CENTRAL COAST REGIONAL CANCER CENTRE

HEALTH INFRASTRUCTURE
NSW HEALTH

ELECTRICAL, MECHANICAL AND COMMUNICATION SERVICES

PART 3A APPLICATION

STEENSEN VARMING

AUSTRALIA DENMARK IRELAND UK

DOCUMENT REVISION AND STATUS

RP.08REV1

Document Reference No.	**10776SR003**		**Document Author**	MF/IN/DV	
Date	**Rev**	**Issue**	**Notes**	**Checked**	**Approved**
21-10-2010	0		Draft	CA	MF
12-11-2010	A		Part 3a Application	CA	MF

Disclaimers and Caveats:

Steensen Varming (Australia) Pty Ltd **www.steensenvarming.com.au**

Sydney
160 Sailors Bay Road
Northbridge NSW 2063
Telephone: (02) 9967 2200

Canberra
218 Northbourne Avenue
Braddon ACT 2612
Telephone: (02) 6230 0502

TABLE OF CONTENTS

1 EXECUTIVE SUMMARY

This report has been prepared by Steensen Varming, for the Part 3A Application, for the proposed Central Coast Regional Cancer Centre (CCRCC), located at Gosford Hospital.

The Part 3a Application Report provides the outline description of the design solutions for the Mechanical, Electrical Services and Medical Gases which will serve the new CCRCC in addressing the existing capacity and any augmentation requirements of the development for the provision of the following services.

- Electrical;
- Mechanical;
- Communications;
- Medical Gases; and
- Security.

Each system that is proposed for use in the new CCRCC is identified and discussed in this report.

2 ELECTRICAL SERVICES

2.1 INTRODUCTION

The Part 3a Application report provides an outline description of the design solutions for the Electrical Services that will serve the CCRCC at Gosford Hospital. The scope of Electrical Services in this report covers electrical services, communications, nurse call and electronic security systems.

2.1.1 Standardisation of Plant and Equipment

To avoid concerns of the engineering and maintenance department in regard to the differences in type of plant installed in various parts of the Hospital and the resultant difficulties in servicing and replacing plant components, where possible new plant for all stages will be of similar configuration, component manufacture and control sequence.

2.1.2 Maintenance

2.1.2.1 Maintenance Contracts

Preventative maintenance of a new installation will form part of the project 12 month maintenance period.

2.1.3 Occupational Health & Safety (OH&S)

Adequate space will be provided for servicing of equipment and parts in plantrooms and the general areas. Equipment will be installed to ensure adequate serviceability without the need for unsafe work practices. Reference will be made to:

- Manufacturer's installation instructions
- Workcover requirements
- Australian Standards

Where special equipment is proposed, all necessary operating details of such equipment will be provided.

2.1.4 Redundancy and Spare Capacity

The redundancy and spare capacity provisions will be in compliance with TS11.

2.2 AUTHORITY CONNECTIONS

The existing Gosford Hospital site obtains its electricity supply form two chamber substations, one located on Cape Street North and the other located on Holden Street. The Holden Street substation is located adjacent to the proposed site and would be used as the electricity supply origin for this project. The Holden Street substation houses three 1500kVA transformers and has capacity to service the additional electrical load requirements for the proposed CCRCC.

The existing Gosford hospital site contains optical fibre and copper lead-in telecommunications cables with capacity to service the additional voice and data requirements of the proposed CCRCC.

2.3 POWER SUPPLY

The existing Holden Street substation (18166) feeds the main switchboard SS located adjacent to the substation, this main switchboard then feeds into the existing major switchboard which services the area of the proposed CCRCC. The existing major switchboard has capacity to service the lighting and general power requirements for the CCRCC, however, the Linac's, due to their high electrical loads, will need to obtain power supply form the main switchboard SS via a new circuit breaker mounted onto Supply 1 side of this switchboard.

It is intended that power supply for the additional mechanical services plant equipment shall be obtained from main switchboard SS Supply 2, however, no spare spaces are available and extension of the switchboard will be required to accommodate additional functional unit spaces to enable connection of the mechanical electrical loads.

