



Taronga Zoo Wildlife Hospital

UTILITIES IMPACT ASSESSMENT REPORT

22 TWH_SSDA UTILITIES IMPACT ASSESSMENT REPORT REV5

Client:

Taronga Zoo Conservation Society Australia

Revision:

REV 5

Date:

17/08/2022

REPORT INFORMATION

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Client	Taronga Zoo Conservation Society Australia
Revision	REV 5
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1 INTRODUCTION

LCI has been commissioned by Taronga Zoo Conservation Society Australia to prepare this report in accordance with the technical requirements of the Secretary’s Environmental Assessment Requirements (SEARs), and in support of the SSDA for the proposed Taronga Wildlife Hospital development within the Taronga Zoo precinct.

Specifically, this report addresses the following SEARs:

SEARs Requirements	Report Reference
<p>17. Utilities Impact Statement</p> <ul style="list-style-type: none"> • In consultation with relevant service providers: <ul style="list-style-type: none"> ○ assess the impacts of the development on existing utility infrastructure and service provider assets surrounding the site. ○ identify any infrastructure upgrades required off-site to facilitate the development and any arrangements to ensure that the upgrades will be implemented on time and be maintained. ○ outline the process for managing trade wastewater generated during operations. ○ provide an infrastructure delivery and staging plan, including a description of how infrastructure requirements would be co-ordinated, funded and delivered to facilitate the development. 	<ul style="list-style-type: none"> • Electrical - Section 2.1 • Comms – Section 2.2 • Hydraulics – Section 2.3 • Fire – Section

2 SITE AND SURROUNDING CONTEXT

Taronga is the leading provider of veterinary services to the zoo's resident animals, wildlife rescue and rehabilitation in NSW. With the Taronga Zoo caring for over 1500 sick, injured and orphaned native animals each year. During the 2020 bushfires, the Wildlife Hospitals played a leading role in both the immediate rescue of wildlife and the rehabilitation of injured animals.

The proposed Taronga Wildlife Hospital (TWH) leverages from this expertise to deliver better outcomes and to train the next generation of wildlife vets and vet nurses. The TWH will support the health and wellbeing of wildlife, and Taronga Zoo's animals, through the provision of upgraded veterinary services and facilities. The proposed development will replace the existing Wildlife Hospital providing a new state of the art treatment and teaching animal hospital. The facility will provide dedicated and purpose built spaces for the husbandry, treatment, diagnostics and education specifically related to the care of wildlife. The spaces include rehabilitation facilities (including wildlife intensive care and Marine turtle facilities), surgeries, necropsy room/s, pathology labs, medical equipment and supplies storage, medical equipment and quarantine facilities to replace existing facilities on site.

The TWH will include upgraded animal quarantine facilities to assist in the management of Taronga Zoo's animals and to support the conservation partnerships and animal management with other zoos. The new TWH will also include upgraded clinical diagnostic facilities that will assist in the forensic activities of the Taronga's clinical team and the Australian Registry of Wildlife Health. The new facilities will ensure the safety and welfare of wildlife in care but also for Taronga's staff. The TWH will strengthen Taronga's existing educational facilities by offering learning and training spaces that will enable training specific to veterinary treatment and wildlife care.

The TWH will be located in the heart of the zoo, to become part of every zoo guests experience. The TWH will be positioned at a strategic location to allow access by all guests to experience and engage with the day to day activities that occur within the Hospital. General guests will not access inside the TWH but be able to view into Marine Rescue, Animal Treatment and Diagnostic spaces, as well as Clinical Pathology and Nutrition Spaces. The public area will create a sheltered plaza that enables guests to watch Taronga's medical team at work. Back of house access to the TWH will only be accessible to staff and escorted visitors, and is accessed via the existing zoo roadway network.

The TWH will replace existing veterinary facilities that have exceeded their lifecycle, and enhance the operations of Taronga's veterinary services as well as contribute to the ongoing education and advocacy for Wildlife Conservation



Figure 1 – Taronga Zoo Precinct

3 PROJECT DESCRIPTION

The proposed SSDA will facilitate the development of the new world-class Wildlife hospital facility.

Wildlife hospital

The new Hospital building will have an approximate floor area of 2188m² that will span two floor levels in height.

The new hospital facility will incorporate new surgery spaces designed to fit modern technology including marine wards and pathology services. It's quarantine ward will facilitate international animal transfers to assist in developing and maintaining an animal population. The hospital will incorporate provisions to allow guest a 'clear window' to observe the hospital's day to day operations.

The Wildlife hospital building will accommodate the following areas:

- Animal Quarantine
- Necropsy
- Intensive Care unit
- Staff office and amenities.
- Pathology
- Animal Ward
- Marine Wildlife

4 GLOSSARY

4.1.1 GLOSSARY OF KEY TERMS

Term	Definition
Site	The proposed Wildlife hospital/Nutrition building location.
Precinct	The Taronga Zoo precinct.
Mains pipe	The main utilities line serving providing supply.
Authority	The authority that has jurisdiction over utility.

5 ABBREVIATIONS

Abbreviation	Meaning
A	Ampere
AS	Australian Standard
ASP 1	Accredited Level 1 Service Provider (High Voltage Construction)
ASP 3	Accredited Level 3 Service Provider (High Voltage Design)
ASS	Acid Sulphate Soils
BC Act	Biodiversity Conservation Act 2016
BCA	Building Code of Australia
CMP	Conservation Management Plan
CPTED	Crime Prevention Through Environmental Design
CPTMP	Construction Parking and Traffic Management Plan
DAS	Distributed Antenna Service
DBYD	Dial Before You Dig
DES	Design Excellence Strategy
DN	Diameter Nominal
DPC	NSW Department of Premier and Cabinet
DPIE/Department	NSW Department of Planning, Industry and Environment
DP	Deposited Plan
DSI	Detailed Site Investigation
EIS	Environmental Impact Statement
EPA	NSW Environment Protection Authority
EPBC	Act Environment Protection and Biodiversity Conservation Act 1999
ESD	Ecologically Sustainable Development
FDB	Functional Design Brief
FRNSW	Fire Rescue New South Wales

