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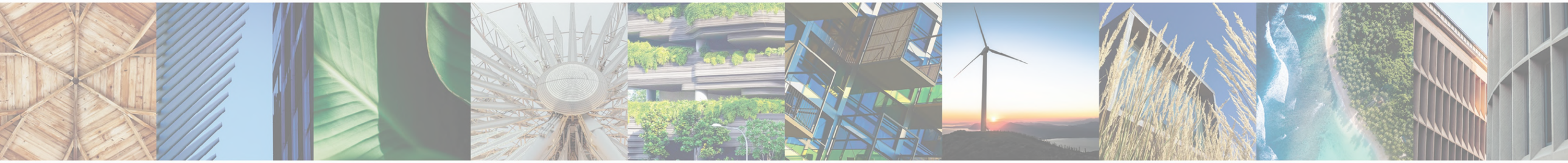

ECOLOGICALLY SUSTAINABLE DESIGN (ESD) REPORT for PLANNING PROPOSAL

2-6 Dee Why Parade, part of 8 Dee Why Parade, 10-12 Dee Why Parade and part of 2 Clarence Avenue, Dee Why—Oceangrove

Prepared for: Dee Why RSL Club

Attention: Paolo Salotto, Marchese Partners

Issue	File Ref.	Description	Author	Date	Comment
A	23-4644C	Ecologically Sustainable Design Report	TD (GSAP)	31/10/2023	To support Planning Proposal
B	23-4644C	Ecologically Sustainable Design Report	TD (GSAP)	6/11/2023	Including amendments
C	23-4644C	Ecologically Sustainable Design Report	TD (GSAP)	6/12/2023	Including further amendments
D	23-4644C	Ecologically Sustainable Design Report	TD (GSAP)	7/12/2023	Including further amendments
E	23-4644C	Ecologically Sustainable Design Report	TD (GSAP)	14/12/2023	Prepared for Dee Why RSL Club

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ECOLOGICALLY SUSTAINABLE DESIGN (ESD) REPORT

2-6 Dee Why Parade, part of 8 Dee Why Parade, 10-12 Dee Why Parade and part of 2 Clarence Avenue, Dee Why—Oceangrove

Oceangrove residents in existing outdoor community space

Introduction

Introduction

This ESD report outlines key sustainability initiatives and targets recommended for a planning proposal to support new multi storey independent living units (ILUs) in Dee Why.

In recommending the initiatives Efficient Living believes they will be achievable for the intended project underlying the change in planning controls proposed. These initiatives have been proposed in order to meet key sustainability regulations and strategies (as summarised below) and to ensure the project meets or exceeds industry standards.

The proponent is Dee Why RSL Club as the existing owner of major facilities and existing seniors housing on this large and central urban block. The site address is 2-6 Dee Why Parade, part of 8 Dee Why Parade, 10-12 Dee Why Parade and part of 2 Clarence Avenue, Dee Why and the project will be an expansion of the existing Oceangrove seniors living residential community.

Key environmentally sustainable considerations for the proposal

Key regulatory requirements for ESD performance for the proposal include:

- Compliance under the NSW BASIX SEPP
- Compliance under NCC Section J for the energy efficiency performance of relevant communal or non-residential spaces in the buildings
- Consideration of ESD related objectives of the NSW Apartment Design Guide

The proposal also needs to demonstrate delivery and merit against a wide cross section of environmental sustainability outcomes in state and local strategies and development control plans.

- **Greater Sydney Region Plan**: 33 Low carbon city; 34 Energy and water flows are captured, used and reused; 35 More waste is recycled; 36 People and places adapt to climate change; 37 Exposure to natural and urban hazards is reduced; 38 Heatwaves are managed.
- **Draft NSW Seniors Housing Guidelines 2021/22:** Design Principle 'Care for Planet' including net zero carbon emissions design guidelines
- **Northern Beaches Council Local Strategic Planning Statement 2020 'Towards 2040':** Priority 5 Greener urban Environments, Priority 7 A low-carbon community, with high energy, water and waste efficiency, Priority 8 Adapted to the impacts of natural and urban hazards and climate change.
- **Warringah LEP 7.5 Design Excellence clause C:** Sustainable design principles.
- **Warringah DCP Part D and E as relevant:** Conservation of Energy and Water, Access to Sunlight.
- **Warringah DCP Part G (Dee Why Town Centre):** Section 9 Sustainability and Section 10 Water Sensitive Urban Design as a guide to strong outcomes whilst recognising that the site sits just outside the town centre boundary.

Northern Beaches Council has also released new Sustainability Priorities to shape future LEPs and DCPs including:

- Priority 5—Greener Urban Environments
- Priority 7—A low-carbon community, with high energy, water and waste efficiency
- Priority 8—Adapted to the impacts of natural and urban hazards of climate change

The report has also considered current industry standards for ESD outcomes such as benchmark outcomes required to achieve ratings under independent schemes such as GBCA Green Star, EnviroDeveloper and WELL.

