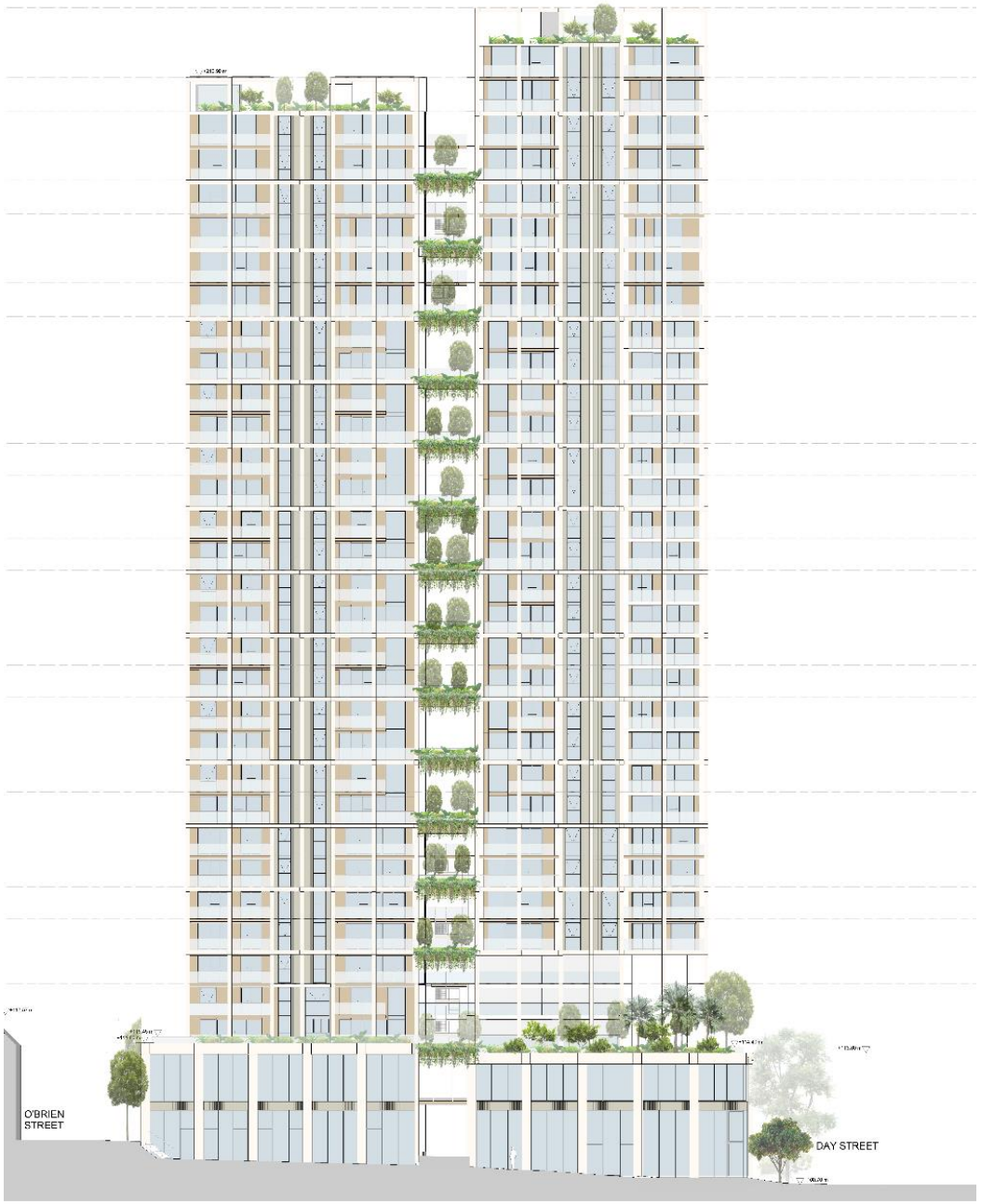

BASIX and ESD Report

44-52 Anderson Street
Chatswood NSW 2067

Prepared for
Bridgestone Projects

Prepared by
GREENPERCH PTY LTD

GreenPerch

Prepared on behalf of
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REVISION	PREPARED	DRAWINGS
1 (24/09/24)	MP and checked JP	DA SET – 17.09.2024 MAKE Architects
2 (31/10/2024)	MP check JP	21.10.24 - DA ISSUE by MAKE ARCHITECTS

Table of Contents

1. Introduction and ESD Summary

This report summarises the ESD aspects for the proposed development, at 44-52 Anderson Street, Chatswood, 2067. The client and the design team have made a strong commitment to ESD, especially for items such as thermal comfort, water, energy, waste, materials, transportation, management and landscaping. This report discusses, in detail, how the proposal has embraced these sustainability principles. The design used the SEARS targets from the SSDA process, as discussed below. It also used Willoughby Development Control Plan (Willoughby DCP), and the strategies have strived to meet these ESD objectives and more. The Principles of Ecologically Sustainable Development were all embraced, and these include: (a) the precautionary principle, (b) inter-generational equity, (c) conservation of biological diversity and ecological integrity, and (d) improved valuation, pricing and incentive mechanisms. The project will also be targeting a 5-star Green Star rating with the Buildings Tool.

Site Context Photo - 44-52 Anderson Street, Chatswood, NSW 2067

The proposed development (**SSD-75408008**) seeks approval to construct 33-storey mixed use shop top housing, including in-fill affordable housing.

Specifically, this SSDA seeks approval for:

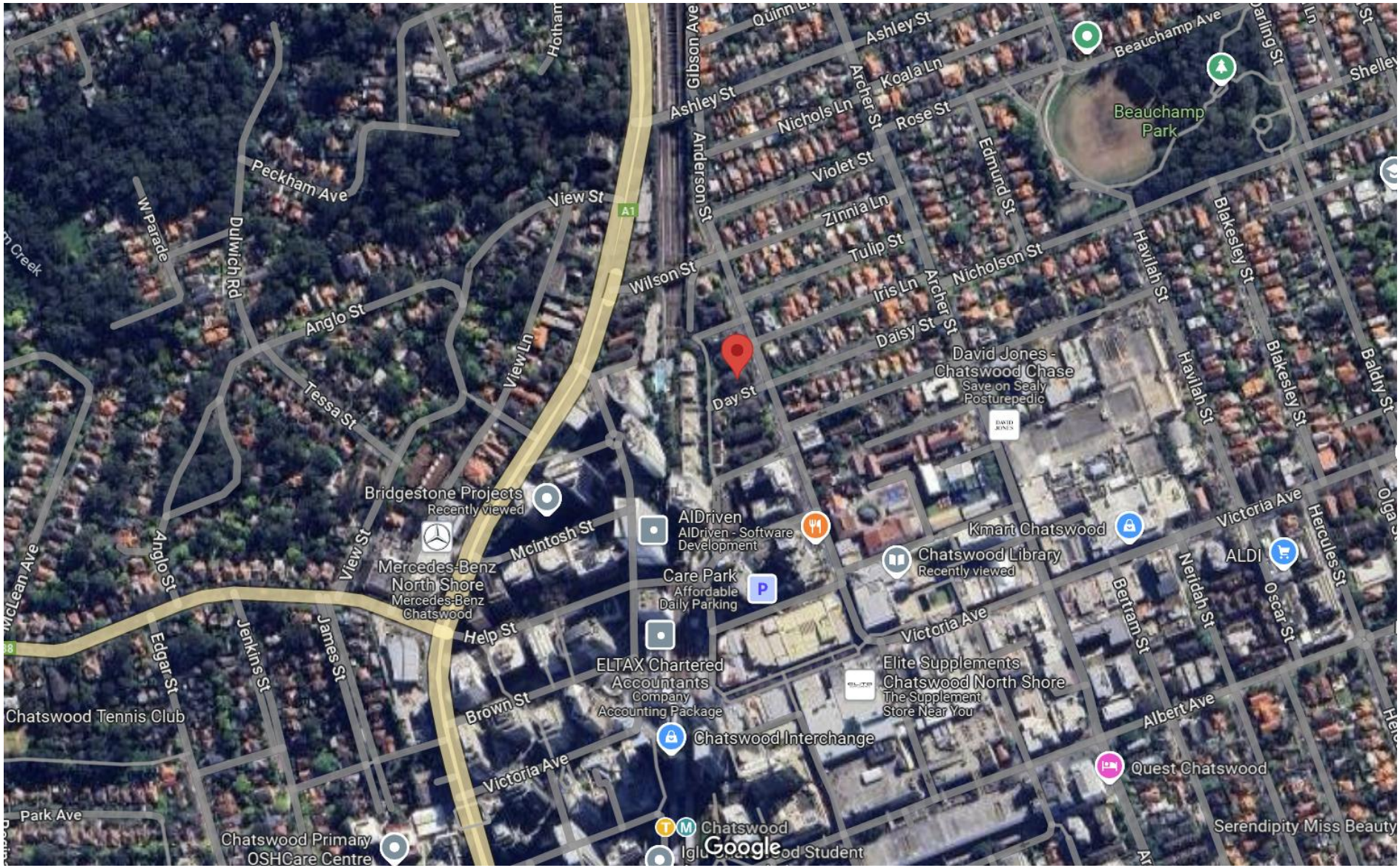
- Site preparation works including demolition of existing structures on the site, tree and vegetation clearing, and bulk earthworks;
- Construction of a 33-storey mixed use shop top housing development comprising:
  - A two-storey non-residential podium, with commercial/retail floor space, and
  - Two residential towers, with 123 apartments,
- Construction of an eight-level shared basement car parking for 296 carparking spaces including:

o 256 residential spaces (including 25 accessible spaces);
o 22 commercial and retail spaces (including 1 accessible space);
o 18 visitor spaces;

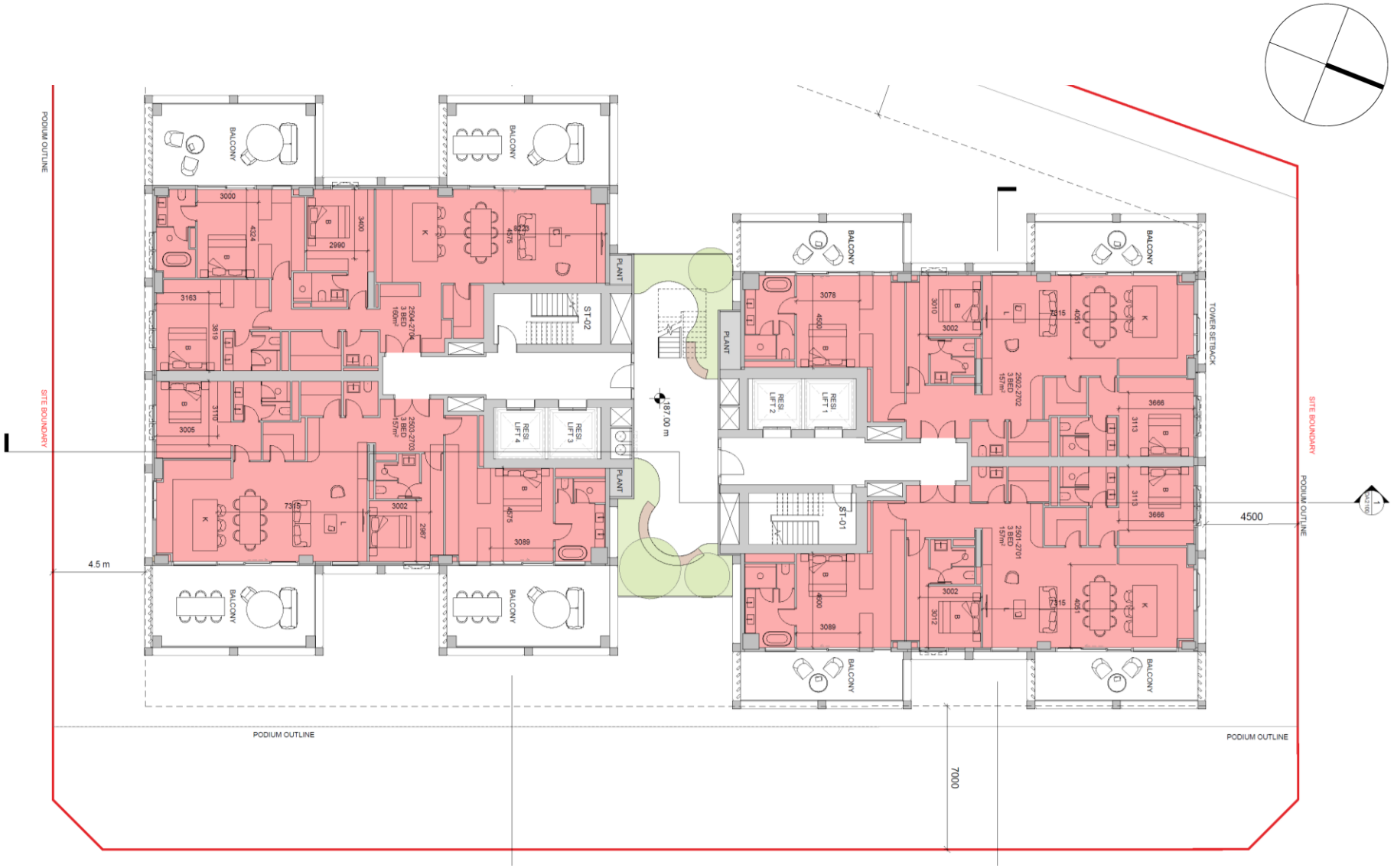
- Vehicular access from Day Street,
- Communal open space on Level 2 including shared outdoor spaces, swimming pool and associated amenities, sauna and BBQ area and a green spine running between the two towers;
- Associated landscaping and public domain works, and
- Services and infrastructure improvements, as required.

This report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued for the project (SSD-75408008). This report concludes that the proposed development is suitable, warrants approval, and satisfies SEAR 9 - Ecologically Sustainable Development (ESD), as shown below. The report also details the mitigation measures implemented within the design such as water, energy, materials, thermal comfort and ESD strategies (as discussed in this report).

