SSD ESD REPORT

OPAL BAYVIEW

ESD SERVICES

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DOCUMENT CONTROL SHEET

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EXECUTIVE SUMMARY

This Ecologically Sustainable Design (ESD) Report is submitted to the Department of Planning, Housing and Infrastructure (DPHI) on behalf of Principal Healthcare Finance Pty Limited (Opal Healthcare) in support of a State Significant Development Application (SSDA) (SSD-77240466) for a 177 bed residential aged care facility (RACF) at 36-42 Cabbage Tree Road, Bayview (the site).

The design adheres to the Ecologically Sustainable Development (ESD) principles outlined in the EP&A Regulation and complies with both the Sustainable Buildings SEPP 2022 and industry-specific SEARs. The project is committed to maximising passive design opportunities and integrating modern energy efficiency technology, ensuring the development meets or exceeds recognised environmental performance standards.

The following table summarises the project-specific ESD responses that address the ESD requirements of the SEARs and the General Sustainability Provisions of the SB SEPP:

SEARs	Project Specific Responses
Identify how ESD principles (as defined in section 193 of the EP&A Regulation) are incorporated in the design and ongoing operation of the development.	▪ ESD principles are integrated using passive design, efficient resource management, and climate resilience strategies in both the design and ongoing operations. For further details, see Section 3.
Where relevant, provide an assessment of the development against the standards for non-residential development set out in Chapter 3 of State Environmental Planning Policy (Sustainable Buildings) 2022.	▪ The project minimises greenhouse gas emissions and resource consumption by employing renewable energy, water-sensitive urban design, and sustainable waste management practices. For further details, see Section 4.

General Sustainability Provisions	Project Specific Responses
1. The minimisation of waste from associated demolition and construction, including by the choice and reuse of building materials.	▪ Construction Waste Management Plan stating proposed strategies for minimizing waste generation, maximizing material reuse, recycling, and reprocessing, and reducing the volume of materials destined for landfill. Targeting up to 80% of construction and demolition waste generated to be diverted from landfill.
2. A reduction in peak demand for electricity, including through the use of energy efficiency technology.	▪ A high-efficiency air-cooled heat rejection system (surpass the minimum requirements of the NCC 2022 Section J Energy Efficiency Part J6). ▪ Energy efficient LED lighting with suitable timer controls and/or daylight/occupancy sensors as appropriate. ▪ Heat pump technology for domestic hot water
3. A reduction in the reliance on artificial lighting and mechanical heating and cooling through passive design.	▪ Appropriate insulation and a light-coloured roof will be provided. ▪ High thermal performance glazing system. ▪ Appropriate combination of external shading devices (eaves etc.) and glazing location to maximise natural daylight and winter heat gains while minimising unwanted heat gains in summer.
4. The generation and storage of renewable energy.	▪ Provision of a roof-mounted photovoltaic system (PV).

General Sustainability Provisions	Project Specific Responses
5. The metering and monitoring of energy consumption.	▪ Sub-metering is to be provided to enable individual time-of-use energy data recording of the on-site renewable energy equipment & on-site electric vehicle charging equipment. The sub-meters required will be interlinked by a communication system that collates the time-of-use energy data to a single interface monitoring system where it can be stored, analysed, and reviewed.
6. The minimisation of consumption of potable water.	▪ Installed water-efficient fixtures and fittings meeting the minimum WELS Rating as nominated. ▪ Capturing rainwater for reuse in landscape irrigation and/or toilet flushing. ▪ Stormwater management plan including water-sensitive urban design (WSUD) ▪ Use of air-cooled heat rejection systems as opposed to water-based heat rejection

The initiatives outlined in this report are designed to improve upon the National Construction Code (NCC) Section J requirements for energy efficiency and are aligned with the government's ESD objectives. This holistic approach ensures that the project not only meets regulatory requirements but also contributes meaningfully to environmental sustainability.

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1. INTRODUCTION

This Ecologically Sustainable Design (ESD) Report is submitted to the Department of Planning, Housing and Infrastructure (DPHI) on behalf of Principal Healthcare Finance Pty Limited (Opal Healthcare) in support of a State Significant Development Application (SSDA) (SSD-77240466) for a 177 bed residential aged care facility (RACF) at 36-42 Cabbage Tree Road, Bayview (the site).

This ESD Report addresses the following relevant Secretary's Environmental Assessment Requirements (SEARs) set out in the table below.

SEARS Request	Response / Location in Report
15. Ecologically Sustainable Development (ESD)	
Identify how ESD principles (as defined in section 193 of the EP&A Regulation) are incorporated in the design and ongoing operation of the development.	Section 3
Where relevant, provide an assessment of the development against the standards for non-residential development set out in Chapter 3 of State Environmental Planning Policy (Sustainable Buildings) 2022.	Section 4

1.1 PROJECT DESCRIPTION

Building type and function: Class 9c Residential Care Building

NCC Climate Zone: Climate Zone 5

The proposed development will comprise the following:

- Demolition of the existing aged care building and driveway on the site;
- Construction of a three-storey residential aged care facility, accommodating:
- 177 beds,
- Basement parking,
- Ground floor ancillary facilities;
- Construction of a community room, to be located on the Aveo Bayview Gardens Retirement Living (Aveo BGRL) site;
- Construction of a new driveway, to be located on the Aveo BGRL site;
- Torrents Title subdivision of the Opal Healthcare Bayview site from Aveo BGRL;
- Associated amenities and landscaping works;
- Augmentation of, and connection to, existing utilities as required.

For a detailed project description, refer to the Environmental Impact Statement prepared by Beam Planning.

1.1.1 THE SITE

The Opal HealthCare Bayview site comprises a ~6,000sqm portion of the current Aveo BGRL site at 36-42 Cabbage Tree Road, legally described at Lot 121 in DP 789400. The site in irregular is shape, bound by Annam Road to the east, and the Aveo BGRL site to the north, west, and south.

A site aerial is provided below.

Figure 1 Context of site within the broader Aveo site

Figure 22 Subdivision site

1.2 STAKEHOLDERS CONSULTATION

The stakeholders consulted and/or contributed to the development of this report are listed below.

Stakeholders	Role
Bloompark Harry Bate, Corey Taylor	Project Manger
Opal Healthcare Tyron Nicholson	Client Representative
Calder Flower Architecture Polly Jankov, Bradley Wahl, Lara Calder	Architect
Beam Planning Chris Forrester, Emily Batten	Town Planner
JHA Consulting Engineers Lawrence Yu, Jasmin Bayocot	ESD Consultant
JHA Consulting Engineers Mathew MacIntyre, Scott Thompson, Grace Guo	Electrical, Hydraulic, Fire Consultant
Osborne & Smith William Willis, AJ Rens	Mechanical Consultant
Birzulis Michael Grogan, Chris Mundy, John Walujono	Civil & Structural Consultant
Taylor Brammer Aaron Lakeman, Vanessa Hoang	Landscape Consultant

2. ESD REQUIREMENTS

This development aims to enhance the local community by providing modern and sustainable facilities that improve the well-being of residents, staff, and visitors. The project has been designed to comply with the ESD requirements of the Planning *Secretary's Environmental Assessment Requirements* (SEARs) for Housing and the Sustainable Buildings SEPP (SB SEPP).