Report structure

The sustainability report has been grouped into the following key focus areas:

- Energy and Carbon Smart
- Human health and wellbeing
- Water efficiency
- Climate resilience and urban greening
- Responsible construction and waste management
- Sustainable Transport and Movement

These focus areas can be aligned as required with any later requirements for more detailed analysis against the upcoming combined Northern Beaches DCP or any of the independent rating tools.

Planning our Sustainable Future 2021– Northern Beaches Council

The Proposal

Proposal location

The subject site is located towards the southern portion of the broader Dee Why RSL site and directly adjacent to the Dee Why town centre to the south. It is currently occupied by a former chemist and vacant land/parking area. Vehicular access is currently through Dee Why Parade and Pittwater Road.

Adjoining land uses include the seniors housing development known as 'Oceangrove' to the north, residential flat building to the east and a mixed use development to the south which forms part of the 'Dee Why Town Centre'. To the west, on the opposite side of Pittwater Road is a commercial building (Kingsway Medical and Dental Centre). Dee Why RSL is located further north of the subject site.

Daily and weekly shopping needs, services and public transport are all within an easy 400m walk of the site.

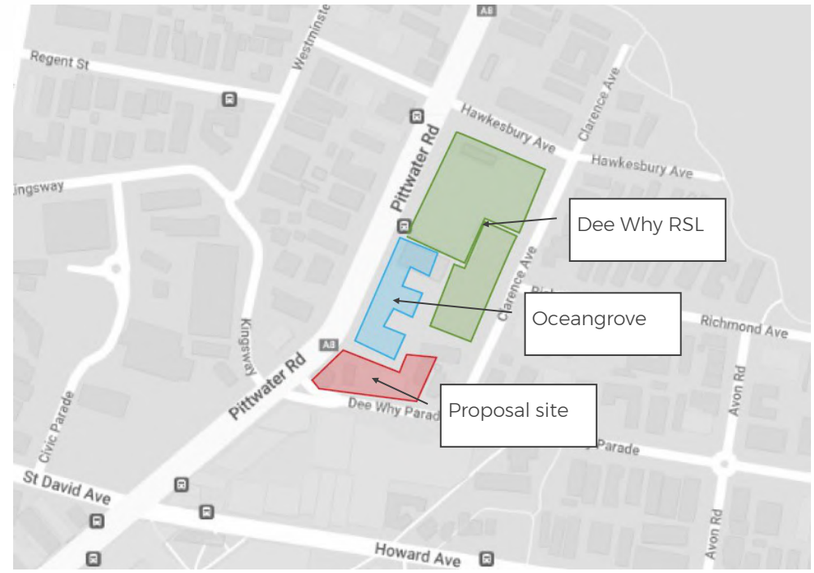
The site is generally flat and is within the PMF flood area in a medium and low risk flood planning precinct.

Proposal description

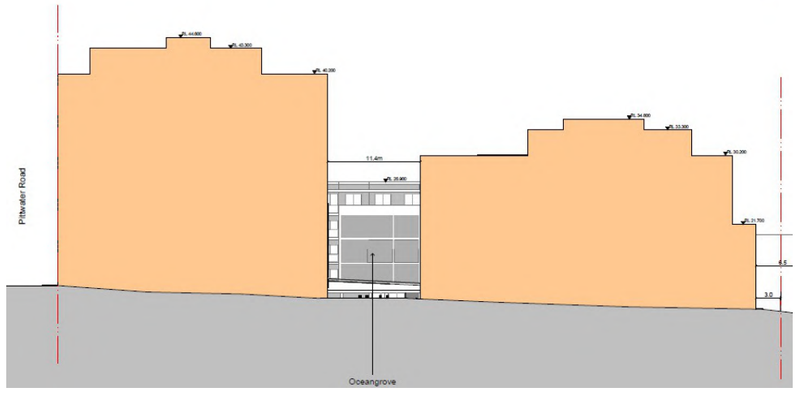
The planning proposal is intended to expand the existing seniors housing development known as 'Oceangrove". The land is located at 2-6 Dee Why Parade, part of 8 Dee Why Parade, 10-12 Dee Why Parade and part of 2 Clarence Avenue.

Increased building envelopes are proposed able to accommodate two predominantly independent living unit buildings. These buildings are also planned to include significant community spaces inclusive of community facilities and rooftop terraces.

The change in planning controls would require increasing the maximum height of buildings from 12 and 13 metres to height controls capable of a maximum RL of 44.6 metres and RL34.6 metres for respective building envelopes in the proposal.



