

Health
Infrastructure

**Coffs Harbour Hospital Expansion – SSD
Application** No. 8981

Infrastructure Report

For

HYDRAULIC and FIRE SERVICES

Project No : 7915

Revision : 5

Date : 11th May, 2018

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1 EXECUTIVE SUMMARY

General – The Coffs Harbour Hospital Expansion consists of a new five level Critical Services building, associated car parking areas and some refurbishment of parts of the existing hospital building and areas to realign services roles.

The early works access road and car parking modification works and relocation of existing services are not part of this EIS application and are subject to a separate planning application REF.

The renovation of the existing areas associated within the hospital can be supported by the existing infrastructure and modified site services. The new building will have new services that are supplied or connected directly from the existing internal mains which will generally support the facility; however a new connection to the Coffs Harbour City Council water main will be required to serve as a new incoming supply to the fire sprinkler system installed as part of the new building.

Sanitary Plumbing and Drainage – The existing piped sewer reticulation system drains to a sewer pumping station wet well located adjacent to the Northeast corner of the existing building. The house service drainage has two main branches generally running parallel to the northern and southern elevations of the existing building. It is proposed the new multistorey building will connect to the existing sewer drainage system, pumps and rising main. The refurbished areas will remain connected into the existing drainage system within the hospital site.

Domestic Cold Water –The site is fed from 2 x100mm dia incoming waters supplies connected to the Authorities watermain located in the Pacific Highway. Potable water to the new building will be provided from the existing reticulated system. The existing system is located in-ground along the perimeter of the southern side of the new building. The system has been installed as a ring main with isolation valves throughout the ring main to enable the closure of sections of the main without disrupting the cold water supply to the whole facility. Isolation valves will be installed within the existing piped system to enable the new works to proceed with little disruption to the operation of the hospital.

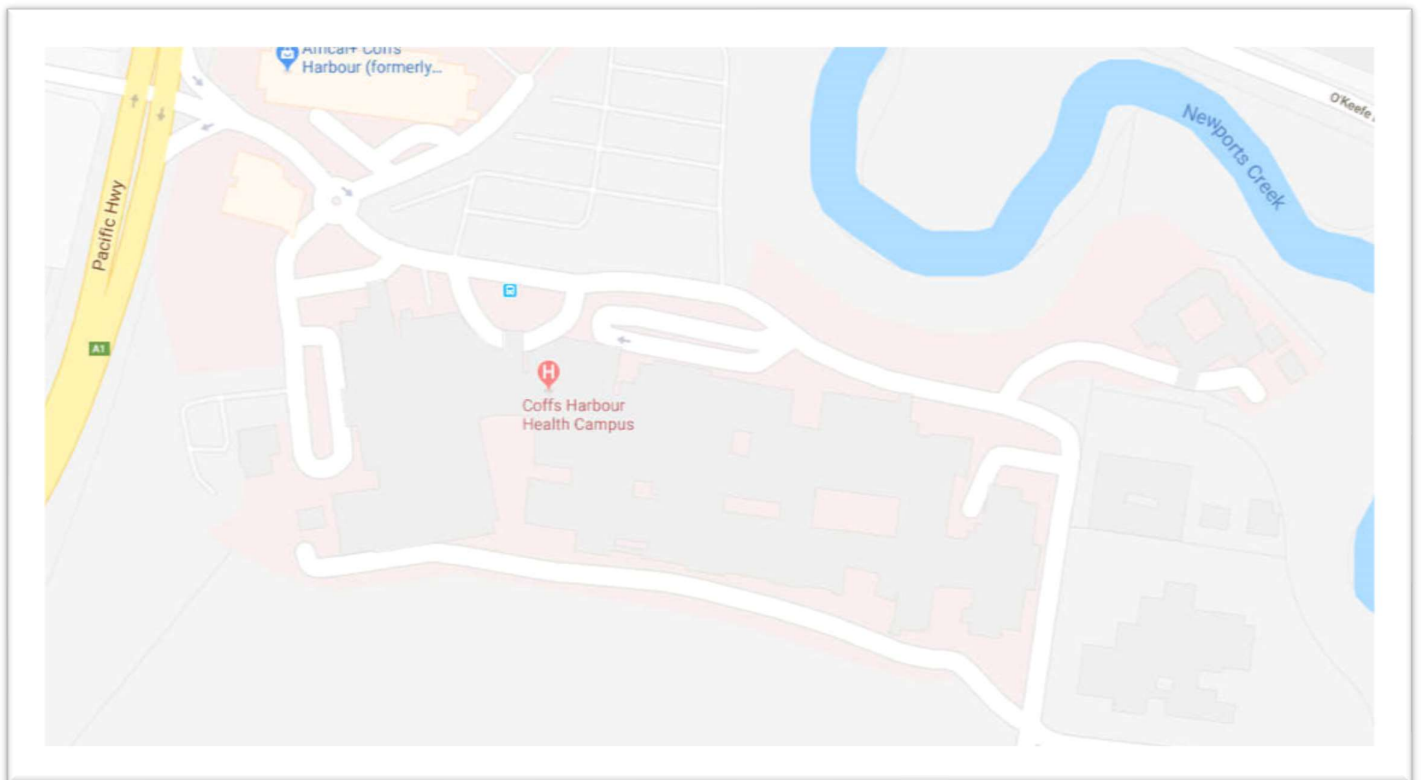
Liquid Petroleum Gas Services – The site is fed from an onsite Liquefied Petroleum Gas (LPG) storage tanks. The service is reticulated in ground along the southern side of the new building. The system has not been installed as a ring main. The new building will connect to the existing gas service via a new connection to the regulated medium pressure service manifold located at the tank farm. The total capacity of the new LPG system will compromise six (6) LPG cylinders with a maximum capacity of 45kL.

