plant.

Clause J8D2 refers to the hot water supply system for food preparation or sanitary purposes. Thus, this is not applicable to this project

Clause J8D3 refers to Swimming pool heating and pumping. Thus, this is not applicable to this project.

Clause J8D4 refers to Spa pool heating and pumping. Thus, is not applicable to this project.

All services consultants and contractors shall design the Hot Water supply systems to ensure compliance with Part J8 of the NCC Section J and all subsections associated therein

4.8. Part J9: Energy Monitoring & On-Site Distributed Energy

Part J9 of the NCC outlines the provisions of facilities for energy monitoring and on-site distributed energy resources.

4.8.1. Facilities for Energy Monitoring

As the building has a floor area of more than 500 m² and less than 2,500 m², the project must have energy meters to record time-of-use energy consumption of electricity and gas.

All services consultants and contractors shall design the facilities for energy monitoring to ensure compliance with Part J9D3 of the NCC Section J, and all subsections associated therein.

4.8.2. Facilities for Electric Vehicle Charging Equipment

Electrical distribution boards dedicated to serving electric vehicle charging must

- be fitted with a charging control system with the ability to manage and schedule charging of electric vehicles in response to total building demand
- have capacity for each circuit to support an electric vehicle charger able to deliver a minimum of 12 kWh from 11:00 pm to 7:00 am daily
- be sized to support the future installation of a 7 kW (32 A) type 2 electric vehicle charger in 100% of the car parking spaces associated with a Class 2 building.
- contain space of at least 36 mm width of DIN rail per outgoing circuit for individual sub-circuit electricity metering to record electricity use of electric vehicle charging equipment
- be labelled to indicate the use of the space is for the future installation of metering equipment.

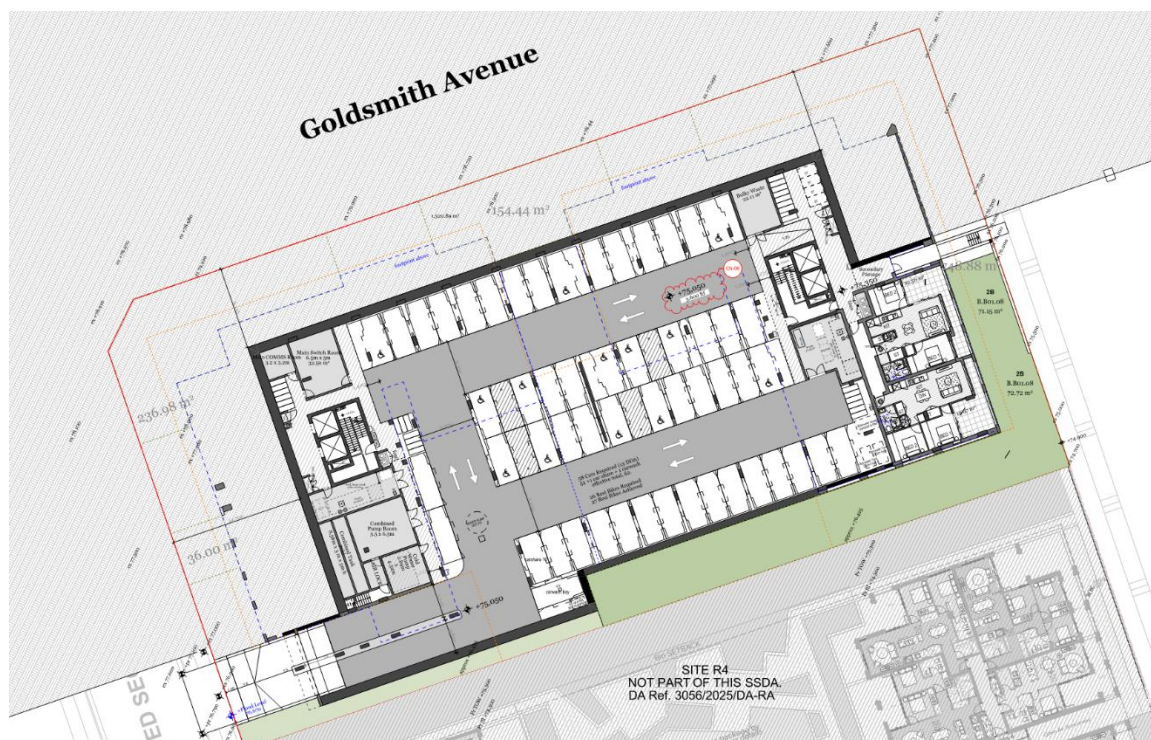


Figure 4-2 Basement Carpark Plan (Source: DKO Architects)

There are approximately 62 car parks (Source: *Basement 1 Plan – DA200*) dedicated to the building, of which all 62 are to be indicated for future EV car park. This equates to over 100% of the car park provided for Class 2 building and in compliant with Part J9D4 of the NCC Section J.

4.8.3. Facilities for Solar Photovoltaic and Battery Systems

The main electrical switchboard of a building must:

- contain at least two empty three-phase circuit breaker slots and four DIN rail spaces labelled to indicate the use of each space for a solar photovoltaic system and a battery system
- be sized to accommodate the installation of solar photovoltaic panels producing their maximum electrical output on at least 20% of the building roof area

At least 20% of the roof area of a building must be left clear for the installation of solar photovoltaic panels, except for buildings – with installed solar photovoltaic panels

As shown in Figure 3-3, 20% of the overall roof area of each building tower is dedicated to for the provision of PV installation.

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Appendix A. Additional Requirements

The following sections are requirements from NCC 2022 Volume 1, and the design and construction must comply with these.

Part J4D3 Thermal Construction — General

- a) Where required, insulation must comply with AS/NZS 4859.1 and be installed so that it—
 - i. abuts or overlaps adjoining insulation other than at supporting members such as studs, noggings, joists, furring channels and the like where the insulation must be against the member; and
 - ii. forms a continuous barrier with ceilings, walls, bulkheads, floors or the like that inherently contribute to the thermal barrier; and
 - iii. does not affect the safe or effective operation of a service or fitting.
- b) Where required, reflective insulation must be installed with—
 - i. the necessary airspace to achieve the required R-Value between a reflective side of the reflective insulation and a building lining or cladding; and
 - ii. the reflective insulation closely fitted against any penetration, door or window opening; and
 - iii. the reflective insulation adequately supported by framing members; and
 - iv. each adjoining sheet of roll membrane being—
 - a) overlapped not less than 50 mm; or
 - b) taped together.
- c) Where required, bulk insulation must be installed so that—
 - i. it maintains its position and thickness, other than where it is compressed between cladding and supporting members, water pipes, electrical cabling or the like; and
 - ii. in a ceiling, where there is no bulk insulation or reflective insulation in the wall beneath, it overlaps the wall by not less than 50 mm.
- d) Roof, ceiling, wall and floor materials, and associated surfaces are deemed to have the thermal properties listed in Specification 36.
- e) The required Total R-Value and Total System U-Value, including allowance for thermal bridging, must be—
 - i. calculated in accordance with AS/NZS 4859.2 for a roof or floor; or
 - ii. determined in accordance with Specification 37 for wall-glazing construction; or
 - iii. determined in accordance with Specification 39 or Section 3.5 of CIBSE Guide A for soil or sub-floor spaces

Appendix B. Thermal Compliance Markup

Goldsmith Avenue

FOR INFORMATION ONLY



PROJECT: 20260227 - MACARTHUR GARDENS NORTH R3

TITLE: NatHERS COMPLIANCE THERMAL REQUIREMENTS MARKUP

STAGE: S455 Issue

BY: K. SAXENA

DATE: 20.05.2026

LEGEND

COMMON AREAS THERMAL PERFORMANCE

ROOF / CEILING
TOTAL R-VALUE REQUIREMENTS: R3.2 DOWNWARDS
(Refer to Section 3.2 of the report for further details)

FLOOR
TOTAL R-VALUE REQUIREMENTS: R2.0
(Refer to Section 3.2 of the report for further details)

WALLS
TOTAL R-VALUE REQUIREMENTS: R1.4
(Refer to Section 3.2 of the report for further details)

GLAZING
TOTAL U-VALUE: 4.34; TOTAL SHGC: 0.45

RESIDENTIAL AREAS THERMAL PERFORMANCE

FLOOR
SUSPENDED CONCRETE FLOOR
ADDED INSULATION REQUIREMENTS: R2.0 (90MM)

ROOF / CEILING
MINIMUM R3.0 RIGID BOARD INSULATION TO THE UNDERSIDE OF THE EXPOSED CONCRETE ROOF

ROOF / CEILING
MINIMUM R2.0 RIGID BOARD INSULATION TO CEILING WHERE EXPOSED ABOVE

EXTERNAL / INTERNAL WALLS
LIGHTWEIGHT (FC) WALLS: MINIMUM R2.5 (90MM) BULK INSULATION AND R0.2 THERMAL BREAK REQUIRED

PARTY WALLS / CORRIDOR WALLS / SERVICES: 75MM AAC STUD WALL WITH MINIMUM R1.50 BULK INSULATION ON BOTH SIDES OF AIR GAP

GLAZING PERFORMANCE REQUIREMENTS

Glazing Type	Total U-Value	Total SHGC
Group A: Awning / Casement	2.91	0.44
Group B: Fixed / Sliding doors	2.9	0.51

CEILING FAN LEGEND

1200MM DIAMETER CEILING FAN IN EACH BEDROOM AND LIVING ROOM

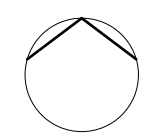
NOTE:
1. TOTAL R-VALUE IS FOR THE COMPLETE WALL SYSTEM AND IS TO INCLUDE THERMAL BRIDGING.
2. TOTAL U- AND SHGC VALUES ARE FOR THE COMPLETE GLAZING SYSTEM AS TESTED IN ACCORDANCE WITH AFRC.
3. THE ABOVE MENTIONED VALUES ARE MINIMUM REQUIRED. HIGHER PERFORMING SYSTEMS WILL BE ACCEPTABLE.
4. THERMAL BRIDGING MUST BE ACCOUNTED FOR IN THE TOTAL R-VALUE CALCULATIONS. THERMAL BRIDGING CALCULATIONS SHALL BE COMPLETED IN ACCORDANCE WITH AS/NZS4214. WITHIN THIS REPORT, WHERE INSULATION MATERIAL R-VALUES ARE PROVIDED, THEY ARE ESTIMATES ONLY AND SHOULD BE CONFIRMED, PRIOR TO INSTALLATION, BASED ON THE FINAL SELECTION AND DETAIL OF THE FABRIC AND CONSTRUCTION ELEMENTS

-1. BASEMENT 01
Scale 1:200

Rev	Date	By	Chk'd By	Description
A	25/07/2025	AH	SO	FOR DA SUBMISSION
B	19/12/2025	AH	SO	FOR DA SUBMISSION
C	19/06/2026	AH	SO	FOR S.455 SUBMISSION

- All works to be in accordance with authority & statutory approvals.
- Refer to all survey for all information relating to existing site conditions.
- All Boundary information to be confirmed by registered surveyor before commencing work and prior to construction.
- Refer to Arborist Report and Landscape Documentation for all information relating to trees and their removal, and all landscaping work.
- Drawings to be read in conjunction with all Specifications and Schedules; all specialist consultant documentation (SAB, NER, etc); Section U Certificates.
- Minor changes to building form & configuration may be required after Development Consent.
- Do not scale from drawing; figured dimensions only to be used.
- Building Contractor to verify all dimensions before commencing work.

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Site R3, Macarthur Gardens North
Campbelltown NSW 2560
Dharawal

DEVELOPMENT APPLICATION

Drawing Name
Basement 1

Drawing Scale
Drawing No.
DA200

1:200 @ A1
Revision
C

FOR INFORMATION ONLY



PROJECT: 20260227 - MACARTHUR GARDENS NORTH R3

TITLE: NATHERS COMPLIANCE THERMAL REQUIREMENTS MARKUP

STAGE: S455 Issue

BY: K. SAXENA

DATE: 20.05.2026

LEGEND

COMMON AREAS THERMAL PERFORMANCE

ROOF / CEILING
TOTAL R-VALUE REQUIREMENTS: R3.2 DOWNWARDS
(Refer to Section 3.2 of the report for further details)

FLOOR
TOTAL R-VALUE REQUIREMENTS: R2.0
(Refer to Section 3.2 of the report for further details)

WALLS
TOTAL R-VALUE REQUIREMENTS: R1.4
(Refer to Section 3.2 of the report for further details)

GLAZING
TOTAL U-VALUE: 4.34; TOTAL SHGC: 0.45

RESIDENTIAL AREAS THERMAL PERFORMANCE

FLOOR
SUSPENDED CONCRETE FLOOR
ADDED INSULATION REQUIREMENTS: R2.0 (90MM)

ROOF / CEILING
MINIMUM R3.0 RIGID BOARD INSULATION TO THE UNDERSIDE OF THE EXPOSED CONCRETE ROOF

ROOF / CEILING
MINIMUM R2.0 RIGID BOARD INSULATION TO CEILING WHERE EXPOSED ABOVE

EXTERNAL / INTERNAL WALLS
LIGHTWEIGHT (FC) WALLS: MINIMUM R2.5 (90MM) BULK INSULATION AND R0.2 THERMAL BREAK REQUIRED

PARTY WALLS / CORRIDOR WALLS / SERVICES: 75MM AAC STUD WALL WITH MINIMUM R1.50 BULK INSULATION ON BOTH SIDES OF AIR GAP

GLAZING PERFORMANCE REQUIREMENTS

Glazing Type	Total U-Value	Total SHGC
Group A: Awning / Casement	2.91	0.44
Group B: Fixed / Sliding doors	2.9	0.51

CEILING FAN LEGEND

1200MM DIAMETER CEILING FAN IN EACH BEDROOM AND LIVING ROOM

NOTE:
1. TOTAL R-VALUE IS FOR THE COMPLETE WALL SYSTEM AND IS TO INCLUDE THERMAL BRIDGING.
2. TOTAL U- AND SHGC VALUES ARE FOR THE COMPLETE GLAZING SYSTEM AS TESTED IN ACCORDANCE WITH AFRC.
3. THE ABOVE MENTIONED VALUES ARE MINIMUM REQUIRED. HIGHER PERFORMING SYSTEMS WILL BE ACCEPTABLE.
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GOLDSMITH AVENUE

Site Boundary

4.5M Setback

Site Boundary

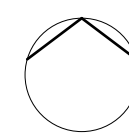
SITE R4
NOT PART OF THIS SSDA.
DA Ref. 3056/2025/DA-RA

0. GROUND LEVEL
Scale 1:200

Rev	Date	By	ChkBy	Description
A	25/07/2025	AH	SO	FOR DA SUBMISSION
B	19/12/2025	AH	SO	FOR DA SUBMISSION
C	19/06/2026	AH	SO	FOR S.455 SUBMISSION

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- Building Contractor to verify all dimensions before commencing work.

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Project Number
Project Address
Country

Macarthur Gardens North R3
13822
Site R3, Macarthur Gardens North
Campbelltown NSW 2560

Dharawal

DEVELOPMENT APPLICATION

Drawing Name
Ground Floor

Drawing Scale
DA201

1:200 @ A1
Revision
C

FOR INFORMATION ONLY



PROJECT: 20260227 - MACARTHUR GARDENS NORTH R3

TITLE: NATHERS COMPLIANCE THERMAL REQUIREMENTS MARKUP

STAGE: S455 Issue

BY: K. SAXENA

DATE: 20.05.2026

LEGEND

COMMON AREAS THERMAL PERFORMANCE

- ROOF / CEILING**
TOTAL R-VALUE REQUIREMENTS: R3.2 DOWNWARDS
(Refer to Section 3.2 of the report for further details)
- FLOOR**
TOTAL R-VALUE REQUIREMENTS: R2.0
(Refer to Section 3.2 of the report for further details)
- WALLS**
TOTAL R-VALUE REQUIREMENTS: R1.4
(Refer to Section 3.2 of the report for further details)
- GLAZING**
TOTAL U-VALUE: 4.34; TOTAL SHGC: 0.45

RESIDENTIAL AREAS THERMAL PERFORMANCE

- FLOOR**
SUSPENDED CONCRETE FLOOR
ADDED INSULATION REQUIREMENTS: R2.0 (90MM)
- ROOF / CEILING**
MINIMUM R3.0 RIGID BOARD INSULATION TO THE UNDERSIDE OF THE EXPOSED CONCRETE ROOF
- ROOF / CEILING**
MINIMUM R2.0 RIGID BOARD INSULATION TO CEILING WHERE EXPOSED ABOVE
- EXTERNAL / INTERNAL WALLS**
LIGHTWEIGHT (FC) WALLS: MINIMUM R2.5 (90MM) BULK INSULATION AND R0.2 THERMAL BREAK REQUIRED
- PARTY WALLS / CORRIDOR WALLS / SERVICES:** 75MM AAC STUD WALL WITH MINIMUM R1.50 BULK INSULATION ON BOTH SIDES OF AIR GAP

GLAZING PERFORMANCE REQUIREMENTS

Glazing Type	Total U-Value	Total SHGC
Group A: Awning / Casement	2.91	0.44
Group B: Fixed / Sliding doors	2.9	0.51

CEILING FAN LEGEND

- 1200MM DIAMETER CEILING FAN IN EACH BEDROOM AND LIVING ROOM

NOTE:
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GOLDSMITH AVENUE

PROPOSED SECONDARY STREET

SITE R4
NOT PART OF THIS SSDA.
DA Ref. 3056/2025/DA-RA

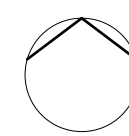
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Rev	Date	By	Chk'd By	Description
A	25/07/2025	AH	SO	FOR DA SUBMISSION
B	19/12/2025	AH	SO	FOR DA SUBMISSION
C	19/06/2026	AH	SO	FOR S.455 SUBMISSION

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Project Name
Project Number
Project Address

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13822
Site R3, Macarthur Gardens North
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Dharawal