Site adjacent to existing Dee Why RSL facilities



Indication of new building envelopes proposed (subject to final design)

Energy and carbon smart

Passive design Initiatives to reduce energy use

With some early consideration of energy efficiency, a well-designed building in Dee Why will be able to be passively heated, cooled and ventilated for most of the year, relying on mechanical heating, ventilation and air-conditioning (HVAC) systems only minimally when outside temperatures are too high or low to be controlled passively.

Future compliance with Sustainable Buildings SEPP 2022—strong building thermal performance

Strong passive design will translate into strong measured thermal performance outcomes in NatHERS modelling. The project will target an average of NatHERS 7 stars for apartments/ILUs (minimum 5.5 stars individual apartment) in line with upgraded BASIX requirements from October 2023 (Sustainable Buildings SEPP 2022).

A preliminary analysis of a 'reference' design for the site indicates that strong NatHERS outcomes should be achievable within usual building design and inclusion parameters.

Future compliance with NCC 2022

The project will comply with the latest NCC 2022 Section J inclusions for building fabric and energy requirements as required. This will include any community spaces that may be air conditioned.

In detailed design and service selection an analysis to target a 20% reduction in energy (compared to a reference building) will be carried out.

Cross Ventilation

The floor plate of the future building will be designed to maximise the number of dwellings achieving natural cross ventilation.

At least 60% of apartments will comply with cross ventilation requirements in accordance with SEPP 65 Apartment Design Guide.

Solar Access

The floor plate of the building will be designed to maximise solar access. Solar access provides daylight which means electric lights can be left off during the day but also provide passive heating during the winter months, meaning that the heating system has less work to do, and less energy is consumed heating the spaces.

Over 70% of apartments will receive more than 3hrs of solar access between 9am-3pm in accordance with SEPP Seniors Living Guidelines.

Facade

The windows and glazed elements will have appropriate performance glazing and well-designed shading to control solar gain. High performance glazing systems with U-value and SHGC to be chosen in line with thermal comfort modelling to minimize energy consumption and maximise occupant comfort.

Minimum performance glazing and insulation values are determined by NatHERS thermal simulation modelling to ensure the design reaches and exceeds BASIX heating and cooling load limits for residential spaces.

Figure 4A.2 Shading devices on balconies should shade summer sun and allow winter sun access to living areas

From NSW Apartment Design Guide (degrees indicated are solar angle from horizontal)

Energy and carbon smart

Preliminary testing of NatHERS ratings for indicative future apartments

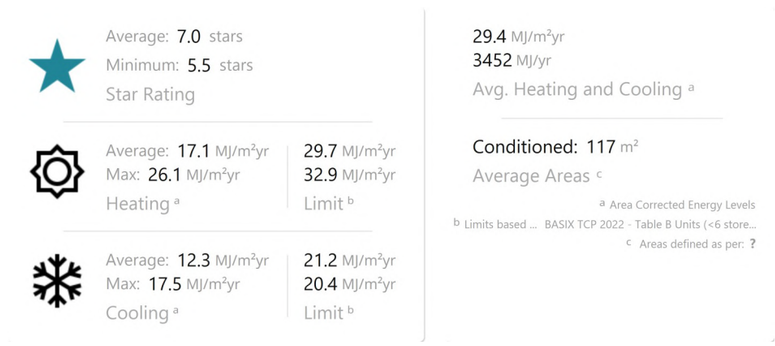
The future proposed buildings will target a weighted area average of at least NatHERS 7 stars with at least NatHERS 5.5 stars for each ILU/apartment.

Tests were conducted on four indicative units using common inclusions, each featuring different orientations and layouts. The tests proved the early indicative layouts can meet upgraded BASIX 2022 thermal performance standards overall.

