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JACFIN PTY LTD

Sustainability Report

Horsley Park Employment Precinct

301015-00543

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PROJECT 301015-00543 - SUSTAINABILITY REPORT

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1 INTRODUCTION

This report responds to the Director Generals Requirements for a Concept Plan (CP 10_0129) and Stage 1 Project Application (MP 10_0130) for the Horsley Park Employment Precinct. The site is legally known as Lot A in DP 392643 and has an area of approximately 105ha. The Stage 1 Project Application consists of one distribution warehouse in the north eastern section of the site and associated site infrastructure.

This report summarises sustainable strategies incorporated into the site and design of the development. It specifically addresses the energy efficiency requirements of the DGRs dated 12 August 2010 under the heading of Key Issues.

While no environmental rating framework exists for distribution centres, the strategies incorporated in this development draw on common sustainability principles. The design takes a holistic approach to site and context issues such as ecology and transport and introduces additional measures for the buildings beyond current practice for buildings of this nature.

Figure 1 - Lot A DP392643, Horsley Park0 Employment Precinct - Concept Plan

2 SUSTAINABLE SITE STRATEGIES

2.1 Site Landuse

The site has been used extensively for rural purposes over many decades. The formulation of the State Environmental Planning Policy (SEPP) Western Sydney Employment Area established a zoning of most of the site as General Industrial – IN1. There is a small corridor across the western boundary of the site zoned E2 Environmental Conservation under the SEPP (see **Figure 1**)

The site forms a component of the Western Sydney Employment Area which is an initiative of the state government to provide employment opportunities in western Sydney which will significantly reduce travel times and costs in the future. This will provide considerable sustainability benefits in the future related to people travel to and from work as well as with more efficient distribution of goods within the greater Sydney region given the access to major road infrastructure.

2.2 Ecological Value

An independent ecological report has been undertaken for the site which identified that no protected flora or fauna will be removed due to development works for the site.

The landscape proposed in the development sites has been based on the local native species and continuing the same visual character as the existing pastoral landscape of the site.

2.3 Bulk Earthworks

The bulk earthworks on the site have been designed to balance the cut and fill where possible. This will minimize the volumes of materials imported and exported to and from the site. This minimizes the energy used in this operation as well as in the transport operation. Topsoil will be stockpiled on site for reuse in the landscaping works. Minimizing the transport required leads to a reduction in the CO_2 emissions and also provides a sustainable option for disposal of excavated soils.

3 SUSTAINABLE DESIGN STRATEGIES

3.1 Transport

Secure bicycle parking facilities will be provided for the site's tenants and employees at a ratio of 1 bicycle parking space per 10 car spaces in order to reduce the reliance on private vehicles where possible. A shared pedestrian/bicycle footpath will be provided in the development to promote bike use.

Opportunities will be discussed with the relevant authorities to extend existing bus routes to service the site. This could provide a regular bus service for site workers and would promote the use of public transport as an alternative to private transport. Bus stops will be provided in the development to encourage bus use. Indicative locations are provided on the Concept Plan.

3.2 Energy Efficiency

The Director General's Requirements for the site include the following in relation to energy efficiency:

- **Energy efficiency – including an assessment of the energy use on site, and demonstrate what measures would be implemented to ensure the proposal is energy efficient;**

The energy/fuel uses on the site will be (generally in descending order of magnitude):

- Mechanical ventilation of the storage areas;
- Air conditioning of the office areas;
- Internal and external lighting (carpark and security);
- Plug in equipment such as office equipment; and
- Fuel use for equipment to move goods.

The energy use in warehouses is relatively low compared to other types of development due to use of mechanical/natural ventilation and lower light intensity.

The key strategies demonstrating that the proposal is energy efficient are:

- Use of clear roof sheeting in the roof area (one sheet per bay) to provide natural light into the warehouse;
- Carefully designed natural ventilation in storage areas to allow cross air flow;
- Energy efficient air conditioning equipment and fan selection for the office areas;
- Energy efficient lighting with a power density below the Part J6 maximum density and control systems to dim or turn off when not in use.

The design will be further refined in the subsequent stages including selection of mechanical and electrical services equipment. These selections will reduce the greenhouse gases compared to compliance with the requirements of Section J of the BCA.

3.2.1 Building Design

The warehouse will incorporate thermal insulation and the building design will incorporate cross ventilation as well as mechanical ventilation.

Ventilation supply and exhaust will be designed to improve internal conditions.