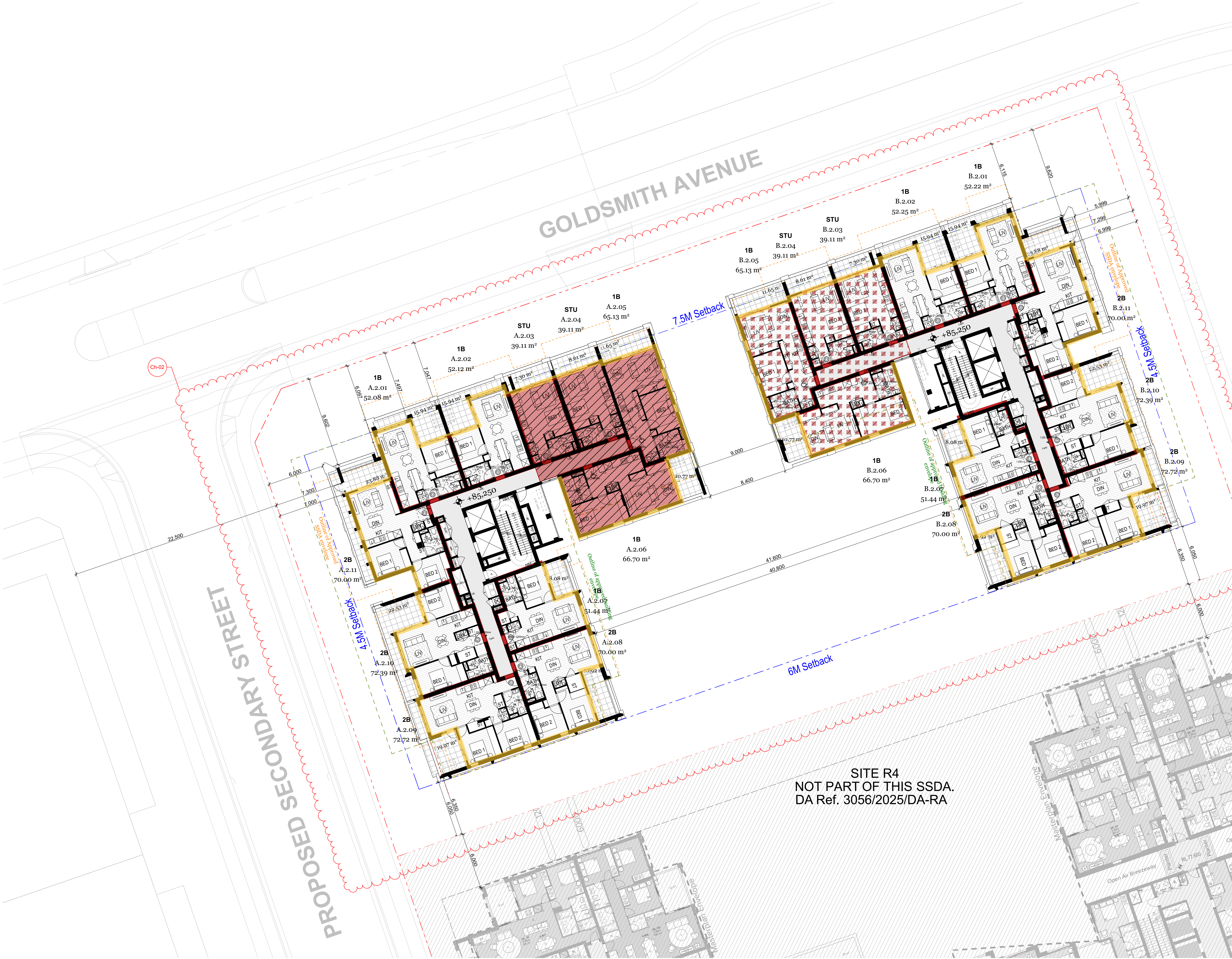
DEVELOPMENT APPLICATION

Drawing Name
Level 1

Drawing Scale
Drawing No.
DA202

1:200 @ A1
Revision

C



BSE

TRUE PARTNERS

PROJECT: 20260227 - MACARTHUR GARDENS NORTH R3

TITLE: NaThERS COMPLIANCE THERMAL REQUIREMENTS MARKUP

STAGE: S455 Issue

BY: K. SAXENA

DATE: 20.05.2026

LEGEND

COMMON AREAS THERMAL PERFORMANCE

ROOF / CEILING

TOTAL R-VALUE REQUIREMENTS: R3.2 DOWNWARDS
(Refer to Section 3.2 of the report for further details)

FLOOR

TOTAL R-VALUE REQUIREMENTS: R2.0
(Refer to Section 3.2 of the report for further details)

WALLS

TOTAL R-VALUE REQUIREMENTS: R1.4
(Refer to Section 3.2 of the report for further details)

GLAZING

TOTAL U-VALUE: 4.34; TOTAL SHGC: 0.45

RESIDENTIAL AREAS THERMAL PERFORMANCE

FLOOR

SUSPENDED CONCRETE FLOOR
ADDED INSULATION REQUIREMENTS: R2.0 (90MM)

ROOF / CEILING

MINIMUM R3.0 RIGID BOARD INSULATION TO THE UNDERSIDE OF THE EXPOSED CONCRETE ROOF

ROOF / CEILING

MINIMUM R2.0 RIGID BOARD INSULATION TO CEILING WHERE EXPOSED ABOVE

EXTERNAL / INTERNAL WALLS

LIGHTWEIGHT (FC) WALLS: MINIMUM R2.5 (90MM) BULK INSULATION AND R0.2 THERMAL BREAK REQUIRED

PARTY WALLS / CORRIDOR WALLS / SERVICES: 75MM AAC STUD WALL WITH MINIMUM R1.50 BULK INSULATION ON BOTH SIDES OF AIR GAP

GLAZING PERFORMANCE REQUIREMENTS

Glazing Type	Total U-Value	Total SHGC
Group A: Awning / Casement	2.91	0.44
Group B: Fixed / Sliding doors	2.9	0.51

CEILING FAN LEGEND

1200MM DIAMETER CEILING FAN IN EACH BEDROOM AND LIVING ROOM

NOTE:

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2. LEVEL 02
Scale 1:200

Rev	Date	By	Chk'd By	Description
A	25/07/2025	AH	SO	FOR DA SUBMISSION
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C	19/06/2026	AH	SO	FOR S.455 SUBMISSION

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DEVELOPMENT APPLICATION

Drawing Name
Level 2

Drawing Scale
Drawing No.
DA203

1:200 @ A1
Revision
C

FOR INFORMATION ONLY



PROJECT: 20260227 - MACARTHUR GARDENS NORTH R3

TITLE: NAtHERS COMPLIANCE THERMAL REQUIREMENTS MARKUP

STAGE: S455 Issue

BY: K. SAXENA

DATE: 20.05.2026

LEGEND

COMMON AREAS THERMAL PERFORMANCE

ROOF / CEILING
TOTAL R-VALUE REQUIREMENTS: R3.2 DOWNWARDS
(Refer to Section 3.2 of the report for further details)

FLOOR
TOTAL R-VALUE REQUIREMENTS: R2.0
(Refer to Section 3.2 of the report for further details)

WALLS
TOTAL R-VALUE REQUIREMENTS: R1.4
(Refer to Section 3.2 of the report for further details)

GLAZING
TOTAL U-VALUE: 4.34; TOTAL SHGC: 0.45

RESIDENTIAL AREAS THERMAL PERFORMANCE

FLOOR
SUSPENDED CONCRETE FLOOR
ADDED INSULATION REQUIREMENTS: R2.0 (90MM)

ROOF / CEILING
MINIMUM R3.0 RIGID BOARD INSULATION TO THE UNDERSIDE OF THE EXPOSED CONCRETE ROOF

ROOF / CEILING
MINIMUM R2.0 RIGID BOARD INSULATION TO CEILING WHERE EXPOSED ABOVE

EXTERNAL / INTERNAL WALLS

LIGHTWEIGHT (FC) WALLS: MINIMUM R2.5 (90MM) BULK INSULATION AND R0.2 THERMAL BREAK REQUIRED

PARTY WALLS / CORRIDOR WALLS / SERVICES: 75MM AAC STUD WALL WITH MINIMUM R1.50 BULK INSULATION ON BOTH SIDES OF AIR GAP

GLAZING PERFORMANCE REQUIREMENTS

Glazing Type	Total U-Value	Total SHGC
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Group B: Fixed / Sliding doors	2.9	0.51

CEILING FAN LEGEND

1200MM DIAMETER CEILING FAN IN EACH BEDROOM AND LIVING ROOM

NOTE:
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GOLDSMITH AVENUE

PROPOSED SECONDARY STREET

SITE R4
NOT PART OF THIS SSDA.
DA Ref. 3056/2025/DA-RA

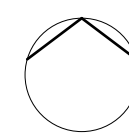
3. LEVEL 03

Scale 1:200

Rev	Date	By	ChkBy	Description
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Project Name
Project Number
Project Address
Country

Macarthur Gardens North R3
13822
Site R3, Macarthur Gardens North
Campbelltown NSW 2560

Dharawal

DEVELOPMENT APPLICATION

Drawing Name
Level 3

Drawing Scale
Drawing No.
DA204

1:200 @ A1
Revision
B

FOR INFORMATION ONLY



PROJECT: 20260227 - MACARTHUR GARDENS NORTH R3

TITLE: NATHERS COMPLIANCE THERMAL REQUIREMENTS MARKUP

STAGE: S455 Issue

BY: K. SAXENA

DATE: 20.05.2026

LEGEND

COMMON AREAS THERMAL PERFORMANCE

ROOF / CEILING
TOTAL R-VALUE REQUIREMENTS: R3.2 DOWNWARDS
(Refer to Section 3.2 of the report for further details)

FLOOR
TOTAL R-VALUE REQUIREMENTS: R2.0
(Refer to Section 3.2 of the report for further details)

WALLS
TOTAL R-VALUE REQUIREMENTS: R1.4
(Refer to Section 3.2 of the report for further details)

GLAZING
TOTAL U-VALUE: 4.34; TOTAL SHGC: 0.45

RESIDENTIAL AREAS THERMAL PERFORMANCE

FLOOR
SUSPENDED CONCRETE FLOOR
ADDED INSULATION REQUIREMENTS: R2.0 (90MM)

ROOF / CEILING
MINIMUM R3.0 RIGID BOARD INSULATION TO THE UNDERSIDE OF THE EXPOSED CONCRETE ROOF

ROOF / CEILING
MINIMUM R2.0 RIGID BOARD INSULATION TO CEILING WHERE EXPOSED ABOVE

EXTERNAL / INTERNAL WALLS

LIGHTWEIGHT (FC) WALLS: MINIMUM R2.5 (90MM) BULK INSULATION AND R0.2 THERMAL BREAK REQUIRED

PARTY WALLS / CORRIDOR WALLS / SERVICES: 75MM AAC STUD WALL WITH MINIMUM R1.50 BULK INSULATION ON BOTH SIDES OF AIR GAP

GLAZING PERFORMANCE REQUIREMENTS

Glazing Type	Total U-Value	Total SHGC
Group A: Awning / Casement	2.91	0.44
Group B: Fixed / Sliding doors	2.9	0.51

CEILING FAN LEGEND

1200MM DIAMETER CEILING FAN IN EACH BEDROOM AND LIVING ROOM

NOTE:
1. TOTAL R-VALUE IS FOR THE COMPLETE WALL SYSTEM AND IS TO INCLUDE THERMAL BRIDGING.
2. TOTAL U- AND SHGC VALUES ARE FOR THE COMPLETE GLAZING SYSTEM AS TESTED IN ACCORDANCE WITH AFRC.
3. THE ABOVE MENTIONED VALUES ARE MINIMUM REQUIRED. HIGHER PERFORMING SYSTEMS WILL BE ACCEPTABLE.
4. THERMAL BRIDGING MUST BE ACCOUNTED FOR IN THE TOTAL R-VALUE CALCULATIONS. THERMAL BRIDGING CALCULATIONS SHALL BE COMPLETED IN ACCORDANCE WITH AS/NZS4214. WITHIN THIS REPORT, WHERE INSULATION MATERIAL R-VALUES ARE PROVIDED, THEY ARE ESTIMATES ONLY AND SHOULD BE CONFIRMED, PRIOR TO INSTALLATION, BASED ON THE FINAL SELECTION AND DETAIL OF THE FABRIC AND CONSTRUCTION ELEMENTS

GOLDSMITH AVENUE

7.5M Setback

6M Setback

SITE R4
NOT PART OF THIS SSDA.
DA Ref. 3056/2025/DA-RA

PROPOSED SECONDARY STREET

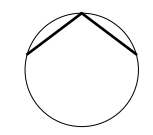
4. LEVEL 04

Scale 1:200

Rev	Date	By	ChkBy	Description
A	25/07/2025	AH	SO	FOR DA SUBMISSION
B	19/06/2026	AH	SO	FOR S.455 SUBMISSION

- All works to be in accordance with authority & statutory approvals.
- Refer to site survey for all information relating to existing site conditions.
- All Boundary information to be confirmed by registered surveyor before commencing works on site.
- Refer to Arborist Report and Landscape Documentation for all information relating to trees and their retention/removal, and all landscape works.
- Drawings to be read in conjunction with all Specifications and Schedules; all specialist consultant documentation (SARs, NATHERS, Section J Certificates).
- Minor changes to building form & configuration may be required after Development Consent.
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- Building Contractor to verify all dimensions before commencing work.

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Project Name
Project Number
Project Address
Country

Macarthur Gardens North R3
13822
Site R3, Macarthur Gardens North
Campbelltown NSW 2560

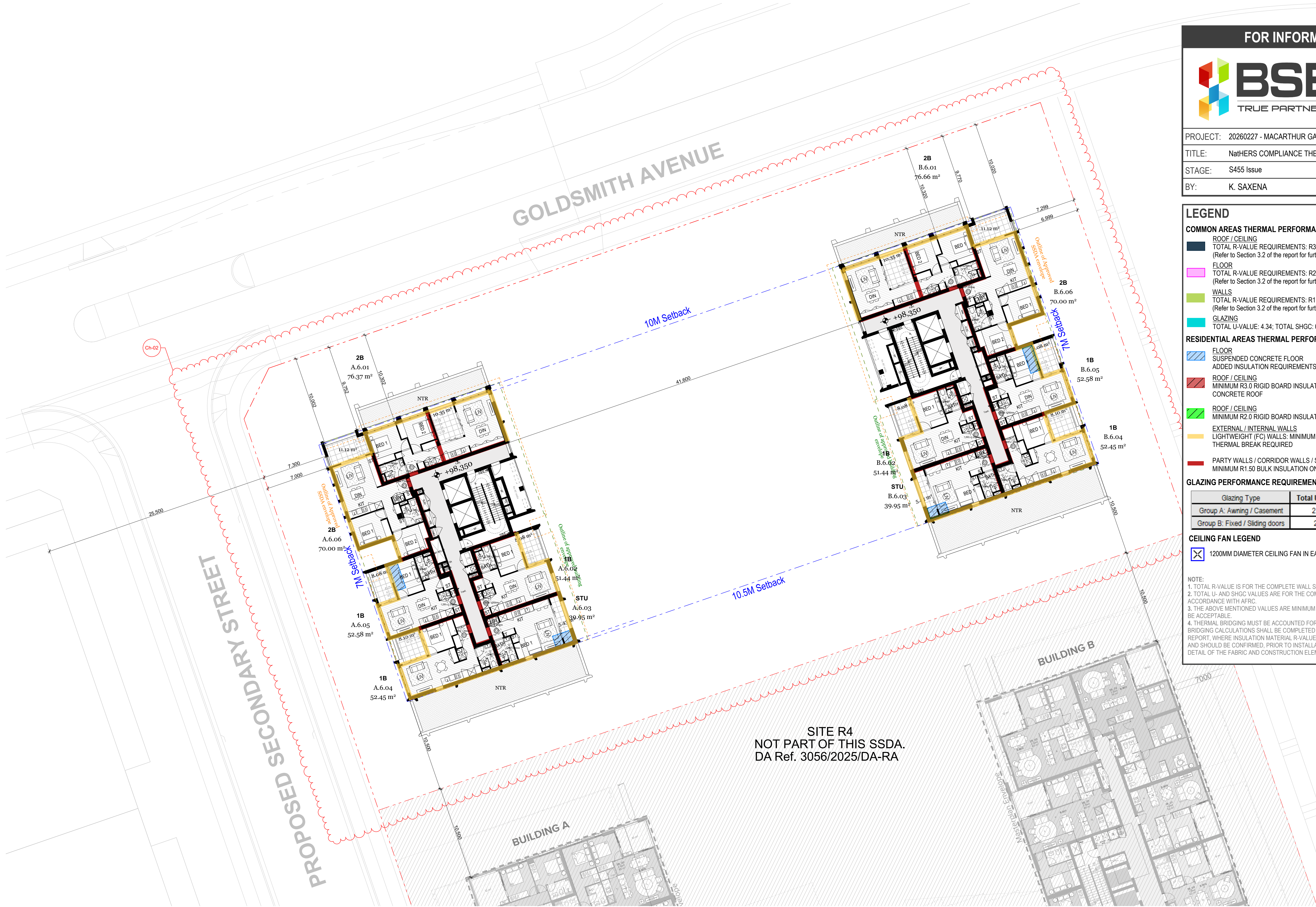
Dharawal

DEVELOPMENT APPLICATION

Drawing Name
Level 4 - Level 5

Drawing Scale
Drawing No.
DA205

1:200 @ A1
Revision
B



BSE

TRUE PARTNERS

PROJECT: 20260227 - MACARTHUR GARDENS NORTH R3

TITLE: NATHERS COMPLIANCE THERMAL REQUIREMENTS MARKUP

STAGE: S455 Issue

BY: K. SAXENA

DATE: 20.05.2026

LEGEND

COMMON AREAS THERMAL PERFORMANCE

ROOF / CEILING

TOTAL R-VALUE REQUIREMENTS: R3.2 DOWNWARDS
(Refer to Section 3.2 of the report for further details)

FLOOR

TOTAL R-VALUE REQUIREMENTS: R2.0
(Refer to Section 3.2 of the report for further details)

WALLS

TOTAL R-VALUE REQUIREMENTS: R1.4
(Refer to Section 3.2 of the report for further details)

GLAZING

TOTAL U-VALUE: 4.34; TOTAL SHGC: 0.45

RESIDENTIAL AREAS THERMAL PERFORMANCE

FLOOR

SUSPENDED CONCRETE FLOOR
ADDED INSULATION REQUIREMENTS: R2.0 (90MM)

ROOF / CEILING

MINIMUM R3.0 RIGID BOARD INSULATION TO THE UNDERSIDE OF THE EXPOSED CONCRETE ROOF

ROOF / CEILING

MINIMUM R2.0 RIGID BOARD INSULATION TO CEILING WHERE EXPOSED ABOVE

EXTERNAL / INTERNAL WALLS

LIGHTWEIGHT (FC) WALLS: MINIMUM R2.5 (90MM) BULK INSULATION AND R0.2 THERMAL BREAK REQUIRED

PARTY WALLS / CORRIDOR WALLS / SERVICES: 75MM AAC STUD WALL WITH MINIMUM R1.50 BULK INSULATION ON BOTH SIDES OF AIR GAP

GLAZING PERFORMANCE REQUIREMENTS

Glazing Type	Total U-Value	Total SHGC
Group A: Awning / Casement	2.91	0.44
Group B: Fixed / Sliding doors	2.9	0.51

CEILING FAN LEGEND

1200MM DIAMETER CEILING FAN IN EACH BEDROOM AND LIVING ROOM

NOTE:

1. TOTAL R-VALUE IS FOR THE COMPLETE WALL SYSTEM AND IS TO INCLUDE THERMAL BRIDGING.
2. TOTAL U- AND SHGC VALUES ARE FOR THE COMPLETE GLAZING SYSTEM AS TESTED IN ACCORDANCE WITH AFRC.
3. THE ABOVE MENTIONED VALUES ARE MINIMUM REQUIRED. HIGHER PERFORMING SYSTEMS WILL BE ACCEPTABLE.
4. THERMAL BRIDGING MUST BE ACCOUNTED FOR IN THE TOTAL R-VALUE CALCULATIONS. THERMAL BRIDGING CALCULATIONS SHALL BE COMPLETED IN ACCORDANCE WITH AS/NZS4214. WITHIN THIS REPORT, WHERE INSULATION MATERIAL R-VALUES ARE PROVIDED, THEY ARE ESTIMATES ONLY AND SHOULD BE CONFIRMED, PRIOR TO INSTALLATION, BASED ON THE FINAL SELECTION AND DETAIL OF THE FABRIC AND CONSTRUCTION ELEMENTS

6. LEVEL 06
Scale 1:200

Rev	Date	By	ChkBy	Description
A	25/07/2025	AH	SO	FOR DA SUBMISSION
B	19/06/2026	AH	SO	FOR S.455 SUBMISSION

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- Building Contractor to verify all dimensions before commencing work.

