ESD STRATERY

The project will take a considered approach to Ecologically Sustainable Development and the incorporation of ESD principles as defined in clause 7(4) of Schedule 2 of EP&A Regulation 2000 into the design, documentation and ongoing operation phases of the development.

The underlying goal will be to achieve a holistic design response that finds the correct balance between the following key categories:

- Environmental: emissions, occupancy and user controls
- Health benefits: daylight, air quality ,thermal, visual comfort and user control
- Flexibility: operational, layout & load adaptability and future expansion
- Operation: security, user interaction, training and education
- Cost: capital, maintenance, energy life cycle and related building costs
- Reliability: Ease of maintenance, resilience and proven technology

Other specific areas of consideration are as follows:

Siting

Environmental principles are maintained with the siting of the building in line with the site contours, reducing cut and fill and retaining walls to allow the natural hydrology of the site to be maintained.

Façade Shading

The 'southern pavilion' of the building faces east/west and the facade is has deep window reveals to reduce overall heat gain and minimise glare to the internal occupants.

Natural Light

The use of natural light is maximised in all habitable areas to reduce the reliance on artificial lighting to achieve illumination levels and contribute to overall energy savings in the building.

Predominately services, stores and the like located in internal areas.

Glare from daylight will reduced through the use of blinds or screens are fitted on all glazing as a base building provision and meet to Green Star criteria of eliminating 95% of all direct sun penetration

Section J JV3 Modelling

A Section J/JV3 Model has been undertaken. The key objective of performing Section J JV3 Modelling is to provide advice on any issues relating to the building façade and optimise the glazing specification.

The JV3 Model integrates all services being utilised including:

- Air-conditioning
- Power & Lighting
- Domestic Hot Water Systems
- Building Fabric
- External Glazing

Given the efficient nature of the services proposed as part of the design there will be a degree of flexibility in the final façade treatments.

Building Management Control System (BMCS) Infrastructure

The new development will incorporate a full Building Management and Control System, providing facility management control and monitoring of all new major mechanical plant as well as lighting, and major hydraulics plant. The system will be an open protocol type appropriately sized for the development.

The BMCS will be implemented in such a way as to achieve:

- Integration with existing site system
- Optimising of plant scheduling
- Electrical load shedding
- Data logging of plant run hours
- Data gathering to optimise the building energy performance.
- Lighting and movement detection
- Security

Studies have shown that building tuning is one of the most effective ways of reducing energy use. Hospitals are traditionally very high users of energy and a robust BMCS system that will allow ongoing building tuning is of paramount importance.

Mechanical ESD Initiatives

The key sustainability objectives for the new building are:

- Comfortable and healthy indoor environment.
- Minimise non-renewable resource consumption.
- Cost-effectiveness over its whole life span.
- Reduction in CO2 consumption.
- Reliability and ease of maintenance

Minimisation of electrical consumption by ensuring that the design:

- Utilises energy efficient chillers/boilers.
- Consideration to plant life and maintenance requirements will be given when selecting air conditioning plant.
- Will optimise passive cooling methods wherever possible. For this site this will include tree plantings that can shade the building in summer and provide access to winter sun in winter. High performance glazing will be considered along with exposing thermal mass within the space.
- Provide a BMCS capable of tuning the building to achieve improved energy consumption.
- Will use sub metering for substantive energy uses with in the building (any plant Greater than 100kVA.)
- Provide VSD’s all major fans, pumps and other reciprocating equipment.
- Economy cycle can be implemented in the major air handling plant. This allows free cooling for the times when ambient conditions are below the internal conditions and cooling is required.
- CO2 monitors in operating theatres to maintain air quality.

Electrical ESD Initiatives

The key sustainability objectives of the design are to minimise electrical consumption by;

- Utilising energy efficient lamps, luminaires and associated control gear;
- Consideration of lamp life and maintenance requirements in the selection of luminaires;
- Optimisation of the use of natural lighting during daylight hours;
- Individual light switching for individual spaces and master switches for each functional area;
- Separate sub-metering of lighting and power services;
- The provision of automatic lighting control including:
  - Photoelectric controls
  - Time switches
  - Movement detectors
- Use of sub metering for substantive energy uses (greater than 100kVA) within the building.

Hydraulic ESD Initiatives

The following ESD measures are to be implemented into the design:

- Metering of water supplies including hot water metering
- Increased thickness of thermal insulation on all hot water supplies
- Recyclable materials selection

Additional measures that may be considered include:

- Solar contribution for water heating (minimum target to be a 50% annual solar gain)
- Capture of mechanical plant waste heat for input into domestic water heating plant
- Rainwater harvesting for mains water supply sustainability for reticulation to landscape irrigation
- Reverse Osmosis waste water collection and reuse. For reticulation to landscape irrigation
- Low voltage power generation by converting liquid flow (either water supply or sewage) at authority - points of connection into energy
- Capture of fire services test water

Solar Power & Heating

Solar power generation and solar water heating is currently being investigated for the project.

Hydraulic Fixtures

All hydraulic have been selected with regards to infection control and water conservation. These will be further assessed against the predicted water consumption for sanitary use within the building and against a 'best practice' benchmark as determined by the Green Star Potable Water Calculator.

Materials

The proposal will use materials and products which:

- Adequately and economically perform their intended functions, and also have lower adverse environmental impacts throughout their life cycle.
- Contain reduced or nil hazardous substances
- Are low VOC products

- Reduce the amount of PVC used throughout the building
- Reduce the demand for rare or non-renewable resources
- Are made from or contain recycled materials or can be recycled at the end of their useful life.

Timber Policy

The proposal will adopt the following environmental policies:

- No rainforest timbers are to be used unless plantation grown
- No timbers from high conservation forests are to be used.
- Use of recycled timber, engineered and glued timber composite products, timber from plantations or from sustainably managed regrowth forests.

Pesticides

No chemical pesticides and termiticide are to be used. Preventive treatments are to be specified by physical means i.e. termimesh or gravel.

Green Star Compliance Checklist

The ESD strategy has used the initial objectives outlined above and will continue to identifying ESD targets via the adoption of the Green Star Health ratings system. This will be used through the course of design development and beyond to assess the design's compliance with ESD targets. A copy of the architectural targets is enclosed in Appendix A for reference.