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Lincolne Scott

Mr Bill Lozevski
Development Manager
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Sydney NSW 2009

**Forrest Road, Orange - Stage 1 - Building Services Statement**

Dear Bill

The following description outlines the building services being provided for the hospital building, commercial suites and the motel building of the Forrest Road, Orange Development. Details of the proposed site water, gas, electricity and telecommunications supply and reticulation are also provided. Details of the hostel building, residential development, child care centre and other minor buildings shall form part of a separate future statement.

The building services design objective is to provide a facility which will optimise, within appropriate commercial constraints, the opportunities for the reduction in the use of energy and water. Electricity, which has a significant negative green house gas implication through the use of coal for electricity generation, will be reduced. Water usage across the development will also be minimised, as it is a scarce resource.

Low energy and water consumption shall be achieved by the design of environmentally efficient systems with the capability to closely control operation. Unnecessary over ventilating, cooling, heating and water consumption is avoided through design of these systems.

All building services systems will be designed to meet the Building Code of Australia and relevant associated Australian standards that are current at the time of this report.

Some specific design features of the site and buildings are as follows:

## Site Electrical Services

All buildings on the site shall be supplied from the local Country Energy network from Forrest Road. A series of substations shall be located throughout the site to distribute power to each building. All electrical reticulation, both high voltage and low voltage, shall be installed underground.

Street Lighting shall be provided to the roadways on the site and shall be of the metal halide type and be controlled through photo electric controls. Additional lighting shall be provided to open spaces where pedestrian circulation will be frequent. Consideration shall be given to the minimisation of light pollution in selection of luminaires and layouts.

All electrical works shall be carried out in accordance with the relevant Australian Standards and the Country Energy requirements.

**Site Telecommunications Services**

Telecommunications services shall be provided throughout the site and to each building. The site shall be connected to the local telecommunications network in Forrest Road. A network of underground conduits and pits shall be provided throughout the site suitable to facilitate the installation of both copper and fire services.

The telecommunications installation shall be carried out in accordance with the relevant Australian Standards and the local distributor's requirements.

**Site Sewage Services**

The sewage infrastructure, recently upgraded, located adjacent to Forrest Road shall be used for sewage disposal from the development.

The council sewage system shall be extended to supply the new development. The sewage system from the development shall reticulate via gravity drainage within the site.

A network of sewer pipe lines and manholes shall be installed throughout the site to service all buildings. The system shall be designed to comply with all Orange Council requirements, Australian Standards and applicable NSW codes.

**Site Water Services**

The water infrastructure located within Forrest Road, which has been recently upgraded, shall be used to derive supply of water to the development.

The council water system shall be extended throughout the site to provide fight fighting and potable water services to each building.

The system shall be designed to comply with all Orange Council requirements, Australian Standards and applicable NSW codes.

**Site Water harvesting**

It is proposed to provide an on site rain water harvesting system. The system shall incorporate underground tanks to store roof collected water. A system of pipe and pumps shall be utilised to distribute harvested water to non potable services such as landscape watering, toilet flushing and urinal flushing.

**Site Gas Services**

A 450 metre extension/upgrade along Forrest Road footpath with a 160mm PE Alinta main will be required to supply the estimated load for the development.

The natural gas energy system shall be extended throughout the site to provide gas services to each building.

This process with Alinta has begun and is in the application stage.

**Hospital Building**

**Mechanical Services**

The mechanical services will designed in accordance with the following code and authority requirements.

- Building Code of Australia
- AS1668.1 1998 and AS1668.2 1991
- Orange City Council Requirements

- Applicable Health Guidelines
- AS3666
- AS3000

The mechanical systems shall generally comprise of the following systems:

- Central chilled water system for air conditioning purposes; including a central chilled water generation system and reticulation system comprising chillers, duty and standby pumps for each chiller, insulated pipe work, valves fittings, pressurization unit, chemical dosing pot, instrumentation, automatic controls, all necessary equipment to circulate chilled water to fan coil units and air handling units etc;
- Condenser water system to service the chillers comprising of cooling towers, duty and standby pumps for each cooling tower, pipe work, valves, fittings, chemical dosing system and all associated controls;
- Central heating hot water system for air conditioning purposes; including a central hot water generation system and reticulation system comprising boilers, duty and standby pumps for each chiller, insulated pipe work, valves fittings, pressurization unit, instrumentation, automatic controls, all necessary equipment to circulate heating hot water to fan coil units and air handling units etc;
- Individual air conditioning systems to serve the hospital air conditioned areas where required,;
- Air conditioning systems for Building Distributor Rooms, Communications Room and Lift Motor rooms if required.
- Individual mechanical ventilation systems for air conditioning purposes; including air handling units, heating coils, cooling coils, filters, ductwork, fire dampers, air inlets and outlets, instrumentation, automatic controls and all necessary equipment to deliver and extract conditioned air to/from individual spaces;
- Dedicated toilet exhaust ventilation systems;
- Special purpose exhaust ventilation systems as required, i.e. fume cupboards, for removal of infection, odour, steam, heat, vapour, hazardous gases and smoke;
- Mechanical kitchen exhaust and make up air system; kitchen will also be provided with a temperate air conditioning system;
- Ventilation systems for plant rooms including, switch room, Building Distributor Room, Substation, Communications Room, Lift Motor rooms, Hydrant Pump room, Sprinkler Pump Room and Sprinkler Valve Chamber Room;
- Special purpose cooling systems as required, i.e. switch room and Lift Motor Room etc;
- Smoke management or fire control strategy systems where required by the BCA;
- Acoustic treatment and attenuators to mechanical systems to achieve internal and external noise criteria. All architectural acoustic louvre shall be by others;
- Automatic controls dedicated to mechanical services systems; including but not limited to Building Management and Control System (BMCS) to control and monitor the air conditioning and ventilation systems and other functions;

