MULTIPLEX

# INFRASTRUCTURE MANAGEMENT PLAN

New Maitland Hospital
State Significant Infrastructure Application – Stage 2

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## Contents

# 1. INTRODUCTION

## 1.1 SECRETARY ENVIRONMENTAL ASSESSMENT REQUIREMENTS (SEARS)

| 23 | Infrastructure Management Plan | Section Referenced |
|---|---|---|
| 23.01 | **SSI 9975 SEARS 12. Utilities** | |
| 23.02 | • Prepare an Infrastructure Management Plan in consultation with relevant agencies, detailing information on the existing capacity and any augmentation and easement requirements of the development for the provision of utilities including staging of infrastructure | Throughout |
| 23.03 | • Identify any potential impacts on existing utility infrastructure and service provider assets and demonstrate how these will be protected or impacts mitigated. | Throughout |

## 1.2 INTRODUCTION

This Infrastructure Management Plan (IMP) has been prepared in response to SSI 9975 SEARS 12. Utilities:

- Prepare an Infrastructure Management Plan in consultation with relevant agencies, detailing information on the existing capacity and any augmentation and easement requirements of the development for the provision of utilities including staging of infrastructure
- Identify any potential impacts on existing utility infrastructure and service provider assets and demonstrate how these will be protected or impacts mitigated.

Multiplex has engaged JHA Consulting Engineers to fulfil the electrical requirements of the above and Warren Smith and Partners to fulfil the hydraulic requirements, their full reports are appended to this report. The two reports are broken up into two major discipline sections;

1. Hydraulic
    a. Sewer
    b. Water
    c. Gas
2. Electrical
    a. High Voltage (HV)
    b. Telecommunications

## 1.3 PROJECT DESCRIPTION

Health Infrastructure has committed to undertaking a staged planning application process in accordance with Section 115ZD (1) of the Environmental Planning and Assessment Act 1979 (EP&A Act) for the following works:
- Stage 1: Site clearance and preparatory works (approved under SSI9022)
- Stage 2: Design and construction of the hospital Main Works. (this application SSI9775)

Stage 2 includes the design and construction work generally comprising:

- A new seven storey Acute Services Building, including:

- Emergency services
- Medical, surgical, paediatric and maternity services
- Critical care services for adults and babies, including a special care nursery
- Operating theatres, delivery suites and assessment rooms
- Palliative care and rehabilitation services
- Mental health services
- Satellite renal dialysis
- New chemotherapy services
- Oral health service
- A range of ambulatory care and outpatient clinics.

- Internal road network and car parking for staff, patients and visitors
- Signage
- Site landscaping and open space improvements
- Tree removal
- Utility and services connection and amplifications works.

# 2. Attachment 1 - Hydraulic Utility Services Report

Warren Smith & Partners

04 April 2019

# Maitland Hospital

## Utility Services Report

# UTILITY SERVICES REPORT
## Maitland Hospital

| | | |
|---|---|---|
| 01 | 15/10/2018 | Issue for review by HI and Multiplex |
| 02 | 24/10/2018 | Updated with gas and water loads |
| 03 | 06/02/2019 | Updated with latest information |
| 04 | 04/04/2019 | Updated with latest information |
| **Rev #** | **Date** | **Description of Change** |

## APPROVALS

| | | | |
|---|---|---|---|
| 01 | V. Gopakumar | Superseded | T. Wise |
| 02 | V. Gopakumar | Superseded | T. Wise |
| 03 | V. Gopakumar | Superseded | T. Wise |
| 04 | V. Gopakumar | Current | T. Wise |
| **Rev #** | **Author** | **Status** | **Reviewer** |


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Warren Smith & Partners

# Contents

# UTILITY SERVICES

## 1 GENERAL

Warren Smith & Partners (WS+P) have been engaged by Multiplex Pty Ltd on behalf of Health Infrastructure to prepare a town planning Utility Services Report for the proposed New Maitland Hospital (NMH) site on Lot 7314 and Part Lot 401.

Health Infrastructure are adopting a staged infrastructure application for the project under Section 115ZD(1) of the EP&A Act as follows:

- Stage 1 - Concept design, site clearance and preparatory works (SSI application undertaken already see SSI 9022)
- Stage 2 - Detailed design, construction and operation of the hospital

A sperate water and sewer application has been prepared for stage 1 of the project, which forms part of the SSI 9022 application. This report is for the Stage 2 application and the purpose is to identify that suitable servicing arrangements are available and discuss any expected upgrade and augmentation requirements. Detailed design of services connections have been done under the Stage 1 application which included further consultation with the relevant network utility operators.

Note, Part Lot 401 has been incorporated within the site area to align with the State Significance Infrastructure (SSI) declared boundaries. As per the concept masterplan Part Lot 401 will consist of a open on grade carpark which would have no utility requirement. Lot 7314 will be the location of the new hospital structure and associated improvements hence this report primarily addresses utility services for this lot. Nevertheless, section 3 explores potential methods to connect utilities to part lot 401 should this be required in the future.

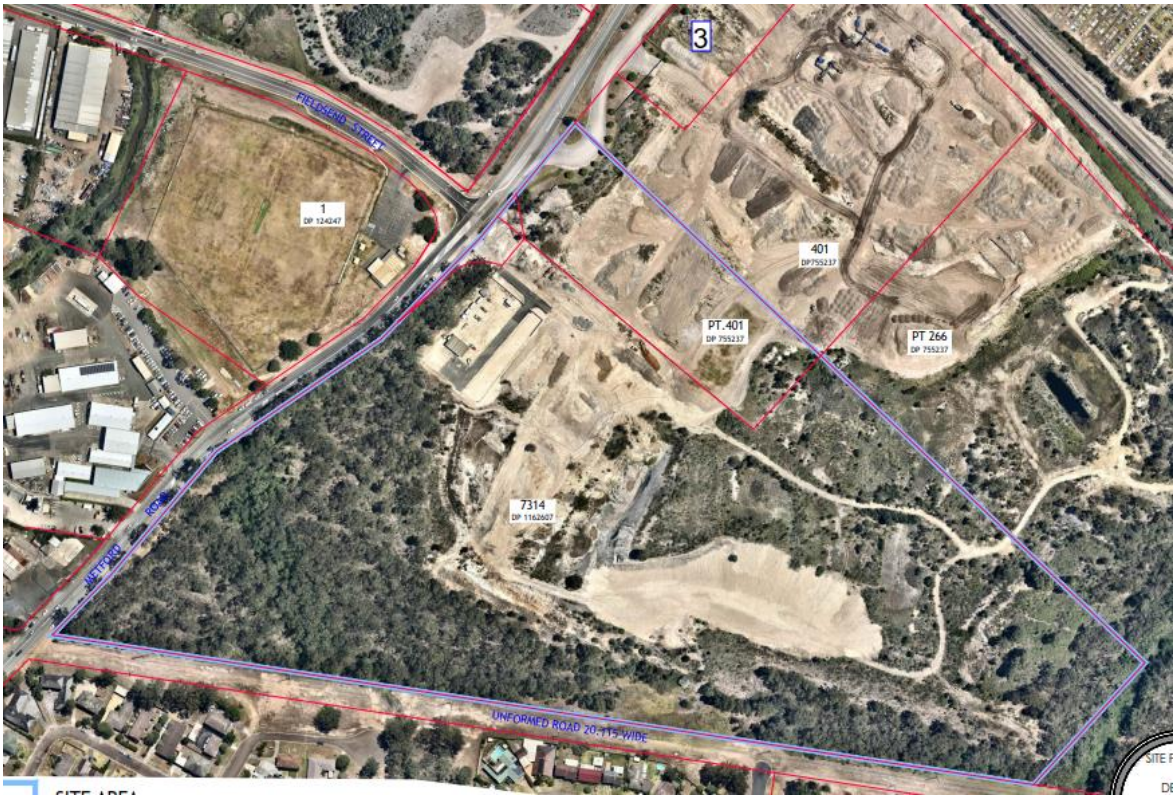


**Figure 1: Lot boundaries and numbers. Pt. 401 refers to the part lot 401.**

This report aims to address the utility infrastructure plan only, based on the following general utility planning condition; “Utilities; Prepare an Infrastructure Management Plan in consultation with relevant agencies, detailing information on the existing capacity and any augmentation requirements of the development for the provision of utilities including staging infrastructure.”

