STEENSEN VARMING

10756 CO001b/SJH/SJH

21st June 2010

Australand
Level 3, 1C Homebush Bay Drive
Rhodes
NSW 2138

Attention: **Paul Solomon - Development Manager Infrastructure & Approvals**

Dear Paul

ENERGY STATEMENT FOR PROPOSED WAREHOUSE FACILITY FOR K-MART, AT EASTERN CREEK BUSINESS PARK (STAGE 3, LOT 2)

This report has been prepared by Steensen Varming to support Australand's proposed warehouse and offices development application for the Proposed Warehouse facility for K-Mart, at Eastern Creek Business Park, Lot 2, Stage 3.

The project will ostensibly comprise 49,850 square meters of warehouse space and 1,140 square metres of office space. A despatch office, receiving office, pump and fire room, and a gate house make up an additional 670 square meters.

For some time Australand has taken energy minimisation quite seriously with the warehouses they build, despite the lack of mandatory energy rules or targets. Now that the BCA has been modified to incorporate Section J, and recently revised, there are clearer minimum energy requirements, and Australand has indicated that this development will meet or exceed these minimum requirements.

In a warehouse development of this type, the biggest 'base building' energy consumer will be the warehouse lighting. To minimise the need for artificial lighting, it is desirable to maximise 'daylighting' through the use of transparent roof sheeting, without compromising the integrity of the roof, or the thermal conditions in the warehouse. Australand have optimised their design with a maximum of 10% of the roof area being given over to 'roof lights'. With this configuration in use at a similar Australand site, we have measured natural light levels of 300+ lux at 1.5m above warehouse floor.

Whilst optimising daylighting makes good energy sense, the reality in warehouses of this type is that sometimes the occupants stock racking can be configured such that it prevents natural light reaching the operating plane (often the racking starts off being installed in sympathy with the roof lights, but in time, and in response to changes in the tenants operations, racking is moved, and the natural lighting advantages are lost). It is therefore important that consideration be given to the efficiency of the installed artificial lighting system.

We understand that artificial lighting within the warehouse areas will be provided by metal halide lamps. In this type of application metal halides are generally the most efficient type of lamp (both high and low pressure sodium lamps are more efficient, but colour rendition is compromised so making them unsuitable for most warehouse applications). Based on our observations at a similar Australand site, spacing will be optimised to ensure code compliance without over-lighting.

Metal Halide lamps take time to 'warm up' so they do not lend themselves to occupancy detection switching. We are advised that central switching will be provided, which is appropriate in this instance. The switches will be suitably located, and the circuits will be bundled to reduce the amount of switches needed, so reducing the risk of some circuits being left on.

There is some external metal halide lighting, which will be controlled via a photo electric cells and time switches (the cell switches the lights on when daylight is insufficient, and the time switch resets the lighting). Again this is an appropriate energy efficient solution.

The office and amenities component of the development is a fraction of the size of the respective warehouses. The lighting in the office areas is provided by T5 Triphosphor tubes in recessed luminaries. This is an efficient form of lighting. The lights will be switched via a central panels, and occupant sensors will be used in rooms with intermittent use, so as to turn lights off when spaces are unoccupied. All office lights will be overridden by a central 'override' switch (the last occupant activates this switch to ensure that all lights are extinguished – an important energy saving initiative that is rarely found on similar developments).

We understand that all artificial lighting will designed to meet or exceed the minimum efficiency requirements of the BCA Part J6 requirements, including recent revisions.

The heating, ventilation and air conditioning systems would be the next largest 'base building' energy consumer, though by comparison to the warehouse lighting component, the energy consumed would likely be significantly less.

We understand that the warehouses will be naturally ventilated. There will be a requirement that the toilet areas be mechanically ventilated.

We have been advised that the offices will be air conditioned using reverse cycle air cooled heat pumps, so configured to ensure proper zonal control. The use of such equipment is considered appropriate in this instance.

We understand that the ventilation and air conditioning systems will meet the minimum efficiency requirements of the BCA Part J5, , including recent revisions.

Hot water use is minimal and will be provided by a system that will meet the efficiency requirements of the BCA Part J7, including recent revisions.

From a water use perspective, a number of water savings initiatives are called for, including the use of AAA rated fittings waterless urinals and rainwater harvesting.

Total annual energy use will be dependent upon the way that the occupant makes use of the energy savings initiatives. Based on information provided by members of the design team, we have estimated that total electrical power consumption is likely to be in the order of 3.4GJ per annum,. This is generally a 24 hours per day, 7 days per week facility, and 23% of the consumption is related to internal transportation needs (fork-lift charging and conveyors).

Recently the Green Building Council of Australia released a 'Greenstar Industrial' tool. Whilst the tool was not used in the design development process, we have undertaken our own brief analysis to determine possible implications. Preliminarily results suggest that this development may be some 30% more energy efficient than a comparable building, which would deliver 3 Greenstar points and potentially save some 1,527 Tonnes CO_2e per annum (based on published emissions value of 1.07kgCO_2e /kW for NSW). These savings can be attributed to the measures noted above.

To conclude, we are satisfied that energy efficiency has been taken into consideration during the design process, that the development will be designed to meet or exceed the energy provisions (Section J) of the BCA, including recent revisions, and that the initiatives adopted to date appear to be appropriate for this type of development.

Yours sincerely

Stephen Hennessy
Director