

Citify

1-9 Walkerville Terrace

Sustainability Strategy Report

D Squared Consulting Pty Ltd
Trading as dsquared
ACN 159 612 067
ABN 38 159 612 067

Level 1, 199A Rundle Street
Adelaide SA 5000
T: 0405 106 268
E: paul@dsquaredconsulting.com.au
W: www.dsquaredconsulting.com.au

Project Number: 2971



Document Control

Issue	Date	Change	Checked	Approved
01	01/12/23	First draft issue for comment	BH	PD
02	22/02/24	Updated with client comments	BH	PD
03	16/08/24	Updated based on new design. Issued for comment	BH	PD
04	03/09/24	Updated with client comments	BH	PD

Our Vision is to **think beyond the square**.

Our Mission is to create spaces, places, and communities that are positive for both the environment and for people. We will do this by providing our clients with sustainable and bespoke solutions that are innovative, challenge perceived ideas, and push the boundaries of achievement and excellence.

We confirm that all work has been undertaken in accordance with our ISO 9001 accredited quality management system.

Acknowledgement of country

The dsquared team wish to acknowledge the Traditional Custodians of all country throughout Australia, and their cultural, spiritual, physical, and emotional connection with their land, waters, and community. We pay our respects to all Elders past, present, and emerging.

Contents

Document Control	2
Contents	3
1 Introduction	4
1.1 Introduction	4
1.2 Vision	4
1.3 Author	4
2 Performance	5
2.1 NatHERS	5
2.2 Energy and GHG Emissions	5
2.3 Heat Island and Microclimate	5
2.4 Climate Change	5
2.5 Façade	6
2.6 Daylight	6
3 Initiatives	7
3.1 Community and Social Sustainability	7
3.2 Energy	7
3.3 Water	8
3.4 Waste	8
3.5 Transport	9
3.6 Indoor Environment Quality	9
3.7 Construction	9

1 Introduction

1.1 Introduction

This document summarises the Sustainability Strategies and ESD initiatives which will be applied to the new mixed-use development at 1-9 Walkerville Terrace, Gilberton, SA in order to reduce the development's impact on the environment in both construction and operation. This report follows the development of the building design by the integrated design team lead by Citify.

1.2 Vision

The sustainability vision and outcomes proposed are summarised as follows:



Social Sustainability

Homes for Homes

- _ commitment of 0.1% of sales value to Homes for Homes
- _ all apartments achieve a NatHERS average of 7.7 Stars
- _ extensive integrated planting and landscaping
- _ 80% reduction in heat island effect via landscaping and surface treatments
- _ rainwater reuse for landscape irrigation
- _ sensitive refurbishment of Buckingham Arms heritage building

Energy and Emissions

Carbon Neutral Ready

- _ inset energy network
- _ 30% more energy efficient than building code
- _ centralised hot water and air-conditioning systems
- _ all-electric precinct
- _ 90kW solar PV
- _ low cost, 100% renewable energy available

Verified Performance

- _ facade performance site tested to ATTMA standards
- _ 7.7 Star average NatHERS rating certification
- _ 60% of apartments certified 8 Star NatHERS

1.3 Author

This report has been prepared by Paul Davy, a Director of dsquared.

Paul has over 30 years' experience in the UK, Europe, Asia and Australia as an engineering, ESD, and sustainability consultant. Paul holds IEng and MCIBSE Accreditation, is a Green Star Certified Assessor, a Green Building Council of Australia Teaching Faculty Member, an Ambassador for the Living Futures Institute of Australia, a WELL Accredited Professional, and an Infrastructure Sustainability Accredited Professional.

Paul has been a member of the South Australian Government ODASA Design Review Panel since its inception.

2 Performance

2.1 NatHERS

The apartments will be designed to achieve a 7.7 Star NatHERS rating average, demonstrating a 20% improvement over the NCC/BCA average requirement of 6 Star average.

60% of the apartments will be designed to achieve an 8 Star NatHERS rating.

2.2 Energy and GHG Emissions

The development will be designed to achieve an overall reduction in building energy consumption by at least 30% lower than a NCC2022 deemed-to-satisfy building.

2.3 Heat Island and Microclimate

The precinct comprises more than 80% coverage of either landscaping or roofs with a high Solar Reflective Index (SRI) finish. The proposed pool will also contribute to mitigating heat island effect.