SEAR 9. 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.	Principles of ecologically sustainable development are discussed in pages 9-38 (ESD specs and discussion)
Demonstrate how the development will meet or exceed the relevant industry recognised building sustainability and environmental performance standards.	See discussion within this ''BASIX and ESD Report'' and Appendix B for compliant certificates
Demonstrate how the development minimises greenhouse gas emissions (reflecting the Government's goal of net zero emissions by 2050) and consumption of energy, water (including water sensitive urban design) and material resources.	See pages 9-16 for the main ESD & BASIX specifications. See pages 21-36 for ESD discussions



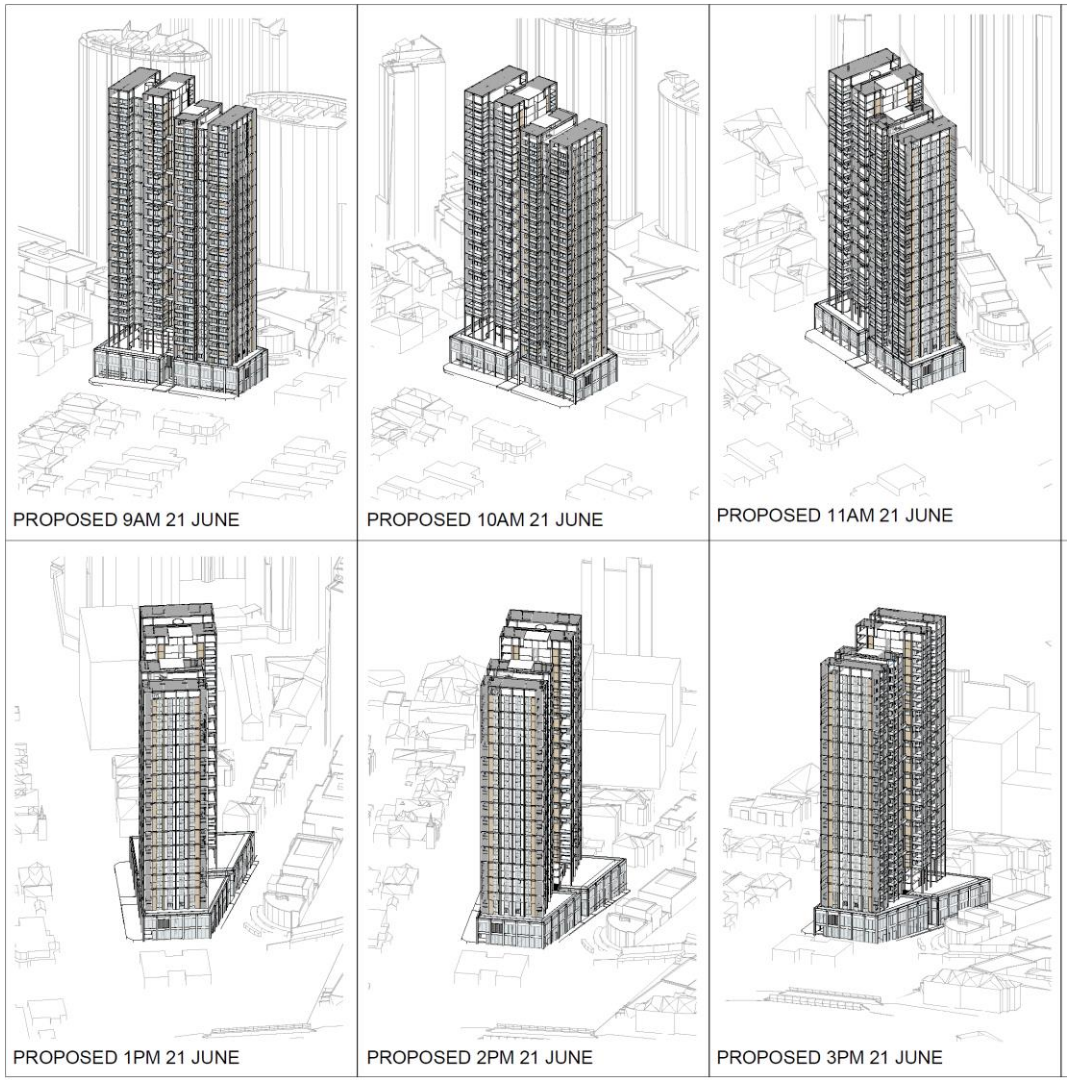
Site Location Plan - 44-52 Anderson Street, Chatswood, NSW 2067



Typical plan layout - 44-52 Anderson Street, Chatswood, NSW 2067

The GreenPerch team have worked very closely with the design team, to ensure a high level of energy-efficiency and environmental sustainability. Importantly, a strong emphasis was placed on the passive efficiency of the building (including passive heating, passive cooling, natural lighting and natural ventilation). The architects have done an superb job to ensure that these passive systems are working effectively, through a well-balanced and intelligent blend of innovative architectural design and passive thermal comfort techniques.

For example, the use of building articulation and orientation was used to enhance natural lighting, passive heating and cross ventilation. These techniques are very often neglected in buildings of this scale, especially those similar buildings with predominantly single-aspect dwellings. The very good thermal comfort results are a testament to the success of this excellent architectural design. The intelligent and high-tech facades have greatly helped this achievement, including shading devices, overhangs and high-performance glazing specifications for all windows and glazed doors (including double glazing and good metal frames, for apartments and non-residential zones).



3D Render - 44-52 Anderson Street, Chatswood, NSW 2067

1.1 ESD Summary and Mitigation Measures

Some of the main ESD categories (for residential and non-residential) will be targeted as follows:

1. ESD - An ecologically sustainable design (ESD) consultant was part of the design team. GreenPerch have suggested and tested numerous effective ESD options. GreenPerch has many decades of experience and includes engineers, architects and energy experts.

2. Climate Resilience – Approaches have included: designing for extreme rainfall events; inclusion of low-level and rooftop shade structures; use of cross ventilation for night-time flushing; cross-ventilation for fresh air and respite from extreme heat; materials selection (including generous thermal mass) which is supportive of passive cooling; drought-tolerant landscaping; and careful building design to cope with extended heatwave conditions. Passive cooling processes were also used cleverly, throughout the buildings, such as thermal mass, good glass, performance frames, shading devices, dual-aspect designs, overhangs, eaves and large window openings.

3. Passive Design - The buildings express a strong commitment to passive design (such as optimal orientation, shading devices, cross ventilation, thermal, mass and open plan living). Performance glazing is also proposed for all the development, including double glazing, appropriate tinting and high-performance frames. Importantly, the intelligent use of facades, rather than just ceiling fans should give an optimum summer performance, for the base building. That said, the ceiling fans, where proposed, are adding extra stars to the NatHERS scores and these are rewarded (correctly) as 'passive systems', since they are so energy-efficient.

4. Energy efficiency - To minimise energy use, the residential buildings have many low-energy initiatives, as discussed in the Energy and BASIX sections of this report. These include items such as PV solar power; generous insulation; performance glazing; shading devices; low-energy HVAC: efficient appliances; efficient lighting; timers/sensors; electric heat-pump hot water; and metering systems.

5. Waste reduction - Waste management plans will be prepared for the construction and the operational phases. These plans will demonstrate the application of principles of the waste management hierarchy of waste: avoid use, reduction, re-use and recycling. In particular high levels of recycling of construction and demolition waste will be targeted (over 90% waste). The project will also target a high proportion of operational waste to be diverted from landfill including compostable organics and green waste.

6. Water efficiency - Rainwater for irrigation is proposed. Water fixtures and fittings are also highly rated, including close-to-best ratings for taps, showers and toilets. Furthermore, a good portion of plants will be locally indigenous or low-water species.

7. Eco Transport – Good access to public transport, car-sharing, electric car chargers and bicycle storage has been proposed. Electric car-charging switchboards are proposed, with flexibility for current and future scenarios. Travel information kits for building users will also be generated later. This will encourage public transport, walking, bicycles and carshare schemes (over private motor vehicle use).

Some of the other ESD initiatives are listed below. These are also listed later in the report, in regard to water, energy, ESD and BASIX:

- Targeting a 5-star Green Star rating with the Buildings Tool
- PV solar power to provide power for common lighting or other uses – 60 kW or more
- Energy-efficient whitegoods (high-rated dishwashers, etc)
- Rainwater reuse for irrigation and car wash (5 kL minimum rainwater storage)
- Water-efficient fixtures (very high ratings for toilets, showers and taps) and reduced flow to sewer
- Recycling or reusing (closed loops) of water from fire pump testing.
- Efficient irrigation such as drip irrigation, timers and moisture -sensors for planters and gardens.
- At least 10% use by area of locally indigenous or “one-drop” water-efficient plants
- Generous deep-soil allocation and planter bed gardens.
- Recycling of construction and demolition waste (over 90% of total waste by mass).
- The use of re-usable formwork for internal floors and core walls on site.
- Paints and floor-coverings with low VOCs, wherever possible.
- Wood products with low formaldehyde (and VOCs), wherever possible.
- Water-based and low-emission paints where possible, for internal 'low-sheen' areas.
- Low-emission and (where practical) water-based paints for internal gloss or semi-gloss finishes.
- Intent to research and include, where possible, some products/materials certified by GreenTag/GECA.
- Specification of sustainable-timber, where possible, using FSC or PEFC (for structure, trims, etc).
- Motion-sensors and time-based controllers (time clocks) for lights, ventilation, etc.
- Air quality (CO/CO2) monitors for the car park ventilation system control and efficient VSD fans.
- Light-colour roofs, generous vegetation and passive cooling to reduce ‘’urban heat-island effects’’.
- Sensible access to and bus transport as well as an extensive network of bike paths.
- Generous Bicycle Parking and proposed ‘Travel Kits’ to educate residents
- Use of “Carshare” schemes, electric-car charging and other efficient-vehicle-alternatives
- Reduced topsoil removal, ecosystem renewal and many low-water or locally indigenous plants
- Reduced Operating Costs (water, gas, electricity) due to the good ESD, BASIX and NatHERS scores

1.2 Thermal Comfort Summary

The development has achieved the following NatHERS scores:

- Average NatHERS rating > 7.1 stars
- Average cooling load <13 MJ/m2.year (permitted average is 20 MJ/m2.year)
- Average heating load <16 MJ/m2.year (permitted average is 28 MJ/m2.year)

To achieve these scores, the following materials and construction systems have been proposed:

NatHERS - Thermal Comfort Items	Proposed Specifications
External Walls 1	Concrete wall with R2.5 added (Metal studs +R0.2 break added)
External Walls 2	Metal cladding with R2.5 added (Metal studs +R0.2 break added)
External Walls 3	FC/Glass cladding with R2.5 added (Metal studs +R0.2 break added)
Unit Walls next to halls/lobbies 1	Plasterboard and 75mm Hebel + R1.7 acoustic insulation
Unit Walls next to halls/lobbies 2	Concrete columns + plasterboard + R1.7 acoustic insulation
Party walls 1	Plasterboard and 75mm Hebel + optional insulation
Party walls 2	Concrete columns, lined plasterboard + optional insulation
Walls next to lifts	Concrete ≥150mm and plasterboard + acoustic insulation if needed
Walls next to stairs	Concrete ≥150mm and plasterboard + acoustic insulation if needed
Internal Walls	Plasterboard on Studs
Internal Floors	Concrete floors, with plasterboard below
External Floors (units with air below)	Concrete slab with basement or air below
Floor Insulation Rooms over basement/air	R2.4 added under unit over plant room/ open air (Metal studs +R0.2 break also)
Floor Finishes	Tiles - wet areas, carpet - beds, timber – living/dining (tiled living penthouses)
Roofs 1 - penthouse roofs	Concrete roof + R3.8 + plasterboard (except R5 needed 3001)
Roofs 1 - below balconies/terraces	Concrete roof + R3.8 + plasterboard (Primepanel or similar)
Roof Colour	Light colour roofs
Skylights for units	Generic double glazing - U ≤ 2.7, SHGC = 0.24 (VELUX type)

Window Shading	Eaves and overhangs + Screens as shown
Weather Stripping	All external doors and windows
Ceiling Penetrations Lights	LED downlights - generic holes assumed, as per NatHERS protocol (TBC at CC)
Ceiling Penetrations Fans	Bathroom, laundry, kitchen: generic holes from NatHERS protocol (TBC at CC)
Ceilings fans – some rooms only	Fans in bedrooms 1400 diam and a few living– 2 fans for 3001 living + 1 in living for: 401 to 801 + 404 to 804 + 505 to 805 + 508 to 808 + 904 to 2304 + 905 to 2305

Thermal Comfort Glazing Item	Details
Windows – awning/bifold/hinged	Metal frames + clear double-glazing
Windows - U-value	≤ 3.1
Windows - SHGC	0.39 ± 5% awning/bifold/hinged
Window sliders/hung	Metal frames + clear double-glazing
Windows - U-value	≤ 2.9
Windows - SHGC	0.42 ± 5% sliders/hung
Window fixed	Metal frames + clear double-glazing
Windows - U-value	≤ 2.5
Windows - SHGC	0.44 ± 5% fixed

Simulation Notes:
- No RCP provided at DA so generic holes assumed for all downlights (must have extra checking and rerunning at CC stage)
- No RCP provided at DA so generic holes assumed for exhaust fans (must have extra checking and rerunning at CC stage)
- Concrete walls and floor thickness need checking at CC stage, due to complexity of the proposed construction.
- All wall types, ceiling types, floor types need checking at CC stage, due to complexity of the proposed construction.
- Window sizes used from elevations, sections and plan mark-ups (plans take priority and all this needs re-checking at CC stage).
- Windows hidden (with no size or operability shown) are assumed as full height and fixed (this needs re-checking at CC stage).
- Door sizes used from elevations, sections and plan (this may need more re-checking at CC stage).
- Neighbours modelled as shown on drawings but no tree preservations in place and not modelled
- Shading devices used from elevations, sections and plans (these details may need re-checking at CC stage).
- Glazing values are indicative for DA – pending final insulation, shading, wall types and RCPs these glazing values may change

1.3 BASIX Summary

The following specifications are proposed for BASIX water and energy items:

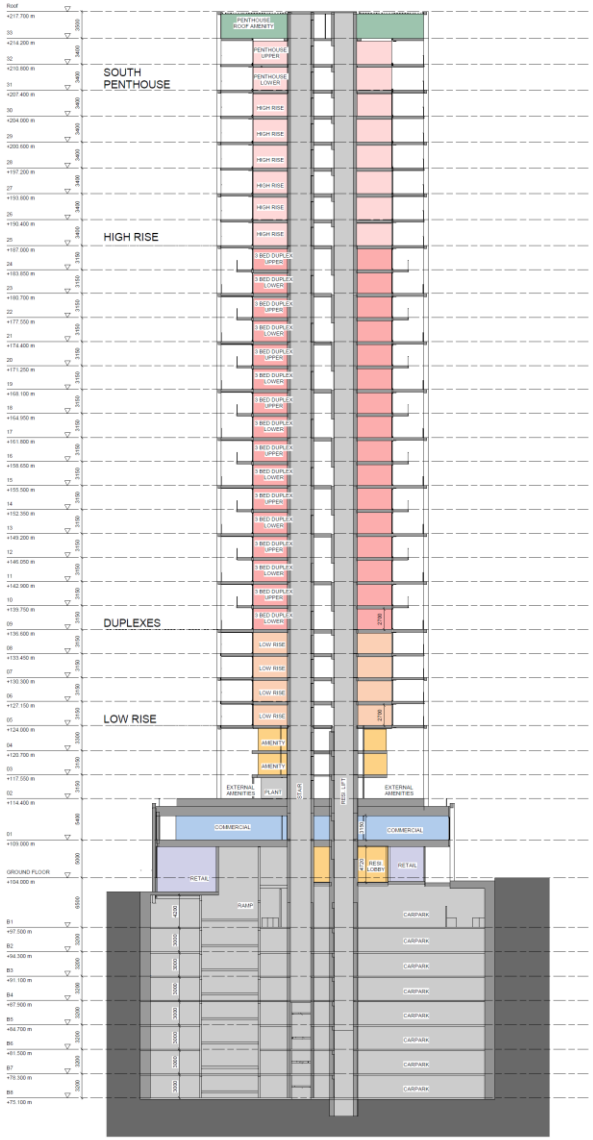
BASIX Item – Water	Proposed Specifications
Rainwater Tank	5.0 kL or more collects most of main roof >500 m2
Rainwater Tank use	Rainwater for irrigation only (car wash and other uses are optional)
Stormwater Tank	None proposed
Blackwater/Greywater reuse	None proposed
Other reticulated water reuse	None proposed
Fire Sprinklers	Sprinklers in basements and in main building
Fire Sprinkler Test Water	Fire test water reused in closed loops
Showers	4 stars ≤ 6.0 L/min (low-flow range in BASIX)
Toilets	4 stars
Kitchen Taps	5 stars
Bathroom Taps	5 stars
On demand hot recirculation	No
Clothes washers	Optional
Dishwashers	4 stars WELS or better
Planting & lawn (respectively)	2,560 m2 total = 60 m2 lawn and 2,500 m2 planting
Planting – low water species	10% plants area = locally indigenous or 1-drop lowest water, 250 m2
Pools and Spas	198 kL pool 1.5m deep (heat pump heating + pump timer + optional cover)