Industry-specific SEARs apply to eligible projects for the most common types of SSD to improve the clarity, consistency and certainty of assessment. In accordance with the above industry-specific SEARs for Housing, the development will implement a holistic and integrated approach to ESD, maximising passive opportunities with the selective application of modern technology where appropriate.

In accordance with Chapter 3.1 of Sustainable Building SEPP 2022, the General Sustainability Provisions are applicable to all development that involves:

- The erection of a new building, if the development has a capital investment value of $5 million or more; or
- Alterations, enlargement or extension of an existing building, if the development has a capital investment value of $10 million or more.

Hence the Sustainable Building SEPP 2022 is applicable to the project, and the project will incorporate best practice sustainability measures that are applicable for this project type.

Specifically, this report has been prepared to address the following ESD requirements:

SEARs – Item 15. Ecologically Sustainable Development (ESD)	The relevant section(s) of this report addressing the requirements:
Identify how ESD principles (as defined in section 193 of the EP&A Regulation) are incorporated in the design and ongoing operation of the development.	Section 3
Where relevant, provide an assessment of the development against the standards for non-residential development set out in Chapter 3 of State Environmental Planning Policy (Sustainable Buildings) 2022.	Section 4 (see details below)
Sustainable Buildings (SB) SEPP – General Sustainability Provisions	**The relevant section(s) of this report addressing the requirements:**
1. The minimisation of waste from associated demolition and construction, including by the choice and reuse of building materials.	Section 4.1 Waste Minimisation
2. A reduction in peak demand for electricity, including through the use of energy efficiency technology.	Section 4.2 Peak Electricity Demand Reduction
3. A reduction in the reliance on artificial lighting and mechanical heating and cooling through passive design.	Section 4.3 Passive Design
4. The generation and storage of renewable energy.	Section 4.4 Renewable Energy
5. The metering and monitoring of energy consumption.	Section 4.5 Energy Metering and Monitoring
6. The minimisation of consumption of potable water.	Section 4.6 Water Conservation

3. PRINCIPLES OF ECOLOGICALLY SUSTAINABLE DEVELOPMENT

The ESD principles as defined in section 193 of the EP&A Regulation have been incorporated into the design and ongoing operation phases of the development as follows:

3.1 THE PRECAUTIONARY PRINCIPLE

The precautionary principle is that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In applying the precautionary principle, public and private decisions should be guided by

(i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment; and

(ii) an assessment of the risk-weighted consequences of various options.

PROJECT RESPONSE:

The Opal Bayview development has been designed in line with the precautionary principle, integrating ESD strategies that minimise the risk of serious or irreversible environmental harm. Key passive design features, such as high-performance glazing, external shading, natural ventilation, and thermal insulation, are incorporated to reduce energy use, limit emissions, and lower the building's environmental footprint.

In addition to the above, a Climate Change Resilience Assessment (see Appendix A) has been undertaken to evaluate exposure to future climate risks (e.g. flood, storm, heatwaves, bush fires, extreme storms and other weather events). The outcomes of this assessment have directly informed material selection, building orientation, and infrastructure resilience. Mitigation measures such as durable finishes, light-coloured roofing, and shading structures are embedded in the design to address long-term environmental risks.

3.2 INTER-GENERATIONAL EQUITY

The principle of inter-generational equity is that the present generation should ensure the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.

PROJECT RESPONSE:

The development has been designed with long-term sustainability and community benefit in mind, aligning with the principle of inter-generational equity. By delivering a high-quality aged care development, the project provides a lasting care facility for the elderly that will benefit current and future residents, staff and the broader community.

Environmentally, the project adopts measures that reduce resource consumption and emissions over the building's life. These include water-efficient fixtures, rainwater harvesting, on-site renewable energy generation, and the use of low-carbon and durable materials. Such initiatives not only lower the environmental footprint during construction and operation but also ensure that future generations inherit a site that is resilient, efficient and aligned with sustainable development goals.

The focus on passive design, long-term durability and operational efficiency reflects a commitment to maintaining environmental quality and usability over time, helping to preserve ecological and community value for decades to come.

3.3 CONSERVATION OF BIOLOGICAL DIVERSITY AND ECOLOGICAL INTEGRITY

The principle of the conservation of biological diversity and ecological integrity is that the conservation of biological diversity and ecological integrity should be a fundamental consideration.

PROJECT RESPONSE:

The proposed development has been designed with a strong focus on conserving the site's ecological integrity and enhancing local biodiversity. A detailed Landscape Report will confirm that the works will not significantly impact any threatened species, ecological communities, or their habitats. The design retains significant areas of vegetation, ensuring the preservation of ecological corridors and natural features.

Mature trees have been retained where possible, and the landscape strategy incorporates native and endemic species to support habitat creation and ecological resilience. The project includes green outdoor areas, structured garden beds, and permeable surfaces to support biodiversity and maintain natural water flow. Ecological assessments have informed the

design, ensuring minimal disturbance and alignment with principles of sustainable development and environmental stewardship.

3.4 IMPROVED VALUATION, PRICING AND INCENTIVE MECHANISMS

The principle of improved valuation, pricing and incentive mechanisms is that environmental factors should be included in the valuation of assets and services, such as

(i) polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement, and,

(ii) the users of goods and services should pay prices based on the full life cycle of the costs of providing the goods and services, including the use of natural resources and assets and the ultimate disposal of waste, and

(iii) established environmental goals should be pursued in the most cost-effective way by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

PROJECT RESPONSE:

The project incorporates environmental valuation principles by prioritising materials and construction methods that reflect full life-cycle costs, including environmental impacts. Material selection is guided by industry-recognised sustainability standards and whole-of-life cost assessments, rather than focusing solely on initial capital expenditure. Where possible, certified recycled, reused, or low embodied energy materials will be used to reduce environmental footprint and promote resource efficiency.

In line with the "polluter pays" principle, the project aims to minimise construction waste and emissions at their source through smart design, efficient procurement, and responsible waste management. Incentive-based decision-making is embedded in the process, encouraging supply chain partners to propose cost-effective, sustainable alternatives. This approach ensures environmental outcomes are achieved in a financially responsible manner, aligning with broader sustainability and policy goals.

4. PROPOSED ESD INITIATIVES

The proposed development is committed to incorporating best practices ESD initiatives that are appropriate to the intended usage of the buildings to ensure that the facility is both environmentally responsible and resource efficient. The following key initiatives have been integrated into the project to enhance its sustainability performance, addressing the ESD requirements of the SEARs and the General Sustainability Provisions of the SB SEPP.

Project-specific ESD initiatives are outlined below. See Appendix B for a schedule summarising the proposed initiatives.