GANSW	NSW Government Architect's Office
GFA	Gross Floor Area (as defined under the Sydney Local Environmental Plan 2012)
HIS	Heritage Impact Statement
HV	High Voltage
Infrastructure Strategy	State Infrastructure Strategy 2018-2038
kPa	kilo Pascal
kVA	kilo Volt Amp
LGA	City of Sydney Local Government Area
L/s	Litre per second
LSPS	Draft Sydney Local Strategic Planning Statement
LV	Low Voltage
m	Metre
MCF	Mobile Carriers Forum
MCS	Western Sydney University Macarthur Clinical School
mm	Millimetre
MMRC	Macarthur Medical Research Centre
NBN	National Broadband Network
NIA	Noise Impact Assessment
OEH	NSW Office of Environment and Heritage
OLS	Obstacle Limitation Surface
OWMP	Operational Waste Management Plan
PSI	Preliminary Site Investigation
Region Plan	A Metropolis of Three Cities – Greater Sydney Region Plan
RAP	Remediation Action Plan
RAPs	Registered Aboriginal Parties
RMS	Roads and Maritime Services

RTTC	Radar Terrain Clearance Chart
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SEPP 55	State Environmental Planning Policy No.55 – Remediation of Land
SEPP Infrastructure	State Environmental Planning Policy (Infrastructure) 2007
SEPP SRD	State Environmental Planning Policy (State and Regional Development) 2011
sqm	Square Metres
SREP SH	Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005
SSD	State Significant Development
SSDA	State Significant Development Application
TIA	Transport and Accessibility Impact Assessment
The Minister	The Minister for Planning, Industry and Environment
The Regulation	Environmental Planning and Assessment Regulation 2000
VA/m ²	Volt Amps per square meter
VIA	Visual Impact Assessment
WSAA	Water Service Code of Australia
WSC	Water Services Coordinator

6 REFERENCE DESIGN DOCUMENTATION

This report has been prepared for the development project based on the concept architectural design drawings by DWP Architects, available project survey data and Dial before You Dig information provided by:

- AARNet
- Endeavour Energy
- Jemena Gas South
- NBN Co
- Nextgen
- Optus
- Sydney Water
- Telstra
- TPG

7 BUILDING UTILITIES – SITE SERVICES

This utility report considers the various network authorities that may need to be consulted for connection of the new Wildlife Hospital building.

The following infrastructure will be provided to the development:

- Electricity supply and reticulation (derived from internal private reticulation)
- Telecommunications (subject to commercial and technical considerations, the building users may procure services from AARNET, Telstra, Optus, TPG, NBNC0, or other telcos)
- Water services (Sydney Water)
- Sewer services (Sydney Water)
- Gas Services (Jemena)

The consultant team have proactively worked with the local authorities above, undertaking preliminary applications to assess the existing capacity and future requirements of the development. The staging of infrastructure will be developed in the detailed design and approvals process with the relevant authorities.

The investigation undertaken to date has progressed discussions with the relevant authority where augmentation, upgrades or consideration of adjacent assets has been determined.

Negotiations with the relevant authorities are progressing, with a clear understanding of the next steps presented within this report to facilities the proposed development.

8 ELECTRICAL

8.1.1 EXISTING SERVICES REVIEW

The Taronga Zoo site is electrically supplied via a ‘private’ 11kV high voltage system owned and operated by Taronga Zoo. The new building is proposed to be supplied from this internal network. At the time of the preparation of this document, ongoing site assessment and review site capacity, is being undertaken, where an agreed connection point(s) for the Nutrition Building & Hospital are to be determined. Alterations to the Zoo network are to be undertaken as to permit connection of the facility, as the following reports will describe.

In the vicinity of the site(s), an external ‘kiosk’ type substation identified as Substation #1, that is found to be supplying local electrical loads. Importantly, Substation #1 does not form part of the ‘ring’ installation that is reticulated around the zoo, and essentially has no second source of High Voltage supply. Substation #1 is supported by a permanently connected generator, that has a rating of 440kVA, or 612Amps. There is a generator installed and sized to accommodate the critical loads. This substation is name plating rating of 750kVA, or 1,050Amps.

Substation #1 to supply existing facilities and Stage 1 Nutrition Centre Building, via an existing 800Amp rated Main Switchboard Board.

Refer to Figure 2 for the existing Substation #1, generator and existing 800A MSB location.



Figure 2 Existing and Proposed Power Distribution

8.1.2 PROPOSED NETWORK & ELECTRICAL

The estimated maximum demand for the combined (Nutrition Centre & Wildlife Hospital) development shown on table 1 is based on the assumption that the existing load is 200A/phase. This is to be further confirmed by Taronga zoo. Currently, the existing Substation #1 does not have the capacity to accommodate the new Wildlife Hospital Building. Therefore, a new 1500KVA substation is proposed to replace the existing Substation #1.

Table 1 – Maximum Demand for Substation 1

Area	KW	KVA	Amps
Nutrition Centre	570	657	915
Wildlife Hospital	317	334	466.23
Existing Load	136	143	200
Total without spare	1024	1135	1581
Spare	20%		
Total	1229	1362	1898

The Substation #1 cannot be replaced in the same location due to the clearances as well as other difficulties affecting it's viability. It is proposed to install the new 1500kVA kiosk next to the existing generator shown in Figure 2. New HV cabling to be installed from the existing Substation #1 breaker to the new Substation #1.

A new 2500A Main Switchboard to be installed within the Switchroom and Meter room. Modification of the room is required to comply with AS3000. Refer to Figure 3 for the new MSB and existing MSB location.