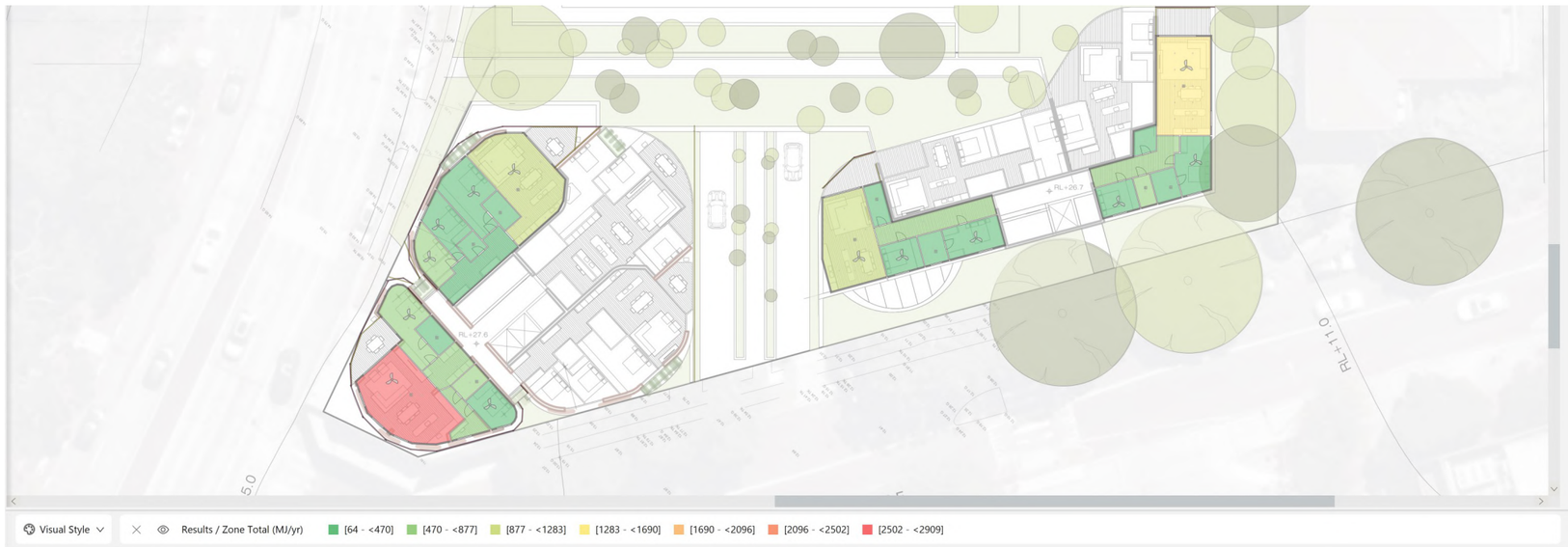
Among the units examined, "Dwelling 1," located on the western side of the building requires the most design attention. This unit exhibited challenges, due to exposure to afternoon sunlight in the summer months, resulting in increased heat gain within the living areas. Additionally, it presented a considerable external wall area, which contributes to more heat loss during the winter season. These findings underline the imperative of addressing these design elements in detailed design to enhance the overall performance and energy efficiency of the building.

In this scenario, ceiling fans have played a vital role in regulating indoor temperatures by facilitating increased ventilation, thereby ensuring a comfortable environment.

Additionally, it would be advantageous in detailed design to consider the installation of vertical shading devices. These shading devices can help reduce the reliance on higher window specifications, leading to enhanced thermal comfort and improved energy efficiency.



Average thermal performance outcome of four typical units



NatHERS modelling of a typical Level (Level 4) showing rooms color coded by total load consumption per year for heating and cooling

<u>Thermal Comfort inclusions assumed for testing only (not final design)</u>

Glazing Doors/Windows - assumed sliding door and windows only

- Group B – sliding doors/windows + fixed glazing + louvred windows
- U-value: 4.10 (equal to or lower than) SHGC: 0.52 (±10%)
- Glass to Floor Area Ratio assumption - 22.3%

External Wall

- Precast 100mm Concrete - Plasterboard Internally with R1.5 insulation
- Any concrete columns within the external wall envelope are assumed to have the same R1.5 insulation

Intertenancy walls

- 75mm Hebel party wall between units and common corridor. No insulation required
- 100mm concrete wall - plasterboard internally between unit and lift shaft/fire stairs. No insulation required.

Floors:

- Suspended Concrete Slab Floor (150mm), no insulation required between conditioned areas
- Floor coverings - Carpet and tile to bathrooms

Ceilings:

- Concrete Slab (150mm) with suspended PB ceiling, with R2.5 insulation where roof is over.

Ceilings penetrations

- Sealed downlights, 1 per 5 m2
- Sealed exhaust fan, kitchen, bathroom and laundry

External Shading

- Assumed floor level tested will not be affected by neighbouring overshadow.
- Assumed slab edge projection of approx. 450mm providing shading in west building.

Ceiling fans

- Assumes 1200mm ceiling fans to living and bedrooms

Energy and carbon smart

Service and appliance initiatives to reduce energy use and carbon emissions

Future compliance with Sustainable Building SEPP 2022—BASIX Energy

The proposal is expected to meet or exceed Sustainable Building SEPP 2022—BASIX Energy requirements by following the recommendations below.

Targeting all electric services to ensure net zero in operation is achievable

The future building is recommended to be serviced by all electric appliances and services. Eliminating natural gas for all purposes is a key strategy towards ensuring the building can practically operate with net zero carbon emissions by securing 100% renewable electricity supply. A Zero Carbon Action Plan will be considered by the project team as DA design is carried out.

Consideration will be given to the total electrical demand requirement and how this will be managed with active load management systems and catered for through substation sizing.

