NSW Health Infrastructure

Children's Hospital at Westmead Stage 2

PSB Infrastructure Management Plan Hydraulic & Fire Services

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1 Introduction

Arup have been engaged by Health Infrastructure NSW to undertake an Infrastructure Management Plan to support the Review of Environmental Factors (REF) for the proposed Paediatric Services Building (PSB) work.

The proposed development will be designed to comply with the BCA, DDA and all other relevant codes, standards and Authorities requirements.

The project is being carried out under State Environmental Planning Policy (Infrastructure) 2007 [1].

1.1 Proposed Development

The proposal seeks consent for the construction of a new **Paediatric Services Building (PSB)** to be located adjacent to the CASB, and on the site of the decommissioned P17 car park, including development of the Hawkesbury Road forecourt and access links. This includes works associated with CHW forecourt on Hawkesbury Road to provide improved community amenity in the form of a new front entry, improved street frontage and enable a more cohesive main entrance connecting existing CHW, adjoining research facilities, and the PSB.

The scope of proposed works includes:

- Construction of the main PSB:

The main PSB may contain the following uses: perioperative and interventional services, neonatal and paediatric intensive care units, cancer centre, acute inpatient beds, back of house and parent facilities; and

- Alterations and additions to existing CHW KR and CASB buildings adjoining PSB site area to accommodate floor realignment and movement corridors
- Construction of a new pedestrian canopy link through KR, connecting the main PSB with the CHW forecourt and existing hospital entrance
- The canopy link is to be lifted 2 storeys above the CHW forecourt
- A new ground plane / forecourt landscaped area extending from Hawkesbury Road to the proposed PSB
- Tree removal to accommodate the construction of the PSB

1.2 The site

The site of the proposed works is located at the site of the existing P17 car park, as well as the existing CHW forecourt and a small link area through the existing KR building.

The PSB scope of works falls on a lot legally described as Lot 101 in Deposited Plan 1119583. The lot is under the ownership of the NSW Health Administration Corporation.

2 Overview of Existing Infrastructure

2.1 Existing Cold Water Infrastructure

Existing water mains are available running along Hawkesbury Road as follows:

- **Sydney Water Assets:**
    - Hawkesbury Road – 250mm ductile iron cement mortar lined (DICL) main.
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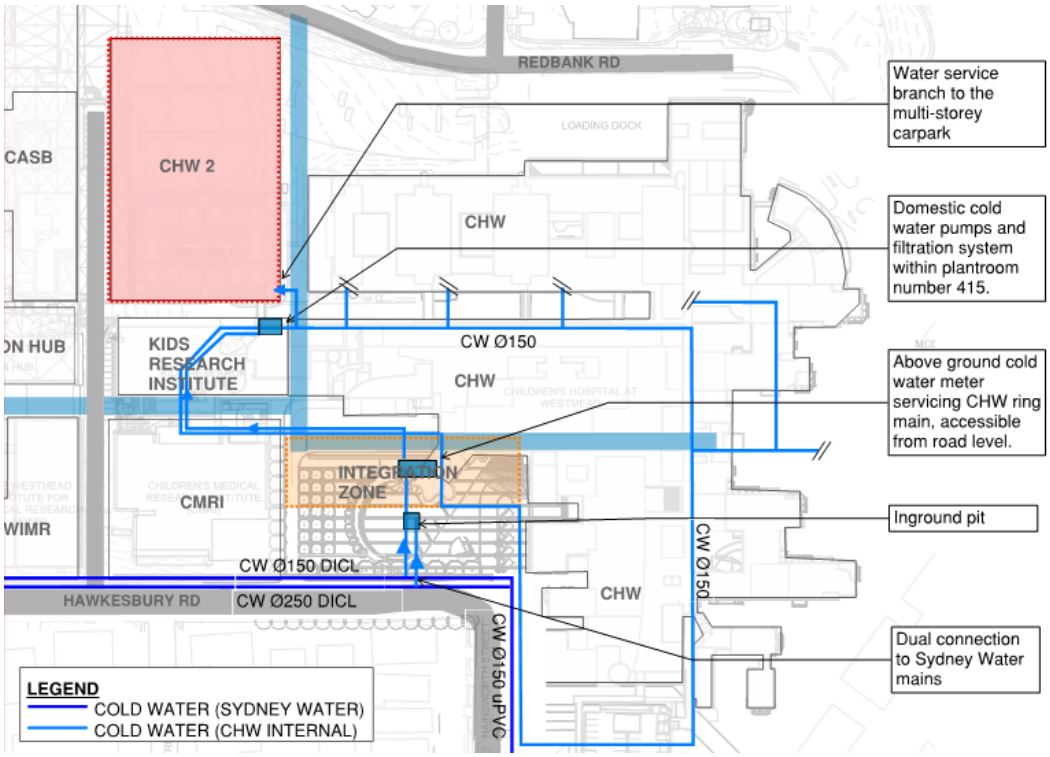

Figure 1 - Cold water infrastructure (utility and private) around the site

The existing cold-water supply to the CHW site includes a dual supply coming off the Sydney Water mains located in Hawkesbury Road. The two independent connections combine into a single point in an inground pit just before the main water meter provide supply and redundancy to the existing hospital site.