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DKO

Project Name
Project Number
Project Address

Macarthur Gardens North R3
13822
Site R3, Macarthur Gardens North
Campbelltown NSW 2560

Country
Dharawal

DEVELOPMENT APPLICATION

Drawing Name
Level 6

Drawing Scale
DA206

1:200 @ A1
Revision
B

FOR INFORMATION ONLY



PROJECT: 20260227 - MACARTHUR GARDENS NORTH R3

TITLE: NATHERS COMPLIANCE THERMAL REQUIREMENTS MARKUP

STAGE: S455 Issue

BY: K. SAXENA

DATE: 20.05.2026

LEGEND

COMMON AREAS THERMAL PERFORMANCE

ROOF / CEILING
TOTAL R-VALUE REQUIREMENTS: R3.2 DOWNWARDS
(Refer to Section 3.2 of the report for further details)

FLOOR
TOTAL R-VALUE REQUIREMENTS: R2.0
(Refer to Section 3.2 of the report for further details)

WALLS
TOTAL R-VALUE REQUIREMENTS: R1.4
(Refer to Section 3.2 of the report for further details)

GLAZING
TOTAL U-VALUE: 4.34; TOTAL SHGC: 0.45

RESIDENTIAL AREAS THERMAL PERFORMANCE

FLOOR
SUSPENDED CONCRETE FLOOR
ADDED INSULATION REQUIREMENTS: R2.0 (90MM)

ROOF / CEILING
MINIMUM R3.0 RIGID BOARD INSULATION TO THE UNDERSIDE OF THE EXPOSED CONCRETE ROOF

ROOF / CEILING
MINIMUM R2.0 RIGID BOARD INSULATION TO CEILING WHERE EXPOSED ABOVE

EXTERNAL / INTERNAL WALLS

LIGHTWEIGHT (FC) WALLS: MINIMUM R2.5 (90MM) BULK INSULATION AND R0.2 THERMAL BREAK REQUIRED

PARTY WALLS / CORRIDOR WALLS / SERVICES: 75MM AAC STUD WALL WITH MINIMUM R1.50 BULK INSULATION ON BOTH SIDES OF AIR GAP

GLAZING PERFORMANCE REQUIREMENTS

Glazing Type	Total U-Value	Total SHGC
Group A: Awning / Casement	2.91	0.44
Group B: Fixed / Sliding doors	2.9	0.51

CEILING FAN LEGEND

1200MM DIAMETER CEILING FAN IN EACH BEDROOM AND LIVING ROOM

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GOLDSMITH AVENUE

10M Setback

10.5M Setback

PROPOSED SECONDARY STREET

SITE R4
NOT PART OF THIS SSDA.
DA Ref. 3056/2025/DA-RA

BUILDING A

BUILDING B

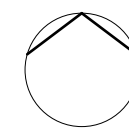
7. LEVEL 07

Scale 1:200

Rev	Date	By	Chk'd By	Description
A	25/07/2025	AH	SO	FOR DA SUBMISSION
B	19/06/2026	AH	SO	FOR S.455 SUBMISSION

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- All Boundary information to be confirmed by registered surveyor before commencing works on site.
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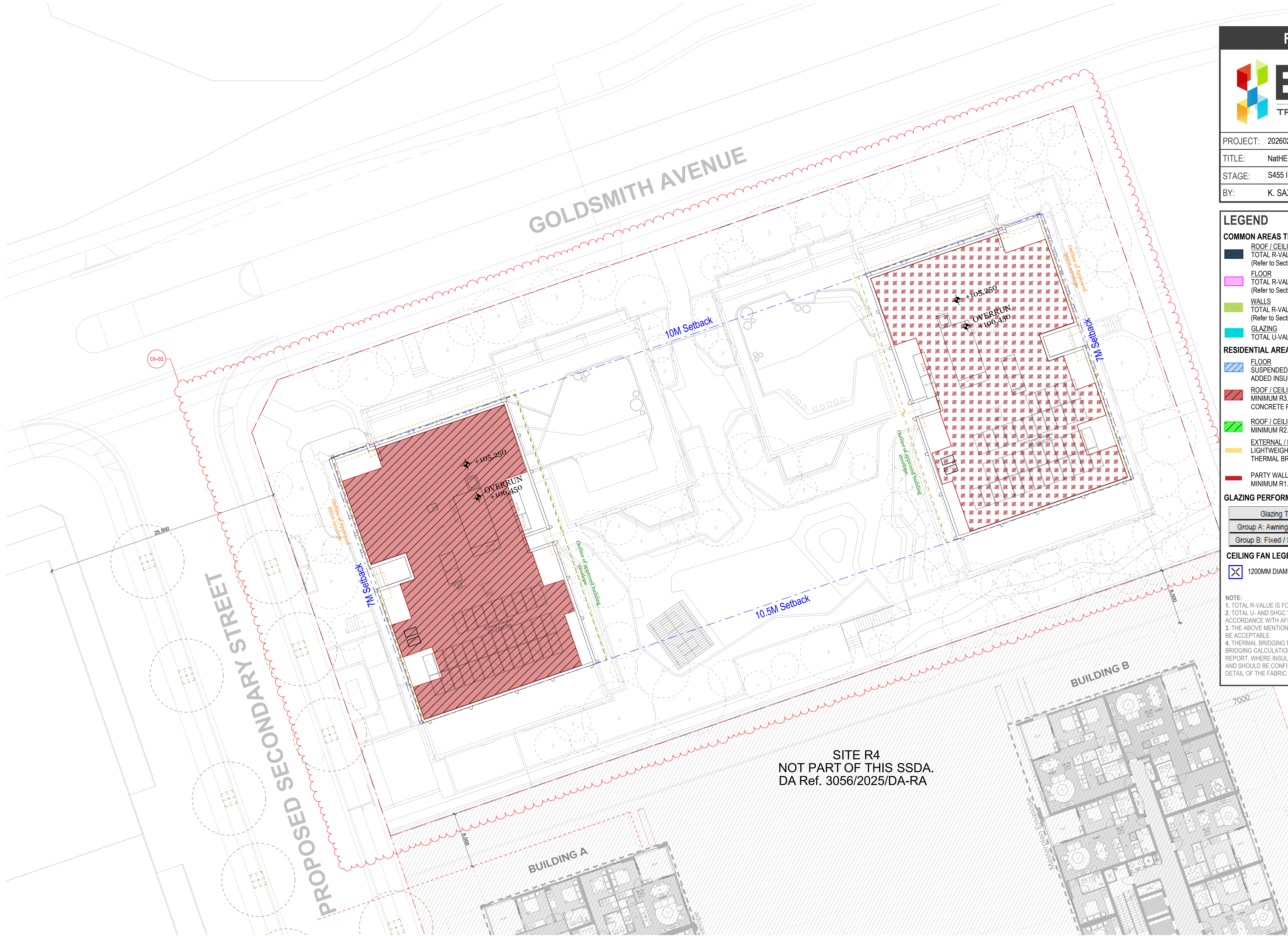
Project Name
Project Number
Project Address
Country

Macarthur Gardens North R3
13822
Site R3, Macarthur Gardens North
Campbelltown NSW 2560

Dharawal

DEVELOPMENT APPLICATION

Drawing Name
Level 7Drawing Scale
Drawing No.
DA2071:200 @ A1
Revision
B



FOR INFORMATION ONLY

PROJECT: 20260227 - MACARTHUR GARDENS NORTH R3

TITLE: NATHERS COMPLIANCE THERMAL REQUIREMENTS MARKUP

STAGE: S455 Issue

BY: K. SAXENA

DATE: 20.05.2026

LEGEND

COMMON AREAS THERMAL PERFORMANCE

ROOF / CEILING

TOTAL R-VALUE REQUIREMENTS: R3.2 DOWNWARDS
(Refer to Section 3.2 of the report for further details)

FLOOR

TOTAL R-VALUE REQUIREMENTS: R2.0
(Refer to Section 3.2 of the report for further details)

WALLS

TOTAL R-VALUE REQUIREMENTS: R1.4
(Refer to Section 3.2 of the report for further details)

GLAZING

TOTAL U-VALUE: 4.34; TOTAL SHGC: 0.45

RESIDENTIAL AREAS THERMAL PERFORMANCE

FLOOR

SUSPENDED CONCRETE FLOOR
ADDED INSULATION REQUIREMENTS: R2.0 (90MM)

ROOF / CEILING

MINIMUM R3.0 RIGID BOARD INSULATION TO THE UNDERSIDE OF THE EXPOSED CONCRETE ROOF

ROOF / CEILING

MINIMUM R2.0 RIGID BOARD INSULATION TO CEILING WHERE EXPOSED ABOVE

EXTERNAL / INTERNAL WALLS

LIGHTWEIGHT (FC) WALLS: MINIMUM R2.5 (90MM) BULK INSULATION AND R0.2 THERMAL BREAK REQUIRED

PARTY WALLS / CORRIDOR WALLS / SERVICES

75MM AAC STUD WALL WITH MINIMUM R1.50 BULK INSULATION ON BOTH SIDES OF AIR GAP

GLAZING PERFORMANCE REQUIREMENTS

Glazing Type	Total U-Value	Total SHGC
Group A: Awning / Casement	2.91	0.44
Group B: Fixed / Sliding doors	2.9	0.51

CEILING FAN LEGEND

1200MM DIAMETER CEILING FAN IN EACH BEDROOM AND LIVING ROOM

NOTE:

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Appendix C. NatHERS Group Certificate

Nationwide House Energy Rating Scheme® Class 2 Summary

NatHERS® Certificate No. #HR-2U95T1-01

Generated on 20 May 2026 using Hero 4.1

Property

Address Goldsmith Avenue , Campbelltown, NSW, 2560
Lot/DP 1097/DP1182558
NatHERS climate zone 28 - Richmond



Accredited assessor

Name BSE ESD
Business name BSE (ESD) PYT LTD
Email sherif.zedan@bse.com.au
Phone +61 405886583
Accreditation No. 101543
Assessor Accrediting Organisation ABSA

Verification

To verify this certificate, scan the QR code or visit <http://www.hero-software.com.au/pdf/HR-2U95T1-01>.

When using either link, ensure you are visiting <http://www.hero-software.com.au>



National Construction Code (NCC) requirements

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

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

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

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

Summary of all dwellings

Certificate number and link	Unit Number	Heating load (load limit) (MJ/m².yr)	Cooling load (load limit) (MJ/m².yr)	Total load (MJ/m².yr)	Star Rating	Whole of Home Rating
HR-EZ9WMV-01	A.1.01	10.5 (65)	12.1 (51)	22.6	9.0	n/a
HR-EZMDOE-01	A.1.02	6.1 (65)	10.4 (51)	16.5	9.4	n/a
HR-FV9D0N-01	A.1.03	0.1 (65)	6.6 (51)	6.7	10.0	n/a

Thermal performance Star rating



**NATIONWIDE
HOUSE**
ENERGY RATING SCHEME®

The rating above is the average of all dwellings in this summary.

For more information on your dwelling's rating see:
www.nathers.gov.au

NCC heating and cooling maximum loads MJ/m².yr

Limits taken from ABCB Standard 2022

	Heating	Cooling
Average load	14.2	12.1
Maximum load	46.7	41.5
Average limit	58.0	45.0
Maximum limit	65.1	50.6

Whole of Home performance rating

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

Summary of all dwellings

Certificate number and link	Unit Number	Heating load (load limit) (MJ/m ² .yr)	Cooling load (load limit) (MJ/m ² .yr)	Total load (MJ/m ² .yr)	Star Rating	Whole of Home Rating
HR-3OUFUV-01	A.1.04	0.2 (65)	7.3 (51)	7.5	10.0	n/a
HR-9OG6W6-01	A.1.05	12.7 (65)	5.3 (51)	18.0	9.3	n/a
HR-LH025K-01	A.1.06	24.1 (65)	2.8 (51)	26.9	8.8	n/a
HR-DV FHBR-01	A.1.07	4.3 (65)	5.8 (51)	10.2	9.9	n/a
HR-USNJ1R-01	A.1.08	22.2 (65)	4.3 (51)	26.5	8.8	n/a
HR-6AZOX3-01	A.1.09	22.0 (65)	10.4 (51)	32.4	8.5	n/a
HR-JC48QL-01	A.1.10	14.8 (65)	13.1 (51)	27.9	8.8	n/a
HR-D9DHMN-01	A.1.11	14.4 (65)	8.1 (51)	22.6	9.0	n/a
HR-75IN2K-01	A.2.01	11.1 (65)	11.3 (51)	22.4	9.0	n/a
HR-R1HEKH-01	A.2.02	6.4 (65)	10.2 (51)	16.6	9.4	n/a
HR-4JJDF2-01	A.2.03	6.9 (65)	10.1 (51)	17.0	9.4	n/a
HR-QPHMWV-01	A.2.04	7.4 (65)	11.7 (51)	19.2	9.2	n/a
HR-5N6RNE-01	A.2.05	27.2 (65)	9.8 (51)	37.0	8.2	n/a
HR-FBKR45-01	A.2.06	42.3 (65)	5.8 (51)	48.1	7.6	n/a
HR-ONTMEK-01	A.2.07	4.2 (65)	6.1 (51)	10.3	9.9	n/a
HR-4P4YR9-01	A.2.08	21.4 (65)	5.0 (51)	26.4	8.8	n/a
HR-0D4CK2-01	A.2.09	17.9 (65)	10.2 (51)	28.1	8.7	n/a
HR-A0I7H2-01	A.2.10	15.8 (65)	12.5 (51)	28.3	8.7	n/a
HR-N5ENPL-01	A.2.11	13.3 (65)	7.8 (51)	21.2	9.1	n/a
HR-R6JDS7-01	A.3.01	10.1 (65)	12.7 (51)	22.8	9.0	n/a
HR-TOFV4B-01	A.3.02	13.3 (65)	16.6 (51)	29.9	8.7	n/a
HR-5XYG0Q-01	A.3.03	4.3 (65)	6.5 (51)	10.8	9.9	n/a
HR-YW2TVX-01	A.3.04	24.2 (65)	3.9 (51)	28.0	8.7	n/a
HR-6O6IKX-01	A.3.05	19.0 (65)	7.8 (51)	26.8	8.8	n/a
HR-F33N22-01	A.3.06	15.0 (65)	16.7 (51)	31.7	8.6	n/a
HR-60OITN-01	A.3.07	14.4 (65)	9.5 (51)	23.9	8.9	n/a
HR-2IG7QJ-01	A.4.01	10.0 (65)	14.3 (51)	24.2	8.9	n/a
HR-ZCRIGA-01	A.4.02	11.8 (65)	19.9 (51)	31.7	8.6	n/a
HR-2ZAAGJ-01	A.4.03	4.4 (65)	6.1 (51)	10.5	9.9	n/a

Summary of all dwellings

Certificate number and link	Unit Number	Heating load (load limit) (MJ/m ² .yr)	Cooling load (load limit) (MJ/m ² .yr)	Total load (MJ/m ² .yr)	Star Rating	Whole of Home Rating
HR-ZLT7HI-01	A.4.04	24.2 (65)	4.0 (51)	28.1	8.7	n/a
HR-KZ47PB-01	A.4.05	19.1 (65)	7.6 (51)	26.7	8.8	n/a
HR-8W7BG1-01	A.4.06	14.1 (65)	17.2 (51)	31.3	8.6	n/a
HR-SROMTQ-01	A.4.07	11.7 (65)	9.5 (51)	21.2	9.1	n/a
HR-41PM3W-01	A.5.01	11.4 (65)	18.3 (51)	29.7	8.7	n/a
HR-6LWZOI-01	A.5.02	14.3 (65)	31.9 (51)	46.3	7.7	n/a
HR-P0LHVG-01	A.5.03	3.9 (65)	6.1 (51)	10.0	9.9	n/a
HR-J491PZ-01	A.5.04	27.6 (65)	6.5 (51)	34.0	8.4	n/a
HR-G4G9ET-01	A.5.05	23.9 (65)	10.5 (51)	34.4	8.4	n/a
HR-HAE6FH-01	A.5.06	13.7 (65)	18.9 (51)	32.6	8.5	n/a
HR-IOETP8-01	A.5.07	11.8 (65)	8.7 (51)	20.5	9.2	n/a
HR-U7HDB9-01	A.6.01	12.4 (65)	28.2 (51)	40.5	8.0	n/a
HR-8V804E-01	A.6.02	3.7 (65)	7.2 (51)	11.0	9.8	n/a
HR-4QDRK6-01	A.6.03	21.8 (65)	9.8 (51)	31.6	8.6	n/a
HR-X9ZBBQ-01	A.6.04	30.0 (65)	26.1 (51)	56.1	7.2	n/a
HR-ZTM8Y6-01	A.6.05	12.8 (65)	13.8 (51)	26.7	8.8	n/a
HR-ZW9Y1I-01	A.6.06	12.6 (65)	9.5 (51)	22.1	9.1	n/a
HR-CAI0CJ-01	A.7.01	22.9 (65)	41.5 (51)	64.4	6.8	n/a
HR-T39CUR-01	A.7.02	12.2 (65)	16.5 (51)	28.7	8.7	n/a
HR-PVLCZ3-01	A.7.03	22.3 (65)	17.6 (51)	39.9	8.1	n/a
HR-AC6PFG-01	A.7.04	37.0 (65)	39.7 (51)	76.7	6.1	n/a
HR-M2P9A9-01	A.7.05	25.6 (65)	38.5 (51)	64.0	6.8	n/a
HR-ABGPYZ-01	A.7.06	28.6 (65)	16.9 (51)	45.5	7.8	n/a
HR-AWP2I1-01	A.G.01	14.7 (65)	11.7 (51)	26.4	8.8	n/a
HR-JALOKC-01	A.G.02	14.6 (65)	12.2 (51)	26.9	8.8	n/a
HR-DLH1FC-01	A.G.03	3.0 (65)	7.0 (51)	10.0	9.9	n/a
HR-Y4E53F-01	A.G.04	9.5 (65)	4.7 (51)	14.2	9.6	n/a
HR-78B0R2-01	A.G.05	37.0 (65)	3.8 (51)	40.9	8.0	n/a
HR-VLGHF4-01	A.G.06	9.8 (65)	7.2 (51)	17.0	9.4	n/a