2.3.1 Standby Generator Power Supply

The standby generators services the area of the proposed works are located on the southern side of the stage 3 building and connect directly to the existing major switchboard servicing the area of the proposed works. From our site investigations it appears that the existing standby generator capacity is sufficient to accommodate the additional standby supply requirements of the CCRCC.

2.3.2 Uninterruptible Power Supply

An uninterruptable power supplies will be provided for selected items of equipment as listed below.
Uninterruptible power supplies will be provided with 10 minute battery autonomy and be adequately sized to accommodate the electrical capacity of the following:

- Computer Room Lab racks.
- Linac Computer Equipment

The electrical reticulation associated with Linac UPS will be designed and installed to incorporate an external maintenance bypass to allow removal of the UPS (for maintenance if required) without compromising the integrity of the power supply to the items of equipment listed above.

2.3.3 Power Cable Reticulation

Submains will be reticulated from the main switchboard throughout the new CCRCC via a cable tray network secured to the soffit. Submains will terminate at separate normal supply and a standby supply distribution boards. Power sub-circuits will originate from each respective distribution board to provide both normal and standby supplies to outlets, equipment and appliances. The whole of the electrical installation will be designed and installed in accordance with the Australian Standard AS/NZS 3000:2000. Cable management systems will be utilised to ensure that cables are installed in a neat and professional manner and to ensure that equipment is serviceable

2.3.4 Electrical Distribution Cupboards

It is proposed to distribute general power and lighting sub-circuit cabling from the existing electrical cupboard DB1/1 as well as from a new electrical cupboard located towards the centre of the new CCRCC to limit cable distance, thereby limiting voltage drop.
As the Linac's require high power load, a separate and independent electrical cupboard will be provided to service this specialised equipment.

2.3.5 Wiring Systems for Patient Treatment

Wiring Systems for patient treatment areas will be designed and installed in accordance with the requirements of Australian Standard AS 3003 and the recommendations of TS-11.

Body Protected Areas will have 10mA Residual Current Devices.

Cardiac Protected Areas will have 10mA Residual Current Devices and be wired with Equipotential Protective Earthing.

In some cases such as operating theatres where cardiac-pulmonary by pass equipment is used Line Isolation Monitors and Isolation Transformers would be used instead of the RCDs.

In non patient areas 30mA RCDs will be used in accordance with AS/NZS 3000.

2.3.6 Medical Services Panels

The MSPs will be provided complete with all services including power, equipotential studs, RCDs, Nurse Call buttons, indicators, light switches, as shown on the room data sheets or typical drawings including communications, Cardiac Monitoring outlets & gas and suction outlets.

The Nurse Call points will be supplied and installed under Nurse Call trade and details of the outlets will be provided to the MSP manufacturer to allow the fascias to be factory punched to suit.

The communications and Cardiac Monitoring outlets will be supplied and installed under communications trade and details of the outlets will be provided to the MSP manufacturer to allow the fascias to be factory punched to suit.

The Gas and Suction outlets will be supplied and installed under Medical Gases Trade and details of the outlets will be provided to the MSP manufacturer to allow the fascias to be factory cut to suit.

RCDs will be flush mounted in the MSP. All power outlets located on the MSPs will be provided with switches and 'power available' indicators for normal supply, standby supply and the UPS (where applicable) supply. An audible signal is to be activated when a RCD trips or is switched off.

The shop drawings for each different type of MSP showing all dimensions, layout, labelling will be provided by the contractor.

The MSPs will generally be recessed, with outlets arranged as per Steensen Varmings drawings. The detailed design and installation of the panels will be coordinated with other services and joinery units etc. Where recessed the Panels will be capable of being mounted back to back in 92mm stud wall.

Where fire and acoustic walls exist cabling will be installed through joinery units to avoid penetrating the fire/acoustic wall.

All conduit 'droppers' are to be recessed into walls and are to terminate in recessed boxes at the rear of the MSP. The Recessed mounted medical services panels will be a standard proprietary item complete with all segregation boxes and separators between power services, communications and medical gas services.

For ease of installation and maintenance, all electrical and nurse call components will be grid mounted to the service duct independent of the fascia panels. All electrical equipment, accessories etc will be factory assembled and panel wired. Aluminium tee bars will be fitted at butt joints between panels to provide support and correct alignment. All corners and end plates will be fully factory welded and dressed.

