

122 Marine Parade, Cottesloe

SUSTAINABLE DESIGN STRATEGY

PREPARED BY

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DISCLAIMER

The intent of the Sustainable design strategy is to demonstrate targets can be achieved based on further discussions with service consultants, an update of performance modelling and a cost/benefit analysis of all items for consideration. It is not the intent of the strategy to provide certainty of credits instead identify sustainable opportunities that may be integrated in the design. The integrated approach allows for multiple members of the design team to work together for a common goal to maximise efficiencies. The approach will increase flexibility in design, save money and also provide higher performing buildings than traditional approach.



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1 OVERVIEW

CADDS Group has developed a sustainable strategy on the proposed development at 122 Marine Parade, Cottesloe for Baltinas.

The purpose of this report is to support the development application by identifying the principles incorporated in the design that meet sustainable objectives and targets for the site.

The review and recommendations are based on experience; an understanding of functionality; a review of current project documentation and an analysis of the site. The initial assessment is based on preliminary documentation with the outcomes subject to change during design development.

1.1 TARGETS

CADDS has undertaken a review of the current site, building layout and sustainable initiatives for inclusion within the project and provided achievable targets for the development.

Category	Target	Comment	
Energy30%ReductioninGWPEfficiencycompared to BAU		8 Star Average NatHERS Rating Lighting efficiency Provision of solar PV array (11kW)	
Water	30% Reduction in water use	Provision of water efficient appliances and	
Efficiency	compared to BAU	equipment.	
Health and	Low exposure to pollutants	Selection of low VOC finishes	
Wellbeing			
	60% of the nominated floor	Use of glass with a high VLT	
area has been designed to		Daylight factor of 2 achieved.	
	high levels of daylight during hours of occupancy		
Water Efficiency Health and Wellbeing	 30% Reduction in water use compared to BAU Low exposure to pollutants 60% of the nominated floor area has been designed to high levels of daylight during hours of occupancy 	Provision of water efficient appliances an equipment. Selection of low VOC finishes Use of glass with a high VLT Daylight factor of 2 achieved.	

Table 1 Targets and Initiatives

The proposed development is designed to exceed the minimum requirement of the NCC by reducing its heating and cooling requirement by 49% and targeting an 8 Star NatHERS rating.

Table 2 NatHERS Benchmark

	NCC	Design WA	Marine
Worst case NatHERS rating	5	5.5	6.9
Overall average NatHERS rating	6	6.5	8.08
Estimate average energy load	39	34	20



2 HEALTH AND WELLBEING

Through the enhancement of indoor environment quality, occupants will see improvements to health along with benefits to thermal and acoustic comfort resulting in a more inviting and liveable internal environment.

A lighting system shall be designed to provide appropriate lighting levels, where required, and suitable control systems. Additionally, lighting control systems shall be provided to all common areas.

Ample external views have been provided to residences through the utilisation of dedicated solar passive design principles.

Materials that emit VOC's or formaldehyde shall be minimised within this project.

A high performing building façade will be considered for the project that will aid to provide comfortable conditions within the building. This will minimise the requirement for heating and cooling. This is to be achieved through optimised insulation and appropriate glass selection along with solar passive design.

2.1 THERMAL COMFORT

Based on preliminary modelling and solar analysis, CADDS have identified solutions to reduce cooling requirements for the building and increase NatHERS ratings over the NCC compliance

Description Base Rat		ting Solution Star Rating		Star Rating	
Residence	Cooling (Mj/m2)	Heating Mj/m2)	Star Rating	Upgrade 1	Upgrade 2
1,3	43.1	15.4	4.6	7.8	8.3
2,4	13.9	6.9	7.9	9.2	9.8
5,6,7	70.5	14.6	3.4	6.4	7.2
8	99	26	2.4	5.5	6.9
ŀ	Average		4.7	7.3	8.08

Table 3 NatHERS Ratings

Upgrade	Glass Type	U	SHGC
Base	Single Clear	6.2	0.65
1	Double Glazed Low-E	3.3	0.32
2	Double Glazed Low-E: Thermally broken frame	2.5	0.32



2.2 PLACES FOR PEOPLE

The project is socially sustainable with the inclusion of places to gather and potential for introduction of business through office spaces. The communal open space provide residents with opportunities to socialise and foster connections. The current design of the communal area responds to microclimate and site conditions with access to sun in winter.





3 ENERGY EFFICIENCY

A key concern with new buildings is greenhouse gas emissions, making up approximately 20% of total GHG emissions in Australia. A number of initiatives and various technology will be incorporated with in the project to ensure these are mitigated including

- +1 NatHERS Rating
- Provision of solar PV array.

3.1 SOLAR PV

31 Panels have been designed for the development, allowing for an estimated 11kW system, generating an estimated 18,000kWh/year.



Figure 1 Solar PV size



4 WATER EFFICIENCY

Perth has a limited potable water supply due to the increases in population and reductions in rainfall levels. By reducing this demand will help to alleviate the concerns related to potable water usage. All new water services are to ensure that high WELS rating fixtures and fitting are to be installed as appropriate.

Table 4 WELS Ratings

Fixture / Equipment Type	WELS Rating	
Taps	5 Star	
Toilets	4 Star	
Showers	3 Star (not more than 7.5L/m)	

Sub-soil drip Irrigation for plantings to be determined during design development.







5 CODES AND RATINGS

The building will be subject to voluntary and mandatory building codes and metrics to measure the performance of the rating. This section of the report outlines the main codes and ratings and identifies the projects response.

5.1 NCC + DESIGN WA

Residential building compliance is achieved through a thermal modelling process defined as the Nationwide House Energy Rating Scheme (NatHERS). This process requires a minimum star rating to be achieved for the thermal comfort of the building, which informs the energy efficiency of the building. The Nationwide House Energy Rating Scheme (NatHERS) is a tool to assess the energy usage of residential dwellings.

For a multi-residential project as the development, every apartment is investigated as a separate unit with its own rating before an overall average rating is calculated. The NatHERS tool considers a wide range of parameters like orientation, glazing, insulation, size of rooms and door openings, shading and awnings and ceiling fans.

The National Construction Code (NCC) requires a minimum of a 5 Star NatHERS rating for the worst performing apartment in the complex and an overall average NatHERS rating of 6-stars.

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Table 6 NatHERS Targets