Appendix L

ESD report

ARUP

Ausgrid/ Investa

33 Bligh Street

Ecologically Sustainable Development Report

222054 / ESD report

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Contents

1 Executive Summary

This report has been prepared by Arup to provide input for the Part 2A(ii) EAR submission for the proposed City East Zone substation and integrated commercial development, at 33 Bligh Street on behalf of Ausgrid and Investa.

This project is committed to the principals of sustainability encompassing environmental, social and economic dimensions. The design, procurement and operation of the building will require decisions to be made throughout the design and construction process. These decisions will be based on cost and long term asset value with due regard to sustainable principles while fostering a culture of innovation.

The preparation of the site will focus on minimising the impact on the surrounding environment, the potential re-use of existing materials and the minimisation of waste going to landfill. A hazardous materials register will be generated for the site.

Ausgrid's zone substation building would house the transformers and associated equipment to safeguard Sydney's energy supply, and the creation of an PCA A-grade commercial office building helping to provide quality office space in the Sydney CBD.

The substation facilities will aim to achieve a building that meets the technical demands of a substation, while minimising energy use and its impact upon natural resources. Carbon emissions will be minimised by utilising passive means of ventilating the space as far as possible and appropriate material selection.

The design of the commercial tower will take into account Investa's corporate sustainability strategy and targets for the environment and innovation as detailed in their Sustainability Report of 2009. The sustainable concepts of the commercial tower are based on 6 categories, and the key initiatives that will be considered are:

1. Energy and Greenhouse gas emissions
    - Passive design solutions including façade optimisation, with good day lighting, glare control, thermal comfort and night flush to reduce energy consumption
    - Use of energy efficient lighting systems and sensor controls
2. Water
    - Water demand reduction through the use of waterless urinals or low flush urinals, dual flush WCs and low flow tapware, rainwater collection and reuse systems, as well as exploring the use of air cooled chillers
    - Vegetation for Sky garden and Sky lobby will be selected based on water requirement during its lifetime

3. Pollution and waste
    - Reduce construction waste by at least 84%, this is achieve through recycling and other means of diversion from landfill
    - Dedicated recycling waste storage will be included in the basement of the building
    - Construction phases will require that the contractors develop a detailed environmental management plans and waste management plan.
4. Material use
    - Avoid the use of CFC and HCFC in refrigerant systems
    - Materials with ozone-depleting substances during its manufacturing process will not be used
5. Indoor Environmental Quality (IEQ)
    - Provide place of respite, such as sky garden and in-house amenity for building users
6. Transport
    - Provision cycling storage facilities to occupants and visitor
    - Main entrance of commercial tower will integrate with Richard Johnson Square to enhance building user access

In addition, the commercial tower will use the Green Star Office Design tool and NABERS energy and water rating as a design guide to achieve a sustainable building. The design of the commercial building will also aim to achieve the following ratings:

- 5 Star Green Star Office Design V3 rating
- 5 Star NABERS Energy rating in operation.

2 Strategies and Targets

2.1 Construction

2.1.1 Pollution and waste

According to Investa's Sustainability 2009 report the average percentage of construction and demolition waste currently being recycled on Investa projects are 84%. For this project the aim will be to match or better this target for construction waste. As part of this process the construction contractors will be required to develop a waste management plan.

Additionally, a hazardous materials register will identify what materials are present and set out guidelines for the safe removal of the materials.

In order to develop environmental checks and procedures during the construction process, the construction workers will be requested to develop an Environmental Management Plan in accordance with the NSW Environmental Management System Guidelines.

2.1.2 Materials

Consideration will be given to the selection of sustainably sourced or re-used materials for temporary site works including site hoarding and shuttering.

2.2 Operational

2.2.1 Energy and Greenhouse gas emissions

Investa Sustainability Report of 2009 indicated that Investa's commercial office stock constitutes 87% of their portfolios carbon emissions. Through energy efficiency incentives the overall portfolio stock has seen a carbon reduction of 35% over the last 7 years. The design process will explore possible initiatives to further improve on the current base line emissions for this project.

2.2.2 Water

Similar to emissions the commercial office stock constitutes 87% of Investa's building stock water use. Water consumption has been reduced by 47% since 2003/2004 and this project will aim to continue that trajectory. This project will explore water sensitive design in terms of building services systems and selection of vegetation to continue the good practise.

2.2.3 Pollution and waste

Accessible dedicated storage for recyclable materials will be provided in the basement of the building.