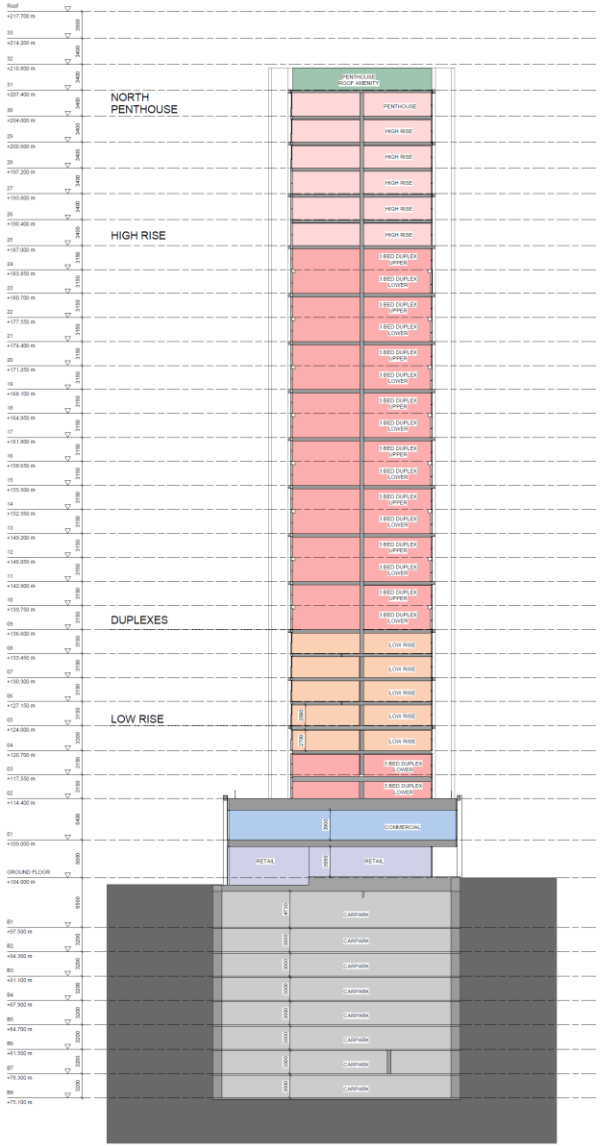
BASIX Item – Energy	Proposed Specifications
Heating for Units -Beds	1-phase airconditioning - ducted / EER 2.5 - 3.0
Heating for Units -Living	1-phase airconditioning - ducted / EER 2.5 - 3.0
Cooling for Units -Beds	1-phase airconditioning - ducted with EER 3.0 - 3.5
Cooling for Units -Living	1-phase airconditioning - ducted with EER 3.0 - 3.5
AC zoning (day or night)	Not used, so bed/living can now be used same time
Bathroom Exhaust	Fan to façade/roof, manual on/off
Laundry Exhaust	Fan to façade/roof, manual on/off
Kitchen Exhaust	Fan to façade/roof, manual on/off
Lighting for Apartments – Each Room	LEDs ≥80% fittings all rooms (dedicated)
Vented fridge-spaces	Not assessed anymore
Cooking	Induction cooktop & electric oven
Internal clothes lines	None for private dwellings
External clothes lines	None for private dwellings
Dryers	8 stars energy
Dishwashers	4 stars energy
Clothes washers	Not supplied
Fridges	Not assessed by BASIX
Hot Water	Electric Heat Pumps, medium/high COP (>3.0 COP and <3.5)
Hot Water Pipe insulation	R1.0 to ringmains +supply risers
Sauna	None
PV Solar Power	60 kW – minimum peak output
Lifts	VVVF gearless traction (with regenerative drives)
Lifts capacity	Mid-range – 1,001 to 1,500 kg
BMS	Yes - included in some form
PFC, Power Factor Correction	Optional
Pools and Spas	198 kL pool approx. (heat pump heating + pump timer + optional cover)

Common area name	Floor area (m^2)	Select the ventilation system type *	Select the efficiency measure *
Changing Rooms	28	ventilation supply only	none i.e., continuous
Suana and WCs	23	ventilation (supply + exhaust)	time clock or BMS controlled
Basement Car park	14461	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan
Substation	38	no mechanical ventilation	n/a
Pump and Tank rooms	72	ventilation supply only	none i.e., continuous
Bin Holding area + FOGO waste	94	ventilation exhaust only	n/a
Bulky Waste	30	ventilation exhaust only	n/a
Residential Chute discharge	66	ventilation exhaust only	n/a
Plant room	707	ventilation (supply + exhaust)	thermostatically controlled
Fire control room	36	ventilation supply only	none i.e., continuous
Fire Pump room	64	ventilation supply only	none i.e., continuous
Residential Lobby	144	air conditioning system	time clock or BMS controlled
Service Lobby	24	ventilation supply only	time clock or BMS controlled
Hallway upper levels	1169	ventilation supply only	time clock or BMS controlled

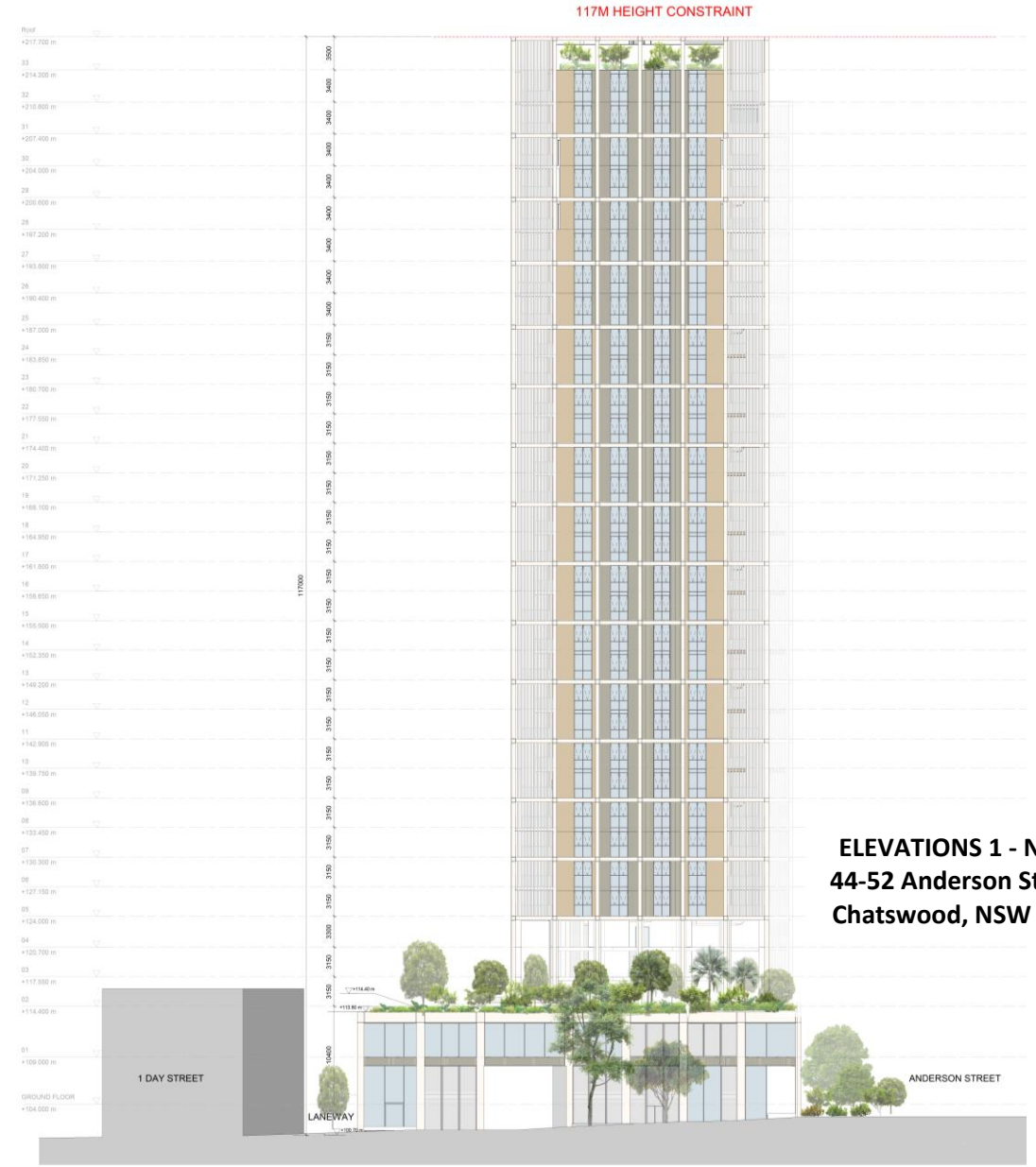
Common area name	Area (m^2)	Primary lighting system type *	Efficiency measure *	Lighting control system / BMS
Lift bank (No. 1)	n/a	light-emitting diode	connected to lift call button	Yes / No
Changing Rooms	28	light-emitting diode	zoned switching	Yes / No
Suana and WCs	23	light-emitting diode	zoned switching	Yes / No
Basement Car park	14461	light-emitting diode	zoned switching with motion	Yes / No
Substation	38	light-emitting diode	motion sensors	Yes / No
Pump and Tank rooms	72	light-emitting diode	motion sensors	Yes / No
Bin Holding area + FOGO waste	94	light-emitting diode	motion sensors	Yes / No
Bulky Waste	30	light-emitting diode	motion sensors	Yes / No
Residential Chute discharge	66	light-emitting diode	motion sensors	Yes / No
Plant room	707	light-emitting diode	motion sensors	Yes / No
Fire control room	36	light-emitting diode	motion sensors	Yes / No
Fire Pump room	64	light-emitting diode	motion sensors	Yes / No
Residential Lobby	144	light-emitting diode	motion sensors	Yes / No
Service Lobby	24	light-emitting diode	zoned switching with motion	Yes / No
Hallway upper levels	1169	light-emitting diode	zoned switching with motion	Yes / No
Lift bank (No. 2)	n/a	light-emitting diode	connected to lift call button	Yes / No

SECTIONS 1 - 44-52 Anderson Street, Chatswood, NSW 2067





SECTIONS 2 - 44-52 Anderson Street, Chatswood, NSW 2067



ELEVATIONS 1 - N & S
44-52 Anderson Street, Chatswood, NSW 2067

ELEVATIONS 2 EAST – 44-52 Anderson Street, Chatswood, NSW 2067

ELEVATIONS 3 WEST - 44-52 Anderson Street, Chatswood,

1.4 EER – Energy Efficiency Report

The mechanisms for energy assessment will be Section J (for Retail / Commercial portions) and BASIX (for residential and common areas). The energy strategies below were implemented. Some of these items were listed previously in this BASIX report.

Greenhouse-gas reduction and energy-efficiency initiatives include:

- Development has well-surpassed the BASIX Energy Target (64 rather than 60 target for 5+ stories).
- Project scoring an average >7.1-star NatHERS rating across the development. This is above the minimum required to pass BASIX and this contributed towards the excellent energy performance.
- Average cooling load <13 MJ/m2.year (permitted average is 20 MJ/m2.year)
- Average heating load <16 MJ/m2.year (permitted average is 28 MJ/m2.year)
- PV solar power to provide power for common lighting or other uses
- Lighting throughout the development will use LED technology (or high efficiency CFL's where appropriate).
- Fixtures, fittings and HVAC are very low-energy and include highly rated whitegoods and energy-efficient AC for units
- A building engineer/manager will be used to undertake building commissioning, for required systems, upon completion.
- Unit design included effective cross-ventilation, generous insulation, operable glazing and suitable shading devices. In particular, the corner dwellings, the dual aspect dwellings, the thermal mass and the large openings (such as sliders) all helped the passive cooling and heating.
- Glazing was appropriately designed to reduce heat losses in winter, and to give opportunities for natural cooling in summer. Furthermore, performance glazing is proposed for all of the development, including double-glazing for all apartments, retail and commercial areas.
- External walls, floors and roofs will all contain very generous added insulation, to help reduce the reliance on mechanical heating & cooling.
- Good Section J results were achieved, due to generous insulation, shading, thermal mass and high-end double-glazing throughout.

2. ESD Strategy (Environmentally Sustainable Development)

This project will be designed and built in accordance with many best practice principles of "Ecologically Sustainable Development" (ESD). This following ESD discussion describes some of the initiatives relating to governance, indoor environmental quality, energy, water, transport, emissions, ecology, materials and community.

2.1 Governance

The proposed development will establish and maintain strong governance practices. These, in turn, will promote engagement, transparency and resilience to the conditions of a changing climate.

Good environmental management practices will be adopted, including enhanced commissioning, ongoing tuning and the production of building-user information. Best practice construction environmental management processes will also be implemented. Furthermore, waste diversion from landfill will be targeted, through intensive recycling of construction and operational waste, wherever possible. Metering and monitoring strategies will also ensure operational performance can be tracked and optimised, for water, energy and HVAC.

