

Frasers Putney - Residential Development

Preliminary ESD and BASIX Report

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Prepared on behalf of Frasers Property

by

Ecospecifier Consulting



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Executive Summary

This report was prepared by Ecospecifier Consulting on behalf of Frasers Property. The report highlights the proposed ESD initiatives for the residential development at Frasers Putney (i.e. “Ecologically Sustainable Development” initiatives). These initiatives have been conceived by the whole design team, under the guidance of Ecospecifier Consulting (who are experienced ESD consultants, Green Star Accredited Professionals and Sustainable Material experts).

This report has summarised some of the preliminary ESD credentials of this proposed development. In particular, it highlights the excellent thermal comfort, water and energy initiatives which will be incorporated into the BASIX assessments for the development. Indeed, the dwellings are on track to achieve high thermal comfort star ratings (due to low average heating and cooling loads) and to achieve high BASIX scores for both the Water and Energy Assessments.

Introduction

BASIX, Thermal Comfort and ESD guidelines have been used to provide specific benchmarks, however Frasers Property, in collaboration with the architects and consultants, consistently strive to develop design principles and building solutions that exceed these minimum benchmarks, in their goal to achieve high levels of sustainability.

In particular, Frasers Property intend to provide the future residents with high levels of passive heating, passive cooling, natural lighting and natural ventilation. These strategies, when combined with other energy-efficient strategies (listed later in the report) will lead to low energy consumption for the residents and, consequently, low greenhouse gas emissions for the whole development. Frasers Property always focus on passive performance as a first priority and have incorporated smart design principles and technologies to achieve this (such as performance glazing, generous insulation, sensible shading and well-placed thermal mass).

Passive heating, passive cooling, natural ventilation and natural lighting have all been incorporated wherever possible throughout the design. These essential design principles will not only last the life of the building but are low-cost, low maintenance and reliable, especially when compared to other, often prohibitively complex and expensive “bolt-on technologies”. Furthermore, these passive design principles will provide owners with a low-energy, cost-effective, pleasant and healthy living environment.

Indeed, for Frasers Putney, Frasers Property have sought to use sustainability & ecological principles that are cost-effective for the residents, both now and in the long-term future. Water & electricity prices both appear set to steadily increase and Frasers Property are constantly looking at how they can make these services more affordable and reliable for residents and tenants. The building design & ongoing running costs will therefore be closely considered at every design stage.

In summary, the building designs presented will offer sustainable lifestyles and affordability to the residents as well as high levels of thermal comfort, energy efficiency and water efficiency. It also contains other sound and proven sustainable & ecological principles integrated into the building design, in part through smart technologies and sustainable materials.

Thermal Comfort

In regards to thermal comfort, the design team has worked collaboratively to develop a design with excellent passive heating, passive cooling and natural ventilation. The success of these initiatives has been supported by promising thermal comfort testing results.

BERS Pro v4.1 has been used to test the thermal comfort conditions for a wide variety of selected dwellings. The preliminary results achieved so far are well under the BASIX target values (for heating and cooling) and are a testament to the excellent passive heating, passive cooling and natural ventilation of the buildings.

Some of the thermally efficient materials and passive design techniques incorporated to achieve high levels of thermal comfort include:

- Generous external wall insulation (i.e. R2 or more added to external walls, including those adjacent to car parks)
- Generous roof insulation (i.e. R3.0 or more added insulation)
- Hebel common walls and concrete slabs used to provide internal thermal mass
- Well-sized balconies used to provide horizontal solar shading
- Louvres, sun-hoods and eaves used to provide additional horizontal solar shading
- Generous window openings in bedrooms and living areas to provide natural ventilation and passive cooling
- Dual aspect and/or corner aspect for most dwellings to assist with cross-ventilation
- Compact design and small external surface areas for most units (to reduce unwanted heat loss and heat gain through the building envelope)
- Infiltration minimisation (through the weather stripping of external windows and sliding doors and also the damping of all exhaust fans)

It should be noted that these passive design techniques are long-term and should generally last the life of the building. Other, more ephemeral strategies such as curtains have not been included in the models (in accordance with ABSA modeling protocols for NSW).

Water and Energy – BASIX Initiatives

As indicated through preliminary BASIX and thermal comfort testing, the proposed development at Frasers Putney should perform well in regards to thermal comfort, water and energy. Some preliminary water and energy strategies are listed below. These strategies may change slightly with the final building design.