Air conditioning services

An air conditioning solution for the ILUs should be chosen based on efficiency in operation (capable of zoned and tailored temperature outcomes within apartments) and energy efficiency.

Minimum AEERs and ACOPs of greater than 3.5 with a target of 4.0 will be used when specifying equipment.

Likely systems available include DX Split Systems with condensers per ILU located on the roof or alternatively an efficient centralised variable refrigerant volume (VRV) system located on the roof.

Domestic Hot Water System

A centralised electric heat pump system is recommended for the building with high level of insulation for the hot water ring main throughout the building.

The coefficient of performance for this system should be greater than 3 compared to a traditional gas boiler system, or individual ILU instant gas or electric systems with coefficient of performance less than 1.

Investigation of this model should be carried out with any option to extend the existing hot water plant servicing the existing Oceangrove project.

Appliances

The following star ratings are recommended for key domestic appliances subject to final clarification of BASIX requirements.

- Dishwashers - 4 Star + energy rating
- Clothes Dryers - 7 Star + energy rating (and using heat pump and condenser technology)

Electric induction cooktops are also recommended for energy efficiency and safety in operation.

Lighting

Lighting can use over 20% of a building's electricity consumption, therefore efficient luminaires and lighting control systems are critical in order to optimise the building's energy efficiency. The following measures will be implemented:

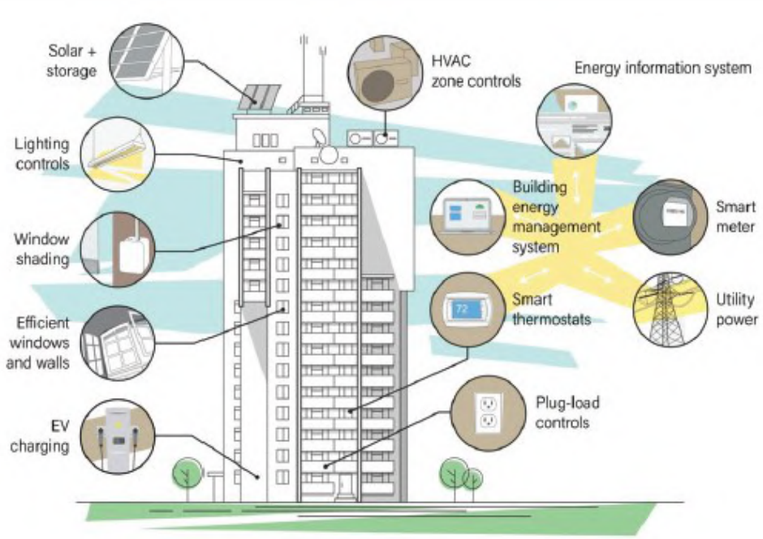
- LED lighting to be specified throughout with a target of 10% reduction on NCC minimum compliance.
- Common area lighting to have motion and daylight sensors with further zoned lighting controls for car park areas.

Lifts

The lifts should target PMS motor and regenerative drive technology and be Class A rated for energy performance (the highest rating available).

Car park ventilation

Car park mechanical ventilation will be CO monitored/controlled



Efficient all electric building—from GBCA Grid-interactive buildings discussion paper

Energy and carbon smart

Energy source

Renewable electricity supply

The building should target 100% renewable electricity from onsite and offsite sources for base building and communal services.

A photovoltaic panel system is recommended for the roof optimising all space with sufficient solar radiation access after allowing for plant equipment areas and any overshadowing impacts from these installations.

The electricity requirement for common and non residential areas not provided by the PV array should be estimated in final design and options to secure offsite renewable electricity for the balance identified. Various renewable electricity power purchase agreement providers are available for this purpose.

Typical apartment building PV panel installation

Opportunity to catalyse a larger renewable electricity approach at Dee Why RSL

At present the Dee Why RSL facilities do not utilise any rooftop PV panels to supplement electricity demand. This planning proposal may provide a catalyst to examine PV array installation on the future ILU building but also as part of a larger scheme for a combined PV array system across all Dee Why RSL facilities. This larger scheme could also then be logically combined with a whole of site power purchase agreement for renewable electricity.

It is very likely that the combination of activities on the whole Dee Why RSL site may provide more opportunities for internal/behind the meter use of onsite produced renewable electricity from a large PV array.

91kW PV array installed at Balgowlah RSL

Embodied energy and carbon versus operational energy and carbon

In addition to the day to day operational energy and carbon likely to be consumed/emitted by building activities the future building design and specification process should also seek to reduce the embodied energy and carbon intensity of material choices.

Reduced embodied energy and carbon

The project should aspire to upfront carbon emissions savings (in the order of 20%) compared to a reference building. This outcome can be achieved through a combination of more economical use of high embodied energy materials (such as concrete and steel), targeting products with relatively lower embodied carbon and targeting products from suppliers with carbon neutral certification.