This report will not address the following general condition which will be addressed by the civil & main works hydraulic report by others, “Prepare an Integrated Water Management Plan detailing any proposed alternative water supplies, proposed alternative water supplies, proposed end uses of potable and non-potable water.”

# 2 LOT 7314

## 2.1 DEMAND CALCULATIONS

### 2.1.1 WATER DEMAND CALCULATIONS

The average daily water demand has been calculated utilising an estimated usage per bed, as seen in Table 1:

**Table 1: Average Water Demand Per Hospital Bed**

| Classification | Metric Unit | Average Demand (L/Metric Unit/Day) |
|---|---|---|
| **Healthcare** | | |
| Hospital Beds | Bed | 271 |

Table 2 below shows the average daily water demand calculation.

**Table 2: Average Daily Water Demand**

| Total Beds | Average Demand (L/Metric Unit/Day) | Total Average Daily Water Demand (kL) |
|---|---|---|
| 339 | 271 | 91.9 |

The following peak flows have also been calculated for the building:

Probable simultaneous flow – 8 L/s

- Cooling towers flow – 6 L/s
- Fire flow for hydrants – 20 L/s
- Fire flow for sprinklers – 20 L/s

### 2.1.2 SEWER DEMAND CALCULATIONS

As with water, the daily total sewer discharge is the product of the number of beds and the average daily discharge per hospital bed.

**Table 3: Daily Sewer discharge**

| Total Units | Average Sewer Discharge 60% of L/metric unit/day | Total Average Daily Sewer Discharge (kL) |
|---|---|---|
| 339 beds | 163 | 55.3 |

As can be seen in Table 3, the daily sewer discharge is 55.3kL/day.

The peak sewer discharge is determined using the equivalent tenement (ET) method outlined in the Hunter Water Gravity Sewer Code of Australia (section 3.3.6). The goal is to determine the peak dry weather flow (PDWF)

$$ET = 339\ beds$$

$$r = \sqrt{1.74 + \frac{56}{ET^{0.4}}}$$

$$r = \sqrt{1.74 + \frac{56}{339^{0.4}}} = 2.68$$

$$Average\ dry\ weather\ flow\ (ADWF) = 0.011\ \times ET$$

$$Average\ dry\ weather\ flow\ (ADWF) = 0.011\ \times 339 = 3.73 L/s$$

$$PDWF = r \times ADWF$$

$$PDWF = 2.68\ \times 3.73 = 10.0\ L/s$$

Therefore, the peak sewer discharge is 10L/s

### 2.1.3 GAS DEMAND CALCULATION

Load calculations for both peak and daily loads have been calculated based on Stage 1 (339 beds) and using the following methods.

Gas

- Daily; Building thermal model and daily domestic hot water usage with a diversity factor
- Peak; Building heat up load and hourly domestic hot water usage

Annual

| Appliance | Total (MJ/year) |
|---|---|
| **Boilers (Steam, Heating and DHW)** | 40,420,000 |
| **Café** | 146,000 |
| **Total** | **40,566,000** |

Daily

| Appliance | Total (MJ/day) |
|---|---|
| **Boilers (Steam, Heating and DHW)** | 256,000 |
| **Café** | 1,000 |
| **Total** | **257,000** |

Peak

The following table is a breakdown of the peak natural gas loads for the proposed building on Lot 7314:

| Appliance | Burner Capacity (MJ/hr) | Diversified Total (MJ/hr) |
|---|---|---|
| **Boilers (Steam)** | 6,400 | 6,400 |
| **Boilers (Heating and DHW)** | 22,856 | 22,856 |
| **Café** | 300 | 300 |
| **Total** | **29,556** | **29,556** |

## 2.2 CONNECTIONS

### 2.2.1 WATER

Based on Section 50 case number 2014-398 (Enabling REF) and the recent completion of the water main works under this case, two 200mm provision(s), for fire and water services, were made for the NMH as per the documentation within case number 2014-398 within Metford Road. However, it is proposed to make water and fire services connections to the main further south along Metford road as shown on Figure *2*, which is opposite the emergency vehicle entrance and fire booster assembly. Further consultation with Hunter Water has been undertaken post issue of the SSI 9022 consent conditions via a Hunter Water Section 50 application (case number 20147-398/13). Hunter Water have provided a Notice of Requirements for this application and stated that the water supply should be capable of being connected to post a Hydraulic Plans Assessment Application and review being undertaken, of which is currently in process.