Water Efficient Strategies:

- 5 star taps
- 4 star toilets
- 3 star showers (mid-range, i.e. between 6 and 7.5 L/min)
- Efficient Water Appliances (e.g. 3 star dishwashers or better)
- Large communal rainwater tanks for common area irrigation and car-wash water (in apartment buildings)
- Individual rainwater tanks for private area irrigation
- High percentage of indigenous and/or low-water plant species
- Recycling of the sprinkler test water for all sprinkler systems

Energy Efficient Strategies:

For the common areas:

- Efficient hot water systems (such as solar, heat pumps and/or gas)
- Insulated ringmains and supply risers (to reduce heat loss)
- Efficient lights in hallways and lobbies (with timers and/or motion sensors)
- Efficient lights in other common areas (possibly with motion sensors, time-clocks and/or manual switches)
- Fluorescent lights in car park areas with motion sensors and time clocks (and approximately 20% permanently lit “safety lighting”)
- Efficient lifts
- PFC (power factor correction)
- Car park with some natural air supply, as well as carbon monoxide sensors and variable speed fans

For the dwellings:

- Efficient hot water systems (such as solar, heat pumps and/or gas)
- Efficient lights within dwellings
- Efficient reverse cycle AC – e.g. average 2.0 stars or more for both heating and cooling (new rating system)
- Zoned air-conditioning controls to ensure that only the required bedrooms and/or living areas are being conditioned, at any given time
- Gas cooktops and electric ovens
- Efficient appliances (e.g. Dishwashers 3* and Dryers 2* or better)
- Individual ducted exhaust and individual fans (switched on/off) to ventilate bathrooms and laundries (as opposed to continuous and usually inefficient central systems)

Sustainable Materials and Healthy Interiors

The Frasers Putney development will also endeavor to deliver sustainable and healthy interiors for all buildings. This will create pleasant and healthy living environments and will also help to avoid health issues such as “sick building syndrome”. To achieve this, the development will incorporate:

- Low-VOC paints, finishes, adhesives
- Low-VOC carpets and floor coverings
- Low formaldehyde and Low-VOC joinery and composite timber products

Furthermore, the development will place high priority on low impact building materials. In particular this will involve the predominant use of materials which have recycled content; are recyclable (or reusable); have low embodied energy; have low toxicity; have low biodiversity impacts and/or are designed for deconstruction and reuse. Some of the material strategies include:

- Concrete: Reduce the absolute quantity of Portland cement by substituting it with industrial waste product(s) or oversized aggregate;
- Sustainable Timber: Use a large percentage of the timber and composite timber products which are sourced from either or a combination of post consumer re-used timber or Forest Stewardship Council certified;
- Floor Covering: Utilise low environmental impact covering for floors in comparison to traditional materials;
- Recycled Content & Reused Products and Materials: Maximize the postconsumer recycled content and reused products in the selection of materials;
- Recycling Waste Storage: Provide recycling waste storage areas for the separation, collection and recycling of waste with good access for all building occupants and for collection by recycling companies;

Other ESD Initiatives

Some of the other ESD initiatives which the development intends to incorporate include:

- Refrigerant ODP: Use refrigerants with zero Ozone Depletion Potential;
- Insulant ODP: Utilise thermal insulants that avoid the use of ozone-depleting substances in either manufacture or composition.
- Watercourse Pollution: Incorporate stormwater designs that minimise stormwater run-off (and possible pollution) to the natural watercourses;
- Cyclist facilities: Provide bicycle racks for residents and visitors;
- Environmental Management Plan: The contractor is expected to adhere to a comprehensive Environmental Management Plan (EMP) for the works. Contractors are recommended to be ISO 14001:2004 certified;
- Waste Management - Construction: The contractor is expected to implement a waste management plan, retain waste records and ensure that a high percentage of construction and demolition waste is reused or recycled;
- Building User's Guide: Produce a Building User's/ occupant's Guide, information management that enables building users / occupants to optimise the building's environmental performance during its operation.

Conclusion

This report has summarised some of the preliminary ESD credentials of this proposed development. In particular, it has highlighted the excellent thermal comfort, water and energy initiatives which will be incorporated into the BASIX assessments for the development. Indeed, the dwellings are on track to achieve high thermal comfort star ratings (due to low average heating and cooling loads) and to achieve high BASIX scores for both the Water and Energy Assessments.

This report also shows some of the additional ESD initiatives proposed for the development which take the design beyond BASIX compliance. These additional initiatives focus on low-impact materials, sustainable building operation and healthy interiors for the residents.

In summary, the building design should offer affordability to the residents as well as high levels of thermal comfort, energy efficiency, water efficiency and overall sustainability performance. It also contains proven, cost-effective and sound sustainable principles integrated seamlessly into the building design. Together these strategies should achieve a high level of sustainable performance for the development.