It is recommended that the tender phase for building contractors include a requirement for submissions to provide material options that would achieve this outcome and clarify differences in relation to increased cost and/or increased uncertainty of supply. Based on this analysis the project proponent will be able to make an informed decision on the feasibility to implement a reduced embodied emission strategy.

Human health and wellbeing

Human wellbeing initiatives

Acoustic Comfort

An Acoustic Comfort Strategy should be developed to describe how satisfactory acoustic outcomes will be delivered to building occupants according to the activity they are undertaking. This process is underway with particular attention paid to mitigating noise impacts from Pittwater Road on residents.

For residential apartments the strategy and design and inclusions should ensure that:

- Maximum acceptable internal noise levels are achieved in bedroom and living room areas (important given the Pittwater Road adjacency)
- Acoustic separation insulation levels between apartments are targeted to exceed NCC minimum requirements

Air quality

Air quality will primarily be protected by separating outdoor air intakes (including natural ventilation/windows) from pollution sources. AS 1668.2:2012 is the standard for this outcome.

Minimum separation distances should be identified based on the expected airflow rate into the building—the greater the air flow rate the larger the distance required from exhausts (such as kitchen exhausts).

Natural cross ventilation outcomes, as considered by the Apartment Design Guidelines criteria should meet and exceed outcomes for more than 60% of ILUs/apartments.

Lighting Comfort

To further enhance the health and wellbeing of residents the project should consider daylighting and will consider lighting design and quality strategies that exceed basic compliance to achieve high levels of human eye comfort.

Low exposure to toxins

Procurement of paints, adhesives, sealants, carpets and other large surface area materials for internal finishes should meet very low Total Volatile Organic Compound' limits. The GBCA published limits from December 2021 could be used for this purpose.

The tender issued for this stage of work should include clear guidelines on the requirements for products and materials to be used.

Any engineered wood products selected for the building should also have low or no formaldehyde content generally recognised as below 1mg/L.

Communal Facilities and Spaces

Any future communal facilities proposed should be inclusive, safe, flexible and enjoyable. Communal rooms should ideally have a flexible fit out to accommodate wide interest groups.

Lobby spaces should be designed as inviting spaces to create opportunity for social interaction amongst residents to foster a sense of community.

Outdoor Spaces

Any future communal open space should be embellished to support multiple outdoor experiences for wide interests.

Inclusive design and spaces

Universal design for people with diverse physical abilities should be considered for both residential and communal spaces.

From NSW Seniors Housing Design Guide

Fig 6.2.A Facilitating community connection and celebrations for all ages. Includes casual surveillance from balconies

Water efficiency

Efficient fixtures, fittings and systems

Water is an increasingly scarce resource in Australia and the future building underlying this proposal should aim to reduce potable water demand. Incorporation of efficient fixtures, fittings and white goods in ILU/apartment buildings play the major role with consideration of rainwater and recycled water scheme wastewater reuse if feasible.

Future compliance with the Sustainable Buildings SEPP 2022—BASIX Water

The future buildings will meet or exceed BASIX requirements to save over 40% of potable water (using the BASIX reference building and occupancy). The following achievable measures would be employed to deliver this outcome.

Efficient Fixtures and Fittings

The future building will reduce potable water consumption by installing water efficient fixtures and fittings. Water efficient fittings will also reduce the energy consumption of hot water heating systems. The following WELS ratings are a baseline for efficiency.

Fixture Type	WELS Rating
Taps	6 stars
Toilets	4 stars
Showers	3-4 Stars (target max flow rate of 7.5L/min)
Dishwashers	5 star
Washing machine	4 star

The greatest activities consuming potable water in the building will be showers and washing machines which together can be expected to make up over 80% of potable water demand.

Rainwater reuse

The feasibility of a larger rainwater tank will be considered for the project mainly for the purpose of landscape irrigation and ILU toilets as required by BASIX.

Landscape & Irrigation

Future landscape design should focus on suitable low water and native plant species. Irrigation systems should comprise of subsurface drip systems and automatic timers with rainwater/ soil moisture sensor controls.

Fire testing water recycling

The water from fire test systems should be captured and reused (consistent with BASIX requirements).

Stormwater Management

A Stormwater Management Plan will be developed for the site achieving stormwater quantity and quality outcomes in accordance with Northern Beaches Council requirements.

Climate resilience

Future proofing

Climate Change Resilience

Relevant climate change impacts over the next 50 years include higher average temperatures and lower average rainfalls (mainly in winter) together with greater extreme events particularly in relation to rainfall, storms and heat waves. Impacts can be direct, for example rainfall ingress to the building, or indirect, for example expected higher maximum temperatures, longer and hotter heat events, increased rainfall intensity leading to increased flooding during rainfall events.