2.1.1 Commissioning and Tuning

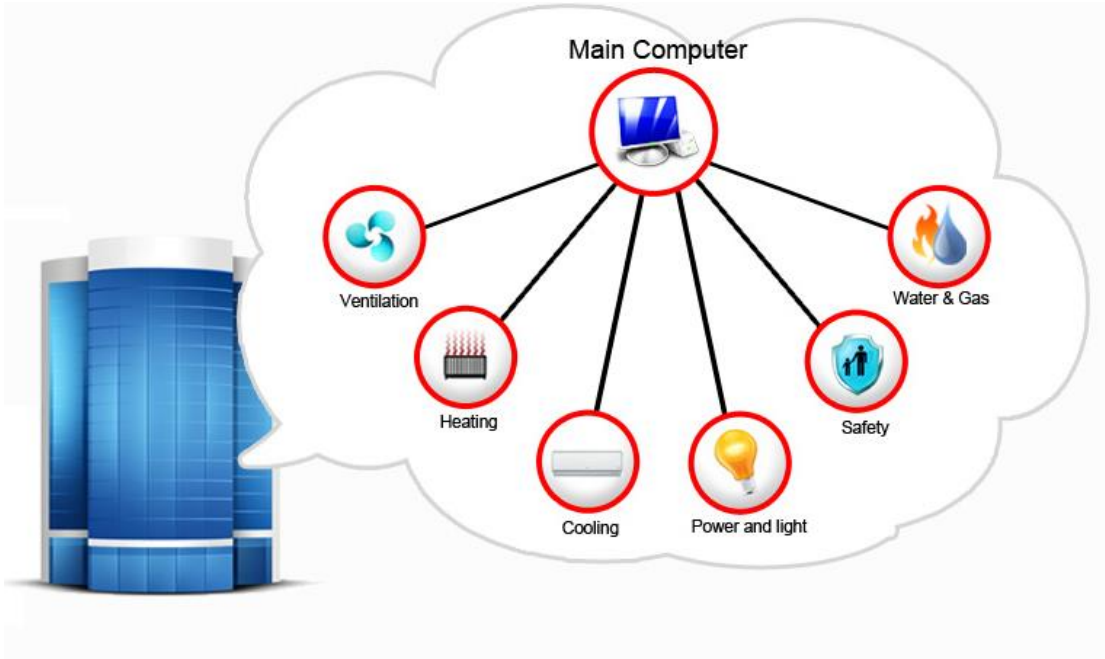
Relevant subcontractors will undertake detailed commissioning and building tuning for all major systems in the building. These systems will relate to water, energy and HVAC.

2.1.2 Adaptation and Resilience

Climate change adaptation and resilience has been considered in detail. This "futureproofing" strategy will enable the building to adapt to potential climate change challenges and future extreme weather events (with the intention of minimising both risk and disruption to the occupants, the building and the community). In particular, the use of rainwater tanks will help reduce the impact of drought periods, for irrigation. The use of performance glass, generous insulation and other thermal comfort techniques will help to deal with changes in climatic conditions, without the excessive reliance on AC. Light colours, shading and generous planting will also reduce heat-island effects.

2.1.3 Building Information

Building operation and maintenance information will be provided and this information may be used to educate building occupants and visitors on the sustainability features of the buildings and how to use these features effectively, in order to reduce potential environmental impacts.



2.1.4 Metering and Monitoring

A metering and monitoring strategy will be implemented to track energy and water use. This system will also monitor progress against performance targets and assist with the identification of leaks, faults or excessive consumption. Sub-metering will be provided for major energy and water uses, supplying data to a Data Collection Point and/or a Building Management System (BMS). Energy sub-metering will be provided for end users. Likewise, water sub-metering may be provided for a variety of uses, pending the final design.

2.1.5 Construction Environmental Management

A Construction Environmental Management Plan (CEMP) will be developed and implemented by the head contractor. This CEMP will be critical to assist with managing the environmental performance, conditions, and impacts arising from excavations, the demolition work and the construction of the proposed buildings.

2.1.6 Operational Waste

Facilities will be provided for the collection, storage and separation of distinct waste streams for collection by the relevant waste contractors. A Waste Management Plan (WMP) will be provided for building operations. In addition, strategies such as well-located recycling facilities (for both the residential and retail/commercial zones) will be incorporated, to increase the ease of recycling.

A detailed operational waste managaement plan (OWMP) has also been prepared. This OWMP details all recycling and waste management for the various building zones, during the operational phase.

2.2 Indoor Environmental Quality

Indoor Environmental Quality (IEQ) will be improved through consideration of indoor air quality, acoustic conditions, thermal comfort, visual comfort, daylighting and external views. The various IEQ strategies are outlined in more detail below.

2.2.1 Indoor Air Quality

The ventilation system for the building will be designed under the guidance of ASHRAE Standards, for issues such as separation distances between pollution sources and air intakes. Ductwork will also be protected during construction to ensure it remains free of moisture and debris prior to occupation.

Preference will be given to paints, adhesives, sealants, floor coverings and engineered wood products with low Volatile Organic Compound (VOC) emissions and low formaldehyde emissions. This will help to minimise indoor air contamination and to promote occupant health. For products with potential VOC emissions, priority will be given to E0 and Super E0, where possible, since these have significantly lower emissions than products with E2 ratings and below.

2.2.2 Acoustic Comfort

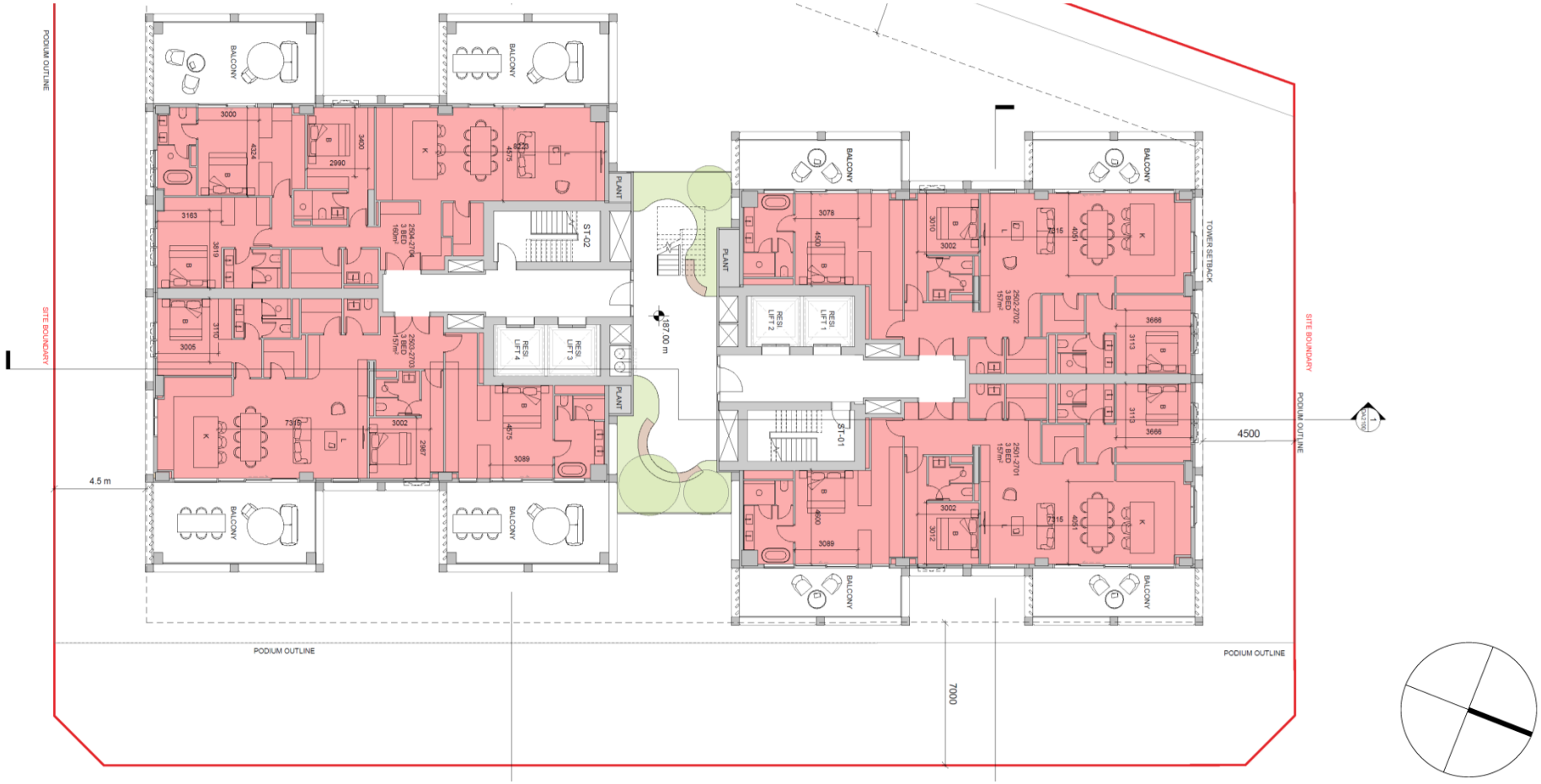
The design has considered acoustic comfort in detail, including general noise levels, reverberation and noise separation. For example, acoustic insulation has been proposed between apartments and corridors and this was selected to provide both acoustic and thermal comfort benefits.

2.2.3 Visual Comfort

Glare control mechanisms such as internal blinds and shading devices will assist in maximizing visual comfort for the occupants. The design has also carefully considered the availability of daylight and external views. Furthermore, artificial lighting will consider appropriate colour perception and lighting levels, reduced glare from lamps and uniformity.

2.2.4 Daylighting

Simulations by the design team have shown excellent solar access to most dwellings, across the building. The fortunate position, orientation and surrounding environment, have allowed for this. The increased daylighting will improve the indoor environment and reduce the reliance on electric lighting. It will also improve productivity, health and overall well-being. The good thermal comfort results have shown that daylighting was not implemented at the expense of overheating. The NatHERS results were excellent and cooling estimates were very good, as discussed.



Solar Access through sensible plan layout and form (typical level) - 44-52 Anderson Street, Chatswood, NSW 2067

2.2.5 Thermal Comfort

Performance glazing with some external shading will be utilised intelligently to improve thermal comfort for the occupants. Indeed, passive heating, passive cooling and natural ventilation have been carefully considered. To balance daylighting and views with thermal comfort, various performance-glazing products have been proposed (such as double-glazing for all apartments and priority zones). The glazing specifications were based on BASIX thermal comfort scores, to ensure that the correct glass is utilised for various orientations and building types.

It is also recognised that thermal comfort is extremely important for BASIX and sustainable design, however the windows also affect other important ESD issues. Therefore, a very careful and deliberate balance was made by the design team, to ensure good thermal comfort, minimal glare, good daylighting and connection to external views.

For example, the use of some darker tinting was implemented for thermal comfort, privacy and glare reduction. However, too much tinting can make rooms unnecessarily dark (and less effective with passive heating in winter) so lighter tints were often selected, if they were passing BASIX targets. The use of glazed balustrades was also implemented, to create exciting building aesthetics and to optimise passive heating and daylighting, through the building facades.

2.3 Energy

The design will seek to reduce energy consumption and greenhouse gas (GHG) emissions, by combining a well-designed building envelope and high-efficiency systems and services. Furthermore, smart controls, meters and automation will ensure that the major building services only operate when needed. Passive design principles have also been integrated (as discussed above) to reduce the demand on active systems such as HVAC and lighting.

2.3.1 National Construction Code Section J for Energy Efficiency

The NCC's Section J (National Construction Code) determines the minimum energy performance requirements for all new developments in Australia. The proposed design will meet all the NCC's Section J energy efficiency requirements. A detailed Section J summary report will be prepared, to demonstrate the design strategies to comply with NCC 2022 Section J, under the DTS assessment. Section J DTS testing has indicated that the retail zones will pass comfortably, since generous insulation and performance glazing is also being proposed in these zones, similar to the apartment designs.

The Section J report, has also been prepared, and this looks in detail at each of the following energy categories:

- Part J1 Energy efficiency performance requirements
- Part J2 Energy efficiency
- Part J3 Elemental provisions for a sole-occupancy unit of a Class 2 or Class 4
- Part J4 Building fabric
- Part J5 Building sealing
- Part J6 Air-conditioning and ventilation
- Part J7 Artificial lighting and power
- Part J8 Heated water supply and swimming pool and spa pool plant
- Part J9 Energy monitoring and on-site distributed energy resources

Importantly, the "conditioned" zones will include the retail and apartment zones (but not hallways, plant rooms, pool rooms or back-of-house zones such as plant rooms or fire stairs). Even if air-conditioning is not proposed for some "habitable" parts of those building types, those zones will still be classified as "conditioned", for the purpose of the DTS analysis. This will ensure that all those high-importance areas have an excellent level of passive thermal comfort.

2.3.2 Energy reduction strategies

The following strategies have been embraced to improve energy efficiency:

- Use of renewable energy sources including generous PV solar power.
- Low-carbon hot water systems (electric heat pumps, air-sourced)
- Efficient heating, ventilation and cooling (HVAC) systems including:
  - High efficiency condensers, pumps, fans, etc
  - Sensors or BMS to monitor and control building systems
  - Ventilation with efficiency controls such as zoning and occupancy sensors
  - Carbon Monoxide sensors and variable VSD fans in basement levels
  - Common area ventilation to include efficiency controls such as zoning, motion sensors and time clock controls

• Passive systems such as passive heating, passive cooling and natural ventilation (through the intelligent use and positioning of thermal mass, window openings, glazing, shading devices, etc).

• Efficient lighting, sensors and efficiency controls (with mainly LED lights). This includes internal, external and public domain lighting.

• Efficient whitegoods, fixtures and fittings for energy. In particular, the whitegoods have a huge influence (on per capita energy use) so excellent dryers and dishwashers will be provided (to educate the residents and also to boost the already high BASIX scores).

• Some areas with shut-off switches for lights and non-essential power to be turned off when unoccupied.

• Appliances and whitegoods (as listed previously) will have very high energy efficiency ratings.

• Efficient taps, showers and water-consuming whitegoods, which will hence reduce the hot water use, per capita.

• Minimised infiltration through weather stripping for doors and windows, dampers for exhaust fans and compliance with Section J.

These energy strategies will also contribute to reducing peak electrical demand from the development. This factor is very important when it comes to reducing the stress on the surrounding energy networks and infrastructure.

