ATTACHMENT L

ESD/ENERGY CONSIDERATIONS

Prepared by

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PROJECT CORRESPONDENCE

Date:	29 September 2010
To:	Suters Architects
Attention:	Steven Donaghey
From:	Mina George Yassa
Project Name:	**WEST PYMBLE POOL**
Project No:	SSUT0102
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Dear Steven,

With regards to the requested revision of the ESD features of the proposed development, we provide below an outline of the ESD initiatives that are currently being examined for the West Pymble Pool project. These initiatives will be examined closer during the detailed design development stage of the project.

- **Passive Building Design:** Optimal building envelope design is an important ESD feature of the proposed development, as it allows for the use of passive systems, which significantly reduce energy consumption. Initiatives such as building fabric design, façade design and window shading strategies are all currently being investigated in collaboration with the architect to produce a naturally energy effective building envelope. The minimum provisions provided by the Building Code of Australia (BCA) 2010 Part Section J will be satisfied and exceeded wherever practical. These include minimum thermal resistance R-values to different building elements:
    - *Roof and ceiling construction:* minimum R3.2;
    - *External wall construction:* minimum R2.8;
    - *Internal wall construction:* minimum R1.8; and
    - *Glazed elements:* minimum BCA calculator requirements to be met.
- **Natural Ventilation:** Substantial improvements in both indoor air quality and energy efficiency can be achieved by providing fresh outside air to the facility when the outdoor conditions are favourable. This reduces the reliance on mechanical air conditioning and substantially reduces the energy consumption associated with it.
- **Natural Daylighting:** Similarly to above, the reliance on energy-intensive electrical lighting can be minimised through the use of skylights and optimal glazing, allowing natural daylight penetration into the facility. Current industry best practice involves the integration of the lighting system with photoelectric daylight sensors to control the operation of electric lighting when adequate daylighting is not available. Acknowledging the requirements of the BCA Section J with regards to glazing, detailed JV3 energy modelling may need to be undertaken to ensure compliance.
- **Co-Generation:** A co-generation central plant system is currently being investigated for the proposed facility. Although co-generation is usually only considered for very large developments with very large electrical and hot water demands, recent technological innovations have hinted at their viability for smaller-scale applications. The system under consideration involves the installation of a gas-fired engine generating electricity for use on-site, with waste heat being used for pool heating and domestic hot water.
- **Solar Hot Water:** A solar hot water heating system that utilises the free renewable solar energy is also being investigated for inclusion into the project. Evacuated tube arrangements of the panels will be able to provide substantial pre-heating to the pool water and domestic hot water, thus reducing the load on energy-intensive heating systems.
- **Water Harvesting and Reuse:** A number of water harvesting strategies are currently being considered to minimise the potable water consumption of the facility. These include a roof-top rainwater collection system,

a grey-water system collecting from sinks and showers, and a pool backwash collection system. Collected water will be treated and stored in above-ground tanks for reuse in landscape irrigation and toilet flushing.

- **Pool Water Evaporation Minimisation:** Pool blankets to cover the pools when not in use is a simple feature that provides extensive savings by preventing evaporation and insulating against heat loss over night. Similarly, the project team is investigating the use of shading devices and landscaping features to provide a measure of protection from the sun and wind, which hasten the water evaporation.
- **Water-Efficient Fittings:** Water efficient fittings and fixtures will be used throughout the amenities of the new facility. This includes 4-star toilets and urinals, 5-star taps and 3-star showerheads – all of which represent the highest rating for the respective fittings and fixtures. Collectively, these water efficient features provide significant savings in potable water consumption. By utilising these fittings, the amenity potable water efficiency will be equivalent to best-practice ratings as defined by the Water Efficiency Labelling and Standards (WELS).
- **Building Materials:** The selection of building materials will be carefully monitored and regulated to ensure that sustainable materials with high recycled content will be used wherever possible. The Green Star – Materials framework will be used to guide the selection of products that have reduced embodied energy, thus encouraging the reduction of greenhouse gas emissions.
- **Waste Management:** Recyclable waste bins will be provided throughout the facility to encourage the recycling of various materials such as aluminium cans, plastics etc.
- **Advanced Building Control:** An automated control system is being considered to provide substantial energy saving opportunities. Examples include: economy cycle using favourable ambient outside air for natural ventilation, variable speed drives will be used to match the cooling demands of the individual zones, CO_2 sensors in return air ducts will match the ventilation requirement with the occupancy of the space, electrical and water sub-metering will ensure sufficient data is available to facility management to allow for fine-tuning of the equipment and the early detection of operational problems such as leaks.
- **Sustainability Displays:** An important principle in the promotion of ecologically sustainable development is the education of building users of the sustainable features operating in the facility. A number of strategies are being considered to demonstrate to the patrons the ESD credentials of the facility including signage, info-pods, leaflets, digital displays of energy and water consumption.

We trust the above is sufficient information. If you have any questions, please do not hesitate to contact us.

Yours sincerely,
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