The following design considerations for development application and then final design will improve climate change resilience:

- Equipment and building drainage design to accommodate increased storm, hail and rainfall events—particularly extreme short term rainfall events associated with 'East Coast Lows'.
- Landscape design and plant selection to survive an increased number of heat wave days and dryer winter and spring conditions
- HVAC design thresholds to function properly with higher average temperatures and a higher number of heat wave days

A pre screening of the projects risks to climate change will be completed as part of future development application processes.

Heat Resilience

Over 75% of total site horizontal surfaces (excluding the area of proposed PV arrays) will be targeted to lower urban heating effects including:

- Green landscape outcomes at ground cover level or as tree canopy providing shade to hard surfaces
- Light coloured horizontal hard surfaces (roof, podiums and ground level)

The landscape design should include deep soil areas where possible to support larger canopy trees for shading, glare reduction and urban cooling effect..

Use of dark building materials contributes to increased local temperatures which contribute to Urban Heat Island formation. Final colours for the roof, any podium hard surfaces and ground level hardscape surfaces should be specified to achieve low solar absorptance/high solar reflectivity.

- Roof initial SRI of minimum 82
- Unshaded hardscapes initial SRI of minimum 39

Further opportunities should be explored, in detailed design phases, to incorporate green roof and wall outcomes. The methods employed for green walls and roofs will need to take into account ongoing operation and maintenance of these features to avoid unwanted water/damp intrusion to the building structure and to ensure the plants chosen have longevity in the microclimate. Ideally plant selection would be locally endemic but consideration of species will need to factor in the integration with building form and operation.

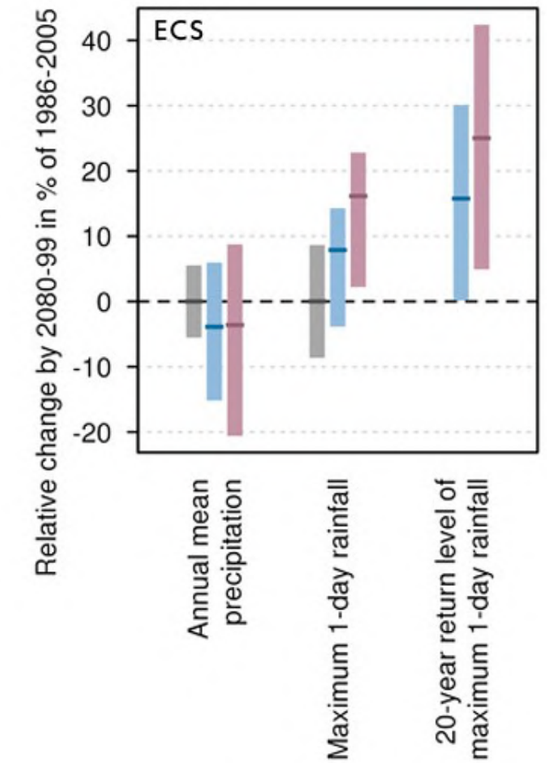


FIGURE 4.3.7: PROJECTED CHANGES IN MEAN RAINFALL, MAGNITUDE OF ANNUAL MAXIMUM 1-DAY RAINFALL AND MAGNITUDE OF THE 20-YEAR RETURN VALUE FOR THE 1-DAY RAINFALL FOR 2090 FOR EAST COAST NORTH (TOP) AND EAST COAST SOUTH (BOTTOM) (SEE TEXT FOR DEFINITION OF VARIABLES). CHANGES ARE GIVEN IN PERCENTAGE WITH RESPECT TO THE 1986–2005 MEAN FOR RCP4.5 (BLUE AND RCP8.5 (PURPLE). NATURAL CLIMATE VARIABILITY IS REPRESENTED BY THE GREY BAR. BAR PLOTS ARE EXPLAINED IN BOX 4.2.

East Coast Region Climate Change Report—CSIRO update 2021

Responsible construction and waste management

Lower impact materials and waste management

Together with supporting lower upfront carbon emissions, the future project will investigate the inclusion of responsible materials and include space for splitting and recycling of waste 'resources' during project construction and ongoing operation.

Supporting responsible materials in the building structure and envelope

The detailed design and tender phases for the project will pay particular attention to environmentally responsible products.

It is recommended that building tender responses will be required to confirm the building materials alignment or otherwise with recognised responsible materials ratings schemes as set out for example by the GBCA.

Key building processes to be considered in detailed design stages would include:

- Design allowing sub structure and super structure to utilise certified concrete, steel and other major components
- Façade design also considered to support use of responsible glazing, panel and shade structures etc

Responsible building finishes

The future tender requirements for internal finish fitouts should require a submission clarifying the % of responsible materials with recognised environmental certification. For example timber components certified by the FSC and products certified by GECA—two common schemes with wide product selection.