2.3.7 Lighting System

Artificial lighting will be provided throughout the new buildings in accordance with the requirements of Australian Standard AS 1680 and the requirements of TS11. Luminaries will be energy efficient in their operation and incorporate a high light output ratio. Generally, the majority of luminaires used within the new buildings will incorporate efficient T5 triphosphor fluorescent lamps and electronic control gear.

Externally located luminaires will incorporate triphosphor fluorescent lamps or metal halide lamps. The lighting system will consider the security requirements of the Hospital. All triphosphor fluorescent lamps and metal halide lamps will incorporate high colour rendering properties Ra≥80 and a colour temperature of 4000K, to comply with the recommendations of TS-11. Where required cyanosis observation lamps will be provided.

Lighting control within the new building will generally be by local switches to individual rooms. Large open plan spaces may be bulk switch controlled. The lighting control system is to be designed and installed to utilize daylight wherever possible to minimise energy usage. Internal areas that have good levels of day lighting will be provided with automatic PE cell lighting control.

In addition to local switches, lighting in inter-departmental corridors will be 50% switched from the DB cupboards, 50% on BMCS control. External luminaires will be switched via photo-electric cell and time clock (BMCS) control. External lighting will be designed in accordance with AS 1158, AS4282 Obtrusive Lighting Code and AS4485, for new carpark areas, pedestrian pathways, and stairs.

The existing Stanalite Nexus emergency exit lighting and emergency lighting is to be provided throughout the new buildings in accordance with the requirements of the Building Code of Australia and Australian Standard AS/NZS 2293.

2.3.8 Lightning Protection System

A lightning protection risk assessment will be undertaken for the new building in accordance with Australian Standard AS 1768. It is anticipated that a lightning protection system to the building will be designed and installed in accordance with the requirements of Australian Standard AS 1768.

Lightning protection will be achieved by bonding the steel reinforcement rods within vertical concrete encased columns and bonding from these nominated down conductors to the metal roof to provide an electrically continuous path to earth from the roof and all exposed metal elements that project the roof line.

Co-ordination between the roof contractor and the lightning protection trade will ensure that warranties are maintained.

Transient Surge protection is also proposed to be installed on the power system.

3 MECHANICAL SERVICES

3.1 INTRODUCTION

This Part 3a Application report provides an outline description of the design solutions for the Mechanical Services that will serve the CCRCC at Gosford Hospital.

This will form the basis for the schematic design and documentation phases of the project.

3.2 SELECTION OF SYSTEMS

All systems are selected to provide flexibility, reliability, and economy in installation, maintenance and operation. The extent of redundancy for the new building is to be discussed and finalised with the client.

3.3 FIRE COMPARTMENTATION

The existing building utilised both sprinkled areas and non-sprinkled smoke controlled areas. A fire engineer has been engaged and is currently advising on the compartmentation between the new and existing buildings and will determine the requirements of the scope of works for this project that are related to fire protection and smoke control. Fire separation and any requirement for smoke control or pressurisation of areas for smoke control are also currently being discussed with the fire engineer.

3.4 DESIGN GUIDELINES

The mechanical services design is based on a number of performance and engineering principles relating to temperature, humidity, air flow/pressure gradients, energy efficiency, acoustics, and flexibility/adaptability/reliability, maintenance and code requirements.

3.4.1 Temperature and Humidity

The following design conditions are referenced from AIRAH DA9 Guidelines.

3.4.1.1 Summer

For general air-conditioned areas, the internal design condition will be 23 degree C and 55%rh. The relative humidity will not be actively controlled but is expected to fall within the design value within a 10% range as a by product of air-conditioning. The temperature will be controlled to within plus and minus 2 degree C.

For any specialised rooms, control of relative humidity will be provided subject to verification of this requirement.

The external design condition to be used for all non critical area load calculations and equipment selection will be 31 degree C DB and 23 degree C WB.

3.4.1.2 Winter

For general air-conditioned areas, the internal design condition will be 22 degree C. Temperature will be controlled to within plus and minus 2 degree C. The relative humidity will not be controlled.

For any specialised rooms, control of relative humidity will be provided subject to verification of this requirement.

The external design condition to be used for all load calculations and equipment selection will be 6 degree C.

