CUNDALL

2 Greenwich Rd, Greenwich

Sustainability Report

Alceon Group Pty Ltd

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Executive Summary

2 Greenwich Road is a proposed new luxury senior living development with commercial and retail space at ground floor. The lower ground and ground level includes common residential areas such as a gallery, wellness centre, wine cellar and cinema. Further residential common areas include a roof terrace with swimming pool, BBQ and social gathering area. Ecologically Sustainable Design (ESD) principles are being applied in the design of the project.

The following targets have been achieved by the development:

- Meet or exceed BASIX minimum compliance requirements for energy and water including:
  - BASIX Energy score: 25% reduction in Greenhouse Gas (GHG) emissions
  - BASIX Water score: Greater than 40% saving in potable water consumption
  - BASIX Thermal Comfort: Achieve better than 6-Star average HERS star rating across the project.

Some of the initiatives currently adopted and being developed further during remaining project stages include:

- Efficient building services, systems, equipment and controls
- Targeting an average higher than 6-Star NatHERS ratings for the apartments through a good performance facade with low-e single glazing, insulation and fixed shading
- Provision of energy efficient appliances to all apartments
- Solar photovoltaic system on roof
- Rainwater capture and reuse for irrigation via OSD tank
- Provision of water efficient appliances to all apartments
- Communal residents facilities
- Close proximity to public transport and amenities.

Additional sustainability initiatives proposed will be developed in further detail as the design progresses.

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1.0 Introduction

Cundall have been engaged to develop the ecologically sustainable development (ESD) strategy for the 2 Greenwich project located in Greenwich NSW. This report supports the Development Application for the project and outlines the sustainability targets for the project, as well as strategies and initiatives proposed to achieve these.

1.1 Description of the development

2 Greenwich Road is a proposed luxury senior living development comprising:

Level	Includes
Basement 1	Residential carpark and storage and services / plant rooms
Basement 2	Residential carpark and storage and services / plant rooms
Basement 3	Residential carpark and storage, Commercial / Retail carpark, services / plant rooms and residential and retail waste room
Lower Ground	Cinema, Wine storage and cellar, residents facilities and apartment units
Ground Level	Café, commercial space, gallery/library, wellness centre and residents terrace
Level 1 to Level 6	Apartment units
Level 7	Rooftop terrace – includes swimming pool and communal residents' area

There is a total of 40 apartment units comprising of a mix of 1, 2 and 3 bedroom apartments. These are independent living units and are classified as Class 2 under the BCA.

Figure 1 shows North and West sections.

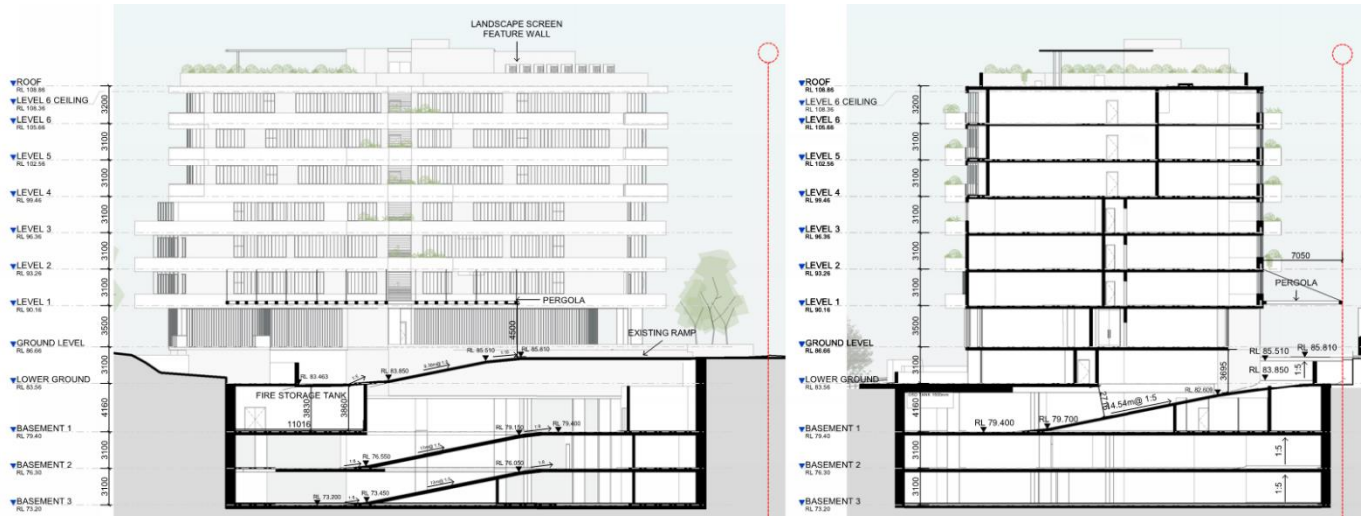

Figure 1. 2 Greenwich Rd building sections – North (left) and West (right).

A 3D render of the proposed development is shown in Figure 2 below. The site is located in close proximity to parks, to the Wollstonecraft Club and to hospital and extensive medical. There is good access to public transport through the nearby railway station and bus services within 200m that connect the area to Sydney CBD. The project is located within Lane Cove Council area and development control.

The site has an approximate area of 2,140sqm and is legally described as follows:

- Lot number: Lot 2; DP 566041

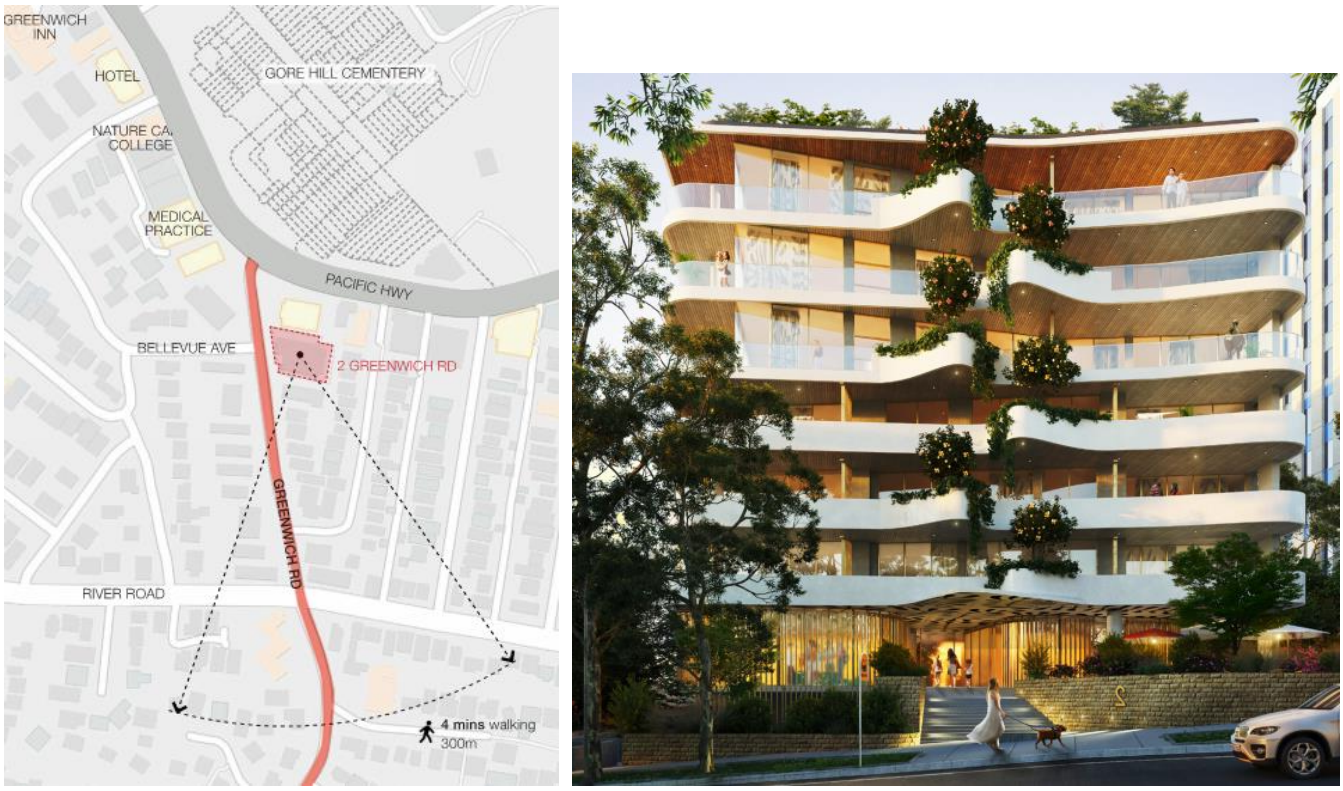

Figure 2. 3D Render of proposed building (right) and location plan (left)

1.2 Sustainability targets, strategies and initiatives

Sections 2 and 3 outline the sustainability targets, proposed strategies and initiatives for the proposed residential development.

2.0 BASIX

2.1 Summary of Targets

The following commitments have been made for the residential component of the development:

- Achieve the minimum BASIX requirements for energy and water including:
  - BASIX Energy: 25% saving compared to benchmark greenhouse gas (GHG) emissions
  - BASIX Water: 40% saving compared to benchmark potable water demand
  - BASIX Thermal Comfort: Achieve better than 6-Star average HERS star rating across the project.

2.2 Minimum regulatory BASIX Requirements

New Class 1 and Class 2 residential development in NSW, must comply with BASIX requirements developed by the Department of Planning and Environment. This replaces some parts of Section J of Volume 1 of the Building Code of Australia for Class 2 buildings. There are three components with minimum compliance targets varying by type of building and location. The three components are energy, water and thermal comfort.

2.2.1 Energy

The energy section of BASIX aims to reduce the greenhouse gas emissions of all new residential dwellings. The benchmark is 3,292 kgCO_2 per person per year, which was the average for homes prior to the introduction of BASIX in 2004. The energy target ranges from 10% to 50% reductions from the benchmark, depending on the climatic zone and the building type. For 2 Greenwich Road, located in Lane Cove Council Area and with over 6 storeys of residential units, the energy target is:

	BASIX Target Zone	Target	Building Type
Energy	E1A	**25%**	High Rise (6 storey units or higher)

2.2.2 Water

The water section of BASIX aims to reduce the potable water consumption of all new residential developments. The benchmark is 90,340 litres of water per person per year (or 247 litres per person per day), which was the average potable water consumption of a home prior to the introduction of BASIX in 2004. The water reduction target ranges from 40% to 0% depending on the climatic zone. For 2 Greenwich Road, located in Lane Cove, the target is:

	BASIX Target Zone	Target
Water	East Coast	**40%**

2.2.3 Thermal Comfort

The thermal comfort section of BASIX aims to ensure thermal comfort for a dwelling's occupants, appropriate to the climate and season, reduce greenhouse gas emissions from artificial cooling and heating through passive design, and reduce the demand for new, or upgraded, energy infrastructure by managing peak demand for energy required for cooling and heating.

Compliance with BASIX thermal comfort criteria is set out in the BASIX Thermal Comfort Protocol (dated November 2017) and requires all units to be assessed by accredited NatHERS assessors using approved software. The BASIX climate zone for thermal comfort for 2 Greenwich Road is 56 (Mascot) which gives the following thermal comfort criteria:

	Maximum (MJ/m2)
Average heating load in building	**40**
Average cooling load in building	**26**
Individual heating load in an apartment	**45.4**
Individual cooling load in an apartment	**29.5**

2.3 BASIX Compliance Strategy

BASIX modelling has been undertaken for the residential development to demonstrate compliance with the minimum commitments.

The following are characteristics for the proposed residential senior living development at 2 Greenwich Road, Greenwich NSW:

- 2,140m^2 site area
- 913m^2 total roof area
- 215m^2 non-residential floor area
- 706m^2 of total common area of garden excluding lawn
- 480m^2 of common area of indigenous or low water use species
- 76 residential car spaces
- 9 non-residential car spaces
- 1 swimming pool – 87.3kL

The following sections outline the proposed strategies to achieve the required performance in each category: energy, water and thermal comfort.

2.3.1 Energy

Strategies to achieve the 25% energy target are outlined in the following table:

	Energy Saving Strategy
Dwellings Appliances (installed)	Gas cooktop & electric oven 3.5-Star energy rated refrigerator with well-ventilated refrigerator space 3.5-Star energy rated dishwasher 6-Star energy rated clothes dryer
Dwellings Heating & Cooling	Living: 1-phase air-conditioning / EER 3.0 – 3.5 Bedroom: 1-phase air-conditioning / EER 3.0 – 3.5
Hot Water	Central System: Electric heat pump gas boosted system with R1.0 insulation
Mechanical Systems (Common Areas)	Please see BASIX screenshots below for details
Mechanical Systems (Dwellings)	Bathroom exhaust: individual fan, ducted to façade or roof with manual switch on/ off Laundry exhaust: individual fan, ducted to façade or roof with manual switch on/ off Kitchen exhaust: individual fan, ducted to façade or roof with manual switch on/ off
Electrical Systems (Common Areas)	Please see BASIX screenshots below for details
Electrical Systems (Dwellings)	Dedicated fluorescent or LED lamps, all downlights to be sealed and non-ventilated
Vertical Transportation Systems	Gearless traction lifts with VVVF motor Lift cars with LED lighting connected to the lift call buttons
Alternate Energy supply	Photovoltaic system: 5.5kW peak installed rated electrical output
Pool	No heating Pump controlled by timer
Other	Active Power factor correction to be installed Indoor clothes drying line provided to dwellings
Energy Saving Required	**25%**
Energy Saving Achieved	**25%**

Common Area Lighting and Ventilation details

Common area ventilation system type and efficiency measures are outlined in the following table.

Common area	Area (m^2)	Ventilation system type *	Efficiency measure *
Carpark / storage B3	1471.8	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan
Carpark / storage B2	1416.1	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan
Carpark B1	1181.4	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan
Main Switch Room B1	15	ventilation exhaust only	thermostatically controlled
Resi & Bulk Waste Room B1	61.7	ventilation (supply + exhaust)	n/a
Garbage Chute Room LG - L6	29.5	ventilation exhaust only	n/a
Multi purpose room	39.9	air conditioning system	time clock or BMS controlled
Wellness Centre	140	air conditioning system	time clock or BMS controlled
Gallery / Library	107.9	air conditioning system	time clock or BMS controlled
Service / Plant Room B3	52.2	ventilation exhaust only	thermostatically controlled
Service / Plant Room B2	101.7	ventilation exhaust only	thermostatically controlled
Service / Plant Room B1	87.1	ventilation exhaust only	thermostatically controlled
L7 Plant Room	9	ventilation exhaust only	thermostatically controlled
Cellar & Wine Storage	52.9	air conditioning system	time clock or BMS controlled
Storage B1	39.5	ventilation supply only	time clock or BMS controlled
Facilities LG	145.5	air conditioning system	time clock or BMS controlled
Lobby Shared non-resi	159.4	air conditioning system	time clock or BMS controlled
Corridor / Hallway	223.8	no mechanical ventilation	
LG Corridor / Hallway	60.7	air conditioning system	time clock or BMS controlled

The shared lobby and lower ground facilities are connected through an open spiral stairwell visually connecting both levels.

Common areas sqm are based on DA drawings set issued on 29/04/2020 by Marchese Partners.

Common area lighting system type and efficiency measures are outlined in the following table.

Common area	Area (m^2)	Primary lighting system type *	Efficiency measure *	Lighting control system
Carpark / storage B3	1471.8	light-emitting diode	zoned switching with motion sensor	Yes No
Carpark / storage B2	1416.1	light-emitting diode	zoned switching with motion sensor	Yes No
Carpark B1	1181.4	light-emitting diode	zoned switching with motion sensor	Yes No
Lift car (No.1)	n/a	light-emitting diode	connected to lift call button	Yes No
Lift car (No.2)	n/a	light-emitting diode	connected to lift call button	Yes No
Main Switch Room B1	15	light-emitting diode	manual on / manual off	Yes No
Resi & Bulk Waste Room B1	61.7	light-emitting diode	motion sensors	Yes No
Garbage Chute Room LG - L6	29.5	light-emitting diode	motion sensors	Yes No
Multi purpose room	39.9	light-emitting diode	manual on / manual off	Yes No
Wellness Centre	140	light-emitting diode	daylight sensor and motion sensor	Yes No
Gallery / Library	107.9	light-emitting diode	daylight sensor and motion sensor	Yes No
Service / Plant Room B3	52.2	light-emitting diode	manual on / manual off	Yes No
Service / Plant Room B2	101.7	light-emitting diode	manual on / manual off	Yes No
Service / Plant Room B1	87.1	light-emitting diode	manual on / manual off	Yes No
L7 Plant Room	9	light-emitting diode	motion sensors	Yes No
Cellar & Wine Storage	52.9	light-emitting diode	zoned switching with motion sensor	Yes No
Storage B1	39.5	light-emitting diode	zoned switching with motion sensor	Yes No
Facilities LG	145.5	light-emitting diode	motion sensors	Yes No
Lobby Shared non-resi	159.4	light-emitting diode	daylight sensor and motion sensor	Yes No
Corridor / Hallway	223.8	light-emitting diode	time clock and motion sensors	Yes No
LG Corridor / Hallway	60.7	light-emitting diode	time clock and motion sensors	Yes No

Lift Details

In BASIX, the number of storeys is equal to the number of levels served, that is, number of residential levels that a lift door can open on to, plus the lobby levels and the basements dedicated to residential services.