2.2 Existing Fire Water Supply

The site is serviced from a dual connection off the water main on Hawkesbury Road.

The FH main supply to the site extends from the two connection points and reticulates around the site in the form of an external ring main.

Fire brigade booster is located at the main entry to the building, accessible from Hawksbury Road.

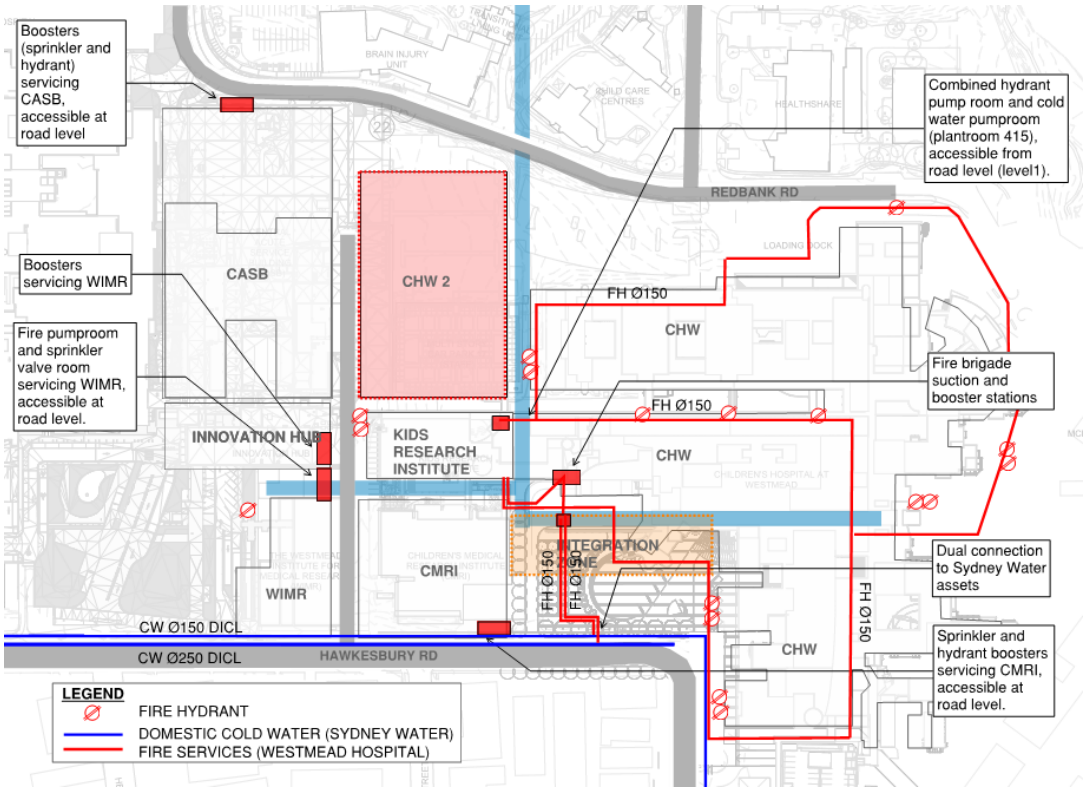

Figure 2- Sketch summarising fire hydrant strategy of existing CHW buildings.

2.3 Existing Sewer Infrastructure

The following is a summary of the existing sewer infrastructure servicing the site.

- **Sydney Water Assets**:

  Existing Sydney Water sewer mains are available running along both Hawkesbury Road, Redbank Road and adjacent Toongabbie Creek. These mains include:

  - Hawkesbury Road – 225mm vitrified clay main. *Note the sewer main in Hawkesbury Rd is higher than the Hospital site and not suitable for a gravity connection at ground level*
  - Alongside of Redbank Road – 300mm salt glazed earthenware main. *Note it appears that no connections are allowed to this sewer line within the Westmead precinct – this will be confirmed by SWC*
  - Alongside of Toongabbie Creek – 750mm reinforced concrete trunk main.

- **Westmead Hospital internal assets**:

There is an extensive network of internal sewer drainage infrastructure across the site and based on the available details it appears that both internal sewer lines

ultimately discharge into the 750mm Sydney Water asset. This will be confirmed with the Sydney Water Coordinator (WSC).

