

If a building becomes architecture, then it is art. Clearly, if a building is not functionally and technically in order, then it isn't architecture either – it's just a building.  
**Arne Jacobsen**

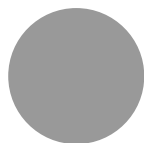
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Copenhagen  
London  
Sydney  
Hong Kong  
New York

Level 8, 9 Castlereagh Street  
Sydney, NSW, 2000, Australia  
ABN 50 001 189 037  
t : +61 / 02 9967 2200  
e : info@steensenvarming.com

## BUILDING SERVICES

## STEENSEN VARMING



# Utility Services Report Mechanical & Electrical Services

**Sydney January 4th, 2021**  
Project No. 177192

**Ivan Mira**  
Associate

ivan.mira@steensenvarming.com  
02 9967 2200

**Project Name:** Griffith Base Hospital Redevelopment

**Project No:** 177192 **Revision** 03

**Checked:** Darren Cassidy

**Subject** Utility Services Report – Mechanical and Electrical Services

## 1.0 Introduction

### 1.1 Scope of SSDA

Steensen Varming have been engaged by Health Infrastructure to complete the design works for the electrical and mechanical services for the Griffith Base Hospital Redevelopment. This report relates to the following scope of works:

- Demolition of Building 25
- Construction of new clinical services building
- Construction of new western car park
- Demolition of buildings 1, 2, 6, 15, 16, 17, 19, 20, 22, 28, 29, 31 and 35
- Landscape work
- Construction of new main car park
- Demolition of temporary car park

### 1.2 Site Overview

Griffith Base Hospital was founded in 1922 and is one of the primary providers of public hospital, community health and aged care services to the Murrumbidgee Local Health District.

The hospital site is D-shaped with the primary building, the Medical Services Block, centrally located on the site. There are approximately 30 buildings located around the site which are all of varying sizes, age and condition.

The Medical Services Block (MSB) has a central plant area containing water cooled chillers, cooling towers and boilers. There is a medical gas plantroom located on the lower ground level containing air compressors, suction and gas bottles. The other various buildings around the site are primarily served by DX reverse cycle air conditioning units.

Electrically the existing site is serviced by a single 1000kVA transformer currently located to the west of the existing MSB building. It supplies into the site main

