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NCC PART J ENERGY EFFICIENCY REPORT

4 Delmar Parade and 812 Pittwater Road, DEE WHY

SP 32071 and SP 32072

Prepared for:

Dee Why 3 Pty Ltd & Dee Why 4 Pty Ltd

Report PJ21/11115

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Synopsis:	This document presents a NCC Part J DTS Energy Efficiency Assessment report for a proposed mixed use development at 4 Delmar Parade and 812 Pittwater Road, DEE WHY NSW

Client Details	
Client:	Dee Why 3 Pty Ltd & Dee Why 4 Pty Ltd
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1 INTRODUCTION

This report has been prepared on on behalf of Dee Why 3 Pty Ltd & Dee Why 4 Pty Ltd, seeking consent for:

a. Demolition of existing buildings, tree removal and site clearing
b. Construction of 2x new mixed-use buildings over a shared two storey basement car park comprising:
    i. 230 residential apartments
    ii. Commercial tenancies on ground floor

1.1 SUMMARY

The proposed buildings are to be located at 4 Delmar Parade and 812 Pittwater Road, Dee Why. This is situated within climate zone 5 and less than 300 metres AHD.

One building will be orientate towards the Delmar Parade frontage and one building will orientate towards the Pittwater Road frontage. These two buildings will share combined basement carparking.

The proposed building comprises the following parts:

Class 2 a Class 2 building is a building containing two or more sole-occupancy units.

Class 6 a shop or other building for the sale of goods by retail or the supply of services direct to the public, including—

(a) an eating room, cafe, restaurant, milk or soft-drink bar; or
(b) a dining room, bar, shop or kiosk part of a hotel or motel; or
(c) a hairdresser's or barber's shop, public laundry, or undertaker's establishment; or
(d) market or sale room, showroom, or service station.

Class 7 a building which is--

1) **Class 7a** - A carpark; or
2) **Class 7b** – for storage, or display of goods or produce for sale by wholesale.

The building is considered able to comply with the Deemed to Satisfy provisions of the Building Code of Australia and as such achieve compliance with Performance Requirement JP1.

As there is a Class 2 portion of the development, this will be addressed in the BASIX certificate which forms part of the Development Application.

2 BASIS FOR ASSESSMENT

2.1 BUILDING DESCRIPTION

The proposed building is comprised of a mixed-use building. There are to be three ground floor commercial tenancies, basement carpark and residential units.

The subject building is to be located at 4 Delmar Parade and 812 Pittwater Road, Dee Why, situated within climate zone 5 and comprising the following parts:

Class 2 Buildings

(1) a Class 2 is a building containing two or more sole occupancy units
(2) Each sole-occupancy unit in a Class 2 building is a separate dwelling.

Class 6 Buildings

a shop or other building for the sale of goods by retail or the supply of services direct to the public, including—

(a) an eating room, cafe, restaurant, milk or soft-drink bar; or
(b) a dining room, bar, shop or kiosk part of a hotel or motel; or
(c) a hairdresser's or barber's shop, public laundry, or undertaker's establishment; or
(d) market or sale room, showroom, or service station.

Class 7 Buildings

A Class 7 building is a storage-type building that includes one or more of the following sub-classifications:

(1) Class 7a - A carpark; or
(2) Class 7b – a building that is used for storage, or display of goods or produce for sale by wholesale.

The proposed development will incorporate residential unit buildings, commercial, basement carparking over up to three levels. Due to the similar building materials they will be assessed together wherever possible.

The residential buildings will be assessed using the BASIX protocol for residential dwellings and this report only refers to the Commercial section of the proposed development.

2.2 CONSTRUCTION MATERIALS

The materials listed below were used as the basis for this assessment. These materials were determined from the architectural drawings and information provided by the proponent.

Should these materials be altered, it may require a re-assessment of the proposed structure against the deemed to satisfy provisions of the BCA.

2.2.1 FLOORING AND REQUIRED INSULATION

Flooring will be a mixture of concrete slab on ground and suspended slab. The insulation requirements are detail in Appendix A.

2.2.2 EXTERNAL WALL AND REQUIRED INSULATION

External Wall construction is identified in the submitted plans and is shown in Appendix A

Internal walls will be plasterboard stud on either timber or metal frames, unless noted otherwise on the plans.

Internal walls between conditioned spaces and unconditioned spaces are to have insulation to achieve a total minimum R value.

2.2.3 ROOF, CEILING AND REQUIRED INSULATION

Roof and ceiling will be suspended concrete slab. The insulation requirements are detail in Appendix A.

2.2.4 WINDOW GLAZING

Window glazing has been specified in Appendix A.

2.2.5 AIR CONDITIONING SYSTEM

It is anticipated that the retail tenancies will be serviced by local split system Air Conditioners. A detailed HVAC design for the commercial tenancies is to occur at fitout or Construction Certificate stage.

2.2.6 ARTIFICIAL LIGHTING

Generic individual lighting is identified later in the report. Figures are established from industry standard average Watts.

2.2.7 HOT WATER SUPPLY

As per Australian Standard 3500.4

3 VERIFICATION METHOD JV3 REQUIREMENTS

3.1 VERIFICATION USING A REFERENCE BUILDING

(a) For a Class 3, 5, 6, 7, 8 and 9 building, compliance with JP1 is verified when it is determined that the annual energy consumption of the proposed building with its services is not more than the annual energy consumption of a reference building when -

(i) The proposed building is modelled with the proposed services; and

(ii) The proposed building is modelled with the same services as the reference building.

(b) The annual energy consumption of the proposed building in (a) may be reduced by the amount of energy obtained from –

(i) An on-site renewable energy source; or

(ii) Another process as reclaimed energy.

(c) The annual energy consumption calculation method must comply with the ABCB Protocol for building Energy Analysis Software.

(d) The annual energy consumption in (a) must be calculated –

(i) For the reference building, using –

A. The Deemed-to-Satisfy Provisions for Part J1 to J7 but including only the minimum amount of mechanical ventilation required by Part F4; and

B. A solar absorptance of 0.6 for external walls and 0.7 for roofs; and

C. The maximum illumination power density without any increase for a control device illumination adjustment factor; and

D. Air-conditioning with the conditioned space temperature within the range of 18^{o} CDB to 26^{o} CDB the plant operation time; and

E. The profiles for occupancy, air-conditioning, lighting and internal heat gains from people, hot meals, appliances, equipment and hot water supply systems –

(aa) of the actual building –

(AA) if the operating hours per year are not less than 2500; or

(BB) if the daily operating profiles are not listed in Specification JV; or

(bb) of Specification JV; and

F. Infiltration values –

(aa) for a perimeter zone of depth equal to the floor-to-ceiling height, when pressurising plant is operating, 1.0 air change per hour; and

(bb) for the whole building, when pressurising plant is not operating, 1.5 air change per hour

(ii) for both the proposed building and the reference building using the same—

(A) annual energy consumption calculation method; and

(B) location, being either the location where the building is to be constructed if appropriate climatic data is available, or the nearest location with similar climatic conditions, for which climatic data is available; and

(C) adjacent structures and features; and

(D) environmental conditions such as ground reflectivity, sky and ground form factors, temperature of external bounding surfaces, air velocities across external surfaces and the like; and

(E) orientation; and

(F) building form, including—

(aa) the roof geometry; and

(bb) the floor plan; and

(cc) the number of storeys; and

(dd) the ground to lowest floor arrangements; and

(ee) the size and location of glazing; and

(G) external doors; and

(H) testing standards including for insulation, glazing, water heater and package air-conditioning equipment; and

(I) thermal resistance of air films including any adjustment factors, moisture content of materials and the like; and

(J) dimensions of external, internal and separating walls; and

(K) surface density of envelope walls over 220 kg/m2; and

(L) quality of insulation installation; and

(M) assumptions and means of calculating the temperature difference across air-conditioning zone boundaries; and

(N) floor coverings and furniture and fittings density; and

(O) internal shading devices, their colour and their criteria for operation; and

(P) number, sizes and floors served by lifts and escalators; and

(Q) range and type of services and energy sources other than energy generated on-site from sources that do not emit greenhouse gases such as solar and wind power; and

(R) internal artificial lighting levels; and

(S) internal heat gains including people, lighting, appliances, meals and other electric power loads; and

(T) air-conditioning system configuration and zones; and

(U) daily and annual profiles of the—

(aa) building occupancy; and

(bb) operation of services; and

(V) range of internal temperatures and plant operating times; and

(W) supply hot water temperature and rate of use; and

(X) infiltration values unless there are specific additional sealing provisions or pressure testing to be undertaken; and

(Y) unit capacity and sequencing for water heaters, refrigeration chillers and heat rejection equipment such as cooling towers; and

(Z) metabolic rate for people; and

(iii) for the proposed building using a solar absorptance for the roof and walls 0.05 higher than that proposed; and

(e) Where the annual energy consumption of the hot water supply or the lifts and escalators are the same in the proposed building and the reference building, they may be omitted from the calculation of both the proposed building and the reference building.

(f) A lift in a building with more than one classification may be proportioned according to the number of storeys of the part for which the annual energy consumption is being calculated.

(g) The design must include—

(i) the ability to achieve all the criteria used in the annual energy consumption calculation method such as having an automatic operation controlling device capable of turning lighting, and air-conditioning plant on and off in accordance with the occupancy and operating profiles used; and

(ii) compliance with—

(A) J1.2 for general thermal construction; and

(B) J1.3(c) for compensation for a loss of ceiling insulation; and

(C) J1.6(a)(ii), J1.6(c) and J1.6(d) for floor edge insulation; and

(D) BS 7190 for testing a water heater; and

(E) AS/NZS 3823.1.2 at test condition T1 for testing package air-conditioning equipment; and

(F) AHRI 550/590 for testing a refrigeration chiller.

(e) forms a continuous barrier with ceilings, walls, bulkheads, floors or the like that inherently contribute to the thermal barrier; and

(f) does not affect the safe or effective operation of a service or fitting.

3.1.2 BUILDING FABRIC

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.

Where required, bulk insulation must be installed so that:

(i) it maintains its position and thickness, other than where it compresses 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.

A roof that:

(i) is required to achieve a minimum Total R-Value; and
(ii) has metal sheet roofing fixed to metal purlins, metal rafters or metal battens; and
(iii) 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 not less than R0.2, installed between the metal sheet roofing and its supporting metal purlins, metal rafters or metal battens.

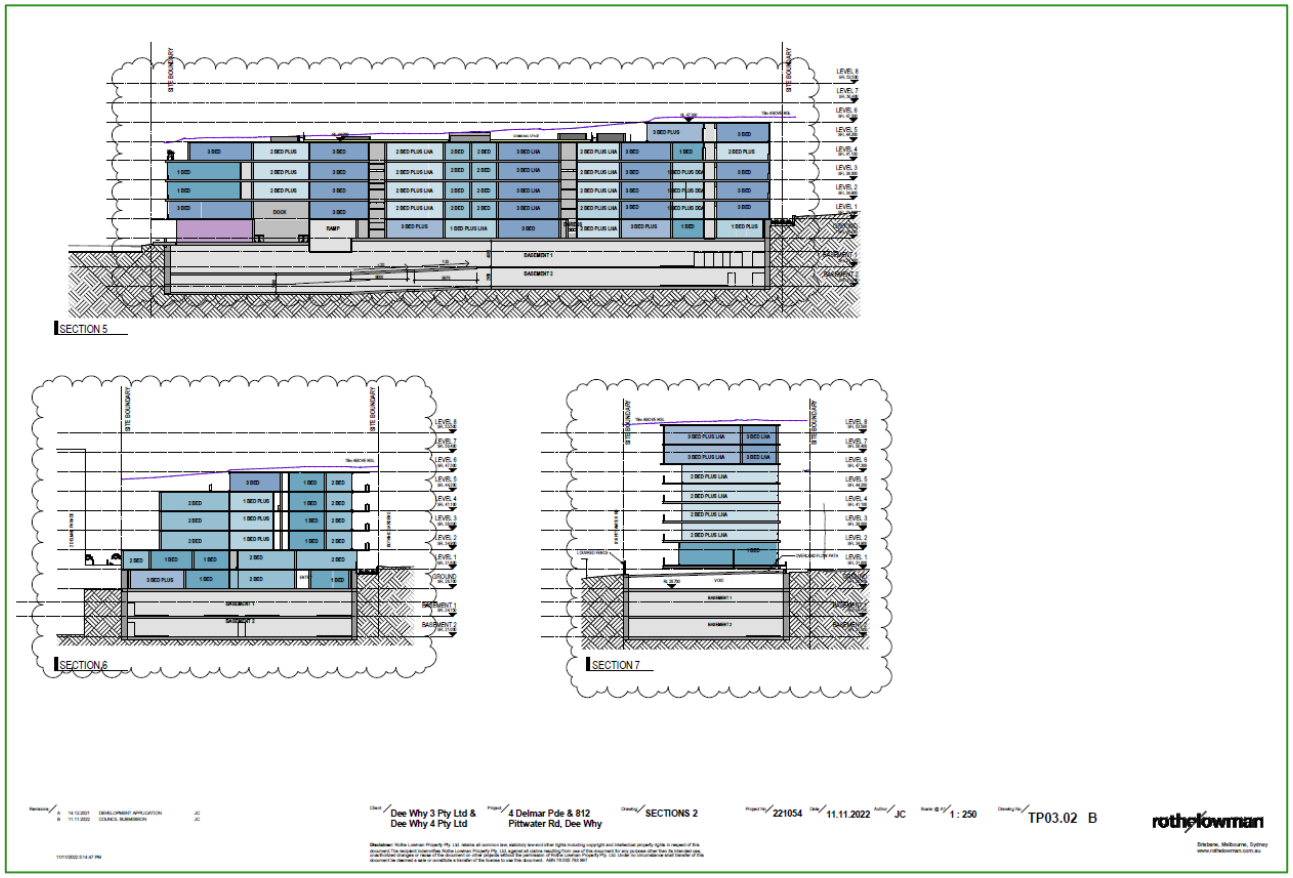


Figure 1 - Typical building section

Roof, ceiling, wall and floor materials, and associated surfaces are deemed to have the thermal properties listed in Specification J1.2 of the BCA unless otherwise stated by manufacturer.

3.1.3 ROOF AND CEILING CONSTRUCTION

Roofing is proposed to be suspended concrete slab with insulation as per Appendix A.

3.1.4 ROOF LIGHTS

No Skylights are proposed as part of the commercial development.

3.1.5 WALL CONSTRUCTION

External walls to the building are to be as indicated on the identified plans. These are identified below in Appendix A.

3.1.6 FLOORS

Floors are to be a mixture of concrete slab on ground and suspended concrete slab construction as per Appendix 1. Insulated requirements for the JV3 assessment are detailed in Appendix 1.