4.1 CONSTRUCTION WASTE MINIMISATION

4.1.1 CONSTRUCTION WASTE MANAGEMENT PLAN

Effective waste collection and disposal are crucial for safeguarding the environment and public health today. To ensure responsible handling of demolition and construction waste, a comprehensive waste management plan will be devised and implemented. This plan will encompass strategies for minimizing waste generation, maximizing material reuse, recycling, and reprocessing, and reducing the volume of materials destined for landfill. Cut and excavation materials will also be reused for backfilling or for grading purposes to level the site where possible. As part of the project's waste minimization efforts, the aim is to divert up to 80% of construction and demolition waste from ending up in landfills.

4.2 PEAK ELECTRICITY DEMAND REDUCTION

4.2.1 HEATING, COOLING AND VENTILATION SYSTEMS

The air-conditioning and ventilation systems will be designed to improve on the minimum energy efficiency requirements of NCC 2022 Section J, Part J6, which outlines standards for efficient HVAC design, control and energy recovery.

A high-efficiency air-cooled heat rejection system is proposed. The air-conditioning controls will be optimised to minimise energy use through appropriate scheduling and setpoints aligned with the buildings' operational needs.

Ductwork will be designed to reduce pressure losses and fan energy use by selecting equipment with low coil and fitting resistance and using suitably sized ducts to minimise friction losses.

In areas such as bathrooms, back of house and plant rooms, natural ventilation will be prioritised where feasible, with mechanical ventilation provided only as needed to maintain air quality and temperature.

4.2.2 LIGHTING

The lighting design will improve on the minimum requirements of NCC 2022 Section J, Part J7. Illumination levels will comply with J7D3. To reduce energy use and optimise efficiency, the development will use LED fittings throughout. These will be paired with an automatic control system incorporating timer controls and occupancy sensors (PIR and/or microwave) as appropriate to enhance operational performance.

To make use of natural daylight, lighting in regularly occupied spaces will include daylight sensors to dim or switch off artificial lighting when daylight is sufficient. In larger areas, perimeter lighting will be zoned to maximise natural light use.

External luminaires will comply with AS 4282:1997 to limit light pollution and meet night sky illumination benchmarks, ensuring external lighting is energy efficient and does not impact the surrounding environment.

4.2.3 DOMESTIC HOT WATER

Potable hot water for the aged care building will be provided by a centralised system using electric heat pumps with storage tanks to generate hot water efficiently. Heat pumps extract heat from the surrounding air and transfer it to the water, using significantly less electricity than conventional electric resistance systems. This approach reduces overall energy demand, lowers operational costs and minimises the environmental footprint over the system's lifecycle.

4.3 PASSIVE DESIGN

Appropriate building design and material selection will help ensure that thermal comfort can be maintained without overreliance on mechanical systems. Passive design strategies, including the use of performance glazing, shading elements, and effective insulation, will reduce demand for mechanical air conditioning. This will lead to a meaningful reduction in both energy consumption and greenhouse gas emissions.

4.3.1 BUILDING ENVELOPE PERFORMANCE

The building fabric will be designed to meet and/or improve upon the minimum NCC 2022 Section J Part J4 requirements for the building envelope. Thermal breaks will be incorporated into walls, floors, and roofs where appropriate to ensure a continuous thermal barrier on the building envelope, reducing the flow of thermal energy between conductive materials.

4.3.1.1 Building Fabric

The indicative total construction R-value requirements to comply with NCC 2022 Section J Part J4 are provided below, based on a Climate Zone 5.

Building Elements	Indicative NCC 2022 Requirements
Envelope Roof/Ceiling	Total R-Value of 3.7 K.m^2/W (Downwards, Light Colour Roof Solar absorptance of the upper surface of a roof must be not more than 0.45)
Envelope Walls	Total R-Value of 1.4 K.m^2/W
Envelope Floors	Total R-Value of 2.0 K.m^2/W (Downwards).

Note: The impact of thermal bridging must be considered within the total R-value calculation under NCC2022.

To achieve the above requirements, insulation will be required for the building's walls and roof/ceilings. Insulation serves to mitigate heat transfer, thereby reducing heat loss during winter and heat gain in summer. By effectively managing thermal flow, insulation significantly decreases the heating and cooling demands placed on air-conditioning systems.

Additionally, employing light-coloured roofing material with low solar absorptance (SA) is recommended. This will help deflect more sunlight, thereby minimising summer heat buildup in the roof space. Furthermore, it contributes to mitigating elevated local temperatures, known as the heat island effect. Notably, this approach will also enhance the efficiency of solar PV panels, as their efficiency improves under cooler conditions.

4.3.1.2 External Glazing

Glazing is a major source of unwanted heat gain in the summer and can cause significant heat loss in the winter due to its low insulation performance. Therefore, a high thermal performance glazing system is recommended. Performance glazing substantially reduces heat transmission. This reduces conduction heat loss in winter and reduces the amount of direct solar heat gains in summer. This will correspond to a reduction of both heating and cooling loads.

The indicative glazing specifications to comply with Section J Part J4 Building Fabric DTS assessment is provided below.

Glazing	Indicative Specifications	Comments
Envelope Glazing	Total System U <=5.2 W.m^2/K Total System SHGC=0.37	Single Tinted low-e or the like

Note: Glazing specifications are indicative only and may be refined to optimise occupant comfort and account for climate change impacts as the architectural design develops. Final specifications will be confirmed during the Detailed Design phase.

No Skylights are proposed within the development.

4.3.2 SHADING AND DAYLIGHTING

Solar access provides significant benefits to indoor environmental quality by increasing natural daylight and reducing reliance on artificial lighting. However, excessive solar gain, particularly from direct radiation, can increase HVAC energy use and cause thermal discomfort. To maximise the benefits of solar access while minimising its drawbacks, the design adopts passive principles.

Passive solar heating allows solar heat to warm spaces in winter, while passive cooling strategies limit heat gain in summer. These approaches optimise indoor conditions and reduce HVAC energy demand through site-specific shading solutions.

In the proposed building, external shading devices, including eaves and vertical shading devices, are strategically designed to block the high summer sun while allowing the lower winter sun to penetrate and contribute to passive heating. High thermal performance skylights will also be incorporated to bring daylight into internal areas while minimising unwanted heat gains in summer and heat losses in winter.

These features enhance daylight and views, reducing artificial lighting needs and supporting occupant wellbeing through improved mood, productivity and connection to the outdoors.

4.4 RENEWABLE ENERGY

4.4.1 PHOTOVOLTAICS

To reduce grid electricity use and greenhouse gas emissions, the project proposes a 100 kW roof-mounted photovoltaic (PV) system. Panels will be installed on the north-facing roof in discreet areas out of main view. Battery storage is not recommended or required, as the building operates primarily during the day and will use the solar electricity as it is generated.

4.5 ENERGY METERING AND MONITORING

4.5.1 ELECTRICITY METERING AND MONITORING

Electricity metering and sub-metering will be implemented in line with NABERS and NCC 2022 Section J, Part J8 metering requirements to monitor and manage the building's energy use. Sub-metering will capture time-of-use energy data for on-site renewable energy systems.

All sub-meters will be connected via a communication system to a central monitoring interface, where energy data can be stored, analysed and reviewed to support ongoing performance management.

4.6 WATER CONSERVATION

The following water conservation initiatives are proposed to help reduce the use of potable water.

