Hobartville Stud

Engineering Infrastructure Due Diligence Report

Prepared for: Hobartville stud PTY LTD

Attention: Stephen Gouge

Date: 1 Oct. 2019

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Ref: 43079

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Revision

Revision	Date	Comment	Prepared By	Approved By
1	25 September 2019	Initial issue	OKW	OKW
2	26 September 2019	Initial issue	OKW	OKW
3	26 September 2019	Initial issue	OKW	OKW
4	1 October 2019	Rezoning Application	OKW	OKW

Contents

1. Introduction

The purpose of this report is to assist the proponent in their due diligence assessment in support of a planning proposal to rezone part of the site for residential. The planning proposal includes an indicative layout of Hobartville Stud, Richmond ('the Site').

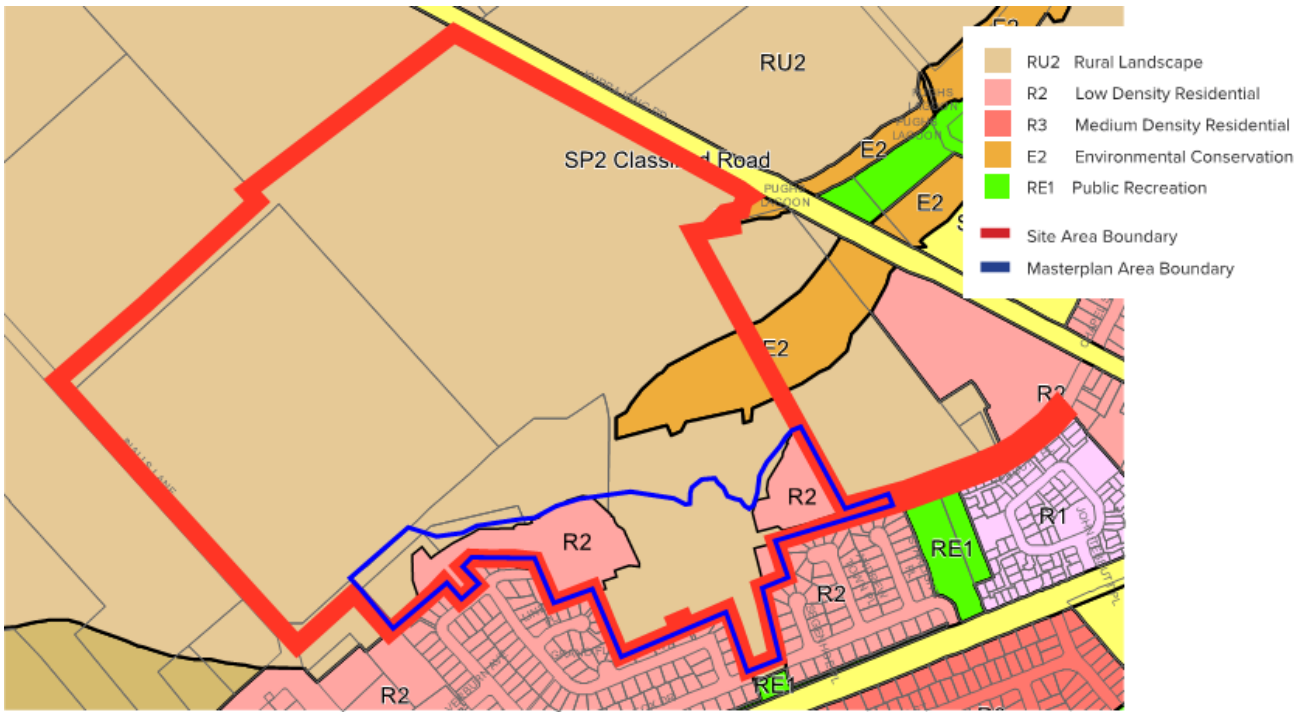
The scope of this report is to investigate existing, sewer, water and electrical infrastructure and assess its capacity to service the proposed development, as described in the master plan by Robert Days dated 19 July 2019.