As such, the heat island effect of this site is expected to be reduced by more than 80%.

2.4 Climate Change

An analysis of the climate change impacts has been undertaken to identify any risks that the development will need to respond to and will include the following topics:

- Rainfall
- Temperature
- Humidity
- Flooding
- Solar radiation
- Bushfire severity
- Evapotranspiration
- Synoptic systems and storms
- Wind speed
- Soil conditions

Climate change risks to the project have been identified using the *SA Government Department for the Environment & Water Guidelines for Climate Change Risk Assessment*, and have been communicated to the project team to ensure the design and systems respond to a changing climate.

These are summarised as follows:

Climate change risk	Mitigation Strategy
Temperature rise – leading to an increase in loading on air conditioning systems, electricity supply infrastructure, and thermal impact on equipment and residents	<p>The facade systems are designed to provide a higher level of thermal comfort than code, with an average 7.7 Star NatHERS outcome.</p> <p>Systems infrastructure including air conditioning systems will be sized to cater for future load increases.</p>

Climate change risk	Mitigation Strategy
	The deployment of planting and landscaping, in combination with external shading devices, will help to minimise heat island effect and human comfort stress in the public realm.
Increased storm intensity – increased peak storm frequency and impact, leading to an increase stormwater loading and potential back-flood risk	The stormwater infrastructure will be sized to cater for future predicted peak stormwater events.
Reduction in rainfall – reduction in annual rainfall leading to an increase in irrigation water demand for landscaping	The irrigation system is designed with the integration of a potable water feed service, such that water is available at all times when rainfall harvesting is insufficient.

2.5 Façade

The façade glazing proposed is as follows:

Apartments: Fully thermally broken, double glazed. Vision Panel performance criteria: System U 2.3, SHGC 0.40, VLT 40%.

Retail/Commercial: High performance double glazing. Vision Panel performance criteria: System U 3.2, SHGC 0.25, VLT 40%.

The building façade will be air leakage pressure tested in-situ in accordance with AS/NZS ISO 9971:2015 using an ATTMA Licenced testing contractor.

2.6 Daylight

All apartments and retail/commercial tenancies will exceed the minimum NCC/BCA requirements for daylight access.

All common areas and corridors will have access to natural light, therefore reducing reliance on artificial lighting during the day.

3 Initiatives

3.1 Community and Social Sustainability

The following social sustainability initiatives are included:

1. The development will contribute 0.1% of sales value to the Homes for Homes initiative.
2. The apartment buildings' design affords views from and to dwellings to provide transparency and a visual connection between residents and the community and environment.
3. The apartment buildings' design allows for connection the local environment through passive design and natural ventilation via opening windows and balcony doors, with open air balconies, allowing residents to connect to nature and to adjust how they live in their dwellings according to the seasons.
4. All apartments include a balcony at least 2.6m deep to allow outdoor access under poor weather conditions.
5. Bicycle storage facilities are provided for apartment residents, and visitors to the buildings.
6. End of Trip facilities including bicycle storage, showers and lockers are provided to the staff servicing the retail/commercial tenancies.
7. All common areas have good access to daylight and ventilation.
8. The development will incorporate communal amenities including a private function space, wine room, golf simulator room, cinema room, and a gym which includes a steam room and sauna.
9. The development will also include a communal outdoor pool and terrace area, surrounded by deep rooted planting for access to nature, shade, and green space.
10. The development will undertake a sensitive refurbishment of Buckingham Arms heritage building.

3.2 Energy

The following Energy initiatives are included:

1. The development will be fully electrified and will not utilise fossil fuels (natural gas) for heating, cooling, hot water, or cooking.
2. An embedded network will be used with electricity being supplied via an inset network, so that residents can benefit from the option of reduced electricity supply rates and have access to 100% renewable energy or GreenPower supply contracts.
3. The deployment of rooftop and shade structure solar PV will be maximised, with a minimum of 90kW capacity provided.
4. The apartment designs also allow for the full natural ventilation of all dwellings through openable windows and balconies.
5. All residential common areas will be provided with daylight access to reduce artificial lighting energy use.
6. All external shading treatments and all glazing system specifications will be optimised using computer simulation techniques. Both the residential and commercial façade will comprise high performing double glazing. Glazing solar heat gain coefficients have been carefully selected to optimise winter solar gain and limit summer heat ingress.
7. Selection of energy efficient lighting fittings (LED) with automated lighting control systems to public spaces.