The following lifts are included in BASIX:

Lift systems	Details	
Lift (No. 1)	System type*	gearless traction with V V V F motor
	Number of storeys (including basement)*	12
Lift (No. 2)	System type*	gearless traction with V V V F motor
	Number of storeys (including basement)*	12

2.3.2 Water Systems

Strategies to exceed the potable water consumption reduction target of 40% are outlined in the table below:

Water Conservation Strategy	
Fixtures (Common areas)	5-Star WELS rated taps
Fixtures (Dwellings)	5-Star WELS rated toilets 5-Star WELS rated Kitchen taps 5-Star WELS rated Bathroom taps 3-Star WELS rated showerheads (>6 and ≤ 7.5 L/min)
Appliances (Dwellings)	4.5-Star WELS rated dishwashers
Pool	87.3kL volume, unshaded
Rainwater tank	None
OSD Tank used for irrigation	80,000 L tank Areas diverted to tank: 692m^2 of roof area; 680m^2 of impervious area
Common area landscape irrigated by OSD tank (m^2)	706
Other	Fire sprinkler test water contained in a closed system
Water Saving Required	**40%**
Water Saving Achieved	**42%**

2.3.3 Thermal comfort

Thermal comfort modelling has been undertaken for all 40 units. NatHERS modelling has been completed using FirstRate5 v5.2.11 (3.13) Thermal Comfort Modelling software. Modelling followed NatHERS modelling requirements and is based on architectural drawings issued by Marchese Partners on 29th April, 2020.

Several changes were required to the façade of some units to comply with thermal comfort minimum requirements. The changes are as follows:

- Unit 1.03 south and west façade change, and apartment 1.05 south façade change
- Unit 2.03 south and west façade change, and apartment 2.05 south façade change
- Unit 3.03 west façade change
- Unit 4.02 west façade change
- Unit 5.02 west façade change
- Unit 6.02 south and west façade change
- Unit 6.04 east façade change

The project is currently achieving an average rating of 6.5-Stars based on the following thermal constructions which have been included in the modelling:

Thermal Comfort Modelling Details	
Section Details	Floor to ceiling height: 2870mm lower ground to level 5 and 2700mm for level 6 Floor-to-floor height: 3100mm
Glazing Doors/Windows	Aluminium non-thermally broken framed single glazing to all units: U-value: 4.41 (equal to or lower than) SHGC: 0.61 (±5%) – Fixed glazing U-value: 4.57 (equal to or lower than) SHGC: 0.61 (±5%) – Sliding windows U-value: 4.40 (equal to or lower than) SHGC: 0.60 (±5%) – Sliding Doors Given values are NFRC, total window system values (glass and frames) *NOTE: openability modelled as per NatHERS Technical Note Version June 2019 – 8.9 with regard to restricted openings
Ceiling	225mm concrete slab, no insulation required to units with units above 225mm concrete slab, minimum R1.0 insulation (insulation only) required to units with balcony/unconditioned spaces above. These units include; LG.01, 2.03, 2.05, 3.02, 3.03, 3.04, 3.05 and 3.06 225mm concrete slab, minimum R2.5 insulation (insulation only) required to units 6.01, 6.03 and 6.05 with rooftop area above 225mm concrete slab, minimum R3.0 insulation (insulation only) required to unit 6.04 with rooftop area above 225mm concrete slab, minimum R3.0 insulation (insulation only) and single sided 1 layer foil required to unit 6.02 with rooftop area above For units where ceiling thermal upgrade is required please refer to certified drawings *NOTE: loss of ceiling insulation due to penetrations have been accounted for in accordance with BASIX Thermal Comfort Protocol Section 4.13.1 and NatHERS Technical Note Version June 2019
External Wall	Insulated external wall – minimum R2.0 (insulation only) for all units. Total R-Value 2.25 *NOTE: default colour modelled as per NatHERS Technical Note Version June 2019 – Section 7.1
Inter-tenancy Walls	Party wall – minimum R1.0 (insulation only) to all walls adjacent to common areas. Total R-Value 1.48m^{2}K/W. No insulation required between neighbouring apartments.
Internal Walls within dwellings	Plasterboard on studs – no insulation required Internal concrete walls – no insulation required

Thermal Comfort Modelling Details	
Floors	225mm concrete suspended floor, no insulation required to units with units below. 225mm concrete suspended floor, minimum R1.0 insulation (insulation only) required to units with balcony/unconditioned spaces below. These units include; 1.01, 1.02, 1.06, 1.07, 3.03, 3.04, 4.02, 4.03 and 4.04. 225mm concrete suspended floor, minimum R2.0 insulation (insulation only) required to all Lower Ground units with underground carpark below and to apartment 1.05 where residents terrace is located below. For units where floor thermal upgrade is required please refer to certified drawings.
Floor Covering	▪ Bedrooms, WIR: carpet ▪ Wet areas: tiles ▪ Kitchen, living/dining, corridors: timber
Artificial Lighting within units	All light fittings within each room are to have LED fixtures installed. *NOTE: modelled as per NatHERS Assessor Handbook Version June 2019 – Section 8.8.1.3
Ventilation within units	Bathroom: individual ducted fans 100x100 Laundry: individual ducted fans 100x100 Kitchen range hood: individual ducted fans 100x100 *NOTE: modelled as per NatHERS Assessor Handbook Version June 2019 – Section 8.8.1.2
Horizontal Shading	Standard ceiling height eaves: as per certified drawings
Vertical Shading	All north facing vertical shades and apartment privacy screens are modelled with 70% opacity.
Balustrades	Opaque levels 1 – 3 and 30% opacity levels 4 – 6 (estimated glazing transparency of 70%).
Surrounding Buildings	Building geometry and height as per architectural plans and elevations.
Thermal Comfort Required	**Climate Zone 56 Heating and Cooling Minimum Requirements**
Thermal Comfort Achieved	**Compliance**

The certification documentation will form part of Appendices A, B and C of this report.

2.4 NCC Section J

The Class 2 residential common areas must comply with the National Construction Code (NCC) Section J 2019 fabric requirements including glazing and insulation.

Based on a preliminary Deemed-to-Satisfy (DTS) assessment, the following glazing system performances have been analysed to be compliant.

Table 1. Summary of glazing performance requirements

Elevation	U-value (W/m². K)	SHGC
Glazing – All elevations	≤4.1	≤0.30

The minimum DTS insulation requirements are outlined in the table below.

Table 2. Thermal performance requirement – Opaque elements.

Building Envelopment Element	R_T (m².K/W)
Roof or ceiling (solar absorptance of not more than 0.45)	R_T3.7
Wall – ▪ External (outer surface solar absorptance value of not more than 0.6) ▪ Internal	 R_T2.8 R_T1.4
Floor (direction downwards)	R_T2.0

Note: R_T means total R-value build-up of the building envelope element. Absorptance is the fraction of solar radiation absorbed by the roof and is affected by the colour and reflectance of the outer surface.

Please refer to Appendix D Section J Report (*1026141 2 Greenwich Road - Section J Fabric Report*) for further details.

3.0 Additional Sustainability Initiatives

Further to the energy and water initiatives outlined in sections 2.3.1 and 2.3.2, the following initiatives are proposed for the residential building:

3.1.1 Health & wellbeing

The wellbeing and health of the building occupants can be addressed through the design by considering features which improve the indoor environment quality of the buildings. Features which will be considered include:

- Good performance façade incorporating shading, good-performance glazing and insulation will improve occupant comfort and reduce air-conditioning costs.
- Sources of indoor air contamination will be ducted to the façade including toilets, laundries and kitchens.
- An appropriate acoustic design addressing internal noise levels, reverberation time and acoustic separation.
- An electric lighting design with appropriate lighting levels for each area, surface illumination for visual interest baffles or similar devices for eliminating lighting glare and controls for users.
- High Visual Light Transmittance glass for maximising daylight penetration.
- Internal blinds for minimising glare discomfort risk.
- Use of low VOC paints, adhesives, sealants and carpets and low formaldehyde emission engineered wood products in all internal areas.
- Thermal comfort modelling to assess and determine the thermal performance of the space over a full calendar year.
- Provision of high-quality outdoor views to landscape

3.1.2 Materials, Supply Chain and Waste

The project will aim to use materials from sustainable sources, applying circular economy principles where possible and prioritising products with transparent, ethical supply chains and reduce resource consumption and divert waste from landfill.

Initiatives being considered for inclusion are:

- Reuse existing concrete and specify more sustainable concrete for new concrete mixes (Portland cement replacement, recycled aggregates, recycled water).
- All timber to be reused or sourced from certified suppliers
- Hazardous material risk assessment to reduce use of toxic materials
- Best practice PVC compliance for formworks, pipes, flooring, blinds & cables
- Preference materials with a high recycled or reused content, third-party environmental / social certification or materials that are sourced locally or from social enterprises.
- Divert a minimum of 90% of non-hazardous construction / demolition waste from landfill via reuse or recycling.
- Provide space for operational waste separation and storage for recycling.
- Provide residents with information about waste separation, recycling and composting.

3.1.3 Ecology

To restore, preserve and protect land, biodiversity and natural capital provides great benefits to people and wildlife. Initiatives which will be considered include:

- Reduce urban heat island via light coloured surfaces, shading and planting.
- Integrate greenery and nature with a focus on native species, preferably with pollinator plants.
- Selection of low maintenance, drought-tolerant planting where possible.
- Communal garden for residents to grow edible vegetation.
- Balcony design allows for planter boxes to be installed. Vegetation will attract birds and increase biodiversity of the site.

3.1.4 Community

Nurturing local identity and heritage, empowering communities and promoting a culture of sustainable living are valuable aspects in a project. Initiatives which will be considered include:

- Community spaces easily accessible to all residents throughout the building.
- Communal areas can be used to host BBQs and other resident gatherings. The design also includes gardens for the use of the residents.
- Provision of communal gardens, wellness centre and cafe open to the public.
- Site location provides a range of community facilities within walking distance.
- Public art to be provided by local artists and to feature sustainability theme, with art installations at each entry to provide wayfinding markers.
- Consult with local aboriginal community about how to best celebrate and recognise their culture on the site (e.g. events, public art).
- Resident noticeboard to notify residents of upcoming community activities and initiatives.

4.0 Conclusion

The proposed 2 Greenwich Road development is adopting a wide range of ESD initiatives in its design which will assist to minimise its environmental impact and improve occupants and community wellbeing.

The following targets have been achieved by the development:

- Meet or exceed BASIX minimum compliance requirements for energy and water including:
  - BASIX Energy score: 25% reduction in Greenhouse Gas (GHG) emissions
  - BASIX Water score: Greater than 40% saving in potable water consumption
  - BASIX Thermal Comfort: Achieve better than 6-Star average HERS star rating across the project.

Some of the initiatives currently adopted and being developed further during remaining project stages include:

- Efficient building services, systems, equipment and controls
- Targeting an average higher than 6-Star NatHERS ratings for the apartments through a good performance facade with low-e single glazing, insulation and fixed shading
- Provision of energy efficient appliances to all apartments
- Solar photovoltaic system on roof
- Rainwater capture and reuse for irrigation via OSD tank
- Provision of water efficient appliances to all apartments
- Communal residents facilities
- Close proximity to public transport and amenities.

Sustainability initiatives proposed will be developed in further detail as the design progresses.

Appendix A: BASIX Certificate

BASIX® Certificate

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

Multi Dwelling

Certificate number: 1098150M

This certificate confirms that the proposed development will meet the NSW government's requirements for sustainability, if it is built in accordance with the commitments set out below. Terms used in this certificate, or in the commitments, have the meaning given by the document entitled "BASIX Definitions" dated 06/10/2017 published by the Department. This document is available at www.basix.nsw.gov.au

Secretary
Date of issue: Thursday, 30 April 2020
To be valid, this certificate must be lodged within 3 months of the date of issue.

NSW GOVERNMENT | Planning, Industry & Environment

Project summary	
Project name	Greenwich Seniors Living
Street address	2 Greenwich Road Lane Cove 2065
Local Government Area	Lane Cove Municipal Council
Plan type and plan number	deposited 566041
Lot no.	2
Section no.	-
No. of residential flat buildings	1
No. of units in residential flat buildings	40
No. of multi-dwelling houses	0
No. of single dwelling houses	0

Project score		
Water	✔ 42	Target 40
Thermal Comfort	✔ Pass	Target Pass
Energy	✔ 25	Target 25

Certificate Prepared by
Name / Company Name: Cundall
ABN (if applicable): 16104924370

Description of project

Project address	
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Street address	2 Greenwich Road Lane Cove 2065
Local Government Area	Lane Cove Municipal Council
Plan type and plan number	deposited 566041
Lot no.	2
Section no.	-
Project type	
No. of residential flat buildings	1
No. of units in residential flat buildings	40
No. of multi-dwelling houses	0
No. of single dwelling houses	0
Site details	
Site area (m²)	2140
Roof area (m²)	913
Non-residential floor area (m²)	215.0
Residential car spaces	76
Non-residential car spaces	9

Common area landscape		
Common area lawn (m²)	0.0	
Common area garden (m²)	706.0	
Area of indigenous or low water use species (m²)	480.0	
Assessor details		
Assessor number	VIC/19/1934	
Certificate number	9CAIGCK56Y	
Climate zone	56	
Project score		
Water	✔ 42	Target 40
Thermal Comfort	✔ Pass	Target Pass
Energy	✔ 25	Target 25

Description of project

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

Residential flat buildings - Building1, 40 dwellings, 8 storeys above ground

Dwelling no.	No. of bedrooms	Conditioned floor area (m^2)	Unconditioned floor area (m^2)	Area of garden & lawn (m^2)	Indigenous species (min area m^2)
1.01	3	110.0	0.0	0.0	0.0
1.05	2	98.5	0.0	0.0	0.0
2.02	2	91.2	0.0	0.0	0.0
2.06	2	91.2	0.0	0.0	0.0
3.03	3	122.8	0.0	0.0	0.0
4.01	3	130.1	0.0	0.0	0.0
4.05	3	117.0	0.0	0.0	0.0
5.04	3	127.5	0.0	0.0	0.0
6.03	3	120.0	0.0	0.0	0.0
LG.02	1	59.7	0.0	11.0	11.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m^2)	Unconditioned floor area (m^2)	Area of garden & lawn (m^2)	Indigenous species (min area m^2)
1.02	2	91.2	0.0	0.0	0.0
1.06	2	91.2	0.0	0.0	0.0
2.03	2	101.2	0.0	0.0	0.0
2.07	3	110.0	0.0	0.0	0.0
3.04	3	132.3	0.0	0.0	0.0
4.02	3	125.0	0.0	0.0	0.0
5.01	3	130.1	0.0	0.0	0.0
5.05	3	117.0	0.0	0.0	0.0
6.04	3	127.5	0.0	0.0	0.0
LG.03	1	59.7	0.0	11.0	11.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m^2)	Unconditioned floor area (m^2)	Area of garden & lawn (m^2)	Indigenous species (min area m^2)
1.03	2	101.2	0.0	0.0	0.0
1.07	3	110.0	0.0	0.0	0.0
2.04	1	61.4	0.0	0.0	0.0
3.01	3	110.0	0.0	0.0	0.0
3.05	2	91.2	0.0	0.0	0.0
4.03	3	120.0	0.0	0.0	0.0
5.02	3	125.0	0.0	0.0	0.0
6.01	3	130.0	0.0	0.0	0.0
6.05	3	116.7	0.0	0.0	0.0
LG.04	2	94.7	0.0	17.0	17.0

Dwelling no.	No. of bedrooms	Conditioned floor area (m^2)	Unconditioned floor area (m^2)	Area of garden & lawn (m^2)	Indigenous species (min area m^2)
1.04	1	61.4	0.0	0.0	0.0
2.01	3	110.0	0.0	0.0	0.0
2.05	2	98.5	0.0	0.0	0.0
3.02	2	91.2	0.0	0.0	0.0
3.06	3	110.0	0.0	0.0	0.0
4.04	3	127.5	0.0	0.0	0.0
5.03	3	120.0	0.0	0.0	0.0
6.02	3	125.0	0.0	0.0	0.0
LG.01	2	96.0	0.0	11.0	11.0
LG.05	2	94.4	0.0	6.5	6.5

Description of project

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

Common areas of unit building - Building1

Common area	Floor area (m²)
Carpark / storage B3	1471.8
Lift car (No.1)	-
Resi & Bulk Waste Room B1	61.7
Wellness Centre	140.0
Service / Plant Room B2	101.7
Cellar & Wine Storage	52.9
Lobby Shared non-resi	159.4

Common area	Floor area (m²)
Carpark / storage B2	1416.1
Lift car (No.2)	-
Garbage Chute Room LG - L6	29.5
Gallery / Library	107.9
Service / Plant Room B1	87.1
Storage B1	39.5
Corridor / Hallway	223.8

Common area	Floor area (m²)
Carpark B1	1181.4
Main Switch Room B1	15.0
Multi purpose room	39.9
Service / Plant Room B3	52.2
L7 Plant Room	9.0
Facilities LG	145.5
LG Corridor / Hallway	60.7

Schedule of BASIX commitments

1. Commitments for Residential flat buildings - Building1
    - (a) Dwellings
        - (i) Water
        - (ii) Energy
        - (iii) Thermal Comfort
    - (b) Common areas and central systems/facilities
        - (i) Water
        - (ii) Energy

2. Commitments for multi-dwelling houses

3. Commitments for single dwelling houses

4. Commitments for common areas and central systems/facilities for the development (non-building specific)
    - (i) Water
    - (ii) Energy

Schedule of BASIX commitments

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

1. Commitments for Residential flat buildings - Building1

(a) Dwellings

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

	Fixtures					Appliances		Individual pool				Individual spa		
Dwelling no.	All shower-heads	All toilet flushing systems	All kitchen taps	All bathroom taps	HW recirculation or diversion	All clothes washers	All dish-washers	Volume (max volume)	Pool cover	Pool location	Pool shaded	Volume (max volume)	Spa cover	Spa shaded
All dwellings	3 star (> 6 but <= 7.5 L/min)	5 star	5 star	5 star	no	-	4.5 star	-	-	-	-	-	-	-

	Alternative water source							
Dwelling no.	Alternative water supply systems	Size	Configuration	Landscape connection	Toilet connection (s)	Laundry connection	Pool top-up	Spa top-up
LG.01, LG.02, LG.03, LG.04, LG.05	central water tank (no. 1)	See central systems	See central systems	yes	no	no	no	no

