Hydraulic Fire Environmental

Hydraulic & Fire Services

Part 3a Application

Central Coast Regional Cancer Care Centre

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1 INTRODUCTION

1.1 Background

Health Infrastructure have engaged SPP Group Pty Ltd in the capacity of Hydraulic and Fire Services Engineer, for the Part 3A Application stage of the proposed Central Coast Regional Cancer Care Centre (CCC) development at Gosford.

1.2 Aims

The aim of this report is to provide information regarding Hydraulic and Fire Services to support the Part 3a application to Planning NSW. The report outlines the different services to be installed within the proposed development and how they connect to the existing infrastructure around the site.

Specifically this report identifies and evaluates the proposed design concepts relating to the following hydraulic and fire services;

- Sanitary Drainage
- Trade Waste Drainage
- Stormwater Drainage
- Cold Water Supply
- Hot Water Supply
- Gas Supply
- Fire Hydrants
- Fire Hose Reels
- Fire Sprinklers
- Fire Smoke Detection Systems
- Emergency Warning and Intercommunication Systems (EWIS)

1.3 Location

The proposed CCC development will occur on the existing Gosford Hospital site.

Gosford Hospital Site indicating Proposed Cancer Care Centre

The proposed CCC building will be bounded by the following:

- Existing Stage 1 portion of the Gosford Hospital on the West.
- Existing Stage 3 portion of the Gosford Hospital on the South.
- Existing entry road on the East and Holden Street.
- Existing “Children’s Ward” on the North.

The existing site is approximately 50% landscaped area and 50% road/paved area. The site is generally flat with a slight fall to the east. However, the site falls off steeply between the existing driveway and Holden Street and is supported by and existing retaining wall.

1.4 Integration with Existing Elements

The proposed development will be constructed so that there is a considerable integration with the eastern end of the Stage 3 portion of the hospital. A number of rooms will be demolished and some facilities will be relocated to make way for the proposed Cancer Care Centre (CCC).

The proposed development will also have some integration with the existing Children’s Ward on the northern side in order to maintain adequate fire egress for the existing building.

1.5 Authorities & Regulations

The following Authorities and regulations have been identified for compliance with regard hydraulic and fire services aspects of this project;

- NSW Department of Health
- Central Coast Area Health Service
- Gosford Regional Council
- NSW Fire Brigades
- Environmental Protection Authority
- Building Code Of Australia
- Relevant Australian Standards
- NSW Code Of Practice – Plumbing & Drainage
- NSW Department of Health - TS11 Engineering Services Guidelines
- Hosplan Code Of Practice - Thermostatic Mixing Valves
- NSW Department Of Health Circular 98/44 - Technical Requirements for Cold & Heated Water

2 SERVICES CONCEPTS

2.1 Sanitary Drainage

Existing

There is an existing sanitary drainage network across the site with the main service affecting this development running below the existing Stage 3 building and continuing to the west. The service is 150mm VCP pipe and is estimated to have adequate capacity as the new fixtures to be installed within the existing building footprint will not vary a great deal from what is currently installed. The 150mm sewer service runs to the western side of the site and connects into the Stage 1 sewer drainage, which subsequently connects to the authority sewer main in Cape Street North. It is assumed that the existing authority sewer drainage has capacity for the new development. This will be confirmed with the authority following the Part 3A approval. Council has been contacted and we are waiting on a response.

There is also an existing Authority sewer main that runs east-west across the site on the southern side of the existing Stage 3 building. This connects into the existing sewer main in Holden Street approximately 60m north of Ward Street.

Proposed

The areas of the existing building that are to be reconfigured as part of this development will connect and discharge into the existing sewer drainage service. For all proposed fixtures that are located outside of the existing building footprint (in the forecourt), a new sewer connection to existing Authority sewer main within the site, on the southern side of Building 3, will be provided.

2.2 Trade Waste Drainage

Existing

There are a number of existing trade waste pre-treatment devices on the existing site. However, the proposed development will not connect to any of the existing devices.