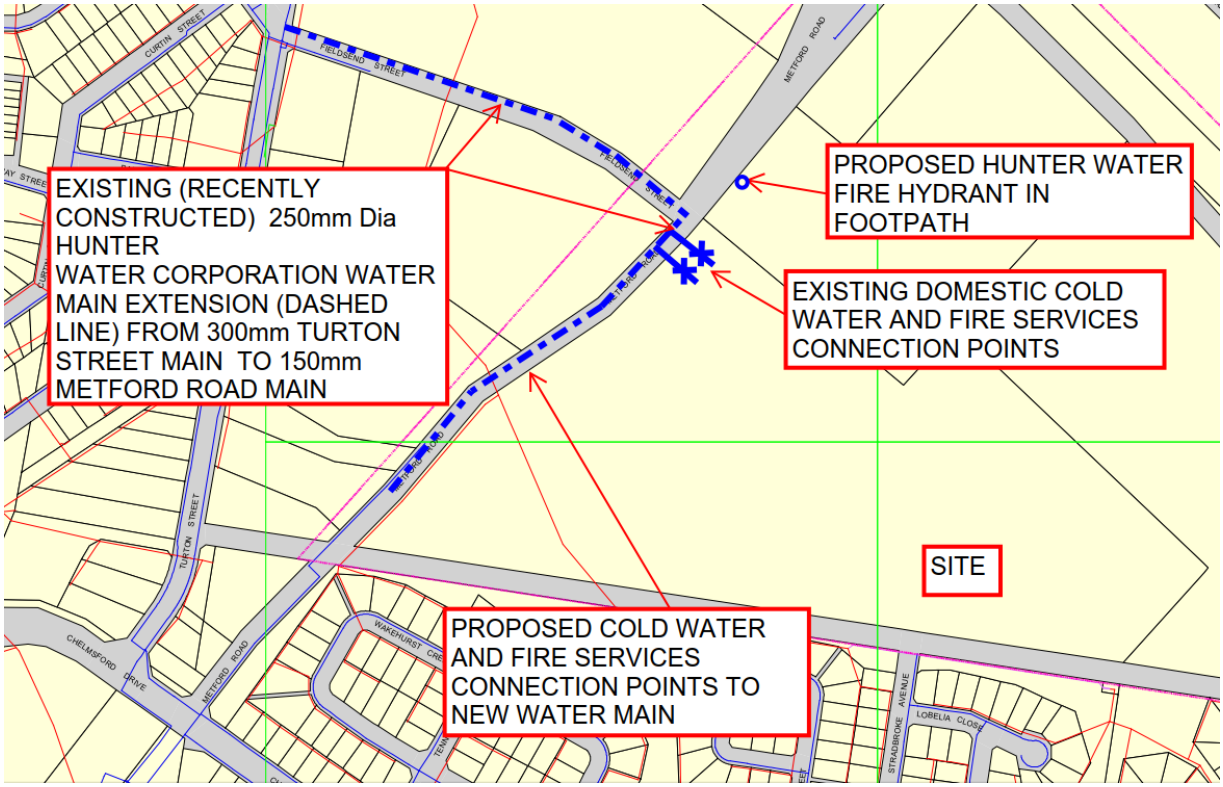


**Figure 2: Water and fire services connection plan**

### 2.2.2 SEWER

The NMH private wastewater network will gravitate towards the existing 225mm diameter Hunter Water Corporation sewer situated on site and will connect at or above RL10.37 See Figure *3*. Further consultation with Hunter Water has been undertaken post issue of the SSI 9022 consent conditions via a Hunter Water Section 50 application (case number 20147-398/13). Hunter Water have provided a Notice of Requirements for this application and stated that the wastewater network is capable of being connected to.

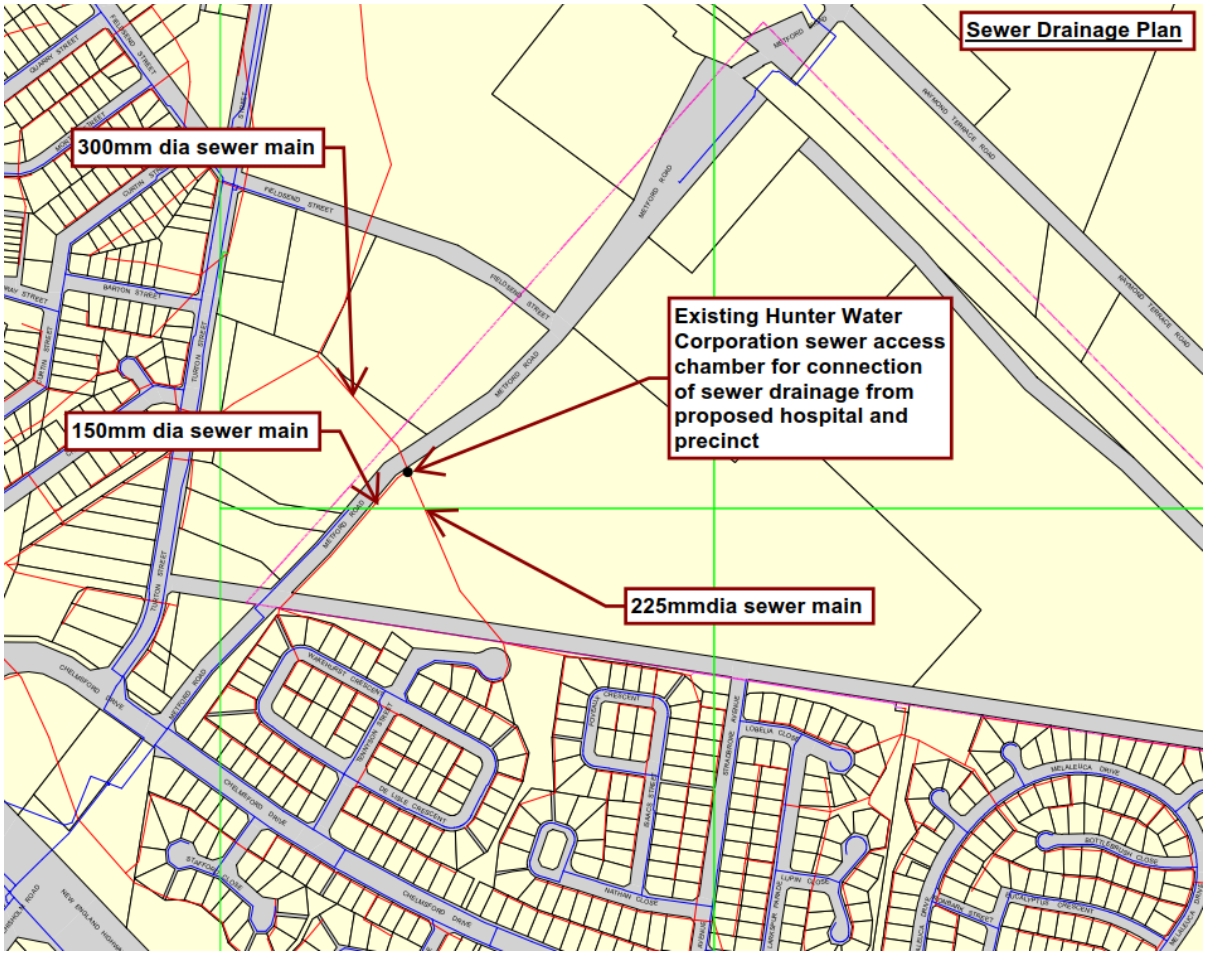


**Figure 3: Sewer drainage plan**

### 2.2.3 GAS

It is proposed to extend the 1050kPa Jemena gas main along Metford Road to terminate at the principal vehicle entrance of Lot 7314. Please refer to Figure 5 for the proposed extension and connection location.

We should note that it is assumed that the existing 210kPa Jemena gas main that fronts Lot 7314 in its existing form will not have the capacity to service the gas loads for this site. However the capacity will be further worked through with Jemena via the gas retailer.