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must comply with the commitments listed below in carrying out the development of a dwelling listed in a table below.			
(b) The applicant must install each hot water system specified for the dwelling in the table below, so that the dwelling's hot water is supplied by that system. If the table specifies a central hot water system for the dwelling, then the applicant must connect that central system to the dwelling, so that the dwelling's hot water is supplied by that central system.	✔	✔	✔
(c) The applicant must install, in each bathroom, kitchen and laundry of the dwelling, the ventilation system specified for that room in the table below. Each such ventilation system must have the operation control specified for it in the table.		✔	✔
(d) The applicant must install the cooling and heating system/s specified for the dwelling under the "Living areas" and "Bedroom areas" headings of the "Cooling" and "Heating" columns in the table below, in/for at least 1 living/bedroom area of the dwelling. If no cooling or heating system is specified in the table for "Living areas" or "Bedroom areas", then no systems may be installed in any such areas. If the term "zoned" is specified beside an air conditioning system, then the system must provide for day/night zoning between living areas and bedrooms.		✔	✔
(e) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Artificial lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that the "primary type of artificial lighting" for each such room in the dwelling is fluorescent lighting or light emitting diode (LED) lighting. If the term "dedicated" is specified for a particular room or area, then the light fittings in that room or area must only be capable of being used for fluorescent lighting or light emitting diode (LED) lighting.		✔	✔

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(f) This commitment applies to each room or area of the dwelling which is referred to in a heading to the "Natural lighting" column of the table below (but only to the extent specified for that room or area). The applicant must ensure that each such room or area is fitted with a window and/or skylight.	✔	✔	✔
(g) This commitment applies if the applicant installs a water heating system for the dwelling's pool or spa. The applicant must:			
(aa) install the system specified for the pool in the "Individual Pool" column of the table below (or alternatively must not install any system for the pool). If specified, the applicant must install a timer, to control the pool's pump; and		✔	
(bb) install the system specified for the spa in the "Individual Spa" column of the table below (or alternatively must not install any system for the spa). If specified, the applicant must install a timer to control the spa's pump.		✔	
(h) The applicant must install in the dwelling:			
(aa) the kitchen cook-top and oven specified for that dwelling in the "Appliances & other efficiency measures" column of the table below;		✔	
(bb) each appliance for which a rating is specified for that dwelling in the "Appliances & other efficiency measures" column of the table, and ensure that the appliance has that minimum rating; and		✔	✔
(cc) any clothes drying line specified for the dwelling in the "Appliances & other efficiency measures" column of the table.		✔	
(i) If specified in the table, the applicant must carry out the development so that each refrigerator space in the dwelling is "well ventilated".		✔	

	Hot water	Bathroom ventilation system		Kitchen ventilation system		Laundry ventilation system	
Dwelling no.	Hot water system	Each bathroom	Operation control	Each kitchen	Operation control	Each laundry	Operation control
All dwellings	central hot water system 1	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	manual switch on/off

	Cooling		Heating		Artificial lighting						Natural lighting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bedrooms &/or study	No. of living &/or dining rooms	Each kitchen	All bathrooms/ toilets	Each laundry	All hallways	No. of bathrooms &/or toilets	Main kitchen
2.01, 4.03, 5.03, 6.03	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	3 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no
1.04, 2.04, LG.03, LG.04	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no
1.03, 1.05, 2.02, 2.03, 2.05	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	2 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	yes
1.02, 1.06, 2.06, 3.02, 3.05, LG.01, LG.02, LG.05	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	2 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	no
All other dwellings	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	1-phase airconditioning EER 3.0 - 3.5 (zoned)	3 (dedicated)	1 (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	yes (dedicated)	0	yes

	Individual pool		Individual spa		Appliances & other efficiency measures							
Dwelling no.	Pool heating system	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Refrigerator	Well ventilated fridge space	Dishwasher	Clothes washer	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	gas cooktop & electric oven	3.5 star (new rating)	yes	3.5 star	-	6 star	yes	no

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

	Thermal loads	
Dwelling no.	Area adjusted heating load (in mJ/m²/yr)	Area adjusted cooling load (in mJ/m²/yr)
1.01	32.7	12.6
1.02	18.2	26.0
1.03	25.7	26.7
1.04	28.0	17.4
1.05	43.9	17.8
1.06	23.9	19.2
1.07	28.7	9.4
2.01	25.4	12.8
2.02	11.3	26.4
2.03	28.0	27.4
2.04	28.0	17.5
2.05	34.3	23.0
2.06	19.2	18.9
2.07	25.8	11.5
3.01	25.0	11.6
3.02	10.3	18.7
3.03	28.6	21.6
3.04	31.2	19.3
3.05	19.4	15.8
3.06	28.8	12.1
4.01	22.4	8.9
4.02	32.3	24.5
4.03	25.7	13.3
4.04	36.1	16.0
4.05	25.1	9.0
5.01	23.2	9.7
5.02	31.3	26.0

	Thermal loads	
Dwelling no.	**Area adjusted heating load (in mJ/m²/yr)**	**Area adjusted cooling load (in mJ/m²/yr)**
5.03	23.7	15.0
5.04	35.4	22.4
5.05	22.2	11.7
6.01	36.7	11.9
6.02	43.8	25.6
6.03	37.9	16.0
6.04	44.3	22.6
6.05	34.5	14.2
LG.01	30.4	16.1
LG.02	25.6	10.7
LG.03	26.9	11.1
LG.04	25.7	21.1
All other dwellings	24.3	24.5

(b) Common areas and central systems/facilities

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

Common area	Showerheads rating	Toilets rating	Taps rating	Clothes washers rating
All common areas	no common facility	no common facility	5 star	no common laundry facility

Central systems	Size	Configuration	Connection (to allow for...)
Central water tank - rainwater or stormwater (No. 1)	80000.0	To collect run-off from at least: - 692.0 square metres of roof area of buildings in the development - 680.0 square metres of impervious area in the development - 0.0 square metres of garden/lawn area in the development - 0.0 square metres of planter box area in the development (excluding, in each case, any area which drains to, or supplies, any other alternative water supply system).	- irrigation of 706.0 square metres of common landscaped area on the site - car washing in 0 car washing bays on the site
Pool (No. 1)	Volume: 87.3 kLs	Location: Building1 Pool shaded: no	-

Central systems	Size	Configuration	Connection (to allow for...)
Fire sprinkler system (No. 1)	-	So that fire sprinkler test water is contained within the fire sprinkler system for re-use, rather than disposed.	-

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

	Common area ventilation system		Common area lighting		
Common area	Ventilation system type	Ventilation efficiency measure	Primary type of artificial lighting	Lighting efficiency measure	Lighting control system/BMS
Carpark / storage B3	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	light-emitting diode	zoned switching with motion sensor	Yes
Carpark / storage B2	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	light-emitting diode	zoned switching with motion sensor	Yes
Carpark B1	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	light-emitting diode	zoned switching with motion sensor	Yes
Lift car (No.1)	-	-	light-emitting diode	connected to lift call button	Yes
Lift car (No.2)	-	-	light-emitting diode	connected to lift call button	Yes
Main Switch Room B1	ventilation exhaust only	thermostatically controlled	light-emitting diode	manual on / manual off	Yes
Resi & Bulk Waste Room B1	ventilation (supply + exhaust)	-	light-emitting diode	motion sensors	Yes
Garbage Chute Room LG - L6	ventilation exhaust only	-	light-emitting diode	motion sensors	Yes
Multi purpose room	air conditioning system	time clock or BMS controlled	light-emitting diode	manual on / manual off	Yes

	Common area ventilation system		Common area lighting		
Common area	**Ventilation system type**	**Ventilation efficiency measure**	**Primary type of artificial lighting**	**Lighting efficiency measure**	**Lighting control system/BMS**
Wellness Centre	air conditioning system	time clock or BMS controlled	light-emitting diode	daylight sensor and motion sensor	Yes
Gallery / Library	air conditioning system	time clock or BMS controlled	light-emitting diode	daylight sensor and motion sensor	Yes
Service / Plant Room B3	ventilation exhaust only	thermostatically controlled	light-emitting diode	manual on / manual off	Yes
Service / Plant Room B2	ventilation exhaust only	thermostatically controlled	light-emitting diode	manual on / manual off	Yes
Service / Plant Room B1	ventilation exhaust only	thermostatically controlled	light-emitting diode	manual on / manual off	Yes
L7 Plant Room	ventilation exhaust only	thermostatically controlled	light-emitting diode	motion sensors	Yes
Cellar & Wine Storage	air conditioning system	time clock or BMS controlled	light-emitting diode	zoned switching with motion sensor	Yes
Storage B1	ventilation supply only	time clock or BMS controlled	light-emitting diode	zoned switching with motion sensor	Yes
Facilities LG	air conditioning system	time clock or BMS controlled	light-emitting diode	motion sensors	Yes
Lobby Shared non-resi	air conditioning system	time clock or BMS controlled	light-emitting diode	daylight sensor and motion sensor	Yes
Corridor / Hallway	no mechanical ventilation	-	light-emitting diode	time clock and motion sensors	Yes
LG Corridor / Hallway	air conditioning system	time clock or BMS controlled	light-emitting diode	time clock and motion sensors	Yes

Central energy systems	Type	Specification
Central hot water system (No. 1)	electric heat pump - gas boosted	Piping insulation (ringmain & supply risers): (a) Piping external to building: R1.0 (~38 mm); (b) Piping internal to building: R1.0 (~38 mm)
Lift (No. 1)	gearless traction with V V V F motor	Number of levels (including basement): 12
Lift (No. 2)	gearless traction with V V V F motor	Number of levels (including basement): 12
Pool (No. 1)	Heating source: no heating	Pump controlled by timer: yes

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

(b) Common areas and central systems/facilities

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

Common area	Showerheads rating	Toilets rating	Taps rating	Clothes washers rating
All common areas	no common facility	no common facility	5 star	no common laundry facility

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

Central energy systems	Type	Specification
Alternative energy supply	Photovoltaic system	Rated electrical output (min): 5.5 peak kW
Other	Active power factor correction installed?: yes	-

Notes

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

Legend

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

Appendix B: NatHERS Group Certificate

Nationwide House Energy Rating Scheme* — Class 2 summary

Certificate Number: **9CAIGCK56Y** Date of Certificate: **30 Apr 2020** ★ Average star rating: **6.5**

Assessor details

Accreditation number:	**VIC/BDAV/19/1934**
Name:	**Loreta Brazukas**
Organisation:	
Email:	**l.brazukas@cundall.com**
Phone:	**0437493649**
Declaration of interest:	**No potential conflicts of interest to declare**
Software:	**FirstRate5 v5.2.11**
AAO:	**BDAV**

Dwelling details

Address:	**2 Greenwich Road**
Suburb:	**Greenwich**
State:	**NSW**
Postcode:	**2065**

6.5

Average rating

NATIONWIDE HOUSE ENERGY RATING SCHEME

The rating listed above is the average of all units in this building.

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

Summary of all dwellings

Certification details

		Annual thermal performance loads (MJ/m2)			
Certificate number	**Unit number**	**Heating load**	**Cooling load**	**Total load**	**Star rating**
A6E6KXF8P4	1.01	32.7	12.6	45.3	6.4
QL4PKYL0V1	1.02	18.2	26	44.2	6.6
M7IE2EZX9Y	1.03	25.7	26.7	52.4	5.9
O099SSHCSG	1.04	28	17.4	45.4	6.4
TSABR0NSLF	1.05	43.6	17.7	61.3	5.3
17R5P8RFJ2	1.06	23.9	19.1	43	6.7
N8J6CAA712	1.07	28.7	9.4	38.1	7.1
4NWAYKANR6	2.01	25.4	12.8	38.2	7.1
E15T249NXX	2.02	11.3	26.4	37.7	7.1
RTA0PCGX87	2.03	27.8	27.1	54.9	5.7
ZP1TKOLRHE	2.04	28	17.5	45.5	6.4
SSFT0D4AW7	2.05	34.1	22.5	56.6	5.6
PAAEDBYWH9	2.06	19.2	18.8	38	7.1
V1QZZTR0NR	2.07	26.2	11.5	37.7	7.1
9MGY2FE8VK	3.01	25	11.6	36.6	7.2
KVT8E3ZF2J	3.02	10.3	18.7	29	7.7

continued

* Nationwide House Energy Rating Scheme (NatHERS) is an initiative of the Australian, state and territory governments. For more details see www.nathers.gov.au

Summary of all dwellings continued

Certification details continued

		Annual thermal performance loads (MJ/m2)			
Certificate number	**Unit number**	**Heating load**	**Cooling load**	**Total load**	**Star rating**
6QHAGUJHPS	3.03	26.8	22.1	48.9	6.2
3BPIHFIGGY	3.04	31.2	19.2	50.4	6
WY98YS0Q79	3.05	19.5	15.8	35.3	7.3
XCP9YRWYWX	3.06	29	12	41	6.8
CA45YRGAC0	4.01	22.4	8.9	31.3	7.6
F7DHJ1TMT9	4.02	32.3	24.5	56.8	5.6
PMQRHJL38A	4.03	25.7	13.3	39	7
5E8IXGIS1P	4.04	36	15.9	51.9	5.9
FM625TEYD4	4.05	25.1	9	34.1	7.3
IWC9PSDKMQ	5.01	23.1	9.7	32.8	7.4
B2BNXDLFCS	5.02	31.2	25.8	57	5.6
USJCV40YQL	5.03	23.7	15	38.7	7
DKTOZYEWXU	5.04	35.3	22.4	57.7	5.5
O1UFT80BWV	5.05	22.2	11.6	33.8	7.4
C4Y4WPEAU8	6.01	36.9	11.8	48.7	6.2
PBY5BIW3TF	6.02	43.8	25.6	69.4	4.8
OPAU28Y0BJ	6.03	37.8	15.9	53.7	5.8
SWLCBQ8H2K	6.04	44.2	22.7	66.9	4.9
FRQGZVOLB4	6.05	34.7	14.1	48.8	6.2
6OC7JYTL5R	LG.01	30.4	16.1	46.5	6.4
KCJOX7FGGO	LG.02	25.6	10.7	36.3	7.2
72RGB83IX8	LG.03	27	10.9	37.9	7.1
AIG52WXNR2	LG.04	25.7	21.1	46.8	6.4
MA5VRN9EOL	LG.05	24.3	24.5	48.8	6.2
			This building achieves an average star rating of:		**6.5**

Appendix C: NatHERS Stamped Drawings

NatHERS Thermal Comfort Inclusions	
Floor-to-ceiling Height	2870mm for lower ground to level 5 2700mm for level 6
Glazing Doors/Windows	Aluminium non-thermally broken framed single glazing to all units: U-value: 4.41 (equal to or lower than) SHGC: 0.61 (±5%) – Fixed glazing U-value: 4.57 (equal to or lower than) SHGC: 0.61 (±5%) – Sliding windows U-value: 4.40 (equal to or lower than) SHGC: 0.60 (±5%) – Sliding Doors Given values are NFRC, total window system values (glass and frames) NOTE: openability modelled as per NatHERS Technical Note Version June 2019 – 8.9 with regard to restricted openings
Ceiling	225mm concrete slab, no insulation required to units with units above 225mm concrete slab, minimum R1.0 insulation (insulation only) required to units with balcony/unconditioned spaces above 225mm concrete slab, minimum R2.5 insulation (insulation only) required to units 6.01, 6.03 and 6.05 and minimum R3.0 insulation (insulation only) required to units 6.02 and 6.04. Unit 6.02 requires one-layer single sided foil. For units where ceiling thermal upgrade is required please refer to certified drawings NOTE: loss of ceiling insulation due to penetrations have been accounted for in accordance with BASIX Thermal Comfort Protocol Section 4.13.1 and NatHERS Technical Note Version June 2019
External Wall	Insulated external wall with reflective air gap – minimum R2.0 (insulation only) for all units. Total R-Value 2.42 NOTE: default colour modelled as per NatHERS Technical Note Version June 2019 – Section 7.1
Inter-tenancy Walls	Party wall – minimum R1.0 (insulation only) to all walls adjacent to common areas. Total R-Value 1.69. No insulation required between neighbouring apartments. Total R-value 0.53.
Internal Walls within Dwellings	Plasterboard on studs – no insulation required. Total R-value 0.32
Floors	225mm concrete suspended floor, no insulation required to units with units below. 225mm concrete suspended floor, minimum R1.0 insulation (insulation only) required to all units where there is a balcony/unconditioned spaces below and minimum R2.0 insulation (insulation only) required to apartment 1.05 where there is open space below. 225mm concrete suspended floor, minimum R2.0 insulation (insulation only) required to all Lower Ground units with underground carpark below. For units where floor thermal upgrade is required please refer to certified drawings.
Floor Coverings	Bedrooms and WIR: carpet Wet areas: tiles Kitchen, living/dining, corridors: timber
Artificial Lighting within Units	All light fittings within each room are to be sealed LED fixtures NOTE: modelled as per NatHERS Assessor Handbook Version June 2019 – Section 8.8.1.3
Ventilation within Units	Bathroom – sealed individual ducted fan Laundry – sealed individual ducted fan Kitchen range hood: sealed individual ducted fan NOTE: modelled as per NatHERS Assessor Handbook Version June 2019 – Section 8.8.1.2

6.5
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate Number: **9CAIGCK56Y**
Assessor Name: **Loreta Brazukas**
Accreditation number: **VIC/BDAV/19/1934**
Certificate date: **30 Apr 2020**
Dwelling address: **2 Greenwich Road, Greenwich NSW 2065**

www.nathers.gov.au

https://www.ifs.com.au/QRCodeLanding?PublicId=9CAIGCK56Y&GrpCert=1

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CLIENT
ALCEON GROUP

PROJECT
GREENWICH SENIORS LIVING
2 GREENWICH ROAD, GREENWICH

JOB
19118

DRAWING TITLE

DATE	DRAWN	CHECKED
29/04/2020	RS	EB

DRAWING

REVISION
A

Certificate Number: 9CAIGCK56Y
Assessor Name: Loreta Brazukas
Accreditation number: VIC/BDAV/19/1934
Certificate date: 30 Apr 2020
Dwelling address: 2 Greenwich Road, Greenwich NSW 2065

6.5 Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

www.nathers.gov.au

https://www.h5.com.au/QRCodeLanding?PublicId=9CAIGCK56Y&GrpCert=1

One commercial parking space removed due to updated dimensions of Supply air fan room.