- **Westmead Hospital** – 375mm sewer main (and a 225mm trade waste main) extends from the connection to the Sydney Water 750mm sewer, adjacent Toongabbie Creek, to service the Westmead Hospital, alongside of Redbank Road. The 225mm trade waste main is laid parallel to the sewer main and extends from the Westmead Hospital to the trade waste treatment plant.
- **Westmead Children's Hospital** – an existing 225mm internal sewer main connects to the Sydney Water 750mm sewer main. This main is split into two separate 225mm sewer mains which extend through the Westmead Children's Hospital to serve various buildings.

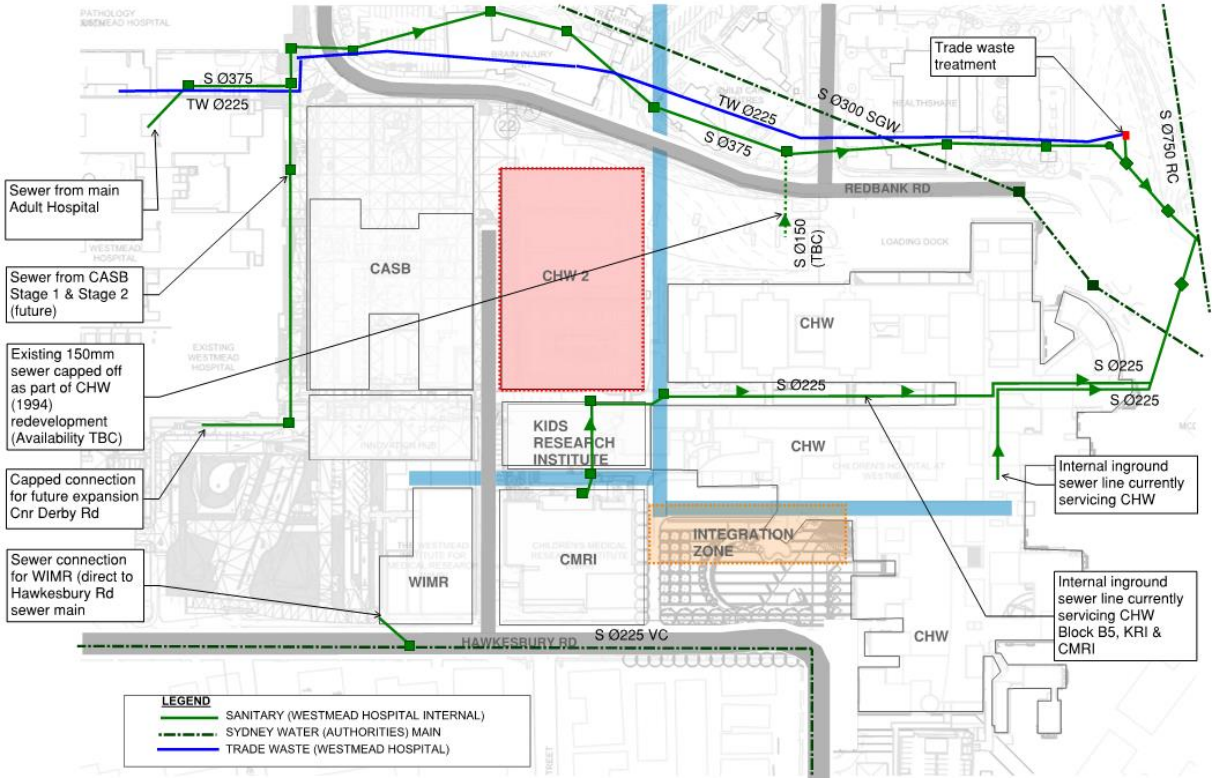

Figure 3 - Sewer infrastructure (utility and private) around the site

2.4 Existing Natural Gas Infrastructure

The Westmead site is fed by a single 150mm high pressure 1,050kPa Jemena gas main and authorities meter set. This gas meter provides supply to the main hospital, the Children's Hospital (CHW) and more recently the new Central Acute Services Building (CASB).

A dedicated gas line branches off the main supply to serve the CHW site, which is privately sub-metered and includes a large privately-owned gas meter serving the CHW (100kPa).