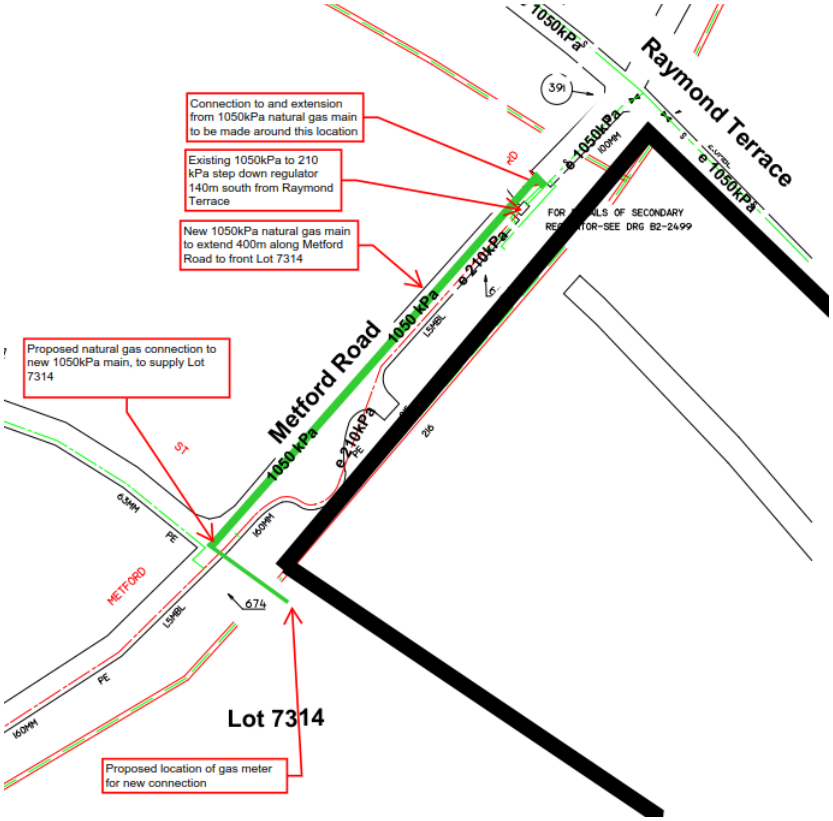


**Figure 4: Natural gas main connection location**

#### 2.2.3.1 NATURAL GAS MAIN EXTENSION CONNECTION LOCATION

The connection to the existing 1050kPa natural gas main could be made in Metford Road, approximately 135m south of the nearest cross street – Raymond Terrace. The connection will need to be made prior to the 210kPa step down regulator which is located in Metford Road. From there the 1050kPa gas main extension will be extended to the site connection point.

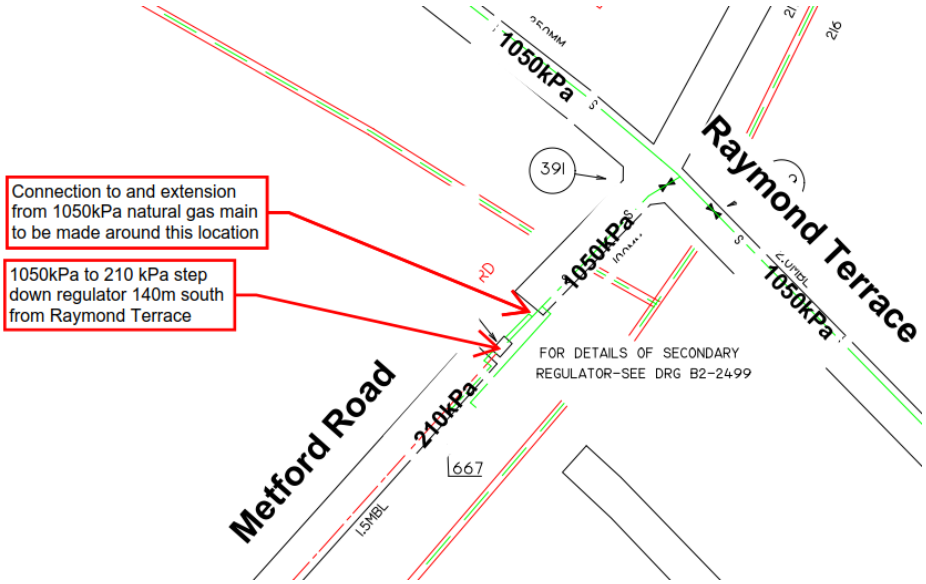


**Figure 5: Natural gas main extension connection location**

### 2.2.3.2 POTENTIAL NATURAL GAS MAIN ROUTE TO SERVE LOT 7314

The proposed natural gas main will need to extend along Metford Road approximately 400m and coordinate with the following authority mains not limited to:

**Sewer drainage:** there appears to be no major sewer mains to coordinate with,
**Stormwater:** there appears to be no major stormwater mains to coordinate with,
**Potable cold water:** there is a potable cold water main that extends approximately 260m from Raymond Terrace as well as a recent extension from Fieldsend Street, this should require minimum coordination issues as crossovers can be avoided,
**Electrical:** there appears to be no major electrical mains to coordinate with,
**Telecoms:** there are fibre-optic cables that run down Metford Road which will require cross overs. Any works are also to be coordinated with the Completed Enabling Works.

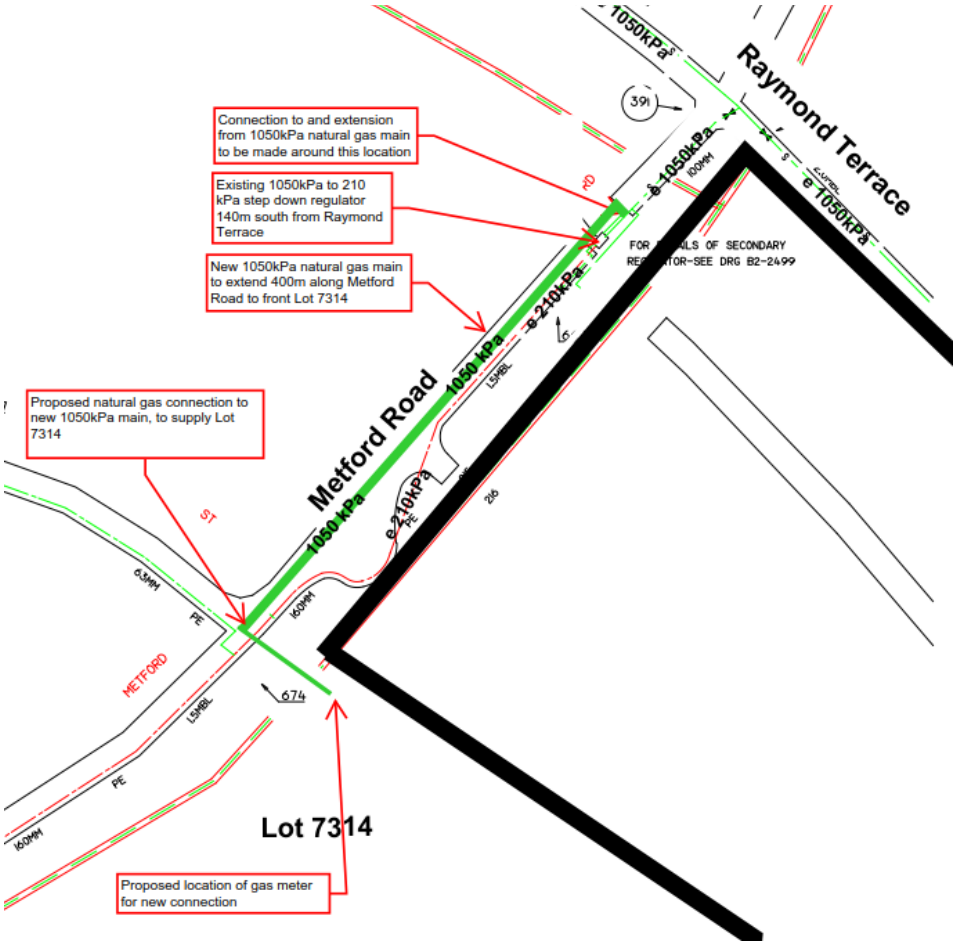


**Figure 6: Potential natural gas main route to serve lot 7314**

# 3 PART LOT 401

The open car park to be developed on Part Lot 401 is not anticipated to need connections to utilities. Nevertheless, we have undertaken an assessment as to how water, sewer and gas could be supplied to Part Lot 401, should this be required for the future development on Part lot 401. This has been identified below.