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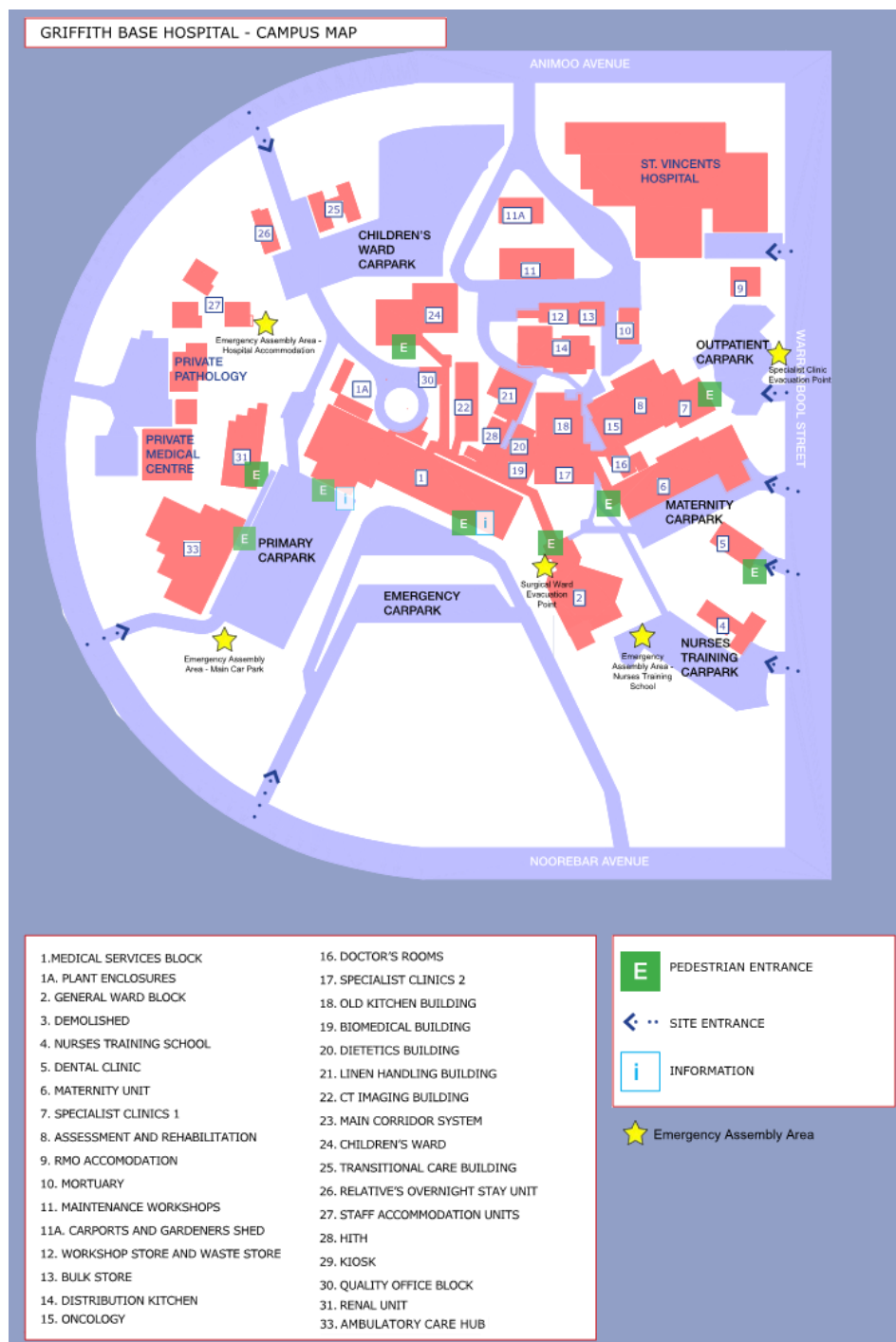
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switchboard which in turn supplies all buildings on the site. Back up power provision is provided through an existing externally installed 800kVA generator located adjacent to the existing kiosk transformer. Site wide communications is serviced through the existing campus distributor room located in the MSB building from which links are provided to each building on the hospital site.



### 1.3 SEAR 5 – Environmental Amenity

SEAR 5 notes the requirement to provide an analysis of proposed lighting that identifies measures to reduce light spill into the surrounding sensitive receivers.

The exterior lighting will focus on functional illumination and key accents to support the user journey at night time, facilitating wayfinding and orientation and assisting in the creation of a safe environment and will be designed in consideration of minimizing spill light to adjacent properties and in consideration of public amenity.

The external lighting will focus on key elements including the external car parks, connecting pedestrian pathways, building transition points from internal to external (forecourts and plaza pedestrian links) and landscaped courtyards. It is not anticipated that façade lighting will be provided.

The following mitigation measures will be considered to minimize spill light:

- Selection of luminaires with appropriate distribution for the task
- Where lighting horizontal surfaces, luminaires to have minimal upwards light ratio
- Mounting orientation of light sources
- Direction of light
- Fitting selection with good optical control
- Minimisation of direct visibility of light sources (no omni-directional luminaires)
- The use of any uplighting shall be carefully positioned and aimed to the underside of canopies, reducing upward spill light
- Use of shields and louvres where appropriate
- Pole lighting with direct downward lighting and full cut-off optics
- Consideration of site lines and different viewing angles to minimise glare.
- Use of lighting control system to automate the timing of the installation and in certain areas allow adjustment of intensity.

### 1.4 SEAR 15 - Utilities

SEAR 15 relates to the impact of the development on existing utility infrastructure and services provider assets surrounding the site, off-site upgrades and proposed staging of authority related works.