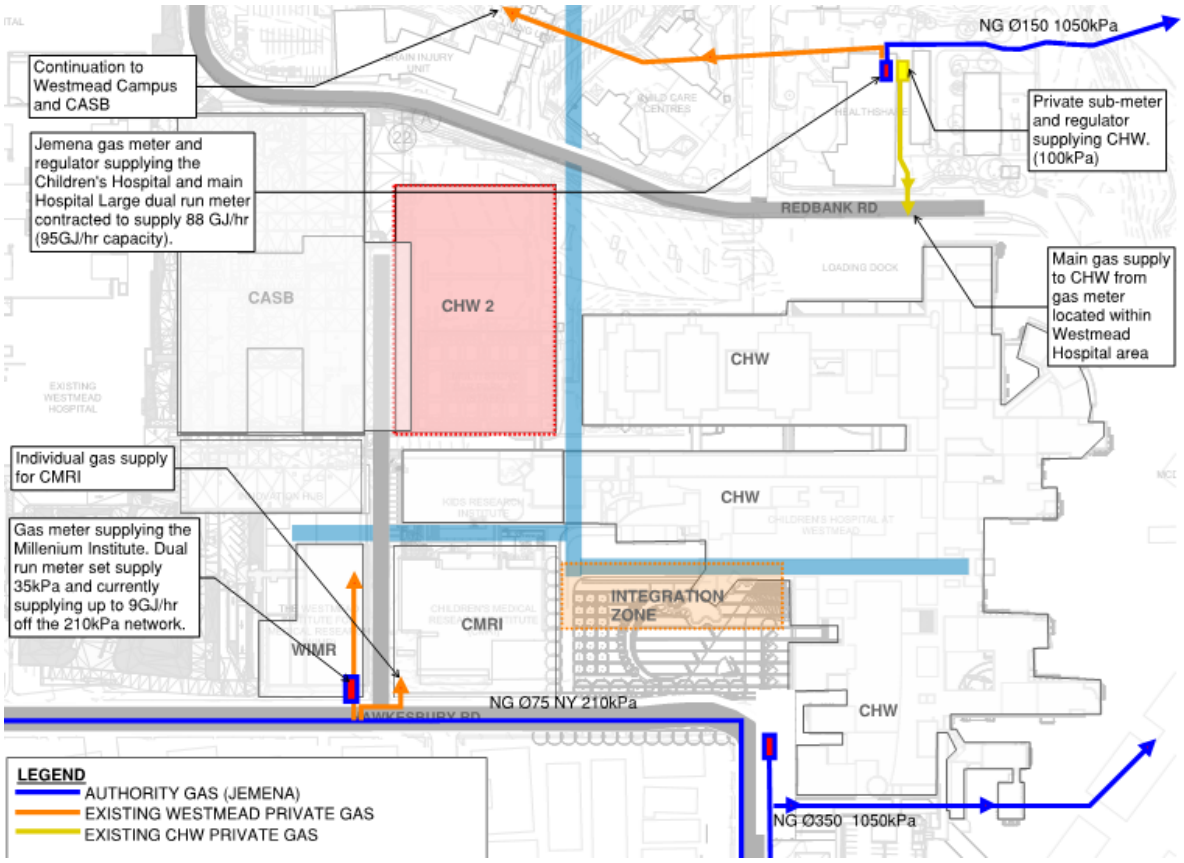

Figure 4 - Natural gas infrastructure (utility and private) around the site

The gas main serving the CHW site extends from the main Westmead Hospital campus gas network with a main gas meter and regulator located within the Westmead Hospital area.

A 150mm @100kPa pipe runs inground crossing Redbank Road and entering the building through the loading dock area. The emergency gas supply isolation valve for the CHW compound is located externally to block 9, accessible from the loading dock.

