

3-5 Gilba Road, Pendle Hill NSW 2145
NCC (2022) Section- J DTS Report



A: S1505, 799B Pacific Highway, Chatswood NSW 2067

E: ezhang@greenbuildingenergy.com.au

P: 0425 619 806

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SECTION 1 - BASIS OF ASSESSMENT

1.1 Location and Description

The building development, the subject of this report, is located at 3-5 Gilba Road, Pendle Hill NSW 2145

1.2 Purpose

The purpose of this report is to review and assess the proposed 3-5 Gilba Road, Pendle Hill NSW 2145, against the compliance requirements of Section-J (Energy Efficiency) of the National Construction Code 2022 (NCC 2022).

The objective of Section-J of NCC 2022 is to reduce greenhouse gas emissions by efficiently using energy in buildings. To achieve this objective, buildings must meet or exceed the minimum performance requirements outlined in Section-J. This report will specifically focus on the building envelope requirements of the NCC 2022 Section-J, Parts J1 to J5. (It is assumed that the relevant members of the design team will ensure compliance with the other component parts of Section-J6 to J9 and hence this report does not include details of these sub-sections).

1.3 SCOPE

Within the NCC 2022, it is a requirement for 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”. This report is based on the Deemed-to-Satisfy Provisions of Section J of the National Construction Code Series Volume 1 – Building Code of Australia, 2022 Edition incorporating the State variations where applicable. Compliance with the DTS requirements of Section-J is necessary, not only to ensure suitable energy performance characteristics for statutory compliance, but also because any departure from a DTS approach would bring with it the need to demonstrate compliance with the intent of Section-J, via alternative verification methods.

1.4 Limitations

This report does not include nor imply any detailed assessment for design, compliance or upgrading for –

- (a) Sections B, C, D, E, F, G, H and I of the NCC;
- (b) The structural adequacy or design of the building;
- (c) The inherent derived fire-resistance ratings of any proposed structural elements of the building (unless specifically referred to); and
- (d) The design basis and/or operating capabilities of any proposed electrical,

mechanical or hydraulic fire protection services.

It is assumed that the relevant design professionals will ensure compliance with the relevant section of the code for their own disciplines.

This report does not include, or imply compliance with:

- (a) The National Construction Code - Plumbing Code of Australia Volume 3
- (b) The Disability Discrimination Act;
- (c) The Premises Standard;
- (d) Demolition Standards not referred to by the NCC;
- (e) Occupational Health and Safety Act;
- (f) Requirements of other Regulatory Authorities including, but not limited to, Telstra, Sydney Water, Electricity Supply Authority, Workover, RTA, Council and the like; And
- (g) Conditions of Development Consent

1.6 Referenced Documents

The following documents and design plans have been referenced in compilation of this report:

National Construction Code Series, Volume 1, Building Code of Australia 2022,

Class 2 to Class 9 buildings.

Architectural Plans provided by “WEN Architects” and received at 13/12/2024.

1.6 Building Description

For the purposed of the NCC the development may be described as follows.

a. Classification (Clause A3.2)

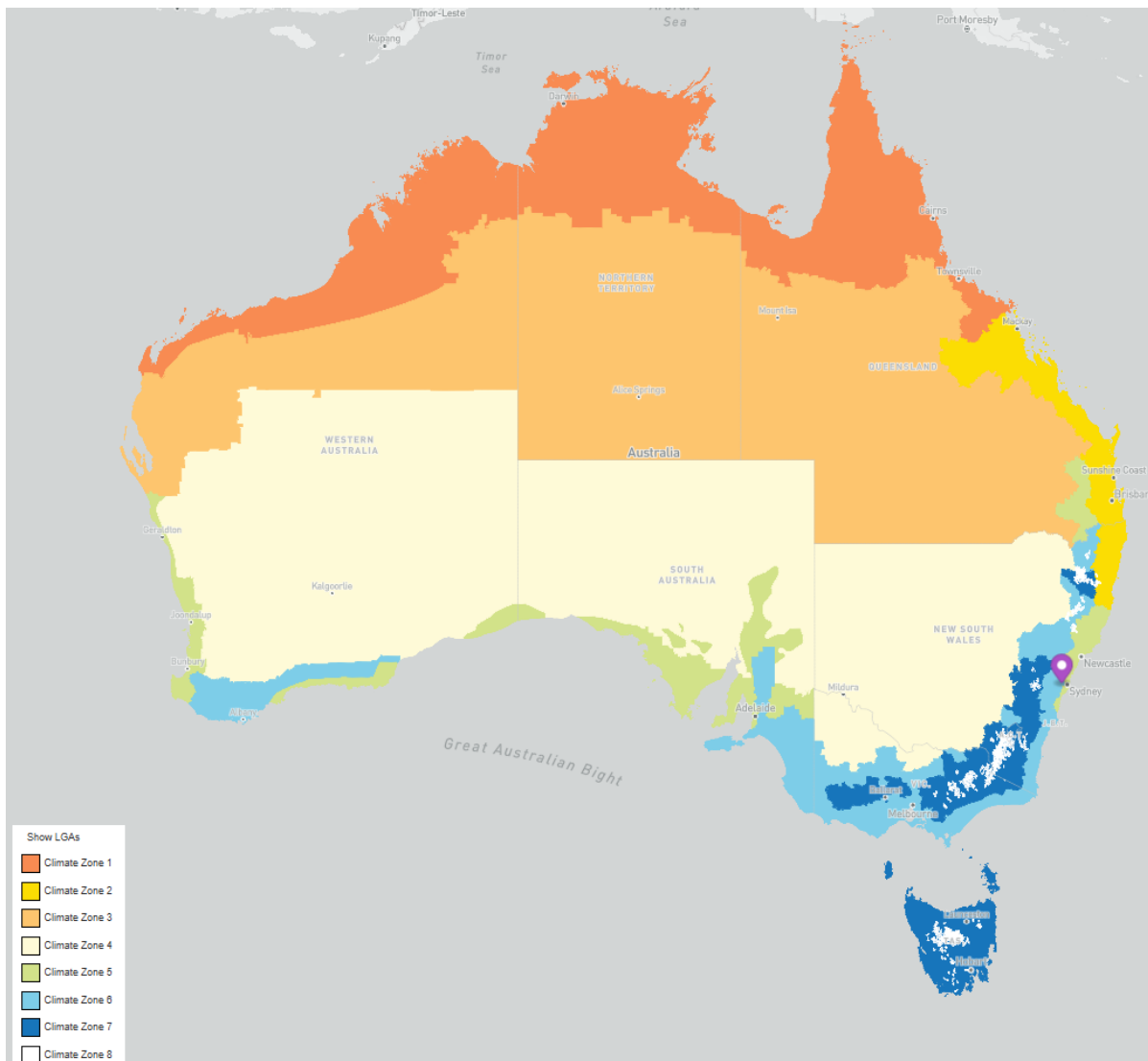
The building has been classified as follows:

Classification	Description
Class 3, Class 6 and Class 9b	Mixed-use development -Co-living accommodation, common areas and childcare facilities

b. Climate Zone (Clause A1.1)

The climate zone is defined by the NCC 2022 as an area for specific locations, having energy efficiency provisions based upon a range of similar climatic characteristics.

According to Figure A and Table 3 of the Definition schedule of NCC 2022, this project is in Climate Zone 6.



SECTION 2 – MINIMUM PERFORMANCE DTS REQUIREMENTS

The following section J summary must be incorporated into the construction certificate documentation.

Refer to the relevant section of the report for more detail.

2.1 Summary of J4 Building Fabric

A DTS solution is proposed for this project. Compliance requirements for parts J4 and J5 have been addressed in this report. Compliance with Parts J6, J7, J8 and J9 will need to be addressed by other consultants as outlined in Section 1.

All insulation that is part of the envelope will be installed in accordance with Clause J4D3, the Manufacturer's Specifications and AS/NZS 4859.1.

The required Total R-Value and System U-Value calculations have been calculated in accordance with Part J4D3 (5).

A roof and/or ceiling that is part of the envelope must achieve the Total R-Value greater than or equal to R3.2 in a downwards direction of heat flow as specified in Part J4D4 (1) & (2)

Walls and glazing: J4D6 see page 12.

Floors: J4D7 (a) – A floor that is part of the envelope must achieve the minimum Total R-value R2.0 in a downwards direction or satisfy one of the options as specified in Table J4D7. A slab-on-ground that does not have an in-slab heating or cooling system is considered to achieve a Total R-value of R2.0 except that specified in Part J4D4 (2). For this project, concrete slab on ground in climate zone 6 is considered to achieve a total R-value of R2.0. For suspended floor above or below a non-conditioned space, R2.0 slab insulation is required.

2.2 J5 Building Sealing

2.3 J6 Air -conditioning and ventilation

2.4 J8 Heated water supply and swimming pool and spa cool plant

2.5 J9 Energy monitoring and on-site distributed energy resources

SECTION 3 - DETAILED REPORT OF PROVISIONS TO COMPLY

PART J1 – Performance Requirements

Part J1 outlines the objectives of Section J of NCC 2022. The objectives are to:

- (a) reduce energy consumption and energy peak demand; and
- (b) reduce greenhouse gas emissions; and
- (c) improve occupant health and amenity.

The above objectives must be satisfied by addressing the performance requirements of J1P1 and J1P4, applicable to the project classification of Class 3.

J1P1 Energy use

A building, other than a sole-occupancy unit of a Class 2 building or a Class 4 part of a building, including its services, must have features that facilitate the efficient use of energy appropriate to —

- (a) the function and use of the building; and
- (b) the level of human comfort required for the building use; and
- (c) solar radiation being—
 - (i) utilised for heating; and
 - (ii) controlled to minimise energy for cooling; and
- (d) the energy source of the services; and
- (e) the sealing of the building envelope against air leakage; and
- (f) for a conditioned space, achieving an hourly regulated energy consumption, averaged over the annual hours of operation, of not more than—
 - (i) for a Class 6 building, 80 kJ/m².hr; and
 - (ii) for a Class 5, 7b, 8 or 9a building other than a ward area, or a Class 9b school, 43 kJ/m².hr; and
 - (iii) for all other building classifications, 15 kJ/m².hr.

J1P4 Renewable energy and electric vehicle charging

A building must have features that facilitate the future installation of on-site renewable energy generation and storage and electric vehicle charging equipment.

Proposed Compliance approach

As per Part A2 of NCC 2022, compliance with the NCC is achieved by complying with —

- (a) the Governing Requirements of the NCC; and
- (b) the Performance Requirements.

Performance Requirements are satisfied by one of the following:

- (a) Performance Solution.
- (b) Deemed-to-Satisfy Solution.
- (c) A combination of (a) and (b).

NOTE 1: For this project, the requirements of J1P1 and J1P4 have been addressed in the current design via a DTS pathway, in accordance with the above guidelines. For the building envelope: DTS requirements are noted in this document. For the renewable energy and electric vehicle charging refer to Electrical services documentation and specifications, in conjunction with the architectural drawings.

PART J2 – Performance Requirements

This Part sets out the application of the Deemed-to-Satisfy Provisions in Parts J3 to J9.

Part J2D1 – Deemed-to-Satisfy Provisions

- (1) Where a Deemed-to-Satisfy Solution is proposed, Performance Requirements J1P1 to J1P4 are satisfied by complying with—
 - (a) J2D2; and
 - (b) J3D2 to J3D15; and
 - (c) J4D2 to J4D7; and
 - (d) J5D2 to J5D8; and
 - (e) J6D2 to J6D13; and
 - (f) J7D2 to J7D9; and
 - (g) J8D2 to J8D4; and
 - (h) J9D2 to J9D5.

Part J2D2 – Application of Section-J

- (1) For a Class 2 to 9 building, other than a sole-occupancy unit of a Class 2 building or a Class 4 part of a building, Performance Requirement J1P1 is satisfied by complying with—
 - (a) Part J4, for the building fabric; and
 - (b) Part J5, for building sealing; and
 - (c) Part J6, for air-conditioning and ventilation; and
 - (d) Part J7, for artificial lighting and power; and
 - (e) Part J8, for heated water supply and swimming pool and spa pool plant; and
 - (f) J9D3, for facilities for energy monitoring.
- (2) J1P2 and J1P3 are applicable only to a sole-occupancy unit of a Class 2 building or a Class 4 part of a building. Not applicable to the current project.