The existing grease arrestor located on the southern side of the Stage 3 building serving the Cafe will become redundant during this project and shall therefore be disconnected and removed.

Proposed

The proposed CCC development will include the installation of two linear accelerators for the treatment of cancer patients. The waste produced by these machines is not considered to have any radiation content and will therefore discharge directly to the authority sewer.

2.3 Stormwater Drainage

Existing

There is an existing stormwater drainage network across the site with the main two services affecting this development located as follows:

- There is an existing 225mm stormwater service on the southern side of the existing Stage 3 building collecting building and road drainage that is available for connection. This connects to the existing authority drainage in Holden Street.
- There is an existing stormwater system collecting the road drainage in the forecourt area. This connects to the Authority drainage in Holden Street adjacent to the existing vehicle entry.

Parts of both services will become redundant during this development and where required services will be disconnected and removed. Services to be modified will be designed and documented by the Civil Engineer.

It is assumed that the existing authority stormwater drainage has capacity for the new development. This will be confirmed with the Authority by the Civil Engineer.

Proposed

The stormwater services for the proposed building will be a mixture of conventional stormwater drainage and siphonic stormwater drainage. The systems will be run throughout the building to collect all areas open to atmosphere. All roof areas collected will discharge into a rainwater reuse tank for reuse within the hospital grounds within the vicinity of the new CCC. All surface areas and the overflow from the rainwater reuse tank will then discharge into the Civil stormwater drainage system.

The rainwater reuse tank shall be connected to a non-potable cold water system and will be reused for irrigation and toilet flushing.

2.4 Cold Water Supply

Existing

There is an existing cold water network throughout the hospital grounds with the main incoming service located adjacent to the existing vehicular entrance from Holden Street. The existing service is 150mm diameter and is in good condition.

The cold water service connects into the existing 150mm authority water main within Holden Street. It is assumed that the existing authority water main has capacity for the new development. This will be confirmed with the authority following the Part 3A approval. Council has been contacted and we are waiting on a response.

Proposed

The proposed CCC development will make a new connection to the existing 150mm cold water service on site and extend to the new building. The new connection will pass through a “private” sub-meter and adequate zone backflow prevention as required.

We have carried out investigation relating to the existing customer service (using existing water bills) and confirm that it has adequate capacity for the proposed CCC development.

2.5 Hot Water Supply

Existing

The new CCC development will not be connecting to any of the existing hot water services on site.

Proposed

A new hot water plant will be provided for the proposed CCC development. The hot water plant will be a solar system with gas boost.

2.6 Non-Potable Cold Water Supply

Existing

The new CCC development will not be connecting to any of the existing non-potable water services on site.

Proposed

The new development will be collecting roof water for reuse on site for:

- Irrigation
- Toilet flushing within the new CCC building.

The non-potable water system will be installed with adequate pre-storage and post-storage filtration and treatment to ensure good quality of reuse water.

2.7 Gas Supply

Existing

There is an existing natural gas supply on site that feeds a number of existing buildings. We have carried out investigation relating to the existing customer service (using existing gas bills) and confirm that it has adequate capacity for the proposed CCC development.

The existing service is connected to an existing 75mm 210kPa natural gas main in Holden Street. We have had discussions with Neale Hilton from Jemena who has verbally confirmed that the existing gas main has capacity for the proposed CCC development. This will be confirmed with the Authority, Jemena, following the Part 3A approval.

Proposed

The proposed CCC development will include a new connection to the existing gas supply below the existing Paediatrics/Children's Ward on the northern side of the proposed site. The connection will be downstream of the existing gas meter. The gas supply will serve all gas appliances in the new CCC building as required.

2.8 Fire Hydrants

Existing

There is an existing Fire Hydrant (FH) service network throughout the hospital grounds with the main incoming service located adjacent to the main driveway entry at Beane Street. The existing service is 100mm diameter and is in good condition.

The fire service connects into the existing 150mm authority water main within Holden Street.

