Stantec

Memo

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Revision: 001

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Subject: 162 Gouger Street - Sustainability Statement

1. Introduction

This memorandum addresses the energy efficiency and sustainability measures of the development located at 162 Gouger Street, Adelaide.

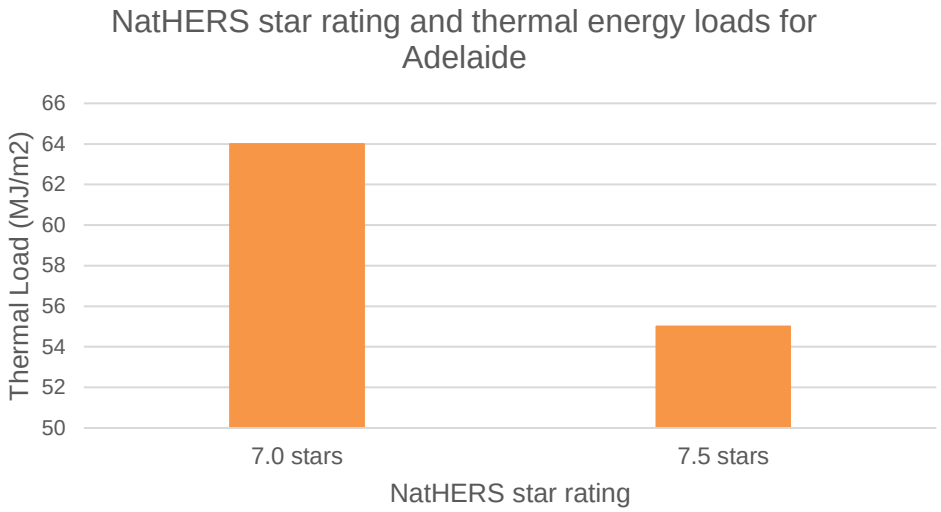
The projected is committed to implementing a range of high impact sustainability initiatives. A series of options have been assessed and considered at the preliminary stage. The following memorandum outlines the design initiatives that will be implemented in subsequent stages.

2. Sustainability Commitments

The Sustainability Commitments section outlines a set of initiatives that have been curated for the development to provide worthwhile and real-world impact.

2.1 Building Fabrics

- Double glazing to the Apartments with high performing, low-e coating to control solar gain.
- Optimisation of operable windows designed to maximize cross flow ventilation and reduce mechanical cooling. Achieve best practice natural ventilation criteria to AS1668.4 - 2012.
- Select a low solar absorptance roof (max SA = 0.32) to reduce both solar gain and urban heat island effect.
- Improved air tightness providing both improve energy efficiency and health benefits, with a target of <10m³/hr.m² for a minimum sample of 10% of apartments.
- External shading to reduce solar gains while maximising views and daylight.
- Increased average star rating of 7.5 stars, with each individual apartments required to achieve a minimum of 6 stars, leading to approximately 15% minimum improvement in heating and cooling loads



2.2 All Electric Development

The development will significantly reduce its carbon emissions of over its lifetime by utilising the rapidly decarbonising electricity grid (see below), which will be 10% net renewable in 2027 according to the latest state government announcement[1]. It also responds to the unique context of South Australia, which is leading the world in the transition to a 100% renewable energy supplied grid.