- (3) For a Class 2 to 9 building, Performance Requirement J1P4 is satisfied by complying with J9D4 and J9D5.

PART J3 – Not applicable for this project

PART J4– Building fabric requirements

J4D2 Application - All new parts of the new building envelope need to comply.

The deemed-to-satisfy provisions of this part apply to building elements forming the envelope of a Class 2 to 9 building.

Building Envelope

The building envelope for the purpose of this Section J is described as the external walls, floors and roof of any conditioned space within the proposed Class 3 premises, as well as any internal walls or floors of the premises exposed to an unconditioned space. Please see Appendix C for building envelope insulation mark-up.

J4D3 Thermal Construction General - Builder is to ensure compliance, during construction.

- Insulation must comply with AS/NZS 4859.1.
- Abuts or overlaps adjoining insulation other than at supporting members such as studs, noggins, joists, furring channels where the insulation must be against the member.
- Forms a continuous barrier with ceilings, walls, bulkheads, floors or the like that contribute to the thermal barrier.
- Does not affect the safe or effective operation of a service or fitting.
- Reflective insulation must be installed with the necessary airspace between the reflective side of the insulation and the lining or cladding.
- Reflective insulation must be installed closely against any penetration, door or window opening.
- Each adjoining sheet of roll membrane being overlapped not less than 50mm or taped together.
- Bulk insulation must be installed so that it maintains its position and thickness.
- When selecting insulation caution should be taken to clearly identify the total R-value of the installed roofing and ceiling system or wall system.
- The required Total R-Value and System U-Value calculations have been calculated in accordance with Part J4D3 (5).

J4D4 Roof & Ceiling Construction

DTS requirements

- a) A roof or ceiling must achieve a Total R-Value greater than or equal to—
 - i. in climate zones 1, 2, 3, 4 and 5, R3.7 for a downward direction of heat flow; and
 - ii. in climate zone 6, R3.2 for a downward direction of heat flow; and
 - iii. in climate zone 7, R3.7 for an upward direction of heat flow; and
 - iv. in climate zone 8, R4.8 for an upward direction of heat flow.
- b) In climate zones 1, 2, 3, 4, 5, 6 and 7, the solar absorptance of the upper surface of a roof must be not more than 0.45.

In this Climate Zone 6, a minimum total R-value R3.20 (downwards) is required. Roof and Ceiling constructions documented by WEN Architects have been reviewed, to identify the location and extent of roof and ceiling constructions that need to meet the thermal performance requirement of J4D4 (Refer: Marked-up plans in Appendix-C of this report).

J4D5 Roof lights - Not Applicable

J4D6 Walls and glazing

DTS requirements

- a) The Total System U-Value of wall-glazing construction must not be greater than—
 - (i) for a Class 2 common area, a Class 5, 6, 7, 8 or 9b building or a Class 9a building other than a ward area, U2.0; and
 - (ii) for a Class 3 or 9c building or a Class 9a ward area—
 - A. in climate zones 1, 3, 4, 6 or 7, U1.1; or
 - B. in climate zones 2 or 5, U2.0; or
 - C. in climate zone 8, U0.9.
- b) The Total System U-Value of display glazing must not be greater than U5.8.
- c) The Total System U-Value of wall-glazing construction must be calculated in accordance with Specification 37.
- d) Wall components of a wall-glazing construction must achieve a minimum Total R-Value of—
 - (i) where the wall is less than 80% of the area of the wall-glazing construction, R1.0; or
 - (ii) where the wall is 80% or more of the area of the wall-glazing construction, the value specified in Table J4D6a.

Table J4D6a: Minimum wall Total R-Value - Wall area 80% or more of wall-glazing construction area

<i>Climate zone</i>	<i>Class 2 common area, Class 5, 6, 7, 8 or 9b building or a Class 9a building other than a ward area</i>	<i>Class 3 or 9c building or Class 9a ward area</i>
1	2.4	3.3
2	1.4	1.4
3	1.4	3.3
4	1.4	2.8
5	1.4	1.4
6	1.4	2.8
7	1.4	2.8
8	1.4	3.8

- e) The solar admittance of externally facing wall-glazing construction must not be greater than—
- (i) for a Class 2 common area, a Class 5, 6, 7, 8 or 9b building or a Class 9a building other than a ward area, the values specified in Table J4D6b; and
 - (ii) for a Class 3 or 9c building or a Class 9a ward area, the values specified in Table J4D6c.
- f) The solar admittance of a wall-glazing construction must be calculated in accordance with Specification 37.
- g) The Total system SHGC of display glazing must not be greater than 0.81 divided by the applicable shading factor specified in S37C7.

Table J4D6b: Maximum wall-glazing construction solar admittance - Class 2 common area, Class 5, 6, 7, 8 or 9b building or Class 9a building other than a ward area

<i>Climate zone</i>	<i>Eastern aspect solar admittance</i>	<i>Northern aspect solar admittance</i>	<i>Southern aspect solar admittance</i>	<i>Western aspect solar admittance</i>
1	0.12	0.12	0.12	0.12
2	0.13	0.13	0.13	0.13
3	0.16	0.16	0.16	0.16
4	0.13	0.13	0.13	0.13
5	0.13	0.13	0.13	0.13
6	0.13	0.13	0.13	0.13
7	0.13	0.13	0.13	0.13
8	0.2	0.2	0.42	0.36

Table J4D6c: Maximum wall-glazing construction solar admittance - Class 3 or 9c building or Class 9a ward area

<i>Climate zone</i>	<i>Eastern aspect solar admittance</i>	<i>Northern aspect solar admittance</i>	<i>Southern aspect solar admittance</i>	<i>Western aspect solar admittance</i>
1	0.07	0.07	0.10	0.07
2	0.10	0.10	0.10	0.10
3	0.07	0.07	0.07	0.07
4	0.07	0.07	0.07	0.07
5	0.10	0.10	0.10	0.10
6	0.07	0.07	0.07	0.07

Energy efficiency

<i>Climate zone</i>	<i>Eastern aspect solar admittance</i>	<i>Northern aspect solar admittance</i>	<i>Southern aspect solar admittance</i>	<i>Western aspect solar admittance</i>
7	0.07	0.07	0.08	0.07
8	0.08	0.08	0.08	0.08

Proposed wall and glazing construction

The Total System U-Value of the wall-glazing construction must not be greater than the value specified in Part J4D6 (1) - refer Appendix A – wall glazing calculation

	Mmaximum Total System U-Value	Achieved Total System U-Value
Wall-Glazing Construction	U1.1	U1.09

The calculations used to determine the Total System U-Value of the wall-glazing construction are based on the specified wall construction. Alternative glazing units may be substituted that have similar properties to those specified.