Limitations of this report are as follows:

- No detailed or conceptual designs or calculations have been confirmed.
- No taking or testing of material samples was carried out.
- No testing for or advice is provided with respect to asbestos, microbiological or other contaminates.
- No formal discussions with Authorities (feedback only available through a formal submission).

2. Basis of Analysis

The master plan by Robert Day dated 19 July 2019 (Revision A) has been used as the basis of our analysis of the proposed development. We have reviewed the services loads and site impacts based on the development profile shown below.



Details of the proposed development are as follows:

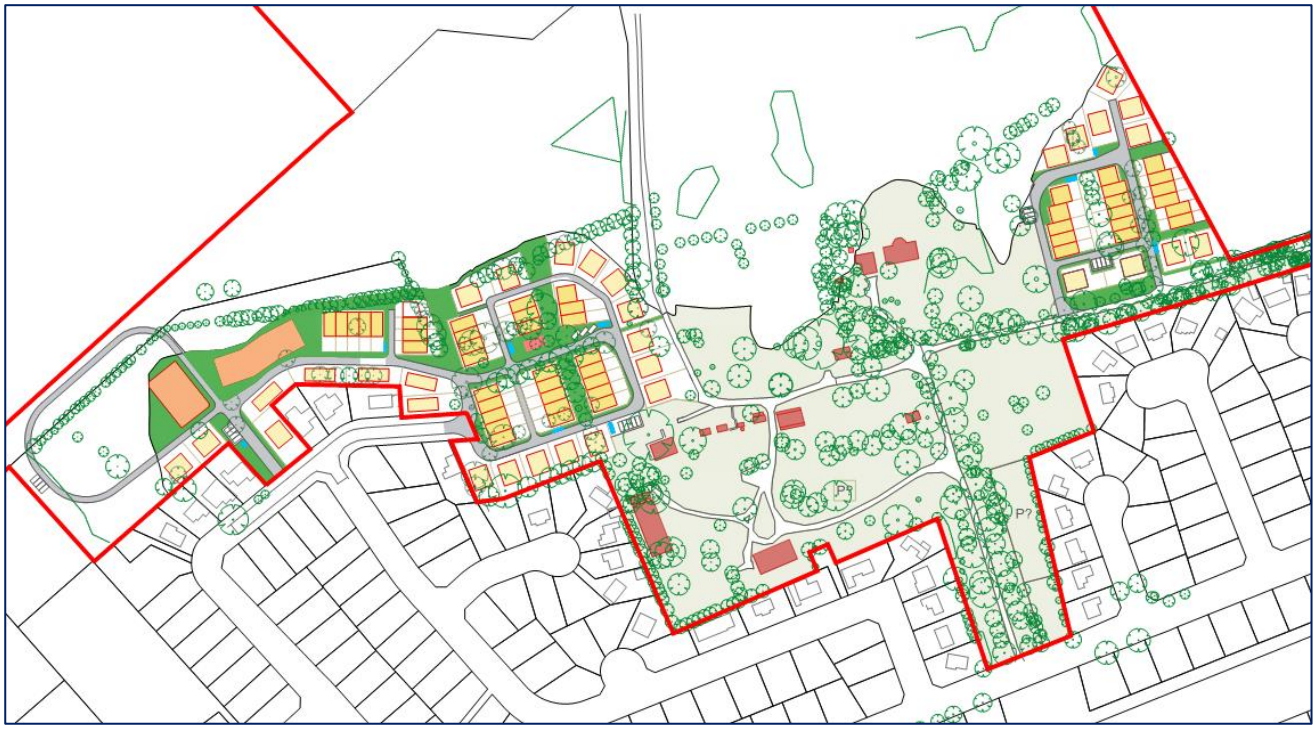
- 87 x 2 storey Terrace houses. Each house with an average lot area of 178.5m^2
- 31 x cottages with an average lot area of 420m^2

3. Existing Site Characteristics

Site: Hobartville Stud, Richmond
Development Area: Partial potion of the site.

The Site is bounded by existing farmland to the north, William Cox Drive and existing residential dwellings to the south, aged care facility to the east and existing farmland to the west.

Generally, the Site gently grades to the north into an existing water course.