Summary of all dwellings

Certificate number and link	Unit Number	Heating load (load limit) (MJ/m ² .yr)	Cooling load (load limit) (MJ/m ² .yr)	Total load (MJ/m ² .yr)	Star Rating	Whole of Home Rating
HR-1UNQC9-01	A.G.07	46.7 (65)	5.7 (51)	52.4	7.4	n/a
HR-M6H2LN-01	A.G.08	27.6 (65)	13.6 (51)	41.2	7.9	n/a
HR-51L4FC-01	B.1.01	7.0 (65)	21.5 (51)	28.5	8.7	n/a
HR-23LO2E-01	B.1.02	4.6 (65)	8.7 (51)	13.3	9.6	n/a
HR-IATGDL-01	B.1.03	0.2 (65)	7.1 (51)	7.3	10.0	n/a
HR-7RJ0LR-01	B.1.04	0.1 (65)	24.4 (51)	24.6	8.9	n/a
HR-TYO11G-01	B.1.05	11.8 (65)	5.5 (51)	17.3	9.4	n/a
HR-5OD08A-01	B.1.06	27.0 (65)	3.0 (51)	30.1	8.6	n/a
HR-7DOMPO-01	B.1.07	3.9 (65)	12.0 (51)	15.9	9.4	n/a
HR-9D4ICC-01	B.1.08	22.3 (65)	5.7 (51)	28.0	8.7	n/a
HR-KFBRU1-01	B.1.09	7.4 (65)	4.2 (51)	11.6	9.8	n/a
HR-9C99SY-01	B.1.10	3.5 (65)	5.8 (51)	9.3	9.9	n/a
HR-SNDNCZ-01	B.1.11	7.4 (65)	6.7 (51)	14.0	9.6	n/a
HR-D501RV-01	B.2.01	7.3 (65)	20.9 (51)	28.2	8.7	n/a
HR-UAGLEU-01	B.2.02	4.7 (65)	8.5 (51)	13.1	9.7	n/a
HR-H8MVU1-01	B.2.03	6.5 (65)	10.0 (51)	16.5	9.4	n/a
HR-WLA5IR-01	B.2.04	4.1 (65)	33.0 (51)	37.1	8.2	n/a
HR-F1XBEL-01	B.2.05	28.2 (65)	9.5 (51)	37.7	8.2	n/a
HR-EOT6IR-01	B.2.06	43.7 (65)	8.1 (51)	51.8	7.4	n/a
HR-6UP99P-01	B.2.07	5.3 (65)	9.2 (51)	14.5	9.5	n/a
HR-XU9QMR-01	B.2.08	22.1 (65)	6.8 (51)	28.9	8.7	n/a
HR-WBSNDC-01	B.2.09	7.7 (65)	4.0 (51)	11.7	9.8	n/a
HR-CTPL01-01	B.2.10	3.7 (65)	5.9 (51)	9.6	9.9	n/a
HR-T9YSI2-01	B.2.11	7.7 (65)	5.4 (51)	13.1	9.7	n/a
HR-3CNBW7-01	B.3.01	6.5 (65)	21.0 (51)	27.5	8.8	n/a
HR-Q1ELUK-01	B.3.02	10.2 (65)	17.3 (51)	27.5	8.8	n/a
HR-DR0HGK-01	B.3.03	6.4 (65)	6.6 (51)	13.0	9.7	n/a
HR-B0LGS6-01	B.3.04	24.4 (65)	6.9 (51)	31.3	8.6	n/a
HR-PKD3WU-01	B.3.05	6.2 (65)	4.3 (51)	10.5	9.9	n/a

Summary of all dwellings

Certificate number and link	Unit Number	Heating load (load limit) (MJ/m ² .yr)	Cooling load (load limit) (MJ/m ² .yr)	Total load (MJ/m ² .yr)	Star Rating	Whole of Home Rating
HR-8OU8KW-01	B.3.06	2.7 (65)	7.0 (51)	9.7	9.9	n/a
HR-AOOAMI-01	B.3.07	5.8 (65)	7.3 (51)	13.1	9.7	n/a
HR-9IM3G9-01	B.4.01	6.7 (65)	20.4 (51)	27.1	8.8	n/a
HR-EVI8Z9-01	B.4.02	10.1 (65)	18.9 (51)	29.0	8.7	n/a
HR-NUT6RS-01	B.4.03	6.6 (65)	6.6 (51)	13.1	9.7	n/a
HR-00XVMY-01	B.4.04	24.2 (65)	6.2 (51)	30.3	8.6	n/a
HR-P1TTJC-01	B.4.05	6.3 (65)	4.6 (51)	10.9	9.8	n/a
HR-BTYIHY-01	B.4.06	2.7 (65)	7.2 (51)	10.0	9.9	n/a
HR-J9YOE5-01	B.4.07	6.0 (65)	7.0 (51)	13.0	9.7	n/a
HR-Q3ELZM-01	B.5.01	8.8 (65)	24.3 (51)	33.1	8.4	n/a
HR-5WSEPH-01	B.5.02	12.3 (65)	23.0 (51)	35.3	8.4	n/a
HR-2U3IBP-01	B.5.03	6.7 (65)	7.3 (51)	14.0	9.6	n/a
HR-0IG4PK-01	B.5.04	27.8 (65)	10.3 (51)	38.1	8.2	n/a
HR-YG8RNF-01	B.5.05	11.1 (65)	6.8 (51)	17.9	9.3	n/a
HR-XZLB1C-01	B.5.06	3.4 (65)	9.4 (51)	12.8	9.7	n/a
HR-K212GP-01	B.5.07	6.1 (65)	7.0 (51)	13.1	9.7	n/a
HR-FEL9IN-01	B.6.01	12.1 (65)	27.6 (51)	39.7	8.1	n/a
HR-9CR7LS-01	B.6.02	7.3 (65)	14.6 (51)	21.9	9.1	n/a
HR-2MI9VM-01	B.6.03	23.2 (65)	16.1 (51)	39.3	8.1	n/a
HR-64YPQ4-01	B.6.04	17.7 (65)	16.5 (51)	34.3	8.4	n/a
HR-CBQTQ9-01	B.6.05	5.7 (65)	8.9 (51)	14.6	9.5	n/a
HR-2FWCER-01	B.6.06	6.2 (65)	6.8 (51)	13.0	9.7	n/a
HR-BTLTR5-01	B.7.01	21.7 (65)	37.9 (51)	59.5	7.0	n/a
HR-VN30H0-01	B.7.02	20.9 (65)	35.5 (51)	56.3	7.2	n/a
HR-59V6NN-01	B.7.03	37.9 (65)	30.1 (51)	68.0	6.6	n/a
HR-5SNBCO-01	B.7.04	28.0 (65)	29.2 (51)	57.2	7.2	n/a
HR-CLP8VL-01	B.7.05	16.3 (65)	19.3 (51)	35.6	8.3	n/a
HR-EQG96N-01	B.7.06	18.3 (65)	13.5 (51)	31.8	8.6	n/a

Summary of all dwellings

Certificate number and link	Unit Number	Heating load (load limit) (MJ/m ² .yr)	Cooling load (load limit) (MJ/m ² .yr)	Total load (MJ/m ² .yr)	Star Rating	Whole of Home Rating
HR-D4LSCU-01	B.B.01	14.0 (65)	5.4 (51)	19.4	9.2	n/a
HR-12JBF3-01	B.B.02	14.4 (65)	3.1 (51)	17.5	9.3	n/a
HR-FP9S4Q-01	B.G.01	14.3 (65)	21.4 (51)	35.7	8.3	n/a
HR-F92F5S-01	B.G.02	10.9 (65)	9.1 (51)	20.0	9.2	n/a
HR-0RXPR0-01	B.G.03	2.9 (65)	7.5 (51)	10.4	9.9	n/a
HR-I0GQF9-01	B.G.04	6.6 (65)	4.7 (51)	11.2	9.8	n/a
HR-2HDQIC-01	B.G.05	44.5 (65)	3.3 (51)	47.7	7.7	n/a
HR-HLRN7H-01	B.G.06	11.8 (65)	13.2 (51)	25.1	8.9	n/a
HR-EKN90K-01	B.G.07	39.7 (65)	6.5 (51)	46.2	7.7	n/a
HR-3EVI4N-01	B.G.08	6.7 (65)	4.4 (51)	11.1	9.8	n/a
HR-QBCMHD-01	B.G.09	2.3 (65)	8.7 (51)	11.0	9.8	n/a
HR-NDQU4X-01	B.G.10	18.6 (65)	5.4 (51)	23.9	8.9	n/a
Averages	130x (Total)	14.2	12.1	26.4	8.9	n/a
Maximum Loads and Minimum Ratings		46.7	41.5	76.7	6.1	n/a

Explanatory notes

About the ratings

The thermal performance star rating in this Certificate is the average rating of all NCC Class 2 dwellings in an apartment block. The Whole of Home performance rating in this Certificate is the lowest rating for the apartment block. Individual unit ratings are listed in the 'Summary of all dwellings' section of this Certificate.

NatHERS ratings use computer modelling to evaluate a home's energy efficiency and performance. They use localised climate data and standard assumptions on how people use their home to predict the energy loads and societal cost. The thermal performance star rating uses the home's building specifications, layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings) to predict the heating and cooling energy loads. The Whole of Home performance rating uses information about the home's appliances and onsite energy production and storage to estimate the home's societal cost.

For more details about an individual dwelling's assessment, refer to the individual dwelling's NatHERS Certificate (accessible via link).

Accredited Assessors

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

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

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

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

Disclaimer

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

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

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

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

Appendix D. NatHERS Stamped Drawings

DEVELOPMENT APPLICATION

Macarthur Gardens North R3



ARTIST IMPRESSION. SUBJECT TO CHANGE

Ch-07

Drawing List		
Drawing	Drawing Name	Revision
DA000	Cover Page	C
DA001	Development Summary	C
DA100	Site & Location Plan	A
DA101	Site Analysis Plan	A
DA102	Proposed Site Plan	B
DA103	Survey Plan	A
DA200	Basement 1	C
DA201	Ground Floor	C
DA202	Level 1	C
DA203	Level 2	C
DA204	Level 3	B
DA205	Level 4 - Level 5	B
DA206	Level 6	B
DA207	Level 7	B
DA208	Level 8	C
DA300	North and South Elevations	B
DA301	East and West Elevations	C
DA302	Internal Elevations	C
DA303	Section A & B	B
DA304	Section C & D	B
DA305	Perspective	B
DA306	Perspective	B
DA307	Perspective	B
DA308	Materials & Finishes Schedule	B
DA400	Shadow Diagrams - June 21	B
DA401	Shadow Diagrams - June 21	B
DA402	Eye of the Sun Diagrams	B
DA500	GFA Diagrams 1	C
DA501	GFA Diagrams 2	C
DA502	Solar Access Diagrams 1	B
DA503	Solar Access Diagrams 2	B
DA504	Cross Ventilation Diagrams	B
DA505	Communal Open Space	B
DA506	Deep Soil And Landscaping	C
DA507	Adaptable & Livable Apartments 1	B
DA508	Adaptable & Livable Apartments 2	B
DA509	Typical Layout	B
DA510	Envelope Diagram	B

Schedule of Changes	
ID	Change
Ch-01	Revised Setback and Envelope
Ch-02	Revised Setback, Layouts, Envelope and carparking
Ch-03	Revised Waste collection
Ch-04	Revised Ftf
Ch-05	Revised Level
Ch-06	Revised Building Height, Removal of storey
Ch-07	Revised CGI
Ch-08	Revised Setback, Envelope and Facade Articulation
Ch-09	Additional Material
Ch-10	Revised Shadows
Ch-11	Revised Compliance Diagram
Ch-12	Revised Layouts
Ch-13	Revised Yield, Mix and Compliance
Ch-14	Revised Landscaping

Rev	Date	By	ChkBy	Description
A	25/07/2025	AH	SO	FOR DA SUBMISSION
B	19/12/2025	AH	SO	FOR DA SUBMISSION
C	19/06/2026	AH	SO	FOR S.455 SUBMISSION

- All works to be in accordance with authority & statutory approvals.
- Refer to site survey for all information relating to existing site conditions.
- All Boundary information to be confirmed by registered surveyor before commencing works on site.
- Refer to Arborist Report and Landscape Documentation for all information relating to trees and their retention/removal, and all landscape works.
- Drawings to be read in conjunction with all Specifications and Schedules; all specialist consultant documentation (BASIX, NABERS, Section U Certificates, etc.)
- Minor changes to building form & configuration may be required after Development Consent.
- Do not scale from drawing; figured dimensions only to be used.
- Building Contractor to verify all dimensions before commencing work.

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Scan QR code or follow website link for rating details.

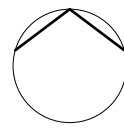
Assessor name
BSE ESD

Accreditation No.
ABSA 101543

Property Address
Goldsmith Avenue
Campbelltown, NSW, 2560



<http://www.hero-software.com.au/pdthr-2U95T1-01>



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DKO

Project Name
Project Number
Project Address

Country

Macarthur Gardens North R3
13822
Site R3, Macarthur Gardens North
Campbelltown NSW 2560

Dharawal

DEVELOPMENT APPLICATION

Drawing Name
Cover Page

Drawing Scale
Drawing No.
DA000

1:1, 1:0.66 @
Revision 1
C

Total Site Area4895 m²

MAX FSR2.5 :1

Max GFA12,238 m²

Proposed FSR1.94 :1

Proposed9,479 m²

		Apartment Building (Tower 1+Tower2)							TOTAL	Solar	Cross Vent	No Solar	GFA*		
		Studios	1B	2B	3B										
3450	Basement			2					2	2	1		244		
3600	LEVELS	Ground	2	9	7	0			18	11	10	6	1482		
3300		Level 1	4	10	8	0			22	15	12	3	1511		
3300		Level 2	4	10	8	0			22	16	12	2	1511		
3150		Level 3	0	6	8	0			14	10	10	0	1031		
3150		Level 4	0	6	8	0			14	10	10	0	1031		
3300		Level 5	0	6	8	0			14	10	10	0	1031		
3150		Level 6	2	6	4	0			12	8	8	0	820		
3150		Level 7	2	6	4	0			12	10	8	0	820		
3300	Roof														
Subtotal		14	59	57	0	0	0	0	130	92	81	11	9479	m2	
Unit Mix		Studio	1B	2B	3B				target (units)						
Proposed		14	59	57	0	0	0	0							
		11%	45%	44%	0%										
TOTAL GFA														9479	m2

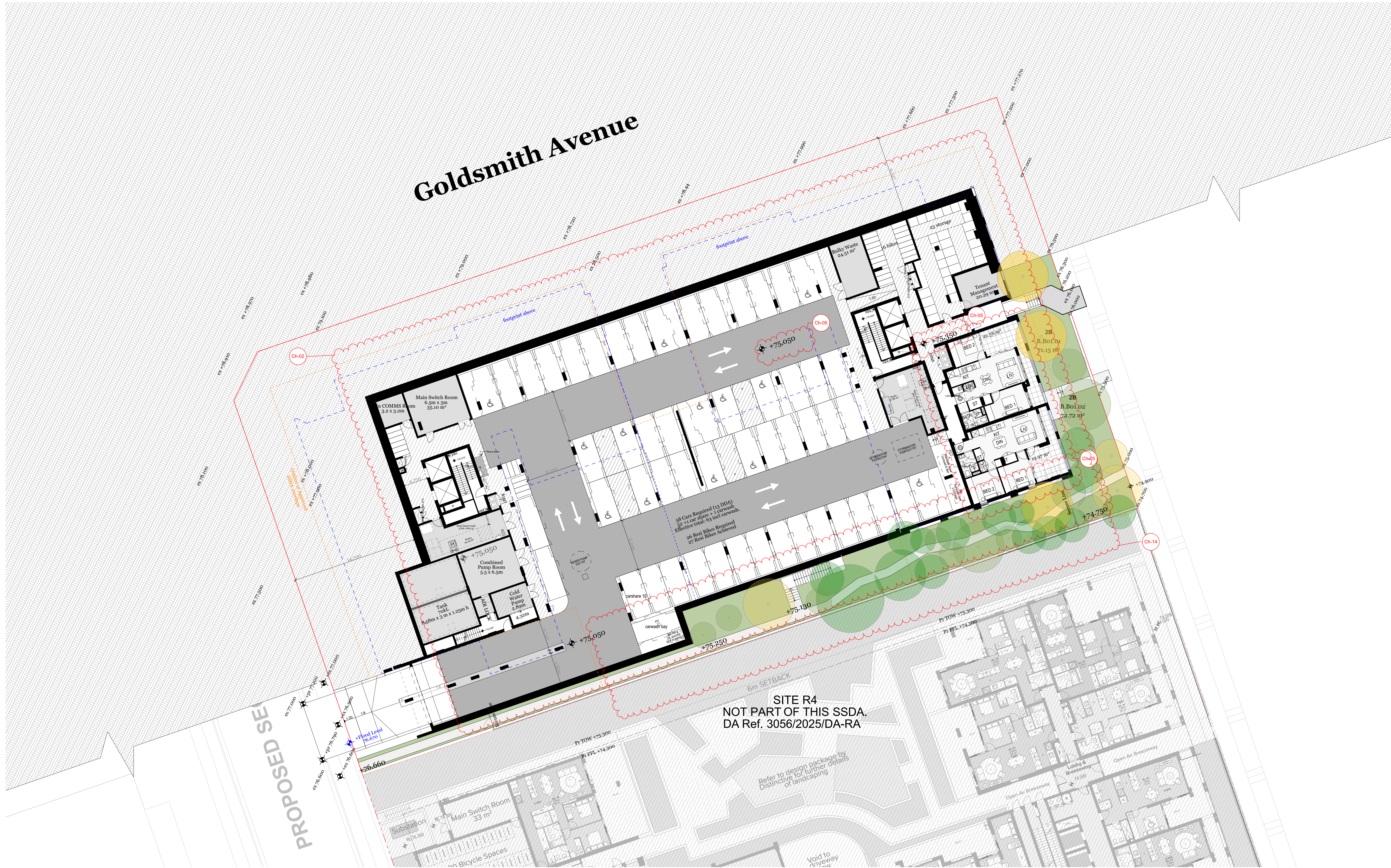
* Note: GFA caculation excludes hydraulic riser within unit

Apartment Internal Sizes	
Typical	(excl adaptable)
Apartment Type	Proposed Apt Sizes
Studio	36-40 sqm
1 Bedroom	50-52 sqm
2 Bedroom	70-72 sqm
3 Bedroom	N/A

SEPP Housing 2021 - Affordable Housing			
	UNITS	RATE	TOTAL
3 BEDROOMS	0	1	0
2 BEDROOMS	57	0.5	29
1 BEDROOMS	59	0.4	24
STUDIO	14	0.4	6
VISITOR	130	0	0
ADAPTABLE	13	1	13
REQUIRED		SEPP	57.7
ACHIEVED W/O			
CARSHARE			53.0
ACHIEVED W			
CARSHARE	EFFECTIVE TOTAL		63
			INCL 1 CARWASH BAY
			INCL 1 CARSHARE AND 1 CARWASH BAY

DCP - Bike Parking Requirements			
RESI BIKE	130	0.2	26.0
ACHIEVES			26
VIS BIKE	130	1/12'	11
ACHIEVES			12





-1. BASEMENT 01
Scale 1:200

Rev	Date	By	ChkBy	Description
A	25/07/2025	AH	SO	FOR DA SUBMISSION
B	19/12/2025	AH	SO	FOR DA SUBMISSION
C	19/06/2026	AH	SO	FOR S.450 SUBMISSION

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- All works to be in accordance with authority & statutory approvals.
- Refer to all survey for all information relating to existing site conditions.
- All Boundary information to be confirmed by registered surveyor before commencing works and prior to removal, and all landscape work.
- Refer to Arborist Report and Landscape Documentation for all information relating to trees and their removal, and all landscape work.
- Drawings to be read in conjunction with all Specifications and Schedules; all specialist consultant documentation (BANK, NERVIS, Section U Certificates).
- Minor changes to building form & configuration may be required after Development Consent.
- Do not scale from drawing; figured dimensions only to be used.
- Building Contractor to verify all dimensions before commencing work.