For the glazing elements, the facade contractor must ensure that the total system values (frame + glass) are in accordance with the minimum performance values noted in Appendix-A.

Proposed wall constructions documented by WEN Architects should be in accordance with the DTS requirements. Location and extent of wall insulation is indicated in Appendix-C of this report.

External Wall Construction

Wall components of the wall-glazing construction must achieve the minimum Total R-Value, where applicable, as specified in Table J4D6a.

	Wall Area %	Required Total R-Value	Achieved Total R-Value
External walls	Less than 80%	R1.0	R2.5

J4D7 Floors

DTS requirements

- a) A floor must achieve the Total R-Value specified in Table J4D7.
- b) For the purposes of (a), a slab-on-ground that does not have an in-slab heating or cooling system is considered to achieve a Total R-Value of R2.0, except—
 - (i) in climate zone 8; or
 - (ii) a Class 3, Class 9a ward area or Class 9b building in climate zone 7 that has a floor area to floor perimeter ratio of less than or equal to 2.
- c) A floor must be insulated around the vertical edge of its perimeter with insulation having an R-Value greater than or equal to 1.0 when the floor—

- (iii) is a concrete slab-on-ground in climate zone 8; or
- (iv) has an in-slab or in-screed heating or cooling system, except where used solely in a bathroom, amenity area or the like.

d) Insulation required by (b) for a concrete slab-on-ground must—

(i) be water resistant; and

(ii) be continuous from the adjacent finished ground level—

A. to a depth not less than 300 mm; or

B. for the full depth of the vertical edge of the concrete slab-on-ground.

Table J4D7: Floors – Minimum Total R-Value

Location	Climate zone 1— upwards heat flow	Climate zones 2 and 3 — upwards and downwards heat flow	Climate zones 4, 5, 6 and 7 — downwards heat flow	Climate zone 8 — downwards heat flow
A floor without an in-slab heating or cooling system	2.0	2.0	2.0	3.5
A floor with an in-slab heating or cooling system	3.25	3.25	3.25	4.75

Notes: For the purpose of calculating the Total R-Value of a floor, the sub-floor and soil R-Value must be calculated in accordance with Specification 39 or Section 3.5 of CIBSE Guide A.

PART J5 – Building Sealing

J5D2 Application

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

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

J5D3 Chimneys and Flues

The chimney or flue of an open burning appliance must be provided with a damper or flap that can be closed to seal the chimney or flue.

J5D4 Roof Lights – not applicable

J5D5 Windows and doors

DTS requirements

- a) A door, openable window or the like must be sealed—
 - (i) when forming part of the envelope; or
 - (ii) in climate zones 4, 5, 6, 7 or 8.
- b) The requirements of (a) do not apply to—
 - (i) a window complying with AS 2047; or
 - (ii) a fire door or smoke door; or
 - (iii) a roller shutter door, roller shutter grille or other security door or device installed only for out-of-hours security.
- c) A seal to restrict air infiltration—
 - (i) for the bottom edge of a door, must be a draft protection device; and
 - (ii) for the other edges of a door or the edges of an openable window or other such opening, may be a foam or rubber compression strip, fibrous seal or the like.
- d) An entrance to a building, if leading to a conditioned space must have an airlock, self-closing door, rapid roller door, revolving door or the like, other than—
 - (i) where the conditioned space has a floor area of not more than 50 m²; or
 - (ii) where a café, restaurant, open front shop or the like has—
 - A. a 3 m deep un-conditioned zone between the main entrance, including an open front, and the conditioned space; and
 - B. at all other entrances to the café, restaurant, open front shop or the like, self-closing doors.
- e) A loading dock entrance, if leading to a conditioned space, must be fitted with a rapid roller door or the like.

J5D6 Exhaust fans

All exhaust fans fitted in a conditioned space must have a sealing device such as a self-closing damper or the like, so as to comply with Part J5D6. Mechanical services consultant must include this requirement within the mechanical services specification.

J5D7 Construction of roofs, walls and floors

- a) All roofs, walls, floors and any opening such as window frame, door frame, roof light frame or the like must be constructed to minimize air leakage in accordance with (b)—
 - (i) when forming part of the envelope; or
 - (ii) in climate zones 4, 5, 6, 7 or 8.
- b) Construction required by (a) must be—
 - (i) enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions; or
 - (ii) sealed at junctions and penetrations with—
 - A. close fitting architrave, skirting or cornice; or
 - B. expanding foam, rubber compressible strip, caulking or the like.
- c) The requirements of (a) do not apply to openings, grilles or the like required for smoke hazard management.

J5D8 Evaporative coolers

An evaporative cooler must be fitted with a self-closing damper or the like—

- a) when serving a heated space; or
- b) in climate zones 4, 5, 6, 7

PART J6 - Air-Conditioning and Ventilation Systems

Mechanical services consultant to ensure compliance with part J6 of the NCC 2022 and all subsections associated therein.

PART J7 – Artificial Lighting and Power

J7D3 – Artificial Lighting

The maximum illumination power density must not exceed as specified in Table J7D3a.