4. Electrical & Communication Services

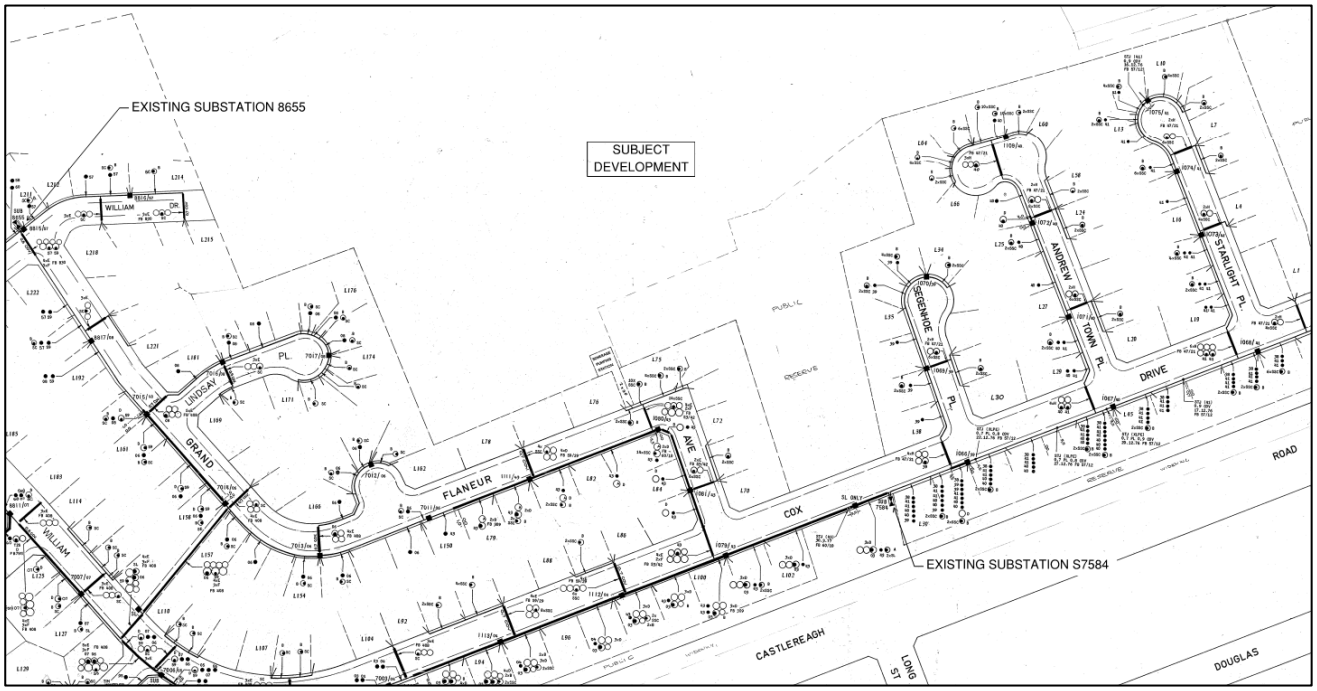
This section of report provides information regarding existing and proposed assets for electrical and communication services.

The desktop assessment was based on the demand requirements for the development proposal mentioned in Section 2 of this report. The information below indicates the existing services highlighted in Dial Before You Dig. In addition, a due diligence assessment of the proposed services to be provided in the below information.

4.1 Existing Electrical Supply & Infrastructure

The supply authority for the site is Endeavour Energy. The desktop assessment indicates an existing Endeavour Energy substation (S7584) on William Cox Drive, as shown below. This substation is situated on the opposite side of the road to the subject site.