8. The use of exposed concrete soffits in living areas to provide thermal mass and suppress summer heat loads. In combination with the 7.7 Star NatHERS average level of thermal performance, the air-conditioning demand to living areas and in particular bedrooms will be reduced significantly.
9. Extensive metering and sub-metering for energy management, connected to an embedded network.
10. Using light coloured external finishes (in particular roof coverings) to reflect heat and reduce solar gain and reduce the heat island effect.
11. Using zero ODP refrigerants and insulation.
12. Designing and certifying the apartments to achieve an energy performance at least 20% better than current Building Code minimum NatHERS rating of 6 Stars average, representing a dwelling average NatHERS Rating of 7.7 Stars. 60% of the apartments rate at 8 Stars.
13. The external façade will be subject to air leakage pressure testing to ATTMA to significantly reduce the apartments energy consumption, and improve the apartment indoor air quality, particularly during high external air pressure conditions.

3.3 Water

The following Water initiatives are included:

1. Water efficient fittings with the minimum WELS ratings:
 - Taps 5 Stars
 - WCs 4 Stars
 - Showers 4 Stars
2. The storage of rainwater in dedicated water reuse tanks. The tanks will provide feed water for irrigation.
3. Selecting appropriate landscape planting to minimise irrigation water use, with a focus on a native planting species palette, vertical green walls, and deep soil tree coverage to the urban park zones.
4. In accordance with the WELL Building Standard, all drinking water tap outlets will be lead-free in accordance with AS 3688-2015.

3.4 Waste

The following Waste initiatives are included:

1. Construction waste will be minimised through efficient design techniques including standardisation and wherever practicable off-site pre-fabrication. A minimum 90% diversion from landfill rate will be targeted.
2. Provisions will be made for the location and use of separate bins for general, organic and recyclable waste. Refer to the separate waste management plan prepared by Colby Phillips Advisory.
3. The development will incorporate ventilated and weatherproof storage facilities for the collection and disposal of general, recyclable, organic waste, and bulky waste, which will be separated on site to facilitate ease of disposal for recycling.
4. Waste chutes will be provided to facilitate the transfer of occupant bagged waste from the apartment floors to the bin storage areas.

3.5 Transport

The following Transport initiatives are included:

1. Dedicated bicycle storage will be provided for residents.
2. End of Trip facilities such as bicycle racks, showers, and lockers will be provided for retail/commercial staff.
3. Space provision will be made for the parking of e-bikes including cargo bikes.
4. Provision for a Go-Get car service.
5. EV charging stations will be provided for at least 5% of the total non-residential carparking spaces in the development. Electrical infrastructure will be designed to be ready for the installation of additional EV charging stations in future to all car park spaces, on a resident opt-in basis.

A demand management and control system will be provided as part of the initial development, allowing the EV charging demand to be managed from the outset.

3.6 Indoor Environment Quality

The following Indoor Environment Quality initiatives are included:

1. Using paints, sealants, adhesives, carpets, coverings, and furniture which have low off-gassing properties (low VOC, low formaldehyde).
2. Maximising access to daylight to all areas whilst minimising glare.
3. Open air and naturally ventilated balconies will be provided to all apartments.
4. All apartments will be naturally ventilated.

3.7 Construction

The following Construction initiatives are included:

1. Select materials with a comparatively low embodied energy/carbon profile wherever practicable, e.g. fly ash in concrete, recycled content in thermal insulation, reinforcement bar, and ceiling/wall/floor coverings, to achieve at least 20% reduction in upfront carbon emissions.
2. Apartments have exposed soffits to living areas to reduce associated embodied emissions, whilst improving the thermal performance and comfort for the occupants;
3. Using off site pre-fabrication techniques to reduce on site construction time, waste, and greenhouse gas emissions, wherever practicable.
4. The development will seek to select locally sourced materials and labour wherever viable.
5. Using RVT Clash Detection as a design and construction management tool to minimise on-site clashes and abortive/wasteful work.