Table J7D3a: Maximum illumination power density

Space	Maximum illumination power density (W/m ²)
Auditorium, church and public hall	8
Board room and conference room	5
Carpark - general	2
Carpark - entry zone (first 15 m of travel) during the daytime	11.5
Carpark - entry zone (next 4 m of travel) during the day	2.5
Carpark - entry zone (first 20 m of travel) during night time	2.5
Common rooms, spaces and corridors in a Class 2 building	4.5
Control room, switch room and the like - intermittent monitoring	3
Control room, switch room and the like - constant monitoring	4.5
Corridors	5
Courtroom	4.5
Dormitory of a Class 3 building used for sleeping only	3
Dormitory of a Class 3 building used for sleeping and study	4
Entry lobby from outside the building	9
Health-care - infants' and children's wards and emergency department	4
Health-care - examination room	4.5
Health-care - examination room in intensive care and high dependency ward	6
Health-care - all other <i>patient care areas</i> including wards and corridors	2.5
Kitchen and food preparation area	4
Laboratory - artificially lit to an ambient level of 400 lx or more	6
Library - stack and shelving area	2.5
Library - reading room and general areas	4.5
Lounge area for communal use in a Class 3 or 9c building	4.5
Museum and gallery - circulation, cleaning and service lighting	2.5
Office - artificially lit to an ambient level of 200 lx or more	4.5
Office - artificially lit to an ambient level of less than 200 lx	2.5

Space	Maximum <i>illumination power density</i> (W/m ²)
Plant room where an average of 160 lx vertical illuminance is required on a vertical panel such as in switch rooms	4
Plant rooms with a horizontal illuminance target of 80 lx	2
Restaurant, café, bar, hotel lounge and a space for the serving and consumption of food or drinks	14
Retail space including a museum and gallery whose purpose is the sale of objects	14
<i>School</i> - general purpose learning areas and tutorial rooms	4.5
<i>Sole-occupancy unit</i> of a Class 3 or 9c building	5
Storage	1.5
Service area, cleaner's room and the like	1.5
Toilet, locker room, staff room, rest room and the like	3
Wholesale storage area with a vertical illuminance target of 160 lx	4
Stairways, including <i>fire-isolated stairways</i>	2
Lift cars	3

J7D4 – Interior Artificial Lighting and Power Control

Artificial lighting of a room or space is individually switched in accordance with Part J7D4 (1).

Light fittings must be controlled by a time switch in accordance with Part J7D4 (4).

J7D5 – Interior decorative and Display Lighting – not applicable

J7D6 – Exterior Artificial Lighting

Exterior artificial lighting attached to or directed at the facade of a building, where installed, must be controlled by a daylight sensor or a time switch as detailed in Part J7D6.

J7D8 – Lifts

Lift must-

- Be configured to ensure artificial lighting and ventilation in the car are turned off when it is unused for 15 minutes.
- Achieve minimum energy efficiency requirements when being used and when idle or in standby modes.

J7D9 – Escalators and Moving Walkways – not applicable

Note: Electrical services consultant to provide a design solution compliant to Part J7 of the NCC 2022 and all subsections associated therein with regards to power.

PART J8 – Heated Water Supply

Where applicable, the hydraulic services consultant and the Pool Engineer must provide a design solution compliant to Part J8 of the 2022 NCC.

PART J9 –Energy Monitoring and on-site distributed energy resource

Where applicable, the electrical consultant must provide a design solution compliant to Part J9 of the NCC 2022 contains the requirements of the Deemed-to-Satisfy compliance for monitoring of Energy use and facilitate easy retrofit of renewable energy and electric vehicle charging equipment. As stated by the NCC2022, Part J9 applies to Class 2 to 9 buildings in climate zone 6. Part J9, therefore applies to the This project.

J9D3 – Facilities for energy monitoring

- (1) A building or sole-occupancy unit with a floor area of more than 500 m² must have energy meters configured to record the time-of-use consumption of gas and electricity.
- (2) A building with a floor area of more than 2 500 m² must have energy meters configured to enable individual time-of-use energy data recording, in accordance with (3), of —
 - (d) air-conditioning plant including, where appropriate, heating plant, cooling plant and air handling fans; and
 - (b) artificial lighting; and
 - (c) appliance power, and
 - (d) central hot water supply; and
 - (e) internal transport devices including lifts, escalators and moving walkways where there is more than one serving the building; and
 - (f) on-site renewable energy equipment, and
 - (g) on-site electric vehicle charging equipment; and
 - (h) on-site battery systems; and
 - (i) other ancillary plant.
- (3) Energy meters required by (2) must be interlinked by a communication system that collates the time-of-use energy data to a single interface monitoring system where it can be stored, analysed and reviewed.

J9D4 – Facilities for electric vehicle charging equipment

- (1) Subject to (2), a carpark associated with a Class 2, 3, 5, 6, 7b, 8 or 9 building must be provided with electrical distribution boards dedicated to electric vehicle charging—
 - (a) in accordance with Table J9D4 in each storey of the carpark, and
 - (b) labelled to indicate use for electric vehicle charging equipment.
- (2) Electrical distribution boards dedicated to serving electric vehicle charging in a carpark must—
 - (a) be fitted with a charging control system with the ability to manage and schedule charging of electric vehicles in response to total building demand; and
 - (b) when associated with a Class 2 building, 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; and

- (c) when associated with a Class 5 to 9 building, have capacity for each circuit to support an electric vehicle charger able to deliver a minimum of 12 kWh from 9:00 am to 5:00 pm daily; and
- (d) when associated with a Class 3 building, have capacity for each circuit to support an electric vehicle charger able to deliver a minimum of 48 kWh from 11:00 pm to 7:00 am daily; and
- (e) be sized to support the future installation of a 7 kW (32 A) type 2 electric vehicle charger in—
 - (i) 100% of the car parking spaces associated with a Class 2 building; or
 - (ii) 10% of car parking spaces associated with a Class 5 or 6 building; or
 - (iii) 20% of car parking spaces associated with a Class 3, 7b, 8 or 9 building; and
- (f) 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, and
- (h) be labelled to indicate the use of the space required by (f) is for the future installation of metering equipment.

Table J9D4: Electric vehicle distribution board requirement for each storey of a carpark

Carpark spaces per storey for electric vehicles	Electrical distribution boards for electric vehicle charging per storey
0 - 9	0
10 - 24	1
25 - 48	2
49 - 72	3
73 - 96	4
97 - 120	5
121 - 144	6
145 - 168	7

Table Notes

Where there are more than 168 *carpark* spaces per storey, one additional distribution board must be provided for each additional 24 spaces or part thereof.