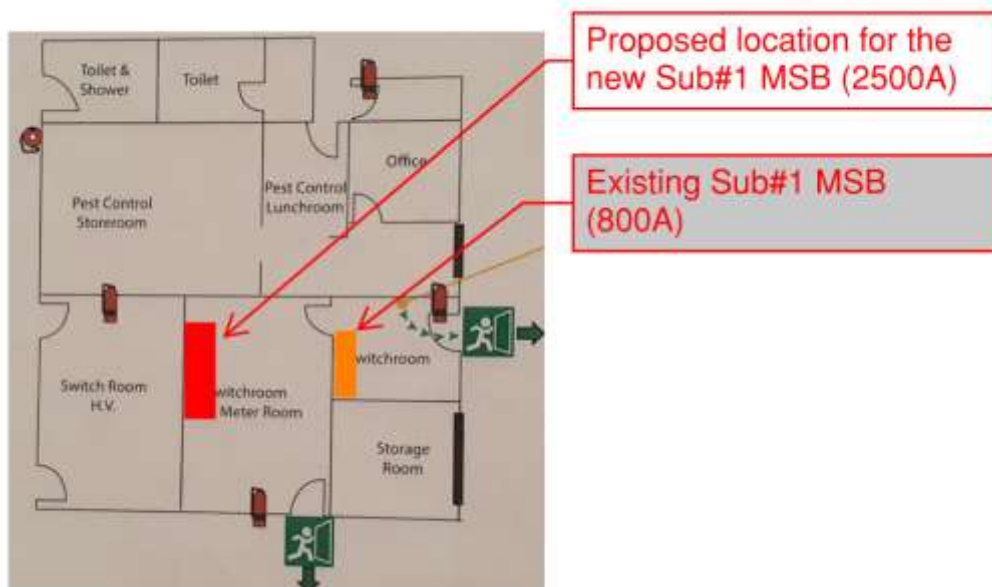


Figure 3 Existing Switchroom

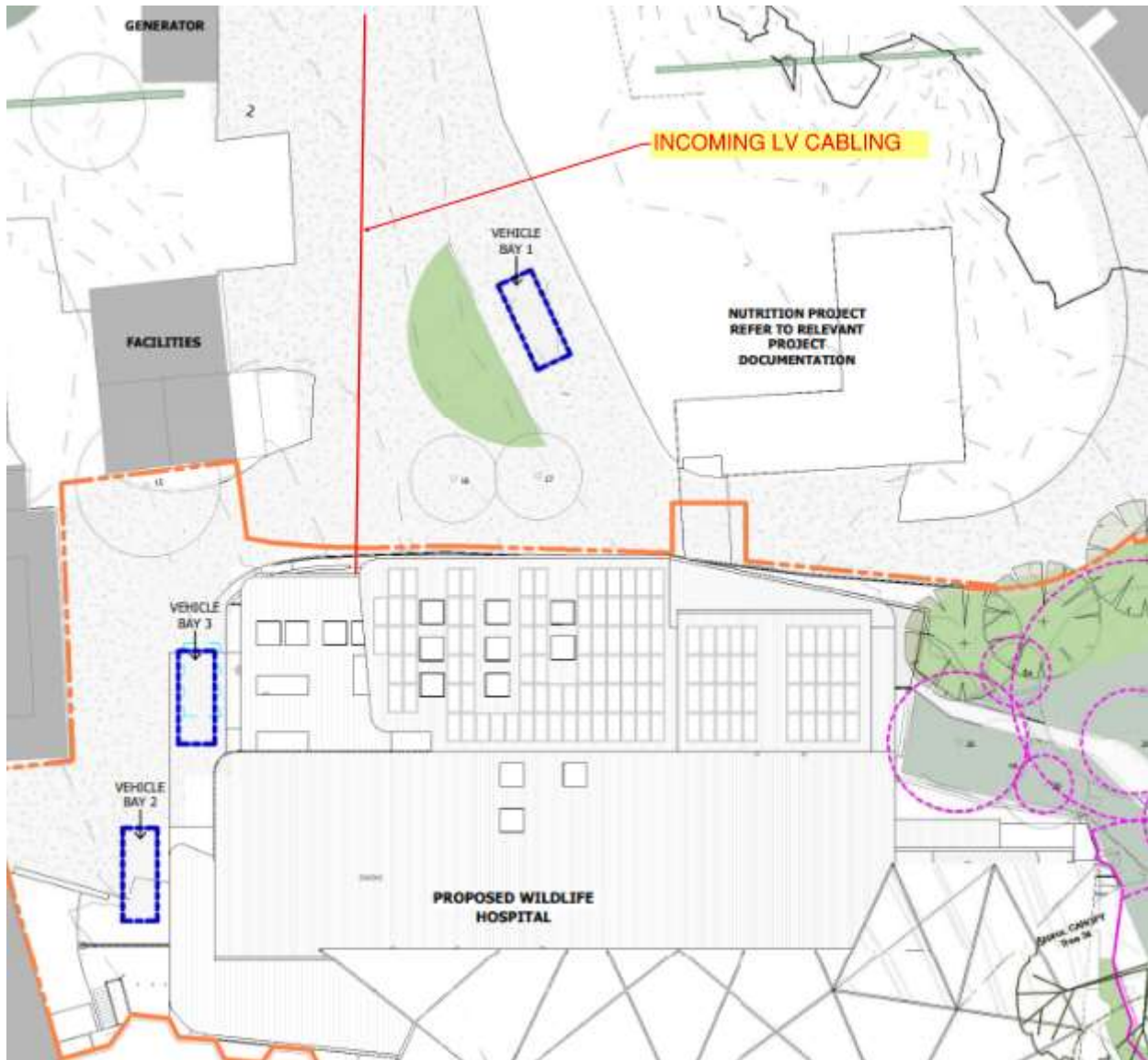


Figure 4 Proposed Power Connection

New LV conduits to be installed from the new MSB to the Wildlife Hospital as shown on Figure 2 and Figure 4.

It is the ongoing discussion that will need to be undertaken with Zoo stakeholders to ascertain the location of the new kiosk substation, which might impact the HV and LV route proposed in this report.

9 COMMUNICATIONS

New communications services will be derived from existing communication system connections and network.

Conduits will be run from the pit and duct system that is reticulated through the site, from the site communications system. LCI will continue to work with the Zoo personnel to confirm the necessary internal alterations, that will be necessary to service the facility.

It is advised by the Zoo that the diverse incoming communication route will be taken from the existing pit C153 and one of the new pit on the north side of the Hospital building. Final details to be coordinated with Taronga zoo.

Existing pit C169 will be removed as shown in Figure 5.