Figure 5 - Gas line to CHW site

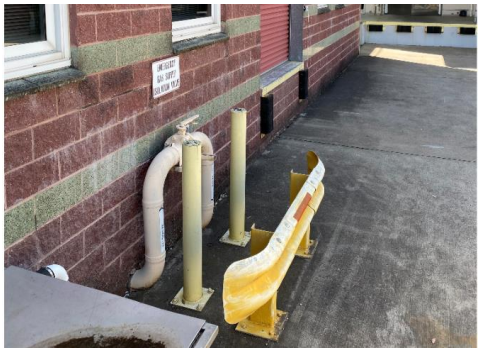

Figure 6- Isolation valve in loading dock

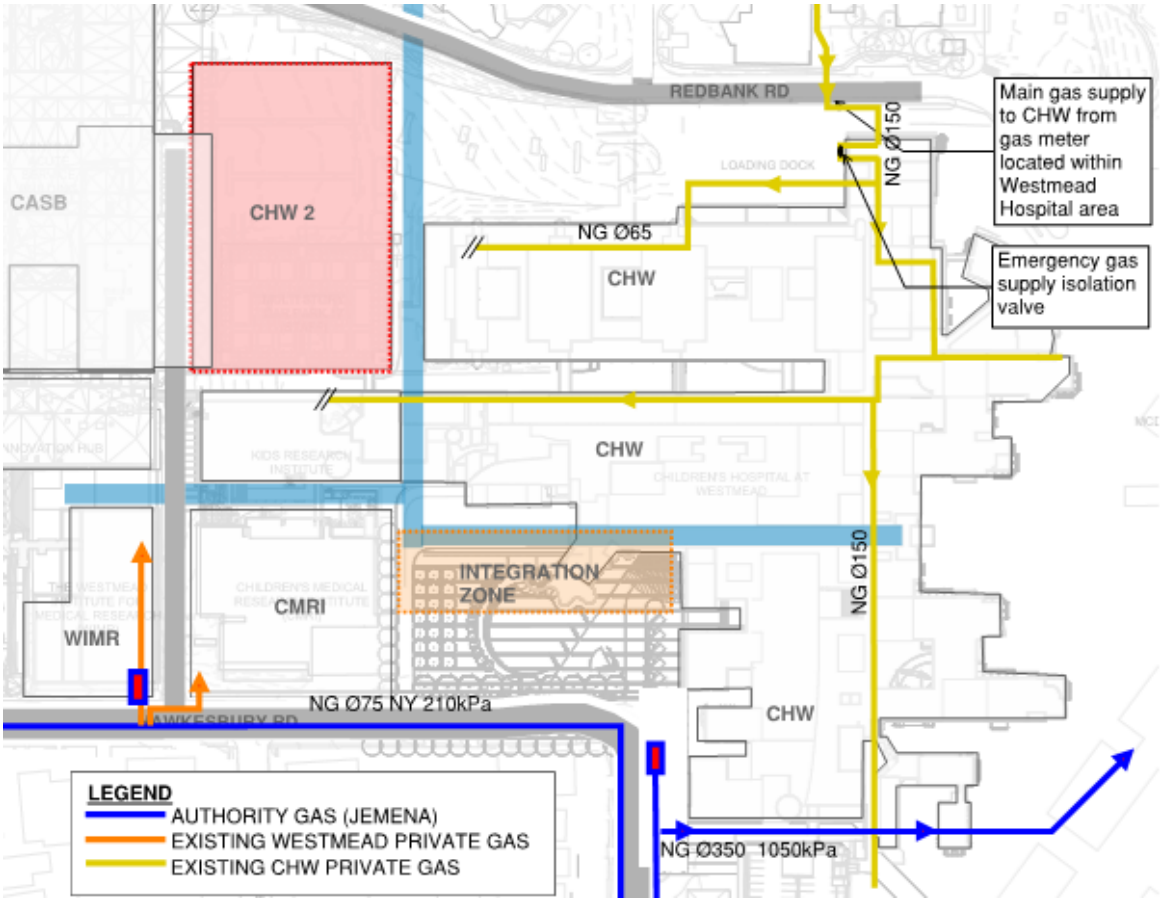

Figure 7 -- Sketch summarising gas supply strategy to existing CHW buildings.

3 Proposed New Infrastructure

New infrastructure is proposed to serve the PSB development as detailed in the following sections.

The options tabled for each service also include relocation of existing services currently serving the existing CHW building where required to suit architectural aspirations for the site. A number of services will be impacted by the integration zone and works within the forecourt and will need to be relocated. The extent of the impact is yet to be determined, however it is anticipated that will include as a minimum the relocation of the following services:

a. Domestic cold water mains dual connection;

b. Domestic cold water authority meter;

c. Domestic cold water inground isolation valve pit;

d. Fire hydrant mains dual connection;

e. Fire sprinkler main single connection;

f. Fire hydrant and sprinkler boosters (2x);

g. Fire services inground isolation valve pit.