2.4 Transport

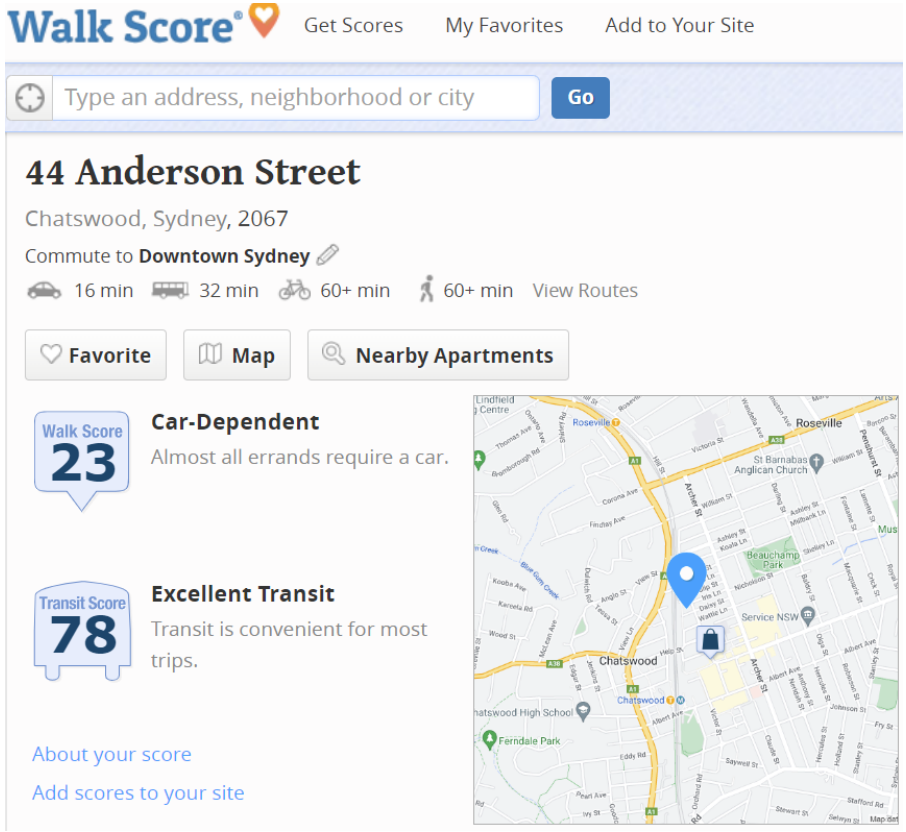
The following alternative transport initiatives are being proposed to improve amenity, to promote occupant health and to reduce transport related GHG emissions.

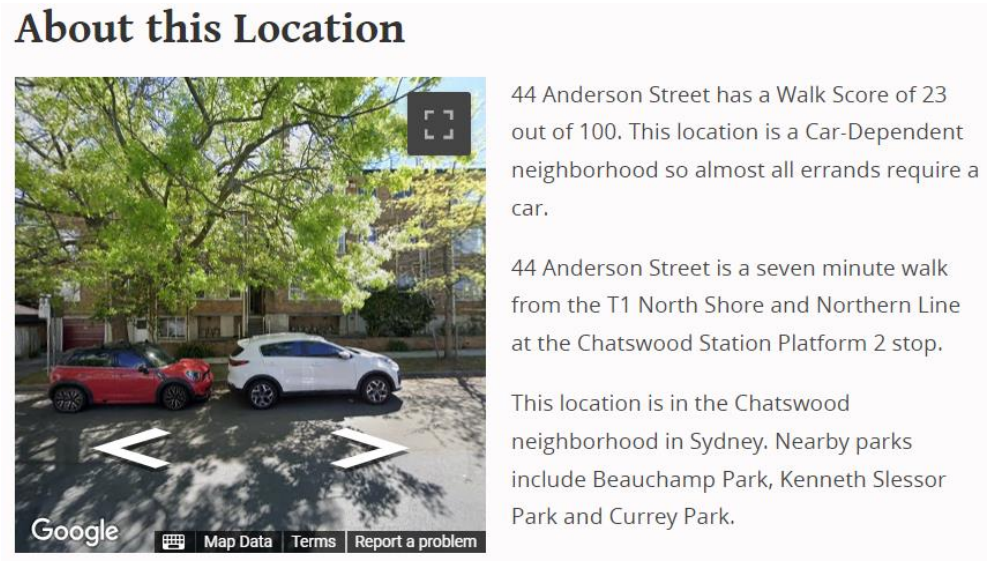
2.4.1 Active Transport Facilities

Secured bicycle parking and associated facilities have been provided for patrons and visitors. Travel information kits for residents and workers will be generated later. This will encourage public transport, walking, bicycles and carshare schemes (over private motor vehicle use). The provision of shared bathroom facilities has also been implemented for non-residential components of the building, and this will encourage staff to cycle to work.

2.4.2 Walkable Neighbourhood & Public Transport

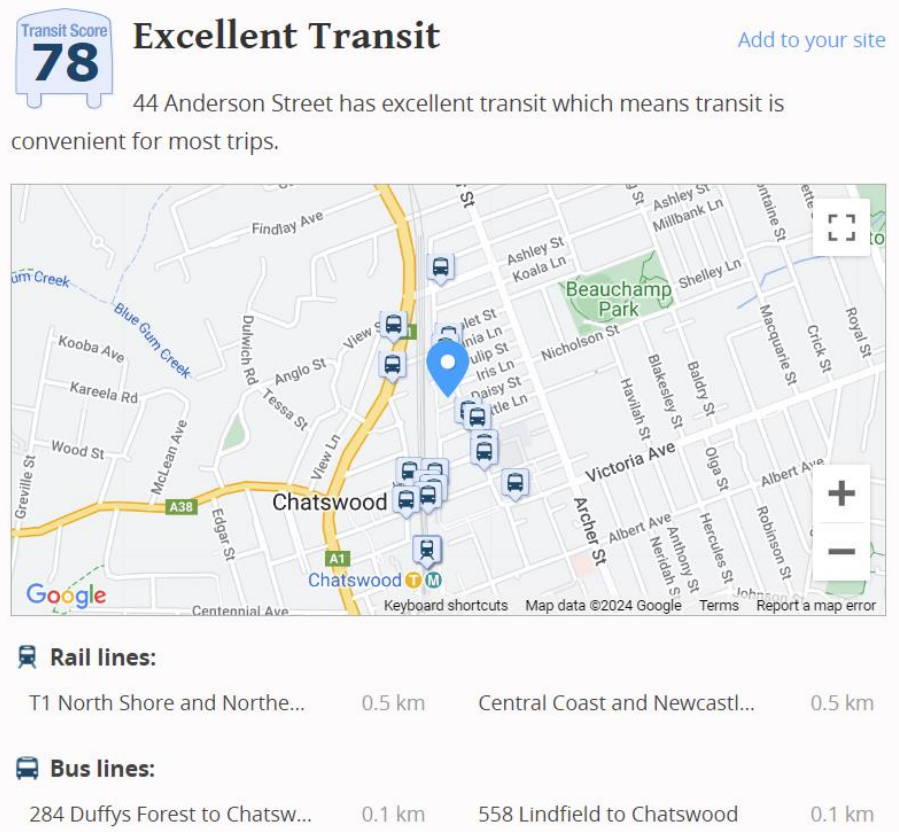
The site is located close to numerous amenities, with a superb 'walk score' of 94 (see below).

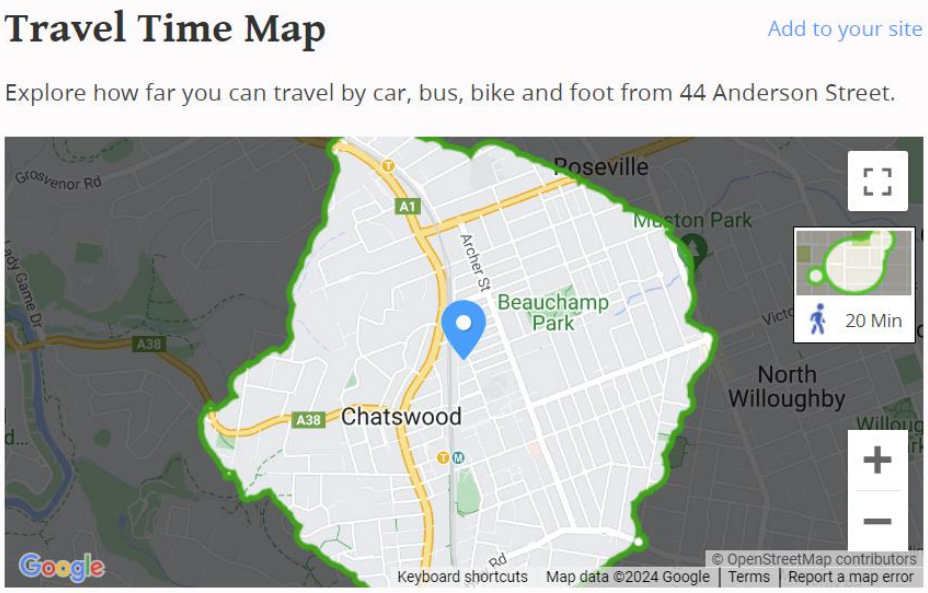




Consequently, the project has been designed to optimise connectivity and pedestrian links within the site itself for "enhanced walkability". This will allow access to the numerous features within the site itself. The corner aspect of the site has been taken advantage of and there are now numerous (easily accessed) entrance zones to the buildings.

The convenience, aesthetics and safety of the design have been carefully considered to encourage users to walk and cycle, rather than driving cars.





2.4.2 Electric car recharging stations

To encourage sustainable motor-vehicles, electric-car recharging facilities have been carefully considered, for future installation. Electric car-charging capabilities have been proposed for the development (with charging facilities and switchboards to be compliant with the new NCC 2022 Section J provisions). Travel information kits for residents and workers will also be generated later.

2.5 Water

Potable water consumption will be minimised for the project by selecting very water-efficient fittings, fixtures and appliances. As shown by the BASIX specifications, products were generally selected within 1 star of the top star rating (using the WELS website). For example, toilets can be awarded up to 5 stars, so the architects chose 4-star ratings. Importantly, the top ratings can be very difficult from a cost, availability or functionality perspective. For example, a 5-star toilet requires a basin above the toilet cistern, and this is clearly not suitable for most designs.

2.5.1 Water strategies

The following strategies will be used to reduce potable water consumption. These initiatives may change slightly as detailed design is developed.

- Water efficient fittings and fixtures (especially taps, showers and toilets)
- Water efficient appliances (especially dishwashers)
- Rainwater harvesting and re-use on the site (5 kL minimum, for rainwater storage)
- Rainwater reuse for irrigation and car wash
- Recycling or reuse (closed loops) of any water required for fire testing.
- Efficient irrigation such as drip irrigation to planters and gardens
- At least 10% use by area of locally indigenous or “one-drop” water-efficient plants
- Generous deep-soil allocation
- Generous garden areas and green-roof gardens/planters, with low-water species

2.6 Materials

2.6.1 Material Selection

Materials used in the building industry are responsible for significant waste generation, resource depletion, GHG emissions and water consumption. To minimise these environmental impacts, the following principles will be considered for material selection on the site, as the design progresses:

- Selection of certified timbers, especially those with FSC-certification
- Consider Best Practice PVC products (or aim for avoidance of PVC, if possible)
- Design major building components for longevity, adaptation, disassembly, re-use and recycling
- Local procurement to support the local economy and reduce transport emissions
- Design for robustness - review the design and the materials to ensure durability for high-traffic surfaces and high-use fittings.
- Specification of sustainable products where appropriate, such as those with recycled content or potential for recycling
- Specification of products with third-party certifications (e.g., GECA or GreenTag) or those with EPDs (Environmental Product Declarations)
- Consider and implement 'green steel products', where feasible, from accredited steel makers and fabricators
- Consider and implement cement-replacements in concrete, where feasible, by using low-carbon options and fly ash. Detailed studies will be undertaken in design development to maximise this low-carbon approach.

2.6.2 Waste minimisation

A Waste Minimisation Plan has also been prepared to outline best practice waste management during the design, construction and operation of the project. The proposed waste strategy looks at issues such as:

- Establish waste targets (including minimum construction and demolition waste recycling targets).
- 'Design out' waste: Reduce the amount of materials used in the construction processes, wherever practical
- Implement best practice construction waste management plans and engage with the supply chain.
- Provide infrastructure and clear guidance (for the building users) to maximise waste recycling during operation.

The Head Contractor will develop a Construction Waste Management Plan (CWMP) in accordance with waste targets and this will:

- Define responsibilities and actions to prevent, reduce and recover waste
- Strive to recycle >90% by weight of construction and demolition waste
- High proportion of operational waste to be diverted from landfill including compostable organics and green waste.
- Identify the waste arising from construction and detail waste reuse and recycling routes
- Record waste movements and quantities during construction and benchmark the results against best practice targets

2.7 Land Use & Ecology

The project will enhance existing ecological value by reusing a previously developed site. Consequently, the objective of the landscaping and ecology strategies will be to restore the ecological value of the site and use locally indigenous species around the site. This will help to reduce water consumption and also to enhance biodiversity and the restoration of native flora and fauna in the area.

2.8 Emissions

Emissions to water, soil and the sky will be minimised during construction and operation. A CEMP will be prepared for the site demolition and construction and the emissions will be addressed in this document.

2.8.1 Reduced Peak Discharge to Stormwater

The post-development peak event stormwater discharge from the site will be minimised (to be very close to or less than the pre-development peak event stormwater discharge).

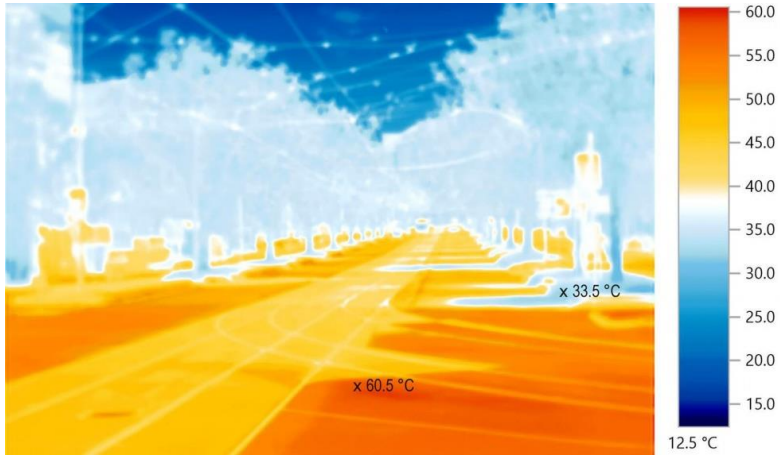
Stormwater discharged from the site will be designed to achieve high levels of pollution removal for pollutants such as total suspended solids, gross pollutants, total nitrogen, total phosphorus, petroleum hydrocarbons and free oils.

2.8.2 Light Pollution

Outdoor lighting on the project will generally be designed in accordance with AS 4282:1997 and external light pollution will be minimised. The reduction in light pollution will alleviate the risk of impacts on neighbours and wildlife. In particular, lights be designed to face predominantly downwards. Lights with upspill or uplighting will be avoided.

2.8.3 Heat Island Effect

Lighter-coloured pavements, walls and roofs (and generous planting) have been proposed, in most locations, as shown in the plans, sections, renders and elevations. This strategy was mainly conceived in order to reduce the potential heat island effect on the site and surrounding areas. Furthermore, this strategy will also improve internal thermal comfort, significantly, in summer.



2.8.4 Refrigerant impacts

Refrigerants will be selected to try and target an Ozone Depletion Potential (ODP) of zero. This includes most air conditioning systems and other refrigeration equipment. This may entail various HVAC&R systems and cold/freezer rooms found on the premises.

Environmental impacts from refrigerants leaking into the atmosphere must be minimised as far as possible, in order for this objective to be achieved.

