



# SMART AND ENVIRONMENTALLY EFFICIENT DESIGN STATEMENT

263-281 Pennant Hills Road, Carlingford NSW

## Enjoy Comfortable Living with Energy-Efficient Solutions

At The Carling your apartment has been specially designed to meet stringent heating, cooling and energy efficiency standards. This ensures that residents and visitors experience enhanced comfort while benefitting from lower energy bills<sup>i</sup>.

- ✓ For apartments an average 7.4 star rating has been achieved across the project under the National Home Energy Rating Scheme which exceeds the new higher standard of 7 stars.
- ✓ This outcome comes down to great design and inclusions – it requires that key components of the building are targeted for comfortable living conditions including:
  - The building shell and insulation – hot and cold conditions are managed passively by clever design, insulation, and materials on the façade of the building.
  - Windows – this project includes high-performance double glazed window systems designed to achieve exceptionally high thermal performance for occupants while preserving stunning views.
  - Air tightness and ventilation – the building is specially designed to ensure the circulation of fresh air throughout the premises. This is achieved through a combination of features, including awning windows and mechanical systems, while also employing a close-fitting design to effectively manage and minimize unwanted air leaks.
- ✓ Comfortable, modern, and highly efficient air conditioning systems that will produce four times the heating and cooling energy for every unit of energy going in. The system will also use lower environmental impact refrigerant. This means comfort with comparatively lower electricity costs<sup>ii</sup> and lower costs to the environment. Savings can be in the order of 30% compared to lower efficiency systems.
- ✓ Lighting is designed to be comfortable and functional whilst also being efficient - energy efficient LED globes are used extensively, and use of timers and motion sensors turns many lights on and off when not required.

- ✓ The hot water system is centralized electric heat pump technology only using gas as required for backup. This type of system can be up to three times as energy efficient as a pure gas based hot water system. By utilising centralized systems, energy can be distributed more effectively, ensuring that hot water is readily available to all residents while minimizing the overall energy consumption.
- ✓ New generation ‘heat pump condensing’ clothes dryers, which are 8 star rated and around three times as efficient as regular dryers<sup>iii</sup>, are provided to reduce energy consumption and minimize moisture penetration into apartments. Additionally, matched washing machines are planned to be efficient 4-star models, further contributing to energy efficiency within the building.
- ✓ Dishwashers are rated 4 stars at the upper end of efficiency ratings.
- ✓ Pool heating systems utilize highly energy-efficient electric heat pumps, which are over three times more energy efficient compared to gas pool and spa heating. This approach not only reduces environmental impact but also leads to significantly lower strata costs over time.
- ✓ Lifts are high speed, comfortable and ‘A Class’ energy rated using energy regeneration, efficient hoisting, efficient lighting and with the ability to power down when on standby.
- ✓ Common area and car park ventilation technologies are being implemented to reduce and reuse energy, also ultimately resulting in reduced strata costs.

### Renewable electricity from roof top solar systems

- Roof top solar panel systems will be incorporated on the roof of each building where possible with a target for total system size of 155kW.
- A system this size would produce in the order of 215,000 kWh of electrical energy per year minimizing greenhouse gas emissions by about 172 tons CO2 per annum<sup>iv</sup> and further reducing strata costs.
- The electrical energy supply from the solar panel systems would be used primarily to provide power to common area services such as hot water, pool heating and car park lighting and ventilation.

The energy network is carefully managed by an ‘embedded network operator’ – Meriton Energy. Meriton Energy aims to manage the buildings’ energy demands efficiently and to make sure residents and tenants get affordable and hassle-free power that’s better for the planet.



Artist's impression

## Water smart

Fixtures and appliances that use valuable drinking water are all highly rated under the independent Water Efficiency Labelling System (WELS). This means that the right flow of water for the activity is provided but without unnecessary wastage – water savings compared to regular lower rated fixtures are in the order of 10-40%<sup>v</sup> benefitting the environment and lowering water bills.

- ✔ Taps are rated 6 star.
- ✔ Showers are rated 4 star.
- ✔ Toilets are rated 4 star.
- ✔ Washing machines are rated 4 star.
- ✔ Dishwashers are rated 5 star.

*The project includes rainwater harvesting to collect and reuse rainwater which reduces the demand for drinking water.*

- ✔ Rainwater storage for 40,000L is being included to collect water from about 2,000 sqm of roof space.
- ✔ This rainwater will then be reused to support irrigation of the large, landscaped areas and to supply four car wash bays.

## Connected and sustainable transport - active and green travel options

The connected location of The Carling means that you can leave your car at home for much of the time if you choose – and if you are excited about EVs then we have you covered.

- ✔ The Carling is only 350m to the new Carlingford light rail stop. This frequent light rail service will provide easy public transport access to Parramatta Square and the Westmead Health District. Additionally, regular bus services are available along Pennant Hills Road, including to important working locations such as Macquarie Park.
- ✔ Direct easy walking access is available to a new major supermarket and retail services on the site.
- ✔ A quick and easy walk to large green spaces at Cox Park and Galaringi natural area.
- ✔ Apartment occupants will benefit greatly from convenient access to the new off-road shared bike path network opened to connect Carlingford to Parramatta town centre and the extensive Parramatta River network of dedicated bike paths. To support bike riding spaces for 110-165 bikes is being provided.
- ✔ Provision is being made so that every apartment car spot can install an electric vehicle (EV) charger when required<sup>vi</sup> meaning that you can benefit from carbon emissions free driving in the future (assuming renewable electricity is supplied to chargers).

## References

- 'Lower energy bills' assumes that average 7.4 star NatHERs thermal comfort ratings and proposed modern energy efficient appliances allow the typical occupant to live comfortably with less energy consumption compared to similar projects delivered historically with lower energy efficiency regulatory requirements.
- Assumes air conditioning provided by R32 refrigerant VRV or ducted/split DX systems with 4.5/5 star ratings versus 2.5 star ratings (comparison from Energy Rating calculator).
- Assumes 8kg heat pump dryer rated at 8 stars versus standard dryer rated at 2 stars (comparison from Energy Rating calculator).
- Assumes PV array net output average of 3.8x installed capacity per day and 0.8kg CO<sub>2</sub> per kWh saved from avoiding grid sourced electricity.
- Assumes 6 star versus 4 star taps, 4 star versus 3 star showerheads and 4 star versus 3 star toilets (WELS approximate average product comparisons for water consumption).
- Electric vehicle charging in the future may be restricted to time of day use and electrical load management conditions for the buildings with the ideal time to charge electric vehicles expected to be throughout the night.

## Responsive to health, community and the local climate

The Carling provides multiple wellbeing options for residents and visitors – matched to the local environment and with a view to responsible and sustainable choice of materials.

- ✔ Healthy indoor air quality will be supported by investigating materials with very low unhealthy air emissions (such as volatile organic compounds in paints and formaldehyde in engineered timbers).
- ✔ Our commitment to sustainability extends to the investigation of building materials and suppliers with sustainable material ratings, such as those certified by the Forest Stewardship Council (FSC).
- ✔ Integrated landscape design for areas over 5,000sqm incorporates at least 70% resilient local species and will include over 80 new canopy trees across the site, ensuring that green landscaped areas will thrive in the local environment and provide shade on hotter summer days.
- ✔ Extensive communal gathering areas will be provided in rooftop landscaped spaces. These spaces will take advantage of stunning district views and include raised planting beds, seating areas, outdoor BBQs and areas of green rooves.



Artist's impression