J9D5 – Facilities for solar photovoltaic and battery system

- (1) The main electrical switchboard of a building must—
 - (a) contain at least two empty three-phase circuit breaker slots and four DIN rail spaces labelled to indicate the use of each space for—
 - (i) a solar photovoltaic system; and
 - (ii) a battery system; and
 - (b) be sized to accommodate the installation of solar photovoltaic panels producing their maximum electrical output on at least 20% of the building roof area.
- (2) At least 20% of the roof area of a building must be left clear for the installation of solar photovoltaic panels, except for buildings—
 - (a) with installed solar photovoltaic panels on
 - (i) at least 20% of the roof area; or
 - (ii) an equivalent generation capacity elsewhere on-site; or
 - (b) where 100% of the roof area is shaded for more than 70% of daylight hours; or

(c) with a roof area of not more than 55 m²; or

(d) where more than 50% of the roof area is used as a terrace, carpark, roof garden, roof light or the like.

The facilities for energy monitoring, electric vehicle charging equipment, solar photovoltaic and battery System will be design and calculate by the relevant services engineers.

Limitations

- (1) The requirements of J9D5(1)(a)i) and (b) do not apply to a building with solar photovoltaic panels installed on at least 20% of the roof area.
- (2) The requirements of J9D5(1)(a)ii) and (b) do not apply to a building with battery systems installed.

SECTION 4 – APPENDIX

Appendix A- Glazing Calculators

The calculations for the proposed external glazing are summarized in the following glazing calculators. It should be noted that the project target is to achieve the minimum compliance requirements. All building levels are included in this assessment.

Building name and description					Classification		Climate Zone		
3-5 Gilba Road, Pendle Hill NSW 2145					3. 9c or 9a ward		6		
Calculated Area-Weighted U-Value				1.09	Calculated Representative Air-Conditioning Energy Value				172.5
Allowable Area-Weighted U-Value				1.10	Allowable Representative Air-Conditioning Energy Value				174.6
Building total U-Value allowance met				100%	Building total SHGC allowance met				99%
Check Values		Wall Element Requirements		Met	Display Glazing Element Requirements		-		
Not Visible									

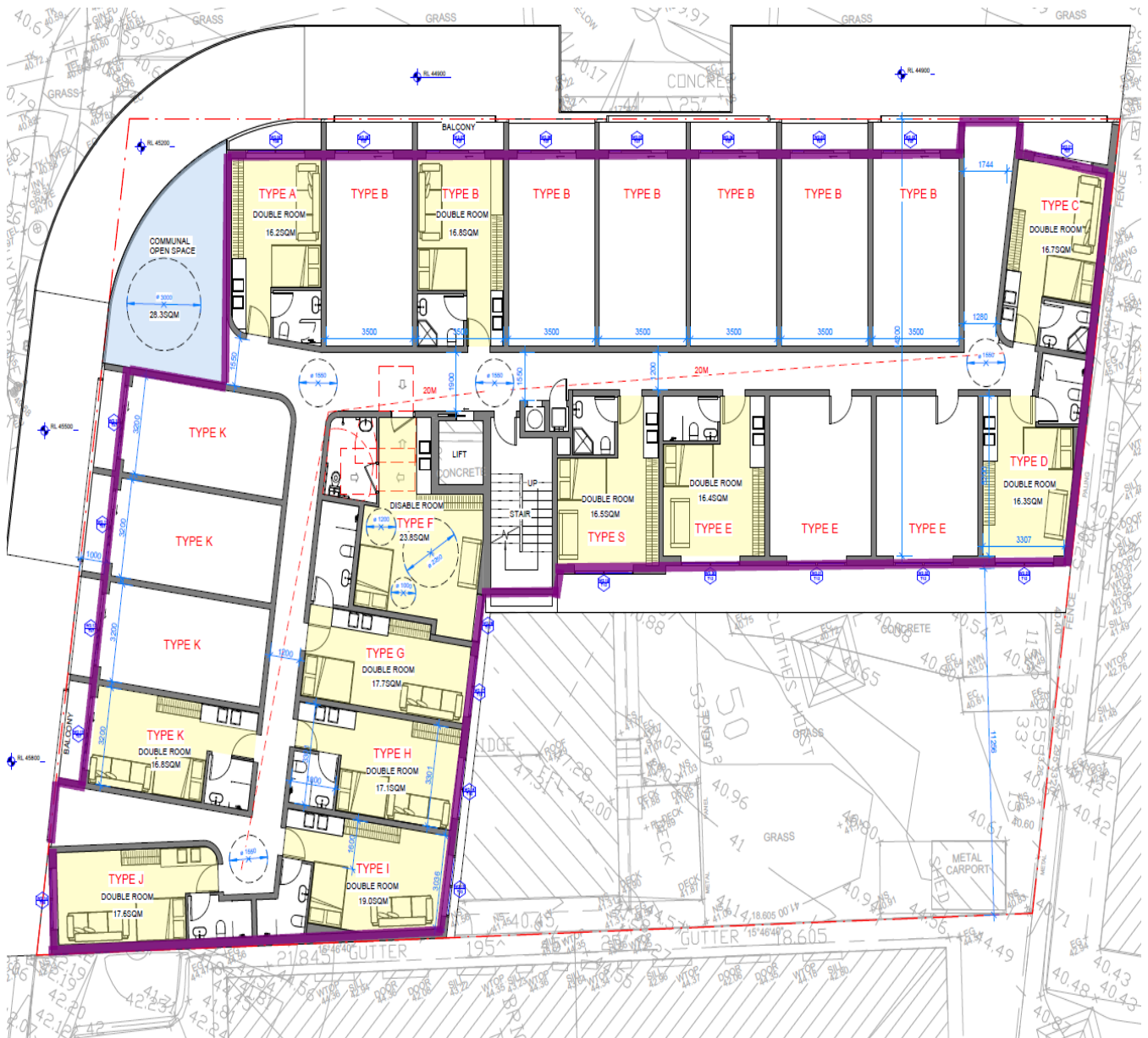
Use of this calculator does not guarantee compliance with the NCC. The disclaimer and a version update check are available at the bottom of the page.