B1 PARKING	
COMMERCIAL / RETAIL	8
COMMERCIAL / RETAIL DISABLE	1
SENIORS SPACES	7
VISITORS DISABLE	3
TOTAL: 19	

B1 STORAGE	
	9

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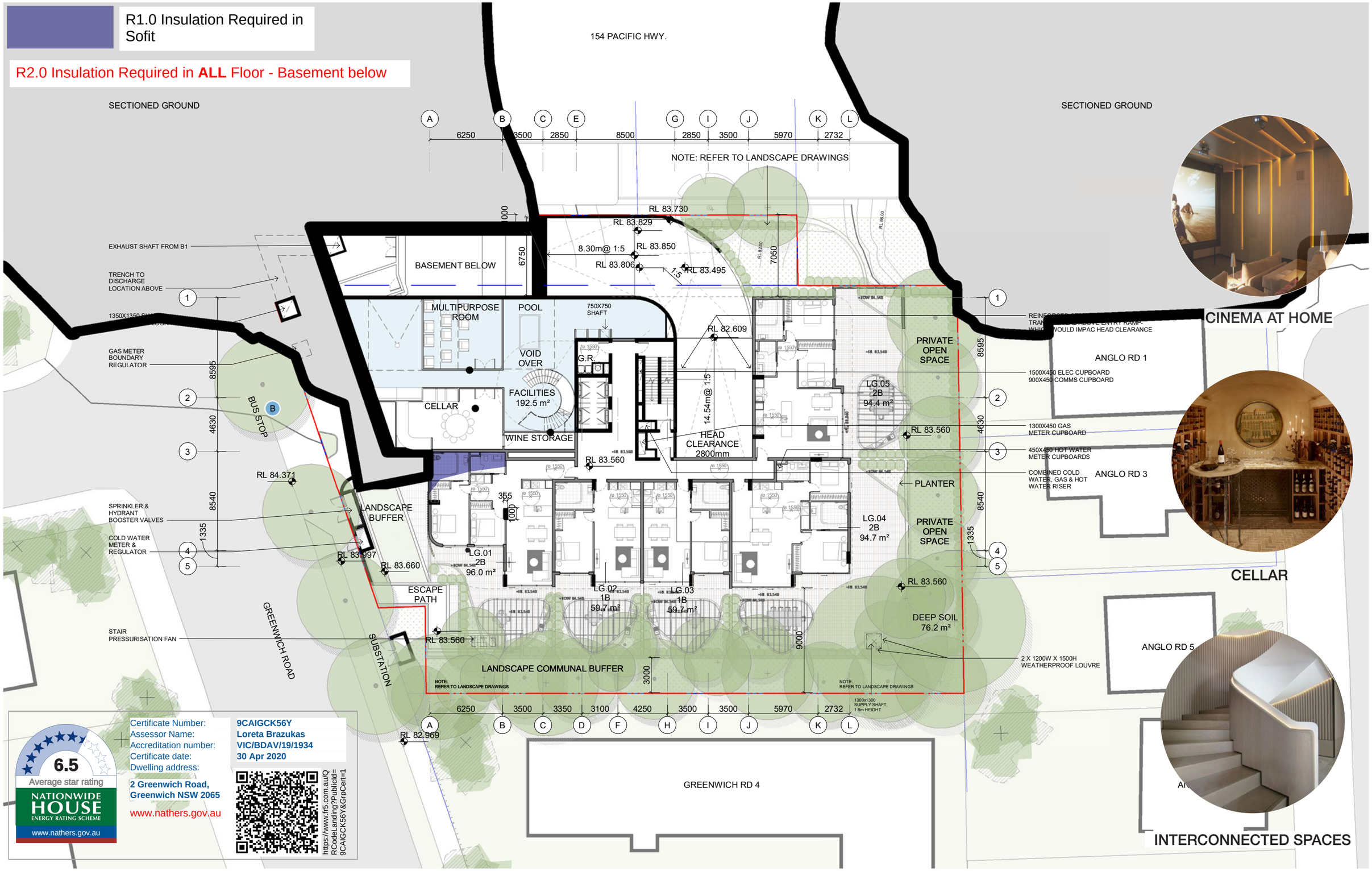
PROJECT
GREENWICH SENIORS LIVING
2 GREENWICH ROAD, GREENWICH

DRAWING TITLE
BASEMENT 1

SCALE	DATE	DRAWN	CHECKED
1:150 @A1 1:300 @A3	29/04/2020	RS	EB
JOB	DRAWING		REVISION
19118	DA2.03		A

R1.0 Insulation Required in Sofit

R2.0 Insulation Required in **ALL** Floor - Basement below



6.5
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate Number: 9CAIGCK56Y
Assessor Name: Loreta Brazukas
Accreditation number: VIC/BDAV/19/1934
Certificate date: 30 Apr 2020
Dwelling address: 2 Greenwich Road, Greenwich NSW 2065

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ALCEON GROUP

DRAWING TITLE
LOWER GROUND

PROJECT
GREENWICH SENIORS LIVING
2 GREENWICH ROAD, GREENWICH

SCALE	DATE	DRAWN	CHECKED
1:150 @A1 1:300 @A3	29/04/2020	RS	EB
JOB	DRAWING		REVISION
19118	DA2.04		A

154 PACIFIC HWY.

A B C E G I J K L

6250 3500 2850 8500 2850 3500 5970 2732

5m Setback

RL 85.810

EXISTING ABANDONED ENTRY DRIVEWAY

RL 86.207

IN

EXISTING RAMP

NEW GATE

NEW RAMP

8.30m@ 1:5

3m@ 1:10

RL 83.829

OUT

RL 85.880

PERGOLA ABOVE

RL 83.850

RL 83.495

RL 85.613

6m Setback

RL 85.810

9m Setback

9000

6m Setback

2 X 1200W X 1500H WEATHERPROOF LOUVRE.
LOCATION OF DISCHARGE AT BOUNDARY SUBJECT TO APPROVAL BY COUNCIL

1350x1350 EXHAUST SHAFT. 1.8m HEIGHT

GAS METER BOUNDARY REGULATOR

NOTE: REFER TO LANDSCAPE DRAWINGS

1000X1200 REFRIGERANT SHAFT

OUTSIDE AIR INTAKE

750X750 SHAFT

HEAD CLEARANCE 3725mm

500x1800 STAIR PRESSURISATION SHAFT

1500X450 ELEC CUPBOARD
900X450 COMMS CUPBOARD

700x1800 STAIR PRESSURISATION SHAFT

COMBINED COLD WATER, GAS & HOT WATER RISER

1 2 3 4 5

8595 4630 8540 1335

CAFE
62.1 m²

PLAZA

G.R.

VOID

2000

DDA TOILET
5.9 m²

COMMERCIAL
146.7 m²

LEVEL 1 ABOVE

BUS STOP

B

BELLEVUE AVE

RL 84.649

RL 86.660

LOBBY
159.4 m²

SPRINKLER & HYDRANT BOOSTER VALVES

COLD WATER METER & REGULATOR

LOADING ZONE

5000

RL 84.918

RL 85.600

RL 85.600

GALLERY / LIBRARY
107.8 m²

WELLNESS CENTRE
140.0 m²

RESIDENTS TERRACE
88.1 m²

9m Setback

9m Setback

PRIVACY LOUVERS

GREENWICH ROAD

49

RL 84.127

9000

3000

5m Setback

9m Setback

RL 83.560

6250 3500 3350 3100 4250 3500 3500 5970 2732

A B C D F H I J K L

GREENWICH RD 4

130-134 ANGLO RD

ANGLO RD 1

ANGLO RD 3

ANGLO RD 5

WELLNESS CENTER

NEW PUBLIC PLAZA

CAFE - LIBRARY

Certificate Number: 9CAIGCK56Y
Assessor Name: Loreta Brazukas
Accreditation number: VIC/BDAV/19/1934
Certificate date: 30 Apr 2020
Dwelling address: 2 Greenwich Road, Greenwich NSW 2065

www.nathers.gov.au

https://www.fr5.com.au/QRCodeLanding?PublicId=9CAIGCK56Y&GrpCert=1

6.5 Average star rating

NATIONWIDE HOUSE ENERGY RATING SCHEME

www.nathers.gov.au

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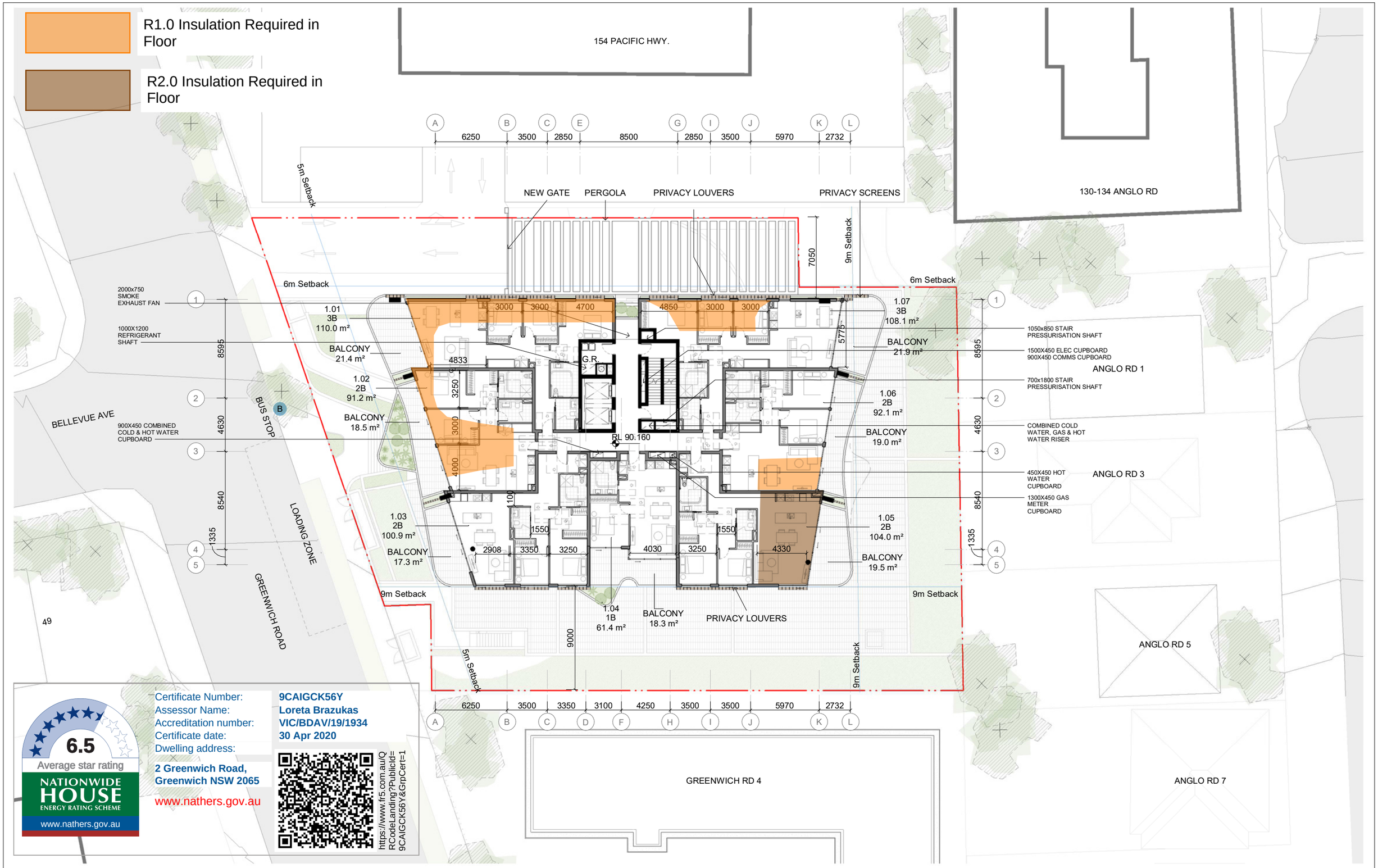
ALCEON GROUP

DRAWING TITLE
GROUND LEVEL

PROJECT
GREENWICH SENIORS LIVING
2 GREENWICH ROAD, GREENWICH

SCALE	DATE	DRAWN	CHECKED
1:150 @A1 1:300 @A3	29/04/2020	RS	EB
JOB	DRAWING		REVISION
19118	DA2.05		A



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CLIENT
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DRAWING TITLE
LEVEL 1

PROJECT
GREENWICH SENIORS LIVING
2 GREENWICH ROAD, GREENWICH

SCALE	DATE	DRAWN	CHECKED
1:150 @A1 1:300 @A3	29/04/2020	RS	EB
JOB	DRAWING		REVISION
19118	DA2.06		A

R1.0 Insulation Required in Sofit

154 PACIFIC HWY.

130-134 ANGLO RD

A B C E G I J K L

6250 3500 2850 8500 2850 3500 5970 2732

5m Setback

NEW GATE PERGOLA

PRIVACY SCREENS

9m Setback

7050

6m Setback

6m Setback

2000x750 SMOKE EXHAUST FAN

1000X1200 REFRIGERANT SHAFT

900X450 COMBINED COLD & HOT WATER CUPBOARD

1050x850 STAIR PRESSURISATION SHAFT

1500X450 ELEC CUPBOARD
900X450 COMMS CUPBOARD

700x1800 STAIR PRESSURISATION SHAFT

COMBINED COLD WATER, GAS & HOT WATER RISER

450X450 HOT WATER CUPBOARD

1300X450 GAS METER CUPBOARD

1 2 3 4 5

8595 4630 8540 1335

2.01
3B
110.0 m²

BALCONY
21.4 m²

G.R.

2.02
2B
91.2 m²

BALCONY
18.5 m²

RL 93.260

2.03
2B
100.9 m²

BALCONY
17.3 m²

2.04
1B
61.4 m²

BALCONY
18.3 m²

2.05
2B
104.0 m²

BALCONY
19.5 m²

2.06
2B
92.1 m²

BALCONY
19.0 m²

2.07
3B
108.1 m²

9m Setback

9m Setback

9000

5m Setback

9m Setback

6250 3500 3350 3100 4250 3500 3500 5970 2732

A B C D F H I J K L

ANGLO RD 1

ANGLO RD 3

ANGLO RD 5

ANGLO RD 7

GREENWICH RD 4

BELLEVUE AVE

BUS STOP

B

LOADING ZONE

GREENWICH ROAD

49

6.5
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate Number: 9CAIGCK56Y
Assessor Name: Loreta Brazukas
Accreditation number: VIC/BDAV/19/1934
Certificate date: 30 Apr 2020
Dwelling address: 2 Greenwich Road, Greenwich NSW 2065

www.nathers.gov.au

https://www.fr5.com.au/QRCodeLanding?PublicId=9CAIGCK56Y&GrpCert=1

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CLIENT
ALCEON GROUP

DRAWING TITLE
LEVEL 2

PROJECT
GREENWICH SENIORS LIVING
2 GREENWICH ROAD, GREENWICH

SCALE	DATE	DRAWN	CHECKED
1:150 @A1 1:300 @A3	29/04/2020	RS	EB
JOB	DRAWING		REVISION
19118	DA2.07		A

R1.0 Insulation Required in Sofit

R1.0 Insulation Required in Floor

154 PACIFIC HWY.

A B C E G I J K L

6250 3500 2850 8500 2850 3500 5970 2732

5m Setback

NEW GATE

PERGOLA

PRIVACY SCREENS

9m Setback

130-134 ANGLO RD

6m Setback

6m Setback

2000x750 SMOKE EXHAUST FAN

1000X1200 REFRIGERANT SHAFT

900X450 COMBINED COLD & HOT WATER CUPBOARD

1 2 3 4 5

8595 4630 8540 1335

3.01
3B
110.0 m²
BALCONY
21.4 m²

3.02
2B
91.2 m²
BALCONY
18.5 m²

3.03
3B
126.3 m²
BALCONY
21.2 m²

G.R.

RL 96.360

3.06
3B
108.1 m²
BALCONY
21.9 m²

3.05
2B
92.1 m²
BALCONY
19.0 m²

3.04
3B
142.2 m²
BALCONY
19.5 m²

BALCONY
6.3 m²

BALCONY
6.3 m²

1050x850 STAIR PRESSURISATION SHAFT

1500X450 ELEC CUPBOARD
900X450 COMMS CUPBOARD

700x1800 STAIR PRESSURISATION SHAFT

COMBINED COLD WATER, GAS & HOT WATER RISER

450X450 HOT WATER CUPBOARD

1300X450 GAS METER CUPBOARD

ANGLO RD 1

ANGLO RD 3

ANGLO RD 5

ANGLO RD 7

BELLEVUE AVE

BUS STOP

B

LOADING ZONE

GREENWICH ROAD

49

9m Setback

9m Setback

5m Setback

9m Setback

6250 3500 3350 3100 4250 3500 3500 5970 2732

A B C D F H I J K L

GREENWICH RD 4

Certificate Number: 9CAIGCK56Y
Assessor Name: Loreta Brazukas
Accreditation number: VIC/BDAV/19/1934
Certificate date: 30 Apr 2020
Dwelling address: 2 Greenwich Road, Greenwich NSW 2065

www.nathers.gov.au

6.5
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

https://www.fr5.com.au/QRCodeLanding?PublicId=9CAIGCK56Y&GrpCert=1

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CLIENT
ALCEON GROUP

DRAWING TITLE
LEVEL 3

PROJECT
GREENWICH SENIORS LIVING
2 GREENWICH ROAD, GREENWICH

SCALE	DATE	DRAWN	CHECKED
1:150 @A1 1:300 @A3	29/04/2020	RS	EB
JOB	DRAWING		REVISION
19118	DA2.08		A

R1.0 Insulation Required in Floor

154 PACIFIC HWY.

A B C E G I J K L

6250 3500 2850 8500 2850 3500 5970 2732

5m Setback

NEW GATE PERGOLA

PRIVACY SCREENS

130-134 ANGLO RD

7050

9m Setback

6m Setback

6m Setback

2000x750 SMOKE EXHAUST FAN

1000X1200 REFRIGERANT SHAFT

900X450 COMBINED COLD & HOT WATER CUPBOARD

8595 4630 8540 1335

1 2 3 4 5

4.01 3B 129.9 m²

BALCONY 30.8 m²

G.R.