**Certificate No. #HR-2U95T1-01**
Scan QR code or follow website link for rating details.

Assessor name BSE ESD
Accreditation No. ABSA 101943
Property Address Goldsmith Avenue
Campbelltown, NSW, 2560
<http://www.hero-software.com.au/pdthr-2U95T1-01>



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DKO

Project Name Macarthur Gardens North R3
Project Number 13822
Project Address Site R3, Macarthur Gardens North
Campbelltown NSW 2560

Country Dharawal

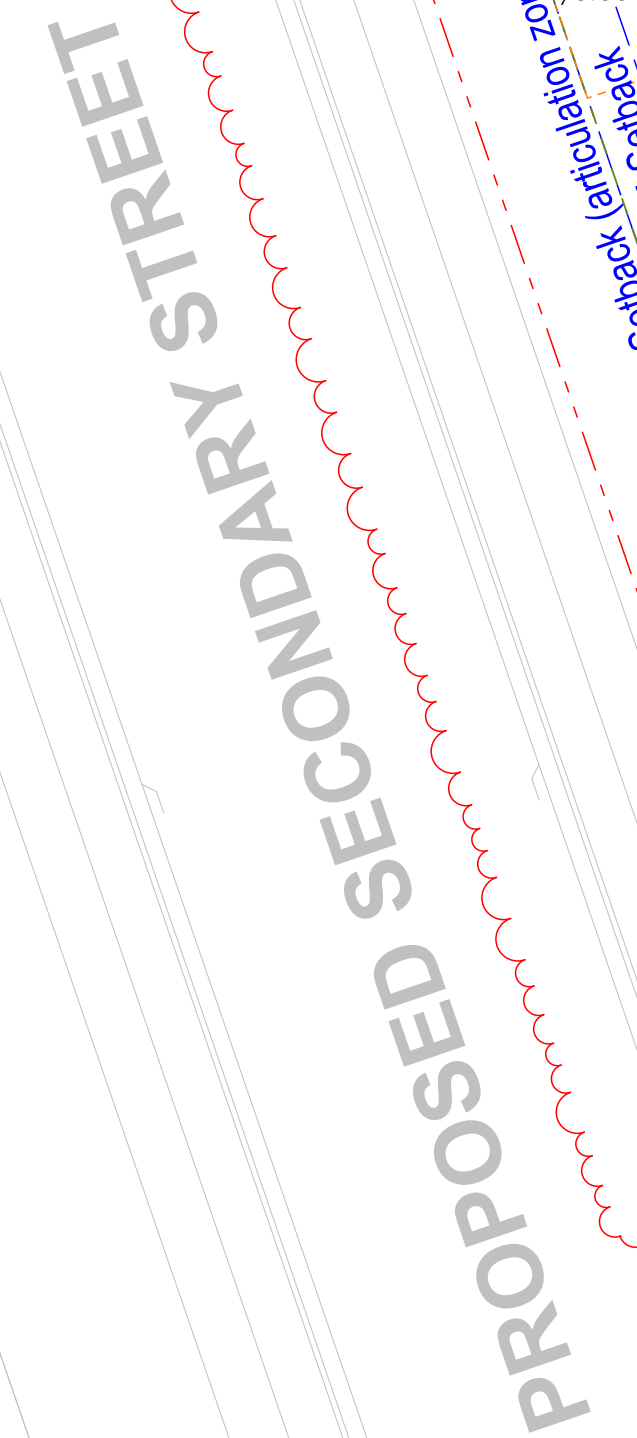
DEVELOPMENT APPLICATION

Drawing Name
Basement 1

Drawing Scale
Drawing No.
DA200

1:200 @ A1
Revision
C





1:200 © A1
Revision
C

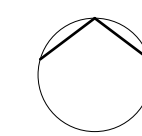


2. LEVEL 02
Scale 1:200

Rev	Date	By	Chk'd By	Description
A	25/07/2025	AH	SO	FOR DA SUBMISSION
B	19/12/2025	AH	SO	FOR DA SUBMISSION
C	19/06/2026	AH	SO	FOR S.455 SUBMISSION

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- All works to be in accordance with authority & statutory approvals.
- Refer to site survey for all information relating to existing site conditions.
- All Boundary information to be confirmed by registered surveyor before commencing works on site.
- Refer to Arborist Report and Landscape Documentation for all information relating to trees and their retention/removal, and all landscape works.
- Drawings to be read in conjunction with all Specifications and Schedules; all specialist consultant documentation (SAB, NAB, ERS, Section J Certificates).
- Minor changes to building form & configuration may be required after Development Consent.
- Do not scale from drawing; figured dimensions only to be used.
- Building Contractor to verify all dimensions before commencing work.



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Project Name
Project Number
Project Address

Country

Macarthur Gardens North R3
13822
Site R3, Macarthur Gardens North
Campbelltown NSW 2560

Dharawal

DEVELOPMENT APPLICATION

Drawing Name
Level 2

Drawing Scale
Drawing No.
DA203

1:200 @ A1
Revision
C

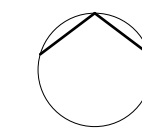


3. LEVEL 03
Scale 1:200

Rev	Date	By	ChkBy	Description
A	25/07/2025	AH	SO	FOR DA SUBMISSION
B	19/06/2026	AH	SO	FOR S.455 SUBMISSION

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Project Name
Project Number
Project Address

Country

Macarthur Gardens North R3
13822
Site R3, Macarthur Gardens North
Campbelltown NSW 2560

Dharawal

DEVELOPMENT APPLICATION

Drawing Name
Level 3

Drawing Scale
Drawing No.
DA204

1:200 @ A1
Revision
B

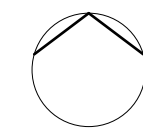


4. LEVEL 04
Scale 1:200

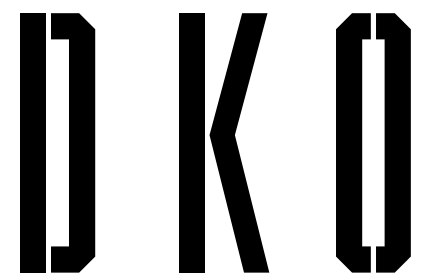
Rev	Date	By	ChkBy	Description
A	25/07/2025	AH	SO	FOR DA SUBMISSION
B	19/06/2026	AH	SO	FOR S.455 SUBMISSION

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Project Name
Project Number
Project Address
Country

Macarthur Gardens North R3
13822
Site R3, Macarthur Gardens North
Campbelltown NSW 2560

Dharawal

DEVELOPMENT APPLICATION

Drawing Name
Level 4 - Level 5

Drawing Scale
Drawing No.
DA205

1:200 @ A1
Revision
B



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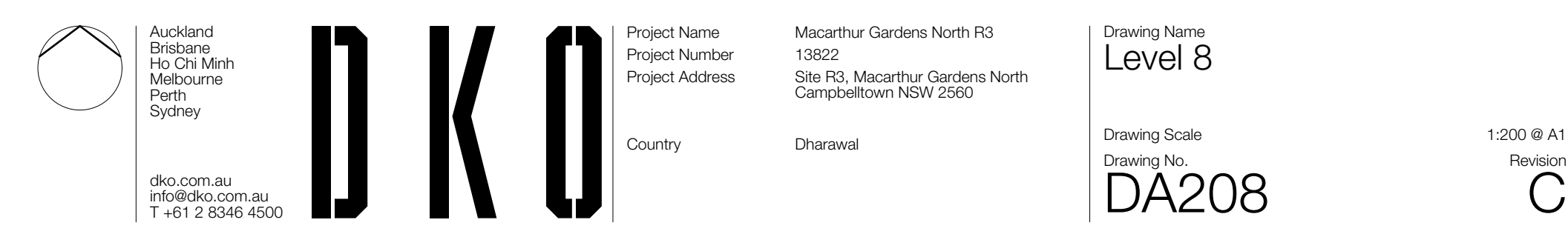
DKO

Macarthur Gardens North R3
13822
Site R3, Macarthur Gardens North
Campbelltown NSW 2560

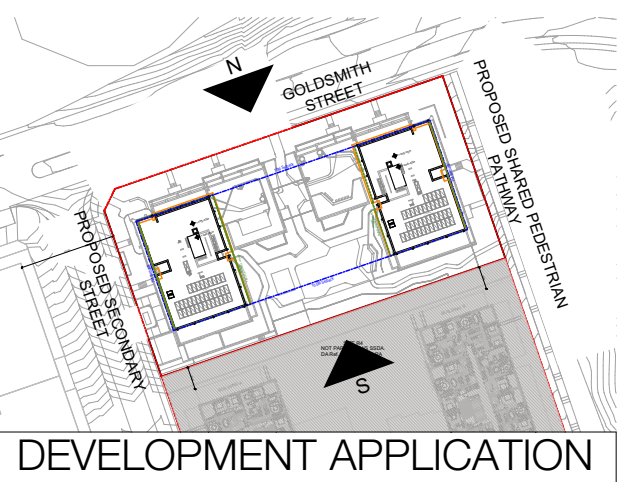
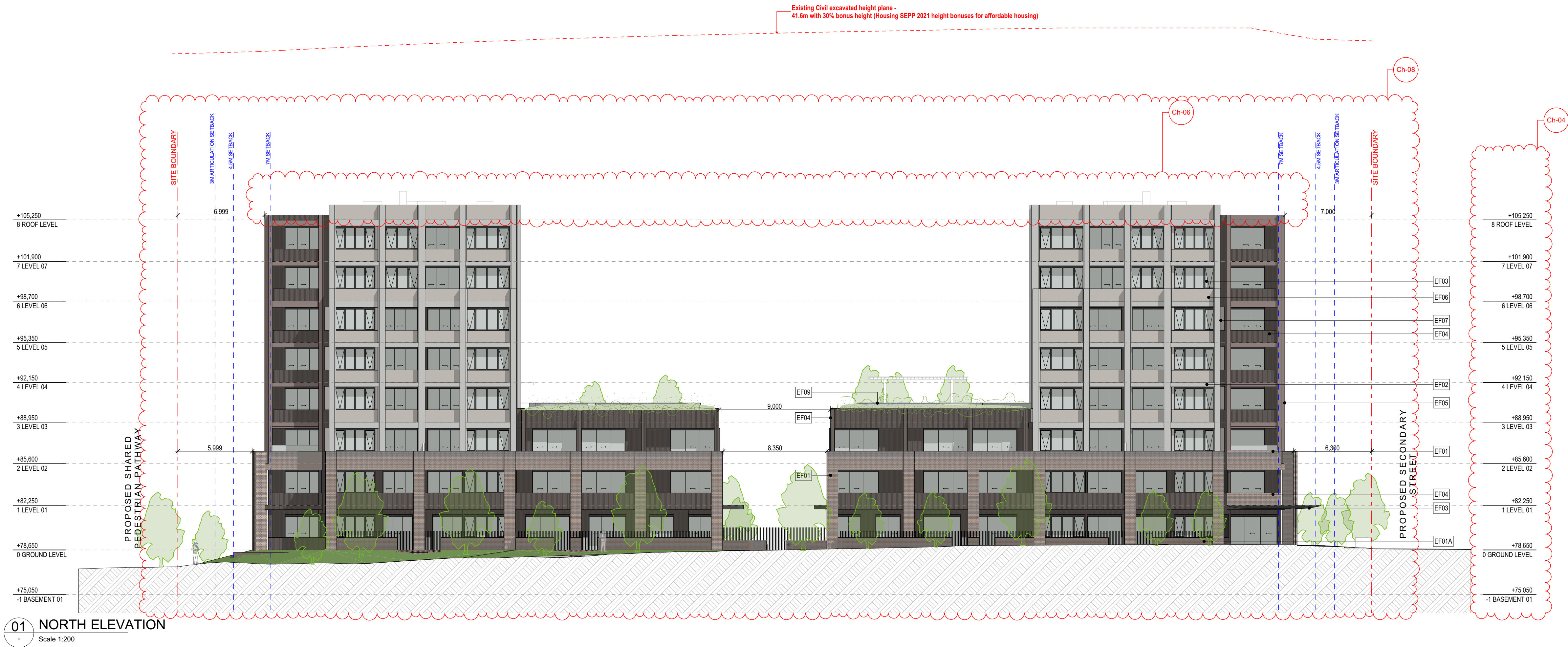
1:200 © A1
Revisior
B



1:200 @ A1
Revision
B

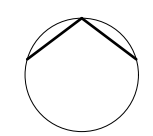


The image shows a certificate from HERO Software. At the top left is the HERO Software logo, which consists of a blue circle with a white star and the word 'HERO' in white, with 'SOFTWARE' in smaller letters below it. To the right of the logo, the text 'Certificate No. #HR-2U95T1-01' is displayed in a large, bold, green font. Below this, a line of text reads 'Scan QR code or follow website link for rating details.' In the center, there is a table with three rows and two columns. The first row contains 'Assessor name' and 'BSE ESD'. The second row contains 'Accreditation No.' and 'ABSA 101543'. The third row contains 'Property Address' and 'Goldsmith Avenue, Campbelltown, NSW, 2560'. To the right of the table is a large QR code. At the bottom left, the URL 'http://www.hero-software.com.au/pdf/HR-2U95T1-01' is provided. The background of the certificate is white with faint, large, grey letters spelling out 'HERO' diagonally.



Rev	Date	By	ChkBy	Description
A	25/07/2025	AH	SO	FOR DA SUBMISSION
B	19/06/2026	AH	SO	FOR S.445 SUBMISSION

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Project Name
Project Number
Project Address
Country

Macarthur Gardens North R3
13822
Site R3, Macarthur Gardens North
Campbelltown NSW 2560
Dharawal

Drawing Name
North and South Elevations

Drawing Scale
Drawing No.
DA300

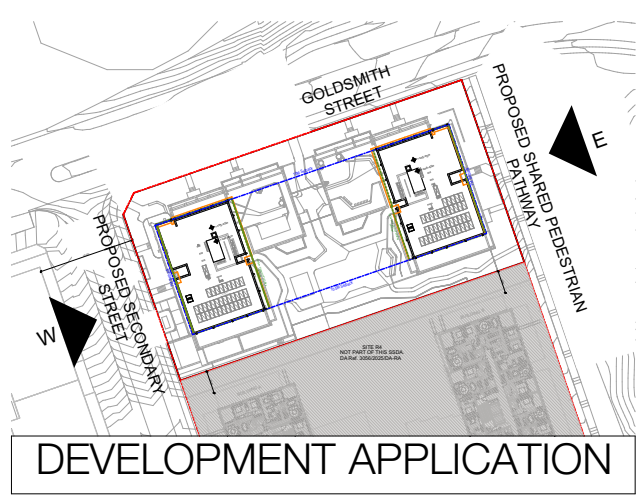
1:200, 1:1 @
Revised
B



01 E-02 EAST ELEVATION
Scale 1:200



02 E-04 WEST ELEVATION
Scale 1:200

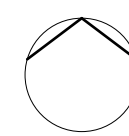


DEVELOPMENT APPLICATION

Rev	Date	By	ChkBy	Description
A	25/07/2025	AH	SO	FOR DA SUBMISSION
B	15/12/2025	AH	SO	FOR DA SUBMISSION
C	19/06/2026	AH	SO	FOR S.450 SUBMISSION

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Project Name
Project Number
Project Address

Country

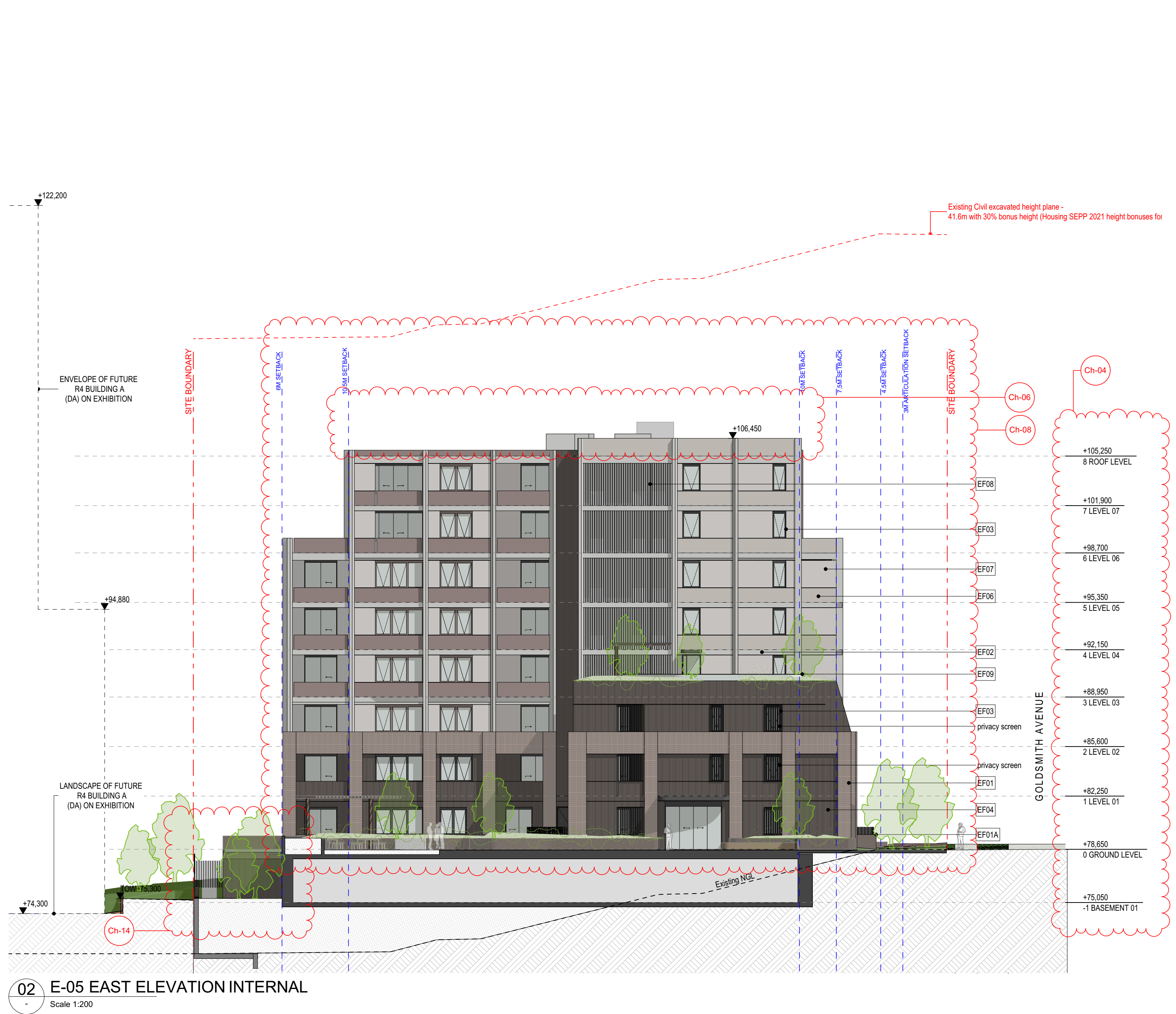
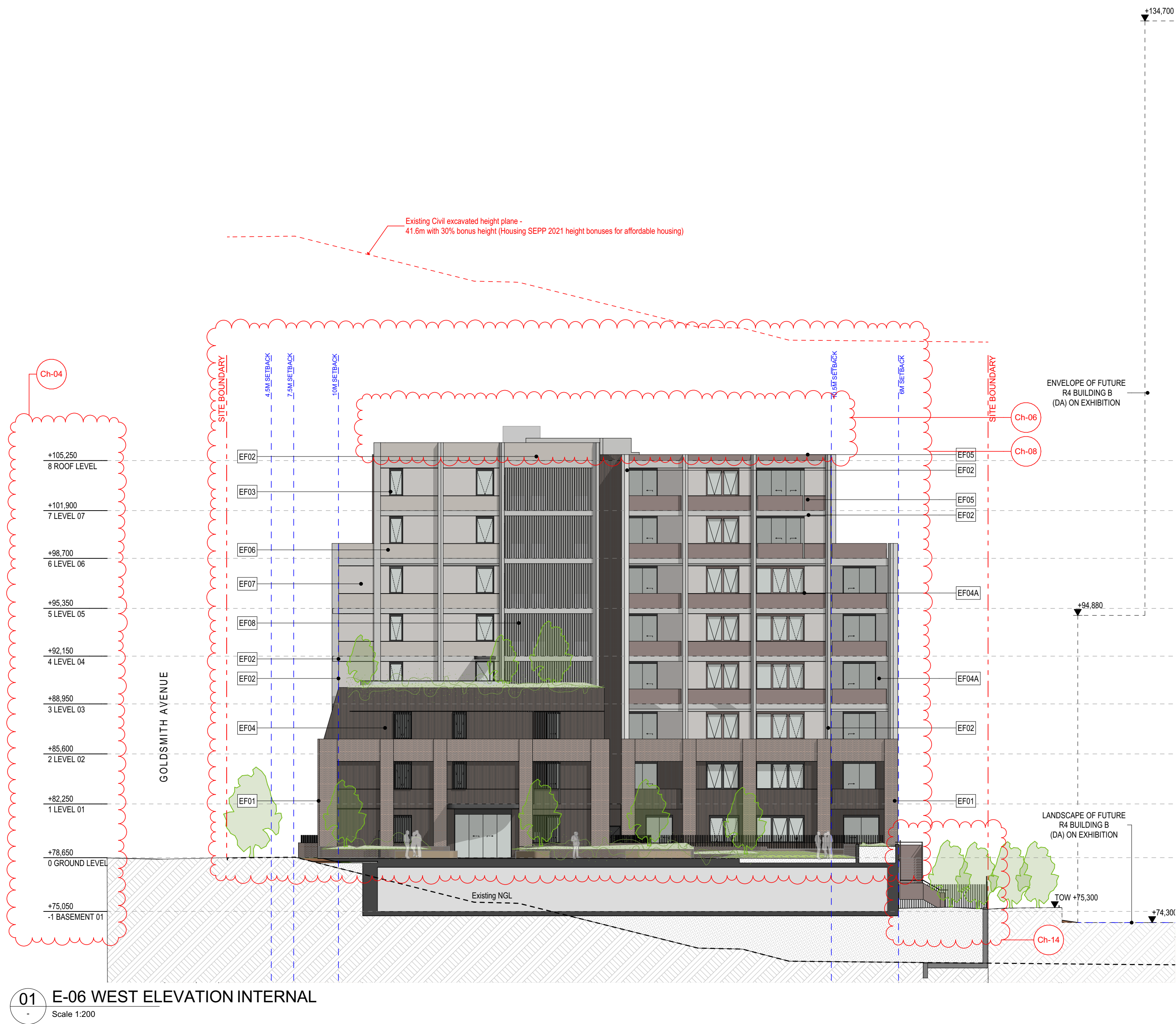
Macarthur Gardens North R3
13822
Site R3, Macarthur Gardens North
Campbelltown NSW 2560