3.1.7 EXTERNAL GLAZING

The proposed glazing is based upon advice provided by the proponent. The proposed external glazing is considered to be consistent with the deemed to satisfy provisions for Part J2.

3.2 BUILDING SEALING

3.2.1 CHIMNEYS AND FLUES

None proposed as part of the development.

3.2.2 ROOF LIGHTS

No Skylights are identified in the plans for the commercial section.

3.2.3 WINDOWS AND DOORS

A seal to restrict air infiltration must be fitted to each edge of any door, openable window or the like, forming part of the envelope of a conditioned space, except where:

(i) any 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.

Any required seal for the bottom edge of an external swing door, must be a draft protection device; and for the other edges of an external door or the edges of an openable window or other such opening, may be a foam or rubber compressible strip, fibrous seal or the like.

The main entrance to the building must have self-closing door

3.2.4 EXHAUST FANS

Any exhaust fan, such as a bathroom or domestic kitchen exhaust fan, must be fitted with a sealing device such as a self-closing damper or the like when serving a conditioned space.

Any mechanical ventilation system, either as part of an air-conditioning system or as a separate ventilation system, must be capable of being deactivated when the building or part of the building served by the system is not occupied.

3.2.5 CONSTRUCTION OF ROOFS, WALLS AND FLOORS

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

(i) enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions; or
(ii) sealed by caulking, skirting, architraves, cornices or the like.

The above requirements do not apply to openings, grilles and the like required for smoke hazard management.

3.2.6 EVAPORATIVE COOLERS

No evaporative coolers are proposed.

3.2.7 AIR-CONDITIONING SYSTEM

The proposed building is considered under the provisions of the NCC to be, at least partly, conditioned by some air conditioning device.

The proposed air-conditioning system utilises a mixture of Single Split Air conditioning system and VRV heat recovery system, utilising economy cycle and outside air and heat exchangers. The air-conditioning system has been modelled as per the requirements of verification method JV3 using the requirements of Specification JV of the Building Code of Australia.

Any air-conditioning unit or system must be capable of being deactivated when the part of the building it services is not occupied.

Where the air-conditioning unit or system has motorised outside air and return dampers, these dampers must close when the unit or system is deactivated.

The air-conditioning system's supply and return ductwork sealed and insulated in accordance with specification J5.2 of the Building Code of Australia.

The air-conditioning unit or system must, when serving more than one air-conditioning zone or area with different heating and cooling needs, thermostatically control the temperature of each zone or area.

A time switch must be installed as part of the air-conditioning system to allow the system to turn on one hour before the start of business and turn off one hour after the close of business each day.

3.2.8 LIGHTING

The lighting loads are as per Specification JV of the Building Code of Australia. The proposed building is to utilise energy efficient Light Emitting Diodes or similar as indicated in the report.

3.2.9 EQUIPMENT POWER

As per Specification JV, Table 2h of the BCA.

3.2.10 HOT WATER SUPPLY

Any hot water system, other than a solar hot water system, will be designed and installed in accordance with Section 8 of AS 3500.4.

3.2.11 BATHROOM AND TOILET EXHAUST FANS

4.84kW load allowed for the toilet exhaust fans where natural ventilation is not considered to be sufficient to satisfy the Deemed to satisfy provisions of the BCA.

3.3 AIR CONDITIONING AND VENTILATION SYSTEMS

3.3.1 AIR CONDITIONING SYSTEMS

Air conditioning unit or systems must –

(i) be capable of being deactivated when the sole-occupancy unit, building or part of the building served is not occupied; and
(ii) Where the air-conditioning unit or system has motorised outside air and return dampers, close the dampers when the air-conditioning unit or system is deactivated; and
(iii) Have any supply and return ductwork sealed and insulated in accordance with Specification J5.2 of the BCA; and
(iv) Other than where a packaged air-conditioning unit is used, have a variable speed fan when its supply air quantity is varied; and

(v) Be designed so that the total fan motor power of the air-conditioning supply air and return air fans in the building, divided by the floor area served by those fans is, in accordance with Table 1

Table 1 - Maximum Fan Motor Power

Air-conditioning sensible heat load (W/m^2 of the floor area of the conditioned space)	Maximum fan motor power (W/m2 of the floor area of the conditioned space)	
	For an air-conditioning system serving not more than 500 m^2	For an air-conditioning system serving more than 500 m^2
Up to 100	5.3	8.3
101 – 150	9.5	13.5
151 – 200	13.7	18.3
201 – 300	22.2	28.0
301 - 400	30.7	37.0

(vi) Other than where a packaged air-conditioning unit is used, have a variable speed fan when its supply air quantity is varied; and

(vii) In a class 3 building, be capable of controlling the temperature of a sole-occupancy unit at a different temperature during sleeping periods than during other periods; and

The above requirements must not inhibit—

(i) The smoke hazard management operation of air-conditioning and mechanical ventilation systems; and

(ii) Essential ventilation such as for a garbage room, lift motor room, gas meter enclosure or gas regulator enclosure or the like.

A time switch in accordance with Specification J6 of the BCA must be provided to control each of the following:

(i) An air-conditioning system of more than 10 kWr.

(ii) A ventilation system with an air flow rate of more than 1000 L/s.

(iii) A heating system of more than 10 $kW_{heating}$.

The time switch requirement does not apply to an air-conditioning system or ventilation system that serves only one sole-occupancy unit of a Class 3 building.

(a) Systems that provide heating or cooling for air-conditioning systems must –

(a) Have any piping, vessels, heat exchangers or tanks containing heated or chilled fluid, other than those with insulation levels covered by Minimum Energy Performance Standards (MEPS), insulated in accordance with Specification J5.4 of the BCA; and

(b) Where water is circulated by pumping at greater than 2 L/s-

a. Be designed so that the total of the pump power to the pump is in accordance with Table 2; and

Table 2 - Maximum Pump Power

Cooling or Heating Load (W/m^2 of the floor area of the conditioned space)	Maximum pump power (W/m2 of the floor area of the conditioned space)		
	Chilled water	Condenser water	Heating water
Up to 100	1.3	0.9	1.0
101 – 150	1.9	1.2	1.3
151 – 200	2.2	2.2	1.7
201 – 300	4.3	3.0	2.5
301 - 400	5.0	3.6	3.2
More than 400	5.6	5.6	3.6

b. Have the pump capable of varying its speed in response to varying load when it is rated at more than 3 kW of pump power, except where the pump is needed to run at full speed for safe and efficient operation; and

(c) If the system contains more than one water heater used for heating a building, chiller or coil, be capable of stopping the flow of water to those not operating.

(b) a heater-

(i) for heating a space via water, such as a boiler, that is part of an air-conditioning system, must-

(A) achieve a thermal efficiency complying with Table 3 when tested in accordance with BS 7190; and

(B) use reticulated gas where it is available at the allotment boundary; and

A package air-conditioning equipment with a capacity of not less than 65 kWr, including a split unit and a heat pump, must have an energy efficiency ratio when cooling complying with Table 3 when tested in accordance with AS/NZS 3823.1.2 at test condition T1.

Table 3 - Minimum energy efficiency ratio for packaged air-conditioning equipment

Equipment	Minimum energy efficiency ratio ($W_r/W_{input.power}$)	
	65 kWr to 95 kWr capacity	More than 95 kWr capacity
Air-conditioner – cooling	2.70	2.80
Heat pump - cooling	2.6	2.7

It is considered that the air-conditioning units proposed are able to achieve the deemed-to-satisfy provisions of the BCA.

3.3.2 MECHANICAL VENTILATION SYSTEM

Any mechanical ventilation system, either as part of an air-conditioning system or as a separate ventilation system, must be capable of being deactivated when the building or part of the building served by the system is not occupied.

When serving a conditioned space, the ventilation system, must not provide mechanical ventilation in excess of the minimum outdoor air quantity required by Part F4 of the BCA for a mechanical ventilation system, by more than 20% other than where there is:

a) Additional unconditioned outside air supplied to provide free cooling or to balance process exhaust such as from a health-car building or laboratory; or
b) Additional exhaust ventilation needed to balance the required mechanical ventilation; or
c) An energy reclaiming system that preconditions all outside air.

When the mechanical ventilation is provided by means other than an air-conditioning system and the air flow rate is more than 1,000 L per second, the system must have;

a) a fan power to air flow ratio of 0.5 W/(L/s) without filters or 0.75 W(L/s) with filters for a general mechanical ventilation system; and
b) for carpark exhaust, when serving a carpark with more than 40 vehicle spaces, be controlled by an atmospheric containment monitoring system in accordance with Australian Standard 1668.2.

The above requirements must not inhibit the smoke hazard management operation of air-conditioning and mechanical ventilation systems.

Essential ventilation of areas such as garbage room, lift motor room, gas meter enclosure or gas regulator enclosure or the like, must not be inhibited by the restrictions on mechanical ventilation and air-conditioning.

A time switch must be provided for the mechanical ventilation system where its airflow exceeds 1,000 L/s.

3.3.3 EXHAUST SYSTEMS

Any miscellaneous exhaust system with an air flow rate of more than 1000 L/s, that is associated with equipment having a variable demand such as a stove must be designed to minimise the exhausting of conditioned air and have the means for the operator to:

a. reduce the energy used, such as by a variable speed fan, and

b. stop the motor when the system is not needed.

The restrictions above do not apply where the air flow must be maintained for safe operation.

3.4 HOT WATER SUPPLY

Any hot water system, other than a solar hot water system, will be designed and installed in accordance with Section 8 of AS 3500.4.

3.5 ACCESS FOR MAINTENANCE

Services to be mounted in an accessible area to allow access in accordance with Part I2 of the BCA

3.6 VERIFICATION METHOD

3.6.1 METHODOLOGY

The Speckel Software suite was used to model the proposed building. Speckel provides various calculations in line with the National Construction Code 2019 - Volume 1 - Section J Energy Efficiency.

These calculations are tested in line with all applicable NCC equations or NCC referenced primary or secondary documents, for them to represent an accurate Performance Solution against the Performance Requirements - JP1 Energy Use.

A Performance Solution must be shown to comply with the relevant Performance Requirements through one or a combination of Assessment Methods. Speckel is a valid Asessment Method by comparison with the Deemed-to-Satisfy Provisions of each relevant area.

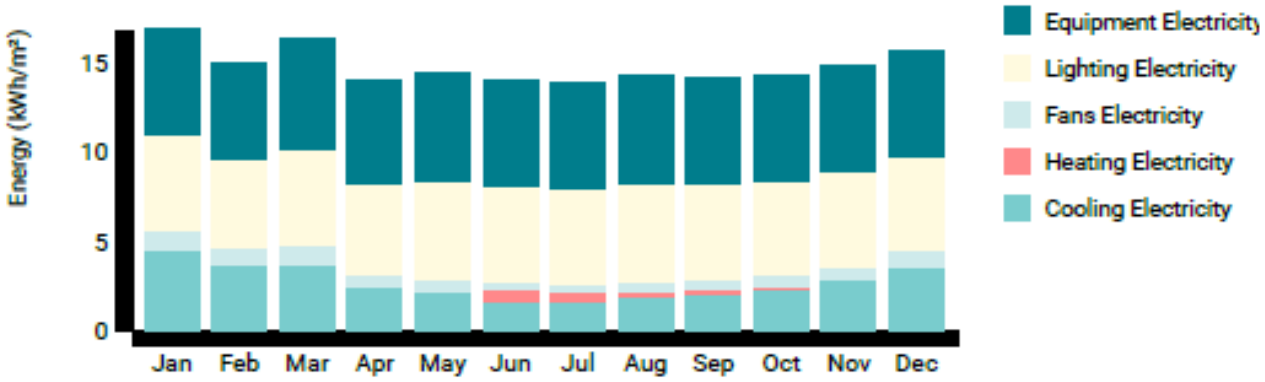
This assessment represents whole-façade performance (Method 2) and single aspect of whole-façade performance (Method 1) according to NCC 2019 (Vol 1) J1.5 Walls and glazing and as per Specification J1.5a Calculation of U-Value and solar admittance.

Each elevation (in degrees) is mapped to one of the four aspects (N, E, S, W) as defined in Specification J1.5a Calculation of U-Value and solar admittance.

Total U-value (ISO 15099), and Wall R-value (AS/NZS 4859.2:2018) is calculated as defined in Specification J1.5a - *Calculation of U-Value and solar admittance* and Specification J1.5b *Spandrel panel thermal performance*.

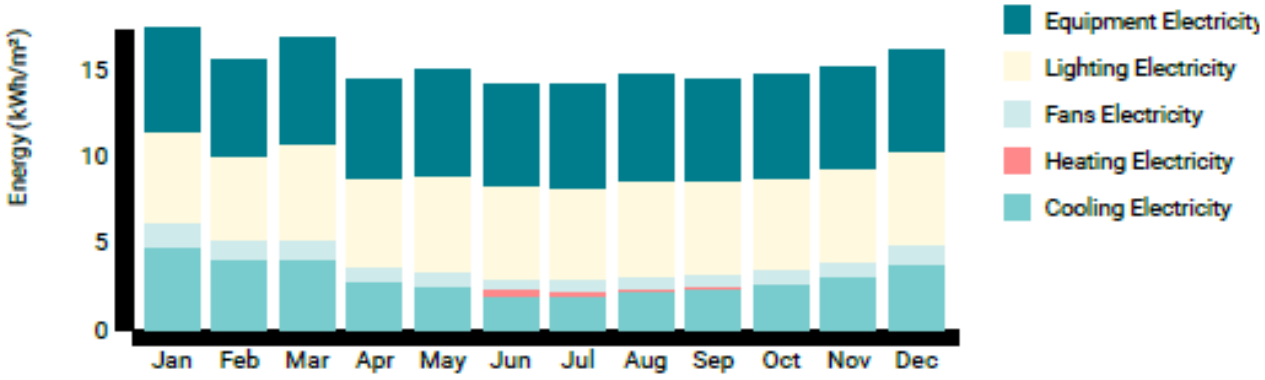
Solar Admittance (when applicable), Solar Admittance Weight, Wall/glazing ratio and threshold Solar Admittance are calculated for the four aspects (N, E, S, W).

