Taronga Wildlife Hospital Sydney Nutrition Centre

201108 UTILITIES IMPACT ASSESSMENT REPORT

Client:

Taronga Conservation Society Australia

Revision:

P4

Date:

21/12/2021

REPORT INFORMATION

Project	Taronga Wildlife Hospital Sydney Nutrition Centre
Title	Utilities Impact Assessment Report
Client	Taronga Conservation Society Australia
Revision	P4
Revision Date	21/12/2021
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REVISION SCHEDULE

Revision	Date	Issue Name	Author	Authorised
P1	28/07/21	Draft Issue	ADT/NA/DM	LEP
P2	01/10/21	SSDA Issue	ADT/GG/DM	LEP
P3	05/10/21	SSDA Issue	DM	LEP
P4	21/12/21	SSDA Issue	ADT/ANS	LEP

CONTENTS

1 INTRODUCTION

LCI has been commissioned by Taronga 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 Sydney Nutrition Centre development within the Taronga Zoo precinct.

Specifically, this report addresses the following SEARs:

SEARs Requirements	Report Reference
17. Utilities Impact Statement • **In consultation with relevant service providers:** ○ 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.	• Electrical - Section 2.1 • Comms – Section 2.2 • Hydraulics – Section 2.3 • Fire – Section

2 SITE AND SURROUNDING CONTEXT

The Taronga Zoo precinct is located at Bradley's Head Road Mosman, 10km from Sydney's CBD. The Zoo currently occupies approximately 28 hectares of land, caring for up to 5,000 animals from over 350 species.

Project Overview

The new facility will replace the existing veterinary, quarantine and animal nutrition facilities. The relocated and expanded hospital will not only provide modern facilities for wildlife care, nutrition and research but also significantly increase capacity for the treatment of resident animals in addition to expanding and improving capacity for the treatment and rehabilitation of wildlife species.

A central part of the design and purpose of the new hospital is the critical role it will play in education. The proposed new facilities will double the current teaching space and upskill future conservationists, students, veterinary practitioners, scientists and wildlife carers.

This new specialist hospital will also play a vital role in engaging the public in wildlife conservation by deeply engaging Taronga Zoo's visitors in previously 'back of house' activities including opportunities to view animal treatment, surgeries, and breeding centres.

The new Hospital will:

- Increase capacity for wildlife treatment, rehabilitation and improved wildlife first response times
- Increase space for training and educating 1,000s of veterinary professionals, volunteer wildlife carers and students
- Increase space for quarantine and care of confiscated wildlife
- Expand capacity for breeding endangered birds and mammals for release to the wild

The Taronga Wildlife Hospital, Sydney will be delivered in 2 stages, reflecting the 2 key components of the project.

Stage 1: the Taronga Wildlife Hospital, Sydney – Nutrition Centre is located back of house and will replace several standalone buildings currently providing animal food preparation and storage.

Stage 2: will incorporate the main wildlife treatment, teaching and rehabilitation spaces. The facility will be linked to the Stage 1 Nutrition Centre via a tunnel and will be located on the footprint of the existing Serpentaria exhibit following the construction of a new Reptile & Amphibian Conservation Centre (currently under SSDA Assessment).

Stage 2 – Hospital will be delivered under a separate State Significant Development Application (SSDA).

Stage 1 – Nutrition Centre incorporates the following:

- New animal food and meat preparation facilities to serve the Taronga site
- Open plan offices and meeting spaces to serve the Nutrition Centre and Stage 2 Hospital
- New tunnel under the back of house service road to link to the Stage 2 Hospital

Key Points

- **Demolition – Exempt Development**
  - Demolition of the existing Warehouse, Food Preparation and Grain store will be completed as exempt development and not included in the SSDA Application. Concrete slabs/footing will remain however the main structures for each facility will be removed as part of an early works package
- **Project naming for stage 1**
  - 'Taronga Wildlife Hospital, Sydney – Nutrition Centre' should be the primary name for the Stage 1 project
  - The term 'Nutrition Centre' can be used in the body of report as needed once the main project name has been used
  - Client: 'Taronga Conservation Society Australia' (Taronga)

- **Conservation Precinct – for context only**
    - Taronga has been successful in obtaining funding grants to construct a conservation precinct to the north of the Nutrition Centre. The project includes a new Platypus Research & Refuge Centre in addition to expanding out Bellinger River turtle holding capacity. Whilst this project is not part of the SSDA for Stage 1, an REF is being prepared for this project and is part of the project boundary.

Figure 1 – Taronga Zoo Precinct

3 PROJECT DESCRIPTION

The proposed SSDA will facilitate the development of the new world-class Animal Nutrition Centre.