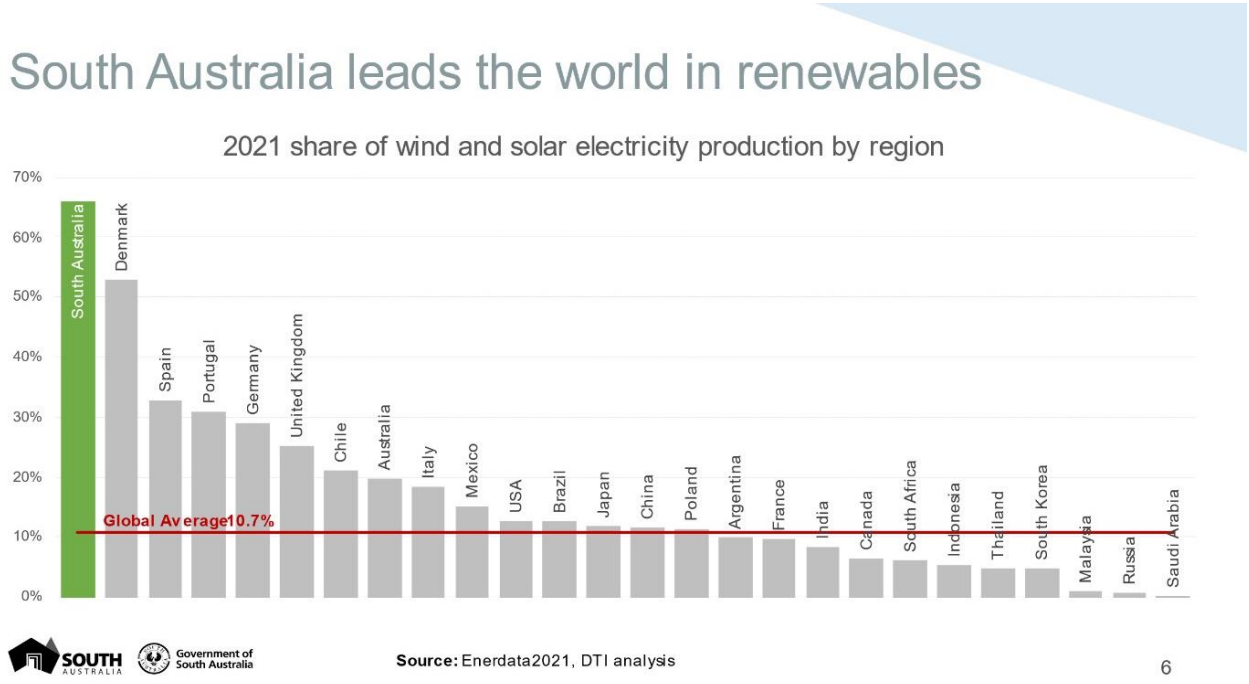


Figure 1 - South Australia's World Leading Decarbonisation of Electricity

[1] https://www.premier.sa.gov.au/media-releases/news-items/new-target-for-renewables

This commitment has the following benefits beyond decarbonisation:

- Electric cooking is more energy efficient than gas, eliminating up to 32.1 metric tons of CO_2 per year against a standard cookline.
- With no open flame, or gas line at all, risk of gas leaks and gas fires disappears. With minimal buildup, risk of grease fires is also essentially eliminated.
- HVAC systems are utilised significantly less, reducing energy cost. Some modern systems are demand-controlled to activate only when excess fumes are detected.
- Electric cooking reduces harmful pollutants to only the particulate matter produced from the food itself, compared to additional harmful pollutants produced from burning gas. One study showed that gas cooking is equivalent to the impact of passive smoking in households[2] and another showed children had a 42% higher rate of asthma[3], with gas burning and leakage in homes contributing to 12% of the national asthma burden in Australia[4]
- Using electric heat pumps (typical efficiency of 350%) instead of gas fired boilers (typical efficiency 80%).

2.3 Embedded Network

An embedded network allows for greater operational savings for residents, reduced capex costs for the developer by offloading costs associated with meters, hot water system and solar PV.

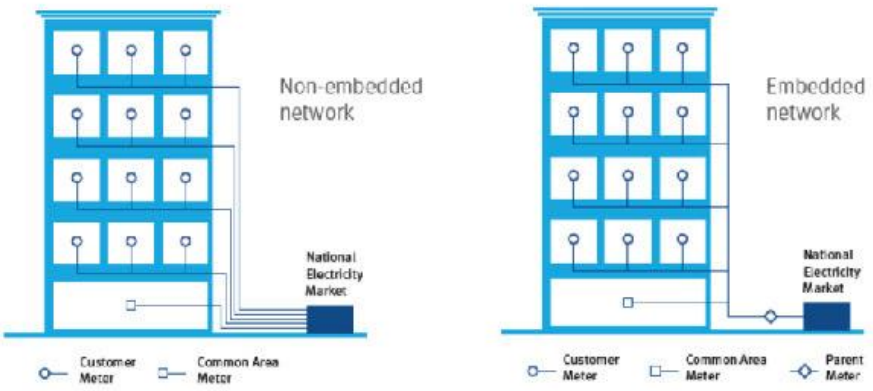


Figure 2 - Embedded Network versus Traditional Metering

Source: https://ap2u.com.au/embedded-networks-explained/

2.4 Services

- HVAC: High efficiency DX units throughout with low GWP R32 refrigerant, a reduction of approximately 70% global warming potential compared to industry typical R410a

[2] https://www.climatecouncil.org.au/resources/invisible-danger-gas-asthma-children/
[3] https://academic.oup.com/ije/article/42/6/1724/737113?login=false
[4] https://www.abc.net.au/news/2021-05-23/can-gas-stovetops-give-you-asthma/100157786

- Lighting: Install LED lighting throughout. At a minimum, install occupancy sensors in all intermittently occupied zones, ensure light switches are suitably frequent to allow for optimal control, achieve a 20% reduction in LPD and glare and colour rendition. Limit external lighting.
- Vertical Transport: Select lifts with standby power modes and regenerative drives.
- Consolidate roof plant to maximise common Solar PV system (minimum 30kW) which will be distributed across all building users via the embedded network.
    - Expected to generate 45,990kWh annually, or the equivalent power consumption of approximately 10 homes in SA[5]
- Where Appliances are installed, nominate energy efficiency options, including:
    - Dishwashers: 4 star
    - Washing Machines: 4.5 star
    - Dryers: 5.0 star
    - Fridge/Freezers: 4 star
- Maximise naturally ventilated car parks. If Mechanical ventilation is required include CO2 Control for improved energy efficiency.