3.6.2 RESULTS



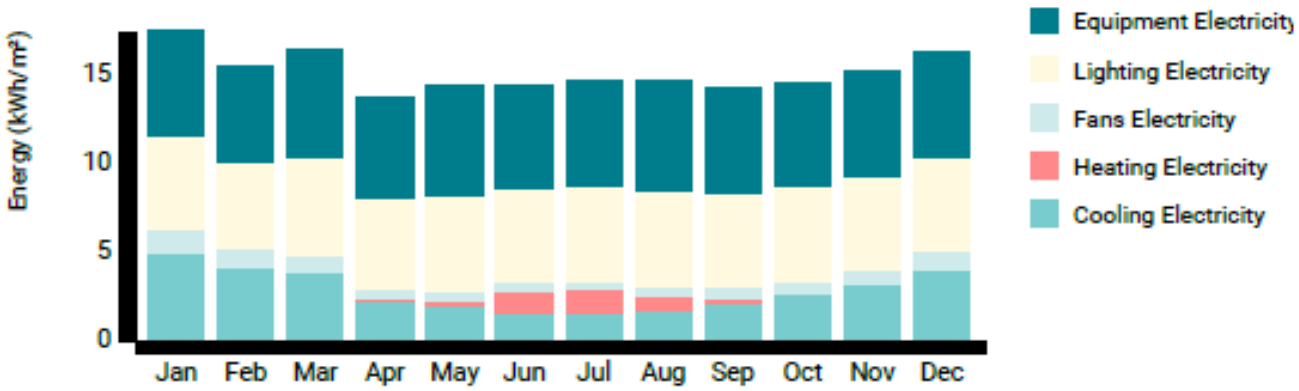
Energy	kWh	kWh/m²	MJ	MJ/m²
Cooling Electricity	11837.6	32.1	42615.2	115.5
Heating Electricity	667.5	1.8	2403.1	6.5
Fans Electricity	3363.4	9.1	12108.1	32.8
Lights Electricity	23354.1	63.3	84074.6	227.9
Equipment Electricity	26086.7	70.7	93912.1	254.5

Reference



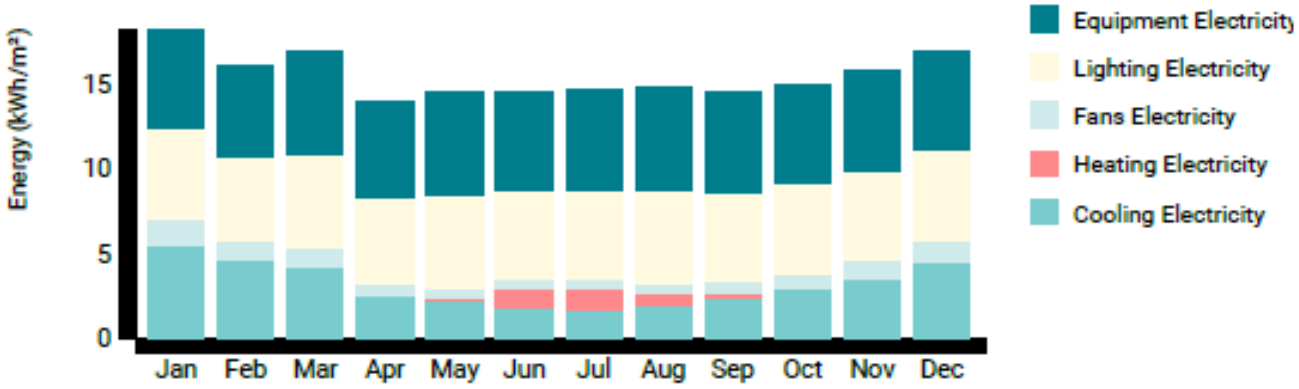
Energy	kWh	kWh/m²	MJ	MJ/m²
Cooling Electricity	13226.5	35.8	47615.5	129.0
Heating Electricity	460.8	1.2	1659.0	4.5
Fans Electricity	3924.3	10.6	14127.7	38.3
Lights Electricity	23354.1	63.3	84074.6	227.9
Equipment Electricity	26086.7	70.7	93912.1	254.5

Figure 2 – 4 Delmar Parade



Energy	kWh	kWh/m²	MJ	MJ/m²
Cooling Electricity	15044.9	32.7	54161.6	117.8
Heating Electricity	1803.7	3.9	6493.3	14.1
Fans Electricity	4202.3	9.1	15128.3	32.9
Lights Electricity	29024.6	63.1	104488.4	227.2
Equipment Electricity	32420.7	70.5	116714.5	253.8

Reference



Energy	kWh	kWh/m²	MJ	MJ/m²
Cooling Electricity	17148.3	37.3	61733.9	134.2
Heating Electricity	1652.0	3.6	5947.4	12.9
Fans Electricity	4912.0	10.7	17683.2	38.4
Lights Electricity	29024.6	63.1	104488.4	227.2
Equipment Electricity	32420.7	70.5	116714.5	253.8

Figure 3 - 812 Pittwater Road

This assessment demonstrates that the proposed building's annual energy consumption is consistent with the Deemed to Satisfy requirements of the NCC 2019.

4 CONCLUSION

The above report shows that the proposed commercial buildings demonstrably satisfies the requirements of Section J of the BCA, and therefore satisfy Performance requirement JP1 of the BCA.

This report demonstrates that the proposal is consistent the performance requirements of Section J and is anticipated to satisfy the objective of Section J, to reduce greenhouse gas emissions by efficiently using energy.

Appendix A

Energy Efficiency Assessment Reports

JV3 Building Assessment

National Construction Code 2019 - Volume 1

Project	4 Delmar Parade DEE WHY
Address	4 Delmar Parade, Dee Why NSW 2099, Australia (33.76° S, 151.28° E)
Date	2022-11-22, 12:16 PM
Author	Duncan Hope (Senica Consultancy Group) duncan@senica.com.au
Scope	National Construction Code 2019
Building Class	6 (Display Glass)
Performance Requirements	JP1 Energy Use
Assessment Process	Comparison with the Deemed-to-Satisfy Provisions
Climate Zone	5
Storeys	1
Floor to Floor Height	3800 mm

Using Speckel

Speckel provides various calculations in line with the National Construction Code 2019 - Volume 1 - Section J Energy Efficiency. These calculations are tested in line with all applicable NCC equations or NCC referenced primary or secondary documents, for them to represent an accurate Performance Solution against the Performance Requirements - JP1 Energy Use. A Performance Solution must be shown to comply with the relevant Performance Requirements through one or a combination of Assessment Methods. Speckel is a valid Assessment Method by comparison with the Deemed-to-Satisfy Provisions of each relevant area.

Results

The National Construction Code (NCC) specifies minimum performance standards for the energy efficiency of buildings through the Building Code of Australia (BCA) Volume 1, Section J.

To enable flexibility of the architectural design of the building, a Performance Solution has been used to comply with the Performance Requirement - JP1.

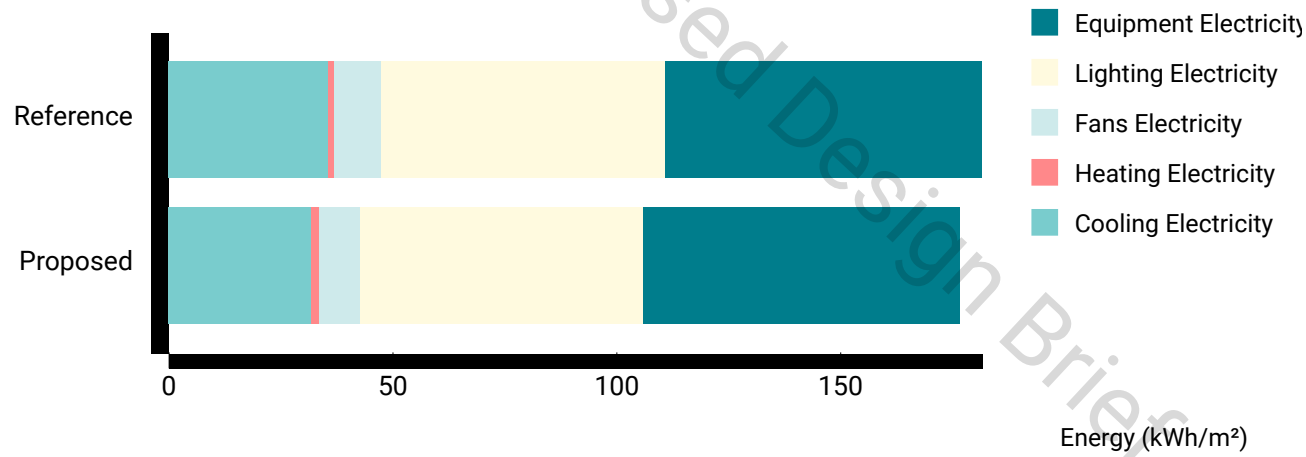
The Assessment Method, 'JV3 Verification using a reference building' has been used and is an Alternative Solution for the Building Fabric only. As such, a Proposed Building with the proposed fabric has been modelled as part of this approach, to compare against the Reference Building services.

To meet acceptance criteria, the Proposed Building with the proposed fabric GHG emissions must be no greater than the Reference Building services.

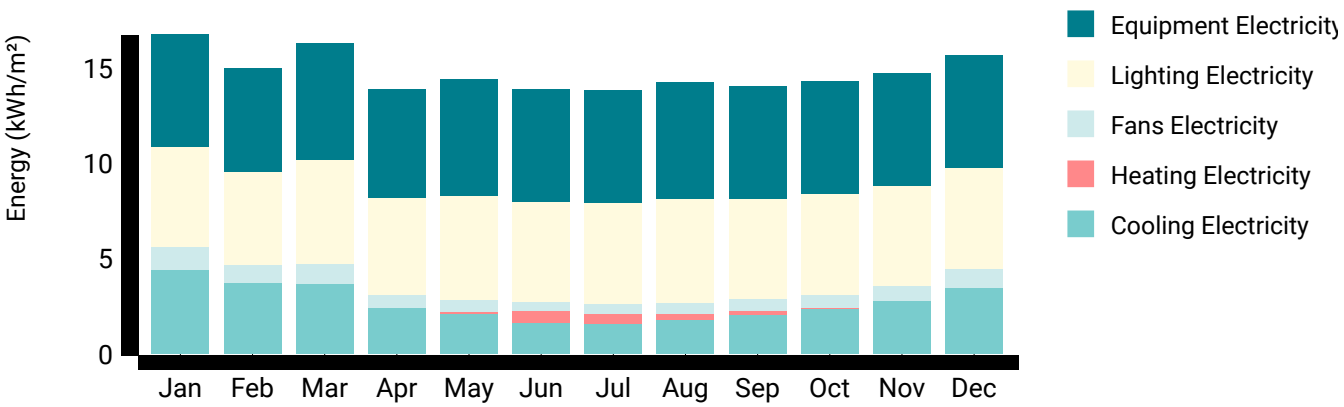
Building Emissions

	Proposed (kgCO2-e)	Reference (kgCO2-e)	Difference (%)
Emissions	60188.96	61795.56	-2.60

Building Energy

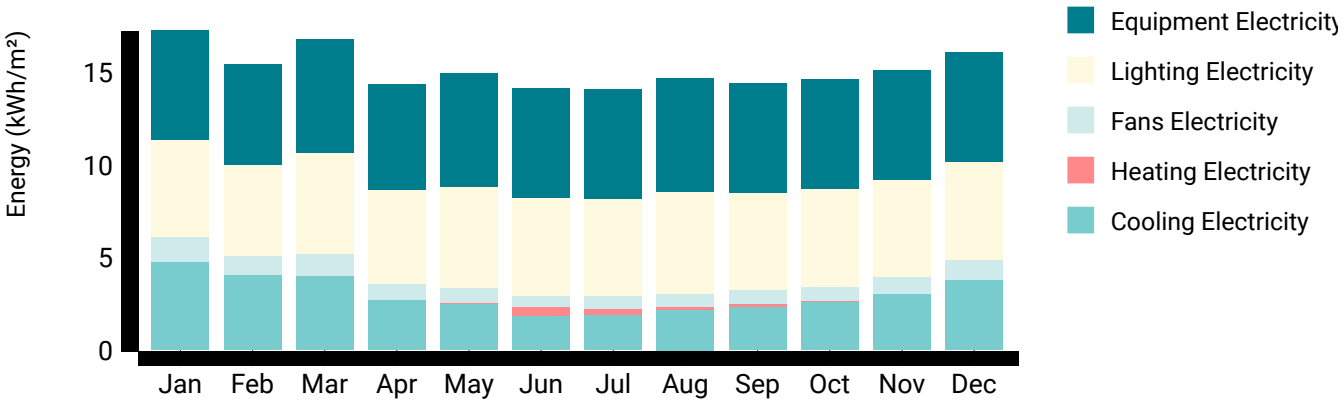


Proposed



Energy	kWh	kWh/m²	MJ	MJ/m²
Cooling Electricity	11837.6	32.1	42615.2	115.5
Heating Electricity	667.5	1.8	2403.1	6.5
Fans Electricity	3363.4	9.1	12108.1	32.8
Lights Electricity	23354.1	63.3	84074.6	227.9
Equipment Electricity	26086.7	70.7	93912.1	254.5

Reference



Energy	kWh	kWh/m²	MJ	MJ/m²
Cooling Electricity	13226.5	35.8	47615.5	129.0
Heating Electricity	460.8	1.2	1659.0	4.5
Fans Electricity	3924.3	10.6	14127.7	38.3
Lights Electricity	23354.1	63.3	84074.6	227.9
Equipment Electricity	26086.7	70.7	93912.1	254.5

Proposed

#	Zone	Int. Floor (m²)	Occupied (Hrs)	Comfortable (Hrs)	Ratio (%)	Pass
1	1. Commercial 01	200.80	3432	3387	98.69	✓
1	2. Commercial 02	132.79	3432	3432	100.00	✓
1	3. Substation	28.35	3432	3432	100.00	✓
1	4. plant	7.04	3432	3431	99.97	✓
					Pass	✓

Reference

#	Zone	Int. Floor (m²)	Occupied (Hrs)	Comfortable (Hrs)	Ratio (%)	Pass
1	1. Commercial 01	200.80	3432	3320	96.74	✗
1	2. Commercial 02	132.79	3432	3432	100.00	✓
1	3. Substation	28.35	3432	3432	100.00	✓
1	4. plant	7.04	3432	3431	99.97	✓
					Pass	✗

Method

Approach

- The National Construction Code (NCC) specifies minimum performance standards for the energy efficiency of buildings through the Building Code of Australia (BCA) Volume 1, Section J.
- To enable flexibility of the architectural design of the building, a Performance Solution has been used to comply with the Performance Requirement - JP1.
- The Assessment Method, JV3 Verification using a reference building has been used and is an Alternative Solution for the Building Fabric only. As such, a Proposed Building with the proposed fabric has been modelled as part of this approach, to compare against the Reference Building services.
- To meet acceptance criteria, the Proposed Building with the proposed fabric Greenhouse Gas (GHG) emissions must be no greater than the Reference Building services.
- When the Simulated Shading Multipliers feature is enabled, each window is simulated in EnergyPlus twice, to compare a completely unshaded window, to a window affected by attached shading, building self-shading, and surrounding structures. The multiplier is based on the ratio of shaded versus unshaded annual average external incident solar radiation, limited between 0.0 and 1.0.