RL 99.460

4.05 3B 115.6 m²

BALCONY 22.6 m²

1050x850 STAIR PRESSURISATION SHAFT

1500X450 ELEC CUPBOARD 900X450 COMMS CUPBOARD

700x1800 STAIR PRESSURISATION SHAFT

COMBINED COLD WATER, GAS & HOT WATER RISER

450X450 HOT WATER CUPBOARD

1300X450 GAS METER CUPBOARD

ANGLO RD 1

ANGLO RD 3

BELLEVUE AVE

BUS STOP

LOADING ZONE

GREENWICH ROAD

49

4.02 3B 124.7 m²

BALCONY 42.8 m²

4.04 3B 127.2 m²

BALCONY 49.9 m²

9m Setback

9m Setback

4.03 3B 120.0 m²

BALCONY 28.4 m²

9000

5m Setback

9m Setback

6250 3500 3350 3100 4250 3500 3500 5970 2732

A B C D F H I J K L

ANGLO RD 5

GREENWICH RD 4

ANGLO RD 7

6.5 Average star rating

NATIONWIDE HOUSE ENERGY RATING SCHEME

www.nathers.gov.au

Certificate Number:	9CAIGCK56Y
Assessor Name:	Loreta Brazukas
Accreditation number:	VIC/BDAV/19/1934
Certificate date:	30 Apr 2020
Dwelling address:	2 Greenwich Road, Greenwich NSW 2065

www.nathers.gov.au

https://www.frs.com.au/QRCodeLanding?PublicId=9CAIGCK56Y&GrpCert=1

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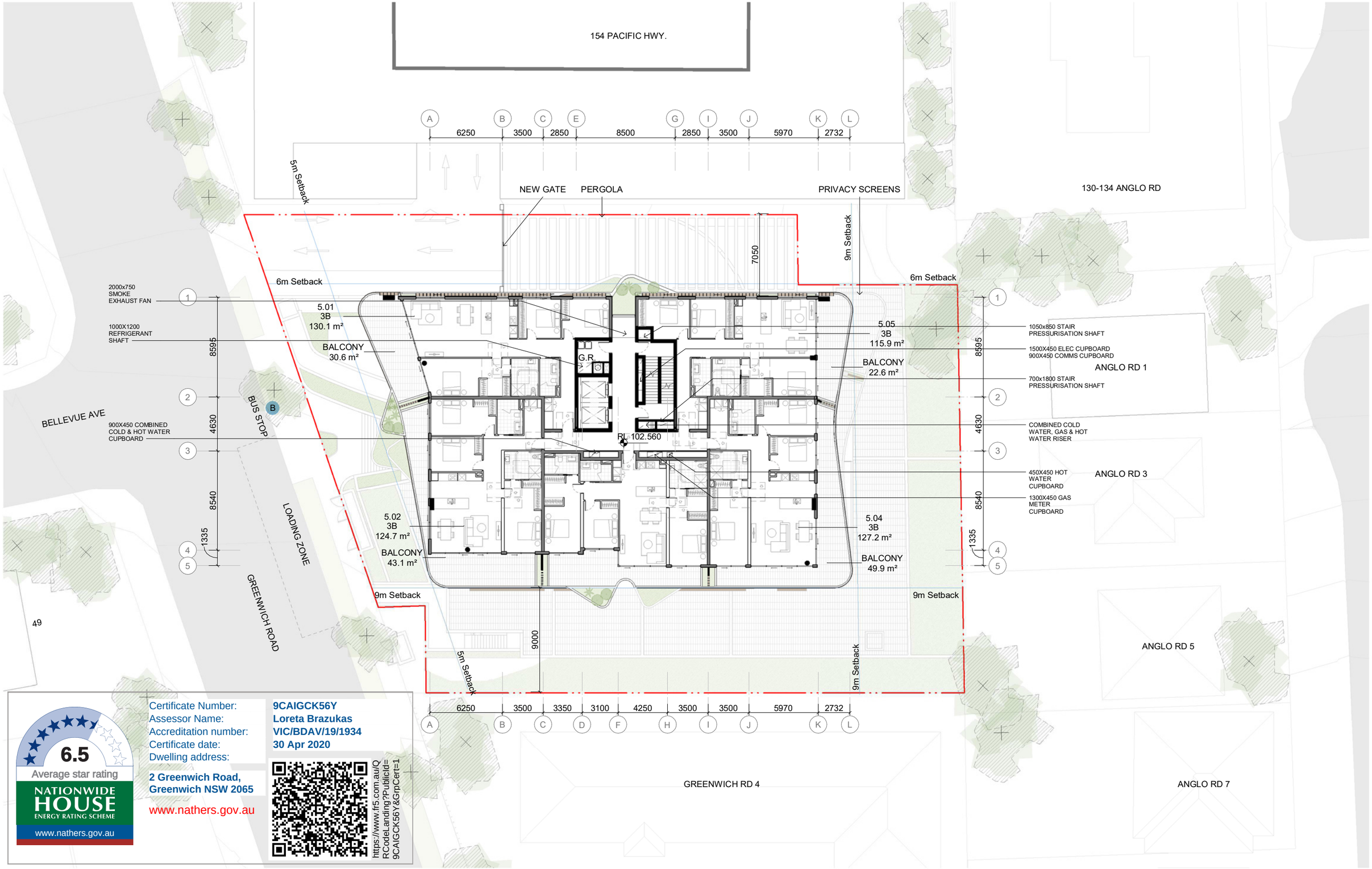
CLIENT
ALCEON GROUP

DRAWING TITLE
LEVEL 4

PROJECT
GREENWICH SENIORS LIVING
2 GREENWICH ROAD, GREENWICH

SCALE	DATE	DRAWN	CHECKED
1:150 @A1 1:300 @A3	29/04/2020	RS	EB
JOB	DRAWING		REVISION
19118	DA2.09		A



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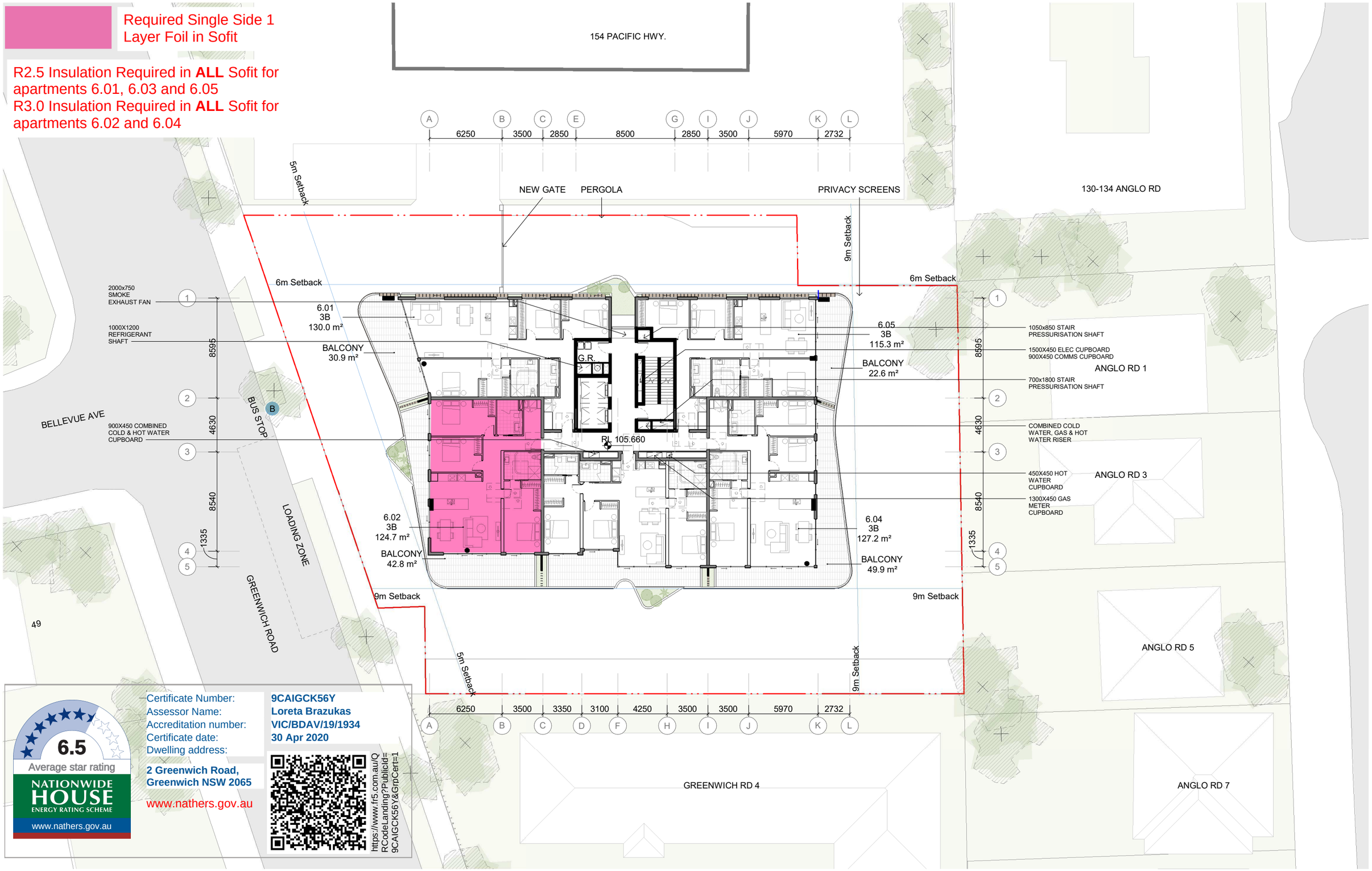
PROJECT
GREENWICH SENIORS LIVING
2 GREENWICH ROAD, GREENWICH

DRAWING TITLE
LEVEL 5

SCALE	DATE	DRAWN	CHECKED
	29/04/2020	RS	EB
JOB	DRAWING		REVISION
19118	DA2.10		A

Required Single Side 1 Layer Foil in Sofit

R2.5 Insulation Required in **ALL** Sofit for apartments 6.01, 6.03 and 6.05
R3.0 Insulation Required in **ALL** Sofit for apartments 6.02 and 6.04



6.5
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

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ALCEON GROUP

PROJECT
GREENWICH SENIORS LIVING
2 GREENWICH ROAD, GREENWICH

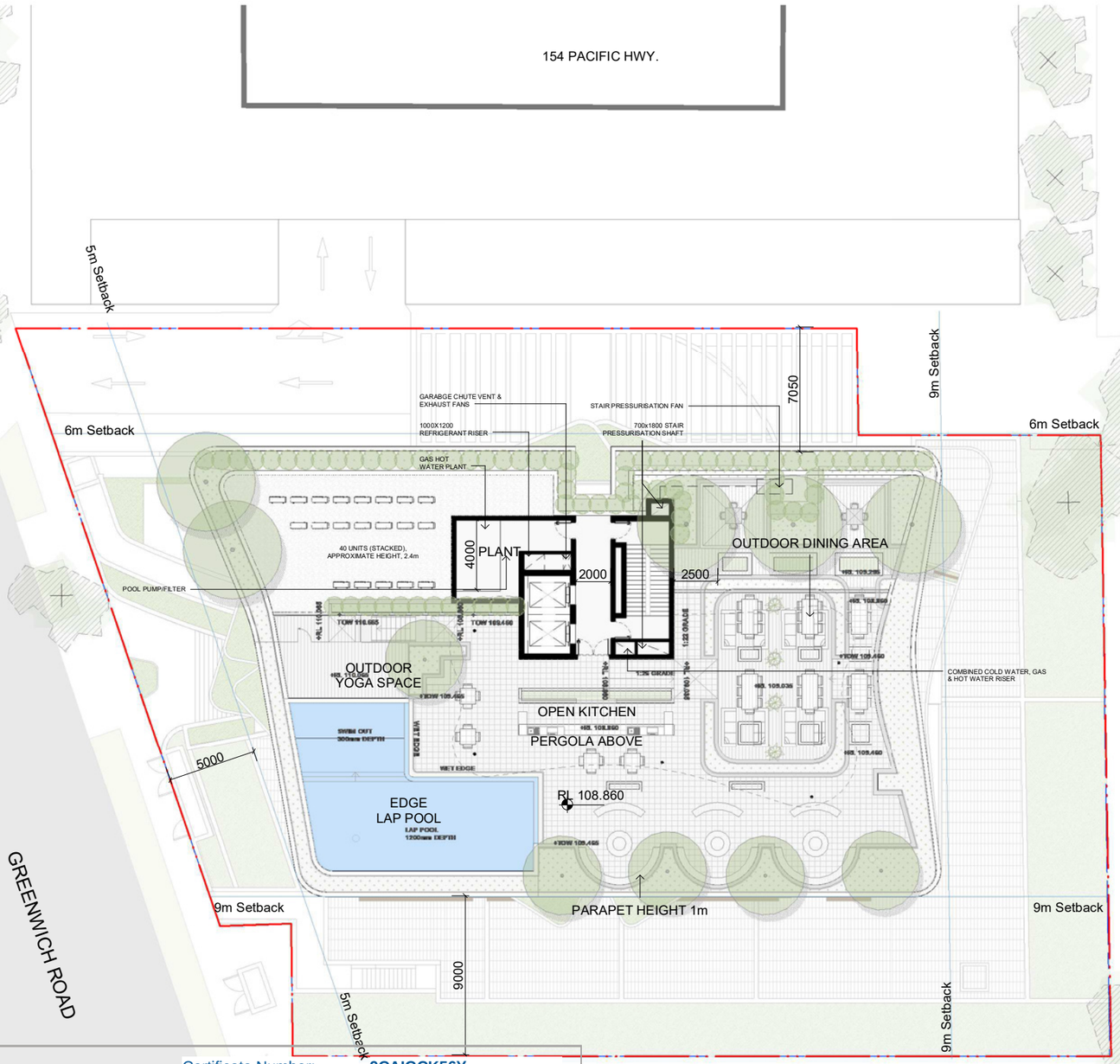
DRAWING TITLE
LEVEL 6

SCALE	DATE	DRAWN	CHECKED
	29/04/2020	RS	EB
JOB 19118	DRAWING DA2.11		REVISION A

CITY VIEW
ROOFTOP SETTING

INFINITY POOL
POOL WITH VIEWS

COMMUNITY GARDEN
REHAB GARDEN



GREENWICH ROAD

49

11

130-134 ANGLO RD

ANGLO RD 1

ANGLO RD 3

ANGLO RD 5

GREENWICH RD 4

GREEN VILLAGE
COMMUNITY INTERACTION

ROOF TOP VIEWS
ROOF TOP DINNING

COMMUNITY GARDEN
REHAB GARDEN

6.5
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
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PROJECT
GREENWICH SENIORS LIVING
2 GREENWICH ROAD, GREENWICH

DRAWING TITLE
ROOF TOP GARDEN

SCALE	DATE	DRAWN	CHECKED
1:150 @A1 1:300 @A3	29/04/2020	RS	EB
JOB	DRAWING		REVISION
19118	DA2.12		A

6.5
Average star rating
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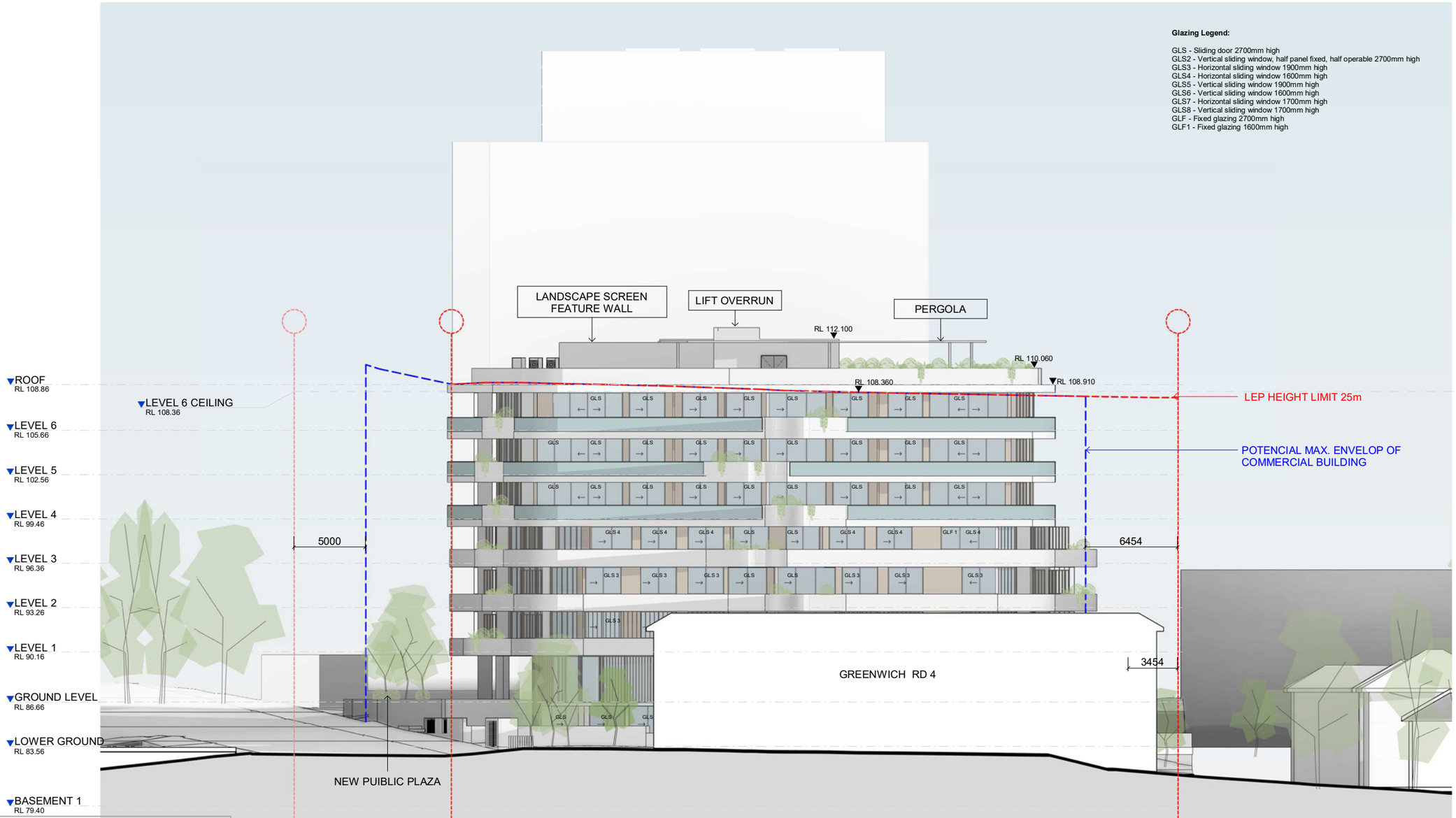
PROJECT
GREENWICH SENIORS LIVING
2 GREENWICH ROAD, GREENWICH