The following list shows the key critical codes and design guidelines that will be referred to in the design:

- SWAHS Facilities Standards
- TS-11 re Department of Health Design Guidelines
- BCA
- AS 1668 re Ventilation and Smoke Control systems
- AS 2117 re Acoustics
- AS 2896 re Medical Gases
- AS 3666 re Control of Legionella Bacteria
- AS 3000 re Electrical Wiring

3.5 PLANT ROOMS AND ACCESS

Whilst investigations are being undertaken to determine the viability of locating some items of plant in the existing building, plantrooms housing mechanical plant to serve the new extension will be required.

3.5.1 Air Handling Plant

New air handling units will be used as outside air units to serve both the new extension and the refurbished area of the existing building. Fan Coil Units will be used areas such as communications rooms and separate zones to supplement the cooling/heating requirements of the building.

It is currently not feasible to locate Air Handling Plant in the new extension to the building due to space and cost constraints. Instead, the existing air handling unit plant room that currently serves the area of the existing building that is to be refurbished, has spare capacity to house additional air handling plant and as such the new equipment will be located here. Large ducts will need to be reticulated through to the existing building to serve the new extension.

Air conditioning through the new portion of the building will be conditioned with the proposed air handling system which will be a combination of VAV and Localised FCUs.

Variable Air Volume (VAV)

VAV systems offer better flexibility in zoning and therefore better suited for future modifications. The option for a Multizone system was investigated; however these are usually less energy efficient to achieve the same degree of control of temperature as VAV. In order to achieve the same degree of zoning control as that offered by VAV, the amount of ductwork emanating from the plant room to each floor will be substantial, not to mention the associated riser and ceiling space required.

Variable speed drives will be provided to each VAV air-handling unit and return air fans with a static pressure sensor to modulate the fan speed to match the building loads. Each VAV box will include a

heating coil to provide winter heating and zone adjustments.

Localised Fan Coil Units (FCUs)
Localised FCUs will be mounted within the ceiling void and provide zone control for specialised spaces.

Combination of VAV and FCU
A combination of both VAVs and FCUs is the most appropriate and economical for the application of the CCRCC. This will provide the efficient zoning of the VAV system and the localised FCU for specialty rooms such as communications rooms and the like.

3.5.2 Energy Plant

Investigations of existing plant locations, spare capacity and unused space has been undertaken. It has been determined through our investigations that the existing mechanical plant has no spare capacity and as such it is our recommendation to extend the existing system as discussed in further detail below.

The main components of the energy plant consist of the following:

- Chilled Water Plant for Air Conditioning
- Air Cooled Chillers Serving Linear Accelerators
- Hot Water Plant

The plant rooms housing the Chillers and a Heating Water Unit are required to accommodate the following:

- Individual air cooled chillers to serve the Varian Linear Accelerators
- An air cooled chiller for the air conditioning of the new building
- A hot water heater for the air conditioning of the new building.
- Associated pumps
- Chilled water buffer tank for low load requirements
- Pipework
- Access space for maintenance etc.

Chilled Water Plant
A new chilled water plant for the new building extension is to be provided. It is our recommendation to extend the existing system via one of the following two options:

- The addition of a water cooled chiller and extending the capacity of the existing cooling towers.
    - The existing chiller plant room that serve the stage 1 area of the building has additional space that is currently used as storage. This area may be sufficient to house an additional water cooled chiller that would connect into the existing system.
    - This additional chiller would then be required to be connected to the cooling tower plant and this heat rejection system will be expanded to accommodate the increased load of the new chiller.
    - Through preliminary investigations, it is apparent that the reticulation path from the existing chiller plant room to the cooling towers is tight. It may not be possible to find a path for additional condenser water pipes to be reticulated through the building and as such a secondary option has been provided in the way of an air cooled chiller.
- The addition of an air cooled chiller which may be connected into the existing system.
    - If this option is decided upon, the air cooled chiller will be housed in a plant room north of the bunkers. The retaining wall and surrounding area will need to be excavated to provide sufficient space for this chiller to be located.
    - Connecting an air cooled chiller to the existing system may provide a different type of

redundancy whereby if there is an issue with the cooling tower system (such as a legionella outbreak), the air cooled chiller would not be affected and would still be able to function.
- If the air cooled chiller is connected to the existing system then this will provide a different form of redundancy to the addition of a water cooled chiller. That is, in the event of a legionella outbreak, the air cooled chiller would not be affected.
- To connect the existing system to the air cooled chiller a reticulation path would need to be found that would connect the new and the existing system.
- If connection between the existing system and new air cooled chiller is not feasible or not required, then the air cooled chiller will be kept as a separate entity and serve only the new cancer care centre.
- Air cooled chillers are required to be situated within an open plant deck with louvre screening around the outside or on the roof of the building with no screening.