3.2.2 Passive Solar Design

The office components of the Project Application building has been designed to reduce heating and cooling requirements through passive design principles. The proposed office will face south. The extent of office glass on the western wall has been limited and will have suitable specified glass to reduce heat transmission.

3.3 Materials

A comparison of the embodied energy of various materials is provided within this section, which can indicate the benefits of using alternate materials

3.3.1 Materials Selection

As an example, **Table 1** provides a comparison of the carbon dioxide equivalent (CO_2e) of 1kg of hardstand materials that may be used at industrial sites (bitumen, plain concrete mix and concrete mix with flyash). As indicated the inclusion of flyash in the concrete mix reduces the CO_2e by approximately fifteen percent. Materials with lower embodied carbon content will be considered during the design and construction of the proposed development.

Table 1 – Material Embedded CO_2 Content

1kg	Bitumen, at consumer/AU U	0.66kg CO_2e
1kg	Concrete plain mix	0.25kg CO_2e
1kg	Concrete 30% flyash mix	0.21kg CO_2e

Building materials will inevitably contribute to a significant portion of the development's embodied energy. The CO_2e presented in **Table 2**, for a range of common building materials, indicates a significant variation between products. The proposed development will consider the more environmentally sustainable alternatives to building applications, where feasible.

Table 2 – Material Embedded CO_2 Content

Unit	Building Material	kg CO_2e
1kg	Aluminium, building applications	18.6
1kg	Steel Bluescope Port Kembla	3.11
1kg	Steel Bluescope Port Kembla 20% recycled	2.80
1kg	Flat glass, uncoated, at plant	0.71
1kg	Hardwood	0.45
1kg	Structural pine	0.39
1kg	Bricks	0.25
1kg	Eco-bricks	0.20

In addition to the above, all timber products used at the site will be specified from certified sustainably harvested resources. No timber will be specified from rainforest or old growth forests.

3.4 Indoor Environment

3.4.1 Volatile Organic Compounds (VOC)

Paints, carpets, adhesives and sealants are required to be low VOC where used in any office areas within the development. Stipulating and maintaining VOC limits below the recommended levels will assist in reducing any potential detrimental impacts on occupant health arising from products which may emit volatile pollutants.

3.4.2 Formaldehyde Minimisation

Where composite wood products are used within the development, including (but not limited to) cabinetry, stair frames and so on, this should be Low Emission Formaldehyde. Emission of formaldehyde from wood based materials must not exceed, in their raw state, the E1 emission limit according to standard EN 13986; or emission of formaldehyde from the final product will not exceed 0.05ppm after 28 days when tested and certified in accordance with EN717-1.

3.5 Water

3.5.1 Stormwater

The stormwater management plan formulated for the site provides strategies to control water flow both from and through the site. The WSUD will incorporate filtering with the use of bioretention

basins and gross pollutant traps (GPTs) prior to discharge to receiving waters. The WSUD strategy seeks to maintain high quality stormwater flows to contribute to the long term improvement in the health of Ropes Creek.

3.5.2 Potable Water Use

Considerable energy and CO_2 emissions are associated with the production of potable water. As such, the collection of rainwater from the warehouse roofs in rainwater tanks for reuse onsite for non potable uses such as toilet flushing and irrigation provides an efficient way to reduce potable water use.

Non potable water uses of the proposed warehouse has been estimated and the rainwater tank size selected is 25kL. This reuse system will minimize the potable water use and lead to more sustainable outcomes for the development.

All proposed warehouses would incorporate rainwater harvesting to minimize potable water use.

The landscaping plan proposes plants which are drought resistant and have low water requirements to further enhance the sustainability of the development.

3.5.3 Fixtures

Water efficient fixtures (those with a higher WELS rating) reduce overall potable water consumption. All tapware for the development is required to be 4 star WELS rated, WC's are to be minimum 4 star WELS rated and urinals are to be minimum 5 star WELS rated.

4 CONCLUSION

This development encompasses a range of sustainability strategies at the site and building level. Receiving water health is enhanced and logistical efforts are being made to reuse local cut for fill on the site. The buildings are designed to improve occupant comfort with improved fabric design, shading to windows and natural ventilation. High efficiency lighting, fans and other equipment will be specified. Potable water use is reduced by taking advantage of rainwater harvesting and efficient fixtures. Materials and finishes will be specified for low environmental impact and indoor occupant health and amenity.