It is possible that in the future Part Lot 401 and Lot 7314 will be amalgamated to a single Lot (see purple boundary in Figure 1), in which case connection to utility services mains will be carried out as outlined in section 2.

## 3.1 WATER CONNECTION

Any water services to supply part lot 401, should that be required in the future, will require a separate connection to the water main should part lot 401 not be amalgamated with lot 7314. As there is no water main fronting the lot, a connection has to be made to the nearest water main, which is the recent extension on Metford road. The proposed way to do this has been outlined in Figure 7 diagrammatically. It is possible that Part Lot 401 and Lot 7314 will be amalgamated to a single Lot (see purple boundary in Figure 1), in which case connection to the water main will be carried out as outlined in section 2.

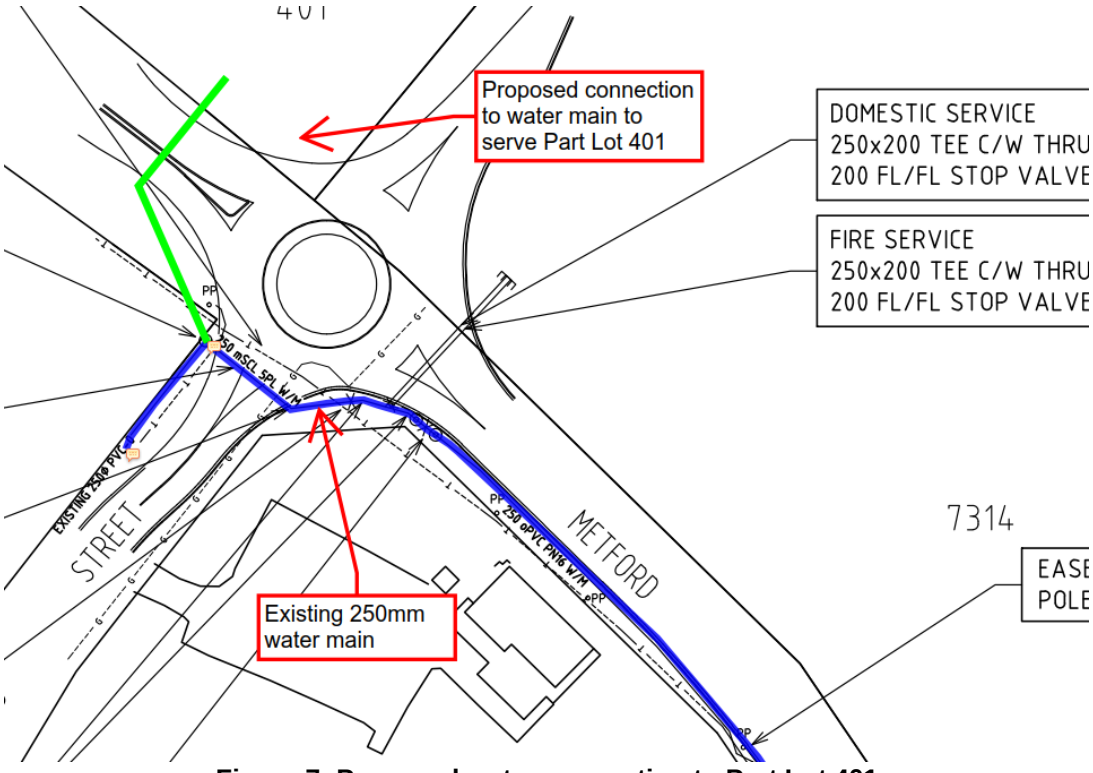


**Figure 7: Proposed water connection to Part Lot 401**

## 3.2 SEWER CONNECTION

Part Lot 401 currently does not have access to a sewer connection that crosses the lot boundary by at least 1m. In the future in order to provide a sewer provision for the lot, should that be required, an extension has to be made to either one of the two sewer man holes on Metford Road or Fieldsend Street should part lot 401 not be amalgamated with lot 7314. This is indicated diagrammatically in Figure 8. It is possible that Part Lot 401 and Lot 7314 will be amalgamated to a single Lot (see purple boundary in Figure 1), in which case connection to the sewer main will be carried out as outlined in section 2.

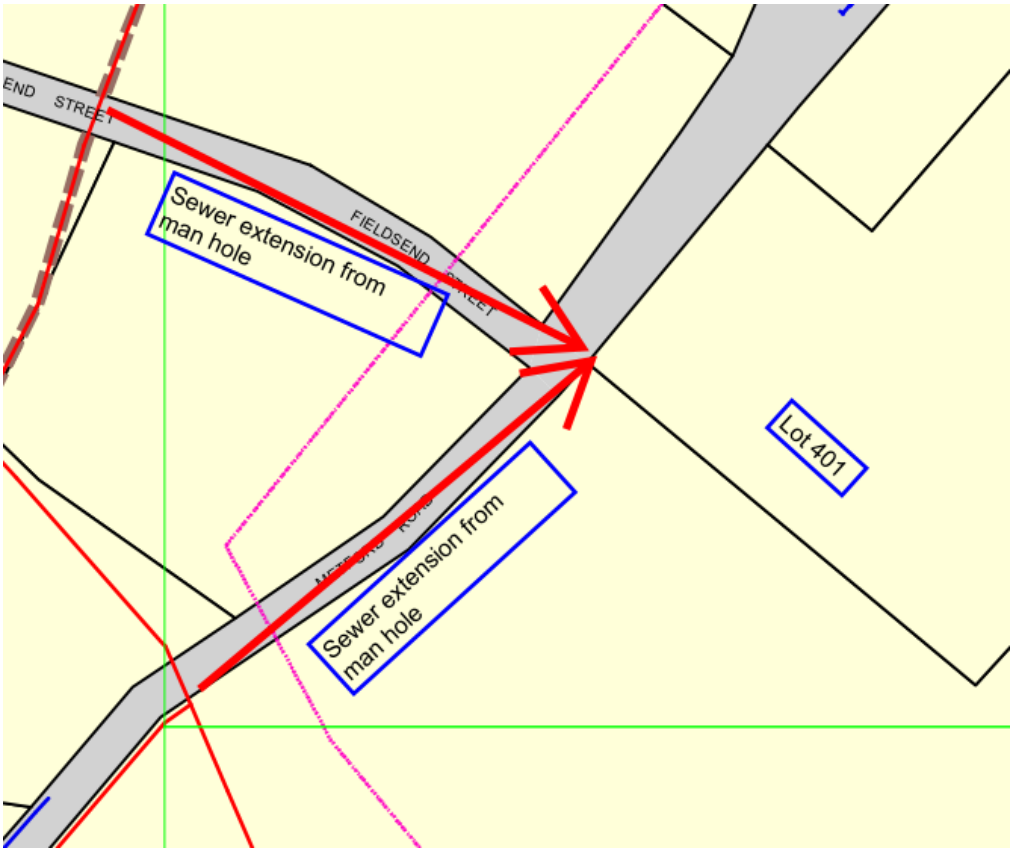


**Figure 8: Proposed sewer extension from man hole**

## 3.3 GAS CONNECTION

Any gas services to supply part lot 401, should that be required in the future, will require a separate connection to the gas main should part lot 401 not be amalgamated with lot 7314. As there is 210kPa and potentially as described in section 2, a 1050kPa gas main fronting the lot, a connection can be made to the nearest gas main, which is in Metford road.

