

By email
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Our ref 274355

Dear Sir/Madam

Nepean TAMS/CAMHS **REF Hydraulic and Fire Services Requirements**

We are writing to provide a brief summary confirming the parameters that are being adopted in the mechanical design of the above-mentioned development.

The scope of work to be carried out includes redevelopment of the following Nepean Hospital building facilities:

- New TAMS building – designed by Arup
- New CAMHS – designed by Arup based on WSP Schematic design

1. Introduction

Arup have been commissioned by NSW Health Infrastructure to provide the Hydraulic and Fire services design for the Nepean Hospital Stage 2 Redevelopment – CAMHS and TAM.

This memo provides Hydraulic and Fire services advice to support the Review of Environmental Factors (REF) for the proposed scope of works.

This memo describes the proposed scope associated with the hydraulic and fire services and addresses requirements that need to be considered as part of the REF.

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

1.1 The Site

The Nepean hospital campus includes many blocks and detached buildings around the site. Stage 1 building is currently in construction. Stage 2 building includes the construction of a new building and the refurbishment of existing departments in North block.

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The focus of this report is the CAMHS unit which is a development that forms part of the mental health expansion zone within the Nepean Hospital. The CAMHS works will involve the demolition of two existing buildings (Nepean 1&2) to allow for the new CAMHS building which will be located close to the existing Acute Mental Health building. The surrounding buildings (Executive, sexual health and court buildings) are to remain operational throughout the CAMHS works.

It has been proposed to relocate the existing TAM located on Barber avenue to where the current fleet parking area is, adjacent to the sexual health and court buildings.

The demolition works associated with the hydraulic and fire services scope include the retention and protection of part of the private sewer main running underneath Nepean 1 building.

1.2 Limitations

This memo is subject to the following limitations:

- The information in this report has been provided based on the survey information of services as provided for the project to date.
- Information provided by third parties and respective Authorities has been utilised in the preparation of this report and have been assumed to be of sufficient accuracy to inform the REF process.

2. Hydraulic and Fire Services

2.1 Domestic Cold Water

Existing water mains are available as follows:

- Sydney Water Assets:
 - Somerset Street: 150mm cast iron cement mortar lined (CICL) main.
 - Derby Street: 150mm/100mm main which changes in size/material.
- Private Water Mains:
 - Water main of unknown size and Origin extending from the north and located between AMH and Nepean 1 buildings
 - 100mm capped connection extending from the incoming connection serving AMH from Derby St

The cold water supply to the existing Nepean 1 and 2 buildings are provided from an extension of the water main of unknown size. Domestic cold water to the future CAMHS building is proposed to be extended from the existing supply to the Nepean 1 and 2 buildings. If the supply is deemed to be unsuitable the 100mm capped connection extending from the AMH building will be utilised.

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The cold water supply to the TAM building will be provided downstream of the existing water meter on Derby St, branching off the existing 100mm private main.

As such, a new connection to Sydney Water authority mains will not be required to supply cold water to the CAMHS and TAM buildings.

2.2 Natural Gas

The site has access to six Jemena natural gas mains that range in size from 50mm-200mm diameter and pressures from 210-3100kPa. The gas mains that are located close to the site are as follows.

- Jemena Assets:
 - Derby Street: 50mm 210kPa & 200mm 1050kPa
 - Somerset Street: 50mm 210kPa

- Nepean Assets:
 - North of proposed CAMHS: 150mm 135kPa with 40mm capped connection

The CAMHS building does not require any gas services as such a gas supply will not be provided.

The TAM building does not require any gas services as such a gas supply will not be provided.

2.3 Sanitary Drainage

There are no Sydney Water authority sewer mains in close proximity to the site. The site services survey shows a private sewer network servicing Nepean 1,2, sexual and court buildings. The sewer collected from all of these buildings discharge into an existing 300mm authority sewer main on Parker Street. Part of the drainage.

The drainage from level 1 and drainage from the east of level 2 is not able to drain via gravity into the existing private main sewer connection point as it is unlikely to meet the invert level which has been estimated based on the invert levels around the manhole provided further downstream of the proposed connection point. As such a sewer pump station is proposed to be installed to the south of CAMHS facing the Sexual health building to collect this drainage. All other drainage will be drained via gravity. Drainage from CAMHS will drain into the existing private sewer connection located on the north end of CAMHS.

The site services survey does not indicate where the existing drainage from the sexual and court buildings continue towards. The facility management have advised that there is a sewer pump out pit that serves these buildings. It is proposed that the TAM building drainage will drain into the sewer pump station installed for CAMHS.

Both the CAMHS and TAM buildings will connect into existing private site sewer infrastructure, as such a new connection to Sydney Water authority sewer mains will not be required

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2.4 Rainwater / Stormwater Drainage

Rainwater harvesting will not be adopted for CAMHS or TAM buildings. All roof drainage collected will discharge into the civil stormwater network.

2.5 Fire Hydrant and Fire Hose Reels

There is currently an existing hydrant booster assembly located on Derby Street. This booster is dedicated to the AMH building. The AMH hydrant system is complete with a single diesel hydrant pump located on level 1 and consists of a 150mm capped provision available for future extension as documented on the AMH hydraulic as built drawings (*AB-HZ-512 REV:C*). The hydrant water supply for the future CAMHS building will be supplied by extending this capped provision.