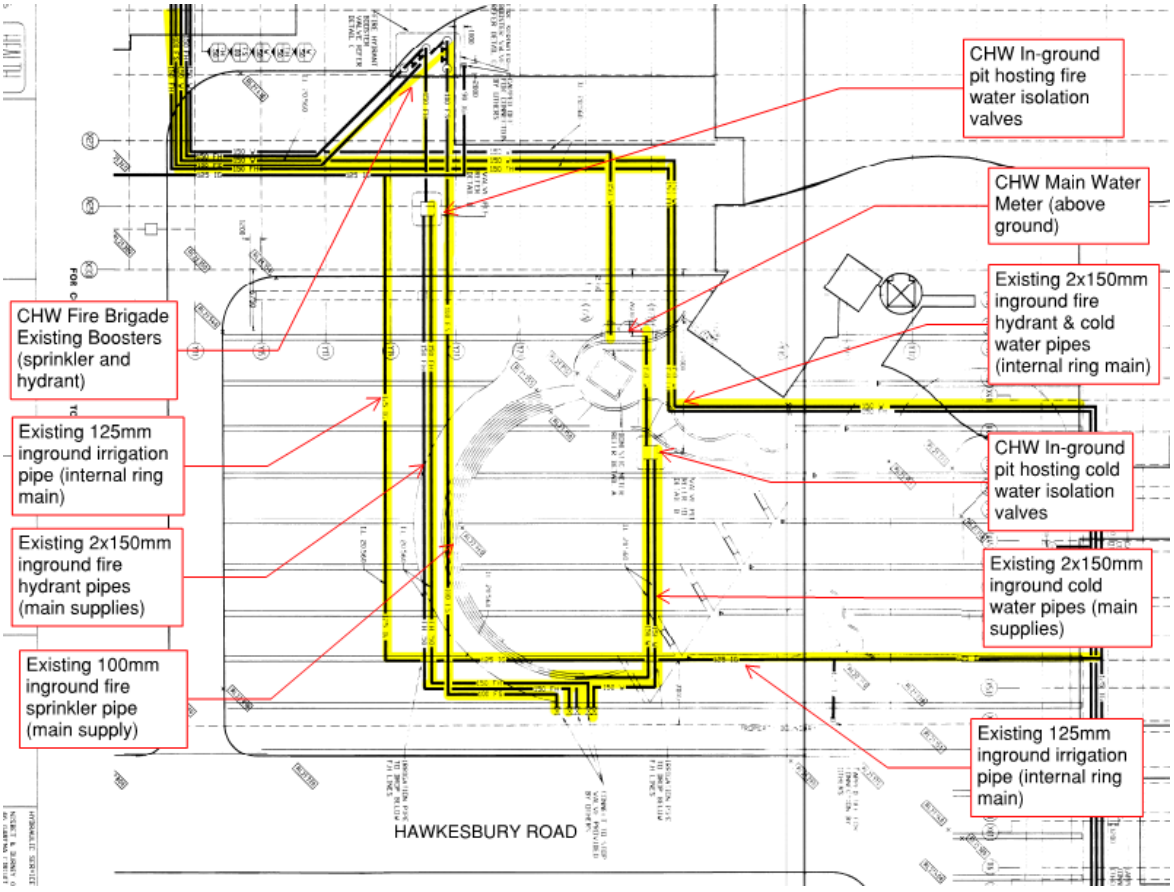

Figure 8 - Existing Services within forecourt area

Pending confirmation on the forecourt and integration zone design, the following additional services may also be impacted:

a. A portion of the private domestic cold water ring main serving CHW;

b. A portion of the private irrigation ring main serving CHW;

c. A portion of the private fire hydrant ring main serving CHW.

3.1 Private Dual Cold Water Mains

The cold water supply to serve new PSB and existing CHW will be provided from new dual connection (2x200mm) to Sydney Water assets in Hawkesbury Road, with 2x new water meters (one for each supply) located externally at the site boundary, at CNR Hawkesbury Road and KR Lane. Dual check valves (DCVs) will be installed immediately downstream of the water meters to provide site containment protection. RPZDs will be located at cold water supply to each building.

The dual incoming water services will form a "private" water supply main to service water and fire needs for both PSB & CHW.

Of the new works noted above, it is proposed for the following to form part of the Campus Infrastructure works to minimise disruption on KR Lane:

- 2x200mm new water pipes on KR Lane.
- New dual authority water meters and associated dual check valves (DCVs).

The new cold water services will be capped for future extension to serve PSB & CHW during the main works.

The existing water meter, RPZDs and connections currently serving the existing CHW will remain operational during construction and will be decommissioned as part of the PSB works.

While we anticipate an increase in water demand from the site, we generally expect the authority infrastructure alongside Hawkesbury Road to be of sufficient size and able to support the new development. Further investigation is being undertaken in conjunction with the Water Services Coordinator (WSC) regarding the existing Sydney Water water main capacity and a feasibility application has been submitted.