It is possible that Part Lot 401 and Lot 7314 will be amalgamated to a single Lot (see purple boundary in Figure 1), in which case connection to the water main will be carried out as outlined in section 2.

# 4 WATER USAGE REDUCTION

## 4.1 LOW FLOW TAPS

Where possible, potable water usage will be reduced by the use of low flow taps and sanitary fixtures, typically using the following flow rates:

- Shower 9.0L/m
- Basin 7.7L/m
- Sink 7.7L/m

Low flow taps are only to be used if the fixtures chosen to comply with the AusHFG.

## 4.2 WATER METERS

The development will be metered with both utility owned water meters at the property boundary, and client owned and read water meters. These water meters will have the capability for connection a BMCS via pulse read-out and therefore be water demand and leak monitored.

## 4.3 RAINWATER REUSE

On previous projects, holistic life cycle reviews on rainwater reuse systems have been undertaken. These reviews have generally found that rainwater reuse systems have not been cost effective for the project with a payback of greater than 7 years. A simple payback exercise has been run for this project and show to not payback the capital cost of a rainwater reuse system.
Further to the cost considerations above, within a clinical environment the prevention of infection is a priority. The storage of collected rainwater may contain or breed legionella, dead animals, mosquitoes, chemicals, microbial hazards and escherichia coli.

The maintenance involved with the general upkeep of rainwater reuse tanks and ensuring the stored collected rainwater is not harbouring infections is laborious and often budget driven which may reduce the prudent level of maintenance to ensure the public and hospital are comfortable with the level of public health.
Given the payback period and risk to public health a rainwater reuse system will not be provided, and no non-potable water sources will be used or reticulated on the site.

# 5 SCHEDULE 1 SYDNEY WATER TABLE

**"AVERAGE DAILY WATER USE BY PROPERTY TYPE"**

| Development Type | Development Sub-Type | Key Metric | Metric Unit | Average Demand (L/Metric Unit / Day) |
|---|---|---|---|---|
| Residential | Single Lot Torrens | Dwelling | Each dwelling | 623.00 |
| | Flats Torrens | Net Floor Area | Square Meter | 2.36 |
| | High Rise Units | Net Floor Area | Square Meter | 3.34 |
| | Single Lot Community | Dwelling | Each dwelling | 623.00 |
| Mixed | Residential / Commercial | Combined Floor Area | Each dwelling / Square Meter | Use separate rates for each component |
| | Commercial / Industrial | Combined Floor Area | Square Meter | Use separate rates for each component |
| Commercial | Aged Accom - Self Care | Net Floor Area | Square Meter | 2.50 |
| | Aged Accom - Hostel | Bed | Each bed | 271.00 |
| | Aged Accom - Full Care | Bed | Each bed | 271.00 |
| | Childcare | Net Floor Area | Square Meter | 3.60 |
| | Hotel / motel / serviced apartments | Room | Each room | 359.94 |
| | Office | Net Floor Area | Square Meter | 2.27 |
| | Shopping Centre | Net Floor Area | Square Meter | 3.00 |
| | Laundry / Dry Cleaner | Net Floor Area | Square Meter | 10.50 |
| | Café / Fast Food / Butcher / Deli | Net Floor Area | Square Meter | 2.48 |
| | Retail Units | Net Floor Area | Square Meter | 2.48 |
| | Medical / Veterinary | Net Floor Area | Square Meter | 2.48 |
| | Mechanical Repair | Net Floor Area | Square Meter | 2.48 |
| | Car / Boat Sales | Net Floor Area | Square Meter | 2.48 |
| | Car Wash | Net Floor Area | Square Meter | 9.40 |
| | Club | Net Floor Area | Square Meter | 3.77 |
| Industrial | Heavy Process | | As required | |
| | Chemical Manufacturing | | As required | |
| | Printing Manufacturing | | As required | |
| | Beverage Manufacturing | | As required | |
| | Light Factory Unit | Developed floor area | Square Meter | 2.82 |
| | Warehousing | Developed floor area | Square Meter | 2.82 |
| | Transport / Bus Depot | Site area | Square Meter | 0.91 |
| Special Uses | University | Student | Each student | 20.00 |
| | School | Student | Each student | 20.00 |
| | Hospital | Bed | Each bed | 271.00 |
| | Religious assembles | Developed floor area | Square Meter | 1.30 |
| | Government Depot | Site area | Square Meter | 0.91 |
| | Community Centre / Library | Floor area | Square Meter | 1.84 |
| | Sport Fields with Amenities | | As required | |
| | Park & Reserves | | As required | |
| | Services - Police / Ambulance etc. | Floor area | Square Meter | 1.40 |

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# 3. Attachment 2 - Electrical Utility Services Report

**UTILITIES SEARS REPORT**

# Maitland Hospital

## ELECTRICAL INFRASTRUCTURE SERVICES

JHA

CONSULTING ENGINEERS

# DOCUMENT CONTROL SHEET

| | |
|---|---|
| Title | Utilities SEARS Report |
| Project | New Maitland Hospital |
| Description | Report on Electrical Services Infrastructure Suitable for SEARS Submission |
| Key Contact | Brenton Burrows |

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## Revision History

| Issued To | Revision and Date | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| John Corcoran / Tim MacLeod – MPX<br><br>Health Infrastructure / CBRE | **REV** | A | | | | | | | |
| | **DATE** | 19/03/2018 | | | | | | | |
| | **REV** | | | | | | | | |
| | **DATE** | | | | | | | | |
| | **REV** | | | | | | | | |
| | **DATE** | | | | | | | | |

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# 1. EXECUTIVE SUMMARY

This report has been prepared by JHA to identify and summarise the proposed Utility infrastructure requirements, which will be incorporated into the design of the new Maitland Hospital.

This report demonstrates compliance with the Secretary's Environmental Assessment Requirements (SEARS) which apply to the project and has been prepared to accompany a State Significant Development Application to the NSW Department of Planning and Environment. This report should be read in conjunction with the Architectural design drawings and other consultant design reports submitted as part of the application.

The report identifies how the principles of infrastructure management plans will be incorporated in the design and during the phases of the development.

# 2. INTRODUCTION

## 2.1 Project Description

The proposed new Maitland Hospital is located at Lot 7314 Metford Rd, Metford NSW and forms part of the Hunter New England Health District.

The site is completely greenfield and consists of approximately 45,000m$^2$ of new clinical space.

The New Maitland Hospital will be a state-of-the-art facility, designed to meet the needs of the local community now and into the future. The new hospital will offer a wider range of services for the people of the Hunter, including:

- Emergency services
- Medical, surgical, pediatric and maternity services
- Critical care services for adults and babies, including a special care nursery
- Operating theatres, delivery suites and assessment rooms
- Palliative care and rehabilitation services
- Mental health services
- Renal dialysis service
- A new chemotherapy service
- Expanded oral health service
- A range of ambulatory care and outpatient clinics

The hospital's proposed site is a 17ha Crown Land site at Metford, is on the eastern side of Metford Road and forms part of an old brickworks site formerly run by CSR.

JHA understand that a key component of this project will include consultation and liaising with the following Utility agencies:

- Ausgrid
- NBN

This report will outline the infrastructure requirements for servicing the proposed development. The report will also outline any key design risks/items in terms of infrastructure relocations required for the development.