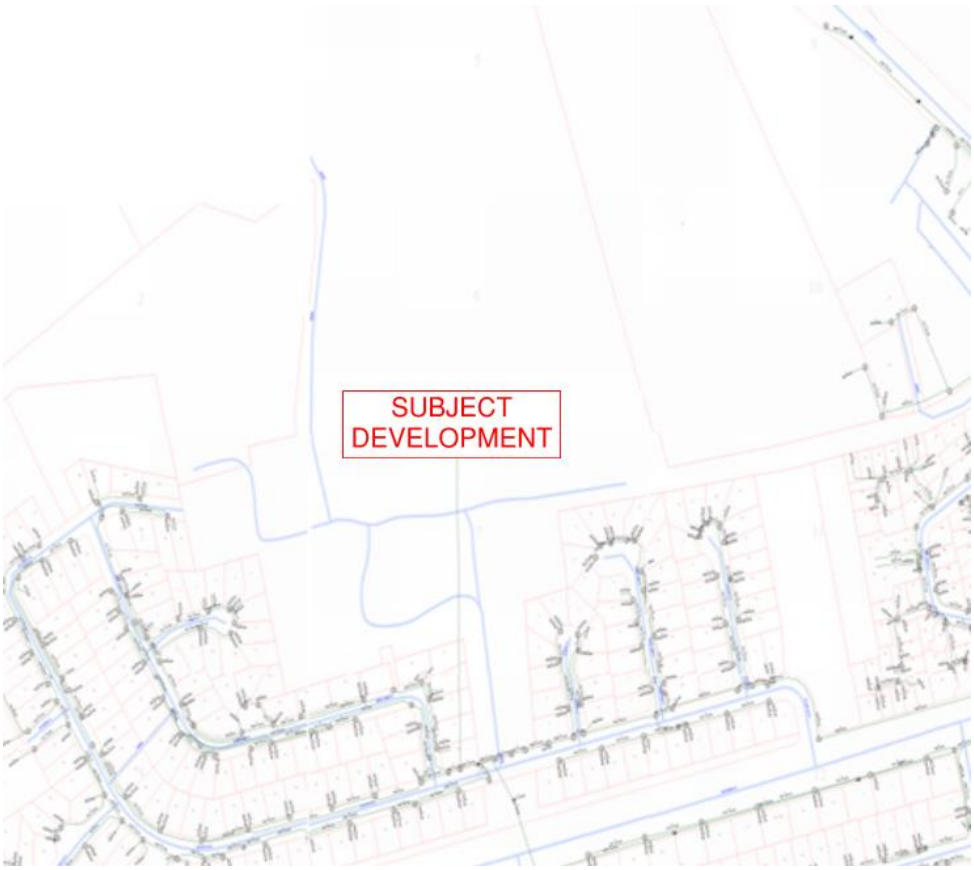
Existing Substation (S7584)



Existing Endeavour Energy Network (Source: Dial Before You Dig)

4.2 Existing Telecommunication Supply & Infrastructure

Dial Before You Dig information indicates the following NBN services in proximity to the Site:

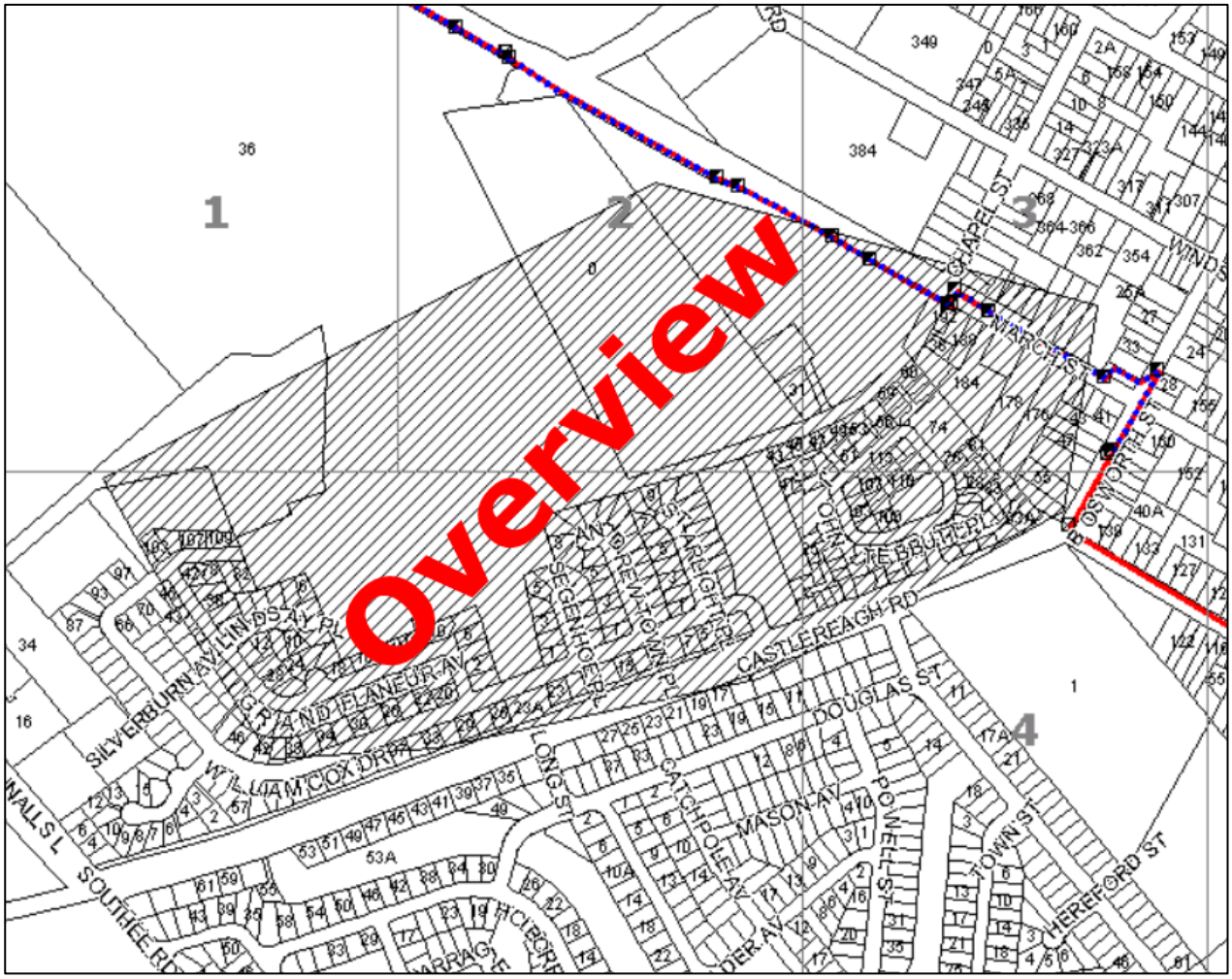


Existing NBN Network (Source: Dial Before You Dig)

Fibre-To-The-Node (FTTN) NBN service is currently available to the adjacent sites.

4.3 Existing Optus Infrastructure

Dial Before You Dig information indicates the following Optus services are located along Kurrajong Road.



Existing Optus Network (Source: Dial Before You Dig)

4.4 Proposed Electrical Infrastructure

The electrical demand calculations for the proposed development is based on the information in section 2 of this report. Preliminary assessment shows that the existing electrical infrastructure may be insufficient to cater for the proposed scope of works.

Considering the distance between the western and eastern portion of the development, substation S7584 (above) would be intended to be fed eastern portion of the site. An additional assessment required to determine whether substation S7584 will need to be upgraded to suit a new 400A distributor and an upgraded transformer.

The western portion of the development to be serviced by an existing substation shown below (8655). To ensure sufficient capacity, substation 8655 will be required to be upgraded with a larger transformer and a new 400A distributor to service the western part of the site.

Existing Substation (S8655)

