OWEN FERGUSON HEALTH

SOP PRIVATE HOSPITAL

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STEENSEN VARMING

REPORT

DIRECTOR GENERALS REQUIREMENTS

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QUALITY ASSURANCE			
ISSUE	A	INITIALS	DATE
REVISION	3		
PRELIMINARY ISSUE		RT	13.06.2007
FINAL ISSUE			

07781
13 JUNE 2007

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1 EXECUTIVE SUMMARY

Steensen Varming were engaged to develop electrical, mechanical, medical gases and vertical transportation engineering principles and spatial requirements to assist in the Hospital space planning and for the Development Application to be lodged.
This report is a response to the Director Generals Requirements for those to services being considered by Steensen Varming.

2 ISSUES TO BE ADDRESSED AS PART OF THE DIRECTOR GENERALS REQUIREMENTS

2.1 ECOLOGICALLY SUSTAINABLE DEVELOPMENT

The Green Stars rating will be adopted and use to inform the basis of the design for this building. A minimum 4 Star rating would be set, however we would like to see the project aspire to a 5 star rating that would equal a building of excellence in Australia.

We see the following initiatives as key elements in achieving a sustainable outcome for the building and would score well against the Green Star criteria:

- Provision for mixed mode ventilation to patient ward rooms has been made. This will be made possible by providing individual fan coil units to rooms thus giving the occupant the opportunity for natural or mechanical ventilation, the air conditioning to a room will be automatically switched off if the window is opened. This, however, will only be implemented pending infection control considerations.
- Heat recovery will be provided to the operating theatre full outside air systems, these systems will transfer energy that would normally be discharged to outside back into the outside air supply serving the theatre.
- Closed circuit cooling towers are proposed to ensure that water wastage is kept to a minimum.
- Condensing boilers will be used with the low grade heat recovered used to heat the hydrotherapy pool.
- Low friction high efficient chillers will be specified.
- A standby generator is being supplied to back up the Hospital essential services, during the design development the appropriateness of tri-generation will be evaluated. The tri-generation would serve to provide power, hot water and chilled water via an absorption chiller.
- Photovoltaic cells will be evaluated for possible employment to provide some direct green energy.
- Energy efficient luminaries and lamps will be specified.
- Variable speed drives will be provided to chilled water and heating hot water pumps to save energy during low demand periods.
- Variable speed medical air compressors will be provided to allow better efficiency of operation.
- Multiple medical gases vacuum suction pumps will be provided to allow capacity matching of load demand.
- Connection to the precinct's recycled water reclamation and management scheme
- Daylight wells to harvest daylight deep in the buildings core will be investigated
- Adjustable external shade element to control solar heat and glare
- Enhanced commissioning of systems to ensure that controls are optimised.
- Winter gardens external balconies as places of respite for patients and staff
- Fire stairs used for public access to reduce demanded on lifts
- Material selection to improve indoor air quality
- Reduced car parking spaces
- Provision of cyclist facilities
- Site remediation to improve the site ecology

2.2 ACOUSTICS

The acoustic considerations of the building and the site will be taken into account when making selections of medical gases and mechanical plant.

Cooling towers will be specified to have low noise fans and will be programmed to operate at reduced speed at night time.

Chillers will be provided with acoustic covers to motors and compressors.

Plant room ventilation louvers will be provided with acoustic attenuators to reduce noise break out.

Noise attenuation will be provided to between fans and duct discharge penetrations

2.3 LEAD IN SERVICES

Space has been included for a two transformer substation with access at street level to comply with the requirements of Energy Australia.

A main distribution frame room has been included within the basement for the termination of the lead in communication cabling.

Dial before you dig enquiries have been lodged and responses received, there do not appear to be any issues across our site.

2.4 JUSTIFICATION FOR ROOF TOP PLANT

Roof top plant has been proposed for a number of reasons.

The chillers require either air or water cooled condensers, this condenser cooling equipment can only operate efficiently when located externally and close to the chillers, for this reason both the condenser cooling and chillers are located on the roof, the cooling towers being outside with louvers screening them from view and the chillers located within the roof top plant room where they can also be acoustically treated. This also places the chillers close to the largest building cooling loads being the operating theatres on the floor below (level 5).

The stream boilers that serve the level 5 sterilising equipment will be locate within the roof top plant room, this allows them to have short flues and also short pipe runs to the equipment they are serving, thus leading to efficient operation.

The heating hot water boilers will be located in the roof top plant room, thus allowing them to have short flues and placing then to the largest heating loads this being the operating theatres.

The air handling plant for the level 5 operating theatres, recovery ward and the sterilising department are located within the roof top plant room due to their close proximity to these departments.

Exhaust fans for the kitchen and the bathrooms / toilets will be placed in the roof plant room thus placing them close to the discharge point which ensures that smells do not leak back into the building.

2.5 ELECTRICAL INTERFERENCE

Strong energy fields can cause interference to sensitive equipment. The rail corridor that runs within 50m of the site is a potential cause for electrical interference. Equipment manufacturers requirements and selections together with special earthing of equipment will be considered to counter any such risk of interference.