2.5 Indoor Environment Quality & Amenity:

- Specify glass with a minimum VLT of 40% for improved daylight.
- Select and use low VOC products internally for adhesives, sealants, carpets, and paints
- Specify engineered timber products to meet formaldehyde limits.
- Inclusion of shared roof top community area with community garden.

2.6 Water & Landscaping:

- Drought tolerant low water requiring native species landscaping with sub surface drip irrigation and weather station connection.
- Water efficient fixtures and fittings, with the following minimum WELS ratings:
    - 5 star Taps
    - 4 star Toilets
    - 3 star Showers (Maximum flowrate of 7.5L/min)
    - 4.5 star Washing Machine (where installed)
    - 5 star Dishwasher (where installed)
- Reduce Urban Heat Island Effect through:
    - Low Solar Absorptance roof as per ‘Buildings Fabrics’ section.
    - Maximising Vegetated landscaping.
    - Selection of Light coloured paving where exposed from above, with a Solar Absorptance of 0.4 or less.

2.7 Waste:

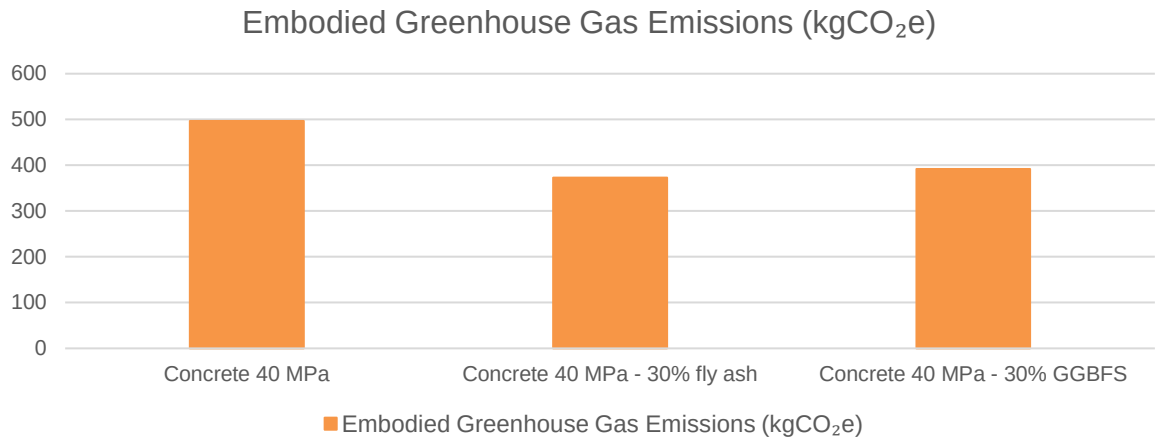
- Minimum 3 streams of waste collection for reduced landfill in operation
    - Organics
    - Commingled Recycle
    - General Waste
    - Include additional waste stream for one of the following: e-Waste, Bulky goods or Batteries.

[5] https://ahd.csiro.au/other-data/typical-house-energy-use/

- 90% diversion of Construction and Demolition Waste.

2.8 Materials:

- Reduce embodied carbon impact of the building through:
  - Nominating concrete with a 30% reduction in Portland cement content for footings, slab, piles and other on-grade applications (typical concrete mixes and resultant improvement shown below[6])



  - Design with Post tensioned slabs where possible to reduce volume of concrete and reinforcing steel.
- Sustainable Procurement of Materials: Many products have certifications or accreditations that provide transparency around their environmental impact such as GECA, EPD, GreenRate and ECS (carpets only). The project will preference these materials where cost comparable.

2.9 Sustainable Transport:

- Future proof the project with EV charger ready infrastructure. Install conduit to all car parks and ensure transformer has sufficient capacity for future installations.
- Provide the option for apartment owners to have EV Chargers installed upon request.
- Site is in close proximity to public transport and bike paths, reducing carbon emissions associated with transport and promoting healthier lifestyles

3. Conclusion

The development located at 162 Gouger Street, Adelaide will present a significant increase in sustainable design and energy efficiency against minimum practice. Associated carbon emissions from energy use will be significantly reduced and further eliminated through the consideration of low-carbon construction elements. Reductions in resource consumption such as water and waste, improved internal environment quality and considered urban design elements will all serve to increase the resilience and sustainability of the development. The outlined initiatives will also future proof the site, allowing residents to better respond to rapidly changing conditions due to climate change.

[6] https://msd.unimelb.edu.au/research/projects/current/environmental-performance-in-construction