Assumptions / Limitations

- Parts J3 - J8 are not part of this assessment.
- Specification JVa Additional Requirements Part 2. Additional Requirements - General, is only met for provisions (a) General Thermal Construction, J1.2 and (b) for Floor Edge Insulation, J1.6(b) and J1.6(c). All other provisions (c - n) are not part of this assessment.
- Specification JVb Modelling Parameters Part 1. Scope, Part 2. Reference Building and Part 3 Proposed Building and Reference Building have been used to form the basis of the Method of Assessment.
- Specification JVb Modelling Parameters Part 4. Services - proposed and reference building, are not part of this assessment as the minimum performance requirements of the services are not part of this assessment.
- To ensure the reference building can be calculated, windows are limited to a maximum of 99% window-to-wall ratio (WWR).

Inputs

The NCC 2019 - Vol 1 contains technical design and construction requirements for all commercial buildings and their associated structures. The following Building Classes have been adopted in this assessment.

Building Class	Wall Area (m²)	Window Area (m²)	Roof Area (m²)	Window-Wall Ratio
6 (Display Glass)	159.11	127.79	379.09	0.45

Levels

#	Drawing	# Zones	Floor Area (m²)	Wall (m²)	Window (m²)
1	Delmar	4	379.1	159.1	127.8

Zones

Level	Zone	Area (m²)	Volume (m²)	Treated Area (m²)
1	1. Commercial 01	200.80	722.89	200.80
1	2. Commercial 02	132.79	478.05	132.79
1	3. Substation	28.35	102.05	28.35
1	4. plant	7.04	25.34	7.04
		368.98		368.98

Walls

Total System R-values of all walls include the effects of thermal bridging, which are calculated in accordance with AS/NZS 4859.2 and NZ 4214:2006 (J1.2 Thermal construction — General (e)) or are stated values.

For the purpose of the Reference Building, the wall total system R-value of the wall-glazing construction has been calculated in accordance with J1.5 Walls and Glazing and Specification and J1.5a Calculation of U-Value and solar admittance.

Proposed	Title	Class	R-Value (m²K°/W)	Area (m²)
External	Hebel	6 (Display Glass)	2.58	159.11
Reference	**Title**	**Class**	**R-Value (m²K°/W)**	**Area (m²)**
External	Hebel	6 (Display Glass)	2.58	159.11

Roofs

Total system R-values of all roofs include the effects of thermal bridging are calculated in accordance with AS/NZS 4859.2 and NZ 4214:2006 (as per J1.2 Thermal Construction —

General (e)) or are stated values.

For the purpose of the Reference Building, the roof total system R-value has been assumed in accordance with J1.3 Roof and ceiling construction.

Proposed	Title	Class	R-Value (m²K°/W)	Area (m²)
Top	Concept	6 (Display Glass)	3.20	379.09
Reference	Title	Class	R-Value (m²K°/W)	Area (m²)
Top	Concept	6 (Display Glass)	3.70	379.09

Windows

Total system U-values of all windows include the effects of thermal bridging at the frame, which are calculated in accordance with ISO 15099, as per J1.2 Thermal Construction — General (e).

For the purpose of the Reference Building, the glazing total system U-value and solar admittance of the wall-glazing construction has been calculated in accordance with J1.5 Walls and Glazing and Specification J1.5a Calculation of U-Value and solar admittance.

Proposed	Title	Class	U-value	SHGC	Area (m²)
External	Concept	6 (Display Glass)	5.70	0.60	127.79
Reference	Title	Class	U-value	SHGC	Area (m²)
External	Concept	6 (Display Glass)	5.80	0.81	127.79

Location and Climate

This development is located at Terrey Hills,NSW AUS. The climate file used in all simulations was AUS_NSW_Terrey.Hills.947590_TMYx.2004-2018, sourced from Climate.OneBuilding, an online repository collated from public sources. http://www.climate.onebuilding.org/.

Emission Factors

Greenhouse gas emission factors are used according to NCC2019 – Vol 1 Specification JVb Modelling Parameters - Table 3a Greenhouse Gas Emissions Factors (kgCO2-e/GJ). In the case of this project, 256 kgCO2-e/GJ has been used for electricity only, based on the site location.

Occupants

Occupant density (m²/person) are stipulated in each thermal zone, subject to the function and purpose of the space. Internal heat gains for the Reference and Proposed Reference Building occupant densities are identical.

Building Class	Activity	Occupancy Density	Clothing	Air Velocity (m/s)

Building Class	Activity	Occupancy Density	Clothing	Air Velocity (m/s)
6 (Display Glass)	Retail	5.0	0.7	0.1

Lighting

Lighting power density (W/m²) is stipulated in each thermal zone, subject to the function and purpose of the space. Internal heat gains for the Reference and Proposed Reference Building equipment density have been nominated as identical.

Building Class	Space	W/m²
6 (Display Glass)	Retail	14.0

Equipment

Equipment density (W/m²) are stipulated in each thermal zone, subject to the function and purpose of the space. Internal heat gains for the Reference and Proposed Reference Building equipment density are identical.

Building Class	Space	W/m²
6 (Display Glass)	Retail	15.0

Air-Conditioning

As a fabric only assessment, air-condition equipment and mechanical ventilation rates for the Reference and Proposed Building are identical. Minimum mechanical ventilation is required as per Part FP4.3 Outdoor air supply.

Thermostat Details

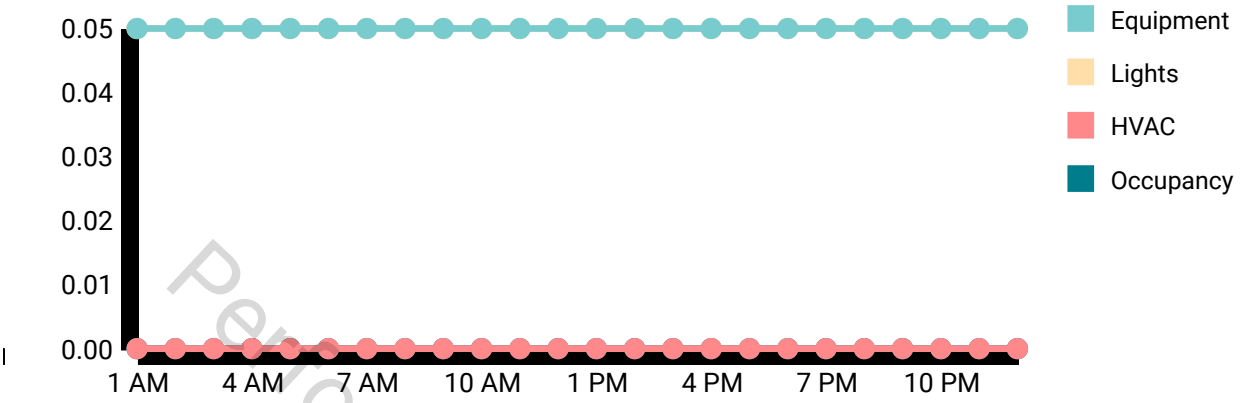
Building Class	Space	Cooling Set Point (°C)	Heating Set Point (°C)
6 (Display Glass)	Retail	24.0	20.0

HVAC Details

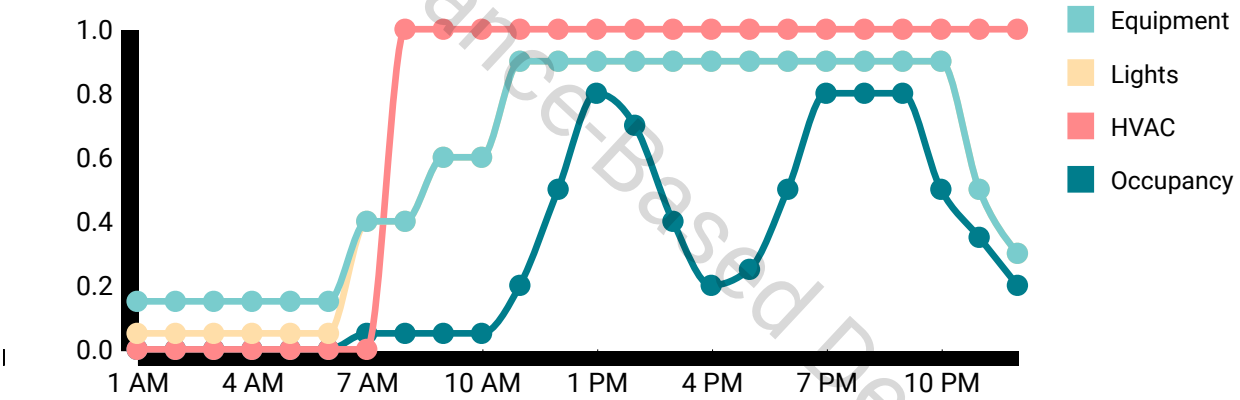
HVAC Type	Packaged Variable Air Volume System
Outdoor Air Flow Rate per Person	0.0075
Gross Rated Air Cooling Cop	3
Heating Coil Type	Electric
Supply Fan Efficiency	0.55
Supply Fan Pressure	1000
Supply Fan Motor Efficiency	0.55

Profiles

Profile 1 Class 6 (Display Glass)
Sunday



Typical Day



Drawings

Level 1 - Delmar

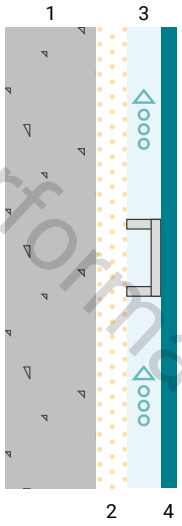
- Thermal Line
- Windows
- Class 6 (Display Glass)

Envelope

Walls

Hebel

Layout



Options

Option	Selected
Total Height (mm)	3800
Contact Resistance	No
Cavity Bridging	No

Materials

Layer	Type	Product
1	Concrete / Masonry	Autoclaved aerated concrete
		Material Width: 75 mm
		Conductivity: 0.100 W/(m.K)
2	Insulation	Reflex Insulation PIRMAX HR Silver
		Material Width: 25 mm
		Conductivity: 0.023 W/(m.K) (R-value: 1.05 m².K/W)
		External Emissivity: 0.05
		Internal Emissivity: 0.05
		Material Facing: External
3	Bridged Air Cavity	
		Layer Width: 28 mm
		Ventilation Area: 500 mm² (Unventilated Internal)
		Material Positioned: External

Layer	Type	Product
		Vertically-Repeating Framing
		Material - Steel
		Conductivity - 47.5 W/(m.K)
		Section - U-Section
		Section Direction - External
		Frame Thickness (BMT) - 0.75 mm
		Vertical Spacing - 250 mm
		Projection - 28 mm
		Frame Height - 35 mm
4	Internal Material	Gypsum plasterboard
		Material Width: 13 mm
		Conductivity: 0.170 W/(m.K)

Disclaimer

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JV3 Building Assessment

National Construction Code 2019 - Volume 1

Project	812 Pittwater Road DEE WHY
Address	4 Delmar Parade, Dee Why NSW 2099, Australia (33.76° S, 151.28° E)
Date	2022-11-22, 12:46 PM
Author	Duncan Hope (Senica Consultancy Group) duncan@senica.com.au
Scope	National Construction Code 2019
Building Class	6 (Display Glass)
Performance Requirements	JP1 Energy Use
Assessment Process	Comparison with the Deemed-to-Satisfy Provisions
Climate Zone	5
Storeys	1
Floor to Floor Height	3800 mm

Using Speckel

Speckel provides various calculations in line with the National Construction Code 2019 - Volume 1 - Section J Energy Efficiency. These calculations are tested in line with all applicable NCC equations or NCC referenced primary or secondary documents, for them to represent an accurate Performance Solution against the Performance Requirements - JP1 Energy Use. A Performance Solution must be shown to comply with the relevant Performance Requirements through one or a combination of Assessment Methods. Speckel is a valid Assessment Method by comparison with the Deemed-to-Satisfy Provisions of each relevant area.

Results

The National Construction Code (NCC) specifies minimum performance standards for the energy efficiency of buildings through the Building Code of Australia (BCA) Volume 1, Section J.

To enable flexibility of the architectural design of the building, a Performance Solution has been used to comply with the Performance Requirement - JP1.

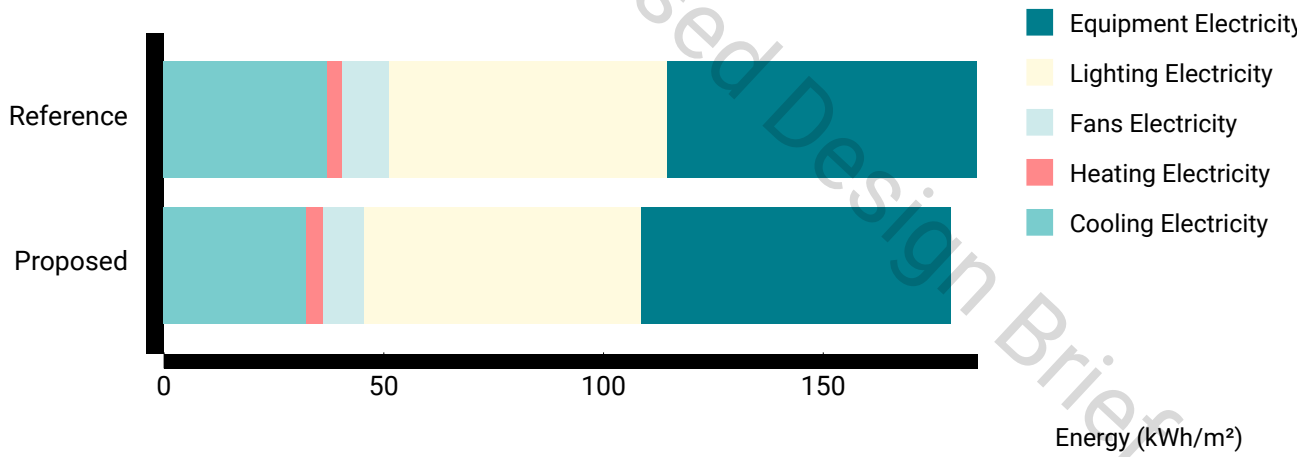
The Assessment Method, 'JV3 Verification using a reference building' has been used and is an Alternative Solution for the Building Fabric only. As such, a Proposed Building with the proposed fabric has been modelled as part of this approach, to compare against the Reference Building services.

To meet acceptance criteria, the Proposed Building with the proposed fabric GHG emissions must be no greater than the Reference Building services.