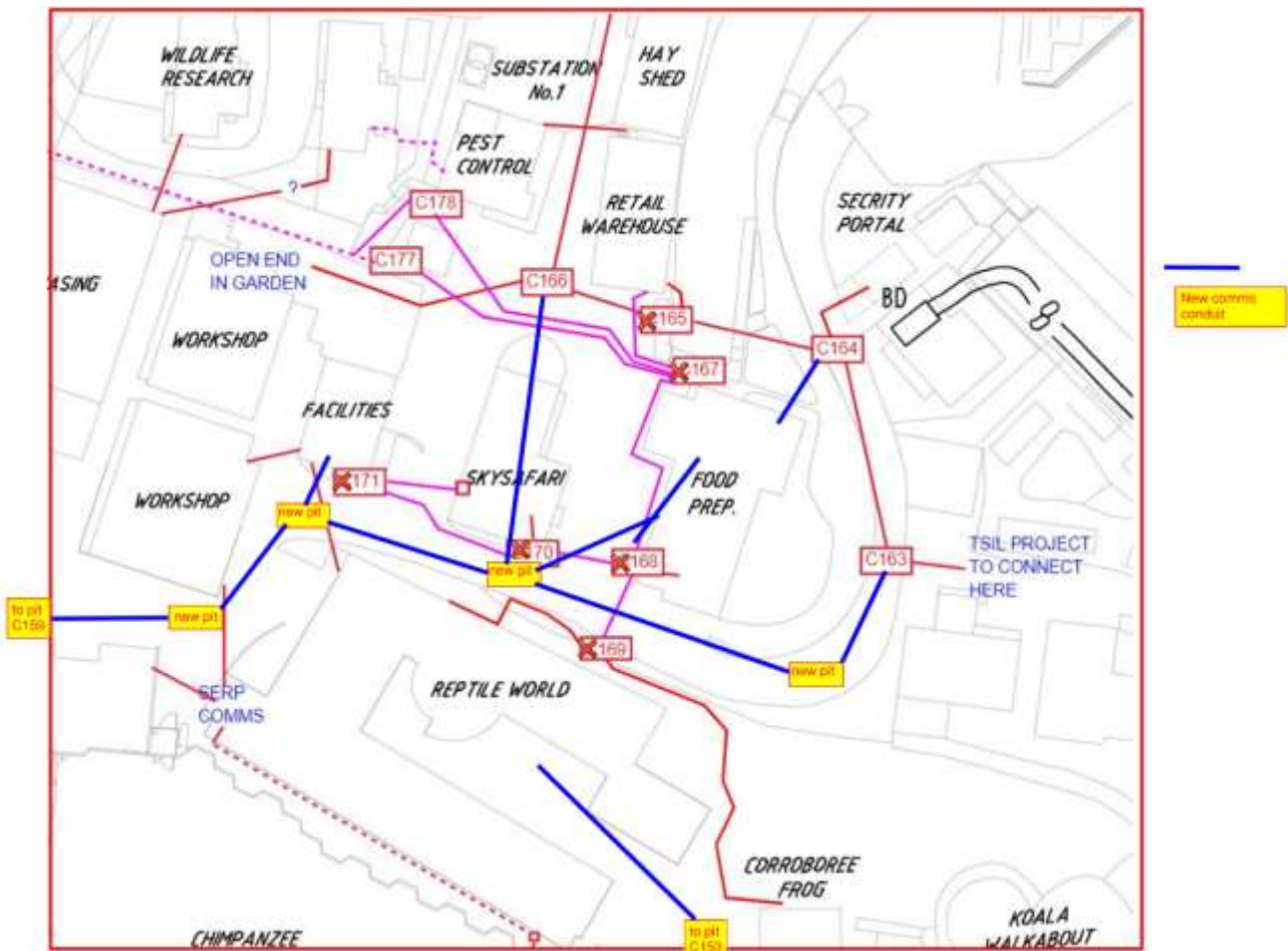


Figure 6 Preliminary Communication Services Connection

10 HYDRAULICS SERVICES

10.1.1 EXISTING SERVICES REVIEW

Sewer

As per DBYD maps received from Sydney Water, a portion of the precinct's sewer mains are indicted on the map as authority owned. Taronga Zoo have provided a response from their Building Plan Approval application indicating Sydney Water transferred the ownership of the sewer main pipework located within the precinct over to the Zoo (figure 1). The current sewer mains located within the Taronga Zoo precinct are deemed private assets.

Based on the utilities survey documents provided, the precinct's sewer main network extends throughout the site, providing individual connections to buildings within the zoo precinct. The sewer mains reticulates to the North-western corner of the site (Figure 3), connecting to the authority's DN.300 VC sewer main.



Other request application

Application number 177326

16/01/2017

Dear Matthew Spooner

Your application for TARONGA ZOO Bradleys Head Rd, Mosman 2088 has been

DECLINED

Please read the details below to understand the reasons why your application was declined.

REASONS

Not a valid Tap In application - however, records indicate that the sewer assets within the zoo boundaries were transferred to the Taronga Park Trust and are owned by, and the responsibility of, Taronga Zoo.

NEXT STEPS

If you have further questions please contact us

Email us swtapin@sydneywater.com.au

Call us 1300 082 746

Figure 1 – BPA application indicating Sydney Water transfer of ownership.



Figure 3– Precinct's Authority Sewer main connection.

Potable Water Services

Based on the utilities survey documents provided, the precinct’s potable water main network is supplied from a dedicated metered connection to the authority’s DN.150 CICL water main within Bradley’s Head road (Figure 2).

The precinct’s potable water service extends throughout the site via mains pressure, providing individual connections to buildings within the zoo precinct. The utilities survey drawings do not indicate pipe sizes of the current water mains. A detailed survey will need to be undertaken on the portion of existing potable water mains works are proposed for, to confirm pipe sizes.