Element Description				U-Value		SHGC and Shading					
ID	Description (optional)	Element Type	Facing Sector	Area (m ²)	U-Value	U-Value Element share of allowance used	SHGC	Glazing Height (m)	Shading Height (m)	Shading Projection (m)	SHGC Element share of allowance used
1	North	Wall	North	421.46	0.40	6% of building total					Not counted
2	W2.15-18	Glazing	North	20.41	4.00	3% of building total	0.4	2.7	3.05	1	6% of building total
3	W3.15-18	Glazing	North	20.41	4.00	3% of building total	0.4	2.7	3.05	1	6% of building total
4	W4.12-15	Glazing	North	20.41	4.00	3% of building total	0.4	2.7	3.05	1	6% of building total
5	W5.09-12 & W5.01	Glazing	North	47.68	3.23	5% of building total	0.28	2.7	3.05	1.2	10% of building total
6	South	Wall	South	458.95	0.40	6% of building total					Not counted
7	W2.10	Glazing	South	6.48	4.20	1% of building total	0.4	2.7	3.05	1	1% of building total
8	W2.11-14	Glazing	South	22.44	4.20	3% of building total	0.4	2.7	3.05	1	5% of building total
9	W3.10-14	Glazing	South	31.32	4.20	5% of building total	0.4	2.7	3.05	1	7% of building total
10	W4.08-11	Glazing	South	43.74	4.00	6% of building total	0.4	2.7	3.05	1	9% of building total
11	W5.05-08	Glazing	South	36.45	4.20	5% of building total	0.4	2.7	3.05	1	8% of building total
12	East	Wall	East	612.00	0.40	8% of building total					Not counted
13	W2.19	Glazing	East	6.48	4.00	1% of building total	0.4	2.7	3.05	1	0% of building total
14	W2.20-23	Glazing	East	25.92	3.80	3% of building total	0.4	2.7	3.05	1	0% of building total
15	W3.19-23	Glazing	East	32.40	3.80	4% of building total	0.4	2.7	3.05	1	0% of building total
16	W4.16-20	Glazing	East	32.40	3.80	4% of building total	0.4	2.7	3.05	1	0% of building total
17	West	Wall	West	596.78	0.40	8% of building total					Not counted
18	W2.01	Glazing	West	6.48	3.30	1% of building total	0.32	2.7	3.05	1	1% of building total
19	W2.02	Glazing	West	6.48	3.30	1% of building total	0.32	2.7	3.05	1	1% of building total
20	W2.03-09	Glazing	West	43.92	3.23	5% of building total	0.32	2.7	3.05	1	10% of building total
21	W3.01-09	Glazing	West	56.88	3.23	6% of building total	0.28	2.7	3.05	1	11% of building total
22	W4.01-06	Glazing	West	49.95	3.23	6% of building total	0.28	2.7	3.05	3	6% of building total
23	W5.02-03	Glazing	West	57.78	3.23	6% of building total	0.28	2.7	3.05	1.2	11% of building total
24						Not counted					Not counted
25						Not counted					Not counted
26						Not counted					Not counted

Appendix B – Solar Admittance**Example: East wall**

East			width (m)	High(m)	Area (m2)	SHGC	Sw1	SA
Gross Wall Area					612.00			
Doors	1		0.90	2.40	2.16			
					0.00			
					0.00			
Net Wall Area					609.84			
Windows	w2.19	1	2.40	2.70	6.48	0.4	0.95	0.004038
	w2.20	1	2.40	2.70	6.48	0.4	0.95	0.004038
	w2.21	1	2.40	2.70	6.48	0.4	0.95	0.004038
	w2.22	1	2.40	2.70	6.48	0.4	0.95	0.004038
	w2.23	1	2.40	2.70	6.48	0.4	0.95	0.004038
	w3.19	1	2.40	2.70	6.48	0.4	0.95	0.004038
	w3.20	1	2.40	2.70	6.48	0.4	0.95	0.004038
	w3.21	1	2.40	2.70	6.48	0.4	0.95	0.004038
	w3.22	1	2.40	2.70	6.48	0.4	0.95	0.004038
	w3.23	1	2.40	2.70	6.48	0.4	0.95	0.004038
	w4.16	1	2.40	2.70	6.48	0.4	0.95	0.004038
	w4.17	1	2.40	2.70	6.48	0.4	0.95	0.004038
	w4.18	1	2.40	2.70	6.48	0.4	0.95	0.004038
	w4.19	1	2.40	2.70	6.48	0.4	0.95	0.004038
	w4.20	1	2.40	2.70	6.48	0.4	0.95	0.004038
Window total area					97.20			0.06
Wall Area less Glazing					512.64			
Wall U-Value					0.40	84.06% 15.94%		
Glazing U-Value					3.8			
Wall Total R-Value					2.5			
Wall Total U-Value					0.40			
Area Average U-Value					0.9			