4.6.1 FITTINGS AND FIXTURES

Water-efficient fixtures and fittings will be installed in accordance with the Australian Government's Water Efficiency Labelling Scheme (WELS) to reduce potable water consumption. All fixtures and fittings will meet the minimum WELS Rating as specified in the table below.

Water Fittings / Fixtures	Minimum WELS Rating Proposed for the Buildings	Highest Available Rating (AS/NZS 6400-2016)
Showerheads	4 (>6.0, but <= 7.5L/min)	4
Toilets	4	5
Urinals	5	5
Bathroom Taps	5	6

Water Fittings / Fixtures	Minimum WELS Rating Proposed for the Buildings	Highest Available Rating (AS/NZS 6400-2016)
Dishwashers (excluding commercial equipment)	5	6
Washing Machines (excluding commercial equipment)	4	6

4.6.2 RAINWATER COLLECTION AND REUSE

The project will capture roof water in a rainwater tank for reuse in landscape irrigation. The tank size will be determined by the available catchment area and the predicted monthly demand for reuse, as assessed by the project's hydraulic consultant. Mains water will back up the rainwater supply to ensure continuity if the tank runs dry.

4.6.3 WATER-SENSITIVE URBAN DESIGN

The project will implement best practices of water-sensitive design to manage stormwater runoff and reduce demand for landscape irrigation. A detailed stormwater management plan including water-sensitive urban design (WSUD) will be completed by a civil/stormwater consultant.

4.6.4 HEAT REJECTION SYSTEM

The project will use of air-cooled heat rejection systems as opposed to water-based heat rejection to reduce water demand.

4.7 ADDITONAL ESD INITIATIVES

4.7.1 LOW VOC / LOW FORMALDEHYDE MATERIALS

Adhesives, sealants, flooring and paint products will be selected where possible to contain low or no Volatile Organic Compounds (VOCs) and all engineered timber products used in exposed or concealed applications shall contain low or no formaldehyde to avoid harmful emissions that can cause illness and discomfort for the occupants.

4.7.2 RECYCLED MATERIALS

Reducing the embodied emissions in new development, that is the greenhouse gas emissions resulting from the materials used to construct a building, is also an important component to achieving the goal of net zero emissions.

One way to reduce embodied emissions is include more recycled materials to replace new/virgin construction materials in new development. This project will incorporate recycled aggregate for drainage layer behind retaining walls and recycled road base below concrete slabs and pavements.

4.7.3 EV CHARGERS

Incorporating 32 EV chargers into the design supports the transition to low-emission transport by encouraging the use of electric vehicles, which reduce local air pollution and greenhouse gas emissions compared to conventional cars. Providing this infrastructure also future-proofs the building, ensuring it can meet the growing demand for EV charging as adoption increases, while enhancing the site's sustainability credentials and appeal to environmentally conscious users.

5. CONCLUSION

The proposed Opal Bayview development demonstrates a strong commitment to ecologically sustainable design, aligning with the principles of the SEARs and the SB SEPP 2022. The project integrates passive design, resource efficiency, climate resilience and inclusive design strategies to deliver high-performance aged care environments that are comfortable, adaptable and low-impact.

Through a considered approach to energy use, water conservation, material selection and indoor environmental quality, the development supports both immediate and long-term sustainability outcomes. Measures to enhance climate resilience further reinforce the facility's commitment to sustainable design.

This ESD Report serves as a performance specification, outlining the environmental targets and design strategies required to meet the project's sustainability objectives. It forms the basis for integrating sustainability across design, construction and operations, and should be read alongside supporting architectural and consultant documentation. The report will be updated as required to maintain compliance with statutory obligations and best-practice benchmarks throughout the project lifecycle.

APPENDIX A – CLIMATE CHANGE RESILIENCE

The project has considered the following potential impacts from climate change and has provided appropriate response to mitigate these impacts:

- Direct damage or failure of project components
- Accelerated deterioration of project components or reduced design life
- Reduced operating capacity
- Climate hazard impacts to surrounding areas (e.g., impacting access and egress)
- Impacts to the health and wellbeing of building occupants and other relevant stakeholders
- Indirect risks from impacts to other interdependent systems and services (e.g., transport networks, power, water, telecommunications)

CLIMATE CHANGE SCENARIOS AND IMPACTS

The subject site is located within the East Coast South sub-cluster as defined by the CSIRO and the Australian Government.

Figure 3: East Coast South Sub-cluster

The East Coast south sub-cluster comprises Natural Resource Management (NRM) regions in the central part of the eastern seaboard of Australia. The area encompasses important headwater catchments for a high proportion of Australia's population.

The sub-cluster area has a predominantly sub-tropical climate, with regional variations such as some temperate influences in the south.

Key projection messages for this sub-cluster:

- Average temperatures will continue to increase in all seasons (very high confidence).
- More hot days and warm spells are projected with very high confidence. Fewer frosts are projected with high confidence.

- Temperatures have increased over the past century, with the rate of warming higher since 1960. The mean temperature increased between 1910 and 2013 by around 0.8°C. The recent decades have been the warmest on record for both daily minimum and daily maximum temperatures in the cluster.
- For the near future (2050), the annual average warming across all emissions scenarios is projected to be around 0.5 to 1.3°C above the climate of 1986 – 2005.
- By late in the century (2090), for a high emission scenario (RCP8.5) and projected range of warming is 2.9 to 4.6°C. Under an intermediate scenario (RCP4.5) the projected warming is 1.3 to 2.5°C.
- Decreases in winter rainfall is projected with medium confidence. Other changes are possible but unclear.
- Increased intensity of extreme rainfall events is projected, with high confidence.
- Mean sea level will continue to rise, and the height of extreme sea-level events will also increase (very high confidence).
- A harsher fire-weather climate in the future (high confidence).
- On an annual and decadal basis, natural variability in the climate system can act to either mask or enhance any long-term human induced trend, particularly in the next 20 years and for rainfall.

HAZARD MAPS

The project has considered future climate risks, particularly bushfire and flooding, which are expected to intensify with climate change. As an aged care facility, it is classified as a Special Fire Protection Purpose and a Vulnerable Use, increasing its sensitivity to climate extremes and requiring a precautionary, climate-resilient approach. The site is mapped outside both bushfire-prone and flood risk zones. Non-combustible construction, in line with NCC requirements, and WSUD principles have been incorporated into the design to further help mitigate these risks. These measures demonstrate a proactive commitment to minimising climate-related risks for occupants.