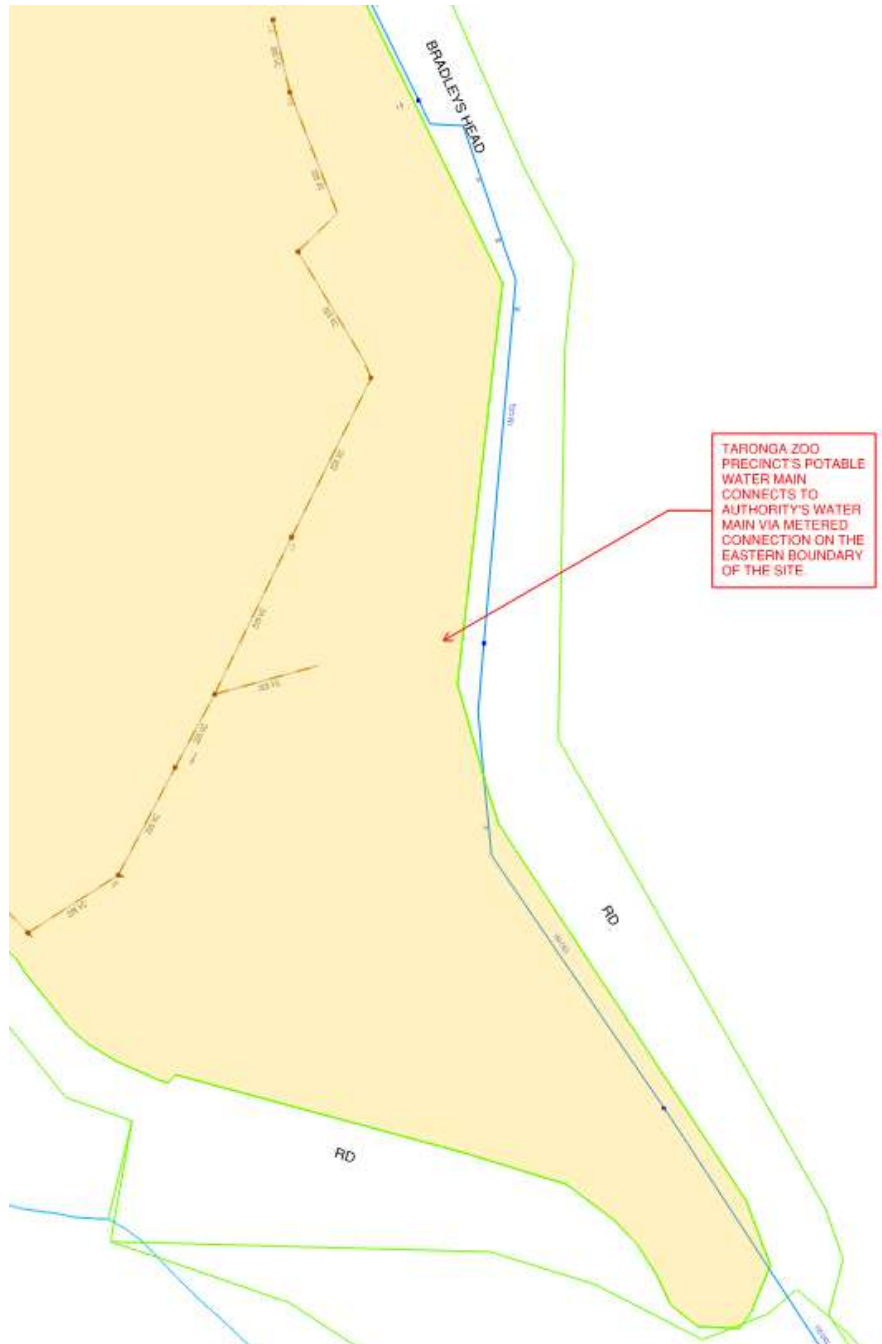


Figure 4 – Precinct’s Authority Water main connection.

Natural Gas Services

The precinct incorporates three independent natural gas mains each supplied from separate connections to Jemena's gas mains in the following arrangement:

- An authority owned boundary regulator/meter assembly located in the North easter corner of the precinct is connect from Jemena's 210kpa gas main within Bradleys Head Road. It is envisaged the 5kpa gas main extends within the precinct to serve appliances within the Retail and Facilities buildings.
- An authority owned boundary regulator/meter assembly located on the precinct's eastern boundary is connected from Jemena's 210kpa gas main within Bradley's Head road. It is envisaged the 5kpa gas main extends within the precinct to serve appliances within the Wildlife retreat, Guest lodge, Taronga Centre, The View café, Elephant Barn, and Taronga Food market.
- An authority owned boundary regulator/meter assembly located in the North western corner of the precinct is connect from Jemena's 210kpa gas main within Whiting Beach Road. It is envisaged the 5kpa gas main extends within the precinct to serve appliances within the current Wildlife hospital, Chimpanzee Night house building, Staff amenities & Aviaries.

10.1.2 REQUIRED SERVICES DIVERSIONS

Sewer – Wildlife Hospital building

The Underground Utilities Survey drawings received for the site does not indicate sewer main pipes traversing through the proposed hospital development and no diversion works will be required.

Potable Water & Natural Gas – Wildlife Hospital building

The Underground Utilities Survey drawings received for the site does not indicate water or gas main pipes traversing through the proposed hospital development and no diversion works will be required.

10.1.3 NEW SERVICES

SEWER – Wildlife Hospital

It is envisaged the precinct's sewer main will have sufficient capacity to accommodate the new Wildlife Hospital building's wastewater loads and amplification works to the main will not be required.

The Wildlife hospital building will connect into the precinct's sewer mains by one of the following two options:

Option 1 - A new DN.150 sanitary drainage service will be extended from the precinct's sewer main to serve the Wildlife Hospital building.

Option 2 – Extend a new DN.150 sanitary drainage service from the existing sewer manhole located northwest of the hospital building. A survey of the existing manhole will be required to confirm invert levels and outlet pipe size will be sufficient to cater for new connection.

The Wildlife Hospital building's approximate wastewater loads are as per table below:

Wildlife Hospital Building's Approximate Wastewater Discharge		
Daily wastewater discharge	6200	L/day
Peak wastewater flow rate	6	L/s

A detailed survey on the portion of the precinct's sewer main providing connection to the Nutrition building will be required to confirm pipe invert levels and size.