Building Emissions

	Proposed (kgCO2-e)	Reference (kgCO2-e)	Difference (%)
Emissions	76028.42	78481.22	-3.13

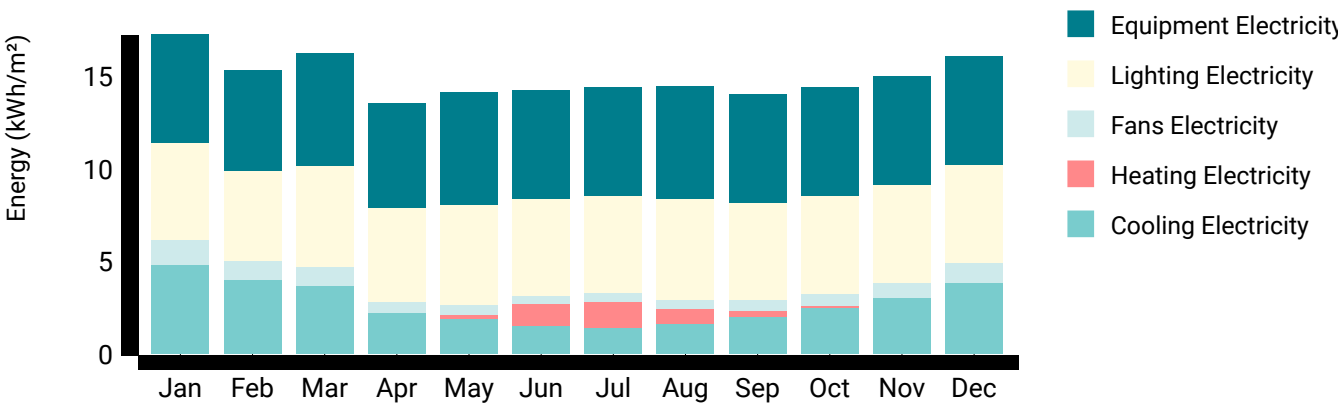
Building Energy



Proposed

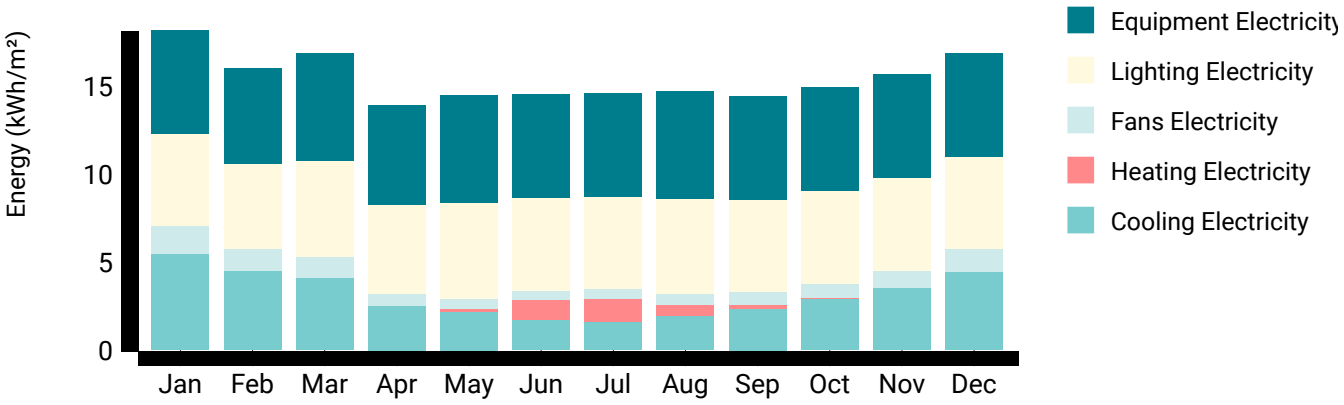
812 Pittwater

812 Pittwater Road DEE WHY



Energy	kWh	kWh/m²	MJ	MJ/m²
Cooling Electricity	15044.9	32.7	54161.6	117.8
Heating Electricity	1803.7	3.9	6493.3	14.1
Fans Electricity	4202.3	9.1	15128.3	32.9
Lights Electricity	29024.6	63.1	104488.4	227.2
Equipment Electricity	32420.7	70.5	116714.5	253.8

Reference



Energy	kWh	kWh/m²	MJ	MJ/m²
Cooling Electricity	17148.3	37.3	61733.9	134.2
Heating Electricity	1652.0	3.6	5947.4	12.9
Fans Electricity	4912.0	10.7	17683.2	38.4
Lights Electricity	29024.6	63.1	104488.4	227.2
Equipment Electricity	32420.7	70.5	116714.5	253.8

Proposed

#	Zone	Int. Floor (m²)	Occupied (Hrs)	Comfortable (Hrs)	Ratio (%)	Pass
1	1. Commercial 01	270.18	3432	3393	98.86	✓
1	2. Commercial 02	182.48	3432	3432	100.00	✓
1	3. Toilet 02	7.27	3432	3432	100.00	✓
					Pass	✓

Reference

#	Zone	Int. Floor (m²)	Occupied (Hrs)	Comfortable (Hrs)	Ratio (%)	Pass
1	1. Commercial 01	270.18	3432	3336	97.20	✗
1	2. Commercial 02	182.48	3432	3429	99.91	✓
1	3. Toilet 02	7.27	3432	3432	100.00	✓
					Pass	✗

Method

Approach

- The National Construction Code (NCC) specifies minimum performance standards for the energy efficiency of buildings through the Building Code of Australia (BCA) Volume 1, Section J.
- To enable flexibility of the architectural design of the building, a Performance Solution has been used to comply with the Performance Requirement - JP1.
- The Assessment Method, JV3 Verification using a reference building has been used and is an Alternative Solution for the Building Fabric only. As such, a Proposed Building with the proposed fabric has been modelled as part of this approach, to compare against the Reference Building services.
- To meet acceptance criteria, the Proposed Building with the proposed fabric Greenhouse Gas (GHG) emissions must be no greater than the Reference Building services.
- When the Simulated Shading Multipliers feature is enabled, each window is simulated in EnergyPlus twice, to compare a completely unshaded window, to a window affected by attached shading, building self-shading, and surrounding structures. The multiplier is based on the ratio of shaded versus unshaded annual average external incident solar radiation, limited between 0.0 and 1.0.

Assumptions / Limitations

- Parts J3 - J8 are not part of this assessment.
- Specification JVa Additional Requirements Part 2. Additional Requirements - General, is only met for provisions (a) General Thermal Construction, J1.2 and (b) for Floor Edge Insulation, J1.6(b) and J1.6(c). All other provisions (c - n) are not part of this assessment.
- Specification JVb Modelling Parameters Part 1. Scope, Part 2. Reference Building and Part 3 Proposed Building and Reference Building have been used to form the basis of the Method of Assessment.
- Specification JVb Modelling Parameters Part 4. Services - proposed and reference building, are not part of this assessment as the minimum performance requirements of the services are not part of this assessment.
- To ensure the reference building can be calculated, windows are limited to a maximum of 99% window-to-wall ratio (WWR).

Inputs

The NCC 2019 - Vol 1 contains technical design and construction requirements for all commercial buildings and their associated structures. The following Building Classes have been adopted in this assessment.

Building Class	Wall Area (m²)	Window Area (m²)	Window-Wall Ratio
6 (Display Glass)	174.90	203.04	0.54

Levels

#	Drawing	# Zones	Floor Area (m²)	Wall (m²)	Window (m²)
1	812 Pittwater Road DEE WHY	3	471.1	174.9	203.0

Zones

Level	Zone	Area (m²)	Volume (m²)	Treated Area (m²)
1	1. Commercial 01	270.18	972.65	270.18
1	2. Commercial 02	182.48	656.92	182.48
1	3. Toilet 02	7.27	26.17	7.27
		459.93		459.93

Walls

Total System R-values of all walls include the effects of thermal bridging, which are calculated in accordance with AS/NZS 4859.2 and NZ 4214:2006 (J1.2 Thermal construction — General (e)) or are stated values.

For the purpose of the Reference Building, the wall total system R-value of the wall-glazing construction has been calculated in accordance with J1.5 Walls and Glazing and Specification and J1.5a Calculation of U-Value and solar admittance.

Proposed	Title	Class	R-Value (m²K°/W)	Area (m²)
External	Hebel	6 (Display Glass)	2.58	174.90
Reference	**Title**	**Class**	**R-Value (m²K°/W)**	**Area (m²)**
External	Hebel	6 (Display Glass)	2.58	174.90

Windows

Total system U-values of all windows include the effects of thermal bridging at the frame, which are calculated in accordance with ISO 15099, as per J1.2 Thermal Construction — General (e).

For the purpose of the Reference Building, the glazing total system U-value and solar admittance of the wall-glazing construction has been calculated in accordance with J1.5 Walls and Glazing and Specification J1.5a Calculation of U-Value and solar admittance.

Proposed	Title	Class	U-value	SHGC	Area (m²)
External	Concept	6 (Display Glass)	5.40	0.55	203.04
Reference	**Title**	**Class**	**U-value**	**SHGC**	**Area (m²)**
External	Concept	6 (Display Glass)	5.80	0.81	203.04

Location and Climate

This development is located at Terrey Hills,NSW AUS. The climate file used in all simulations was AUS_NSW_Terrey.Hills.947590_TMYx.2004-2018, sourced from Climate.OneBuilding, an online repository collated from public sources. http://www.climate.onebuilding.org/.

Emission Factors

Greenhouse gas emission factors are used according to NCC2019 – Vol 1 Specification JVb Modelling Parameters - Table 3a Greenhouse Gas Emissions Factors (kgCO2-e/GJ). In the case of this project, 256 kgCO2-e/GJ has been used for electricity only, based on the site location.

Occupants

Occupant density (m²/person) are stipulated in each thermal zone, subject to the function and purpose of the space. Internal heat gains for the Reference and Proposed Reference Building occupant densities are identical.

Building Class	Activity	Occupancy Density	Clothing	Air Velocity (m/s)
6 (Display Glass)	Retail	5.0	0.7	0.1

Lighting

Lighting power density (W/m²) is stipulated in each thermal zone, subject to the function and purpose of the space. Internal heat gains for the Reference and Proposed Reference Building equipment density have been nominated as identical.

Building Class	Space	W/m²
6 (Display Glass)	Retail	14.0

Equipment

Equipment density (W/m²) are stipulated in each thermal zone, subject to the function and purpose of the space. Internal heat gains for the Reference and Proposed Reference Building equipment density are identical.

Building Class	Space	W/m²
6 (Display Glass)	Retail	15.0

Air-Conditioning

As a fabric only assessment, air-condition equipment and mechanical ventilation rates for the Reference and Proposed Building are identical. Minimum mechanical ventilation is required as per Part FP4.3 Outdoor air supply.

Thermostat Details

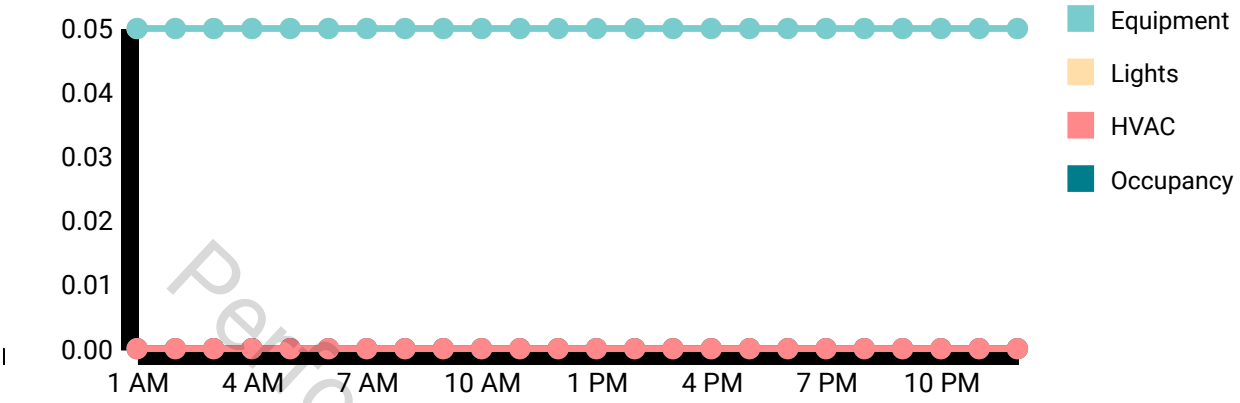
Building Class	Space	Cooling Set Point (°C)	Heating Set Point (°C)
6 (Display Glass)	Retail	24.0	20.0

HVAC Details

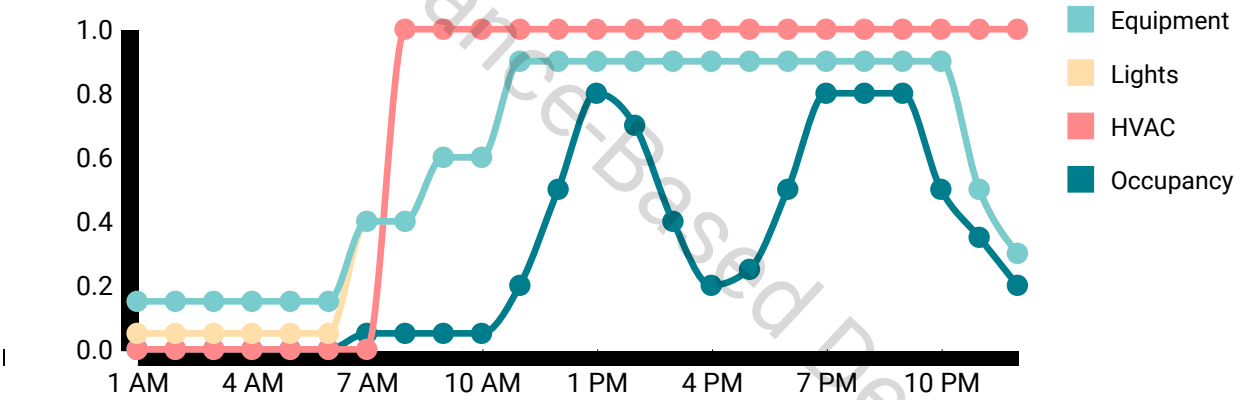
HVAC Type	Packaged Variable Air Volume System
Outdoor Air Flow Rate per Person	0.0075
Gross Rated Air Cooling Cop	3
Heating Coil Type	Electric
Supply Fan Efficiency	0.55
Supply Fan Pressure	1000
Supply Fan Motor Efficiency	0.55

Profiles

Profile 1 Class 6 (Display Glass)
Sunday



Typical Day



Drawings

Level 1 - 812 Pittwater Road DEE WHY

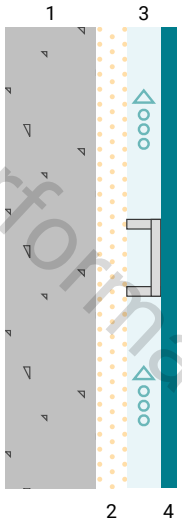
- Thermal Line
- Windows
- Class 6 (Display Glass)