BUSH FIRE PRONE LAND MAP

Figure 4: Bush Fire Prone Land Overlay

NBC FLOOD HAZARD MAP

Figure 5: Flood Hazard Overlay

CLIMATE CHANGE PRE-SCREENING CHECKLIST

Pre-screening item	Applies to project	Has data regarding future climate exposure been reviewed?	Has a risk to the project been identified?	Has a risk treatment been identified?
The project area has previously been impacted by extreme climate events (e.g. storms/tropical cyclones, extreme rainfall and flooding, damaging winds, damaging hail, bushfires, heatwaves, drought, or coastal inundation).	Yes	Yes	Yes	Yes
The project is located in a cyclone zone.	No	NA	NA	NA
The is project located in or adjacent to a bushfire prone area.	No	NA	NA	NA
The project is located in or adjacent to a flood prone area.	No	NA	NA	NA

Pre-screening item	Applies to project	Has data regarding future climate exposure been reviewed?	Has a risk to the project been identified?	Has a risk treatment been identified?
The project is located at or adjacent to the coastline or tidally influenced waterway.	No	NA	NA	NA
The project will accommodate occupants vulnerable to the impacts of climate extremes (e.g. children, elderly, low mobility, seeking medical treatment).	Yes	Yes	Yes	Yes

EXTREME CLIMATE EVENTS

The Northern Beaches of New South Wales has experienced severe weather events including storms, floods, and bushfires. For examples, a storm with 130 km/h winds hit the Northern Beaches in December 2021 and a storm with gale-force winds, lightning, and swells of up to 8 ft hit the Northern Beaches in January 2025. As with all suburbs in the Great Sydney Areas, the Northern Beaches has also experienced heatwaves, flash floodings, periods of drought and smoke-related impacts from bushfire events. These risks are mitigated using suitable building elements, such as non-combustible walls, climate resilient landscaping and use of local weather alerts and advanced monitoring to prepare for storms, floods, or bushfires.

VULNERABLE OCCUPANTS

Vulnerable occupants often have reduced mobility and health issues, making it harder to evacuate or cope with disruptions. They may rely on support and specialised care, so any interruption in services or delays in response can seriously affect their wellbeing. The impacts of climate change will likely result in higher frequency and/or duration of heatwaves. This may result in insufficient capacity of the HVAC system to maintain thermal comfort. This risk is mitigated by the incorporation of passive thermal principles such as appropriate external shades and thermal insulation and by upgrading the capacity of the HVAC system once the current system has reached the end of its service life. Furthermore, this risk can be mitigated by developing and training staff in disaster response plans and emergency procedures.

APPENDIX B – ESD INITIATIVES SCHEDULE

Project No.:	240516
Project Name:	Opal Bayview
Revision No.:	A
Date:	21/10/2025
Author:	Lawrence Yu
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The following verification comments are made based on review of evidence provided and do not replace or take precedence over consultant/contractor obligations. Whilst this document aims to determine status of ESD initiatives, this report does not represent an in-depth analysis to identify all latent defects. No testing of as-built elements has been carried out for the preparation of this document, nor have concealed spaces been opened up for inspection. Work on elements that have not been done by JHA Consulting Engineers are expressly not dealt with in this document as they require a more comprehensive study than our scope allows. The opinions expressed in this document are specifically qualified in this way.

ESD Initiatives Schedule

Design Phase

Item No.	Item Name	Item Description	Responsibility	Design Evidence / Documentation	Date Received
1	Construction Waste Minimisation	Implement a waste management plan to divert up to 80% of demolition and construction waste from landfill.	Head Contractor	Construction Waste Management Plan Waste diversion reports	
2	HVAC	Use high-efficiency HVAC systems designed to exceed NCC 2022 Section J energy efficiency requirements.	Mechanical Consultant	HVAC design documentation NCC compliance records	
3	LED Lighting	Install energy-efficient LED lighting with smart controls, timers and occupancy/daylight sensors.	Electrical Consultant	Lighting design documentation NCC compliance records	
4	Heat Pump Hot Water	Provide domestic hot water using electric heat pumps with storage tanks.	Hydraulic Consultant	DHW design documentation NCC compliance records	
5	Passive Design – Building Envelope	Design the envelope to improve upon NCC Section J requirements through insulation, performance glazing, and/or thermal breaks.	ESD Consultant	Building envelope design calculations Energy modelling report	
6	Shading and Daylighting	Incorporate external shading devices to glazed elements to optimise natural lighting and reduce HVAC load.	Architect	Detailed design drawings	
7	Renewable Energy – Photovoltaics	Install a roof-mounted PV system to reduce grid dependency.	Electrical Consultant	PV system design Installation plans	
8	Energy Metering and Monitoring	Integrate sub-metering for electricity and renewable energy monitoring.	Electrical Consultant	Energy metering design drawings Monitoring system specifications	
9	Water-Efficient Fixtures	Install water-efficient fixtures (WELS ratings) to reduce potable water consumption: - Showerheads: 4 star (>6 but <=7.5L/min) - Toilets: 4 star - Taps: 5 star	Architect	Fixture specification sheets WELS compliance documentation	
10	Rainwater Harvesting	Implement rainwater collection for landscape irrigation.	Civil/Hydraulic Consultant	Rainwater system design Hydraulic calculations	
11	Water-Sensitive Urban Design	Incorporate WSUD practices for effective stormwater management and reduced irrigation needs.	Civil Engineer / Landscape Architect	WSUD design report Stormwater management plan	
12	Sustainable Materials	Use low VOC/low formaldehyde and recycled materials to reduce embodied emissions.	Architect	Material specification sheets Sustainability certifications	
13	EV Charging	Provide EV chargers to support the transition to low emission transport.	Electrical Consultant	EV Charger design documentation NCC compliance records	
14	Climate Change Resilience	Integrate adaptation measures to mitigate extreme weather impacts and safeguard vulnerable occupants.	Architect	Non-combustible materials	

APPENDIX C – SECTION J PBDB

SECTION J PART J4 PERFORMANCE-BASED DESIGN BRIEF (PBDB)

OPAL BAYVIEW GARDENS RACF

ESD SERVICES

JHA

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DOCUMENT CONTROL SHEET

Project Number	240516
Project Name	Opal Bayview RACF
Description	Section J Part J4 Performance-Based Design Brief (PBDB)
Key Contact	Harry Bate

Prepared By

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Author	Jasmin Bayocot
Checked	Lawrence Yu
Authorised	Lawrence Yu

Revision History

Issued To	Revision and Date								
Harry Bate	REV	DRAFT							
	DATE	27/05/2025							
	REV	A							
	DATE	07/08/2025							
	REV								
	DATE								

CONTENTS

1 INTRODUCTION

This Section J Part J4 performance-based design brief (PBDB), prepared by JHA Consulting Engineers, identifies and summarises the performance solution process to assess and validate the proposed development against the performance requirements of NCC 2022 Volume One Section J Energy Efficiency Part J4 Building Fabric.

The purpose of a PBDB is to record fundamental activities and outcomes of the performance-based design process, as agreed during key stakeholder negotiations.

When the PBDB is finalised, all critical activities and outcomes would have been identified.

Consequently, the design process can commence with confidence that the proposed design will be approved provided the process of the PBDB are followed.

During the Development Application phase, this PBDB is a live document that is circulated to the client, project manager, architect, certifier and all other stakeholders for discussion and comments. After all such feedback is received, an "agreed framework" will be adopted and subsequently serve as the basis for design development and validation.

This PBDB also includes a preliminary Part J4 assessment of the proposed development based on the deemed-to-satisfy (DTS) provisions of Part J4 to identify the constraints and opportunities particular to this project, as well as preliminary recommendations/options to achieve compliance with Part J4.