It has been proposed that hydrant protection to the TAM building will be provided via external hydrants that will extend from the new hydrant service to CAMHS.

A new connection to Sydney Water authority mains for the hydrant supply will not be required for the CAMHS and TAM buildings.

Similar to the cold-water supply to the CAMHS building, the fire hose reel supply will be provided from the existing supply to Nepean 1 & 2. The fire hose reel supply to the TAM building will extend from the cold-water supply.

2.6 Fire Sprinklers

A 150mm connection to the authority water main along Derby Street will be required to provide the sprinkler system water supply for CAMHS. The sprinkler system consists of a sprinkler booster to be located along Derby Street complete with a diesel pump located inside the pump room on level 1. No requirement for upgrades to the existing authority main is anticipated.

Whilst BCA does not require sprinklers to TAM, HI guidelines require all buildings to be sprinkler protected. It is our understanding that HI have agreed to omit sprinklers to TAM. As such sprinklers will not be provided to this building.

3. Drawing List

The Hydraulic and Fire Services for these areas is detailed in the following drawings:

3.1 TAMS Works Schematic Design Drawing List

3.1.1 Fire Services

Drawing Number	Drawing Name	Revision
NHR-ARP-DRW-FPS-TAM-000-0000001	Fire Services Cover Sheet & Drawing List	B
NHR-ARP-DRW-FPS-TAM-000-0000002	Fire Services Legend	B
NHR-ARP-DRW-FPS-TAM-230-0110001	Fire Services Layout Level 01	B

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3.1.2 Hydraulic Services

Drawing Number	Drawing Name	Revision
NHR-ARP-DRW-HYD-TAM-000-0000001	Hydraulic Services Cover Sheet & Drawing List	B
NHR-ARP-DRW-HYD-TAM-000-0000002	Hydraulic Services Legend	B
NHR-ARP-DRW-HYD-TAM-230-0000001	Hydraulic and Fire Services Site Plan	A
NHR-ARP-DRW-HYD-TAM-230-0110001	Hydraulic Services Water Services Layout Level 01	B
NHR-ARP-DRW-HYD-TAM-230-0110002	Hydraulic Services Drainage Services Layout - Level 01	B
NHR-ARP-DRW-HYD-TAM-230-0210001	Hydraulic Services Layout Roof	B

3.2 CAMHS Works Issued for Tender Drawing List

3.2.1 Hydraulic Services

Drawing Number	Drawing Name	Revision
NHR-ARP-DRW-HYD-MHS-000-0000001	Hydraulic Services Cover Sheet & Drawing List	D
NHR-ARP-DRW-HYD-MHS-000-0000002	Hydraulic Services Legend	D
NHR-ARP-DRW-HYD-MHS-000-0000003	Hydraulic Services General Details	D
NHR-ARP-DRW-HYD-MHS-100-0000001	Hydraulic Services Cold & Hot water Schematic	D
NHR-ARP-DRW-HYD-MHS-100-0000003	Hydraulic Services Sanitary Drainage Schematic	D
NHR-ARP-DRW-HYD-MHS-100-0000004	Hydraulic Services Stormwater Schematic	D
NHR-ARP-DRW-HYD-MHS-200-0000001	Hydraulic Services Layout - Proposed Works Site Plan	D
NHR-ARP-DRW-HYD-MHS-230-0100001	Hydraulic Services Water Services Layout – Level 01	D
NHR-ARP-DRW-HYD-MHS-230-0200001	Hydraulic Services Drainage Services Layout – Level 01	D
NHR-ARP-DRW-HYD-NBL-230-0200001	Hydraulic Services Water Services Layout – Level 02	D
NHR-ARP-DRW-HYD-MHS-230-0200002	Hydraulic Services Drainage Services Layout – Level 02	D
NHR-ARP-DRW-HYD-MHS-230-0300001	Hydraulic Services Layout - Roof	D

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3.2.2 Fire Services

Drawing Number	Drawing Name	Revision
NHR-ARP-DRW-FPS-MHS-000-0000001	Fire Services Cover Sheet & Drawing List	D
NHR-ARP-DRW-FPS-MHS-000-0000002	Fire Services Legend	D
NHR-ARP-DRW-FPS-MHS-000-0000003	Fire Services General Details	D
NHR-ARP-DRW-FPS-MHS-100-0000001	Wet Fire Services Hydrant and Hose Reel Schematic	D
NHR-ARP-DRW-FPS-MHS-100-0000002	Wet Fire Services Sprinkler Schematic	D
NHR-ARP-DRW-FPS-MHS-100-0000003	Dry Fire Services Schematic	D
NHR-ARP-DRW-FPS-MHS-200-0000001	Dry Fire Services Layout – Demolition Site Plan	D
NHR-ARP-DRW-FPS-MHS-200-0000002	Fire Services Layout – Proposed Works Site Plan	D
NHR-ARP-DRW-FPS-MHS-230-0100001	Wet Fire Services Layout – Level 01	D
NHR-ARP-DRW-FPS-MHS-230-0100002	Dry Fire Services Layout – Level 01	D
NHR-ARP-DRW-FPS-MHS-230-0200001	Wet Fire Services Layout – Level 02	D
NHR-ARP-DRW-FPS-MHS-230-0200002	Dry Fire Services Layout – Level 02	D
NHR-ARP-DRW-FPS-MHS-230-0200003	Wet Fire Services Layout – Level 02 Link Bridge	B