2.2.4 Material use

The project will minimise the environmental impact of material use in line with recent exemplar Investa office development projects.

The recently completed commercial office developments at Ark in North Sydney and Trenerry in Abbotsford, Victoria focused on minimizing the environmental impact of material use. Key achievements at Ark included:

- Integrating construction of the base-building with 30% of tenancy fit-out works to avoid material waste
- Using at least 20% recycled aggregate in all concrete
- Replacement of at least 40% of cement with fly-ash (where appropriate)
- Design modifications to reduce PVC use within electrical cabling, hydraulic pipework, carpet and carpet backing

At Trenerry, design specifications reduced PVC use and ensured use of low formaldehyde content composite timbers.

This project will explore these and other initiatives with the aim to meet or exceed the above material targets.

2.2.5 Indoor Environmental Quality (IEQ)

The design will aim to maximize daylight within the constraints of the site and surrounding buildings. The façade will be designed so as to optimize the thermal comfort conditions within the space. The fresh air supply rate will be increased by 50% over the minimum required by the Australian Standard to provide a good level of indoor air quality. Opportunities for seasonal natural ventilation of spaces will also be investigated.

2.2.6 Transport

Investa's Sustainability Policy includes a number of innovative environmental initiatives to enable tenants to achieve the best environmental outcomes in a cooperative approach. These include a green lease arrangement which encompass fitout design as well as office management and operation guidelines. These included sustainable & healthy transport options. Key strategies for reducing travel demand and car dependency include:

- Proximity to a range of existing or planned public transport options (high number and frequency of services)
- Secure bike storage
- Showers, change facilities and lockers for cyclists, runner and walkers
- Spaces for small cars, mopeds and motorbikes

In Investa Policy, there are two main ways in which these strategies can be facilitated:

1. Where buildings are located in city centre locations, a wider range of transport options are available that reduce car dependence. In the Sydney CBD, car parking is limited and hence public transport, cycle and walk options provide for the majority of the transport task. This reduces the environmental impacts and costs associated with staff travel to and from work, and travel to and from meetings
2. To encourage employees to cycle, bicycle parking facilities and end of trip facilities are required. Cycling facilities also provide employees with a healthy transport option.

The sustainable outcomes include:

- Saves costs associated with transport to and from meetings
- Provides employees with convenient, healthy and affordable transport options
- Demonstrates leadership by responding to climate change and air pollution

Investa's sustainability initiatives align with those of the Green Star Office rating tool which includes the provision of cycling facilities on the basis that the practice of cycling to work benefits the Australian environment by reducing levels of potential pollutants from other means of transport, provides substantial health and economic benefits to the cyclist, and helps reduce road congestion.

3 Initiatives

To meet these aspirations the building design will focus on creating a highly resource efficient building that takes maximum advantage of Sydney's mild climatic conditions for creating a comfortable building with a high indoor environmental quality. The design will consider the following key initiatives:

3.1 Construction

- Develop construction Environmental Management Plan;
- Develop a construction Waste Management Plan;

3.2 Operational

- Passive design solutions including façade optimisation, with good day lighting, glare control, thermal comfort and night flush to reduce energy consumption;
- The use of thermal mass to reduce energy consumption through active or passive night purge / flushing and where possible exposure of the soffit.
- High-efficiency central plant, chillers, cooling towers, and boilers;
- High-efficiency building services, including the potential use of low-temperature Variable Air Volume (VAV) systems, under-floor displacement ventilation or chilled beams;
- The commercial office component will use occupancy sensors and high-efficiency lighting in the buildings;
- The commercial office building will be designed to take advantage of maximum daylight, while avoiding glare and thermal comfort issues;
- Water demand reduction through the use of waterless urinals or low flush urinals, dual flush WCs and low flow tapware, rainwater collection and reuse systems, as well as exploring the use of air cooled chillers;
- Reduce irrigation water demand by selecting vegetation with less water demand
- Avoid the use of CFC and HCFC in refrigerant systems and materials with ozone-depleting substances during its manufacturing process will not be used
- Dedicated recycling waste storage will be included in the basement of the building, available for substation and commercial tower;
- Sustainable landscaping to be incorporated in the design to enhance the microclimate and increase the building amenities. This could possibly take the form of a sky garden on the roof or at the podium level
- Provision of cycling facilities for building occupants

4 Benchmarking

The design of the commercial building will comply with Part J of the Building Code of Australia. In addition will aim to achieve the following ratings:

- 5 Star Green Star Office Design V3 rating;
- 5 Star NABERS Energy rating in operation.