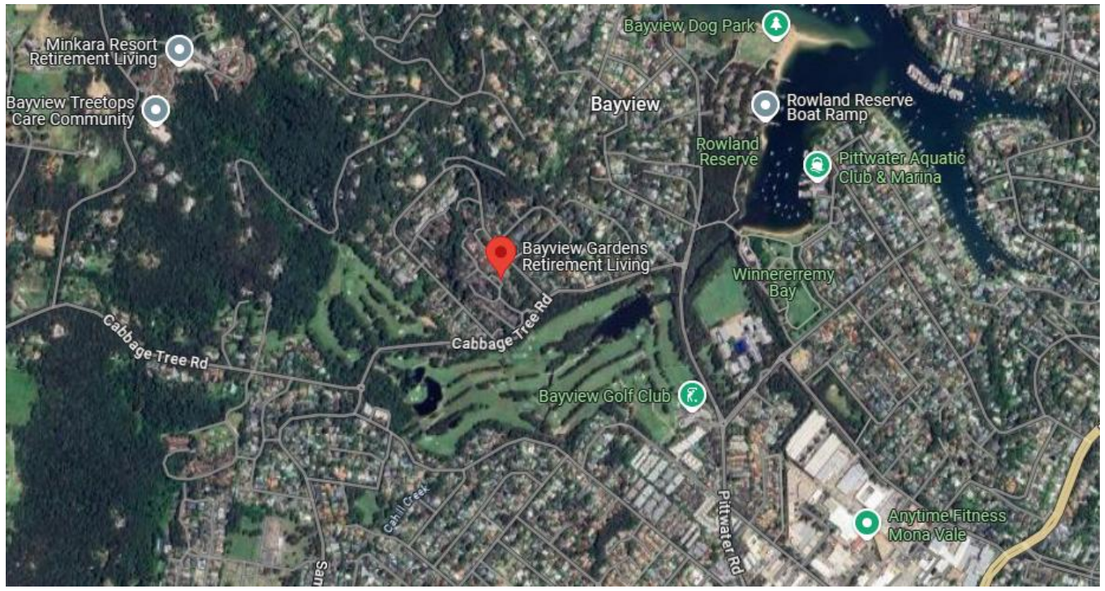
2 PROJECT INFORMATION

2.1 PROJECT DESCRIPTION

The proposed development for the Opal Bayview Gardens, a residential aged care facility located in Bayview, Sydney, will involve the demolition and renovation of the existing structures on the site. This redevelopment will improve the facility's ability to provide care services while integrating into the surrounding residential area. The site is located near landmarks such as Bayview Golf Club and Pittwater, providing easy access to local amenities and transport links.

Building type and function: Class 9c Office

NCC Climate Zone: Climate Zone 5



Aerial photo of site

2.2 STAKEHOLDERS

The stakeholders consulted as a part of the PBDB development process are listed below:

Stakeholders	Role
Opal Healthcare Tyron Nicholson	Client Representative
Bloompark Corey Taylor, Harry Bate	Project Manager
Calder Flower Architecture Lara Calder, Bradley Wahl, Polly Jankov	Architect
Beam Planning Chris Forrester, Emily Batten	Town Planner
Taylor Brammer Aaron Lakeman, Vanessa Hoang	Landscape Architect
Birzulis Michael Grogan, Chris Mundy, John Walujono	Structural & Civil Consultant
JHA Consulting Engineers Mathew MacIntyre, Robert Wright	Electrical Consultant
JHA Consulting Engineers Fazi Saberi	Hydraulic Consultant
JHA Consulting Engineers Grace Guo	Fire Consultant
JHA Consulting Engineers Sean Matthews	Acoustic Consultant
Osborne & Smith William Willis, AJ Rens	Mechanical Consultant
JHA Consulting Engineers Lawrence Yu, Jasmin Bayocot	ESD Consultant

3 SECTION J PART J4 BUILDING FABRIC

3.1 NOMINATED APPLICABLE PERFORMANCE REQUIREMENT(S)

This PBDB addresses the following performance requirements of NCC 2022 Volume One:

- Section J Energy Efficiency JP1 Energy Use
  - Part J4 Building Fabric

3.1.1 OTHER PARTS OF SECTION J & SPECIFICATION 33

Compliance with other parts of Section J, namely:

- Part J5 Building Sealing;
- Part J6 Air-conditioning and ventilation System;
- Part J7 Artificial Lighting and Power;
- Part J8 Heated Water Supply and Swimming Pool and Spa Pool Plant;
- Part J9 Facilities for Energy Monitoring; &
- Specification 33 Additional requirements

remains the responsibility of the relevant services consultant / architect.

It is the responsibility of the contractor to ensure the construction of the proposed development comply with the requirements of J4D3 Thermal Construction – General (1) – (5). If the floor has an in-slab or in-screed heating or cooling system, it is the responsibility of the contractor to comply with slab edge insulation requirements J4D7(3) and J4D7(4).

3.2 APPLICABLE AREAS

The provisions of Part J4 apply to building elements forming the *envelope* of a building.

3.2.1 ENVELOPE

For the purposes of Section J in Volume One, Envelope means the parts of a building's fabric that separate a *conditioned space* from:

- the exterior of the building; or
- a non-conditioned space including—
  - the floor of a rooftop plant room, lift-machine room or the like; and
  - the floor above a carpark or warehouse; and
  - the common wall with a car park, warehouse or the like.

3.2.2 CONDITIONED SPACE

For the purposes of Volume One, Conditioned Space means a space within a building, including a ceiling or under-floor supply air plenum or return air plenum, where the environment is likely, by the intended use of the space, to have its temperature controlled by air-conditioning.

See Appendix A – Prelim Part J4 Building Fabric Markups for the agreed envelope for this development.

3.3 APPLICABLE ASSESSMENT PROCESS

The proposed performance solution to the performance requirement specified in section 3.1 above is *Verification Method J1V3 - Verification using a Reference Building*.

J1V3 is applicable for Class 3, 5, 6, 7, 8 or 9 building.

Reference building, for the purposes of this PBDB, means a hypothetical Part J4 DTS compliant building. This is used to calculate the maximum allowable annual greenhouse gas emissions for the proposed building.

As per J1V3(2)(a), the annual greenhouse gas emissions of the proposed building can be offset by renewable energy that is generated and used on site.

In addition to the above, the proposed building must demonstrate a thermal comfort level of between a Predicted Mean Vote (PMV) of -1 to +1 is achieved across not less than 95% of the floor area of all occupied zones for not less than 98% of the annual hours of operation of the building.

The calculation method used for determining the annual greenhouse gas emissions and thermal comfort level of the building will be in accordance with ANSI/ASHRAE Standard 140, Specification 34 Modelling Parameters and Specification 35 Modelling Profiles.

As noted in section 3.1 above, it is the responsibility of the contractor, relevant services consultant and the architect to ensure the building complies with the additional requirements in Specification 33.