**Electrical Services**

The building will be supplied through the Country Energy network. The hospital shall utilise power factor correction equipment.

Sub mains cabling will be run in electrical risers to service the building and distribution boards shall be provided with energy metering and monitoring facilities.

A standby diesel generator system shall be provided to the building to support critical medical areas during the event of a mains power failure.

Retail tenancy spaces will be provided with separately metered electrical supplies.

The building shall be provided with high efficiency light fittings utilising T5 fluorescent lamps which will significantly reduce the electrical consumption when compared to T8 light fittings. Time schedule and photo electric control shall be utilised. T8 type lamps shall only be used in clinical areas where colour corrected illumination is required for medical purposes.

Additional electrical services shall include:

- General landscape lighting provided to the site will be controlled by photoelectric cells and time switches.
- Emergency and exit lighting will be provided throughout the building.
- A conventional lightning protection system.
- Electro-medical earthing systems shall be provided to all patient and procedure areas.
- UPS systems for critical operating theatre equipment

**Communications Services**

Telecommunications backbone cabling will be provided throughout the building from the Building Distributor to the lifts, data logging systems, fire control centre, security equipment and BMS equipment.

An MATV system will be provided to all patient bedrooms and public spaces. This system will be run within the communications riser. The system shall deliver a suite of patient entertainment and information services.

An access control system will be provided to control the building entry points for staff, patients and vehicles. CCTV monitoring will also be provided to entry lobbies, public areas, car park and ground floor lift lobbies. A fixed duress alarm system shall also be provided.

Nurse call systems shall be provided to all areas, in addition to nursing staff paging systems. The system shall be provided in accordance with the applicable Health Services guidelines and specific clinical requirements.

**Fire Services**

An automatic sprinkler system will be provided throughout the building. The fire sprinkler system will comply with AS 2118.1, the BCA and any alternative building solution. The fire sprinkler system will be served by an electric fire pump and standby diesel fire pump.

A fire detection and alarm system will also be provided throughout the building. The smoke detection system will comply with AS 1670.1, AS 1668.1, the BCA and any alternative building solution. The smoke detection system will call the fire brigade, initiate the emergency warning system, and initiate the smoke hazard management system and other relevant plant operation.

The fire indicator panel will be located at the building main entrance.

A fire fan control panel will be provided and interfaced with the fire indicator panel to enable automatic operation of the smoke control systems in a fire condition. The fire fan control system will comply with AS 1668.1, the BCA and any alternative building solution. The fire fan control panel will be provided with manual control switches which allow the fire brigade to override the automatic operation.

An emergency warning and intercommunication system will be provided throughout the building. The emergency warning and intercommunication system will comply with AS 1670.4, the BCA and any alternative building solution. The emergency warning and intercommunication system will be initiated by the smoke detection and fire sprinkler systems. The main emergency control panel will be located within the fire control centre.

Fire hydrants will be provided throughout the building. The fire hydrant system will comply with AS 2419.1, the BCA and any alternative building solution. The fire hydrant system will be served by an electric fire pump and standby diesel fire pump. The hydrant system water supply is from water storage tanks. A fire

brigade booster assembly will be provided. The hydrant system will be interfaced with the fire indicator panel.

Fire hose reels will be provided throughout the building. The fire hose reel system will comply with AS 2441, the BCA and any alternative building solution.

Fire extinguishers will be provided throughout the building. The number and location of fire extinguishers will comply with AS 2444, the BCA and any alternative building solution.

**Hydraulic Services**

Hydraulic services shall include, though not be limited to:

- Sanitary plumbing and drainage
- Trade waste systems
- Cold water system
- Non potable water system
- Heated domestic water system
- Natural gas system
- Fire hydrants and hose reel service
- Sanitary fixtures, fittings and tap ware

Hydraulic Services shall be to the approval of:

- Orange City Council
- Alinta
- NSW Fire Brigade

Hydraulic services shall be in accordance with:

- Relevant Australian Standards
- Building Code of Australia
- NSW Health Guidelines
- National Plumbing Code
- NSW Plumbing & Drainage Code of Practice

New service connections shall be made to the gas, water and sewage mains on the site, and be extended to the building. Services shall be sized to provide the required capacity to service the building.

Rainwater run-off shall be collected from all roofed areas and will discharge into the site rainwater harvesting system and overflow to the site stormwater system.