Envelope

Walls

Hebel

Layout



Options

Option	Selected
Total Height (mm)	3800
Contact Resistance	No
Cavity Bridging	No

Materials

Layer	Type	Product
1	Concrete / Masonry	Autoclaved aerated concrete
		Material Width: 75 mm
		Conductivity: 0.100 W/(m.K)
2	Insulation	Reflex Insulation PIRMAX HR Silver
		Material Width: 25 mm
		Conductivity: 0.023 W/(m.K) (R-value: 1.05 m².K/W)
		External Emissivity: 0.05
		Internal Emissivity: 0.05
		Material Facing: External
3	Bridged Air Cavity	
		Layer Width: 28 mm
		Ventilation Area: 500 mm² (Unventilated Internal)
		Material Positioned: External

Layer	Type	Product
		Vertically-Repeating Framing
		Material - Steel
		Conductivity - 47.5 W/(m.K)
		Section - U-Section
		Section Direction - External
		Frame Thickness (BMT) - 0.75 mm
		Vertical Spacing - 250 mm
		Projection - 28 mm
		Frame Height - 35 mm
4	Internal Material	Gypsum plasterboard
		Material Width: 13 mm
		Conductivity: 0.170 W/(m.K)

Disclaimer

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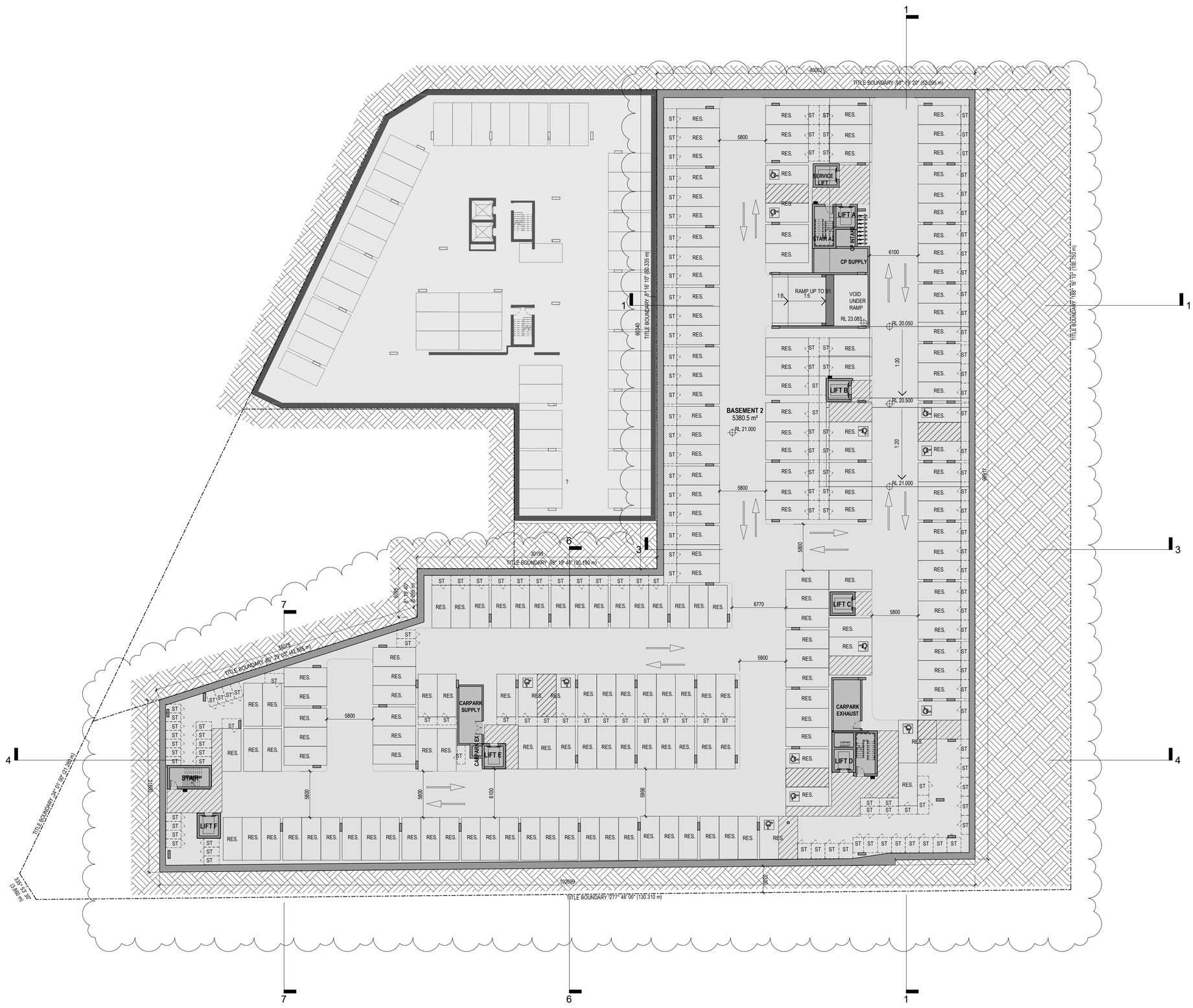
Appendix B

Architectural Plans



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	B	11.11.2022	COUNCIL SUBMISSION	JC

11/11/2022 5:10:26 PM

Client: **Dee Why 3 Pty Ltd & Dee Why 4 Pty Ltd**

Project: **4 Delmar Pde & 812 Pittwater Rd, Dee Why**

Drawing: **BASEMENT 2**

Project No: **221054**

Date: **11.11.2022**

Author: **BR**

Scale: @ A1 **1 : 250**

Drawing No.: **TP01.01 B**

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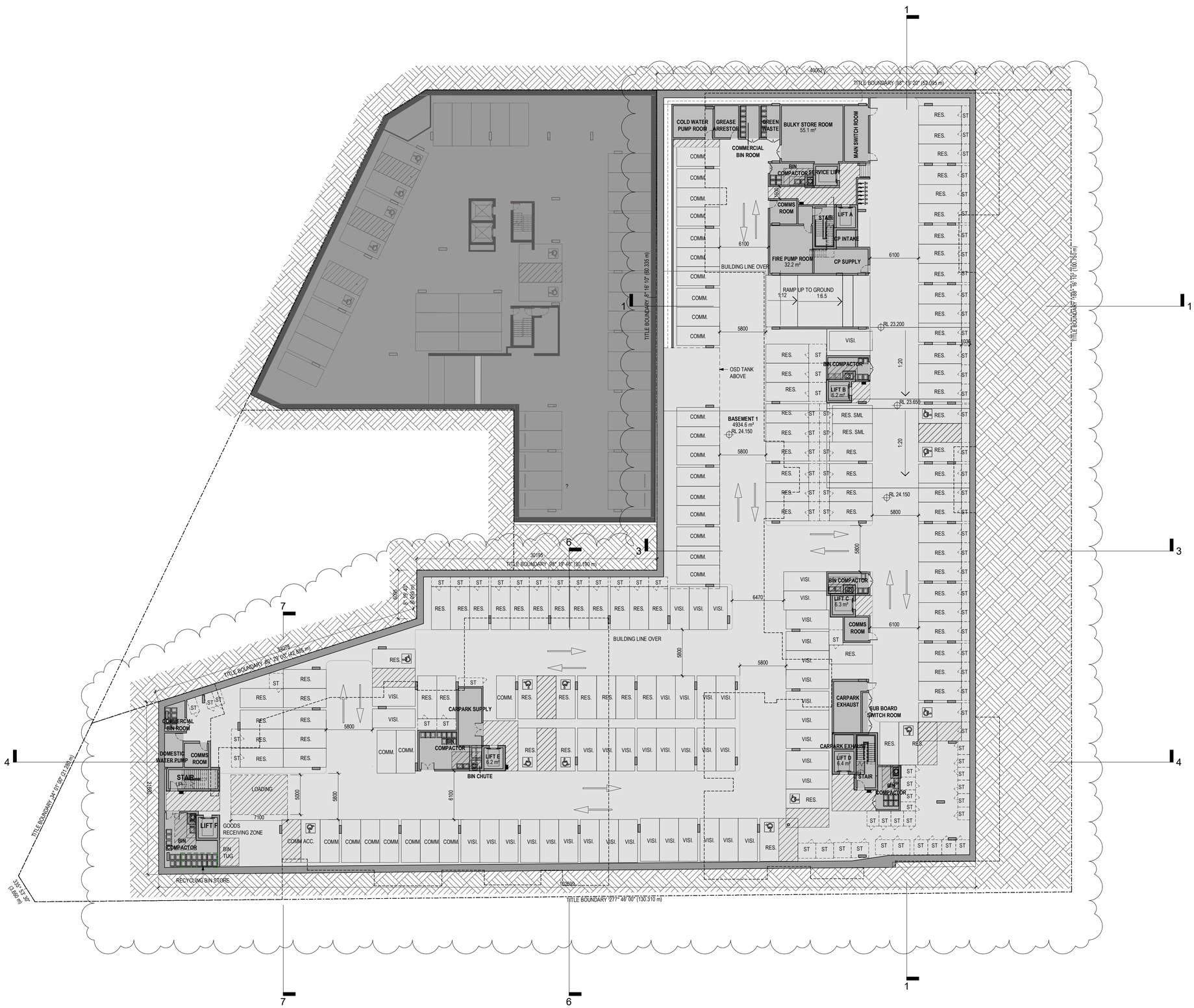

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B	11.11.2022	COUNCIL SUBMISSION	JC

11/11/2022 5:10:33 PM

Client: **Dee Why 3 Pty Ltd & Dee Why 4 Pty Ltd**

Project: **4 Delmar Pde & 812 Pittwater Rd, Dee Why**

Drawing: **BASEMENT 1**

Project No: **221054** Date: **11.11.2022** Author: **BR** Scale: @ A1 **1 : 250** Drawing No.: **TP01.02 B**

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Revisions				
	A	14.12.2021	DEVELOPMENT APPLICATION	JC
	B	11.11.2022	COUNCIL SUBMISSION	JC

17/11/2022 5:20:27 PM

Client: **Dee Why 3 Pty Ltd & Dee Why 4 Pty Ltd**

Project: **4 Delmar Pde & 812 Pittwater Rd, Dee Why**

Drawing: **GROUND**

Project No: **221054**

Date: **11.11.2022**

Author: **DM**

Scale: @ A1 **1 : 250**

Drawing No.: **TP01.03 B**

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DELMAR PARADE

PITTWATER ROAD

2 DELMAR
UNDER CONSTRUCTION

6 DELMAR PDE

816
PITTWATER
RD

COMMERCIAL
178.7 m²

COMMERCIAL
259.8 m²

DOCK BELOW

PLANTER OVER LID OF FLOOD VOID

HIGH LEVEL AWNING WINDOW

HIGH LEVEL AWNING WINDOWS

HIGH LEVEL AWNING WINDOW

OVERLAND FLOW PATH

TITLE BOUNDARY ,98° 19' 20" (52.095 m)

TITLE BOUNDARY ,98° 19' 40" (30.190 m)

TITLE BOUNDARY ,80° 29' 00" (42.885 m)

TITLE BOUNDARY ,8° 16' 0" (0° (60.335 m)

TITLE BOUNDARY ,188° 16' 10" (100.750 m)

TITLE BOUNDARY ,277° 46' 00" (130.310 m)

TITLE BOUNDARY ,34° 10' 00" (21.280 m)

DCP SETBACK 4m FROM KERB

6m SETBACK

9m SETBACK

9000

6000

74669

A.205 1 BED 54.2 m²
A.206 1 BED 55.4 m²
A.201 1 BED 55.3 m²
A.202 1 BED 57.4 m²
A.203 3 BED 97.1 m²
A.204 2 BED LHA 76.9 m²
B.202 2 BED PLUS 87.0 m²
B.201 1 BED DDA 58.6 m²
B.206 1 BED LHA 55.9 m²
B.205 2 BED 83.3 m²
C.202 2 BED 84.4 m²
C.201 2 BED LHA 77.7 m²
C.205 1 BED 52.8 m²
B.203 3 BED 116.4 m²
B.204 2 BED PLUS LHA 88.7 m²
C.203 3 BED LHA 114.4 m²
C.204 2 BED PLUS LHA 91.0 m²
D.207 2 BED 74.9 m²
D.208 1 BED 50.0 m²
D.201 3 BED 110.5 m²
D.202 1 BED PLUS DDA 67.3 m²
D.203 3 BED 108.7 m²
D.206 1 BED PLUS 69.0 m²
D.205 1 BED LHA 50.0 m²
D.204 1 BED LHA 50.0 m²
E.202 2 BED 86.2 m²
E.201 2 BED 82.2 m²
E.209 2 BED 76.8 m²
E.210 1 BED DDA 52.4 m²
E.211 1 BED 53.3 m²
E.212 1 BED PLUS 57.6 m²
E.203 1 BED 59.5 m²
E.204 1 BED 52.6 m²
E.205 2 BED 80.0 m²
E.206 2 BED 84.0 m²
E.208 2 BED 79.3 m²
E.207 1 BED PLUS LHA 60.0 m²
F.201 1 BED 54.0 m²
F.202 1 BED 55.9 m²

RL 31.800
RL 31.280
RL 31.440
RL 31.170
RL 32.400
RL 32.200
RL 32.080
RL 33.930
RL 37.880
RL 27.765
RL 33.100

LIFT 6.2 m²
STAIR 12.0 m²

Revisions			
A	14.12.2021	DEVELOPMENT APPLICATION	JC
B	11.11.2022	COUNCIL SUBMISSION	JC

Client	Dee Why 3 Pty Ltd & Dee Why 4 Pty Ltd	Project	4 Delmar Pde & 812 Pittwater Rd, Dee Why	Drawing	LEVEL 1	Project No	221054	Date	11.11.2022
Author	DM	Scale: @ A1	1 : 250	Drawing No.	TP01.04 B				