3.4 DEEMED-TO-SATISFY (DTS) DEPARTURES

The purpose of this performance solution is to address the following DTS departures:

- J4D4 Roof and ceiling construction – The solar absorptance of the upper surface of a roof, and total R-value
- J4D6 Walls and glazing – The Total System U-Value of wall-glazing construction
- J4D7 Floors – The Total R-Value

3.5 AGREED ACCEPTANCE CRITERIA

3.5.1 PERFORMANCE SOLUTION CRITERIA

Under J1V3, compliance with JP1 is verified when it is determined that the annual greenhouse gas emissions of the proposed building are not more than the annual greenhouse gas emissions of a *reference building*. More specifically, J4 is verified when it is determined that the annual greenhouse gas emissions of the proposed building are not more than the annual greenhouse gas emissions of a reference building when the proposed building is modelled with the same services as the reference building as per J1V3(a)(i)(B).

3.5.2 CONSTRUCTION CERTIFICATE STAGE

For Construction Certificate, the agreed acceptable documentation is a J1V3 Report containing as a minimum the following:

- General
  - Property title / address
  - Building Class and use
  - Verification Method used
  - NCC Climate Zone
  - Details of reference documentations (architectural drawings etc.)
  - Name and version and software use in analysis
  - Name and qualifications of the person responsible for the analysis
- Proposed Building Fabric and Glazing thermal specifications

  - Total R-value, direction (upwards, downwards etc.) and solar absorptance values as applicable for opaque elements
  - Total U-value and Total SHGC as applicable for transparent/translucent elements
  - Minimum onsite renewable energy system type and peak capacity (if required)
- Modelling Inputs
  - Reference building and proposed building thermal specifications
  - Confirmation Specification 34 Modelling Parameters and Specification 35 Modelling Profiles are followed
  - For PMV: temperature setpoints, clothing value, activity level and air velocity in accordance with ANSI/ASHRAE Standard 55
  - Peak capacity and type of onsite renewable energy system (if any)
- Modelling Outputs
  - Annual greenhouse gas emissions of proposed building and reference building
  - Percentage of operational hours the PMV is within the range of -1 to +1 for all "conditioned" spaces
  - 3D Image of the energy model
- Building Fabric Markups showing the extent of total R-value required

3.5.3 OCCUPATION CERTIFICATE STAGE

For Occupation Certificate, the agreed acceptable evidence for signoff is as follow:

- Letter of Confirmation from Contractor(s) that construction of the building fabric has been undertaken in accordance with this design brief and the most up-to-date revision of J1V3 Report, including supporting evidence in the form of datasheets, calculations and purchase receipts to confirm performance of building fabric/glazing or as required by the certifier.

3.5.3.1 Trade/Supplier Certificates

Typically, a range of trade/supplier certificates will be required as part of the sign-off process at the OC stage. These may include, work involved in insulation/thermal breaks, glazing, etc. JHA recommends the requirement for a Section J certificate from relevant trades (or suppliers) should be set out in the terms of engagement of the trade/supplier. These certificates should be obtained immediately after the work is done rather than at the end of construction.

Each relevant trade/supplier certificate must:

1. Clearly identify the person giving the certificate
   a. Full Name,
   b. Job Title,
   c. Company Details/Letterhead, &
   d. Qualifications and Experience
2. State the relevant Section J clause(s)/requirement(s) being certified and that they comply
3. Signed and Dated

4 PRELIMINARY BUILDING FABRIC ASSESSMENT

A preliminary Section J DTS assessment has been carried out for the proposed development to identify the constraints and opportunities particular to this project and to ensure compliance is achievable. Note these are not the proposed thermal specifications for the project; J1V3 assessment will be undertaken to further refine and optimise the thermal specifications in accordance with the objectives of this project during detail design.

The building fabric requirement under the DTS pathway are provided below:

Elements	Indicative Requirements	Comments/Recommendation
Roof/Exposed Ceiling Envelope	Total R-Value of 3.7, downwards (Solar absorptance of the upper surface of a roof must be not more than 0.45)	Potential to relax light roof colour requirement via J1V3 modelling
External Envelope Walls	Total R-Value of 1.4	Should be readily achievable
Internal Envelope Walls	Total R-Value of 1.4	Should be readily achievable
Envelope Floors	Total R-value of 2.0	A slab-on-ground that does not have an in-slab heating or cooling system is considered to achieve a Total R-value of R2.0
External Glazing	Total U-value 5.2 Total SHGC 0.37 Single Glazed Tinted Low E or the like	Potential to relax glazing requirements via J1V3 modelling

See Appendix A – Prelim Part J4 Building Fabric Markups for the indicative locations of where insulation is required.

5 APPENDIX A – PRELIM PART J4 BUILDING FABRIC MARKUPS

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MARKUP / SKETCH

DOCUMENT No.: 240516
DOCUMENT TITLE: Opal Bayview RACF
NCC 2022 Section J Building Fabric Requirements
DOCUMENT REV: D
DOCUMENT BY: J.B DATE: 04/08/2025

KEY

ROOF/EXPOSED CEILING - R3.7
(DOWNWARDS, SOLAR ABSORPTANCE OF THE UPPER SURFACE OF A ROOF MUST BE NOT MORE THAN 0.45)

ENVELOPE FLOORS - R2.0 (DOWNWARDS)

EXTERNAL ENVELOPE WALLS - R1.4

Note: The above construction are only to be applied to the **non-glazed portions of the envelope**; glazing must be installed as per the architectural layouts with its thermal performances pursuant to the respective glazing specifications stated in the Section J report (Total Systems U-Value, and Total Systems SHGC value).

ANNAM ROAD
KOI POND
EXISTING BOWLING GREEN
PLANTER
EXISTING TERRACE
EXISTING DINING- AVEO
KITCHEN
EXISTING COMMUNITY CENTRE RETAINED
AVEO COMMUNITY ROOM
WATER TANK BELOW FLOOR 32 m²
OSD TANK BELOW FLOOR 103 m²
BUS PARKING
MAIN SWITCH 25 m²
HYDRANT
STORE CHEM.
HOIST 5 m²
LOADING DOCK
FILTER CONTROL 14 m²
GARBAGE ROOM
GREASE ARRESTOR 11 m²
COOLING PIT 9 m²
LIFT LOBBY
OPAL PARKING
BOOM GATE
AVEO PARKING
6 m²
CARPARK
NO. 84 BRICK TOWNHOUSES
NO. 80 BRICK TOWNHOUSES
NO. 79 BRICK TOWNHOUSES
+22.20
+20.48
+21.64

BASEMENT
A100
SCALE: 1:200
0 5.0M 10.0M

ARCHITECT:
CALDERFLOWER
architecture
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EXTERNAL ENVELOPE WALLS - R1.4

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BUS PARKING
RAMP BELOW
FLAT ROOF OVER AVEO COMMUNITY BELOW
EXISTING BOWLING GREEN
EXISTING COMMUNITY CENTRE RETAINED
CARPARK
15 MCN BEDS
24 BEDS
DEEP SOIL
KITCHEN 134 m²
LAUNDRY CLEAN & DIRTY 142 m²
LOUNGE- MCN 43 m²
DINING- MCN 42 m²
LOUNGE- NON MCN 61 m²
DINING - NON MCN 61 m²
ACTIVITIES 36 m²
ACTIVITIES 23 m²
MENS WORKBENCH 16 m²
NO. 84 BRICK TOWNHOUSES
NO. 80 BRICK TOWNHOUSES
NO. 79 BRICK TOWNHOUSES