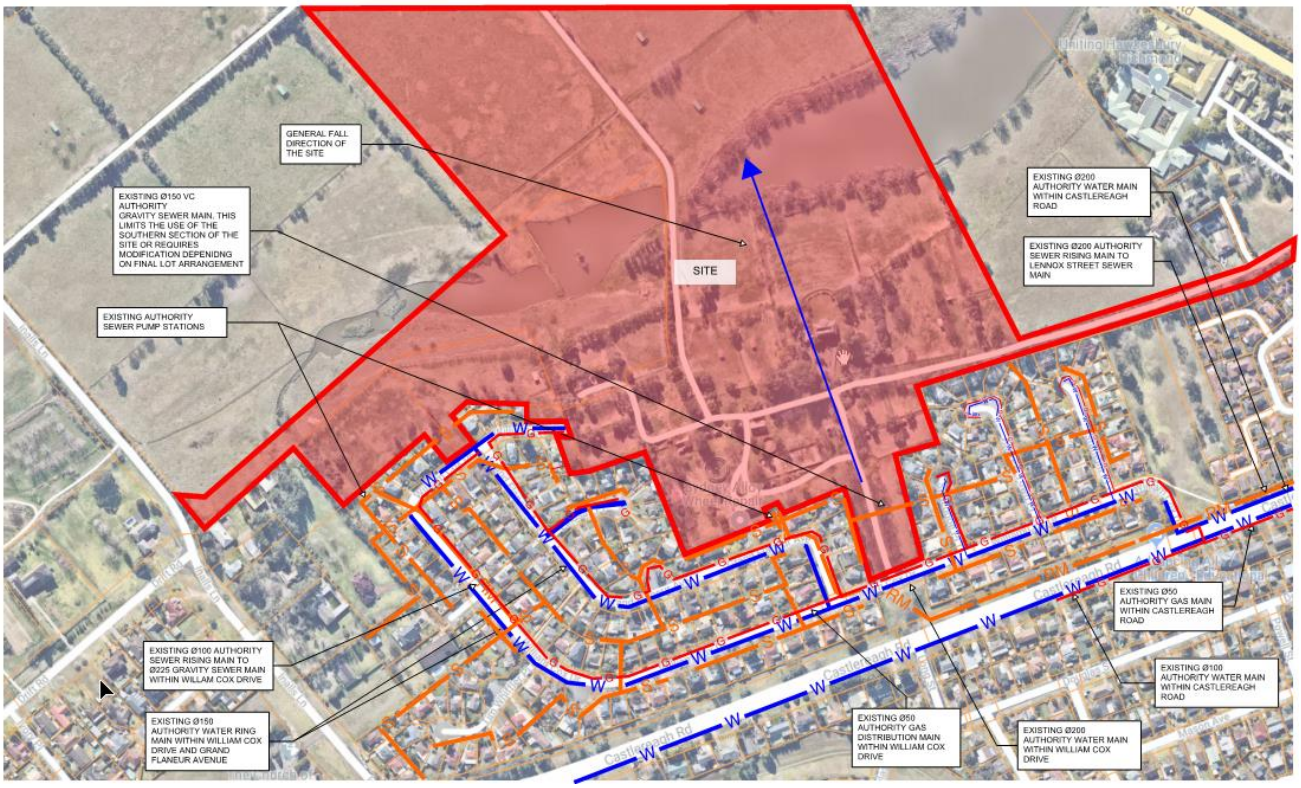
In summary, we would recommend upgrading substations S7584 and S8655, transformer and adding a new 400A circuit to cater for the proposed development. An alternative to substation 8655 is to provide a new 300KVA substation in lieu of upgrades. Further coordination with the relevant service authorities required to determine the existing capacity of the substations.

In addition to the above works, underground LV reticulation to be constructed to service each dwelling.

5. Hydraulic Services

This section of report provides information regarding existing and proposed water, sewer and gas infrastructure.

The master plan drawing below indicates the existing services obtained through Dial Before You Dig and expected proposed services to support the due diligence assessment for the servicing of the development.



Site Plan

5.1 Water Supply

The local water authority for the Site is Sydney Water. The water supply in the vicinity of the Site includes a 200 mm distribution main within William Cox Drive which supplies a ring main reticulating within William Cox Drive and Grand Flaneur Avenue. The 200mm CICL main in William Cox Drive is fed from a 300mm DICL water main within Bosworth Street in Richmond (to the north east of the Hobartville site) with interconnections to the 250mm CICL main in March Street and the 250mm CICL water main on the Southern side of Castlereagh Road (although this main reduces to 100mm before reaching William Cox Drive).

5.1.1 Potable Water Capacity

The potable water demand for the proposed development is expected to be medium to high. There are 87 double storey terrace houses, and 31 single storey cottages proposed for the site. Based on AS3500.1 Table 3.2.3, the probable simultaneous flow rate for the 118 dwellings is 8.50 L/s.