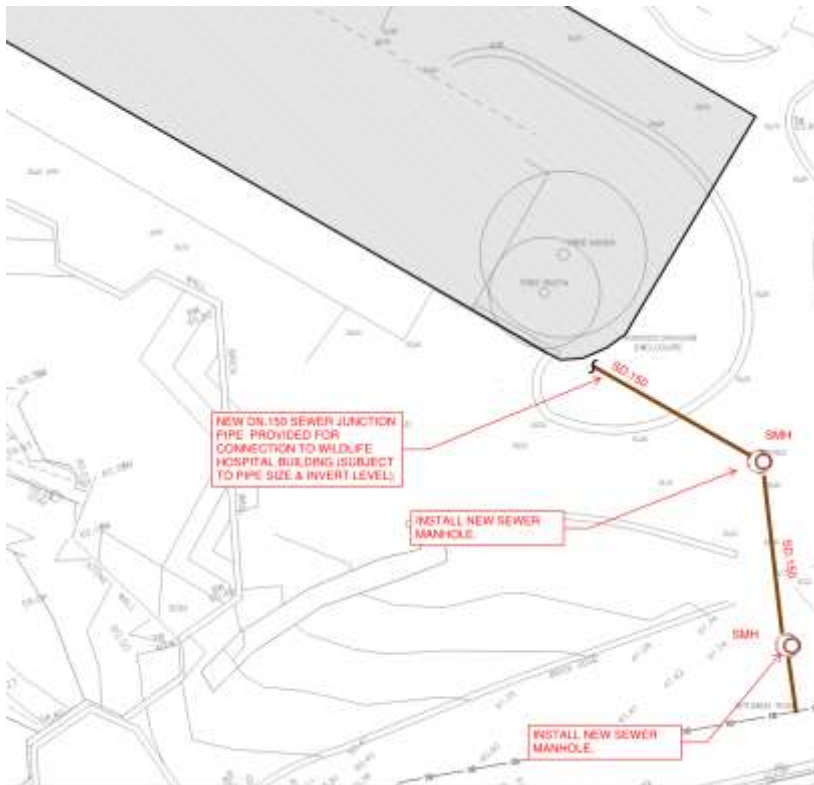


Figure 5 - Wildlife Hospital sewer connection sketch Option 1

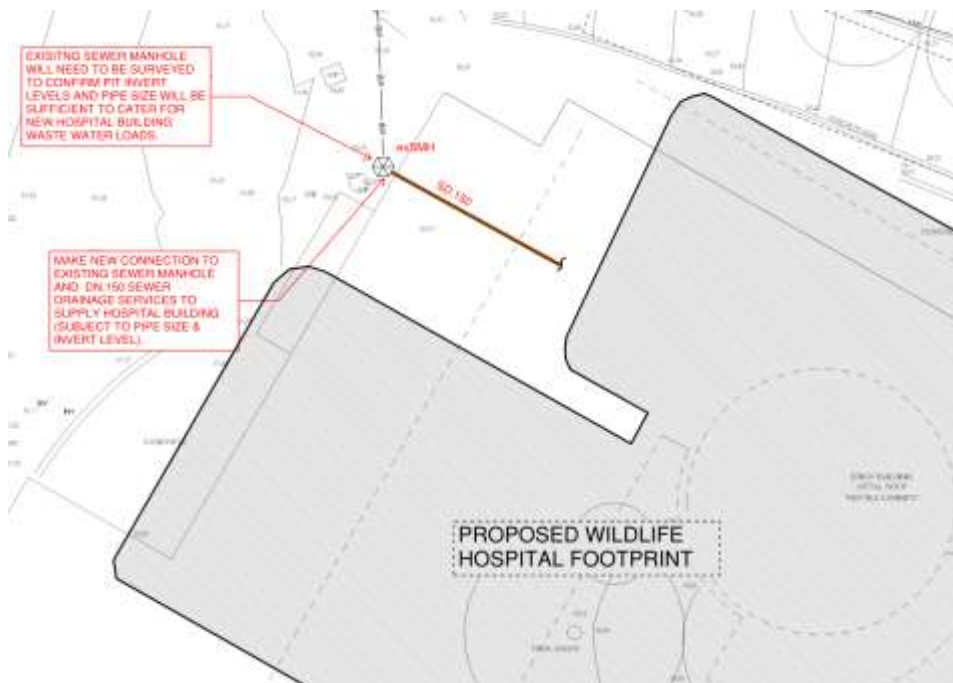


Figure 6 - Wildlife Hospital sewer connection sketch Option 2

POTABLE COLD WATER – Wildlife Hospital Building

It is envisaged amplification works to the precinct’s potable mains to accommodate the Wildlife Hospital building would not be required.

Option 1 – A new DN.80 potable cold water connection will be extended from the precinct’s water main located to the north of the site to serve the Wildlife Hospital building.

Option 2 - A new DN.80 potable cold water connection will be extended from the precinct’s water main located to the south-east of the site to serve the Wildlife Hospital building.

A pressure and flow test will need to be undertaken on the precinct’s potable water main to confirm if the pipe will have sufficient capacity to accommodate the new Wildlife Hospital building’s potable water loads. Additionally, a detailed survey shall be undertaken to confirm the potable main’s size.

The Wildlife Hospital building’s approximate potable water demand is as per the table below.

Wildlife Hospital Building’s Approximate Potable water demand		
Daily potable water usage	7700	L/day
Peak water flow rate	5	L/s