The new Nutrition building will have an approximate floor area of 2231m^2 that will span two floor levels in height.

It's main purpose will be to centralise all Taronga's food preparation into one facility, while allowing the improvement in Taronga nutrition through R&D and expanded work space areas.

The Nutrition building will accommodate the following areas:

- Main Preparation kitchen.
- Meat processing kitchen.
- Staff office and amenities
- Food cold storage

4 GLOSSARY

4.1.1 GLOSSARY OF KEY TERMS

Term	Definition
Site	The proposed 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/m2	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
- Ausgrid and Private reticulation documentation
- 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, NBNCo, 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 proves with the relevant authorities.

The investigation undertaken to date have 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 & ASSESSMENT OF PROPOSED CONNECTIONS

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 has been agreed in principle. 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 supplies facilities such as the existing workshops, Horticulture Shed, Reptile enclosure, Food Prep Unit & Hay Shed, via an **800Amp** rated Main Distribution Board.

It is being proposed that the Nutrition facility should be considered a separated electrical installation under this project. This is due to the fact that the facility can be established in a 'standalone' configuration, and can be supplied without any significant modification of an existing main switch board within the site. The existing electrical infrastructure has available capacity and can support the Nutrition facility, and its proposed electrical demand of **216Amps. This is based on the electrical demand allowances in Table 1.** The physical connection will be permitted via the removal/disconnection of the existing Reptile Facility (from Substation #1 (MSB 1), that is being undertaken as alteration works prior to the establishment of the Nutrition facility.

Table 1 - Electrical Demand VA/m^2 Allowances

Area Type	VA/m^2 Allowance
Shared Public	85
Freezer Cold Storage/Cool Room	70
Office Space (incl. A/C, Light & Power	80