2.8.5 Solar Reflectivity

Glass surfaces (and some other cladding materials) can be highly reflective. Various measures will be used to negate this effect and, in particular, low-reflectivity glass will be used, in accordance with council requirements. The main issues with reflectivity will typically occur at the lower levels, since this is where motorists, pedestrians and public transport operators will be focusing their gaze. This zone of peripheral vision is extremely important for solar reflectance, especially for motorists and train/bus drivers.

With this in mind, the building will use exclusively low-reflective materials and glass at the lower levels. This building (and other similar buildings nearby) has been investigated, for potential reflectivity. It was concluded that a conservative ''reflectivity target'' of 20% should be adequate to prevent negative issues with solar reflectance. Most councils support that conservative figure and (reflectivity index permitted for external glazed elements should not exceed a 20% value).

If the 20% reflectivity target is successful for the lower levels, then the higher levels will work as well (or even better) with that same solar reflectivity. Hence, overall, the 20% target should work well, for the proposed facades of the towers.
In addition to the low-reflectivity glazing, various other measures will also be used to negate unwanted reflection. In particular, vertical fins and building articulation will be used, in accordance with council's general recommendations. The additional shading devices have been incorporated for thermal benefits, privacy and reflectivity benefits, at all levels.

The final glazing products will be carefully selected, with these targets in mind. Importantly, the thermal comfort, acoustic and reflectivity targets should all be compatible with the targets listed above.

2.9 Community

The project will be designed to maximise community benefit. In particular, it will encourage active lifestyles, maintain good pedestrian and cyclist linkages and facilitate ample, safe social interaction. The project will also be designed to minimise other undesirable impacts on the community such as glare and light pollution.

The following strategies will be considered:

- Marketing and education strategies to convey the numerous sustainability practices to wider audiences
- Ensuring that the design and the building materials do not lead to hazardous, undesirable or uncomfortable glare to pedestrians, motorists or occupants of surrounding buildings
- Minimise light spill to the sky.
- Promotion of healthy and active living through various design and education strategies (for example, with cycling storage and facilities)
- Incorporation of crime prevention through environmental design (CPTED)

3. Conclusion

The numerous initiatives outlined in this report demonstrate how the proposed development will incorporate best practice ESD initiatives into its design, construction and ongoing operation. Through a combination of energy, water and other ESD strategies, the project will indeed exceed the minimum requirements for sustainable development.

It is acknowledged that some strategies will need further refinement, during the latter stages of design. These evolving strategies will include:

- Refinement of renewable energy design (such as final PV type and sizing, to optimise all available space – but currently 60 kW or more)
- Energy-efficient building fabric and services to deliver optimal energy savings
- Energy-efficient windows (double-glazing and performance frames) to maximise thermal comfort, natural daylighting and views
- Careful lighting design (further refinement for both energy efficiency and "indoor environment quality")
- Selection of non-toxic materials, finishes, adhesives and products to improve Indoor Environmental Quality (IEQ)
- Final brand and model selection for efficient fittings, fixtures and appliances (noting that better options may be available in 1-2 years)
- Water-reuse balance, with an intelligent synergy between the reuse strategies for rainwater and future treated-wastewater supply
- Active transport facilities to encourage healthier living while reducing carbon emissions from transport
- Selective procurement of materials and internal finishings (to minimise any possible environmental and social impacts)
- Management and governance procedures (which will improve sustainability outcomes during operation).

As detailed earlier, the project will be designed under the guidance of BASIX, NatHERS, NCC's Section J Energy Efficiency and also the Willoughby Development Control Plan (Willoughby DCP). This report concludes that the proposed development is suitable, warrants approval, and satisfies SEAR 9 - Ecologically Sustainable Development (ESD), as discussed previously. The report also detailed the many mitigation measures implemented within the design such as water, energy, materials, thermal comfort and ESD strategies (as discussed in this report).

4. Appendix 1 – BASIX and ESD Certificates

BASIX® Certificate

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

Multi Dwelling

Certificate number: 1770964M_02

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 10/09/2020 published by the Department. This document is available at www.basix.nsw.gov.au

Secretary
Date of issue: Thursday, 31 October 2024
To be valid, this certificate must be submitted with a development application or lodged with a complying development certificate application within 3 months of the date of issue.

NSW GOVERNMENT

Project summary	
Project name	44-52 Anderson Street, Chatswood NSW 2067_02
Street address	44-52 ANDERSON STREET CHATSWOOD 2067
Local Government Area	WILLOUGHBY
Plan type and plan number	Strata Plan -
Lot no.	SP 80201, SP 68797, SP 78790
Section no.	-
No. of residential flat buildings	1
Residential flat buildings: no. of dwellings	123
Multi-dwelling housing: no. of dwellings	0
No. of single dwelling houses	0

Project score		
Water	✔ 42	Target 40
Thermal Performance	✔ Pass	Target Pass
Energy	✔ 65	Target 63
Materials	✔ -21	Target n/a

Certificate Prepared by
Name / Company Name: GREENPERCH PTY LTD

ABN (if applicable): 81679640825

Description of project

Project address	
Project name	44-52 Anderson Street, Chatswood NSW 2067_02
Street address	44-52 ANDERSON STREET CHATSWOOD 2067
Local Government Area	WILLOUGHBY
Plan type and plan number	Strata Plan -
Lot no.	SP 80201, SP 68797, SP 78790
Section no.	-

Project type	
No. of residential flat buildings	1
Residential flat buildings: no. of dwellings	123
Multi-dwelling housing: no. of dwellings	0
No. of single dwelling houses	0

Site details	
Site area (m²)	2687
Roof area (m²)	980
Non-residential floor area (m²)	2743
Residential car spaces	256
Non-residential car spaces	40

Common area landscape	
Common area lawn (m²)	65
Common area garden (m²)	2500
Area of indigenous or low water use species (m²)	250

Assessor details and thermal loads	
Assessor number	DMN/19/1921
Certificate number	0009768200
Climate zone	56

Project score			
Water	✔	42	Target 40
Thermal Performance	✔	Pass	Target Pass
Energy	✔	65	Target 63
Materials	✔	-21	Target n/a

Description of project

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

Residential flat buildings - Building1, 123 dwellings, 34 storeys above ground

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
u1101	3	104	9	0	0
u1105	3	104	9	0	0
u1301	3	104	9	0	0
u1305	3	104	9	0	0
u1501	3	104	9	0	0
u1505	3	104	9	0	0
u1701	3	104	9	0	0
u1705	3	104	9	0	0
u1901	3	104	9	0	0
u1905	3	104	9	0	0
u201	3	104	9	0	0
u2101	3	104	9	0	0
u2105	3	104	9	0	0
u2301	3	104	9	0	0
u2305	3	104	9	0	0
u2501	3	157	0	0	0
u2601	3	157	0	0	0
u2701	3	157	0	0	0
u2801	4+	333	0	0	0
u3001	4+	333	0	0	0
u402	3	96	0	0	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
u1102	3	145	10	0	0
u1106	3	145	10	0	0
u1302	3	145	10	0	0
u1306	3	145	10	0	0
u1502	3	145	10	0	0
u1506	3	145	10	0	0
u1702	3	145	10	0	0
u1706	3	145	10	0	0
u1902	3	145	10	0	0
u1906	3	145	10	0	0
u202	3	145	10	0	0
u2102	3	145	10	0	0
u2106	3	145	10	0	0
u2302	3	145	10	0	0
u2306	3	145	10	0	0
u2502	3	160	0	0	0
u2602	3	160	0	0	0
u2702	3	160	0	0	0
u2802	4+	333	0	0	0
u3002	4+	333	0	0	0
u403	2	78	0	0	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
u1103	3	145	10	0	0
u1107	3	145	10	0	0
u1303	3	145	10	0	0
u1307	3	145	10	0	0
u1503	3	145	10	0	0
u1507	3	145	10	0	0
u1703	3	145	10	0	0
u1707	3	145	10	0	0
u1903	3	145	10	0	0
u1907	3	145	10	0	0
u203	3	145	10	0	0
u2103	3	145	10	0	0
u2107	3	145	10	0	0
u2303	3	145	10	0	0
u2307	3	145	10	0	0
u2503	3	157	0	0	0
u2603	3	157	0	0	0
u2703	3	157	0	0	0
u2901	4+	333	0	0	0
u3201	4+	682	0	0	0
u404	2	75	0	0	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
u1104	3	104	9	0	0
u1108	3	104	9	0	0
u1304	3	104	9	0	0
u1308	3	104	9	0	0
u1504	3	104	9	0	0
u1508	3	104	9	0	0
u1704	3	104	9	0	0
u1708	3	104	9	0	0
u1904	3	104	9	0	0
u1908	3	104	9	0	0
u204	3	104	9	0	0
u2104	3	104	9	0	0
u2108	3	104	9	0	0
u2304	3	104	9	0	0
u2308	3	104	9	0	0
u2504	3	160	0	0	0
u2604	3	160	0	0	0
u2704	3	160	0	0	0
u2902	4+	333	0	0	0
u401	1	57	0	0	0
u501	1	57	0	0	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
u502	3	96	0	0	0
u506	2	79	0	0	0
u602	3	96	0	0	0
u606	2	79	0	0	0
u702	3	96	0	0	0
u706	2	79	0	0	0
u802	3	96	0	0	0
u806	2	79	0	0	0
u902	3	145	10	0	0
u906	3	145	10	0	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
u503	2	78	0	0	0
u507	3	96	0	0	0
u603	2	78	0	0	0
u607	3	96	0	0	0
u703	2	78	0	0	0
u707	3	96	0	0	0
u803	2	78	0	0	0
u807	3	96	0	0	0
u903	3	145	10	0	0
u907	3	145	10	0	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
u504	2	75	0	0	0
u508	1	57	0	0	0
u604	2	75	0	0	0
u608	1	57	0	0	0
u704	2	75	0	0	0
u708	1	57	0	0	0
u804	2	75	0	0	0
u808	1	57	0	0	0
u904	3	104	9	0	0
u908	3	104	9	0	0

Dwelling no.	No. of bedrooms	Conditioned floor area (m²)	Unconditioned floor area (m²)	Area of garden & lawn (m²)	Indigenous species (min area m²)
u505	2	75	0	0	0
u601	1	57	0	0	0
u605	2	75	0	0	0
u701	1	57	0	0	0
u705	2	75	0	0	0
u801	1	57	0	0	0
u805	2	75	0	0	0
u901	3	104	9	0	0
u905	3	104	9	0	0

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)
Lift bank (No. 1)	-
Basement Car park	14513
Bin Holding area + FOGO rooms	210
Plant room	712
Residential Lobby	161
Lift bank (No. 2)	-

Common area	Floor area (m²)
Changing Rooms	41
Substation	39
Bulky Waste	12
Fire control room	30
Service Lobby	25

Common area	Floor area (m²)
Suana and AWC	31
Pump and Tank room	77
Residential Chute discharge	53
Fire Pump room	63
Hallway upper levels	1171

Schedule of BASIX commitments

1. Commitments for Residential flat buildings - Building1

- (a) Buildings
  - (i) Materials
- (b) Dwellings
  - (i) Water
  - (ii) Energy
  - (iii) Thermal Performance
- (c) Common areas and central systems/facilities
  - (i) Water
  - (ii) Energy

2. Commitments for single dwelling houses

- (a) Dwellings
  - (i) Water
  - (ii) Energy
  - (iii) Thermal Performance and Materials

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

- (b) Common areas and central systems/facilities
  - (i) Water
  - (ii) Energy

Schedule of BASIX commitments

The commitments set out below regulate how the proposed development is to be carriedout. 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) Buildings

(i) Materials	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) 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 “Floor types”, “External wall types”, “Internal wall types”, “Ceiling and roof types”, “Frames” and “Glazing” tables below.			✔
(b) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all specifications included in the tables below.		✔	
(c) The applicant must construct the floors, walls, roof, ceiling and roof, windows, glazed doors and skylights of the development in accordance with the specifications listed in the tables below. In the case of glazing, a 5% variance from the area values listed in the “Frames” and “Glazing” tables is permitted.	✔	✔	✔
(d) The applicant must show through receipts that the materials purchased for construction are consistent with the specifications listed in the below tables.			✔

Floor types			
Floor type	**Area (m2)**	**Insulation**	**Low emissions option**
floors above habitable rooms, frame: suspended concrete slab	15837	-	-
suspended floor above open subfloor, frame: suspended concrete slab	307	foil-foam composite board	-
suspended floor above enclosed subfloor, frame: suspended concrete slab	308	-	-

External wall types				
External wall type	**Construction type**	**Area (m2)**	**Low emissions option**	**Insulation**
External wall type 1	concrete panel/ plasterboard,frame:light steel frame	4530	-	rockwool batts, roll or pump-in
External wall type 2	framed (metal clad),frame:light steel frame	720	-	rockwool batts, roll or pump-in

Internal wall types			
Internal wall type	**Construction type**	**Area (m2)**	**Insulation**
Internal wall type 1	plasterboard, frame:light steel frame	3360	-
Internal wall type 2	75 mm AAC panel, frame:light steel frame	1130	-

Reinforcement concrete frames/columns		
Building has reinforced concrete frame/columns?	**Volume (m³)**	**Low emissions option**
yes	1800	-

Ceiling and roof types			
Ceiling and roof type	**Area (m²)**	**Roof Insulation**	**Ceiling Insulation**
concrete - plasterboard internal, frame: light steel frame	980	-	foil-foam composite board

Glazing types			Frame types				
Single glazing (m²)	**Double glazing (m²)**	**Triple glazing (m²)**	**Aluminium frames (m²)**	**Timber frames (m²)**	**uPVC frames (m²)**	**Steel frames (m²)**	**Composite frames (m²)**
0	7120	0	7120	0	0	-	0

(b) 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	4 star (> 4.5 but <= 6 L/min)	4 star	5 star	5 star	-	not specified	4 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**
All dwellings	No alternative water supply	-	-	-	-	-	-	-

(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.		✔	✔
(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;		✔	

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(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 (No. 1)	individual fan, ducted to façade or roof	interlocked to light with timer off	individual fan, ducted to façade or roof	manual switch on/off	individual fan, ducted to façade or roof	interlocked to light

	Cooling		Heating		Natural lighting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bathrooms or toilets	Main kitchen
u3201	1-phase airconditioning - ducted / EER 3.0 - 3.5	1-phase airconditioning - ducted / EER 3.0 - 3.5	1-phase airconditioning - ducted / EER 2.5 - 3.0	1-phase airconditioning - ducted / EER 2.5 - 3.0	5	no
u2801, u2802, u2901, u2902, u3001, u3002	1-phase airconditioning - ducted / EER 3.0 - 3.5	1-phase airconditioning - ducted / EER 3.0 - 3.5	1-phase airconditioning - ducted / EER 2.5 - 3.0	1-phase airconditioning - ducted / EER 2.5 - 3.0	2	no
u401, u501, u508, u601, u608, u701, u708, u801, u808	1-phase airconditioning - ducted / EER 3.0 - 3.5	1-phase airconditioning - ducted / EER 3.0 - 3.5	1-phase airconditioning - ducted / EER 2.5 - 3.0	1-phase airconditioning - ducted / EER 2.5 - 3.0	0	no
u402, u502, u507, u602, u607, u702, u707, u802, u807	1-phase airconditioning - ducted / EER 3.0 - 3.5	1-phase airconditioning - ducted / EER 3.0 - 3.5	1-phase airconditioning - ducted / EER 2.5 - 3.0	1-phase airconditioning - ducted / EER 2.5 - 3.0	1	no
u1102, u1103, u1106, u1107, u1302, u1303, u1306, u1307, u1502, u1503, u1506, u1507, u1702, u1703, u1706, u1707,	1-phase airconditioning - ducted / EER 3.0 - 3.5	1-phase airconditioning - ducted / EER 3.0 - 3.5	1-phase airconditioning - ducted / EER 2.5 - 3.0	1-phase airconditioning - ducted / EER 2.5 - 3.0	1	yes

	Cooling		Heating		Natural lighting	
Dwelling no.	living areas	bedroom areas	living areas	bedroom areas	No. of bathrooms or toilets	Main kitchen
u1902, u1903, u1906, u1907, u202, u203, u2102, u2103, u2106, u2107, u2302, u2303, u2306, u2307, u2501, u2502, u2503, u2504, u2601, u2602, u2603, u2604, u2701, u2702, u2703, u2704, u902, u903, u906, u907						
All other dwellings	1-phase airconditioning - ducted / EER 3.0 - 3.5	1-phase airconditioning - ducted / EER 3.0 - 3.5	1-phase airconditioning - ducted / EER 2.5 - 3.0	1-phase airconditioning - ducted / EER 2.5 - 3.0	0	yes

	Individual pool			Individual spa		Appliances other efficiency measures				
Dwelling no.	Pool heating system	Pool Pump	Timer	Spa heating system	Timer	Kitchen cooktop/oven	Dishwasher	Clothes dryer	Indoor or sheltered clothes drying line	Private outdoor or unsheltered clothes drying line
All dwellings	-	-	-	-	-	induction cooktop & electric oven	4 star	8.0 star	no	no

(iii) Thermal Performance	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.			