Dharawal

Drawing Name
East and West Elevations

Drawing Scale
Drawing No.
DA301

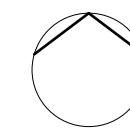
1:200, 1:1 @
Revised
C



Rev	Date	By	ChkBy	Description
A	25/07/2025	AH	SO	FOR DA SUBMISSION
B	15/12/2025	AH	SO	FOR DA SUBMISSION
C	19/06/2026	AH	SO	FOR S.450 SUBMISSION

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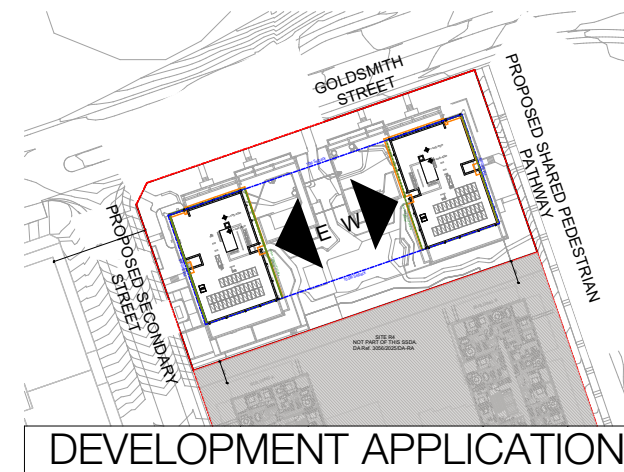


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Project Name
Project Number
Project Address
Country

Macarthur Gardens North R3
13822
Site R3, Macarthur Gardens North
Campbelltown NSW 2560
Dharawal



Drawing Name
Internal Elevations

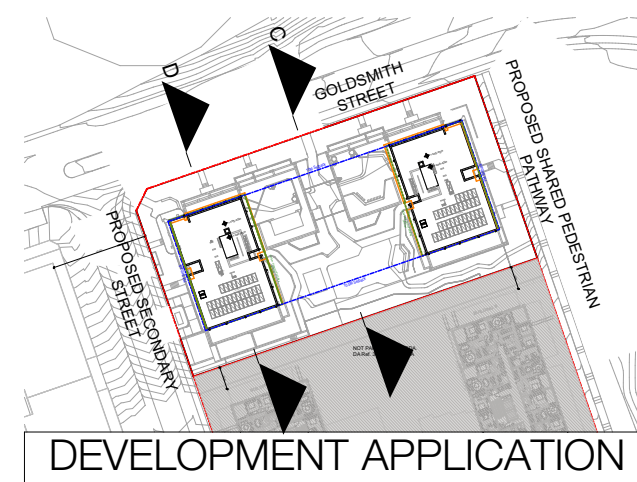
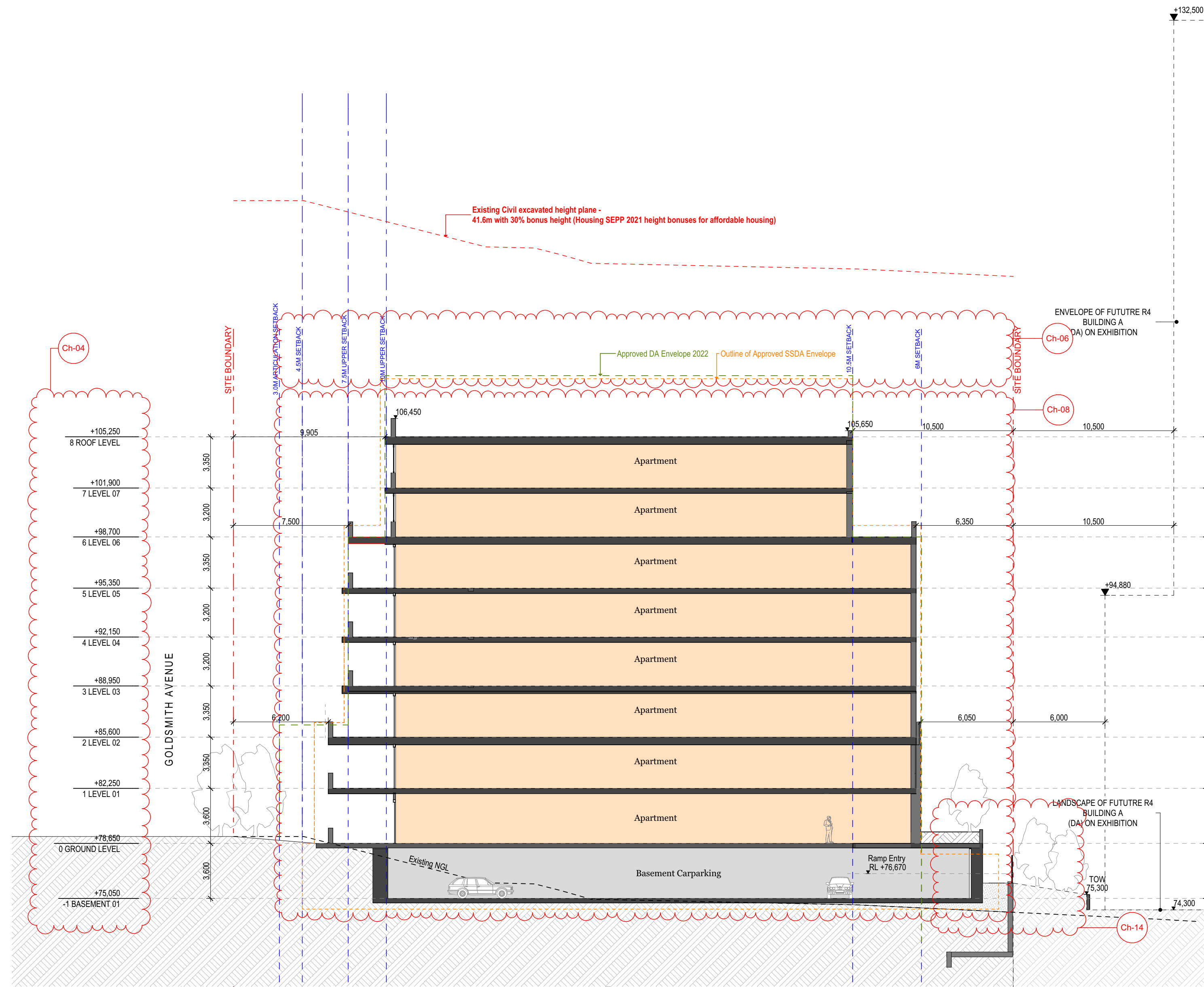
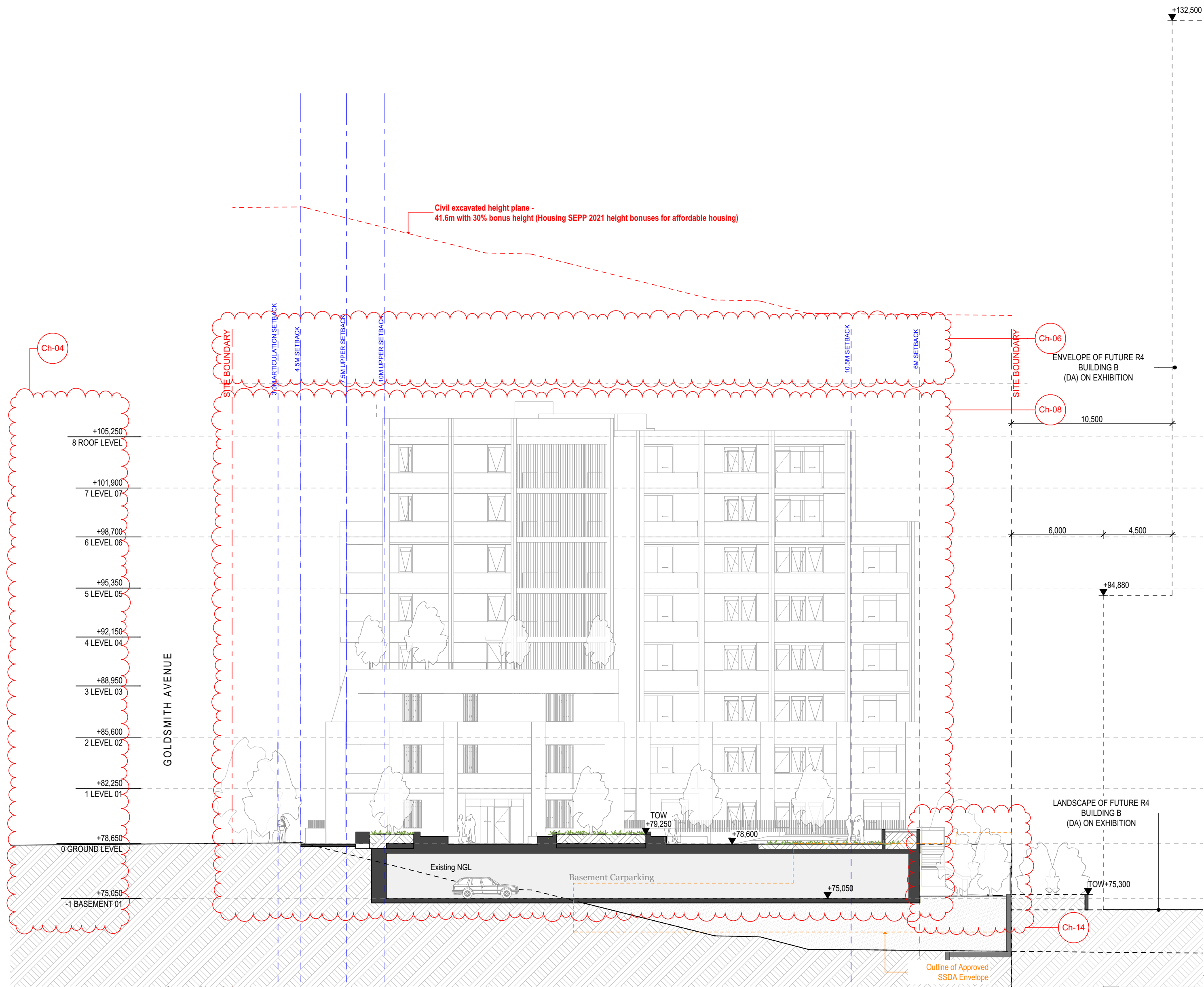
Drawing Scale
Drawing No.
DA302

1:200, 1:1 @
Revised
C



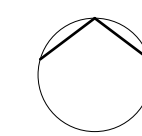
DEVELOPMENT APPLICATION

1:200 @ A
Revisio
B



Rev	Date	By	ChkBy	Description
A	25/07/2025	AH	SO	FOR DA SUBMISSION
B	19/06/2026	AH	SO	FOR S.455 SUBMISSION

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Project Name
 Project Number
 Project Address

Macarthur Gardens North R3
 13822
 Site R3, Macarthur Gardens North
 Campbelltown NSW 2560

Country
 Dharawal

Drawing Name
 Section C & D

Drawing Scale
 Drawing No.
 DA304

1:200 @ A1
 Revision
 B

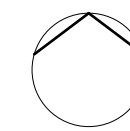


ARTIST IMPRESSION, SUBJECT TO CHANGE

Rev	Date	By	Chk'd By	Description
A	25/07/2025	AH	SO	FOR DA SUBMISSION
B	19/06/2026	AH	SO	FOR S.455 SUBMISSION

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Project Name
Project Number
Project Address

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Country

Dharawal

DEVELOPMENT APPLICATION

Drawing Name
Perspective

Drawing Scale
Drawing No.
DA305

1:0.52 @ A1
Revision
B

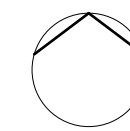


ARTIST IMPRESSION, SUBJECT TO CHANGE

Rev	Date	By	Chk'd By	Description
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B	19/06/2026	AH	SO	FOR S.455 SUBMISSION

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Project Number
Project Address

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Dharawal

DEVELOPMENT APPLICATION

Drawing Name
Perspective

Drawing Scale
Drawing No.
DA306

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Revision
B

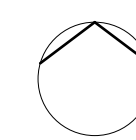


ARTIST IMPRESSION, SUBJECT TO CHANGE

Rev	Date	By	ChkBy	Description
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Project Name
Project Number
Project Address

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13822
Site R3, Macarthur Gardens North
Campbelltown NSW 2560

Dharawal

DEVELOPMENT APPLICATION

Drawing Name
Perspective

Drawing Scale
Drawing No.
DA307

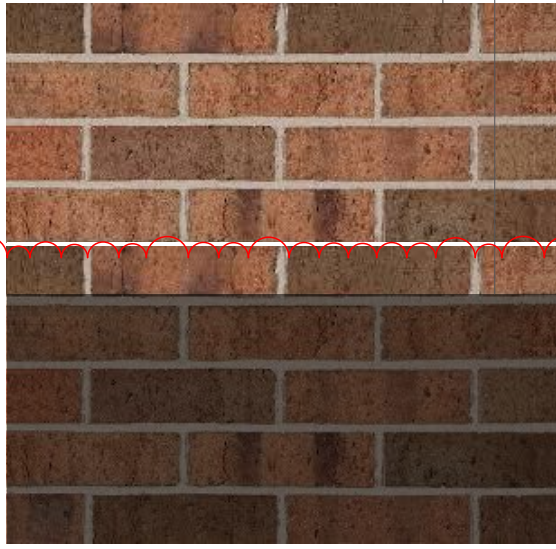
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Revision
B

Ch.07



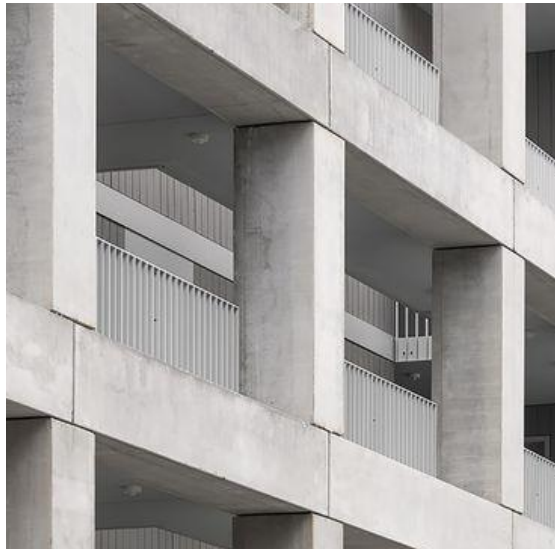
ARTIST IMPRESSION, SUBJECT TO CHANGE

Ch-07



EF-01
BRICK
RUNNING BOND

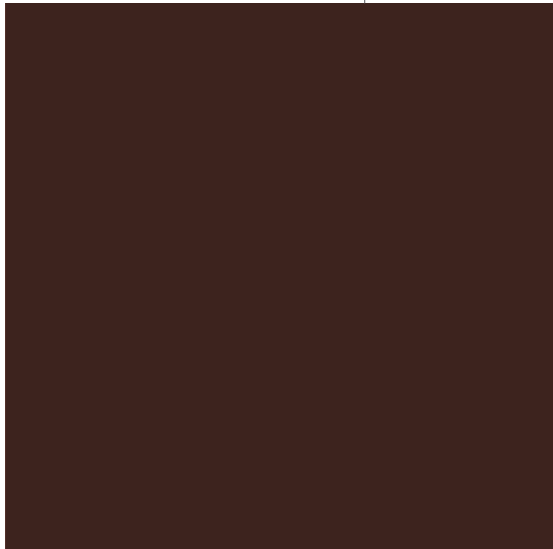
EF-01A
DARK BRICK
RUNNING BOND



EF-02
CONCRETE



EF-03
ANTHRACITE (METAL)



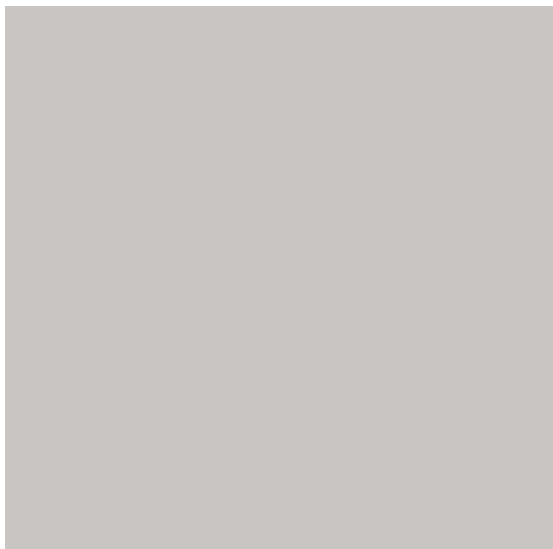
EF-04
LIGHTWEIGHT (RIBBED OR SIMILAR) -
DARK MAROON

EF-04A
DARK MAROON FINISH



EF-05
LIGHTWEIGHT - BROWNISH RED

EF-05A
BROWNISH RED FINISH



EF-06
LIGHTWEIGHT (RIBBED OR SIMILAR) -
BEIGE



EF-07
LIGHTWEIGHT - LIGHT



EF-08
LOUVRE



EF-09
GLASS - CLEAR



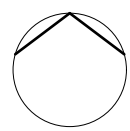
EF-10
PALISADE FENCING

Ch-09

Rev	Date	By	ChkBy	Description
A	25/07/2025	AH	SO	FOR DA SUBMISSION
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Project Name
Project Number
Project Address

Macarthur Gardens North R3
13822
Site R3, Macarthur Gardens North
Campbelltown NSW 2560

Country
Dharawal

DEVELOPMENT APPLICATION

Drawing Name
Materials & Finishes Schedule

Drawing Scale
Drawing No.
DA308

1:1, 1:1.48,
1:1.77, 1:3.55,
1:3.57, 1:6.90,
1:3.57, 1:6.90,
1:1.98, 1:7.92

B

Appendix E. BASIX Certificate

BASIX™ Certificate

Building Sustainability Index

www.planningportal.nsw.gov.au/development-and-assessment/basix

Multi Dwelling

Certificate number: 1806109M_04

This certificate confirms that the proposed development will meet the NSW government's requirements for sustainability, if it is built in accordance with the commitments set out below. Terms used in this certificate, or in the commitments, have the meaning given by the document entitled "BASIX Definitions" dated 10/09/2020 published by the Department. This document is available at www.planningportal.nsw.gov.au/definitions

This certificate is a revision of certificate number 1806109M_02 submitted to the consent authority or certifier on 26 November 2025 with application SSD-80482713.