Correspondence - The copies of the correspondence have been included in appendix B to provide commentary on the consultation between DSC and the relevant authorities. This information has been used to develop our understanding of connections to infrastructure and required upgrades.

2 GENERAL

Coffs Hospital is approximately 16 years old and appears to have been well maintained over that period. The new Critical Services building will be connected to the existing infrastructure within the site. This review covers the following services: -

Sewer Drainage
Potable and Non-potable Water services
LP Gas
Fire Services



Access to the hospital is essentially from two roads:

- Pacific Highway – to the North West of the site is the main driveway entrance providing the main public access to the Public Hospital via the Main Entry, Family Care Centre, Medical & Therputic Care Centre and the Mental & General Well Being Care Centre.
- Phil Hawthorne Drive – to the South East which is at the “rear” of the site and incorporates driveway entrances for “Back of House” facilities, UNSW Rural Clinical School and the Mid North Coast Cancer Institute.

3 EXISTING AND NEW AUTHORITIES SERVICES

3.1 WATER MAINS

With reference to the attached Coffs Harbour City Council service maps. The existing Utilities water mains are located as follows:

- Pacific Highway – 1 x 200mm dia Cast Iron Cement Lined (CICL) watermain connecting to the hospital via 3 x 100mm dia tee branches, adjacent to the hospitals frontage and behind the NSW Ambulance station;

Based on the information in the pressure and flow application the existing infrastructure contains sufficient capacity to service the development with the addition of onsite fire storage tanks.

3.2 SEWER MAINS

With reference to the attached Coffs Harbour City Council service maps. The Coffs Harbour Health Campus site drains to a Sewer Pumping Station (SPS) located toward the North East corner of the site. The sewer rising main runs from the SPS, North along the property boundary across the creek line to O'Keefe Drive, West along O'Keefe Drive to Cook Drive and then West along Cook Drive, towards the Pacific Highway, where it connects into a Coffs Harbour Council rising main sewer pump station located at 4 Cook Drive.

3.3 LIQUID PETROLEUM GAS SUPPLY

There are no reticulated authority's natural gas services available exterior to the site.

The site is fed from an onsite Liquefied Petroleum Gas (LPG) storage tank farm, west of the loading dock, consisting of 3 x 7.5kL and 1 x 6.7kL storage tanks resulting in 29.2kL total storage volume.

The existing gas service is reticulated in ground along the northern and southern sides of the existing building. The system has not been installed as a ring main.

The supply capabilities of the existing LPG tanks have been reviewed to assess their ability to support the new Critical Services building and upgrades to the existing hospital. Advice received from technical expert, Mr. Nicholas Rutherford, at Elgas; indicates that an expansion of the LPG storage plant will be required to meet the new gas loads from the Critical Services Building.

Based on the ELGAS supplied invoices; the tanks are filled on a weekly basis and each fill is between 6,200 to 10,000litres. This equates to between 25% and 45% of the available storage capacity.

The ability of the existing LPG tanks to supply the new Critical Services Building and upgrades to the existing hospital have been reviewed. Advice has been received from the supply contractor that an expansion of the storage capability is required to serve the projected site gas loads.

To accommodate the increased gas loads; It is proposed to install a minimum of two (2) new 7.5kL bulk storage tanks, which will be connected to the existing LPG manifold in parallel with the existing LPG storage tanks; thereby creating greater on-site storage up to 45kL total volume and increasing the LPG supply capabilities to the site.