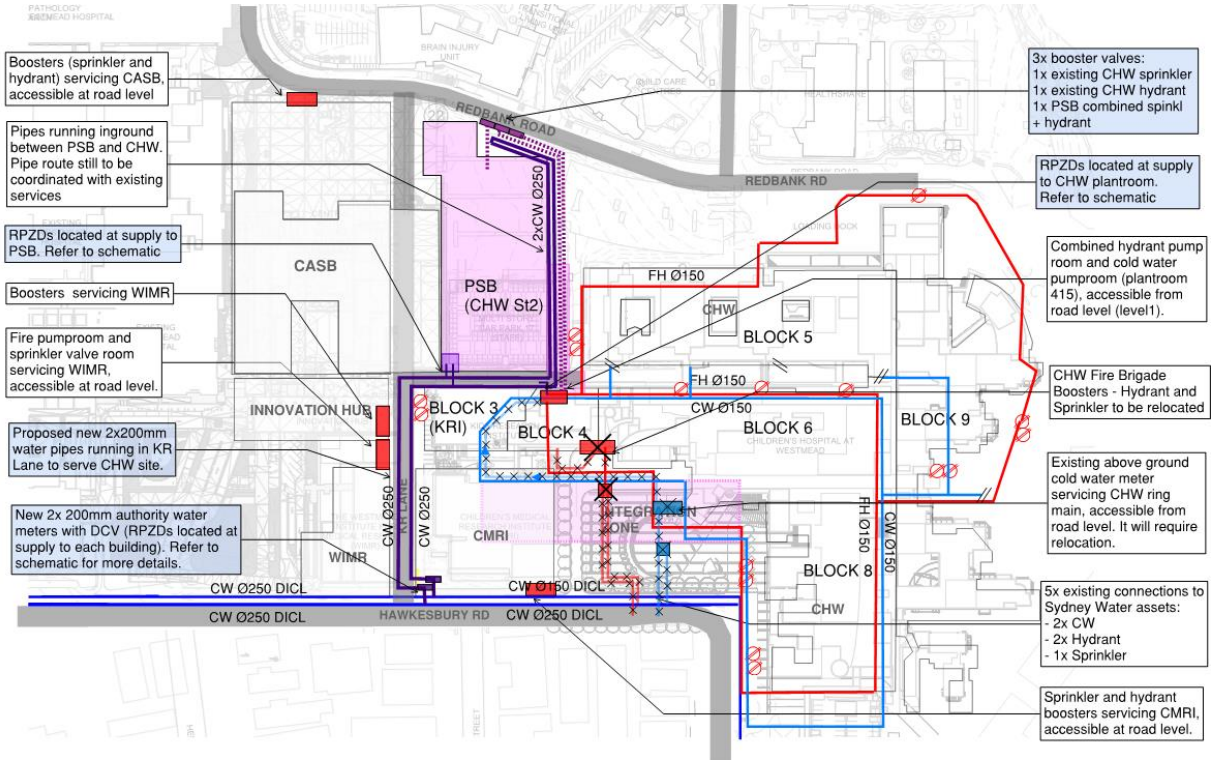

Figure 9 – Cold/Fire water supply strategy

3.2 Sewer Drainage

The new sewer drainage and sanitary plumbing for the new PSB will connect to the private infrastructure (375mm pipe). The pipe is WSLHD's asset.

It is proposed for the section of sewer drainage crossing Redbank Road and associated manholes to be installed as part of the Campus infrastructure works, as Redbank Road will need to be excavated. Extension from the capped sewer access chamber (left in the carpark as part of the Campus infrastructure works) to the new PSB building will be undertaken as part of the main for the PSB project.

The final pipe route will avoid affecting existing trees on the site (if/where such trees are required to be retained, as advised by the project ecologist/arborist), and route around those where possible while coordinating with other services in the area.

Based on preliminary information from the Water Services Coordinator (WSC), it is suggested that the authority sewer, where the existing WSLHD asset eventually connects into, will have capacity to accept the new anticipated sewer loads. This will require confirmation pending response to the feasibility application which has been submitted by the WSC.