DRAWING TITLE
NORTH ELEVATION

SCALE	DATE	DRAWN	CHECKED
1:150 @A1 1:300 @A3	29/04/2020	RS	EB
JOB	DRAWING		REVISION
19118	DA3.01		A

Glazing Legend:

GLS - Sliding door 2700mm high
GLS2 - Vertical sliding window, half panel fixed, half operable 2700mm high
GLS3 - Horizontal sliding window 1900mm high
GLS4 - Horizontal sliding window 1600mm high
GLS5 - Vertical sliding window 1900mm high
GLS6 - Vertical sliding window 1600mm high
GLS7 - Horizontal sliding window 1700mm high
GLS8 - Vertical sliding window 1700mm high
GLF - Fixed glazing 2700mm high
GLF1 - Fixed glazing 1600mm high



6.5
Average star rating
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PROJECT
GREENWICH SENIORS LIVING
2 GREENWICH ROAD, GREENWICH

DRAWING TITLE
SOUTH ELEVATION

SCALE	DATE	DRAWN	CHECKED
1:150 @A1 1:300 @A3	29/04/2020	RS	EB
JOB	DRAWING		REVISION
19118	DA3.02		A

Glazing Legend:

GLS - Sliding door 2700mm high
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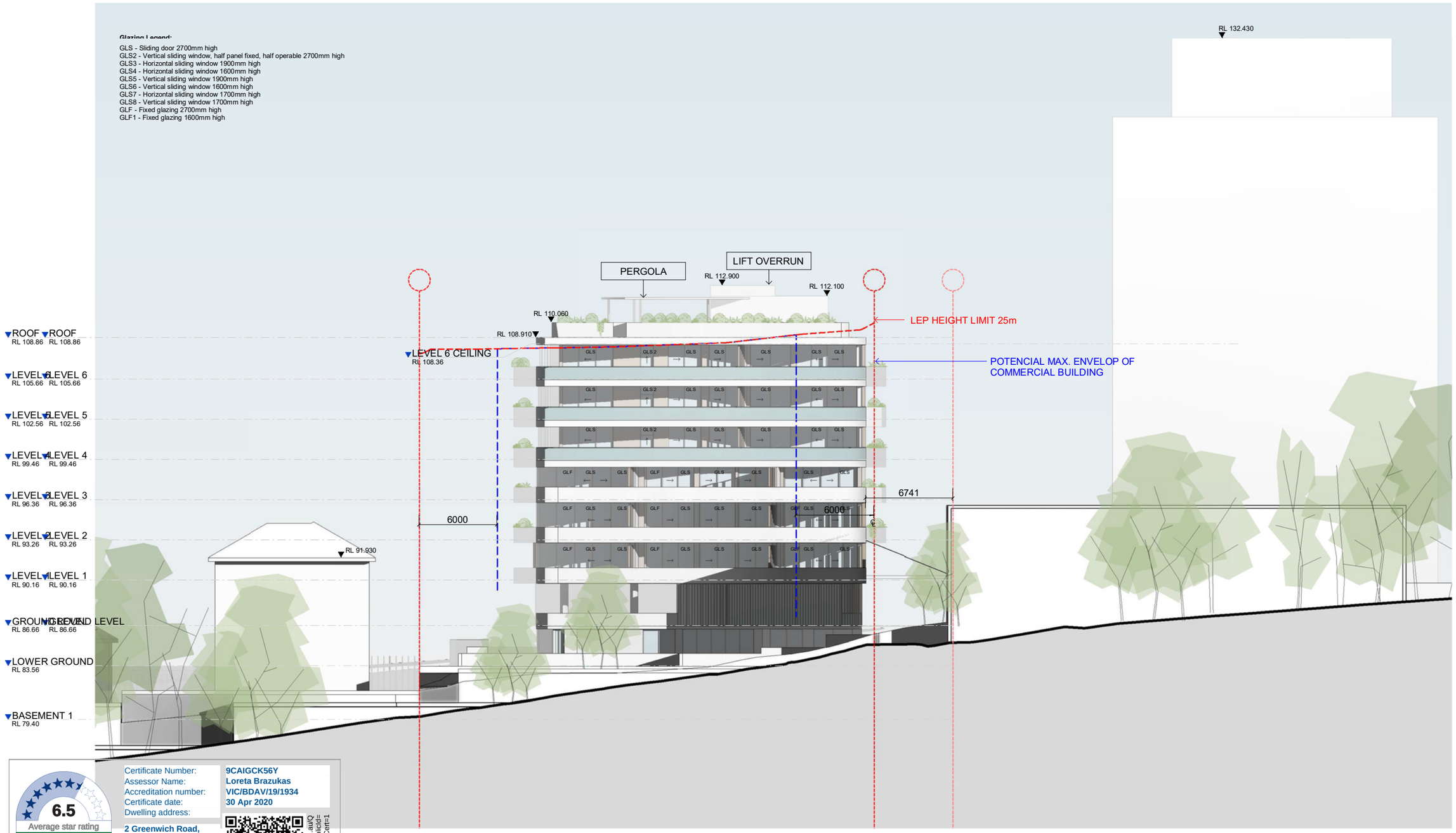
GLS3 - Horizontal sliding window 1900mm high
GLS4 - Horizontal sliding window 1600mm high
GLS5 - Vertical sliding window 1900mm high
GLS6 - Vertical sliding window 1600mm high
GLS7 - Horizontal sliding window 1700mm high
GLS8 - Vertical sliding window 1700mm high
GLF - Fixed glazing 2700mm high
GLF1 - Fixed glazing 1600mm high



6.5
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PROJECT
GREENWICH SENIORS LIVING
2 GREENWICH ROAD, GREENWICH

DRAWING TITLE
EAST ELEVATION

SCALE	DATE	DRAWN	CHECKED
1:150 @A1 1:300 @A3	29/04/2020	RS	EB
JOB	DRAWING		REVISION
19118	DA3.03		A

Glazing Legend:

GLS - Sliding door 2700mm high
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GLS3 - Horizontal sliding window 1900mm high
GLS4 - Horizontal sliding window 1600mm high
GLS5 - Vertical sliding window 1900mm high
GLS6 - Vertical sliding window 1600mm high
GLS7 - Horizontal sliding window 1700mm high
GLS8 - Vertical sliding window 1700mm high
GLF - Fixed glazing 2700mm high
GLF1 - Fixed glazing 1600mm high

6.5
Average star rating
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www.nathers.gov.au

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Certificate date: 30 Apr 2020
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REVISION	DATE	DESCRIPTION	BY
A	01/04/2020	PRELIMINARY	RS
B	20/04/2020	ISSUED FOR COORDINATION	RS
C	27/04/2020	ISSUED FOR COORDINATION	RS

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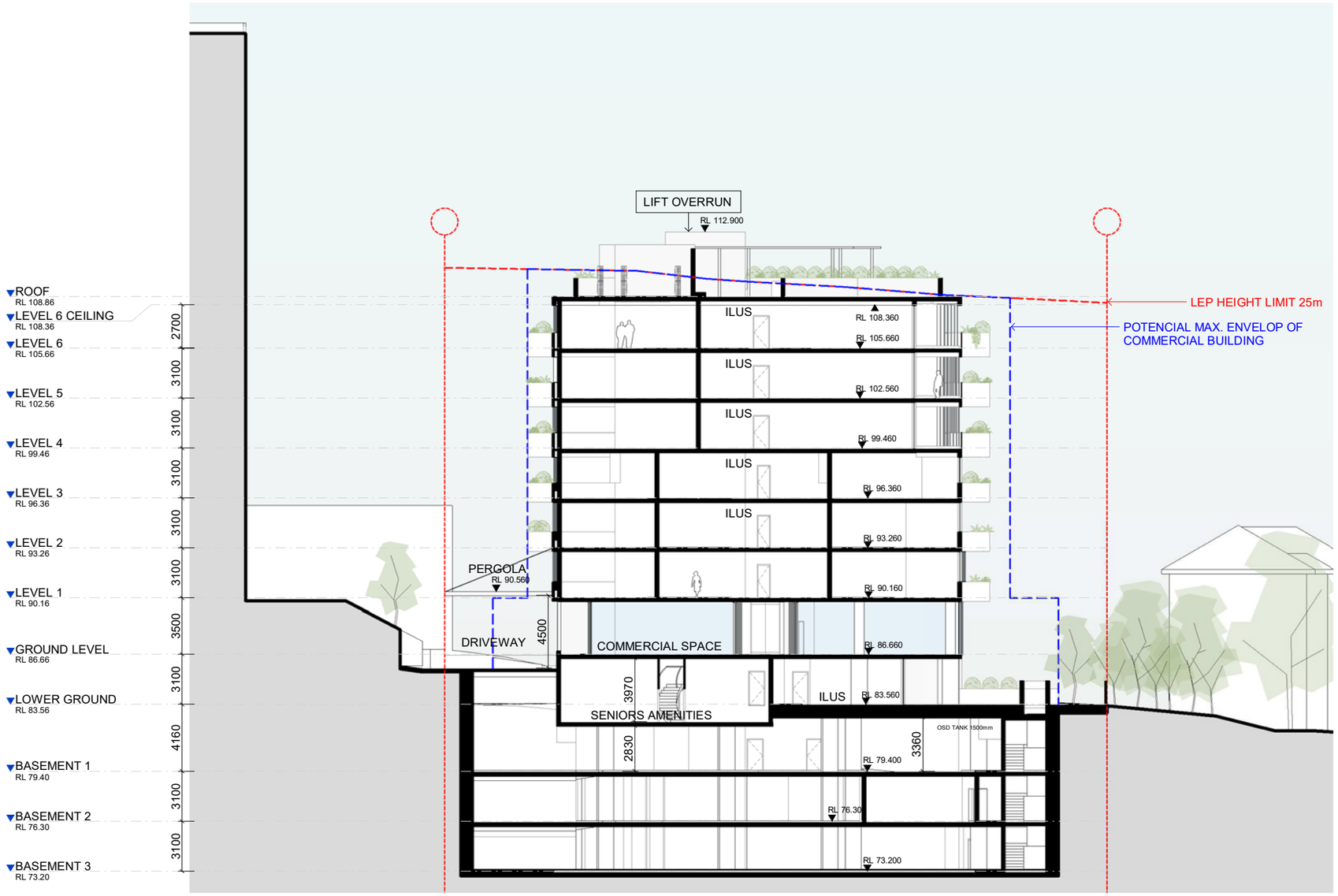
PROJECT
GREENWICH SENIORS LIVING
2 GREENWICH ROAD, GREENWICH

DRAWING TITLE
WEST ELEVATION - GREENWICH RD.

SCALE	DATE	DRAWN	CHECKED
1:150 @A1 1:300 @A3	29/04/2020	RS	EB
JOB	DRAWING		REVISION
19118	DA3.04		A



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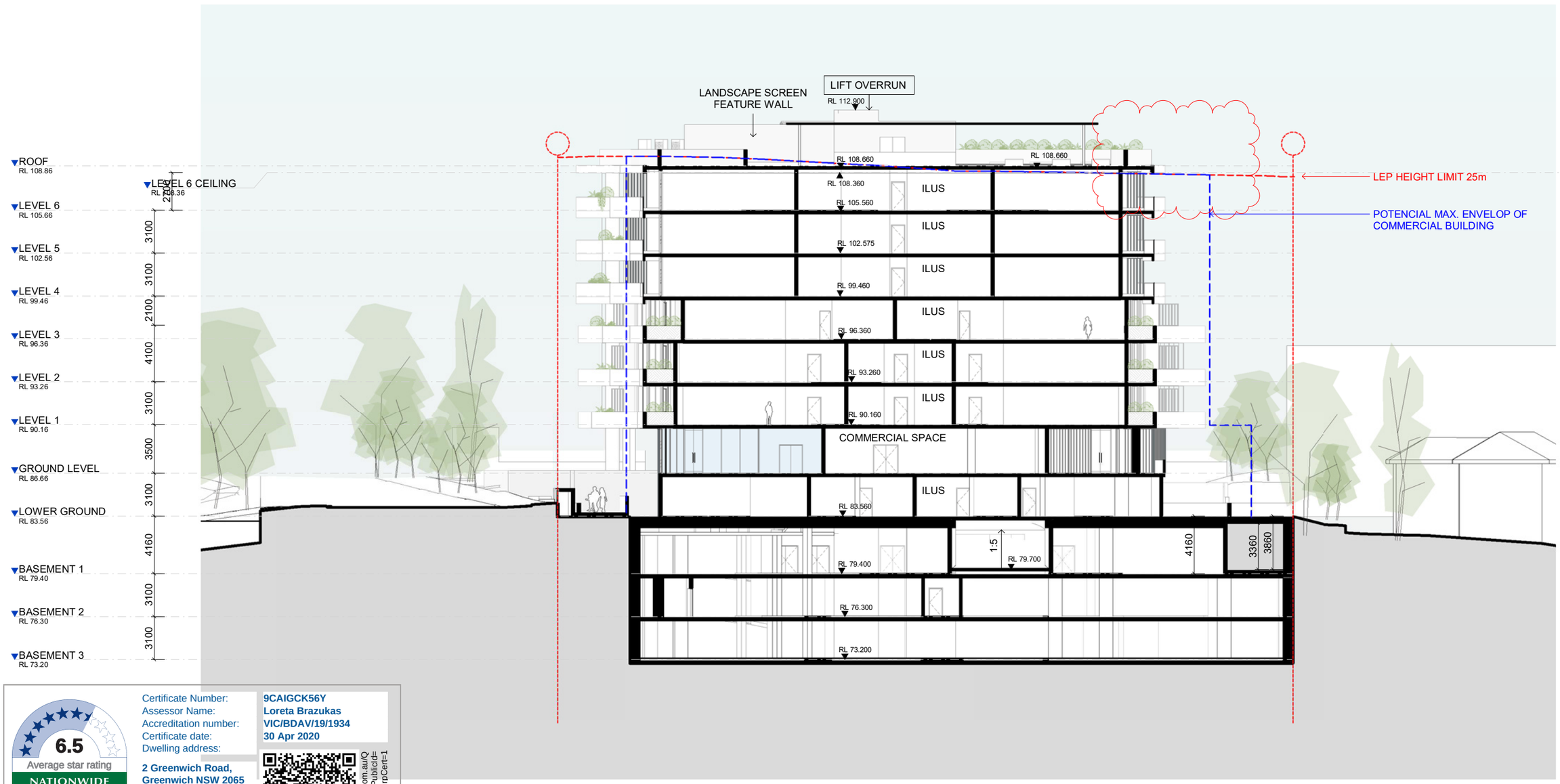
DRAWING TITLE
SECTION 1

PROJECT
GREENWICH SENIORS LIVING
2 GREENWICH ROAD, GREENWICH

SCALE	DATE	DRAWN	CHECKED
1:150 @A1 1:300 @A3	29/04/2020	RS	EB
JOB	DRAWING		REVISION
19118	DA4.01		A



6.5
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

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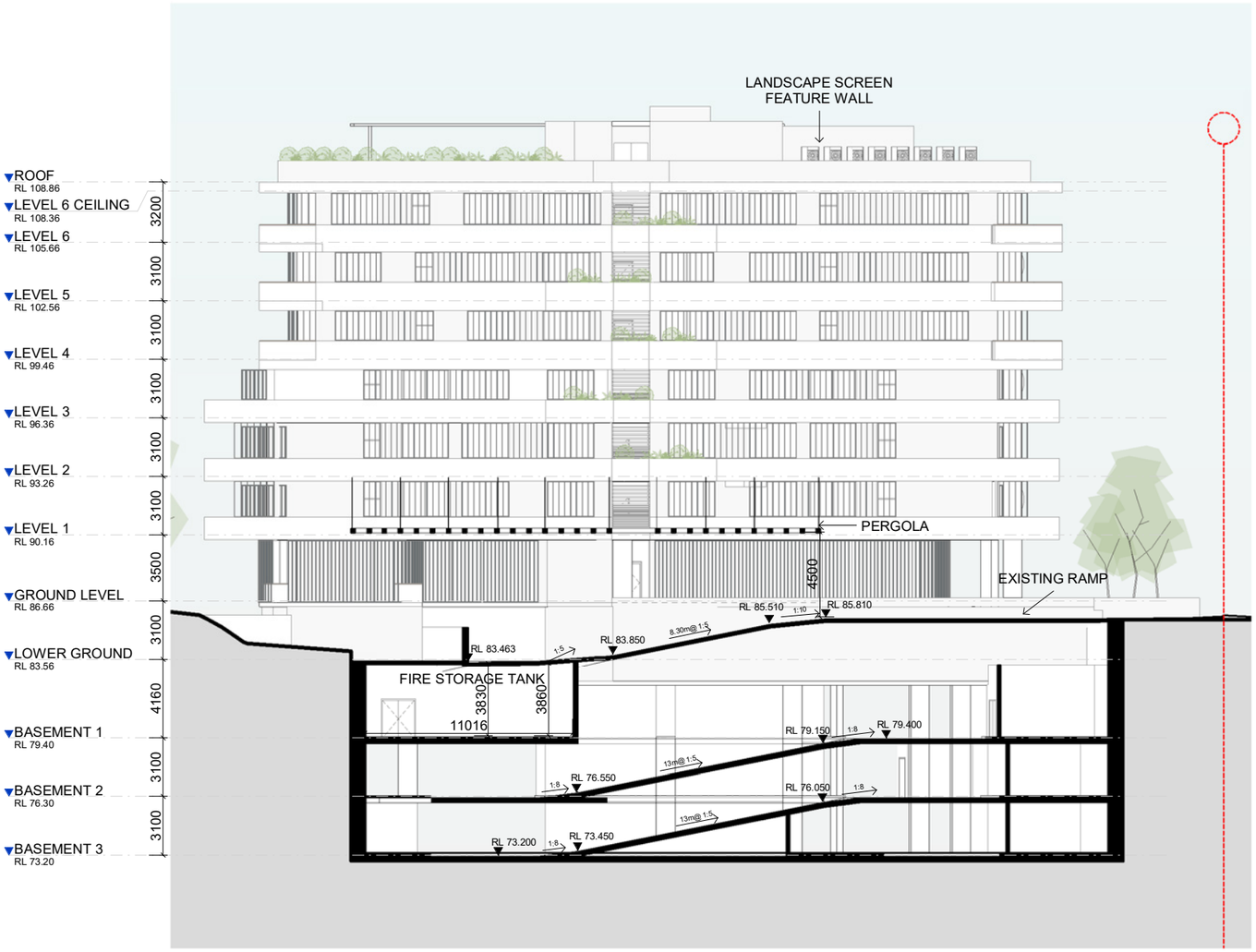
DRAWING TITLE
SECTION 2