The electrical and telecommunications utilities fall within the scope of Steensen Varming services design.

Based on the design information packages issued by Essential Energy it is our understanding that no upgrades are required to the surrounding Essential Energy infrastructure and that there is enough capacity in the existing network to service the additional load introduced by the project. The new high voltage cable within the hospital site is to be at existing Essential Energy pole 96-5177.

Regarding staging, the existing kiosk transformer will remain in place and in operation until the existing MSB building is demolished. During the construction of the new Clinical Services Building, 2 new kiosks will be established which will eventually supply the requirements of the whole site. During commissioning, all 3 kiosk transformers will be in operation.

Based on the design information packages from Essential Energy, all works required to the authority network related to the project are customer funded.

Applications for the new incoming telecommunications services are being managed by the Local Health District (LHD). It has not been reported to the team whether the new connections will impact upon the existing telecommunications network in the surround area. An incoming service will be established during the construction of the new main building and link into the new main communications room on the lower ground floor. The existing incoming service to the existing MSB building shall remain in place and operational until such time that the building is demolished.

## 2.0 Associated Works

### 2.1 Demolition of Building 25

**Power Services** – Existing building 25 is supplied directly from the hospital's existing main switchboard which is supplied from the existing kiosk substation on the hospital site. The power connection to building 25 will be disconnected, made safe and then demolished. This work will not impact the existing incoming power supply.

**Telecommunications Services** – Telecommunications services to building 25 is provided through the Griffith hospital main communications room. The existing main communications room is served by the existing incoming telecommunications service. No change to the existing incoming telecommunications service will occur because of this work.

**Mechanical Services** – The heating & cooling system within building 25 is a dedicated reverse cycle split air conditioning system, that is independent from other buildings on the site. This system will be isolated, degassed, disconnected and removed from site.

### 2.2 Construction of New Clinical Services Building

**Power Services** – The power supply to the New-Clinical Services Building will be derived from a new pair of kiosk transformers that are sized to supply the entire site following the completion of the works. The two kiosk transformers will supply into the new main switch room which will then distribute power throughout the site. An application for connection for the new transformers has been submitted by the Level 3 Accredited Services Provider to Essential Energy. Upon completion of the new building works, the existing transforming supplying the existing main services building will be decommissioned, made safe and demolished.

**Telecommunications Services** – A new incoming telecommunications services will be arranged for the site and supply into the new main communications room within the new main building. Following the construction of this new communications room, all new and existing telecommunications requirements for the site will be serviced by this room.

**Heating and Cooling Systems** – The new Clinical Services Building will be provided with a new 2MW chilled water system to provide critical and comfort cooling for the

spaces within the new building. The system will consist of both air- and water-cooled chillers and associated cooling towers. To provide the heating, a new 1600kW gas fired heating hot water system is being proposed.

Air Conditioning, Ventilation, Indoor Air Quality and Infection Control - Traditional Variable Air Volume (VAV) system typically provide the best balance between capital cost and running cost when assessing the various options for non-critical clinical floors. Fan coil units will provide the best solution for high heat load spaces such as imaging rooms and selected non-clinical areas or transient spaces such as meeting rooms.

Localised constant air volume (CAV) systems will serve the critical areas such as theatres and isolation rooms.

Local exhaust systems to meet best practice indoor air quality standards will be required in such areas as birthing suits, triage, dirty utilities and theatres.

Positive and negative isolation rooms will be carefully designed to provide maximum (airside) isolation from surrounding areas.

Medical Gas Services – The existing oxygen vessel shall remain in its current location and continue to serve the SVPCH during the redevelopment works. A new oxygen vessel shall be provided to serve the new building, along with feeding the SVPCH. The system shall be sized to meet the estimated demand requirements as prescribed in the Australian Standards – AS 2896.2011.

It is proposed that new local medical air compressors and vacuum shall be installed in the new clinical services building to meet the demands set out in AS2896.