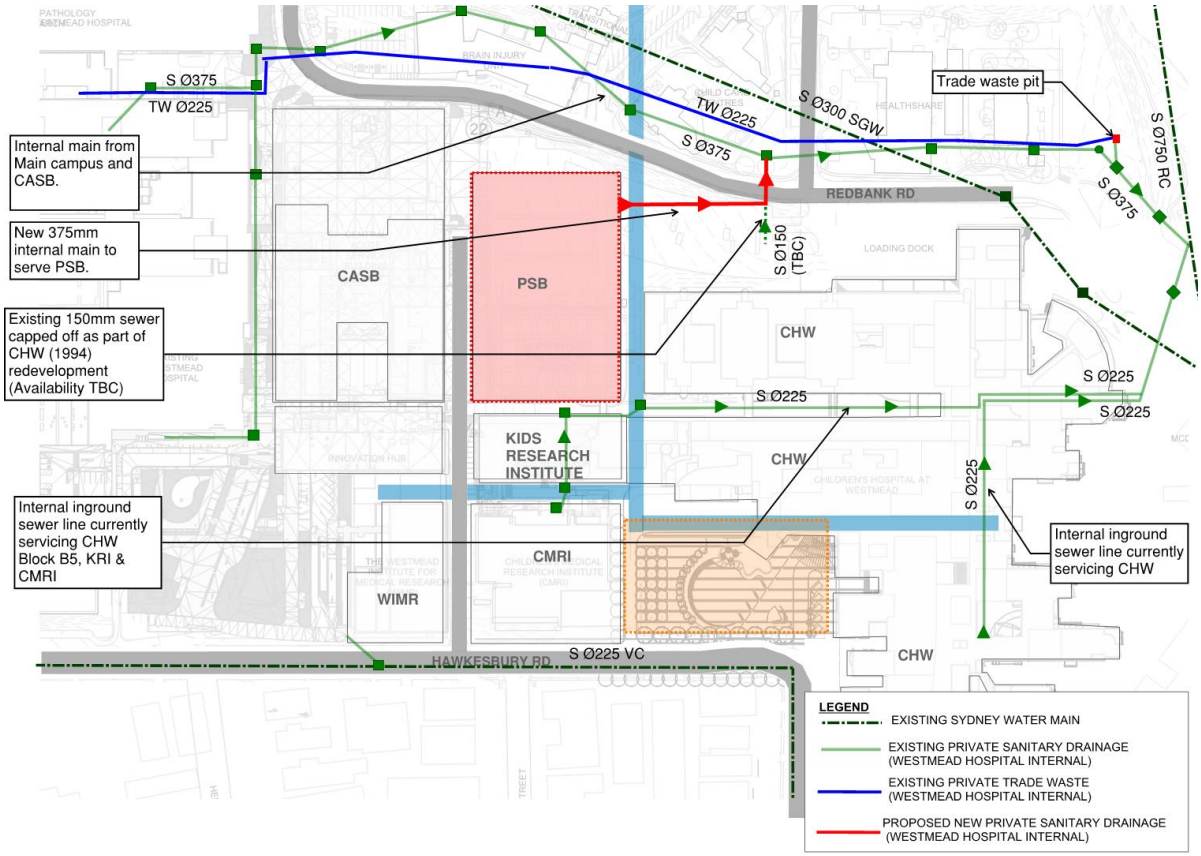

Figure 11 – Sewer Drainage Strategy

3.3 Internal main from Main campus and CASB. Natural Gas Supply

It is proposed for the new PSB to connect into the existing private supply to the CHW, forming a new ring main as per sketch below:

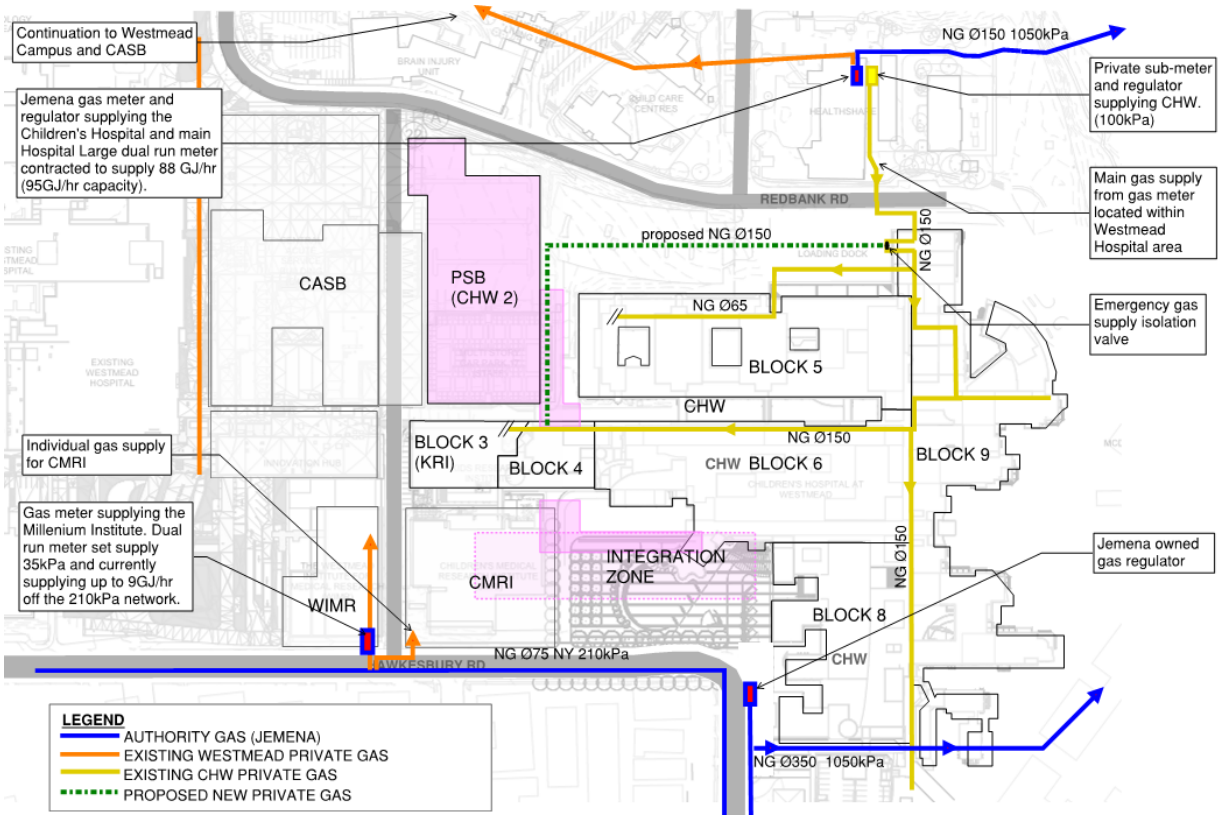

Figure 12 - Proposed gas ring main

The details of the new pipe route, size and coordination with other in-ground services and the loading dock area will be further explored and developed during the next stage of design.

3.4 Campus Infrastructure

Campus infrastructure works will be required to minimise the disruption to the operations of the campus once CASB is operational. The following items will form part of the Campus Infrastructure works package:

a. New private dual cold water mains and associated meters extending down KR Lane;

These works are being delivered under a separate planning approval and will be completed prior to CASB goes live.