## 2.2 Secretary's Environmental Assessment Requirements (SEARS)

This report acknowledges the SEARS prepared by the Secretary which notes the following in Section 11 of the document:

**12. Utilities**

- Prepare an Infrastructure Management Plan in consultation with relevant agencies, detailing information on the existing capacity and any augmentation requirements of the development for the provision of utilities including staging of infrastructure.

JHA was engaged for electrical and communication services for this project. As such, this report will only focus on electricity (Ausgrid) and telecommunications (NBN).

The above Utility items of the SEARS requirements are addressed in sections three and four of this report respectively.

# 3. ELECTRICAL SERVICES

The electrical supply infrastructure will be incorporated into the design and construction phases of the development as follows:

## 3.1 Proposed Maximum Demand

- New building on greenfield site
- Understood to be in the order of 45,000m$^2$
- ESG requires the starting point for maximum demand to be 100VA/m$^2$ (measured sites sit at 85VA/m$^2$)
- Total demand to the site of approx. 4.5 MVA (or 3.825MVA based on 85VA/m$^2$).

A summary table of the maximum demand is below:

| AREA | MAXIMUM DEMAND ASSESSMENT |
|---|---|
| Net Load | 4.5MVA |
| Typical Ausgrid Feeder Capacity | 7MVA (TBC) |
| External Site Capacity (HV) | 7MVA |
| Internal Site Capacity (LV) | 3 x 1.5MVA |
| **INCOMING HV SPARE CAPACITY (HV)** | **APPROX. 2.5MVA** |

Based on the above conservative estimates the site maximum demand is in the order of 4.5MVA. Based on Ausgrid's high voltage feeders being rated 7MVA, the site could be served by one HV feeder, however to improve supply security of the site, a second feeder has been proposed.

## 3.2 AusGrid Application

Design Information Package has been received after the submission of the Connection Application. The design information package outlines two feeder supply options from the Maitland Zone Substation. Option 2 was chosen due to the larger capacity available on the second feeder.

Feeders 1 and 2 must not be paralleled within the private HV network at any time.

Refer to Appendix A for a copy of the Design Information Package.

## 3.3 Proposed Private Substations and HV Reticulation

It is important for the establishment and energisation of the HV Main Switchboard as soon as possible to ensure supply is available during the construction phase to supply the builder's construction equipment.

Both new AusGrid feeders from Metford Zone Substation shall terminate at the Maitland Hospital HV Main Switchboard on their respective section of the bus bar. The HV Main Switchboard shall be located on the boundary alongside Metford Rd.

The HV Main Switchboard shall be such that they are not able to parallel the incoming AusGrid feeders within their installation at any time. Castel keys shall be implemented to ensure segregation of supplies. There should also be a clear segregation between low voltage sources to ensure no parallel feeds between the kiosk substations.

### 3.3.1 Construction Phase

During the Construction Phase the HV main switchboard shall supply via underground cable a single kiosk substation No.01, which shall supply the builder's equipment. This kiosk substation shall be re-used and re-located for the permanent arrangement.

During this arrangement AusGrid Feeder 1 will be the main supply, whereas AusGrid Feeder 2 shall be backup.

### 3.3.2 Permanent

In the final arrangement, the kiosk utilised in the construction phase shall be relocated, HV cabling will reticulate underground and will connect the Main HV Switchboard to the 3-kiosk substations two of which are sized at 1,500kVA and a single 2,000kVA in a ring type of arrangement. Cabling utilised for the construction phase supply should be re-used if possible.

Under normal operations the HV main switchboard Bus Section breaker shall be an open point. The first AusGrid feeder 1 shall supply the first two kiosk substations No.1 & No.2 in the ring, substation No.2 panel 3 shall be an open point. The third kiosk shall be supplied by AusGrid feeder 2.

### 3.3.3 Metering

Metering for the site is via HV CT metering, situated within the HV main switchboard on the two AusGrid feeder Bus Section metering panels. Tariff Meters shall be situated outside the switchroom within an approved meter enclosure for access by utility staff.

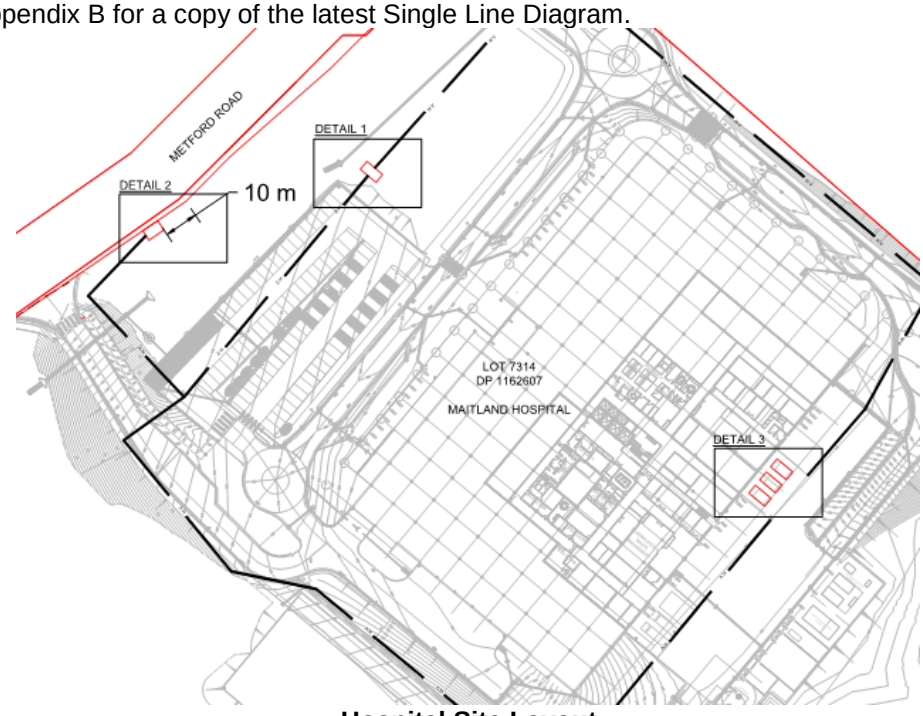
### 3.3.4 Location

The proposed locations for the kiosk substations have been carefully determined with the following considerations:

- Access to the kiosk substation for maintenance
- Minimisation of overall electrical costs by strategic placement of assets to minimise HV and LV cabling.

In reference to the Figure below, Detail 2 is the HV main switchroom location, detail 1 is the temporary construction phase kiosk substation No.01, and detail 3 are the three kiosks, one of which is the relocated substation utilised during the construction phase from detail 2.

Refer to Appendix B for a copy of the latest Single Line Diagram.




**Hospital Site Layout**

# 4. COMMUNICATIONS SERVICES

The communication lead-in infrastructure will be incorporated into the design and construction phases of the development as follows:

## 4.1 Existing Infrastructure Capacity

The existing site is currently vacant and as such has no active telecommunication connection. Localised communication feeders are available from the nearby street (Metford Rd).

## 4.2 Lead-in Conduits

It is expected, two sets of communication services infrastructure lead-in conduits shall be provided to pits one on the north and one on the south side of the property along Metford Rd. From review of DBYD, no major telecommunication relocation appears to be required.

## 4.3 Application

### 4.3.1 Construction Stage

Not required

### 4.3.2 Permanent

NBN Application AYCA-5UIIU7 has been made to the relevant telecommunication authority for one of the communication feeders and approved, while the secondary service provider is still being sourced. We are awaiting confirmation of their scope.