Responsible construction

The tender requirements for building contractors should require that the head contractor has an environmental management system under AS/NZS ISO 14001 and will develop and Environmental Management Plan for the project advised to all sub contractors.

Construction waste recycling

Construction waste should target a recycling outcome of 80-90% by mass with sufficient record keeping procedures to evidence this outcome.

Designing in Waste Sorting and Storage Facilities

The project should provide adequately sized waste storage areas in the basement with separation of major waste streams according to Northern Beaches Council services.

A separate waste streaming area for e-waste should also be considered for occasional removal as required.

A Waste Management Plan should be developed for the project guiding the final sizing and location of facilities and providing a guide to future building operators.

Sustainable Transport

Capitalising on location

Active and Public Transport

The site is located within 250m (3-5 min) easy grade walking distance to the centre of Dee Why.

- B-Line and other frequent bus services
- Local health services
- Major super markets and retail services
- Community services

Dee Why beach and associated open spaces are an easy grade 750m (10-15 min) walk down Dee Why Parade with footpaths provided.

It is anticipated that the proximity to very high service level public transport and daily/weekly shopping needs in the Dee Why town centre will lead to ongoing low overall car usage.

Future residents may also benefit from community bus services accessible through Dee Why RSL.

Provisions for electric vehicles—cars and bikes

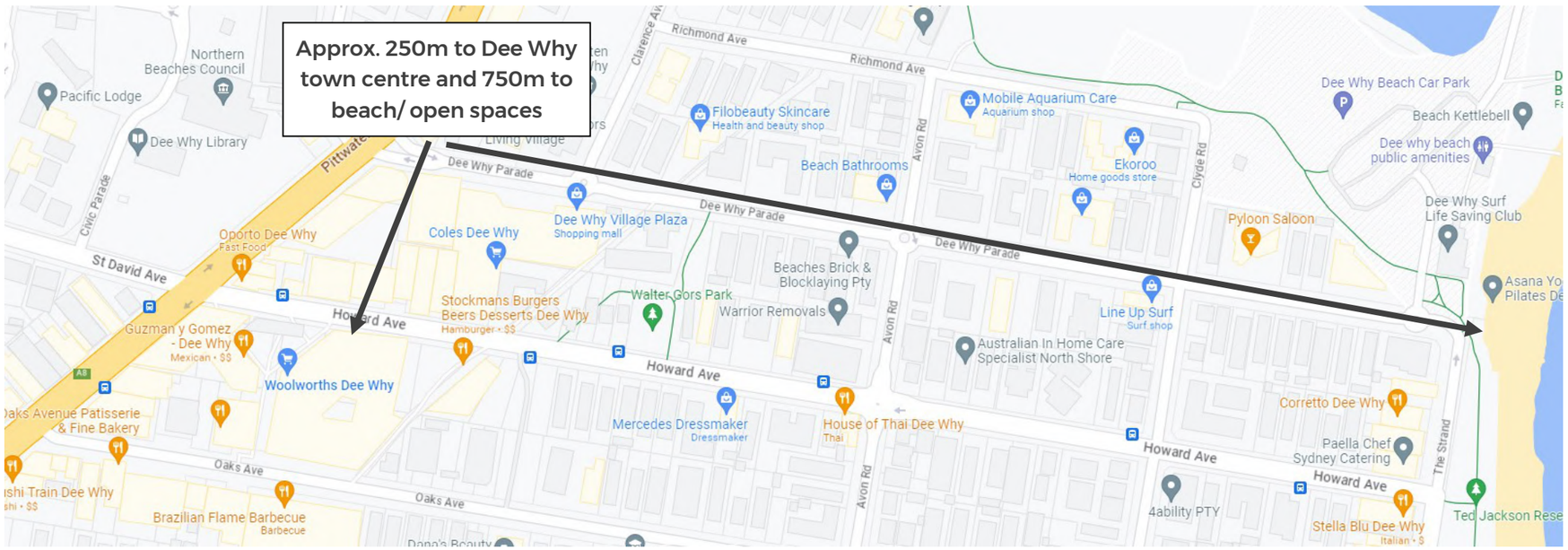
Final electrical system design should cater for a high uptake of electric cars and bikes.

Provision of dedicated distribution boards to support EV charging on each basement level should be provisioned together with consideration of an active load management system that allows future connection of all parking spots within an achievable total electrical demand level for the project.

Consideration of a charger provision and tariff system/model so that individual apartments are provided with an accurate electricity bill for their usage is also recommended.

Provision of standard GPOs with access to bike storage racks should also be considered given the current and expected fast uptake of electric bikes for transport particularly for active seniors.

Example of EV charging provision image from https://evse.com.au/blog/apartmentevcharger/



Sourced from Google Maps