The plant configuration for the new CCRCC will have notionally 1 main air cooled chiller, for the air conditioning of the new site and a chilled water buffer tank to accommodate for the low load requirement.

Air Cooled Chillers Serving Linear Accelerators

Three smaller individual air cooled chillers (in the order of 29KW each) will be used for the Linear accelerators. Two of these chillers will be serving the two linear accelerators that will be installed as part of these works. The third chiller will be used as redundancy and connected to both chillers as part of these works. The future plans for the CCRCC include the addition of a third linear accelerator. As such, the third smaller chiller may be used to serve this linear accelerator. If it is deemed necessary for additional redundancy to be incorporated then this can be considered at a later date when new works will be carried out. These chillers will be located in an open roof plant room complete with louvered screens on the sides.

Hot Water Plant

The heating requirements for the Air Conditioning of the new CCRCC shall consist of a new hot water heater to serve the new building. The unit will be accommodated within an enclosed plant room north of the bunkers of the new cancer care centres. The plant room will be beneath that of the new air cooled chillers and will be ventilated to meet the gas code requirements.

3.5.3 Air Filtration

All air handling systems as a minimum will be provided with good quality filtration including both outside air filtration and final filters. Panel filters will be provided to the outside air with deep bed bag filters being used as final filters.

3.5.4 Exhausts

Toilet Exhausts

Exhaust of toilets will be compliant with AS 1668.2.

Other Exhausts

Exhaust systems will be provided to serve other rooms such as cleaners, dirty utility and the like and will be compliant with AS 1668.2

3.6 BUNKERS

There are two types of cooling that are required for the bunkers:
- Direct cooling to the Varian Linear Accelerators
- Cooling for the room

Individual chillers shall be provided for the individual cooling requirements of the Varian Linear Accelerators.

The air conditioning of the bunker will need both cooling and heating. This will be provided on a centralised system that will serve the entire Cancer Care Centre.

3.7 ENERGY CONSERVATION

Energy efficiency will be an integral part of all mechanical services design. The items that will be considered for inclusion are detailed in a separate report.

3.8 ACOUSTICS AND VIBRATION

Information on the systems and equipment will be sent to the acoustic consultant for review and advice on treatment of ductwork and any special sound attenuation that may be required to treat break out as well as in duct noise levels.

3.9 BUILDING MANAGEMENT SYSTEMS AND AUTOMATIC CONTROLS

3.9.1 SCOPE

Gosford Hospital is served by two existing BMCS systems. All new equipment will be added on to the most recent of the two BMCS systems.

It is proposed that the system will cover the following services:

- Mechanical services
- Chilled water plant
- Heating plant
- Air handling systems
- Ventilation systems
- Lighting
- Power
- Medical Gases supply
- Water systems
- Interface with security and other communication systems as appropriate

4 COMMUNICATIONS

4.1 STRUCTURED VOICE/DATA CABLING SYSTEM

4.1.1 General

A new structured voice / data cabling system will be provided within the new buildings. The installation will conform to AS/NZS3080 requirements, as well as the NSCCAH Central Coast Sector Network Cabling Standards.

4.1.2 Telecommunications Rooms / Risers

The voice and data communications services for the cancer care centre will be an extension of the existing hospital telecommunications system. The existing Hospital main communications room has capacity to accommodate additional copper and optical fibre backbone cabling to connect to the new telecommunications room for the CCRCC.

4.1.3 Telecommunications Rooms

Communications structured cabling equipment shall be enclosed within a new communications room centrally located within the CCRCC. The room will be a minimum of 12m^2 and are accessible from the corridor. The communications rooms will not have a raised floor but rather a grid of cable trays above the communications racks. An anti-static floor will be provided to comply with TS-11.