## 4.4 Staging

Not required.

# APPENDIX A – AUSGRID DESIGN INFORMATION PACKAGE

Issue Date: 07-03-2019

Amendment: 1

# Design Information - Site Specific Terms and Conditions

Ausgrid's Response to a Proposed Design Scope submission received 08-02-2019.

This document must be read in conjunction with the Design Information – General Terms and Conditions document that is available on the Ausgrid Website http://www.ausgrid.com.au

## 1. Ausgrid Project References

| | |
|---|---|
| SAP Project Number | SC13782 |
| Project Name | Maitland Hospital – 2 new 11kV dedicated feeders |
| Project Address | Metford Rd Metford |
| Prjtrak Number | XCU015531 |

## 2. Ausgrid Contact Details

| Note that this information is not to be placed on the design | |
|---|---|
| Ausgrid Contact | Nigel Goodwin |
| Telephone Number | 49519536 |
| Email Address | ngoodwin@ausgrid.com.au |

## 3. Operational Requirements

The design of the customer's 11kV switchboard shall be such that they are not able to parallel the incoming feeders within their installation at any time. The proposed Castel Key arrangement shall be implemented to ensure that the changeover of supply from one feeder to the other must be by a dump and restore process in the customer's premises.

There should also be clear segregation between Low Voltage sources to ensure no parallel feeds between private kiosk substations within the installation.

An Operating Agreement shall be outline these operational requirements, in negotiation with the customer, prior to finalisation of the Connection Agreement.

## 4. Response to Proposed Design Scope (PDS)

The design must meet the requirements contained in the Design Information – General Terms and Conditions, Ausgrid Network Standards and Ausgrid policies regardless of the wording/description of proposed works detailed on the submitted PDS form. Any request for variation and/or dispensation to the Ausgrid requirements must be done via a dedicated application to Ausgrid (eg NS181).

The proposed design scope submission is approved with the following alterations.

### 4.1. Network Proposal

#### 4.1.1. High Voltage Proposal

The Customer has the option of being supplied from One Transformer only at Metford Zone or they can split the feeders between the two transformers. In the case of a transformer failure, the bus section has a 5 second delay in which the customer will lose supply.

### 4.2. OPTION 1 (Feeder from both TX1 and TX2):

- Connect new hospital feeder 1 to spare CB83304
- Connect hospital feeder 2 to CB83315 via existing cable from Aux Tx No.2 RMU. Existing cable from Aux Tx 2 RMU to T joint between HS35838 "Burger King" and LB41416 to be cut and capped to form dedicated feeder to hospital only.
- Connect CB83291 to existing cable from T joint between HS35838 "Burger King" and LB41416 via Aux Tx No.1 RMU.
- Open points changed as per attached diagram.

4.3. OPTION 2 (Feeders from TX1 Only):

- Connect new hospital feeder 1 to spare CB83304
- Connect new hospital feeder 2 to spare CB83291 via Aux Tx No.2 RMU.

## 5. Cable Size

Use minimum 400AL3/300CU1 for all new cables. Screen ratings to be minimum 10kA 1 second.

## 6. Primary Equipment

It is recommended the design fault levels for the 11kV equipment in the customer's installation shall be equal or greater than 20 kA for 3 secs.

## 7. Protection Equipment

### 7.1. Option 1

A current contract Earth Fault Indicator shall be installed on Switch 83357 to identify cable faults.

Major Substations Operational Engineering (MSOE) Newcastle shall conduct a settings review for Fdr 83304 and Fdr 83315 once cable routes and construction are finalised.

### 7.2. Option 2

A current contract Earth Fault Indicator shall be installed on Switch 83337 to identify cable faults.

Major Substations Operational Engineering (MSOE) Newcastle shall conduct a settings review for Fdr 83304 and Fdr 83291 once cable routes and construction are finalised.

## 8. Fault Clearing Times

The maximum fault clearance time for faults on the customer's switchboard immediately downstream of the customer's incoming protection relay shall be dictated by the protection at Ausgrid's respective 11kV feeder panels. A grading margin of 300 milliseconds shall be required between Ausgrid's feeder protection relays and the customer's first protection device.

Major Substations Operational Engineering (MSOE) Newcastle shall provide these clearance times following a settings review.

## 9. Identification of Works Funded by Ausgrid

- Items as detailed in Apportionment of Costs section of the Design Information – General Terms and Conditions document.

The full extent of the Ausgrid funded works is determined when a design is submitted by the ASP/3 designer for certification. Ausgrid will detail the final funding arrangements and the amount to be paid by Ausgrid on the schedule to the certified design.

## 10. Enclosures

- Proposed Design Scope.

# PROPOSED DESIGN SCOPE

DATE: 05/12/2018

To: Ausgrid - Contestable Connections
contestability@ausgrid.com.au

Ausgrid reference: SC13782

From:
ASP Company: JHA
ASP Representative: Brenton Burrows
Authorisation Number: 3342
Phone: 94371000
Email: brenton.burrows@jhaer

| | |
|---|---|
| Project Description: | New Maitland Hospital |
| Project Address: | Lot 7314 Metford Road Metford |

| Connection Details | ☒ HV Supply (i.e. HVC) ☐ LV Supply | | | Include description of existing and proposed load fields below | |
|---|---|---|---|---|---|
| Existing Load: | Phases | | Amps | | |
| Proposed Load: | 3 Phases | 237A | Amps | 4.5MVA | |
| Total: | | | Amps | Proposed connection Date: | August 2019 |

| HV Proposal | |
|---|---|
| Proposed Distribution Centre: include substation type, size, LV panel layout (e.g. L type kiosk, 1000kVA, 1600/400 panels) | 3 Feeder HVC kiosk or direct to hospital MSB |
| Proposed Zone/Feeder: | Metford Zone Substation - Panel 83304 & new panel. |
| HV Network Proposal: describe the HV connection proposal (e.g. loop in new new substation between HS01234 and HS09876) | Run two new dedicated HV feeders between the proposed HVC/HV MSB location (prefer direct to HV MSB) and Metford Zone substation. Feeders to run in primary/backup configuration on an open ring/bus (only one feeder supplying) |
| HV Relocation Proposal: | N/A |

| LV and/or SL Proposal, including comms | |
|---|---|
| LV and/or SL Network Proposal: | N/A |
| LV/SL Relocation Proposal: | N/A |

| | |
|---|---|
| Does this proposal involve modification of Ausgrid's transmission, ADSS or pilot cable system(s)? If YES, please include on sketch | ☐ YES ☐ NO |
| Do you require fault level information that is not on WebGIS:? | ☒ YES ☐ NO |

**Attachments:**
Items marked with X are mandatory
Items with * asterisk are mandatory if applicable to the project type/application

- ☒ Sketch - proposed method of connection*
- ☒ Sketch – System Diagram (for HV works)*
- ☒ Connection Application
  - ☐ includes large/disturbing loads*
- ☒ Design Contract Acceptance
- ☐ Master plan (if multi stage subdivision)*
- ☐ Photographs
- ☒ Development Site Plans
- ☐ Other

| Ausgrid Use Only | Date Offer Accepted: | Load Cycle: |
|---|---|---|
| | Ausgrid Project Number: | CPC: |
| Planning: Response / Comments / Recommendations: (use additional pages if necessary) | | |