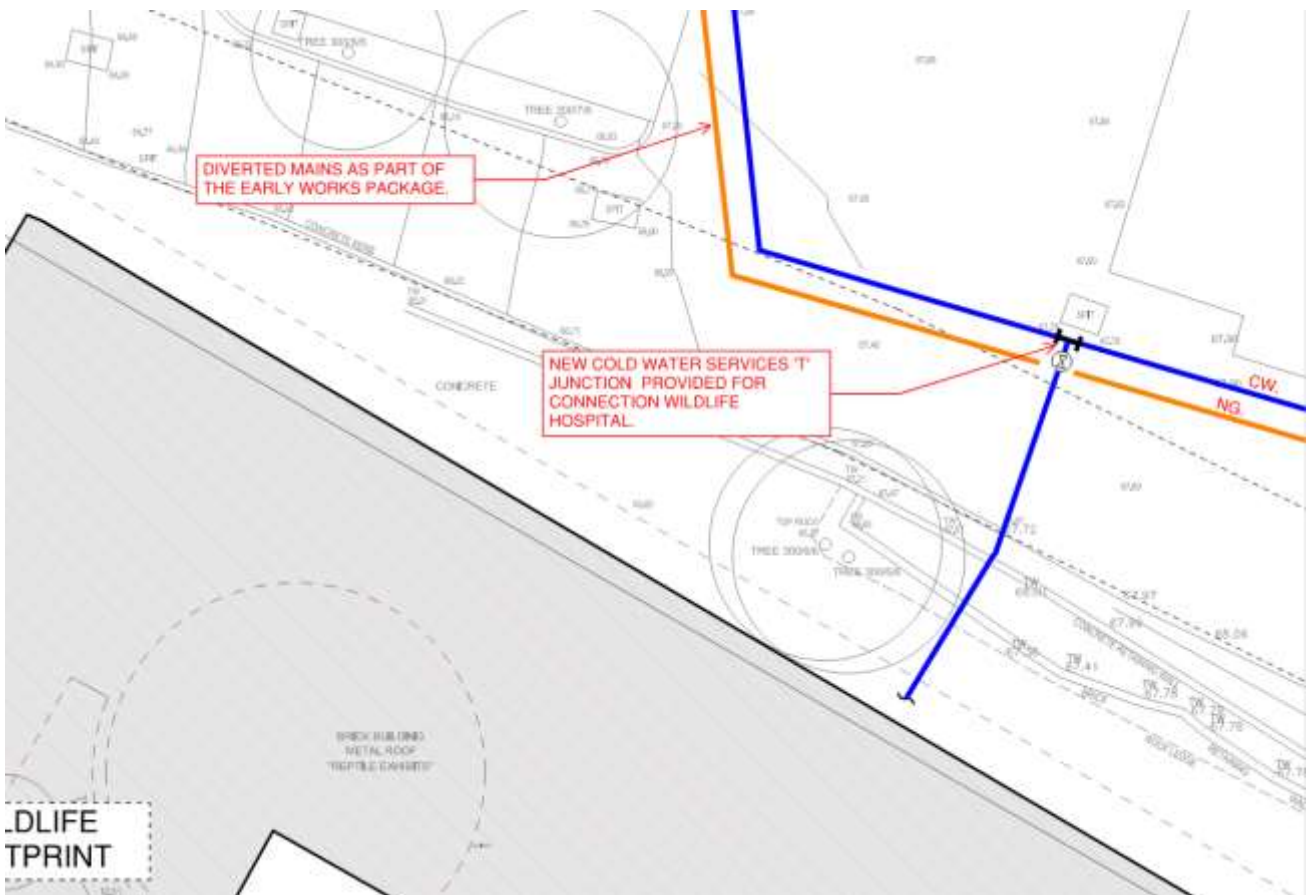


Figure 7 – Wildlife Hospital water connection sketch Option 1

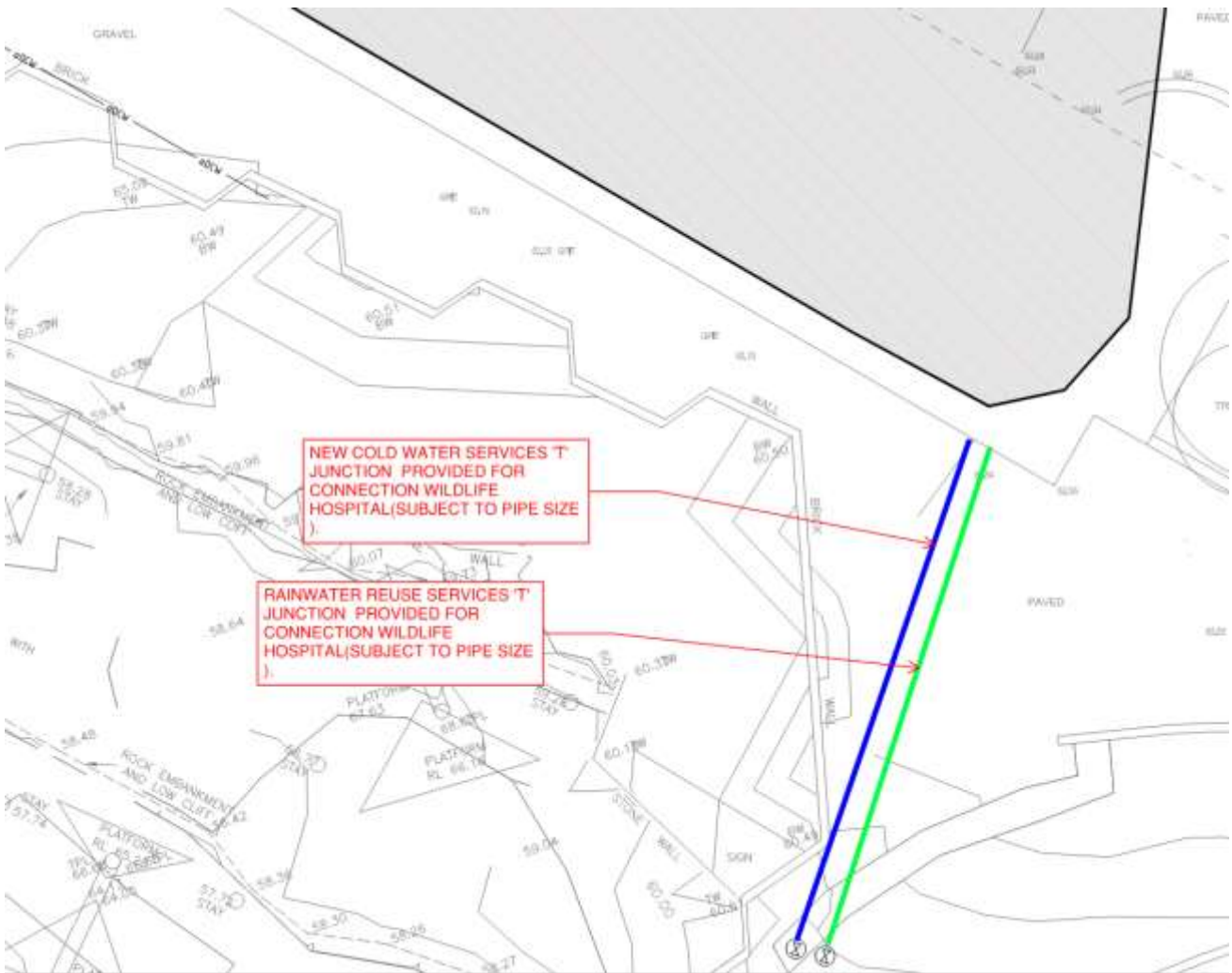


Figure 8 – Wildlife Hospital water connection sketch Option 2

RAINWATER USE WATER – Wildlife Hospital Building

It is envisaged amplification works to the precinct’s rainwater reuse mains to accommodate the Wildlife Hospital building would not be required.

A pressure and flow test will need to be undertaken on the precinct’s potable water main to confirm if the pipe will have sufficient capacity to accommodate the new Wildlife Hospital building’s potable water loads. Additionally, a detailed survey shall be undertaken to confirm the potable main’s size.

A new DN.40 potable cold water connection will be extended from the precinct’s water main located to the south-east of the site to serve the Wildlife Hospital building.

