Built Ecology™

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To	Commercial and Industrial Property Pty Ltd	**Date**	09th June 2010
Attention	Andrzej Masztak	**Email**	amasztak@ciproperty.com.au
From	Ivana Surducki	**Project No**	SBE1004400
Project	Volkswagen Group Australia, 24 Muir Rd Chullora	**No. of pages**	6
Subject	Energy Performance Report	**Copies**	Monique Alfris Bevan Hames Gavin White

Andrzej,

A review of Bankstown DCP 2005 Part D7 indicated that the office component of the development must comply with Section 3 – Energy Minimisation Controls and Section 2 Water Conservation and Controls.

ENERGY

Section 3 – Energy Minimisation Controls requires that an Energy Performance Report (ERP) be submitted which demonstrates how the building has been designed to minimise energy consumption. Given that the project is currently applying for Development Approval the design of the building has not yet been finalised. As such details of energy saving strategies will need to be further developed throughout the detailed design process.

Following a review of the building we propose that the incorporation of the following initiatives will be designed with the potential to achieve a 4 star NABERS energy benchmark for the site. These include:

HVAC

- Efficient HVAC system – A HVAC options study will be conducted to determine the most suitable HVAC system for the building given its use and size
- Reducing internal loads in the space – following a survey of equipment within the space recommendation will be made to the tenant on implement less energy intensive equipment such as laptops in place of desktop PC's. In addition the installation of an efficient lighting system will reduce the lighting load on the HVAC system.
- Reducing solar loads in the space – the implementation of solar control features reducing the amount of cooling the HVAC system is required to provide. This can be implemented through features such as external blinds, internal solar control blinds, external shading, and solar control glazing selection. Further analysis is required to determine the most effective mechanism for this site.

Lighting

- Efficient lighting system – reducing the lighting power density (W/m^2) will ensure minimal electrical energy consumption whilst still providing adequate lighting to the space.
- Lighting control systems - occupancy sensors will be installed within all enclosed offices, meeting rooms and training rooms. This ensures the lighting system will not operate when people are not present in these smaller infrequently used spaces.

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- Lighting zoning –good design of lighting zones will ensure lighting zone areas are minimised where possible. During after hours when only a small number of people are working they can illuminate only their zone rather than having to illuminate the entire floor.
- Daylight sensors – perimeter zones will be controlled with daylight sensors. When there is sufficient daylighting to the perimeter zones the artificial lighting system will switch off.

Domestic Hot Water

- Solar hot water– Installing a solar hot water system can significantly reduce the GHG emissions associated with domestic hot water by using the sun's energy. Consideration will be given to the use of a gas-fired booster rather than an electric one. A booster acts as a back-up to ensure hot water can be delivered at all times. Using gas rather than electricity ensures less carbon emissions, due to the lower carbon intensity of natural gas.

Facilities Management

Good facilities management can result in a half a star rating improvement under NABERS. Facilities management for this site will be enhanced through the implementation of the following measures:

- Building Management Control System (BMCS) – the installation of the BMCS will operate and control the HVAC systems for the offices. This will ensure the system is automatically initiated, operated and controlled to maintain performance and design conditions
- Building Users Guide – providing a building users guide to the facilities manager and tenants of the building will ensure they understand the energy saving features of the building and details the design intent of the building. This will aid in the training of the facilities manager to ensure optimal operation of the building
- Energy Monitoring Targets - providing energy monitoring targets for the facilities manager to track the performance of the building. These targets will show predicted monthly energy consumption of various aspects of the building including but not limited to:
    - HVAC
    - Lighting
    - Power
    - Domestic Hot Water
- Sub-metering – separately sub-metering of lighting and power uses and any large power uses above 25kVA such as lifts. In addition consideration should be given to the separate metering of base building items, allowing base building energy consumption to be monitored and tracked against energy targets.

Commissioning

Effectively commissioning the building will ensure that it is operating as intended. Commissioning should be performed in accordance with CIBSE commissioning Codes or AHSRAE Commissioning Guidelines for mechanical services. The design team is required to provide the following items the building owner/manager to facilitate the commissioning process:

- Design Intent
- As-built drawings
- Operations and Maintenance Manual

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- Commissioning Report
- Training of building management staff

In addition it is recommended that building tuning occur during the first 12 months of operation. This will ensure the building operates effectively during all seasons. This is of particular value to HVAC plant operation.

Due to the early stage of design it is not possible to accurately model the performance of the building against the NABERS benchmarks. However, following a review of the building site and design to date Built Ecology believes that the project has the potential to achieve a 4 star NABERS Base Building Energy rating with the inclusion of energy efficiency initiatives such as those listed above. The design and the initiatives mentioned in this memo will be further addressed throughout the detailed design phase of the project.

WATER

In order to comply with Section 2- Water Conservation Controls of the DCP the site must include the installation of efficient fixtures and fittings (requirement W1) as well as a Site Water Management Plan (requirements W2)

Efficient Fixtures and Fittings

The following WELS ratings are required to be installed to comply with the DCP

- Showerheads – 3 stars or less than 8L/min
- Basins/Taps – 6 stars or less than 4.5L/min
- Toilet cisterns – 4 stars or less than 4L/flush

Site Water Management Plan

In order to reduce potable water demand a 40,000kL rainwater tank is proposed to be installed. Rainwater collected will be used for the following uses within the building:

- Wash down
- Irrigation
- Dust control
- Toilet flushing

A preliminary analysis indicated that a rainwater tank of this size is likely to reduce potable water demand of the office reduction by 57%. See Appendix A for details of calculations

Following a review of the building Built Ecology believes that this site has complied with Section 3 – Energy Minimisation Controls and Section 2 Water Conservation and Controls of the Bankstown DCP. Further development during detailed design of these sustainability strategies is required to determine their effectiveness in reducing greenhouse gas emissions and water use for this site.

If you have any further questions please do not hesitate to contact me.

Regards,

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Ivana Surducki

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APPENDIX A – Water Demand Met by Rainwater Calculations

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The following outlines the basis of calculations:

Showerhead*	3 star
Taps	6 star
Toilets	4 star
Dishwashers	4 star
Landscape area	3,500m²
Catchment Area	11,393m²
Run-off coefficient	0.8[1]
Occupancy	1 person per 10m²
Rainfall Data	1974-2004

*Note that showers are provided for 5% of staff

[1] GBCA Green Star Technical Manual - run-off co-efficient for sloped metal roof.