(iii) Thermal Performance	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(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.	✔	✔	✔
(i) The applicant must show on The plans accompanying The development application for The proposed development, The locations of ceiling fans set out in The Assessor Certificate.	✔		
(j) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), the locations of ceiling fans set out in the Assessor Certificate.		✔	

	Thermal loads		
Dwelling no.	Area adjusted heating load (in MJ/m²/yr)	Area adjusted cooling load (in MJ/m²/yr)	Area adjusted total load (in MJ/m²/yr)
u1101	12.10	18.30	30.400
u1102	2.80	16.80	19.600
u1103	5.40	19.60	25.000
u1104	23.30	14.30	37.600
u1105	24.10	11.40	35.500
u1106	19.20	15.70	34.900
u1107	11.50	14.10	25.600
u1108	12.80	21.30	34.100

	Thermal loads		
Dwelling no.	Area adjusted heating load (in MJ/m²/yr)	Area adjusted cooling load (in MJ/m²/yr)	Area adjusted total load (in MJ/m²/yr)
u1301	12.30	18.30	30.600
u1302	2.90	16.80	19.700
u1303	5.50	19.20	24.700
u1304	23.60	13.60	37.200
u1305	24.50	11.40	35.900
u1306	19.50	15.80	35.300
u1307	12.10	14.10	26.200
u1308	13.10	21.00	34.100
u1501	12.40	18.30	30.700
u1502	3.00	16.70	19.700
u1503	5.70	19.00	24.700
u1504	23.90	14.00	37.900
u1505	24.70	11.40	36.100
u1506	19.70	16.00	35.700
u1507	12.30	14.20	26.500
u1508	13.20	21.40	34.600
u1701	12.70	18.20	30.900
u1702	3.10	16.90	20.000
u1703	5.90	18.80	24.700
u1704	24.30	13.40	37.700
u1705	25.10	11.70	36.800
u1706	20.10	15.70	35.800
u1707	12.60	14.10	26.700
u1708	13.60	20.90	34.500
u1901	12.90	17.70	30.600
u1902	3.20	16.50	19.700
u1903	6.00	18.70	24.700
u1904	24.60	13.20	37.800
u1905	25.30	11.80	37.100
u1906	20.30	15.70	36.000
u1907	12.80	13.70	26.500

	Thermal loads		
Dwelling no.	Area adjusted heating load (in MJ/m²/yr)	Area adjusted cooling load (in MJ/m²/yr)	Area adjusted total load (in MJ/m²/yr)
u1908	13.90	20.20	34.100
u201	10.40	18.00	28.400
u202	1.80	16.30	18.100
u203	3.70	17.40	21.100
u204	23.30	13.40	36.700
u2101	13.10	17.70	30.800
u2102	3.30	16.30	19.600
u2103	6.10	18.40	24.500
u2104	24.50	13.50	38.000
u2105	25.40	11.60	37.000
u2106	20.60	15.70	36.300
u2107	13.00	13.70	26.700
u2108	13.80	20.00	33.800
u2301	13.90	16.40	30.300
u2302	3.40	16.30	19.700
u2303	6.30	18.40	24.700
u2304	24.70	13.20	37.900
u2305	25.10	11.80	36.900
u2306	20.80	15.80	36.600
u2307	13.20	13.70	26.900
u2308	14.00	19.90	33.900
u2501	5.00	19.70	24.700
u2502	11.00	15.10	26.100
u2503	14.20	13.70	27.900
u2504	18.50	13.90	32.400
u2601	5.30	19.60	24.900
u2603	14.50	13.30	27.800
u2604	18.70	13.80	32.500
u2701	5.10	19.80	24.900
u2703	14.30	13.60	27.900
u2704	18.60	14.00	32.600

	Thermal loads		
Dwelling no.	Area adjusted heating load (in MJ/m²/yr)	Area adjusted cooling load (in MJ/m²/yr)	Area adjusted total load (in MJ/m²/yr)
u2801	10.80	12.50	23.300
u2802	17.10	11.30	28.400
u2901	10.50	12.40	22.900
u2902	17.00	11.50	28.500
u3001	19.40	18.00	37.400
u3002	18.20	11.80	30.000
u3201	24.60	11.30	35.900
u401	6.30	17.50	23.800
u402	2.80	16.30	19.100
u403	5.60	10.50	16.100
u404	11.60	20.10	31.700
u501	6.40	17.40	23.800
u502	2.80	16.40	19.200
u503	5.90	10.20	16.100
u504	11.80	20.40	32.200
u505	13.50	15.00	28.500
u506	22.60	9.00	31.600
u507	16.90	7.70	24.600
u508	14.70	19.00	33.700
u601	6.80	17.00	23.800
u602	3.00	16.00	19.000
u603	6.10	10.50	16.600
u604	12.40	19.70	32.100
u605	14.10	14.40	28.500
u606	13.70	9.30	23.000
u607	11.90	9.30	21.200
u608	9.30	20.20	29.500
u701	6.80	16.90	23.700
u702	3.10	16.20	19.300
u703	6.30	10.50	16.800
u704	12.40	19.90	32.300

	Thermal loads		
Dwelling no.	Area adjusted heating load (in MJ/m²/yr)	Area adjusted cooling load (in MJ/m²/yr)	Area adjusted total load (in MJ/m²/yr)
u705	14.20	14.50	28.700
u706	13.50	9.30	22.800
u707	9.30	9.70	19.000
u708	9.50	20.00	29.500
u801	7.10	16.70	23.800
u802	3.20	15.90	19.100
u803	6.40	10.40	16.800
u804	12.50	17.40	29.900
u805	13.70	13.50	27.200
u806	14.20	9.30	23.500
u807	11.90	7.80	19.700
u808	9.60	19.90	29.500
u901	11.80	18.40	30.200
u902	2.70	17.20	19.900
u903	5.10	19.40	24.500
u904	23.10	14.80	37.900
u905	23.80	11.40	35.200
u906	18.80	16.00	34.800
u907	11.20	14.50	25.700
u908	12.50	21.10	33.600
All other dwellings	11.20	14.70	25.900

(c) 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	4 star (> 4.5 but <= 6 L/min)	4 star	5 star	no common laundry facility

Central systems	Size	Configuration	Connection (to allow for...)
Swimming pool (No. 1)	Volume: 198 kLs	Location: Building1 Pool shaded: no	-
Central water tank - rainwater or stormwater (No. 1)	5000	To collect run-off from at least: - 500 square metres of roof area of buildings in the development - 0 square metres of impervious area in the development - 0 square metres of garden/lawn area in the development - 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 2565 square metres of common landscaped area on the site - car washing in 0 car washing bays on the site
Fire sprinkler system (No. 1)	-	So that fire sprinkler test water is contained within the fire sprinkler system for re-use, rather than disposed.	-
Fire sprinkler system (No. 2)	-	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
Lift bank (No. 1)	-	-	light-emitting diode	connected to lift call button	yes
Changing Rooms	ventilation supply only	none i.e., continuous	light-emitting diode	zoned switching	yes
Suana and AWC	ventilation (supply + exhaust)	time clock or BMS controlled	light-emitting diode	zoned switching	yes
Basement Car park	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	light-emitting diode	zoned switching with motion sensor	yes
Substation	no mechanical ventilation	-	light-emitting diode	motion sensors	yes
Pump and Tank room	ventilation supply only	none i.e., continuous	light-emitting diode	motion sensors	yes
Bin Holding area + FOGO rooms	ventilation exhaust only	-	light-emitting diode	motion sensors	yes
Bulky Waste	ventilation exhaust only	-	light-emitting diode	motion sensors	yes
Residential Chute discharge	ventilation exhaust only	-	light-emitting diode	motion sensors	yes
Plant room	ventilation (supply + exhaust)	thermostatically controlled	light-emitting diode	motion sensors	yes
Fire control room	ventilation supply only	none i.e., continuous	light-emitting diode	motion sensors	yes
Fire Pump room	ventilation supply only	none i.e., continuous	light-emitting diode	motion sensors	yes
Residential Lobby	air conditioning system	time clock or BMS controlled	light-emitting diode	motion sensors	yes
Service Lobby	ventilation supply only	time clock or BMS controlled	light-emitting diode	zoned switching with motion sensor	yes
Hallway upper levels	ventilation supply only	time clock or BMS controlled	light-emitting diode	zoned switching with motion sensor	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**
Lift bank (No. 2)	-	-	light-emitting diode	connected to lift call button	yes

Central energy systems	Type	Specification
Swimming pool (No. 1)	Heating source: electric heat pump	Pump controlled by timer: yes
Sauna (No. 1)	Heating source: electric infrared	Efficiency measure: manual on / timer off
Lift bank (No. 1)	gearless traction with V V V F motor and regenerative drive	Number of levels (including basement): 28 number of levels from the bottom of the lift shaft to the top of the lift shaft: 41 number of lifts: 2 lift load capacity: >= 1001 kg but <= 1500kg
Lift bank (No. 2)	gearless traction with V V V F motor and regenerative drive	Number of levels (including basement): 29 number of levels from the bottom of the lift shaft to the top of the lift shaft: 39 number of lifts: 2 lift load capacity: >= 1001 kg but <= 1500kg
Central hot water system (No. 1)	electric heat pump – air sourced	Piping insulation (ringmain & supply risers): (a) Piping external to building: R1.0 (~38 mm); (b) Piping internal to building: R1.0 (~38 mm) (c) Unit Efficiency: 3.0 < COP <= 3.5

2. Commitments for single dwelling houses

(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.	✔	✔	✔

(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.		✔	✔

(ii) Energy	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(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.		✔	✔
(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".		✔	
(iii) Thermal Performance and Materials	**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.			

(iii) Thermal Performance and Materials	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(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.	✔	✔	✔
(i) The applicant must show on The plans accompanying The development application for The proposed development, The locations of ceiling fans set out in The Assessor Certificate.	✔		
(j) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), the locations of ceiling fans set out in the Assessor Certificate.		✔	

3. 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	4 star (> 4.5 but <= 6 L/min)	4 star	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): 60 peak kW
Other	Building management system 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).

Nationwide House Energy Rating Scheme®
Class 2 Summary
NatHERS® Certificate No. 0009768200

Generated on 30 Oct 2024 using BERS Pro v5.1.7 (3.22)

Property

Address	44-52 Anderson Street, Chatswood , NSW , 2067
Lot/DP	Lot - DP SP 80201, SP 68797, SP 78790
NatHERS Climate Zone	56 Mascot (Sydney Airport)

Accredited assessor

Name	Martin Pinson
Business name	GREENPERCH
Email	consulting@greenperch.com.au
Phone	0422144603
Accreditation No.	DMN/19/1921
Assessor Accrediting Organisation	

Design Matters National

Verification

To verify this certificate, scan the QR code or visit hstar.com.au/QR/Generate?p=xmxwadSzl . When using either link, ensure you are visiting hstar.com.au

National Construction Code (NCC) requirements

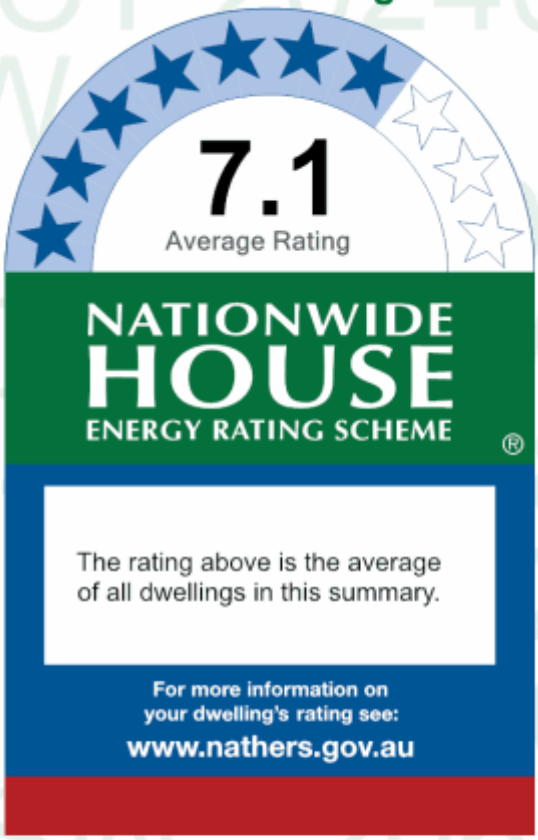
The NCC allows the use of NatHERS accredited software to comply with the energy efficiency requirements for houses (Class 1 buildings) and apartments (Class 2 sole-occupancy units and Class 4 parts of buildings). The applicable requirements for houses are detailed in Specification 42 of NCC Volume Two. For apartments the requirements are detailed in clauses J3D3 and J3D15 of NCC Volume One.

NCC 2022 includes enhanced thermal performance requirements for houses and apartments. It also includes a new whole-of-home annual energy use budget which applies to the major equipment in the home.