4 SERVICES AND CONNECTIONS

4.1 WATER MAIN PRESSURE

Based on information received from the Hospital's engineering department, survey information, visual walk through and information available from existing documents we have reviewed the relevant existing services to the development.

The hospital is currently served by 2 x 100mm cold water connections to the 200mm water main located on Pacific Highway. There is also a 1 x 100mm cold water connection that is used for firefighting services connected to the same main and is currently insufficient for the proposed increase in fire services loads.

Mains pressure enquiries were undertaken on the water main located in The Pacific Highway that supply water to the hospital. The main is a 200mm watermain on the eastern side of the Pacific Highway. The following flow and pressure results were obtained on 21/07/2017 and are based at ground level at the locations noted:

Our Ref: PN (2254175)

21 July 2017

Donnelley Simpson Cleary
Consulting Engineers Pty Ltd
PO Box 40
Roseville 2069, NSW

Dear Sirs

Water Pressure Test :
COFFS HARBOUR HEALTH CAMPUS 345 PACIFIC HIGHWAY SOUTH~COFFS HARBOUR

At 10:30am on 3/7/17 a water flow pressure test was carried out on the water mains at 345 Pacific Highway South Coffs and resulted as follows.

Hydrant location	80m	80m
Static Pressure	Feed Street Hydrant Flow and Pressure	Adjacent Street Hydrant Dynamic Pressure
Flow	Head (m)	
38 L/Sec (max)	5	75
20 L/sec	60	76
15 L/sec	68	78
10 L/sec	78	79
5 L/sec	79	79
1 l/sec	N/A	N/A

The above flow and pressure information is not representative of conditions at all times of the day or season. Conditions could be affected by proposed system augmentations, variations in system demands or changes in hydraulic operation of the network.

Note: Feed Street Hydrant Flow and Pressure (Dynamic Head) – is taken through a Standpipe and flow meter

Yours faithfully

D Hill
Water Services Technical Officer

DH2:dh2

The water main can provide reasonable flow rates and the pressures for domestic use; however, these rates are insufficient to meet the higher firefighting pressure and flow requirements, therefore pumps will be required for the fire and water services within the new building.

4.2 WATER CONNECTIONS

Pacific Highway:

1. 3 x 100mm dia copper incoming supply with 2 x 100mm dia water meter and dual reduced pressure zone assembly and 1 x 100 double detector check assembly for fire services; located south of the main entry road behind the NSW Ambulance station and adjacent to the Western property boundary.
2. A new 1 x 100mm dia copper incoming supply with double detector check assembly for fire sprinkler service is to be installed.

4.3 SEWER CONNECTIONS

There are no reticulated Coffs Harbour City Council sewer mains on or immediately near the site.

A private sewer pumping station, that is located near the Northeast corner of the existing building, collects sewer drainage from all parts of the existing building including the Family Care Centre, Medical & Therapeutic Care Centre and the Mental & General Well Being Care Centre. The sewer pumping station also collects sewer drainage from UNSW Rural Clinical School and the Mid North Coast Cancer Institute.

The Sewer Pumping Station collects the site sewer drainage via a 225mm dia primary connection point; upstream of which is a series of drains increasing in size from 100mm dia at the furthest points in the system. The operation of the Sewer Pumping Station has been examined and its parameters have been reviewed with the intent of determining its working capacity and capability to service the proposed additional sewer loads. It has been determined that the existing sewer pumping station has the capacity to accommodate the proposed expansion of services and additional loads.

The discharge rising main leaves the Sewer Pumping Station as 100mm dia uPVC, runs North across the creek line and up to O'Keefe Drive where it connects to a 150mm dia CL12 uPVC CHCC rising main asset known as Sewer Rising Main No. 45 which was reconstructed by council in 2005.

4.4 LIQUID PETROLEUM GAS MAINS

The LP gas service pipe work installed on site is considered a private house service and is subject to AS5601-2004 requirements regarding installation and operation.

A new house service supply pipe will be extended from the upgraded tank farm to the new building. The new service will be a separate connection to the regulated medium pressure service manifold located at the tank farm

The existing tank farm feeds the house service pipe work via a tank connection manifold with suitable capacity for expansion, through two (2) off Fisher regulators (model 627-7710), currently set to 10 PSI (range 5 – 20 PSI), with a maximum delivery rate of 11,366 Mj/hr each, feeding into a 150mm dia Copper house service main.

5 APPENDIX A – INFRASTRUCTURE DIAGRAMS