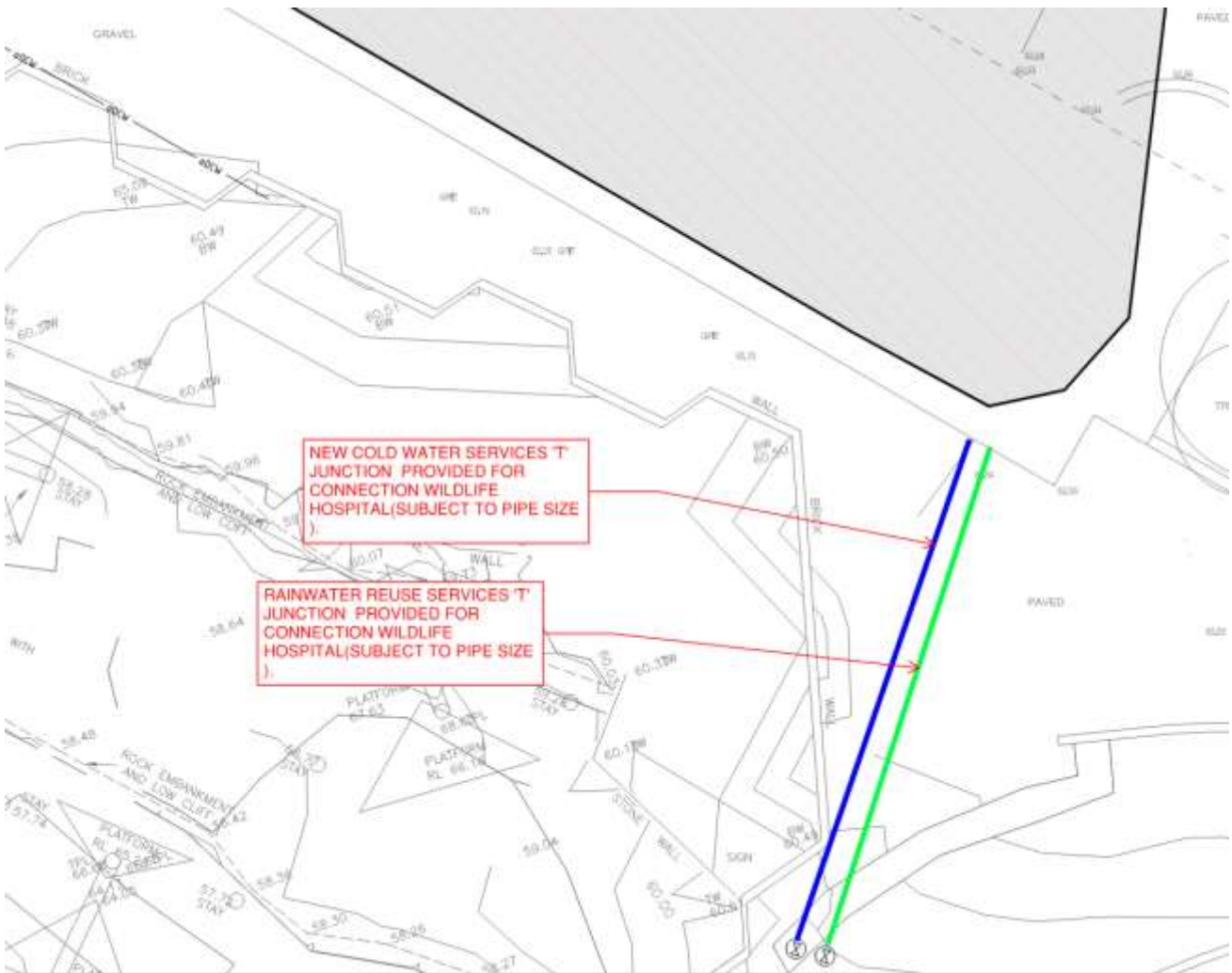


Figure 9 – Wildlife Hospital rainwater reuse water connection sketch

NATURAL GAS – Nutrition Building

As the building will adopt a ‘no gas’ policy for the building’s domestic hot water or mechanical space heating, No new works to extend a gas service from the precinct’s gas main to serve the Nutrition building will not be required.

NATURAL GAS – Wildlife Hospital Building

As the building will adopt a ‘no gas’ policy for building’s domestic hot water or mechanical space heating, No new works to extend a gas service from the precinct’s gas main to serve the Wildlife hospital building will not be required.

11 FIRE SERVICES

11.1.1 FIRE HYDRANT WATER SUPPLY

We will be connecting to the existing fire hydrant water supply on site. The location will be on the western side of the building in-ground. We will provide a new in-ground isolation valve on the hydrant supply to the building. No new fire tanks or pumps will be required to be installed. The demand will be two fire hydrants simultaneously which is within the current capacity of the system.

A combination of external and internal fire hydrants will be required to serve the Wildlife Hospital to achieve coverage in accordance with AS2419.1-2005.

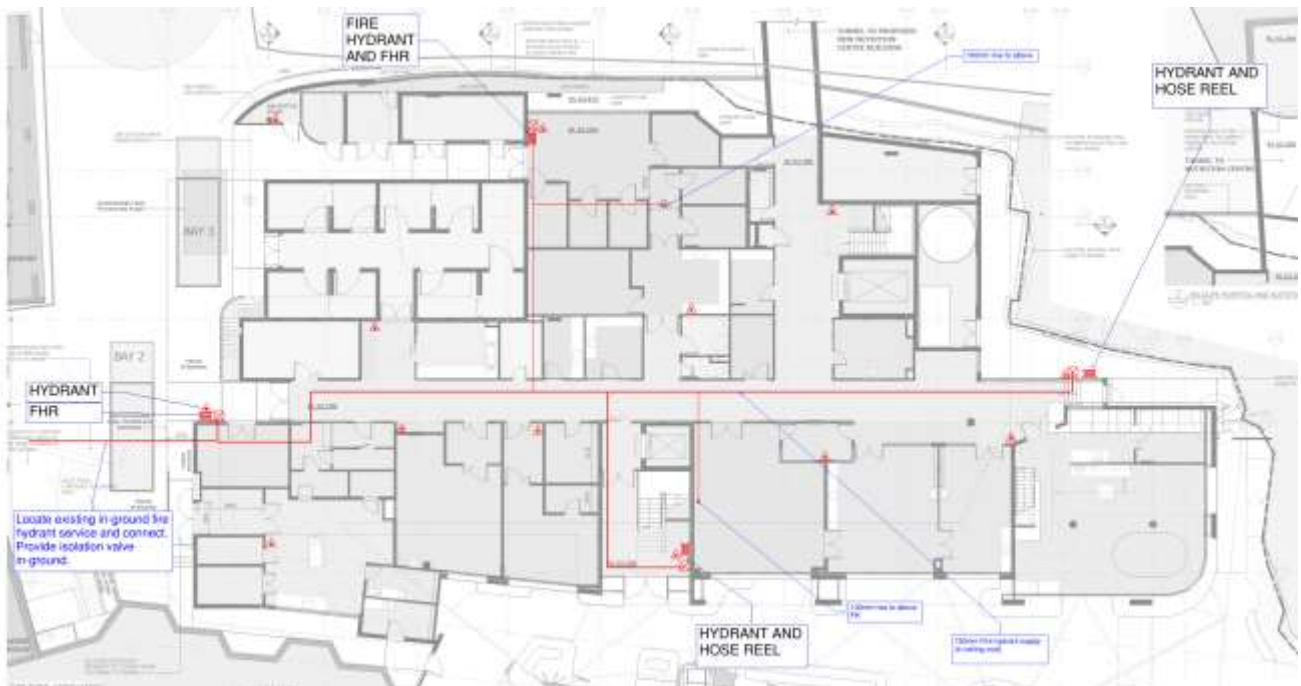


Figure 7 – Fire Hydrant Layout – Indicative

11.1.2 RELATIONSHIP TO NUTRITION CENTRE

Currently the wildlife hospital has a PA and fire service connection to the nutrition centre. In order to stand alone we will need to document an independent connection to the fibre optics in-ground and allow for interface connections inside the new FIP located inside the hospital.

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