The NCC, and associated ABCB Standards and support material, can be accessed at www.abcb.gov.au.

Note, variations and additions to the NCC energy efficiency requirements may apply in some states and territories.

Thermal performance Star rating



NCC heating and cooling maximum loads (MJ/m²/p.a.)

Limits taken from ABCB Standard 2022

	Heating	Cooling
Modelled block average	12.9	15.4
Maximum block limit	N/A	N/A

Whole of Home performance rating

No Whole of Home performance rating conducted for this summary certificate or not completed for all dwellings

Summary of all dwellings

Certificate number and link	Unit Number	Heating load (load limit) [MJ/m²/p.a.]	Cooling load (load limit) [MJ/m²/p.a.]	Total load [MJ/m²/p.a.]	Star Rating	Whole of Home Rating
0009785353-01	201	10.4 (N/A)	18.0 (N/A)	28.4	7.2	0
0009785288-01	202	1.8 (N/A)	16.3 (N/A)	18.0	8.3	0

Summary of all dwellings (continued)

Certificate number and link	Unit Number	Heating load (load limit) [MJ/m^2/p.a.]	Cooling load (load limit) [MJ/m^2/p.a.]	Total load [MJ/m^2/p.a.]	Star Rating	Whole of Home Rating
0009785262-01	203	3.7 (N/A)	17.4 (N/A)	21.1	7.9	0
0009785338-01	204	23.3 (N/A)	13.4 (N/A)	36.6	6.2	0
0009786831-01	401	6.3 (N/A)	17.5 (N/A)	23.8	7.7	0
0009786773-01	402	2.8 (N/A)	16.3 (N/A)	19.1	8.2	0
0009786658-01	403	5.6 (N/A)	10.5 (N/A)	16.1	8.4	0
0009786856-01	404	11.6 (N/A)	20.1 (N/A)	31.7	6.8	0
0009786815-01	501	6.4 (N/A)	17.4 (N/A)	23.9	7.6	0
0009786716-01	502	2.8 (N/A)	16.4 (N/A)	19.2	8.2	0
0009786641-01	503	5.9 (N/A)	10.2 (N/A)	16.0	8.5	0
0009786823-01	504	11.8 (N/A)	20.4 (N/A)	32.2	6.7	0
0009786666-01	505	13.5 (N/A)	15.0 (N/A)	28.5	7.2	0
0009786690-01	506	22.6 (N/A)	9.0 (N/A)	31.6	6.8	0
0009786674-01	507	16.9 (N/A)	7.7 (N/A)	24.7	7.5	0
0009786625-01	508	14.7 (N/A)	19.0 (N/A)	33.7	6.5	0
0009786864-01	601	6.8 (N/A)	17.0 (N/A)	23.8	7.7	0
0009786799-01	602	3.0 (N/A)	16.0 (N/A)	19.1	8.2	0
0009786708-01	603	6.1 (N/A)	10.5 (N/A)	16.5	8.4	0
0009786880-01	604	12.4 (N/A)	19.7 (N/A)	32.1	6.7	0
0009786682-01	605	14.1 (N/A)	14.4 (N/A)	28.6	7.1	0
0009786765-01	606	13.7 (N/A)	9.3 (N/A)	22.9	7.8	0
0009786872-01	607	11.9 (N/A)	9.3 (N/A)	21.2	7.9	0
0009786757-01	608	9.3 (N/A)	20.2 (N/A)	29.5	7.1	0
0009786781-01	701	6.8 (N/A)	16.9 (N/A)	23.7	7.7	0
0009786740-01	702	3.1 (N/A)	16.2 (N/A)	19.3	8.2	0
0009786898-01	703	6.3 (N/A)	10.5 (N/A)	16.7	8.4	0
0009786807-01	704	12.4 (N/A)	19.9 (N/A)	32.3	6.7	0
0009786633-01	705	14.2 (N/A)	14.5 (N/A)	28.7	7.1	0
0009786732-01	706	13.5 (N/A)	9.3 (N/A)	22.8	7.8	0
0009786849-01	707	9.3 (N/A)	9.7 (N/A)	19.0	8.2	0
0009786724-01	708	9.5 (N/A)	20.0 (N/A)	29.5	7.1	0
0009768102-02	801	7.1 (N/A)	16.7 (N/A)	23.8	7.7	0
0009768136-02	802	3.2 (N/A)	15.9 (N/A)	19.1	8.2	0
0009768169-02	803	6.4 (N/A)	10.4 (N/A)	16.9	8.4	0
0009768151-02	804	12.5 (N/A)	17.4 (N/A)	29.9	7	0

0009768037-02	805	13.7 (N/A)	13.5 (N/A)	27.2	7.3	0
0009768185-02	806	14.2 (N/A)	9.3 (N/A)	23.5	7.7	0
0009768128-02	807	11.9 (N/A)	7.8 (N/A)	19.7	8.1	0
0009768094-02	808	9.6 (N/A)	19.9 (N/A)	29.6	7	0
0009784984-01	901	11.8 (N/A)	18.4 (N/A)	30.2	6.9	0
0009785445-01	902	2.7 (N/A)	17.2 (N/A)	19.9	8.1	0
0009785395-01	903	5.1 (N/A)	19.4 (N/A)	24.6	7.6	0
0009785171-01	904	23.1 (N/A)	14.8 (N/A)	37.9	6	0
0009784927-01	905	23.8 (N/A)	11.4 (N/A)	35.2	6.4	0
0009785601-01	906	18.8 (N/A)	16.0 (N/A)	34.8	6.4	0
0009785650-01	907	11.2 (N/A)	14.5 (N/A)	25.7	7.4	0
0009784992-01	908	12.5 (N/A)	21.1 (N/A)	33.6	6.6	0
0009785015-01	1101	12.1 (N/A)	18.3 (N/A)	30.4	6.9	0
0009785478-01	1102	2.8 (N/A)	16.8 (N/A)	19.6	8.1	0
0009785429-01	1103	5.4 (N/A)	19.6 (N/A)	25.0	7.5	0
0009785247-01	1104	23.3 (N/A)	14.3 (N/A)	37.6	6.1	0
0009784935-01	1105	24.1 (N/A)	11.4 (N/A)	35.5	6.3	0
0009785627-01	1106	19.2 (N/A)	15.7 (N/A)	34.9	6.4	0
0009785676-01	1107	11.5 (N/A)	14.1 (N/A)	25.6	7.4	0
0009785023-01	1108	12.8 (N/A)	21.3 (N/A)	34.1	6.4	0
0009785056-01	1301	12.3 (N/A)	18.3 (N/A)	30.7	6.9	0
0009785502-01	1302	2.9 (N/A)	16.8 (N/A)	19.7	8.1	0
0009785452-01	1303	5.5 (N/A)	19.2 (N/A)	24.7	7.5	0
0009785270-01	1304	23.6 (N/A)	13.6 (N/A)	37.2	6.1	0
0009784976-01	1305	24.5 (N/A)	11.4 (N/A)	35.8	6.3	0
0009785643-01	1306	19.5 (N/A)	15.8 (N/A)	35.3	6.3	0
0009785692-01	1307	12.1 (N/A)	14.1 (N/A)	26.2	7.4	0
0009785049-01	1308	13.1 (N/A)	21.0 (N/A)	34.1	6.4	0
0009785080-01	1501	12.4 (N/A)	18.3 (N/A)	30.7	6.9	0
0009785528-01	1502	3.0 (N/A)	16.7 (N/A)	19.7	8.1	0
0009785486-01	1503	5.7 (N/A)	19.0 (N/A)	24.7	7.5	0
0009785304-01	1504	23.9 (N/A)	14.0 (N/A)	37.9	6	0
0009785007-01	1505	24.7 (N/A)	11.4 (N/A)	36.0	6.3	0
0009785668-01	1506	19.7 (N/A)	16.0 (N/A)	35.7	6.3	0
0009785718-01	1507	12.3 (N/A)	14.2 (N/A)	26.5	7.4	0
0009785072-01	1508	13.2 (N/A)	21.4 (N/A)	34.7	6.4	0
0009785114-01	1701	12.7 (N/A)	18.2 (N/A)	30.9	6.9	0
0009785544-01	1702	3.1 (N/A)	16.9 (N/A)	20.0	8.1	0

0009785510-01	1703	5.9 (N/A)	18.8 (N/A)	24.7	7.5	0
0009785312-01	1704	24.3 (N/A)	13.4 (N/A)	37.7	6	0
0009785031-01	1705	25.1 (N/A)	11.7 (N/A)	36.8	6.2	0
0009785684-01	1706	20.1 (N/A)	15.7 (N/A)	35.8	6.3	0
0009785155-01	1707	12.6 (N/A)	14.1 (N/A)	26.7	7.3	0
0009785106-01	1708	13.6 (N/A)	20.9 (N/A)	34.5	6.4	0
0009785130-01	1901	12.9 (N/A)	17.7 (N/A)	30.6	6.9	0
0009785577-01	1902	3.2 (N/A)	16.5 (N/A)	19.7	8.1	0
0009785536-01	1903	6.0 (N/A)	18.7 (N/A)	24.6	7.6	0
0009785346-01	1904	24.6 (N/A)	13.2 (N/A)	37.8	6	0
0009785064-01	1905	25.3 (N/A)	11.8 (N/A)	37.1	6.1	0
0009785700-01	1906	20.3 (N/A)	15.7 (N/A)	36.0	6.3	0
0009785163-01	1907	12.8 (N/A)	13.7 (N/A)	26.5	7.4	0
0009785122-01	1908	13.9 (N/A)	20.2 (N/A)	34.2	6.4	0
0009785148-01	2101	13.1 (N/A)	17.7 (N/A)	30.9	6.9	0
0009785593-01	2102	3.3 (N/A)	16.3 (N/A)	19.5	8.2	0
0009785551-01	2103	6.1 (N/A)	18.4 (N/A)	24.5	7.6	0
0009785379-01	2104	24.5 (N/A)	13.5 (N/A)	38.0	6	0
0009785098-01	2105	25.4 (N/A)	11.6 (N/A)	37.0	6.1	0
0009785726-01	2106	20.6 (N/A)	15.7 (N/A)	36.2	6.2	0
0009785205-01	2107	13.0 (N/A)	13.7 (N/A)	26.7	7.3	0
0009784901-01	2108	13.8 (N/A)	20.0 (N/A)	33.9	6.5	0
0009784885-01	2301	13.9 (N/A)	16.4 (N/A)	30.4	6.9	0
0009785619-01	2302	3.4 (N/A)	16.3 (N/A)	19.7	8.1	0
0009785585-01	2303	6.3 (N/A)	18.4 (N/A)	24.7	7.5	0
0009785403-01	2304	24.7 (N/A)	13.2 (N/A)	37.9	6	0
0009768193-04	2305	25.1 (N/A)	11.8 (N/A)	36.9	6.1	0
0009768060-02	2306	20.8 (N/A)	15.8 (N/A)	36.6	6.2	0
0009785221-01	2307	13.2 (N/A)	13.7 (N/A)	26.9	7.3	0
0009784950-01	2308	14.0 (N/A)	19.9 (N/A)	33.9	6.5	0
0009785197-01	2501	5.0 (N/A)	19.7 (N/A)	24.8	7.5	0
0009785320-01	2502	11.0 (N/A)	15.1 (N/A)	26.2	7.4	0
0009785387-01	2503	14.2 (N/A)	13.7 (N/A)	27.8	7.2	0
0009785254-01	2504	18.5 (N/A)	13.9 (N/A)	32.4	6.7	0
0009785189-01	2601	5.3 (N/A)	19.6 (N/A)	24.9	7.5	0
0009785296-01	2602	11.2 (N/A)	14.7 (N/A)	25.9	7.4	0
0009785361-01	2603	14.5 (N/A)	13.3 (N/A)	27.8	7.2	0
0009785239-01	2604	18.7 (N/A)	13.8 (N/A)	32.5	6.7	0

0009768052-02	2701	5.1 (N/A)	19.8 (N/A)	24.9	7.5	0
0009768078-02	2702	11.2 (N/A)	14.7 (N/A)	25.9	7.4	0
0009768045-02	2703	14.3 (N/A)	13.6 (N/A)	27.9	7.2	0
0009768086-02	2704	18.6 (N/A)	14.0 (N/A)	32.6	6.7	0
0009785494-01	2801	10.8 (N/A)	12.5 (N/A)	23.3	7.7	0
0009785460-01	2802	17.1 (N/A)	11.3 (N/A)	28.4	7.2	0
0009785411-01	2901	10.5 (N/A)	12.4 (N/A)	22.9	7.8	0
0009785437-01	2902	17.0 (N/A)	11.5 (N/A)	28.5	7.2	0
0009768177-02	3001	19.4 (N/A)	18.0 (N/A)	37.4	6.1	0
0009768144-02	3002	18.2 (N/A)	11.8 (N/A)	30.0	7	0
0009768110-02	3201	24.6 (N/A)	11.3 (N/A)	36.0	6.3	0

Explanatory notes

About this ratings

The thermal performance star rating in this Certificate is the average rating of all NCC Class 2 dwellings in an apartment block. Individual unit ratings are listed in the ‘Summary of all dwellings’ section of this Certificate.
NatHERS ratings use computer modelling to evaluate a home’s energy efficiency and performance. They use localised climate data and standard assumptions on how people use their home to predict the energy loads and societal cost. The thermal performance star rating uses the home’s building specifications, layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings) to predict the heating and cooling energy loads.
For more details about an individual dwelling’s assessment, refer to the individual dwelling’s NatHERS Certificate (accessible via link).

Accredited Assessors

For high quality NatHERS Certificates, always use an accredited or licenced assessor registered with an Assessor Accrediting Organisation (AAO). AAOs have strict quality assurance processes, and professional development requirements ensuring consistently high standards for assessments.
Non-accredited assessors (Raters) have no ongoing training requirements and are not quality assured.
Licensed assessors in the Australian Capital Territory (ACT) can produce assessments for regulatory purposes only, using endorsed software, as listed on the ACT licensing register.
Any queries about this report should be directed to the assessor. If the assessor is unable to address questions or concerns, contact the AAO specified on the front of this certificate.

Disclaimer

The NatHERS Certificate format is developed by the NatHERS Administrator. However, the content in certificates is entered by the assessor. It is the assessor’s responsibility to use NatHERS accredited software correctly and follow the NatHERS Technical Note to produce a NatHERS Certificate.
The predicted annual energy use, cost and greenhouse gas emissions in this NatHERS Certificate are an estimate based on an assessment of the dwelling’s design by the assessor. It is not a prediction of actual energy use, cost or emissions. The information and ratings may be used to compare how other dwellings are likely to perform when used in a similar way.
Information presented in this report relies on a range of standard assumptions (both embedded in NatHERS accredited software and made by the assessor who prepared this report), including assumptions about occupancy, behaviour, appliance performance, indoor air temperature and local climate.
Not all assumptions made by the assessor while using the NatHERS accredited software tool are presented in this report and further details or data files may be available from the assessor.