A101 LOWER GROUND FLOOR
SCALE: 1:200
0 5.0M 10.0M

ARCHITECT:
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FLOOR PLAN-LOWER GROUND FLOOR

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ANNAM ROAD

EXISTING BOWLING GREEN

EXISTING COMMUNITY CENTRE RETAINED

CARPARK

24 BEDS

29 BEDS

NO. 84 BRICK TOWNHOUSES

NO. 80 BRICK TOWNHOUSES

NO. 79 BRICK TOWNHOUSES

A102 GROUND FLOOR
SCALE: 1:200
0 5.0M 10.0M

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PROJECT:
OPAL BAYVIEW GARDENS
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FLOOR PLAN-GROUND FLOOR

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26 BEDS

28 BEDS

A103 LEVEL 1
SCALE: 1:200
0 5.0M 10.0M

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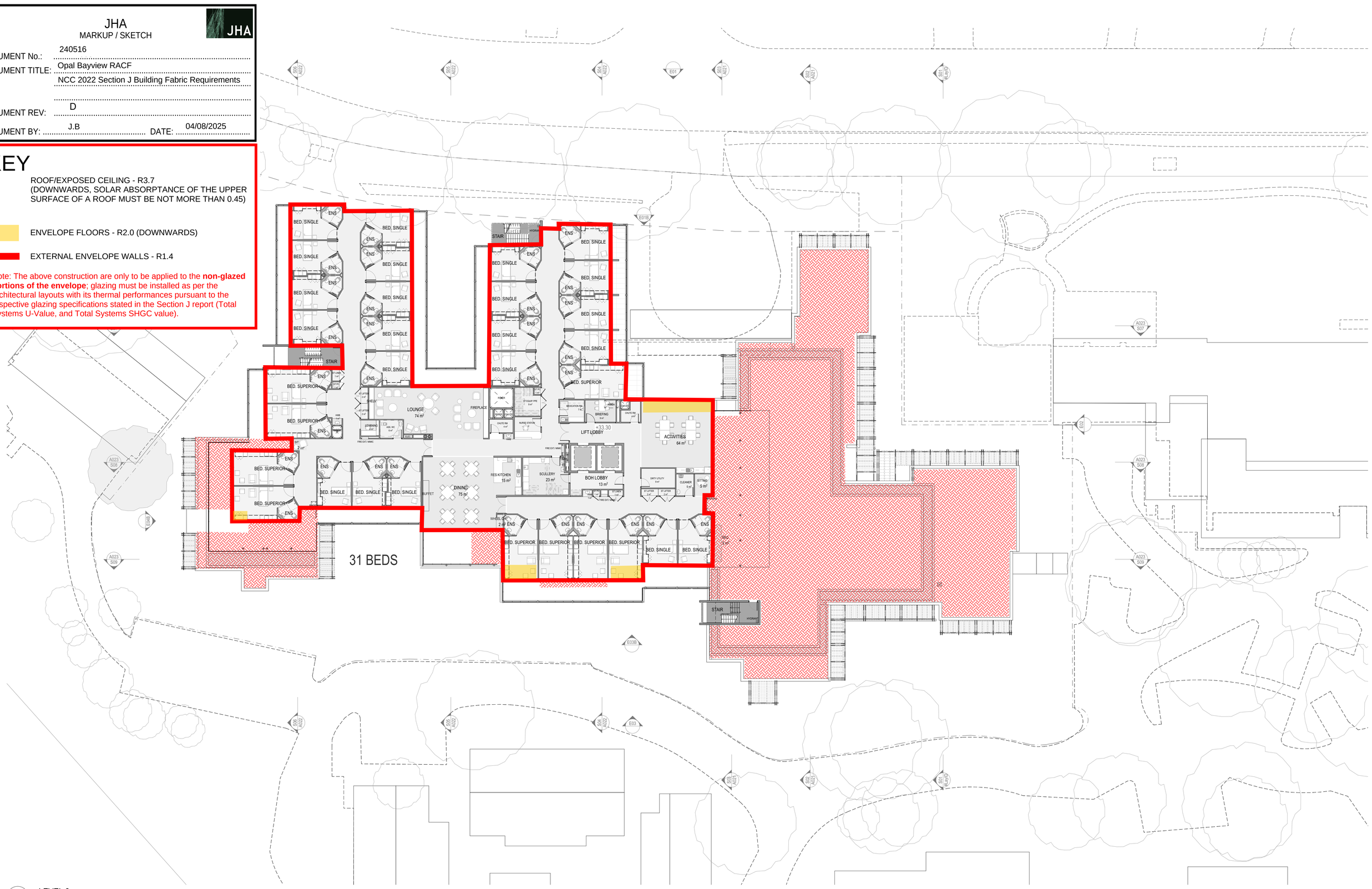

A104 LEVEL 2

SCALE: 1:200

0 5.0M 10.0M

ARCHITECT:

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ANNAM ROAD BAYVIEW, NSW 2104

DRAWING TITLE:

FLOOR PLAN-LEVEL2

SCALE: REFER DRAWING TITLES

PROJECT NO. 24110

DATE PRINTED: DATE: 24/7/2025

ORIGINAL PAPER SIZE: A1

DRAWING NO. A104

NORTH

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JHA
MARKUP / SKETCH

DOCUMENT No.: 240516
DOCUMENT TITLE: Opal Bayview RACF
NCC 2022 Section J Building Fabric Requirements
DOCUMENT REV: D
DOCUMENT BY: J.B DATE: 04/08/2025

KEY

ROOF/EXPOSED CEILING - R3.7
(DOWNWARDS, SOLAR ABSORPTANCE OF THE UPPER SURFACE OF A ROOF MUST BE NOT MORE THAN 0.45)

ENVELOPE FLOORS - R2.0 (DOWNWARDS)

EXTERNAL ENVELOPE WALLS - R1.4

Note: The above construction are only to be applied to the **non-glazed portions of the envelope**; glazing must be installed as per the architectural layouts with its thermal performances pursuant to the respective glazing specifications stated in the Section J report (Total Systems U-Value, and Total Systems SHGC value).

HYDRAULIC PLANT
MECHANICAL PLANT
MECHANICAL DUCTWORK
169 m²
+33.30
CARPARK

A110 ROOF
SCALE: 1:200
0 5.0M 10.0M

ARCHITECT:
CALDERFLOWER
architecture
CALDER FLOWER ARCHITECTS PTY LTD • ABN: 66 001 900 278 • NOMINATED ARCHITECT: L CALDER 6955
LEVEL1 44-46 CHIPPEN STREET CHIPPENDALE NSW 2008 • T (02) 9698 9822 • www.calderflower.com.au

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Opal HealthCare

DRAWING REVISIONS	REV	DATE

DATE	DESCRIPTION	ISSUE	DRAWN	APP'D

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PROJECT:
OPAL BAYVIEW GARDENS
ANNAM ROAD BAYVIEW, NSW 2104

DRAWING TITLE:
ROOF PLAN

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