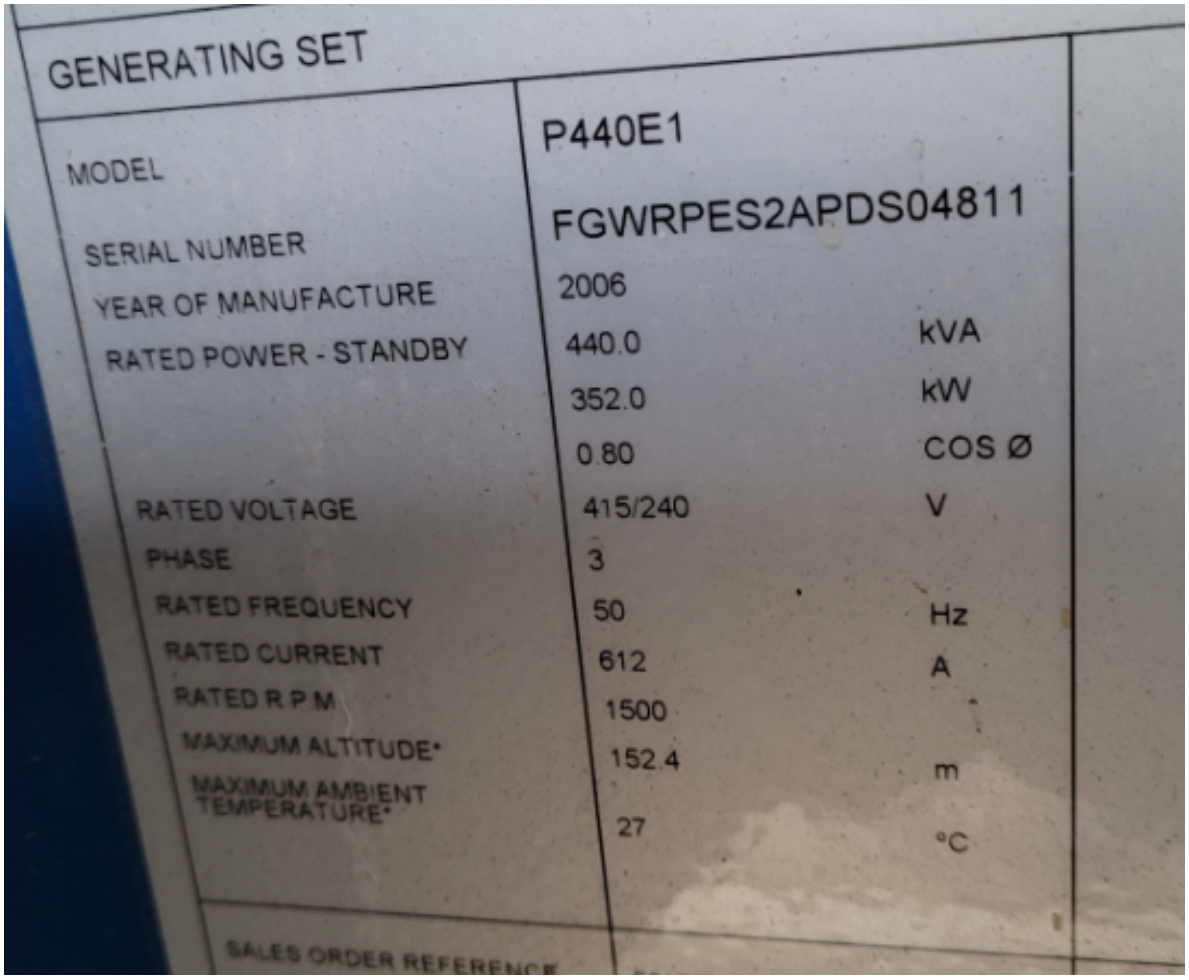


Figure 2 – Substation 1 – Generator Set Label Rating (612Amps)

8.1.2 EXISTING SERVICES RELOCATION

It has been identified that the existing High Voltage 'ring main' cabling is installed in the vicinity of the proposed Nutrition Building. Two options are considered to address these cables. Both options are acceptable, and will be confirmed during design development.

1. **Retain in-situ** – leaving the cabling as is and forming a concrete enclosure as to protect these from future damage and damage while the facility is under construction. However this method restricts future access to the cables, where structure of he new facility may not permit these to be retained, subject to review.
2. **Diversion** – Relocate the High Voltage cable route that will enable unobstructed construction methods, where cables are installed safely and at a suitable location, and protect from damage. And in addition, this may also permit the location of the HV cables to consider the likelihood of the future substation to serve the Hospital facility as previously identified.

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.

10 HYDRAULICS SERVICES

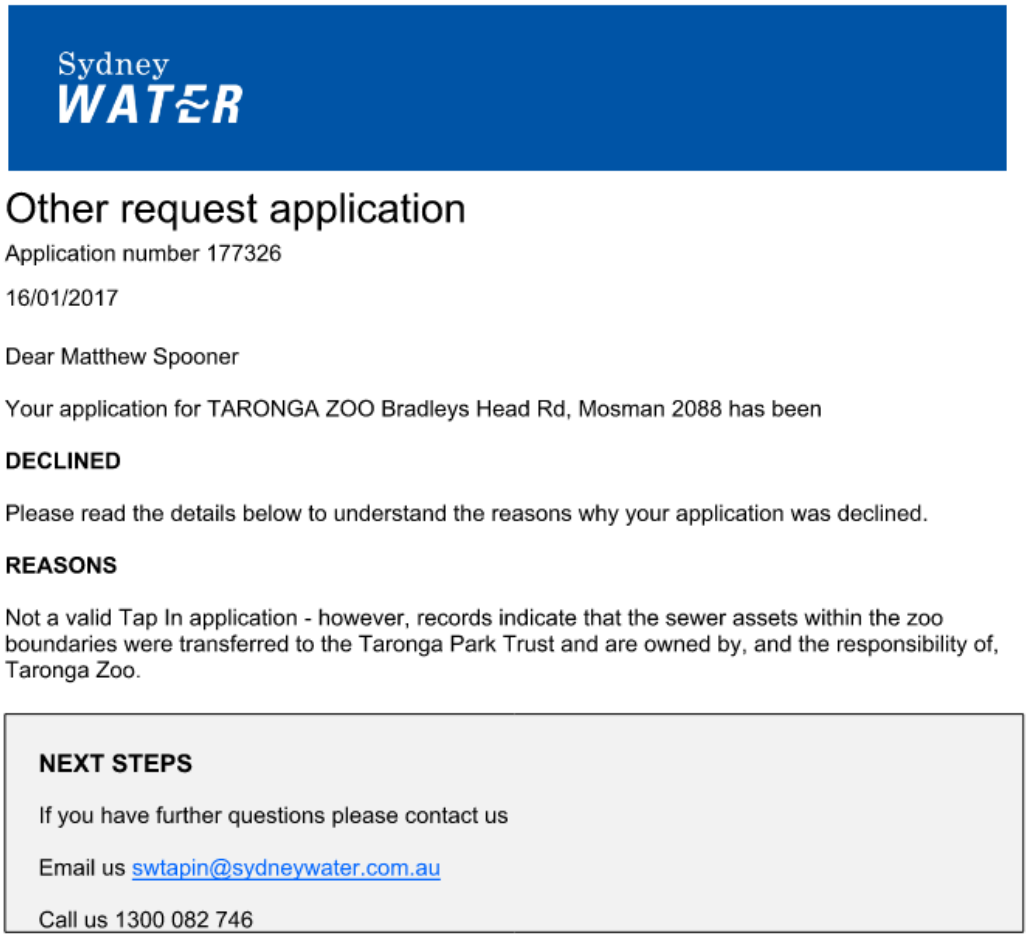
10.1.1 EXISTING SERVICES REVIEW

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 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 Taronga (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 1), connecting to the authority's DN.300 VC sewer main.