The room will have air conditioning using local fan coil units and be provided with standby power supply.

The rooms will be the service nodes for:
Voice and Data Structured Cabling
Nurse Call
Security
MATV
BMCS

The services within the communications room shall be supported by rack mounted UPS.

4.1.4 Proposed System

It is proposed that for Horizontal Structured Cabling to comply to the ADC KRONE PremisNET certification, Category 6 UTP communications cabling be used termination at RJ45 outlets at the work place. Any required shielding of cabling will be facilitated by the communications cable management system rather than use of the STP cabling in local areas.
The recently circulated draft update of TS-11 communications section calls for shielded cabling to be provided, STP rather than UTP. We will review this requirement with Gosford Hospital IT to consider this in conjunction with the current Network Standards.

<u>Category 6</u>
This standard is tested to ISO/IEC 250MHz Class E Channel requirements.

For performance to be guaranteed the entire structured cabling system is to utilise matched components from the same manufacturers system as the sockets.

4.1.5 Information Outlets

Information outlets will consist of the nominated number of Cat 6 RJ45 jacks, mounted in a faceplate to match the electrical power faceplates. The location of each outlet will be coordinated with power, and other relevant equipment. The cable will run back to the nearest communications room using cable tray and centenary wire cable support systems in the ceiling space.

Cable runs will generally be over corridors and publicly accessible areas, with good maintenance access. At the communications room, the cable will be terminated on rack-mounted RJ45 patch panels, grouped according to the floor where the outlet is located.

Reticulation of cabling will be such that the Cable Lengths are within 90m, 5m lengths are allowed for by fly leads and patch leads, total lengths 90m maximum.

4.1.6 Patch Leads

Sufficient quantity of RJ45 to RJ45 Category 6 patch leads of various lengths to patch all field voice and data outlets will be provided.

Patch leads shall be coloured to identify voice and data services.

4.1.7 Fly Leads

Sufficient quantity of RJ45 to RJ45 Category 6 fly leads of 3m lengths to patch all data field outlets to end user equipment. Fly leads associated with the telephone handsets shall be provided with the handsets.

4.1.8 Vertical Cabling

General

Redundancy will be as detailed on the communications single line diagram drawing.

Campus Backbone Between Buildings

Major network nodes will be connected by single-mode optical fibre cables, to form a ring structure spanning the campus.

For telephone services, major distribution frames will be connected by multi-pair UTP external grade block cable, in the form of a hierarchical tree structure, spanning the campus. The capacity of the cable will be determined by the local requirements, in multiples of 50 pairs.

Where available, these will be run within building spaces, however, where this is not possible, the cables will be run underground, within a pit and conduit network established for this purpose.

Where fibre optic cable runs underground, it should be a loose-tube, jelly-filled construction, with slack cable coiled at every pit, and at each point where the cable enters a building.

4.1.9 Lab Racks

Each communication rack will have the following specifications:

45RU lab racks to accommodate standard 19” rack mounted equipment, complete with power rail, and sufficient number of RJ45 passive patch panels to terminate field outlets. Steel cable management panels are required at regular intervals.

Ventilation:
Rack Top Mounted Fans x 2, Open at side bottom.

Shelves:
2 fixed + 2 removable, perforated steel capable of holding 20 kg safely and adequately. No greater than 2RU on face mount.

Cable Entry: Top, Provide cable management to the sides.
Power Outlets: Single GPO x 10; mounted vertically down the rack

Fixing:
The lab racks shall be securely fixed to the floor and the slab above.

4.1.10 Labelling

The labelling of the Structured cabling will be as per the NSCCAH Central Coast Sector Network Cabling Standards.

4.1.11 Testing

Testing of the installed telecommunications system shall be undertaken in accordance with the Australian standards and manufacturers recommendations.

4.2 PABX

The existing PABX shall be retained and expanded by the Hospital IT to accommodate the additional voice services associated with the CCRCC

4.3 PAGING SYSTEM

The existing paging system at Gosford Hospital is to be retained and be expanded to incorporate the paging requirements of the CCRCC.

4.4 NURSE CALL SYSTEM

The existing Austco Medicom nurse call system, currently used throughout Gosford Hospital will be expanded to accommodate the nurse call requirements of the CCRCC. The nurse call systems will incorporate nurse call, staff assist, staff presence, emergency call and porter call points.