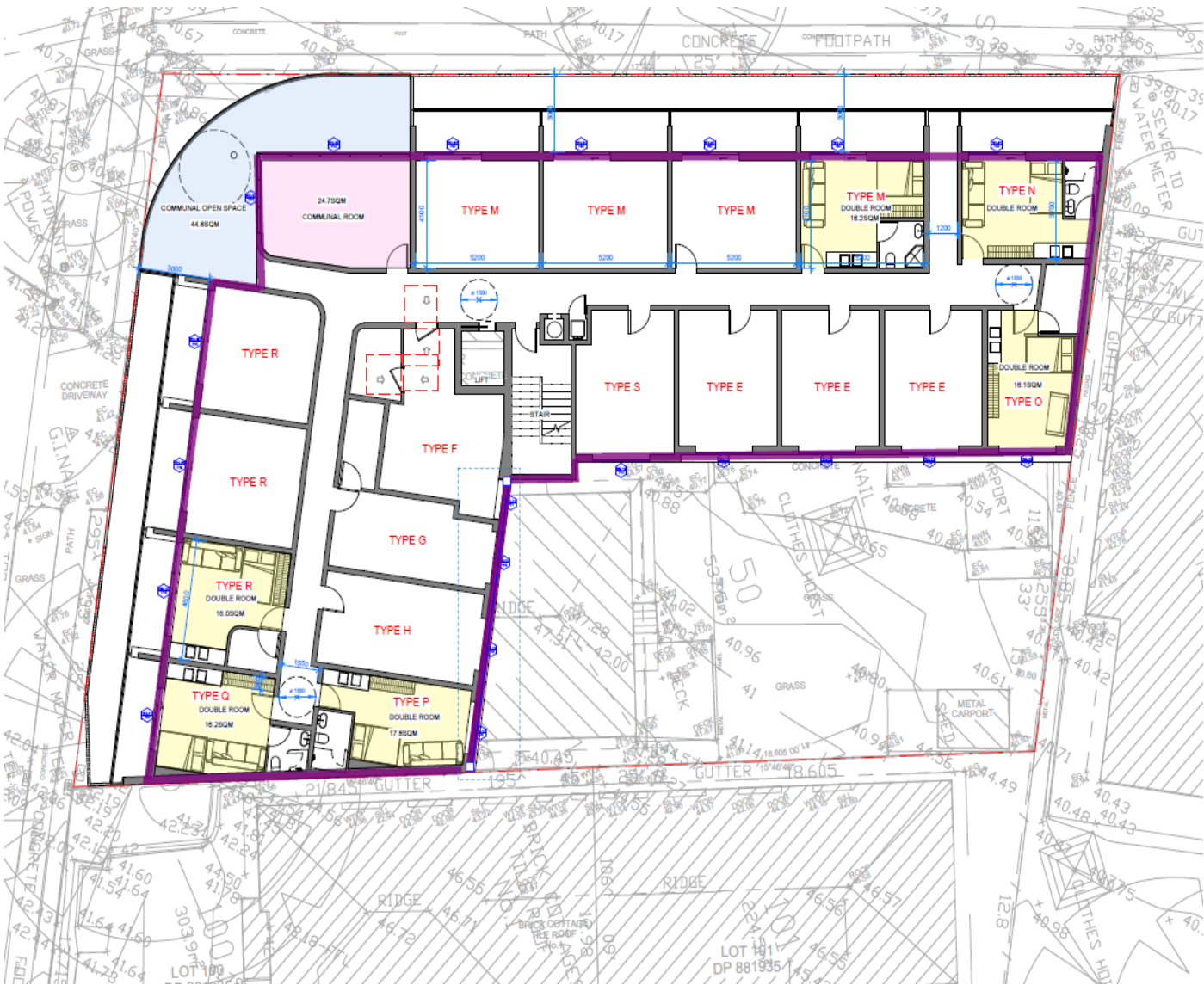
Total solar admittance of East facing wall $SA = 0.06 < \text{Maximum wall-glazing solar admittance}$
 $SA = 0.07$. ok



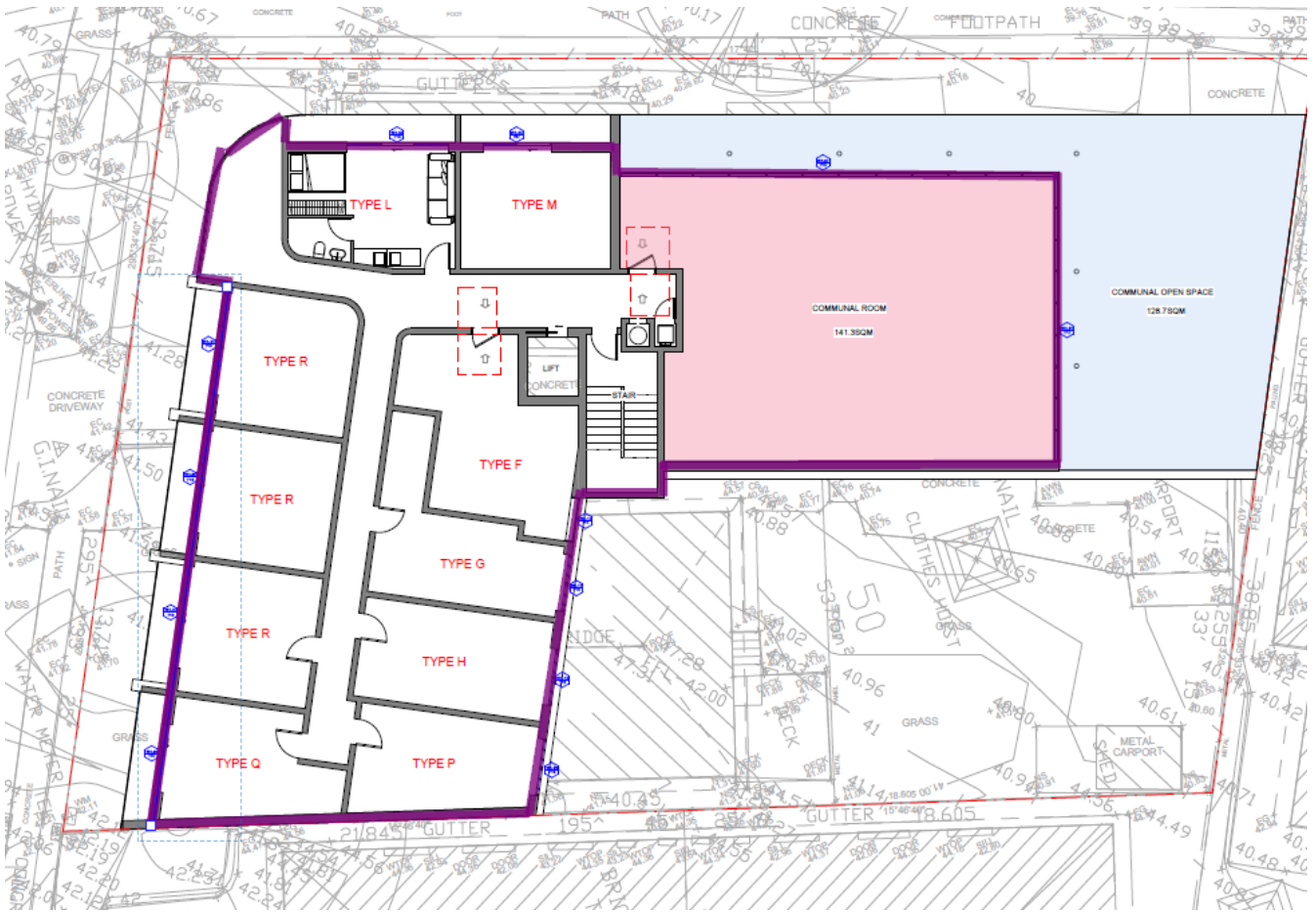
LEVEL 2



LEVEL 3



LEVEL 4



ROOF PLAN