The existing FH service extends through the site to provide coverage of the Stage 1, Stage 3, Paediatrics and Children's Ward sections of the existing hospital using a combination of internal and external fire hydrants. Fire Hose Reels (FHR) within these parts of the building are also connected to the FH service.

The FH service within the existing areas of the Stage 3 building that are being modified will be disconnected and removed or relocated to suit the new architectural layout.

Proposed

The proposed CCC development will connect to the existing service within the Stage 3 building and extend to connect to all new areas of the CCC as required.

The FH system may be subject to inclusion in the Fire Engineered solution for the proposed development as the FHs are not located within fire stairs as nominated in the current version of AS2419.1.

The addition of the new CCC building to the site will not affect the required flow for the fire hydrant service. The new building will still require two fire hydrants to operate at any given time, requiring 20L/s. Therefore, we confirm that the existing fire service will have adequate capacity. During the design phase, friction losses through the system will be calculated to ensure they conform with Australian Standard requirements.

All new FHRs will be connected to the metered cold water supply in line with current practices.

2.9 Fire Hose Reels

Existing

The FHRs within the existing building are connected to the FH service.

The FHRs located within the existing areas of the Stage 3 building that are being modified will be disconnected and removed or relocated to suit the new architectural layout.

Proposed

All proposed fire hose reels will be connected to the metered cold water supply within the proposed CC building.

2.10 Fire Sprinklers

Existing

The site has an existing fire sprinkler service which is used to protect a number of areas throughout the development. However, these areas are selective and the fire sprinklers are not installed throughout the whole existing building. The existing fire sprinkler service is connected to the authority water main in Cape Street North.

The existing fire sprinkler system includes 4 x alarm valves which serve different areas and also includes a capped pipe for the provision for one future alarm valve.

It is assumed that the existing authority water main has capacity for the new development. This will be confirmed with the Authority following the Part 3A approval and will be heavily dependent on the outcomes proposed in the Fire Engineered Solution.

Proposed

The proposed CCC development will utilise the future alarm valve provision and extend the new fire sprinkler service from the Level 3 Loading Dock to the new CCC building. Pumps will be provided to boost pressure if necessary.

2.11 Fire Smoke Detection Systems

Existing

There is an existing smoke detection system within the Stage 1/3 Hospital on site.

Proposed

It is currently proposed that a smoke detection system will be installed in the new CCC building. The extent of the system and interconnection with existing services will be determined following the Part 3A approval and will be heavily dependent on the outcomes proposed in the Fire Engineered Solution.

2.12 Emergency Warning and Intercommunication Systems (EWIS)

Existing

There is an existing EWIS system within the Stage 1/3 Hospital on site.

Proposed

It is currently proposed that an EWIS system will be installed in the new CCC building. The extent of the system and interconnection with existing services will be determined following the Part 3A approval and will be heavily dependent on the outcomes proposed in the Fire Engineered Solution.

3 ESD STRATEGIES

3.1 ESD Strategies Generally

The proposed CCC development at Gosford will be aiming to achieve 4 Stars under the Green Star rating system. As such, the project will incorporate a number of ESD solutions. The ESD initiatives currently targeted are outlined in this section.

3.2 Rainwater Harvesting and Reuse

Rainwater will be collected from roof areas of the proposed building and collected into a rainwater tank. The rainwater will be treated and reuse for irrigation and toilet flushing purposes.

3.3 Solar Hot Water

The proposed development will incorporate solar hot water plant with gas boost. Current design philosophies aim for a 50% contribution to hot water generation from the solar system.

3.4 Water Efficient Fixtures and Tapware

All fixtures and tapware installed in the proposed building will confirm to the Water Efficiency Labelling Scheme (WELS). Star rating of particular fixtures and fittings will be nominated following the Part 3A approval.

3.5 Metering

The proposed building will be provided with authority meters as required for billing purposes.

In addition to this, the building will be installed with sub-meters for water and gas supply as required to achieve Green Star points.