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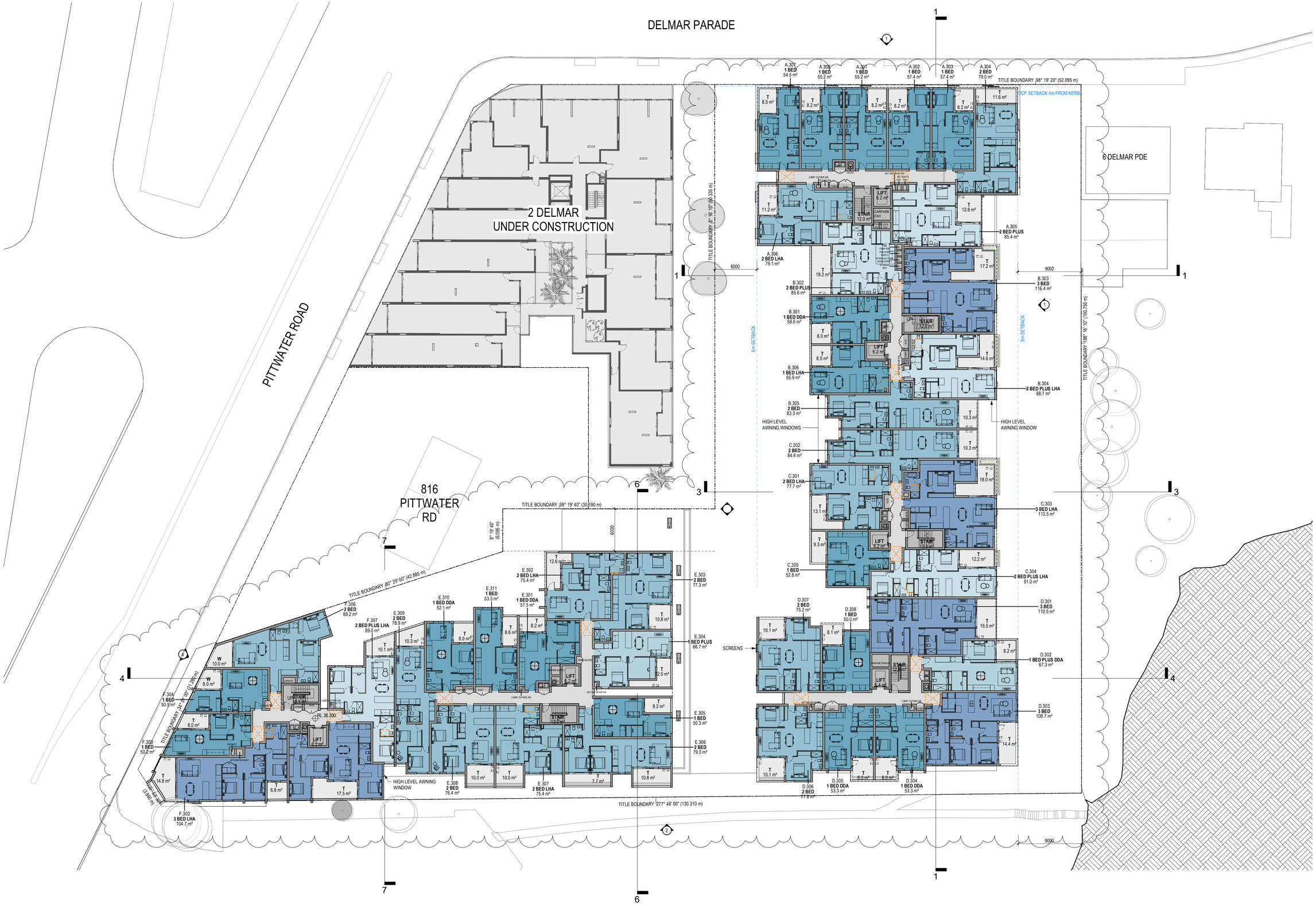

Revisions			
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B	11.11.2022	COUNCIL SUBMISSION	JC

Client: **Dee Why 3 Pty Ltd & Dee Why 4 Pty Ltd**

Project: **4 Delmar Pde & 812 Pittwater Rd, Dee Why**

Drawing: **LEVEL 2**

Project No: **221054**

Date: **11.11.2022**

Author: **DM**

Scale: @ A1 **1 : 250**

Drawing No.: **TP01.05 B**

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DELMAR PARADE

PITTWATER ROAD

2 DELMAR
UNDER CONSTRUCTION

816
PITTWATER
RD

TITLE BOUNDARY 98° 19' 20" (52.095 m)

TITLE BOUNDARY 8° 16' 10" (60.339 m)

TITLE BOUNDARY 188° 16' 10" (100.759 m)

TITLE BOUNDARY 98° 19' 40" (30.190 m)

TITLE BOUNDARY 8° 19' 40" (6.095 m)

TITLE BOUNDARY 260° 29' 00" (42.885 m)

TITLE BOUNDARY 124° 16' 10" (21.180 m)

TITLE BOUNDARY 277° 46' 00" (130.310 m)

6m SETBACK

9m SETBACK

6000

33603

98677

72119

9000

A.407 1 BED 54.5 m²
A.408 1 BED 55.2 m²
A.401 1 BED 55.2 m²
A.402 1 BED 57.4 m²
A.403 1 BED 57.4 m²
A.404 2 BED 79.0 m²
A.405 2 BED PLUS 85.4 m²
A.406 2 BED LHA 79.1 m²
B.402 2 BED 85.6 m²
B.403 3 BED 116.4 m²
B.401 1 BED DDA 58.6 m²
B.406 1 BED LHA 55.9 m²
B.404 2 BED PLUS LHA 88.7 m²
B.405 2 BED 83.3 m²
C.402 2 BED 84.4 m²
C.401 2 BED LHA 77.7 m²
C.403 3 BED LHA 113.5 m²
C.405 1 BED 52.8 m²
C.404 2 BED PLUS LHA 91.0 m²
D.407 2 BED 75.2 m²
D.408 1 BED 50.0 m²
D.401 3 BED 110.5 m²
D.402 1 BED PLUS DDA 67.3 m²
D.403 3 BED 108.7 m²
D.406 2 BED 77.6 m²
D.405 1 BED DDA 53.3 m²
D.404 1 BED DDA 53.3 m²
E.402 2 BED LHA 75.4 m²
E.403 2 BED 77.3 m²
E.411 1 BED 53.3 m²
E.401 1 BED DDA 57.5 m²
E.410 1 BED DDA 52.2 m²
E.404 1 BED PLUS 66.7 m²
E.409 2 BED 78.9 m²
E.407 2 BED LHA 75.4 m²
E.405 1 BED 50.3 m²
E.406 2 BED 79.3 m²
E.408 2 BED 76.4 m²
F.406 2 BED 88.2 m²
F.407 2 BED PLUS LHA 89.0 m²
F.404 1 BED 50.5 m²
F.403 1 BED 50.2 m²
F.402 3 BED LHA 104.7 m²
F.408 3 BED 98.6 m²

HIGH LEVEL AWNING WINDOWS
HIGH LEVEL AWNING WINDOW
HIGH LEVEL AWNING WINDOW

LIFT 6.2 m²
STAIR 12.0 m²
CARPARK EXH
RL 38.000

10 DELMAR PDE
8 DELMAR PDE

Revisions			
A	14.12.2021	DEVELOPMENT APPLICATION	JC
B	11.11.2022	COUNCIL SUBMISSION	JC

Client: **Dee Why 3 Pty Ltd & Dee Why 4 Pty Ltd**

Project: **4 Delmar Pde & 812 Pittwater Rd, Dee Why**

Drawing: **LEVEL 3**

Project No: **221054** Date: **11.11.2022** Author: **DM** Scale: @ A1 **1 : 250**

Drawing No.: **TP01.06 B**

11/11/2022 5:11:57 PM

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DELMAR PARADE

PITTWATER ROAD

816 PITTWATER RD

2 DELMAR
UNDER CONSTRUCTION

TITLE BOUNDARY 98° 19' 20" (52.095 m)

TITLE BOUNDARY 8° 16' 10" (60.335 m)

TITLE BOUNDARY 188° 16' 10" (100.750 m)

TITLE BOUNDARY 98° 19' 40" (30.190 m)

TITLE BOUNDARY 8° 19' 40" (6.055 m)

TITLE BOUNDARY 80° 29' 00" (42.885 m)

TITLE BOUNDARY 34° 1' 10" (27.280 m)

TITLE BOUNDARY 277° 46' 00" (130.310 m)

2 DELMAR GLASS LINE
SLP SETBACK 6m FROM KERB

6m SETBACK

12m SETBACK

HIGH LEVEL AWNING WINDOW

10 DELMAR PDE

8 DELMAR PDE

A.505 **1 BED PLUS** 54.1 m²
A.506 **2 BED** 70.8 m²
A.501 **1 BED** 53.7 m²
A.502 **3 BED** 105.6 m²
A.503 **2 BED PLUS** 85.5 m²
A.504 **2 BED LHA** 79.1 m²
B.502 **2 BED PLUS** 85.7 m²
B.503 **3 BED** 111.7 m²
B.501 **1 BED DDA** 58.3 m²
B.504 **2 BED PLUS LHA** 88.7 m²
B.506 **1 BED LHA** 55.6 m²
B.505 **2 BED** 83.3 m²
C.502 **2 BED** 84.4 m²
C.501 **2 BED LHA** 77.7 m²
C.503 **3 BED LHA** 114.4 m²
C.504 **1 BED** 52.8 m²
C.505 **2 BED PLUS LHA** 91.0 m²
D.507 **2 BED** 75.2 m²
D.508 **1 BED** 50.0 m²
D.501 **3 BED** 110.5 m²
D.502 **1 BED** 53.9 m²
D.503 **2 BED PLUS** 91.5 m²
D.506 **2 BED** 77.8 m²
D.505 **1 BED DDA** 53.3 m²
D.504 **1 BED DDA** 53.3 m²
E.502 **2 BED LHA** 75.4 m²
E.503 **2 BED** 77.3 m²
E.504 **1 BED PLUS** 66.7 m²
E.505 **1 BED** 50.3 m²
E.506 **2 BED** 79.3 m²
E.507 **2 BED LHA** 75.4 m²
E.508 **2 BED** 76.4 m²
E.509 **2 BED** 78.9 m²
E.510 **1 BED DDA** 52.2 m²
E.511 **1 BED** 53.3 m²
E.501 **1 BED DDA** 57.5 m²
F.506 **2 BED** 88.1 m²
F.507 **2 BED PLUS LHA** 89.0 m²
F.504 **1 BED** 50.5 m²
F.503 **1 BED** 50.2 m²
F.502 **3 BED LHA** 104.7 m²
F.508 **3 BED** 98.6 m²

RL 42.500
RL 41.100

12000
6000
3000
118294

Revisions
A 14.12.2021 DEVELOPMENT APPLICATION JC
B 11.11.2022 COUNCIL SUBMISSION JC

Client: Dee Why 3 Pty Ltd & Dee Why 4 Pty Ltd
Project: 4 Delmar Pde & 812 Pittwater Rd, Dee Why
Drawing: LEVEL 4
Project No: 221054
Date: 11.11.2022
Author: DM
Scale: @ A1 1 : 250
Drawing No.: TP01.07 B

11/11/2022 5:12:18 PM

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Revisions

A	14.12.2021	DEVELOPMENT APPLICATION	JC
B	11.11.2022	COUNCIL SUBMISSION	JC

11/11/2022 5:12:42 PM

Client: **Dee Why 3 Pty Ltd & Dee Why 4 Pty Ltd**

Project: **4 Delmar Pde & 812 Pittwater Rd, Dee Why**

Drawing: **LEVEL 6**

Project No: **221054**

Date: **11.11.2022**

Author: **DM**

Scale: @ A1: **1 : 250**

Drawing No.: **TP01.09 B**

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DELMAR PARADE

PITTWATER ROAD

2 DELMAR
UNDER CONSTRUCTION

816 PITTWATER RD

TITLE BOUNDARY 98° 19' 20" (52.095 m)

DCP SETBACK 8m FROM KERB

TITLE BOUNDARY 8° 16' 10" (60.335 m)

6m SETBACK

12m SETBACK

TITLE BOUNDARY 188° 16' 10" (100.750 m)

TITLE BOUNDARY 98° 19' 40" (30.190 m)

8° 19' 40" (6.055 m)

TITLE BOUNDARY 80° 29' 00" (42.885 m)

TITLE BOUNDARY 234° 01' 00" (21.280 m)

TITLE BOUNDARY 277° 46' 00" (130.310 m)

F.805
3 BED PLUS LHA
132.4 m²

F.803
2 BED
90.3 m²

F.802
1 BED
50.3 m²

F.801
3 BED LHA
105.9 m²

F.806
3 BED LHA
111.4 m²

T 10.0 m²
T 16.8 m²
T 8.1 m²
T 13.5 m²
T 14.9 m²
T 6.1 m²
T 20.2 m²

STAIR TOWER

LIFT 6.2 m²

Revisions			
A	14.12.2021	DEVELOPMENT APPLICATION	JC
B	11.11.2022	COUNCIL SUBMISSION	JC

11/11/2022 5:12:50 PM

Client: **Dee Why 3 Pty Ltd & Dee Why 4 Pty Ltd**

Project: **4 Delmar Pde & 812 Pittwater Rd, Dee Why**

Drawing: **LEVEL 7**

Project No: **221054** Date: **11.11.2022** Author: **DM** Scale: @ A1 **1 : 250**

Drawing No.: **TP01.10 B**

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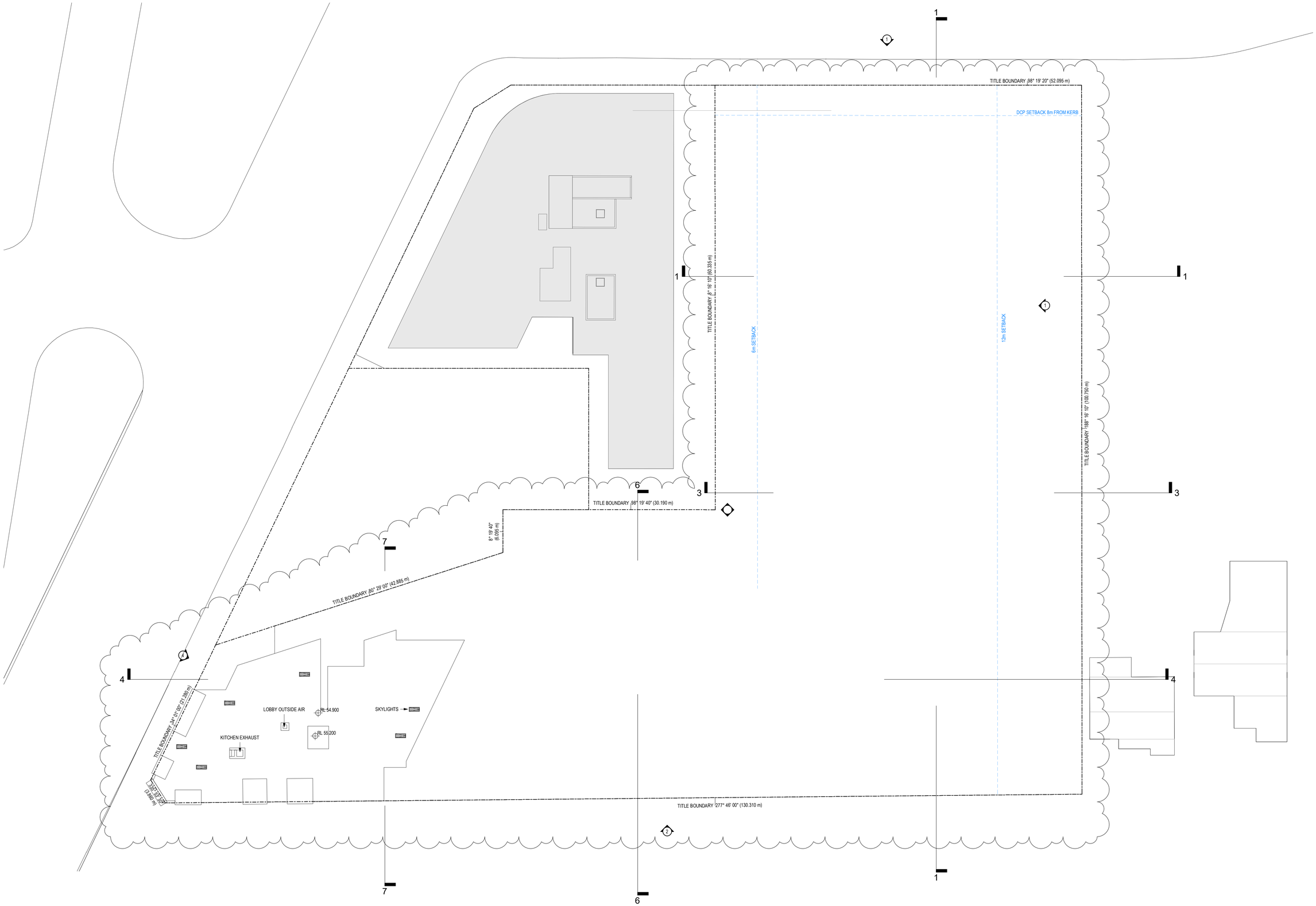