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

Secretary

Date of issue: Thursday, 21 May 2026

To be valid, this certificate must be submitted with a development application or lodged with a complying development certificate application within 3 months of the date of issue.



When submitting this BASIX certificate with a development application or complying development certificate application, it must be accompanied by NatHERS certificate HR-2U95T1-01.

Project summary

Project name	Macarthur Gardens North_04
Street address	GOLDSMITH AVENUE CAMPBELLTOWN 2560
Local Government Area	CAMPBELLTOWN
Plan type and plan number	Deposited Plan 1182558
Lot No.	1097
Section no.	-
No. of residential flat buildings	2
Residential flat buildings: no. of dwellings	130
Multi-dwelling housing: no. of dwellings	0
No. of single dwelling houses	0

Project score

Water	✓ 49	Target 40
Thermal Performance (Simulation method)	✓ Pass	Target Pass
Energy	✓ 60	Target 58
Materials	✓ -100	Target n/a

Certificate Prepared by

Name / Company Name: BUILDING SERVICES ENGINEERS PTY LIMITED

ABN (if applicable): 24084076200

Description of project

Project address	
Project name	Macarthur Gardens North_04
Street address	GOLDSMITH AVENUE CAMPBELLTOWN 2560
Local Government Area	CAMPBELLTOWN
Plan type and plan number	Deposited Plan 1182558
Lot No.	1097
Section no.	-
Project type	
No. of residential flat buildings	2
Residential flat buildings: no. of dwellings	130
Multi-dwelling housing: no. of dwellings	0
No. of single dwelling houses	0
Site details	
Site area (m²)	4895
Roof area (m²)	1860
Non-residential floor area (m²)	0
Residential car spaces	62
Non-residential car spaces	0

Common area landscape		
Common area lawn (m²)	167.8	
Common area garden (m²)	1776.6	
Area of indigenous or low water use species (m²)	1776.6	
Assessor details and thermal loads		
Assessor number	101543	
Certificate number	HR-2U95T1-01	
Climate zone	28	
Project score		
Water	✓ 49	Target 40
Thermal Performance (Simulation method)	✓ Pass	Target Pass
Energy	✓ 60	Target 58
Materials	✓ -100	Target n/a

Description of project

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

Residential flat buildings - Tower A, 63 dwellings, 9 storeys above ground

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
A.1.01	1	50	0	0	0
A.1.05	1	59.9	0	0	0
A.1.09	2	70.8	0	0	0
A.2.02	1	50	0	0	0
A.2.06	1	65.3	0	0	0
A.2.10	2	69.1	0	0	0
A.3.03	1	50.3	0	0	0
A.3.07	2	67.9	0	0	0
A.4.04	2	67.6	0	0	0
A.5.01	1	50	0	0	0
A.5.05	2	70.8	0	0	0
A.6.02	1	50.4	0	0	0
A.6.06	2	67.9	0	0	0
A.7.04	1	50.9	0	0	0
A.G.02	1	50	0	0	0
A.G.06	1	50.3	0	0	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
A.1.02	1	50	0	0	0
A.1.06	1	65.3	0	0	0
A.1.10	2	69.1	0	0	0
A.2.03	1	38	0	0	0
A.2.07	1	50.3	0	0	0
A.2.11	2	67.9	0	0	0
A.3.04	2	67.6	0	0	0
A.4.01	1	50	0	0	0
A.4.05	2	70.8	0	0	0
A.5.02	1	50	0	0	0
A.5.06	2	69.1	0	0	0
A.6.03	1	38.9	0	0	0
A.7.01	2	68.4	0	0	0
A.7.05	1	50.3	0	0	0
A.G.03	1	38	0	0	0
A.G.07	2	67.6	0	0	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
A.1.03	1	38	0	0	0
A.1.07	1	50.3	0	0	0
A.1.11	2	67.9	0	0	0
A.2.04	1	38	0	0	0
A.2.08	2	67.6	0	0	0
A.3.01	1	50	0	0	0
A.3.05	2	70.8	0	0	0
A.4.02	1	50	0	0	0
A.4.06	2	69.1	0	0	0
A.5.03	1	50.3	0	0	0
A.5.07	2	67.9	0	0	0
A.6.04	1	50.9	0	0	0
A.7.02	1	50.4	0	0	0
A.7.06	2	67.9	0	0	0
A.G.04	2	77.1	0	0	0
A.G.08	1	67.1	0	0	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
A.1.04	1	38	0	0	0
A.1.08	2	67.6	0	0	0
A.2.01	1	50	0	0	0
A.2.05	1	59.9	0	0	0
A.2.09	2	70.8	0	0	0
A.3.02	1	50	0	0	0
A.3.06	2	69.1	0	0	0
A.4.03	1	50.3	0	0	0
A.4.07	2	67.9	0	0	0
A.5.04	2	67.6	0	0	0
A.6.01	2	68.4	0	0	0
A.6.05	1	50.3	0	0	0
A.7.03	1	38.9	0	0	0
A.G.01	1	50	0	0	0
A.G.05	1	65.3	0	0	0

Residential flat buildings - Tower B, 67 dwellings, 9 storeys above ground

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
B.1.01	1	49.3	0	0	0
B.1.05	1	59.9	0	0	0
B.1.09	2	70.6	0	0	0
B.2.02	1	49.7	0	0	0
B.2.06	1	65	0	0	0
B.2.10	2	69.8	0	0	0
B.3.03	1	50.3	0	0	0
B.3.07	2	68.1	0	0	0
B.4.04	2	67.2	0	0	0
B.5.01	1	49.3	0	0	0
B.5.05	2	70.6	0	0	0
B.6.02	1	50.4	0	0	0
B.6.06	2	67.9	0	0	0
B.7.04	1	50.9	0	0	0
B.B.02	2	70.8	0	0	0
B.G.04	2	76.7	0	0	0
B.G.08	2	70.6	0	0	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
B.1.02	1	49.7	0	0	0
B.1.06	1	65	0	0	0
B.1.10	2	69.8	0	0	0
B.2.03	1	37.5	0	0	0
B.2.07	1	50.3	0	0	0
B.2.11	2	68.1	0	0	0
B.3.04	2	67.2	0	0	0
B.4.01	1	49.3	0	0	0
B.4.05	2	70.6	0	0	0
B.5.02	1	49.7	0	0	0
B.5.06	2	69.8	0	0	0
B.6.03	1	38.9	0	0	0
B.7.01	2	68.4	0	0	0
B.7.05	1	50.3	0	0	0
B.G.01	1	49.3	0	0	0
B.G.05	1	65	0	0	0
B.G.09	2	69.8	0	0	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
B.1.03	1	37.5	0	0	0
B.1.07	1	50.3	0	0	0
B.1.11	2	68.1	0	0	0
B.2.04	1	38	0	0	0
B.2.08	2	67.2	0	0	0
B.3.01	1	49.3	0	0	0
B.3.05	2	70.6	0	0	0
B.4.02	1	49.7	0	0	0
B.4.06	2	69.8	0	0	0
B.5.03	1	50.3	0	0	0
B.5.07	2	68.1	0	0	0
B.6.04	1	50.9	0	0	0
B.7.02	1	50.4	0	0	0
B.7.06	2	67.9	0	0	0
B.G.02	1	49.7	0	0	0
B.G.06	1	50.3	0	0	0
B.G.10	2	68.1	0	0	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m ²)	Unconditioned floor area (m ²)	Area of garden & lawn (m ²)	Indigenous species (min area m ²)
B.1.04	1	38	0	0	0
B.1.08	2	67.2	0	0	0
B.2.01	1	49.3	0	0	0
B.2.05	1	59.9	0	0	0
B.2.09	2	70.6	0	0	0
B.3.02	1	49.7	0	0	0
B.3.06	2	69.8	0	0	0
B.4.03	1	50.3	0	0	0
B.4.07	2	68.1	0	0	0
B.5.04	2	67.2	0	0	0
B.6.01	2	68.4	0	0	0
B.6.05	1	50.3	0	0	0
B.7.03	1	38.9	0	0	0
B.B.01	2	69.1	0	0	0
B.G.03	1	37.5	0	0	0
B.G.07	2	67.2	0	0	0

Description of project

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

Common areas of unit building - Tower A

Common area	Floor area (m²)	Common area	Floor area (m²)	Common area	Floor area (m²)
Common Room A	21.38	Ground floor lobby	39.79	GF Internal hallway A	70.4

Common areas of unit building - Tower B

Common area	Floor area (m²)	Common area	Floor area (m²)
Common Room B	21.38	GF Internal hallway B	69

Common areas of the development (non-building specific)

Common area	Floor area (m²)	Common area	Floor area (m²)	Common area	Floor area (m²)
Undercover Carpark	1882	Main Switch Room	32.5	B01 Waste room	34.4
B01 Bulky Waste Room	22.1	Combined bin holding	72.9	B01 Waste room 2	37.9
Main Comms room	10.2	Combined pump room	35.8	Cold water pump room	18.7
Tenant Storage	80	Bike storage	76	Tenant Management	20.3

Schedule of BASIX commitments

1. Commitments for Residential flat buildings - Tower A

(a) Buildings

(i) Materials

(b) Dwellings

(i) Water

(ii) Energy

(iii) Thermal Performance

(c) Common areas and central systems/facilities

(i) Water

(ii) Energy

2. Commitments for Residential flat buildings - Tower B

(a) Buildings

(i) Materials

(b) Dwellings

(i) Water

(ii) Energy

(iii) Thermal Performance

(c) Common areas and central systems/facilities

(i) Water

(ii) Energy

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

(a) Buildings 'Other'

(i) Materials

(b) Common areas and central systems/facilities

(i) Water

(ii) Energy

Schedule of BASIX commitments

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

1. Commitments for Residential flat buildings - Tower A

(a) Buildings

(i) Materials	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) 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 "Floor types", "External wall types", "Internal wall types", "Ceiling and roof types", "Frames" and "Glazing" tables below.			✓
(b) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all specifications included in the tables below.		✓	
(c) The applicant must construct the floors, walls, roof, ceiling and roof, windows, glazed doors and skylights of the development in accordance with the specifications listed in the tables below. In the case of glazing, a 5% variance from the area values listed in the "Frames" and "Glazing" tables is permitted.	✓	✓	✓
(d) The applicant must show through receipts that the materials purchased for construction are consistent with the specifications listed in the below tables.			✓

Floor types

Floor type	Area (m2)	Insulation	Low emissions option
suspended floor above garage, frame: suspended concrete slab	398.31	fibreglass batts or roll	-
floors above habitable rooms, frame: suspended concrete slab	3713.62	-	-

External wall types

External wall type	Construction type	Area (m2)	Low emissions option	Insulation
External wall type 1	framed (metal clad), frame: light steel frame	1869.3	-	fibreglass batts or roll

Internal wall types			
Internal wall type	Construction type	Area (m2)	Insulation
Internal wall type 1	plasterboard, frame:light steel frame	1190.7	-
Internal wall type 2	75 mm AAC panel, frame:light steel frame	2308	fibreglass batts or roll

Reinforcement concrete frames/columns		
Building has reinforced concrete frame/columns?	Volume (m³)	Low emissions option
-	-	-

Ceiling and roof types			
Ceiling and roof type	Area (m²)	Roof Insulation	Ceiling Insulation
concrete - plasterboard internal, frame: no frame	3016.5	-	-
concrete - plasterboard internal, frame: no frame	633.4	-	fibreglass batts or roll

Glazing types			Frame types				
Single glazing (m²)	Double glazing (m²)	Triple glazing (m²)	Aluminium frames (m²)	Timber frames (m²)	uPVC frames (m²)	Steel frames (m²)	Composite frames (m²)
-	1123.6	-	1123.6	-	-	-	-

(b) Dwellings

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

	Fixtures					Appliances		Individual pool				Individual spa		
Dwelling no.	All shower-heads	All toilet flushing systems	All kitchen taps	All bathroom taps	HW recirculation or diversion	All clothes washers	All dish-washers	Volume (max volume)	Pool cover	Pool location	Pool shaded	Volume (max volume)	Spa cover	Spa shaded
All dwellings	4 star (> 6 but ≤ 7.5 L/min)	4 star	4 star	5 star	-	4 star	5 star	-	-	-	-	-	-	-

	Alternative water source							
Dwelling no.	Alternative water supply systems	Size	Configuration	Landscape connection	Toilet connection (s)	Laundry connection	Pool top-up	Spa top-up
All dwellings	No alternative water supply	-	-	-	-	-	-	-

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must install each hot water system specified for the dwelling in the table below, so that the dwelling's hot water is supplied by that system. If the table specifies a central hot water system for the dwelling, then the applicant must connect that central system to the dwelling, so that the dwelling's hot water is supplied by that central system.	✓	✓	✓
(c) The applicant must install, in each bathroom, kitchen and laundry of the dwelling, the ventilation system specified for that room in the table below. Each such ventilation system must have the operation control specified for it in the table.		✓	✓
(d) The applicant must install the cooling and heating system/s specified for the dwelling under the "Living areas" and "Bedroom areas" headings of the "Cooling" and "Heating" columns in the table below, in/for at least 1 living/bedroom area of the dwelling. If no cooling or heating system is specified in the table for "Living areas" or "Bedroom areas", then no systems may be installed in any such areas. If the term "zoned" is specified beside an air conditioning system, then the system must provide for day/night zoning between living areas and bedrooms.		✓	✓
(e) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Artificial lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that the "primary type of artificial lighting" for each such room in the dwelling is fluorescent lighting or light emitting diode (LED) lighting. If the term "dedicated" is specified for a particular room or area, then the light fittings in that room or area must only be capable of being used for fluorescent lighting or light emitting diode (LED) lighting.		✓	✓
(f) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Natural lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that each such room or area is fitted with a window and/or skylight.	✓	✓	✓
(g) This commitment applies if the applicant installs a water heating system for the dwelling's pool or spa. The applicant must: (aa) install the system specified for the pool in the "Individual Pool" column of the table below (or alternatively must not install any system for the pool). If specified, the applicant must install a timer, to control the pool's pump; and (bb) install the system specified for the spa in the "Individual Spa" column of the table below (or alternatively must not install any system for the spa). If specified, the applicant must install a timer to control the spa's pump.		✓ ✓	
(h) The applicant must install in the dwelling: (aa) the kitchen cook-top and oven specified for that dwelling in the "Appliances & other efficiency measures" column of the table below;		✓	

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(bb) each appliance for which a rating is specified for that dwelling in the "Appliances & other efficiency measures" column of the table, and ensure that the appliance has that minimum rating; and (cc) any clothes drying line specified for the dwelling in the "Appliances & other efficiency measures" column of the table.		✓ ✓	✓
(i) If specified in the table, the applicant must carry out the development so that each refrigerator space in the dwelling is "well ventilated".		✓	

	Hot water	Bathroom ventilation system		Kitchen ventilation system		Laundry ventilation system	
Dwelling no.	Hot water system	Each bathroom	Operation control	Each kitchen	Operation control	Each laundry	Operation control
All dwellings	electric instantaneous	individual fan, ducted to façade	interlocked to light with timer off	individual fan, ducted to façade	interlocked to light	individual fan, ducted to façade	interlocked to light

	Cooling		Heating		Natural lighting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bathrooms or toilets	Main kitchen
A.1.11, A.2.11, A.3.07, A.4.07, A.5.07, A.6.06, A.7.06	1-phase airconditioning - ducted / 3.5 star (average zone)	no individual system	1-phase airconditioning - ducted / 3 star (average zone)	no individual system	0	yes
All other dwellings	1-phase airconditioning - ducted / 3.5 star (average zone)	no individual system	1-phase airconditioning - ducted / 3 star (average zone)	no individual system	0	no

	Individual pool			Individual spa		Appliances other efficiency measures				
Dwelling no.	Pool heating system	Pool Pump	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Dishwasher	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
A.1.03, A.2.03,	-	-	-	-	-	electric cooktop & electric oven	4.5 star	4.5 star	no	no

	Individual pool			Individual spa		Appliances other efficiency measures				
Dwelling no.	Pool heating system	Pool Pump	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Dishwasher	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
A.6.03, A.7.03										
All other dwellings	-	-	-	-	-	electric cooktop & electric oven	4.5 star	4.5 star	yes	no