## 2.3 Construction of New Western Car Park

Power Services – The new western car park will be supplied with new lighting and security cameras. Power supply to the new light fittings shall be derived from the new main switchboard. Pole mounted CCTV cameras shall be connected to the same power supply provided to the pole lights.

Telecommunications Services – Fibre cabling shall be utilised to connect the CCTV cameras to the new main communications room and linked into the site wide security system.

Lighting Design – The new western car park will be provided with pole mounted lighting designed to provide lighting levels required by the Australia standards. The lighting will be designed and selected to limit the amount of lighting spill to adjacent properties. The design is to consider implementation of mitigation measures to reduce spill light including mounting orientation of light sources, direction of light, fittings selection with good optical control and a lighting control system to automate the timing of the installation.

Mechanical Services – Not applicable

## **2.4 Demolition of Buildings 1, 2, 6, 15, 16, 17, 19, 20, 22, 28, 29, 31 and 35**

**Power Services** – Existing buildings 1, 2, 6, 15, 16, 17, 19, 20, 22, 28, 29, 31 and 35 are supplied indirectly from the hospital's existing main switchboard which is supplied from the existing kiosk substation on the hospital site. The power connections to these buildings will be disconnected, made safe and then demolished. This work will not impact the existing incoming power supply.

**Telecommunications Services** – Telecommunications services to buildings 1, 2, 6, 15, 16, 17, 19, 20, 22, 28, 29, 31 and 35 are provided through the Griffith hospital main communications room. These links will be demolished as part of the works. The existing main communications room is served by the existing incoming telecommunications service which is to be replaced with a new incoming communications connection to the new main communications room.

**Mechanical Services** – Building 1, the Medical Services Block, has a central plant area containing water cooled chillers, cooling towers and boilers. Building 2, the General Ward Block, and Building 6, Maternity, are partially fed from this central plant system. The other buildings are all provided with dedicated reverse cycle split air conditions systems that are independent of each other.

Once the new Clinical Services Building has been built and commissioned, the buildings listed above can be demolished without any impact to the overall hospital site and capacity of the systems in the new Clinical Services Building.

## **2.5 Landscaping Works**

**Power Services** – Power supplies from the new main switchboard shall be provided to any landscaping items requiring power to be advised by the landscape consultant.

**Telecommunications Services** – Not applicable.

**Lighting Design** – The new landscape areas will be provided with considered lighting to support access and use in the late afternoon and early evenings where applicable. The lighting will be designed and selected to limit spill light to adjacent properties and upwards waste light. The design is to consider implementation of mitigation measures to reduce spill light including mounting orientation of light sources, direction of light with any uplighting carefully positioned and aimed to the underside of canopies, selection of luminaires with appropriate distribution for the task, consideration of site lines and different viewing angles to minimise glare and a lighting control system to automate the timing of the installation and allow adjustment of intensity.

**Mechanical Services** – Not applicable

## 2.6 Construction of New Main Car Park

**Power Services** – The new main car park will be supplied with new lighting and security cameras. Power supply to the new light fittings shall be derived from the new main switchboard. Pole mounted CCTV cameras shall be connected to the same power supply provided to the pole lights.

**Telecommunications Services** – Fibre cabling shall be utilised to connect the CCTV cameras to the new main communications room and linked into the site wide security system.

**Lighting Design** – The new western car park will be provided with pole mounted lighting designed to provide lighting levels required by the Australia standards. The lighting will be designed and selected to limit the amount of lighting spill to adjacent properties. The design is to consider implementation of mitigation measures to reduce spill light including mounting orientation of light sources, direction of light, fittings selection with good optical control and a lighting control system to automate the timing of the installation.

**Mechanical Services** – Not applicable

## 2.7 Demolition of Temporary Car Park

**Power Services** – All power services installed to serve the temporary car park shall be disconnected, made safe and demolished as part of the works.

**Telecommunications Services** – All communications services installed to serve the temporary car park shall be disconnected, made safe and demolished as part of the works.

**Mechanical Services** – Not applicable