The annunciator panel must be located so that it is visible from the Staff station and those annunciator panels located along the length of the corridor must be double sided and ceiling mounted. The annunciator panel will be alphanumeric with logical numbering.

4.5 MATV / RADIO SYSTEM

The existing central MATV / Radio system at Gosford Hospital will be modified / extended throughout the new CCRCC.

MATV outlet locations are as nominated on the room data sheets.

The TV monitors and their support bracket suspended from the ceiling pole or wall stud will be a Group 2 item, either from a hire company or purchased by the Hospital.

4.6 VIDEO CONFERENCING & TELEMEDICINE

We have not identified any Video Conferencing requirements for this project, the need for video conferencing will be taken up further with SWAHS, if required this will impact on the communications as well as lighting to the video conference room.

Any Video conferencing and telemedicine audio visual equipment will be a Group 3 item however cabling requirements for the following shall be confirmed:

- Planning Room
- Meeting / Tutorial Room

5 MEDICAL GAS SYSTEM

5.1 GENERAL

The location of plant and outlets will be coordinated with architectural planning but will take into consideration maintenance and operational requirements. Oxygen and other gases will be served from the existing compounds.

Each department will be provided with an isolation valve box and alarm panel. Their locations will be determined in the detail planning of the departments. Medical services outlets will be specified to suit user requirements and it is anticipated the types will be compatible with the existing Hospital outlets.

The entire installation will be designed to AS 2896.

5.2 OXYGEN

The existing Gosford Hospital is served by an oxygen VIE compound. This compound accommodates a bulk vessel as well as a standby vessel. It is proposed that these existing units will be sufficient for the new development at Gosford.

An oxygen line is installed from this compound into the Hospital. A connection will be made from the main distribution point to serve the new building.

5.3 MEDICAL AIR

There is an existing medical air plant in the existing building. The plant room will be able to accommodate space for additional medical air compressors if required.

5.4 VACUUM SUCTION

An existing vacuum plant exists in the existing building. This unit can be extended to serve the new building.

6 ELECTRONIC SECURITY

6.1 GENERAL SECURITY

Security issues are of increasing importance due to the prevalence of violence and theft in the hospital environment. Therefore, the following items have been considered.

- Personal security of patients, staff and visitors
- Security of property of patients staff and visitors
- Security of hospital equipment and stores items
- ACCESS and egress / unauthorised intrusion
- Night staffing conditions

The electronic security system includes functional elements as follows:

- Access control
- Intruder detection and alarm system
- CCTV
- Duress alarms
- Security Lighting

The extent of the electronic security system shall be determined in consultation with the NSCCAH. The new electronic system will be provided in accordance with the Northern Sydney Central Coast Health security Hardware specification.

6.2 ACCESS CONTROL SYSTEM

NSCCH utilises the Honeywell Prowatch system with PW6000 controllers configured back to the head-end located at royal North shore Hospital. A Prowatch Administration Computer is located within each site security office for satellite administration.

6.3 INTRUDER DETECTION AND ALARM SYSTEM

Intruder alarms must connect to the InnerRange Concept 4000 system, expanders are to be installed where required.

6.4 CLOSED CIRCUIT TELEVISION

A surveillance system is designed to be a deterrent to illegal activity as well as providing the ability to review incidents after the event. It is not intended for the CCTV system to be monitored at all times as incidents will be recorded automatically.

A new CCTV system will be provided to the CCRCC and incorporate the following elements.
CCTV Digital Video recorders
Colour CCTV Cameras

6.5 DURESS ALARM SYSTEMS

The three type of duress system in place at NSCCH are:

- Inner Range Concept 4000 system
- Solution 16 system
- Integrated Wireless ASCOM system

The type of system will be determined by the NSCCH security systems administrator

6.6 SECURITY INTERFACES

The interfaces include direct links to the security office, PABX , paging system and the building management system.

6.7 INTERCOM SYSTEM

New intercoms will be located at nominated entry doors as indicated in the Room Data Sheets.

The intercom system will connect entry points with internal secure areas and shall be combined with the electronic security system to control peoples movement during nominated times.