PROJECT
GREENWICH SENIORS LIVING
2 GREENWICH ROAD, GREENWICH

SCALE	DATE	DRAWN	CHECKED
1:150 @A1 1:300 @A3	29/04/2020	RS	EB
JOB	DRAWING		REVISION
19118	DA4.02		A



1 - ACCESS RAMP 1
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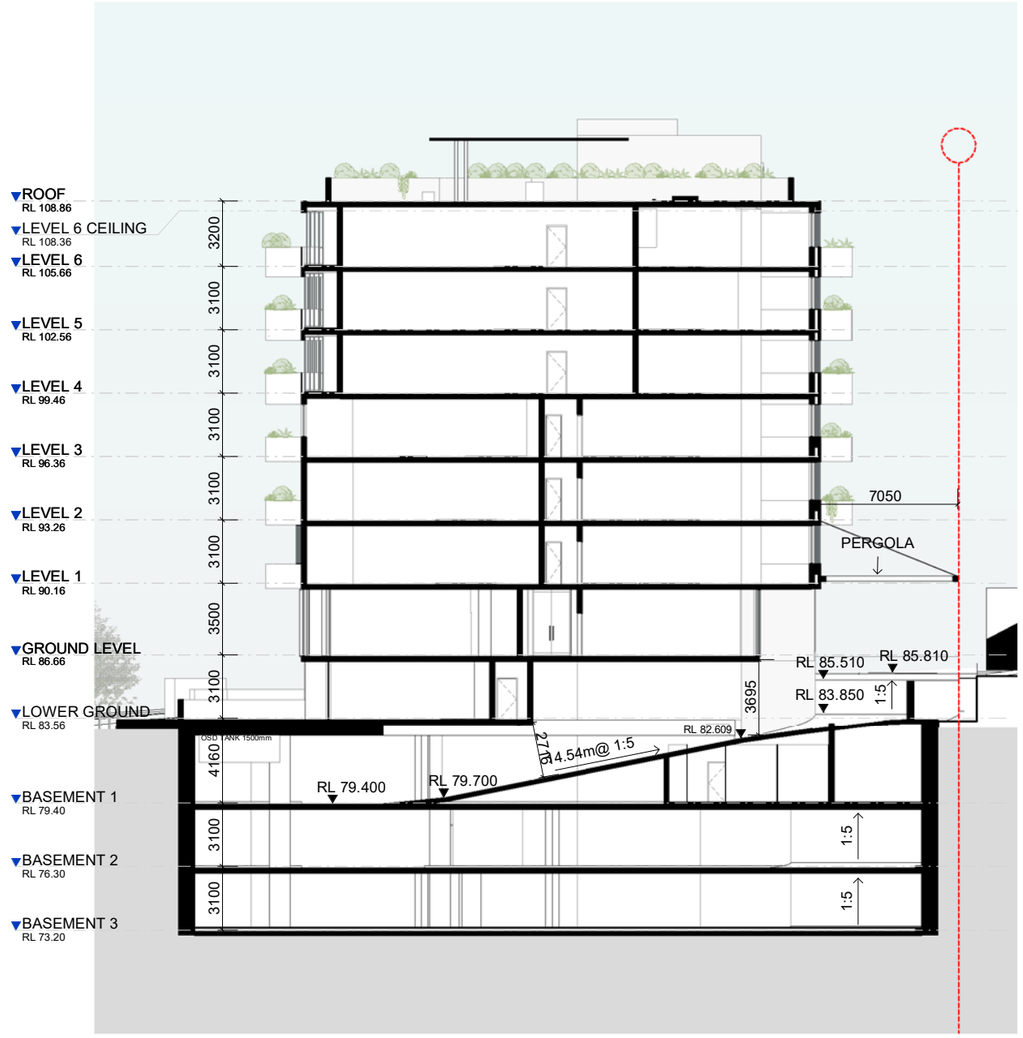

2 - ACCESS RAMP 2
1 : 150

Certificate Number: **9CAIGCK56Y**
Assessor Name: **Loreta Brazukas**
Accreditation number: **VIC/BDAV/19/1934**
Certificate date: **30 Apr 2020**
Dwelling address:
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www.nathers.gov.au

https://www.fr5.com.au/QRCodeLanding?PublicId=9CAIGCK56Y&GrpCert=1

6.5 Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
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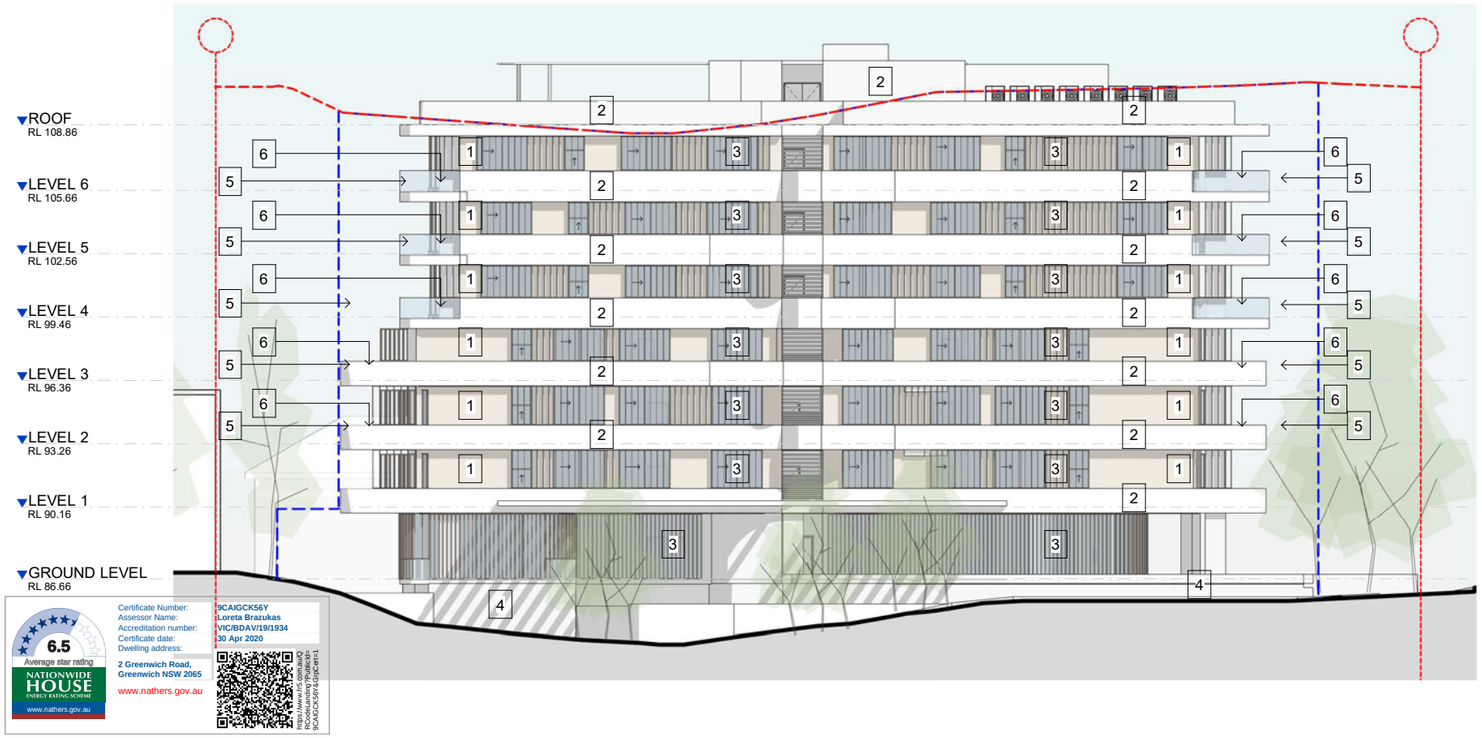
PROJECT
GREENWICH SENIORS LIVING
2 GREENWICH ROAD, GREENWICH

DRAWING TITLE
ACCESS RAMP SECTIONS

SCALE	DATE	DRAWN	CHECKED
1:150 @A1 1:300 @A3	29/04/2020	RS	EB
JOB	DRAWING		REVISION
19118	DA4.03		A



Certificate Number: 9CAIGCK56Y
Assessor Name: Loreta Brazukas
Accreditation number: VIC/BDAV19/1934
Certificate date: 30 Apr 2020
Dwelling address: 2 Greenwich Road, Greenwich NSW 2065
6.5 Average star rating
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3. BRONCE VERTICAL LOUVRES

4. SANDSTONE CLADDING

5. GLASS RAILING (CURVED)

6. GLASS RAILING (STRAIGHT)

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DRAWING TITLE
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PROJECT
GREENWICH SENIORS LIVING
2 GREENWICH ROAD, GREENWICH

SCALE	DATE	DRAWN	CHECKED
	29/04/2020	RS	EB
JOB	DRAWING		REVISION
19118	DA6.01		A

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Assessor Name:	Loreta Brazukas
Accreditation number:	VIC/BDAV/19/1934
Certificate date:	30 Apr 2020
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PROJECT
GREENWICH SENIORS LIVING
2 GREENWICH ROAD, GREENWICH

SCALE	DATE	DRAWN	CHECKED
	29/04/2020	RS	EB
JOB	DRAWING		REVISION
19118	DA6.01		A

Appendix D: Section J Report

CUNDALL

2 Greenwich Road, Greenwich

NCC 2019 Section J Fabric Report

Alceon Group Pty Ltd

Job No:	1026141
Doc Ref:	1026141-SY-RPT-001
Revision:	A
Revision Date:	23 April 2020

Project title	2 Greenwich Road, Greenwich	**Job Number**
Report title	NCC 2019 Section J Fabric Report	1026141

Document Revision History

Revision Ref	Issue Date	Purpose of issue / description of revision
-	23 April 2020	Issued for Comment

Document Validation (latest issue)

Recoverable Signature

X

Principal author

Signed by: be.thompson@cundall.com

Recoverable Signature

X

Checked by

Signed by: n.cahill@cundall.com

X

Verified by

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Executive Summary

The proposed 2 Greenwich Road, Greenwich development has been tested against the NCC 2019 deemed-to-satisfy (DTS) fabric requirements.

Below are the required building fabric and glazing thermal performances for the proposed development to meet the thermal performance requirements of Section J of the NCC 2019.

Table 1. Table 1.1 Thermal performance requirement – Opaque elements

Building Envelopment Element	R_T (m².K/W)
Roof or ceiling (solar absorptance of not more than 0.45)	R_T3.7
Wall – ▪ External (outer surface solar absorptance value of not more than 0.6) ▪ Internal	 R_T2.8 R_T1.4
Floor (direction downwards)	R_T2.0

Note: R_T means total R-value build-up of the building envelope element. Absorptance is the fraction of solar radiation absorbed by the roof and is affected by the colour and reflectance of the outer surface.

The following glazing system performances have been analysed to be compliant.

Table 1.2 Summary of glazing performance requiremnts

Elevation	U-value (W/m². K)	SHGC
Glazing – All elevations	≤4.1	≤0.30

Note: All glazing properties are based on AFRC figures for the total glazing system (glass + frame).

The façade assessment is shown in Appendix B, detailing the glazing performance requirements, as well as the wall, roof and floor requirements.

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Appendices

Appendix A List of Reference Drawings & Information

Appendix B NCC 2019 Section J Façade Report

Appendix C Table of Fabric Build-ups

Appendix D Proposed Fabric Mark-ups

1.0 Introduction

Cundall has been engaged by Alceon Group Pty Ltd to provide a National Construction Code (NCC) 2019 Section J assessment for the proposed 2 Greenwich Road, Greenwich development at 2 Greenwich Road, Greenwich.

1.1 Scope

This report includes a review of the proposed building envelope design in accordance with Section J1 – Building Fabric. All other aspects of Section J compliance are the responsibility of the architect, building services consultants and associated contractors.

The aim is to identify and propose a uniform set of thermal performances that would meet the Section J requirements when the building is located in 5 in NSW.

1.2 Section J background

The general objective of Section J of the 2019 NCC is to reduce greenhouse gas emissions of the built environment. A building, and its services, is required to use energy efficiently so that the greenhouse gas emissions associated with its operation are minimised. This is subject to the intended use of the building and the necessary level of occupant comfort. For buildings that are air-conditioned, the amount of energy has also been quantified.

This is important, as energy consumption in a building is highly dependent on how the building is used. Energy efficiency cannot be assured simply by 'building-in' appropriate measures, as the building also needs to be operated, managed and maintained in an appropriate way. This also addresses the need for a low greenhouse gas intensity source or a renewable source of energy for the building's services.

There are multiple pathways to ensure compliance with Section J of the NCC. Compliance can be achieved by using the Deemed to Satisfy (DTS) requirements, which set out the thermal performance of envelope elements of a development, or a performance solution which test the thermal performance of a proposed development against pre-defined measures.

1.3 Reference documents

The following resources were used throughout this verification exercise:

- Drawings; a list of which is contained in Appendix A;
- NCC 2019, volume one, class 2 to 9 buildings; and
- NCC 2019 facade calculator; results of which are contained in Appendix B.

1.4 Limitations and disclaimers

The DTS review assesses the building for compliance against Section J of the NCC, and only considers the design from an energy efficiency perspective. This assessment does not study the impacts the proposed insulation strategy has on peak load conditions, sizing of mechanical systems, thermal comfort for occupants or condensation issues.

This report does not review the impact of the facades' performance on achieving thermal comfort, adequate daylight or glare reduction. Should modelling of these building performance aspects be desired, separate analyses will be required.

The thermal performance requirements indicated in this report are to be determined and achieved in accordance with AS/NZS 4859.2. The standard comprises a calculation method that takes into account the impact of thermal bridges on the thermal performance of a façade. Depending on the extent of the thermal bridges within a façade, extra insulation or thermal breaks may be required for a façade to be compliant. As such, achieving the as-built thermal performance of elements shall be the responsibility of the contractors.

Suitability of any nominated products must be confirmed with appropriate consultants, contractors and/or suppliers to ensure that they are suitable and compliant from a Fire and Safety perspective as well as other regulatory requirements not assessed as part of Section J1.

2.0 Design details

2.1 Location and weather zones

The proposed 2 Greenwich Road, Greenwich development is located in Greenwich, NSW. The climate zone as defined by the NCC is 5 as illustrated below.

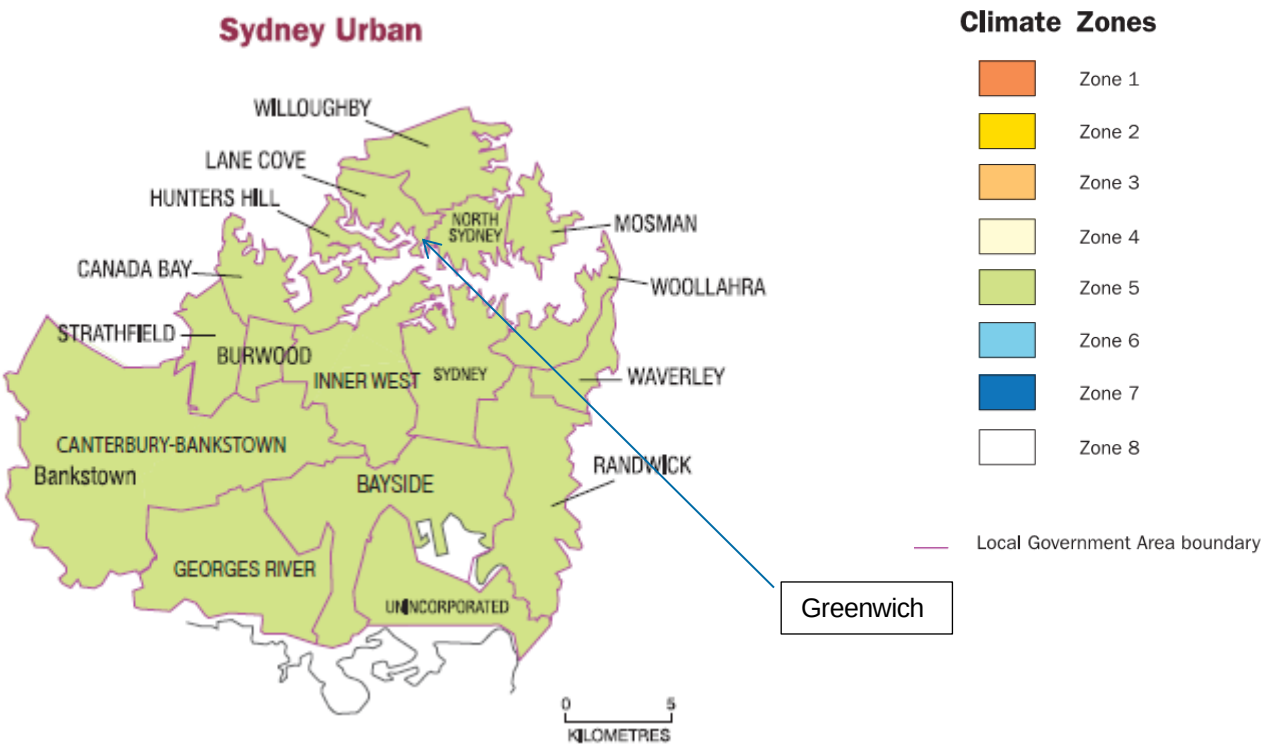


Figure 2.1 Potential climate zones of proposed building locations

2.2 Building classification

The proposed development has been identified as a Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward building as defined by the NCC 2019 Section A6 Classifications.