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Client: **Dee Why 3 Pty Ltd & Dee Why 4 Pty Ltd**

Project: **4 Delmar Pde & 812 Pittwater Rd, Dee Why**

Drawing: **LEVEL 8**

Project No: **221054**

Date: **11.11.2022**

Author: **DM**

Scale: @ A1 **1 : 250**

Drawing No.: **TP01.11 B**

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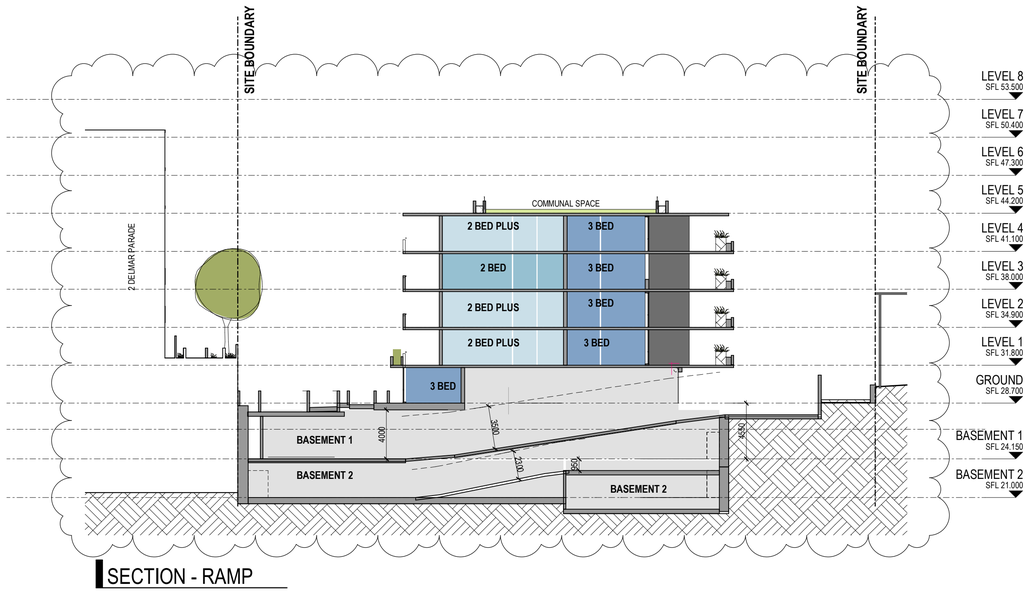

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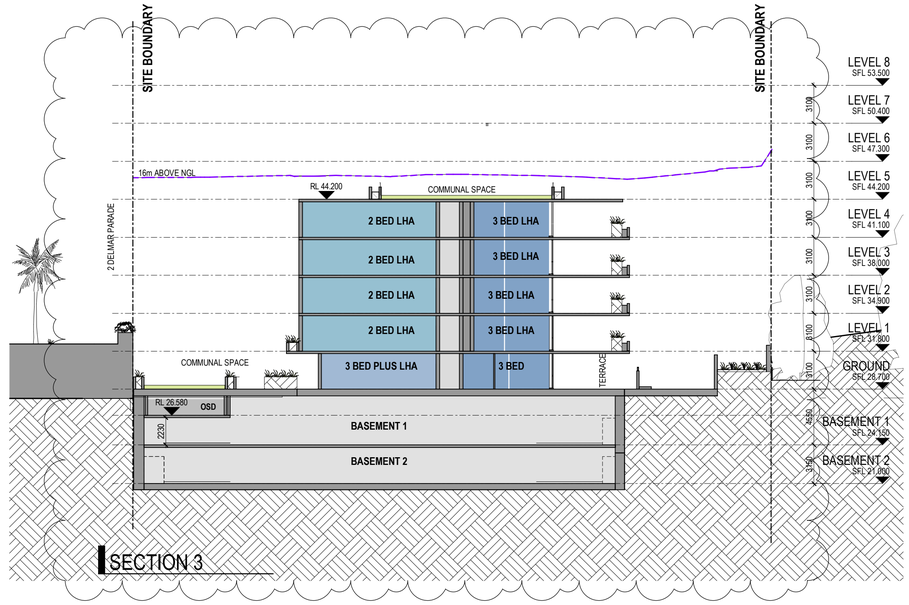

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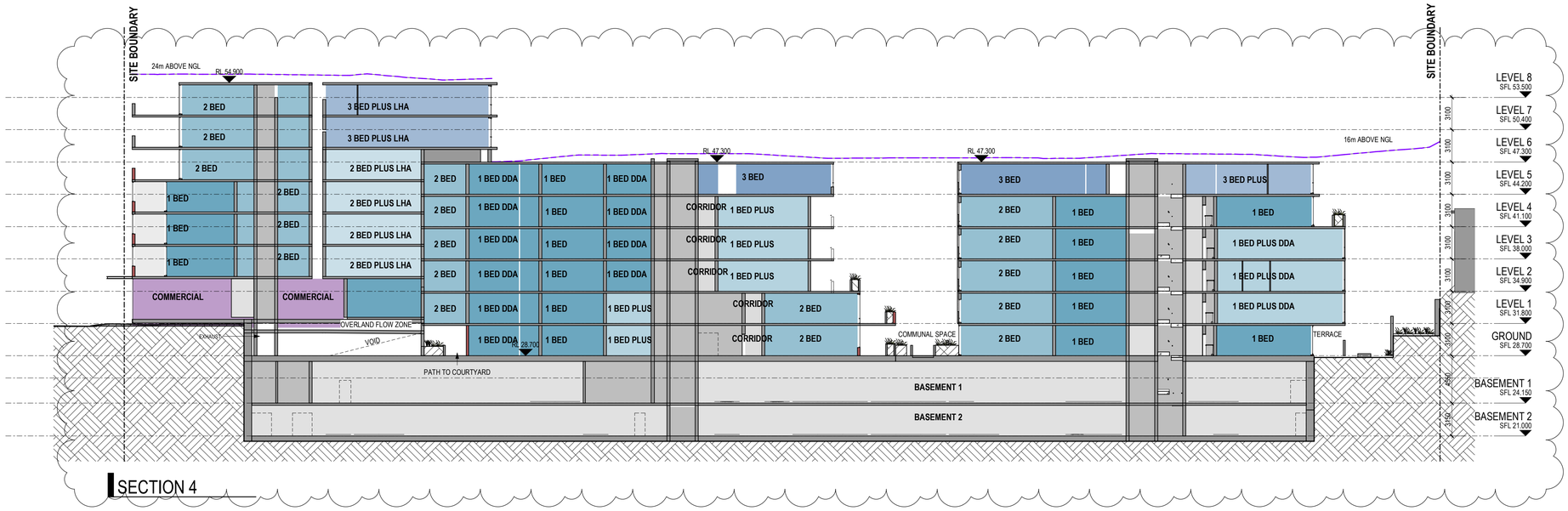

SECTION 4

Revisions				
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	B	11.11.2022	COUNCIL SUBMISSION	JC

Client: **Dee Why 3 Pty Ltd & Dee Why 4 Pty Ltd**

Project: **4 Delmar Pde & 812 Pittwater Rd, Dee Why**

Drawing: **SECTIONS**

Project No: **221054**

Date: **11.11.2022**

Author: **BR**

Scale: @ A1 **1 : 250**

Drawing No.: **TP03.01 B**

11/11/2022 5:14:40 PM

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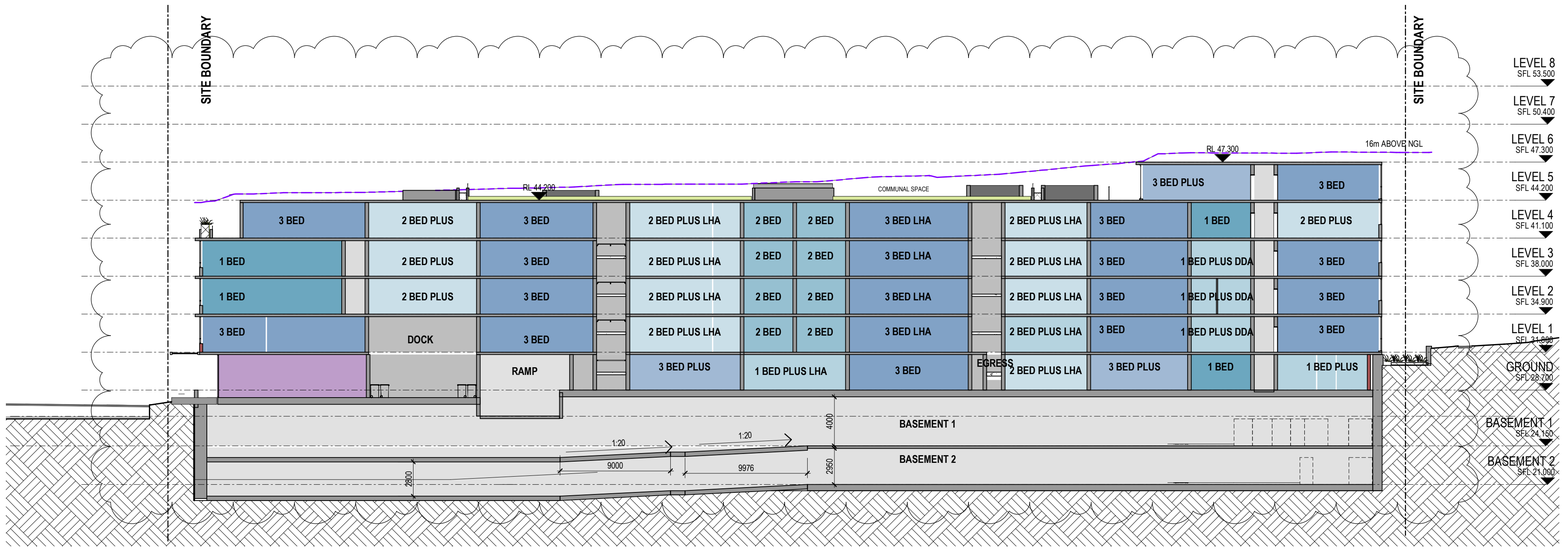

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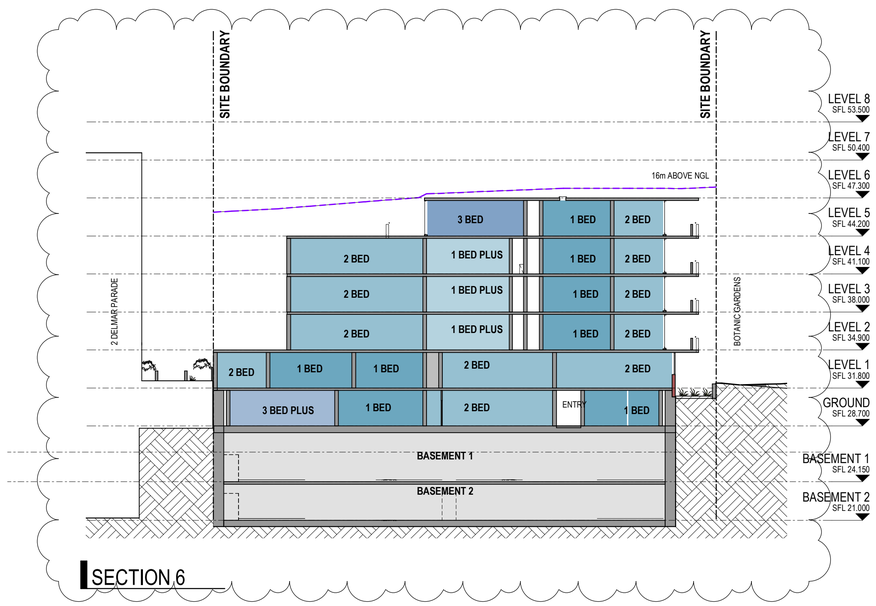

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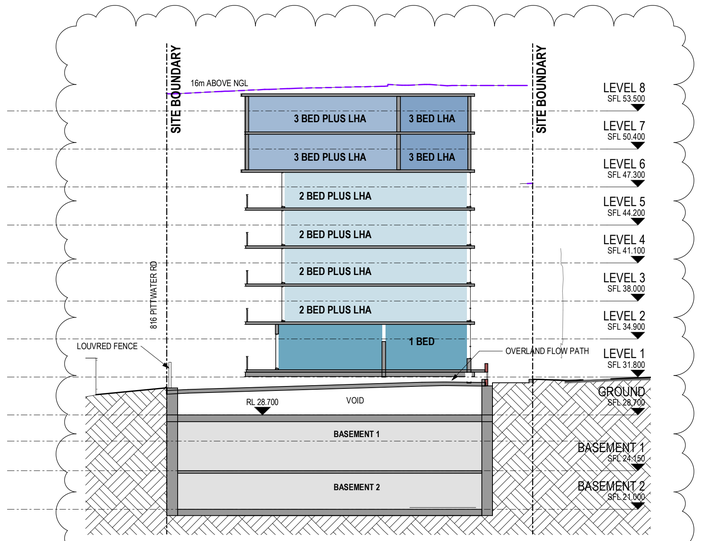

SECTION 7

Revisions				
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	B	11.11.2022	COUNCIL SUBMISSION	JC

11/11/2022 5:14:47 PM

Client: **Dee Why 3 Pty Ltd & Dee Why 4 Pty Ltd**

Project: **4 Delmar Pde & 812 Pittwater Rd, Dee Why**

Drawing: **SECTIONS 2**

Project No: **221054**

Date: **11.11.2022**

Author: **JC**

Scale: @ A1 **1 : 250**

Drawing No.: **TP03.02 B**

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