The sanitary plumbing and drainage shall consist of a combination of drainage and fully vented modified systems connected to the Orange Council sewer main. All vents shall terminate to atmosphere.

Trade waste treatment shall be provided to any lot which generates trade waste. The treated trade waste shall drain to the sanitary drainage system.

All sanitary fixtures and tap ware will be minimum AAAA rated.

## Motel and Commercial Buildings

### Mechanical Services

The mechanical services will designed in accordance with the following code and authority requirements.

- Building Code of Australia
- AS1668.1 1998 and AS1668.2 1991
- Orange City Council Requirements
- AS3666
- AS3000

The commercial medical suites, rehabilitation centre, and motel air conditioning systems utilise chilled water cooled fan coil units located in ceiling voids of the buildings and air handling units located in rooftop plant rooms to provide pre-conditioned outside air in accordance with AS1668.2. The air handling systems are provided with 100% outdoor air which will be cooled, heated or dehumidified to provide primary outside air to each building as appropriate.

Primary air system features multiple air handlers to independently serve the commercial tenancies and motel. Air handling units provide separate primary air to perimeter and internal zones. The air handling systems will be capable of isolation of each tenancy to facilitate after hours operation at minimum supply air quantities. Isolation of the motel will be achieved on a room by room basis. Heating of the primary air is provided by a heat reclaim system in conjunction with gas fired boilers, thus reducing the use of localised electric heaters, and thus reducing green house gas emissions.

Each retail tenancy shall be provided with independent split system type air conditioning units suitable for the size of the space.

All mechanical systems shall be controlled by a Building Management System which will be programmed to optimise plant operation for convenient and energy efficient operation. The motel shall be operated on a separate BMS to the commercial/retail buildings.

In summary, the mechanical systems are appropriate, efficient systems, employing the latest technologies available.

### Electrical Services

The building will be supplied through the Country Energy network. Sub mains cabling will be run in electrical risers to service the building and distribution boards shall be provided with energy metering and monitoring facilities.

Each retail/commercial tenancy will be provided with a separately metered electrical supply.

The motel shall incorporate a “keytag” room access control system which will restrict power usage of a room, including air conditioning, unless it is occupied.

All buildings shall be provided with high efficiency light fittings utilising T5 fluorescent lamps which will significantly reduce the electrical consumption when compared to T8 light fittings. Time schedule and photo electric control shall be utilised.

General landscape lighting provided to the site will be controlled by photoelectric cells and time switches.

Emergency and exit lighting will be provided throughout the building.

A conventional lightning protection system will be provided for the building.

**Communications Services**

Telecommunications backbone cabling will be provided from the Building Distributor throughout the motel. The motel shall also be provided with an MATV system to provide distributed entertainment services to each bedroom.

An access control and security system shall be provided to the motel.

Telecommunications services shall be provided to each individual retail tenancy. Within each commercial tenancy, the fit out of the communications services within the tenancy shall be provided by the lessor. Individual security systems to each commercial tenancy shall be provided by the lessor.

**Fire Services**

A fire detection and alarm system will be provided throughout the motel. The smoke detection system will comply with AS 1670.1, AS 1668.1, the BCA and any alternative building solution. The smoke detection system will call the fire brigade, initiate the emergency warning system, and initiate the smoke hazard management system and other relevant plant operation. The fire indicator panel will be located at the building main entrance.

Fire hydrants will be provided throughout the building. The fire hydrant system will comply with AS 2419.1, the BCA and any alternative building solution. The fire hydrant system will be served by an electric fire pump and standby diesel fire pump. The hydrant system water supply is from the Orange City Council water mains to supply. A fire brigade booster assembly will be provided. The hydrant system will be interfaced with the fire indicator panel.

Fire hose reels will be provided throughout the building. The fire hose reel system will comply with AS 2441, the BCA and any alternative building solution.

Fire extinguishers will be provided throughout the building. The number and location of fire extinguishers will comply with AS 2444, the BCA and any alternative building solution.

**Hydraulic Services**

Hydraulic services shall include, though not be limited to:

- Sanitary plumbing and drainage
- Trade waste systems
- Cold water system
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- Heated domestic water system
- Natural gas system
- Fire hydrants and hose reel service
- Sanitary fixtures, fittings and tap ware

Hydraulic Services shall be to the approval of:

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Hydraulic services shall be in accordance with:

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New service connections shall be made to the gas, water and sewage mains on the site, and be extended to the building. Services shall be sized to provide the required capacity to service the building.

Rainwater run-off shall be collected from all roofed areas and will discharge into the site rainwater harvesting system and overflow to the site stormwater system.

The sanitary plumbing and drainage shall consist of a combination of drainage and fully vented modified systems connected to the Orange Council sewer main. All vents shall terminate to atmosphere.

Trade waste treatment shall be provided to any lot which generates trade waste. The treated trade waste shall drain to the sanitary drainage system.

All sanitary fixtures and tap ware will be minimum AAAA rated.

We trust that the above is sufficient, however, please contact the undersigned if additional information is required.

Yours sincerely

marko.mojsin
Engineer