The specification indicates the type of materials used for the buildings' envelopment elements such as roof and external wall.

2.3 Building geometry

The following figures show the typical layout of the proposed buildings.

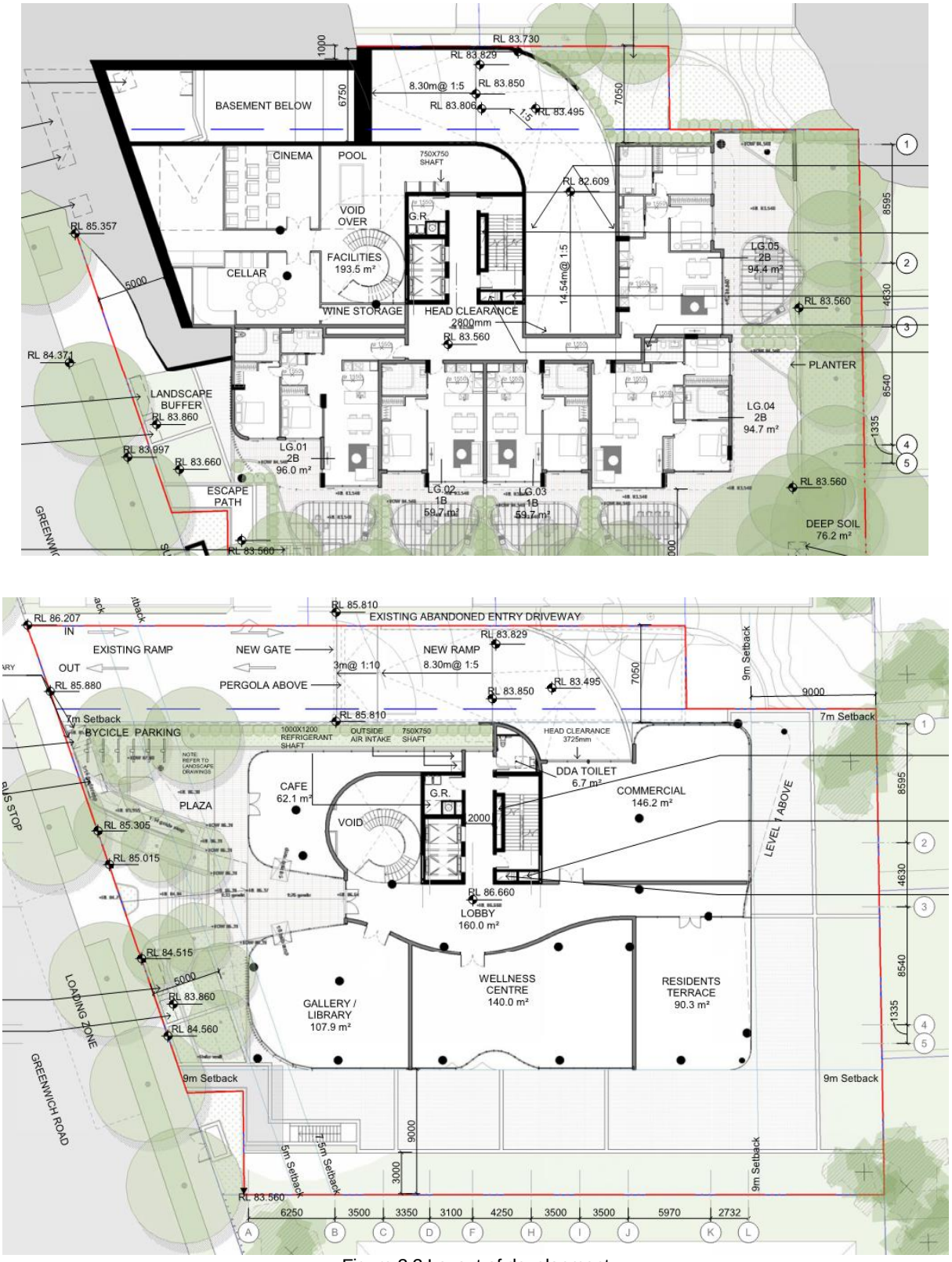


Figure 2.2 Layout of development

3.0 Deemed to satisfy requirements

3.1 Total R-Value and total U-Value

Must be, including allowance for thermal bridging—

(i) calculated in accordance with AS/NZS 4859.2 for a roof or floor; or

(ii) determined in accordance with Specification J1.5a for wall-glazing construction; or

(iii) determined in accordance with Specification J1.6 or Section 3.5 of CIBSE Guide A for soil or sub-floor spaces.

3.2 Fabric requirements

The fabric of the building has been assessed against Section J Part J1. The assessment determined the thermal performance of the fabric.

The following table summarises the minimum required thermal performance requirements for elements of the proposed building.

Table 3.1 Thermal performance requirement – Opaque elements

Building Envelopment Element	R_T (m².K/W)
Roof or ceiling (solar absorptance of not more than 0.45)	R_T3.7
Wall – ▪ External (outer surface solar absorptance value of not more than 0.6) ▪ Internal	 R_T2.8 R_T1.4
Floor (direction downwards)	R_T2.0

Note: RT means total R-value build-up of the building envelope element. Absorptance is the fraction of solar radiation absorbed by the roof and is affected by the colour and reflectance of the outer surface.

The following glazing system performances have been analysed to be compliant.

Table 3.2 Summary of glazing performance requiremnts

Elevation	U-value (W/m². K)	SHGC
Glazing – All elevations	≤4.1	≤0.30

Note: All glazing properties are based on AFRC figures for the total glazing system (glass + frame).

The façade assessment is shown in Appendix B, detailing the glazing performance requirements, as well as the wall, roof and floor requirements.

Based on the detailed sections of the drawings, the specified insulation listed in the specification and the fabric build-ups shown in Appendix C it appears the development will meet the required NCC 2019 Section J thermal performance for external wall elements.

4.0 Conclusions and recommendations

A Section J fabric assessment has been carried out to demonstrate that the proposed development is able to meet the thermal performance requirements specified within Section J of the NCC 2019 by following the DTS methodology.

Based on the design drawings and information listed in Appendix A, the building will meet the Section J requirements when constructed with the thermal performances outlined in Section 3.0

Appendix A List of Reference Drawings & Information

Drawing Number	Drawing Title	Revision	Date Issued
DA2.04	Lower Ground	A	01/04/2020
DA2.05	Ground	A	01/04/2020
DA3.01	North	A	01/04/2020
DA3.02	South	A	01/04/2020
DA3.03	East	A	01/04/2020
DA3.04	West	A	01/04/2020
DA4.01	Section 1	A	01/04/2020
DA4.02	Section 2	A	01/04/2020
DA4.03	Access Ramp Section	A	01/04/2020

Appendix B NCC 2019 Section J Façade Report

Please see overleaf.

Façade

Report

Project Summary

Date
23/04/2020

Name
Benjamin Thompson

Company
Cundall

Position
ESD Consultant

Building Name / Address
2 Greenwich Road, Greenwich

Building State
NSW

Climate Zone
5

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

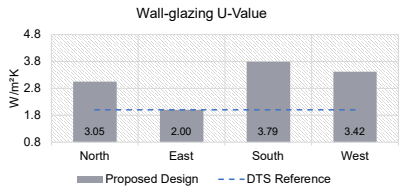
Storeys Above Ground
2.0

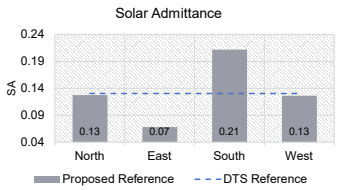
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

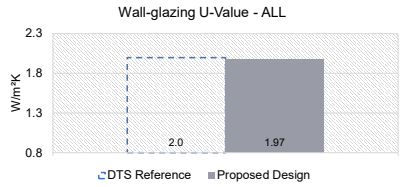
	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	3.05	2.00	3.79	3.42	1.97
Solar Admittance	0.13	0.07	0.21	0.13	
AC Energy Value					110

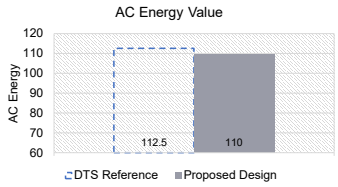
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	125.8	46.1	112.3	76.6
Glazing to Façade Ratio	72%	44%	92%	82%
Glazing References	U4.1 SHGC 0.3	U4.1 SHGC 0.3	U4.1 SHGC 0.3	U4.1 SHGC 0.3
Glazing System Types	DEFAULTS (GENERIC)	DEFAULTS (GENERIC)	DEFAULTS (GENERIC)	DEFAULTS (GENERIC)
Glass Types	U4.1 SHGC 0.3	U4.1 SHGC 0.3	U4.1 SHGC 0.3	U4.1 SHGC 0.3
Frame Types	Aluminium	Aluminium	Aluminium	Aluminium
Methodology	AFRC (True module size)			
Average Glazing U-Value (W/m².K)	4.10	4.10	4.10	4.10
Average Glazing SHGC	0.30	0.30	0.30	0.30
Shading Systems	P1_H3.2_G0 + P1.4_H3.2_G0 + P1.1_H3.2_G0 + P7_H3.2_G0	P1.9_H3.2_G0	P1_H3.2_G0 + P1_H3.2_G0 + P1.1_H3.2_G0 + P4.3_H3.2_G0	P1_H3.2_G0 + P1.4_H3.2_G0 + P1.1_H3.2_G0 + P7_H3.2_G0 + P3.1_H3.2_G0 + P4.9_H3.2_G0
Wall Area (m²)	49.3	58.8	10.0	16.9
Wall Types	R2.8	R2.8	R2.8	R2.8
Methodology	NCC Specification J1.5b			
Wall Construction	R2.8	R2.8	R2.8	R2.8
Wall Thickness	300	300	300	300
Average Wall R-value (m²K/W)	2.80	2.80	2.80	2.80
Solar Absorbtance	0.7	0.7	0.7	0.7

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Appendix C Fabric Build-up Calculations

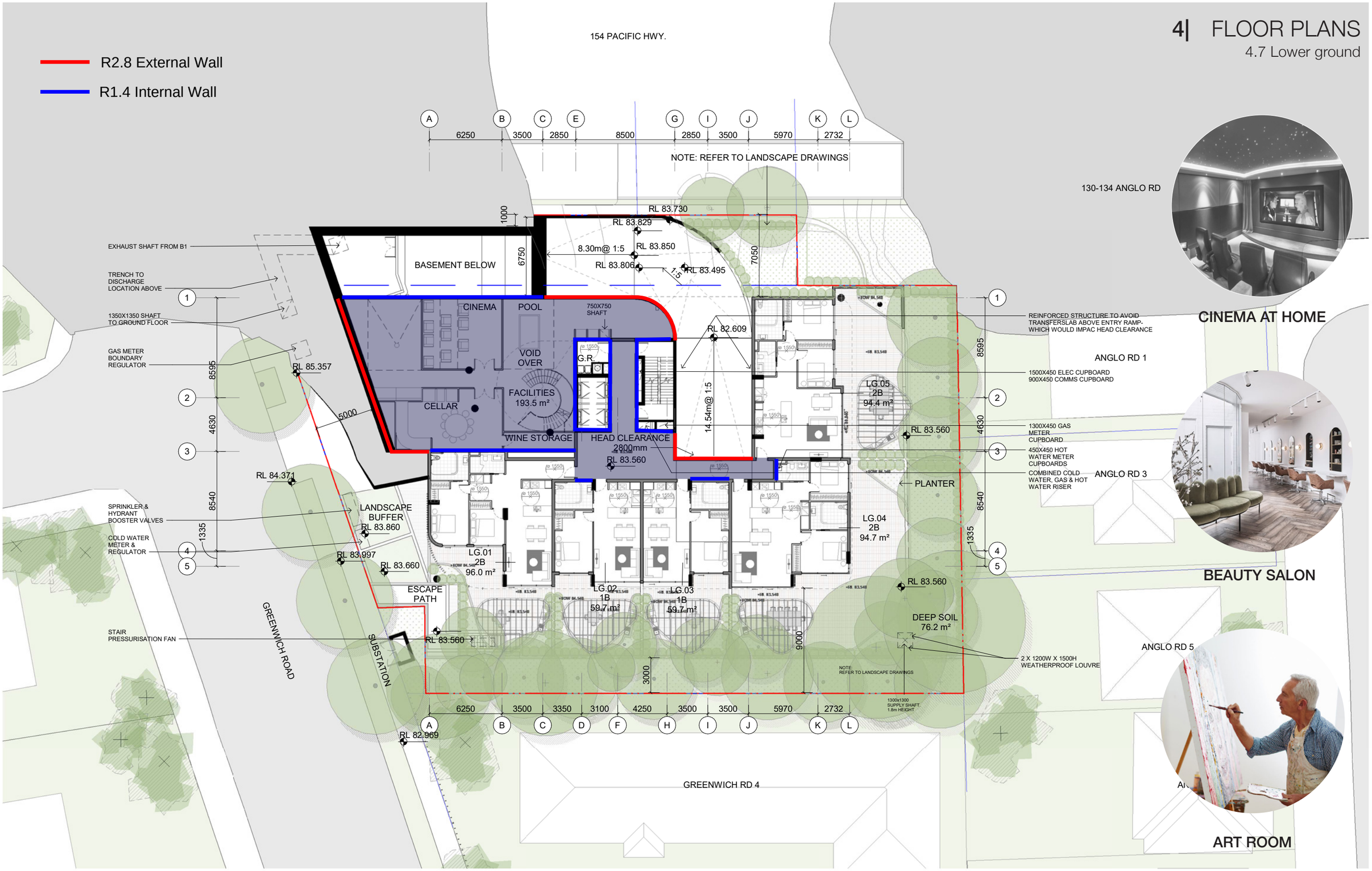
To be confirmed at a later design stage.

Appendix D Proposed Fabric Mark-ups

Please see overleaf.

4| FLOOR PLANS

4.7 Lower ground



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DRAWING TITLE
LOWER GROUND

PROJECT
GREENWICH SENIORS LIVING
2 GREENWICH ROAD, GREENWICH

SCALE	DATE	DRAWN	CHECKED
1:150 @A1 1:300 @A3	20/04/2020	RS	EB
JOB	DRAWING		REVISION
19118	DA2.04		B

4| FLOOR PLANS

4.8 Ground floor

R2.8 External Wall

R1.4 Internal Wall

154 PACIFIC HWY.

A B C E G I J K L

6250 3500 2850 8500 2850 3500 5970 2732

5m Setback

7.5m Setback

RL 86.207

IN

EXISTING RAMP

NEW GATE

OUT

RL 85.880

PERGOLA ABOVE

RL 85.810

EXISTING ABANDONED ENTRY DRIVEWAY

RL 83.829

NEW RAMP

8.30m@ 1:5

3m@ 1:10

RL 83.850

RL 83.495

7050

9m Setback

9000

2 X 1200W X 1500H WEATHERPROOF LOUVRE.
LOCATION OF DISCHARGE AT BOUNDARY SUBJECT TO APPROVAL BY COUNCIL

7m Setback

RL 85.810

7m Setback

1350x1350 EXHAUST SHAFT. 1.8m HEIGHT

BYCICLE PARKING

NOTE: REFER TO LANDSCAPE DRAWINGS

1000X1200 REFRIGERANT SHAFT

OUTSIDE AIR INTAKE

750X750 SHAFT

HEAD CLEARANCE 3725mm

GAS METER BOUNDARY REGULATOR

BUS STOP

PLAZA

CAFE 62.1 m²

G.R.

VOID

2000

DDA TOILET 6.7 m²

COMMERCIAL 146.2 m²

LEVEL 1 ABOVE

1500X450 ELEC CUPBOARD
900X450 COMMS CUPBOARD

700x1800 STAIR PRESSURISATION SHAFT

COMBINED COLD WATER, GAS & HOT WATER RISER

130-134 ANGLO RD

ANGLO RD 1

ANGLO RD 3

ANGLO RD 5

BELLEVUE AVE

RL 85.305

RL 85.015

RL 86.660

LOBBY 160.0 m²

RL 84.515

5000

RL 83.860

RL 84.560

LOADING ZONE

SPRINKLER & HYDRANT BOOSTER VALVES

COLD WATER METER & REGULATOR

GALLERY / LIBRARY 107.9 m²

WELLNESS CENTRE 140.0 m²

RESIDENTS TERRACE 90.3 m²

8595 4630 8540 1335

1 2 3 4 5

GREENWICH ROAD

9m Setback

9m Setback

49

5m Setback

7.5m Setback

9000

3000

9m Setback

RL 83.560

6250 3500 3350 3100 4250 3500 3500 5970 2732

A B C D F H I J K L

GREENWICH RD 4

11

WELLNESS CENTER

INDOOR - OUTDOOR TERRACE

CAFE - LIBRARY

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PROJECT
GREENWICH SENIORS LIVING
2 GREENWICH ROAD, GREENWICH

DRAWING TITLE
GROUND LEVEL

SCALE	DATE	DRAWN	CHECKED
1:150 @A1 1:300 @A3	20/04/2020	RS	EB
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