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

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

	Thermal loads		
Dwelling no.	Area adjusted heating load (in MJ/m²/yr)	Area adjusted cooling load (in MJ/m²/yr)	Area adjusted total load (in MJ/m²/yr)
A.1.01	10.5	12.1	22.600
A.1.02	6.1	10.4	16.500
A.1.03	0.1	6.6	6.700
A.1.04	0.2	7.3	7.500
A.1.05	12.7	5.3	18.000
A.1.06	24.1	2.8	26.900
A.1.07	4.3	5.8	10.100
A.1.08	22.2	4.3	26.500
A.1.09	22	10.4	32.400
A.1.10	14.8	13.1	27.900
A.1.11	14.4	8.1	22.500
A.2.01	11.1	11.3	22.400
A.2.02	6.4	10.2	16.600
A.2.03	6.9	10.1	17.000
A.2.04	7.4	11.7	19.100
A.2.05	27.2	9.8	37.000
A.2.06	42.3	5.8	48.100
A.2.07	4.2	6.1	10.300
A.2.08	21.4	5	26.400
A.2.09	17.9	10.2	28.100
A.2.10	15.8	12.5	28.300
A.2.11	13.3	7.8	21.100
A.3.01	10.1	12.7	22.800
A.3.02	13.3	16.6	29.900
A.3.03	4.3	6.5	10.800
A.3.04	24.2	3.9	28.100

	Thermal loads		
Dwelling no.	Area adjusted heating load (in MJ/m ² /yr)	Area adjusted cooling load (in MJ/m ² /yr)	Area adjusted total load (in MJ/m ² /yr)
A.3.05	19	7.8	26.800
A.3.06	15	16.7	31.700
A.3.07	14.4	9.5	23.900
A.4.01	10	14.3	24.300
A.4.02	11.8	19.9	31.700
A.4.03	4.4	6.1	10.500
A.4.04	24.2	4	28.200
A.4.05	19.1	7.6	26.700
A.4.06	14.1	17.2	31.300
A.4.07	11.7	9.5	21.200
A.5.01	11.4	18.3	29.700
A.5.02	14.3	31.9	46.200
A.5.03	3.9	6.1	10.000
A.5.04	27.6	6.5	34.100
A.5.05	23.9	10.5	34.400
A.5.06	13.7	18.9	32.600
A.5.07	11.8	8.7	20.500
A.6.01	12.4	28.2	40.600
A.6.02	3.7	7.2	10.900
A.6.03	21.8	9.8	31.600
A.6.04	30	26.1	56.100
A.6.05	12.8	13.8	26.600
A.6.06	12.6	9.5	22.100
A.7.01	22.9	41.5	64.400
A.7.02	12.2	16.5	28.700
A.7.03	22.3	17.6	39.900
A.7.04	37	39.7	76.700
A.7.05	25.6	38.5	64.100
A.7.06	28.6	16.9	45.500
A.G.01	14.7	11.7	26.400
A.G.02	14.6	12.2	26.800

	Thermal loads		
Dwelling no.	Area adjusted heating load (in MJ/m ² /yr)	Area adjusted cooling load (in MJ/m ² /yr)	Area adjusted total load (in MJ/m ² /yr)
A.G.03	3	7	10.000
A.G.04	9.5	4.7	14.200
A.G.05	37	3.8	40.800
A.G.06	9.8	7.2	17.000
A.G.07	46.7	5.7	52.400
All other dwellings	27.6	13.6	41.200

(c) Common areas and central systems/facilities

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

Common area	Showerheads rating	Toilets rating	Taps rating	Clothes washers rating
All common areas	no common facility	no common facility	no common facility	no common laundry facility

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

	Common area ventilation system		Common area lighting		
Common area	Ventilation system type	Ventilation efficiency measure	Primary type of artificial lighting	Lighting efficiency measure	Lighting control system/ BMS
Lift bank (No. 1)	-	-	light-emitting diode	connected to lift call button	no
Lift bank (No. 2)	-	-	light-emitting diode	connected to lift call button	no
Common Room A	air conditioning system	time clock or BMS controlled	light-emitting diode	motion sensors	no
Ground floor lobby	ventilation supply only	time clock or BMS controlled	light-emitting diode	time clock and motion sensors	no
GF Internal hallway A	no mechanical ventilation	-	light-emitting diode	time clock and motion sensors	no
L01 to L06 Hallway / Corridor - A	no mechanical ventilation	-	light-emitting diode	time clock and motion sensors	no

Central energy systems	Type	Specification
Lift bank (No. 2)	gearless traction with V V V F motor	Number of levels with apartments served by a lift: 8 number of levels from the bottom of the lift shaft to the top of the lift shaft: 9 number of lifts: 2 lift load capacity: <1001 kg

2. Commitments for Residential flat buildings - Tower B

(a) Buildings

(i) Materials	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) 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 "Floor types", "External wall types", "Internal wall types", "Ceiling and roof types", "Frames" and "Glazing" tables below.			✓
(b) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all specifications included in the tables below.		✓	
(c) The applicant must construct the floors, walls, roof, ceiling and roof, windows, glazed doors and skylights of the development in accordance with the specifications listed in the tables below. In the case of glazing, a 5% variance from the area values listed in the "Frames" and "Glazing" tables is permitted.	✓	✓	✓
(d) The applicant must show through receipts that the materials purchased for construction are consistent with the specifications listed in the below tables.			✓

Floor types

Floor type	Area (m2)	Insulation	Low emissions option
suspended floor above garage, frame: suspended concrete slab	431.96	fibreglass batts or roll	-
floors above habitable rooms, frame: suspended concrete slab	3912.38	-	-

External wall types

External wall type	Construction type	Area (m2)	Low emissions option	Insulation
External wall type 1	framed (metal clad), frame: light steel frame	2006	-	fibreglass batts or roll

Internal wall types

Internal wall type	Construction type	Area (m2)	Insulation
Internal wall type 1	plasterboard, frame: light steel frame	1245.2	-
Internal wall type 2	75 mm AAC panel, frame: light steel frame	2483.9	fibreglass batts or roll

Reinforcement concrete frames/columns		
Building has reinforced concrete frame/columns?	Volume (m³)	Low emissions option
-	-	-

Ceiling and roof types			
Ceiling and roof type	Area (m²)	Roof Insulation	Ceiling Insulation
concrete - plasterboard internal, frame: no frame	3291.3	-	-
concrete - plasterboard internal, frame: no frame	632.4	-	fibreglass batts or roll

Glazing types			Frame types				
Single glazing (m²)	Double glazing (m²)	Triple glazing (m²)	Aluminium frames (m²)	Timber frames (m²)	uPVC frames (m²)	Steel frames (m²)	Composite frames (m²)
-	1181.3	-	1181.3	-	-	-	-

(b) Dwellings

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

	Fixtures					Appliances		Individual pool				Individual spa		
Dwelling no.	All shower-heads	All toilet flushing systems	All kitchen taps	All bathroom taps	HW recirculation or diversion	All clothes washers	All dish-washers	Volume (max volume)	Pool cover	Pool location	Pool shaded	Volume (max volume)	Spa cover	Spa shaded
All dwellings	4 star (> 6 but ≤ 7.5 L/min)	4 star	4 star	5 star	-	4 star	5 star	-	-	-	-	-	-	-

	Alternative water source							
Dwelling no.	Alternative water supply systems	Size	Configuration	Landscape connection	Toilet connection (s)	Laundry connection	Pool top-up	Spa top-up
All dwellings	No alternative water supply	-	-	-	-	-	-	-

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must install each hot water system specified for the dwelling in the table below, so that the dwelling's hot water is supplied by that system. If the table specifies a central hot water system for the dwelling, then the applicant must connect that central system to the dwelling, so that the dwelling's hot water is supplied by that central system.	✓	✓	✓
(c) The applicant must install, in each bathroom, kitchen and laundry of the dwelling, the ventilation system specified for that room in the table below. Each such ventilation system must have the operation control specified for it in the table.		✓	✓
(d) The applicant must install the cooling and heating system/s specified for the dwelling under the "Living areas" and "Bedroom areas" headings of the "Cooling" and "Heating" columns in the table below, in/for at least 1 living/bedroom area of the dwelling. If no cooling or heating system is specified in the table for "Living areas" or "Bedroom areas", then no systems may be installed in any such areas. If the term "zoned" is specified beside an air conditioning system, then the system must provide for day/night zoning between living areas and bedrooms.		✓	✓
(e) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Artificial lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that the "primary type of artificial lighting" for each such room in the dwelling is fluorescent lighting or light emitting diode (LED) lighting. If the term "dedicated" is specified for a particular room or area, then the light fittings in that room or area must only be capable of being used for fluorescent lighting or light emitting diode (LED) lighting.		✓	✓
(f) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Natural lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that each such room or area is fitted with a window and/or skylight.	✓	✓	✓
(g) This commitment applies if the applicant installs a water heating system for the dwelling's pool or spa. The applicant must: (aa) install the system specified for the pool in the "Individual Pool" column of the table below (or alternatively must not install any system for the pool). If specified, the applicant must install a timer, to control the pool's pump; and (bb) install the system specified for the spa in the "Individual Spa" column of the table below (or alternatively must not install any system for the spa). If specified, the applicant must install a timer to control the spa's pump.		✓ ✓	
(h) The applicant must install in the dwelling: (aa) the kitchen cook-top and oven specified for that dwelling in the "Appliances & other efficiency measures" column of the table below;		✓	

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(bb) each appliance for which a rating is specified for that dwelling in the "Appliances & other efficiency measures" column of the table, and ensure that the appliance has that minimum rating; and		✓	✓
(cc) any clothes drying line specified for the dwelling in the "Appliances & other efficiency measures" column of the table.		✓	
(i) If specified in the table, the applicant must carry out the development so that each refrigerator space in the dwelling is "well ventilated".		✓	

	Hot water	Bathroom ventilation system		Kitchen ventilation system		Laundry ventilation system	
Dwelling no.	Hot water system	Each bathroom	Operation control	Each kitchen	Operation control	Each laundry	Operation control
All dwellings	electric instantaneous	individual fan, ducted to façade	interlocked to light with timer off	individual fan, ducted to façade	interlocked to light	individual fan, ducted to façade	interlocked to light

	Cooling		Heating		Natural lighting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bathrooms or toilets	Main kitchen
B.1.11, B.2.11, B.3.07, B.4.07, B.5.07, B.6.06, B.7.06, B.G.10	1-phase airconditioning - ducted / 3.5 star (average zone)	no individual system	1-phase airconditioning - ducted / 3 star (average zone)	no individual system	0	yes
All other dwellings	1-phase airconditioning - ducted / 3.5 star (average zone)	no individual system	1-phase airconditioning - ducted / 3 star (average zone)	no individual system	0	no

	Individual pool			Individual spa		Appliances other efficiency measures				
Dwelling no.	Pool heating system	Pool Pump	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Dishwasher	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
B.1.03, B.2.03,	-	-	-	-	-	electric cooktop & electric oven	4.5 star	4.5 star	no	no

	Individual pool			Individual spa		Appliances other efficiency measures				
Dwelling no.	Pool heating system	Pool Pump	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Dishwasher	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
B.6.03, B.7.03										
All other dwellings	-	-	-	-	-	electric cooktop & electric oven	4.5 star	4.5 star	yes	no

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

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

	Thermal loads		
Dwelling no.	Area adjusted heating load (in MJ/m²/yr)	Area adjusted cooling load (in MJ/m²/yr)	Area adjusted total load (in MJ/m²/yr)
B.1.01	7	21.5	28.500
B.1.02	4.6	8.7	13.300
B.1.03	0.2	7.1	7.300
B.1.04	0.1	24.4	24.500
B.1.05	11.8	5.5	17.300
B.1.06	27	3	30.000
B.1.07	3.9	12	15.900
B.1.08	22.3	5.7	28.000
B.1.09	7.4	4.2	11.600
B.1.10	3.5	5.8	9.300
B.1.11	7.4	6.7	14.100
B.2.01	7.3	20.9	28.200
B.2.02	4.7	8.5	13.200
B.2.03	6.5	10	16.500
B.2.04	4.1	33	37.100
B.2.05	28.2	9.5	37.700
B.2.06	43.7	8.1	51.800
B.2.07	5.3	9.2	14.500
B.2.08	22.1	6.8	28.900
B.2.09	7.7	4	11.700
B.2.10	3.7	5.9	9.600
B.2.11	7.7	5.4	13.100
B.3.01	6.5	21	27.500
B.3.02	10.2	17.3	27.500
B.3.03	6.4	6.6	13.000
B.3.04	24.4	6.9	31.300

	Thermal loads		
Dwelling no.	Area adjusted heating load (in MJ/m ² /yr)	Area adjusted cooling load (in MJ/m ² /yr)	Area adjusted total load (in MJ/m ² /yr)
B.3.05	6.2	4.3	10.500
B.3.06	2.7	7	9.700
B.3.07	5.8	7.3	13.100
B.4.01	6.7	20.4	27.100
B.4.02	10.1	18.9	29.000
B.4.03	6.6	6.6	13.200
B.4.04	24.2	6.2	30.400
B.4.05	6.3	4.6	10.900
B.4.06	2.7	7.2	9.900
B.4.07	6	7	13.000
B.5.01	8.8	24.3	33.100
B.5.02	12.3	23	35.300
B.5.03	6.7	7.3	14.000
B.5.04	27.8	10.3	38.100
B.5.05	11.1	6.8	17.900
B.5.06	3.4	9.4	12.800
B.5.07	6.1	7	13.100
B.6.01	12.1	27.6	39.700
B.6.02	7.3	14.6	21.900
B.6.03	23.2	16.1	39.300
B.6.04	17.7	16.5	34.200
B.6.05	5.7	8.9	14.600
B.6.06	6.2	6.8	13.000
B.7.01	21.7	37.9	59.600
B.7.02	20.9	35.5	56.400
B.7.03	37.9	30.1	68.000
B.7.04	28	29.2	57.200
B.7.05	16.3	19.3	35.600
B.7.06	18.3	13.5	31.800
B.B.01	14	5.4	19.400
B.B.02	14.4	3.1	17.500

	Thermal loads		
Dwelling no.	Area adjusted heating load (in MJ/m ² /yr)	Area adjusted cooling load (in MJ/m ² /yr)	Area adjusted total load (in MJ/m ² /yr)
B.G.01	14.3	21.4	35.700
B.G.02	10.9	9.1	20.000
B.G.03	2.9	7.5	10.400
B.G.04	6.6	4.7	11.300
B.G.05	44.5	3.3	47.800
B.G.06	11.8	13.2	25.000
B.G.07	39.7	6.5	46.200
B.G.08	6.7	4.4	11.100
B.G.09	2.3	8.7	11.000
All other dwellings	18.6	5.4	24.000

(c) Common areas and central systems/facilities

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

Common area	Showerheads rating	Toilets rating	Taps rating	Clothes washers rating
All common areas	no common facility	no common facility	no common facility	no common laundry facility

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

	Common area ventilation system		Common area lighting		
Common area	Ventilation system type	Ventilation efficiency measure	Primary type of artificial lighting	Lighting efficiency measure	Lighting control system/ BMS
Common Room B	air conditioning system	time clock or BMS controlled	light-emitting diode	motion sensors	no
L01 to L06 Hallway / Corridor - B	no mechanical ventilation	-	light-emitting diode	time clock and motion sensors	no
GF Internal hallway B	no mechanical ventilation	-	light-emitting diode	zoned switching with motion sensor	no

Central energy systems	Type	Specification
Lift bank (No. 1)	gearless traction with V V V F motor	Number of levels with apartments served by a lift: 8 number of levels from the bottom of the lift shaft to the top of the lift shaft: 9 number of lifts: 2 lift load capacity: <1001 kg

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

(a) Buildings 'Other'

(i) Materials	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) 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 "Floor types", "External wall types", "Internal wall types", "Ceiling and roof types", "Frames" and "Glazing" tables below.			✓
(b) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all specifications included in the tables below.		✓	
(c) The applicant must construct the floors, walls, roof, ceiling and roof, windows, glazed doors and skylights of the development in accordance with the specifications listed in the tables below. In the case of glazing, a 5% variance from the area values listed in the "Frames" and "Glazing" tables is permitted.	✓	✓	✓
(d) The applicant must show through receipts that the materials purchased for construction are consistent with the specifications listed in the below tables.			✓

Floor types

Floor type	Area (m2)	Insulation	Low emissions option
concrete slab on ground, frame:	2322.8	-	none

External wall types

External wall type	Construction type	Area (m2)	Low emissions option	Insulation
External wall type 1	concrete block/ plasterboard,frame:light steel frame	381.3	-	-
External wall type 2	framed (metal clad),frame:light steel frame	138	-	-

Internal wall types

Internal wall type	Construction type	Area (m2)	Insulation
Internal wall type 1	75 mm AAC panel, frame:light steel frame	33.1	-

Reinforcement concrete frames/columns		
Building has reinforced concrete frame/columns?	Volume (m³)	Low emissions option
-	-	-

Ceiling and roof types			
Ceiling and roof type	Area (m²)	Roof Insulation	Ceiling Insulation
concrete - bare internal, frame: no frame	2179	-	-

Glazing types			Frame types				
Single glazing (m²)	Double glazing (m²)	Triple glazing (m²)	Aluminium frames (m²)	Timber frames (m²)	uPVC frames (m²)	Steel frames (m²)	Composite frames (m²)
0	0	0	0	0	0	0	0

(b) Common areas and central systems/facilities

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

Common area	Showerheads rating	Toilets rating	Taps rating	Clothes washers rating
All common areas	no common facility	no common facility	no common facility	no common laundry facility

Central systems	Size	Configuration	Connection (to allow for...)
Central water tank - rainwater or stormwater (No. 1)	5000	To collect run-off from at least: - 1860 square metres of roof area of buildings in the development - 0.00 square metres of impervious area in the development - 0.00 square metres of garden/lawn area in the development - 0.00 square metres of planter box area in the development (excluding, in each case, any area which drains to, or supplies, any other alternative water supply system).	- irrigation of 1944.4 square metres of common landscaped area on the site - car washing in 1 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.		✓	✓

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

Common area	Common area ventilation system		Common area lighting		
	Ventilation system type	Ventilation efficiency measure	Primary type of artificial lighting	Lighting efficiency measure	Lighting control system/ BMS
Undercover Carpark	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	light-emitting diode	motion sensors	no
Main Switch Room	ventilation supply only	thermostatically controlled	light-emitting diode	manual on / manual off	no
B01 Waste room	ventilation exhaust only	-	light-emitting diode	motion sensors	no
B01 Bulky Waste Room	ventilation exhaust only	-	light-emitting diode	motion sensors	no
Combined bin holding	ventilation exhaust only	-	light-emitting diode	motion sensors	no
B01 Waste room 2	ventilation exhaust only	-	light-emitting diode	motion sensors	no
Main Comms room	air conditioning system	thermostatically controlled	light-emitting diode	motion sensors	no
Combined pump room	ventilation exhaust only	interlocked to light	light-emitting diode	manual on / manual off	no
Cold water pump room	ventilation exhaust only	interlocked to light	light-emitting diode	manual on / manual off	no
Tenant Storage	ventilation exhaust only	time clock or BMS controlled	light-emitting diode	motion sensors	no
Bike storage	ventilation exhaust only	time clock or BMS controlled	light-emitting diode	motion sensors	no
Tenant Management	air conditioning system	time clock or BMS controlled	light-emitting diode	manual on / manual off	no

Central energy systems	Type	Specification
Alternative energy supply	Photovoltaic system	Rated electrical output (min): 33 peak kW
Other	-	-

Notes

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

Legend

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



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