The 200mm CICL main in William Cox Drive (along the Southern boundary of the site) and the 100mm DICL at the end of William Cox Drive (along the Western boundary of the site) are both expected to be more than capable of providing this flow rate. The third option to these connection locations, is to connect into the 150mm main at the end of Chapel Street on the Eastern boundary of the site. However, it is to be noted that connection to Chapel Street will have a higher installation cost over the two aforementioned connection points due to the longer distance of pipework reticulation. For all connection alternatives, confirmation of water supply pressures and flows is required to assess pump requirements and spatial elements.

Please refer to the following sketch showing the expected potable water supply location for the Site.

5.1.2 Fire Water Supply

General fire services will be provided from street hydrants in line with standard residential fire system approaches. Therefore, no dedicated fire systems are proposed for this site. Confirmation of water supply pressures and flows from the local water authority is required to assess pump requirements and spatial elements.

5.2 Sewer Supply

The sewer authority for the Site is Sydney Water.

The local area surrounding the Hobartville Stud site is generally falling towards the north west from William Cox Drive towards Pugh's Lagoon. The existing dwellings surrounding the Hobartville Stud site are currently serviced by several 150mm VC and 225mm VC gravity sewer mains, which flow to either one of two authority sewer pumping stations located adjacent to the Western and Southern boundaries of the site on William Cox Drive and Grand Flaneur Avenue.

There is an existing 200mm sewer rising main that extends to the South East from the authority sewer pump station. The station is located on Grand Flaneur Avenue traversing east along Castlereagh Road, to connect with the gravity sewer network in Lennox Street.

The site from the desktop study includes a low point to the north. This would enable a gravity sewer system (in the largely flat central area of the site) to be installed within the site ultimately connected to a private sewer pump station within the site. A sewer rising main would then enable the private sewer pump station to discharge into the authority sewer network, most likely through the authority sewer pump station on Grand Flaneur Avenue.

The size and capacity of the pump stations in the local area are unknown, however the authority sewer pump station on Grand Flaneur Avenue provides drainage to the existing 220 dwellings which surround the Hobartville Stud site. The estimated population for the local area captured by the authority sewer pump station on Grand Flaneur Avenue is 1014. The current sewer flow to the pump station is estimated to be 16.00 L/s.

The 118 proposed dwellings are estimated to have a population of 413. The additional sewer flow to the pump station is estimated to be 8.90 L/s.

Water Services Australia guidelines suggest the existing 200mm rising main could have a capacity of 30-32 L/s. This presents two options on how the site can be drained to the sewer system. However, this is subject to confirmation from the local water authority. It should be also noted that whilst the authority rising main may have the adequate capacity for the combined existing and proposed loads, the capacity of the pump stations would be the key factor in the sewer connection for the site. The two options for enabling connection of the site should the authority not have sufficient capacity in the pump stations are:

Option 1

Depending on the existing pump station's available capacity and emergency storage, this pump station may require upgrading, including the upgrade of the sewer rising main within Castlereagh Road. This is subject to detailed discussion with the local water authority.

Option 2

In place of upgrading the authority pump station to handle the additional load of 118 dwellings, a holding tank could be installed on the site to enable the sewerage from the site to be discharged at the minimum rate allowed by the local authority. However, the on site holding tank may need to be sized to provide the emergency storage required for the authority sewer pump station. This is subject to detailed discussion with the local water authority.

5.3 Gas Supply

The local gas authority for this site is Jemena, which owns and operates the local gas assets. A desktop investigation indicates the presence of existing gas infrastructure in the vicinity of the Site, as listed below:

- A 50mm gas distribution main within William Cox Drive that is pressurised to 210 kPa reticulating from Castlereagh Road.

Gas demand for the proposed development is expected to be generated by the following:

- Residential gas cooking within the cottages and terraces
- Residential hot water heaters for each of cottages and terraces

Based on past experience with other similar projects, we anticipate this gas load to be between 1,800 and 2,000 MJ/Hour. This is likely to be serviced from the 50mm 210kPa gas main in William Cox Drive.

The above assessment must be confirmed pending advice regarding actual gas demand. Confirmation of the availability of supply is also required from Jemena Gas.

Design with
community in mind

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