The services survey drawings do not indicate pipe sizes or invert levels of the current sewer mains within the precinct. A detailed survey will need to be undertaken on the portion of existing sewer mains works are proposed for, to confirm invert levels of the pit and pipe together with sizes.



Sydney WATER

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 3 – BPA application indicating Sydney Water transfer of ownership.

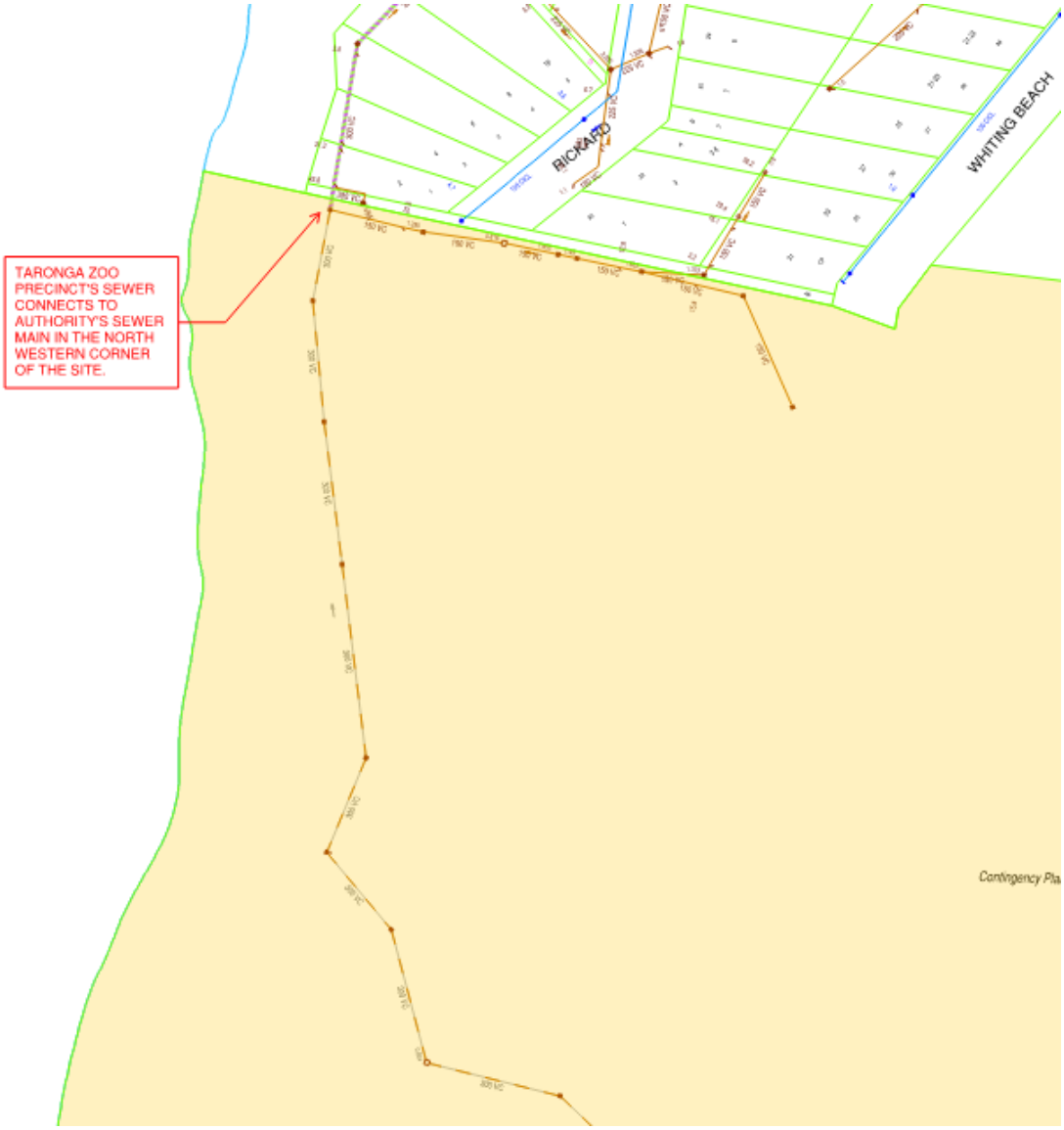


Figure 4 – Precinct's Authority Sewer main connection.

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.

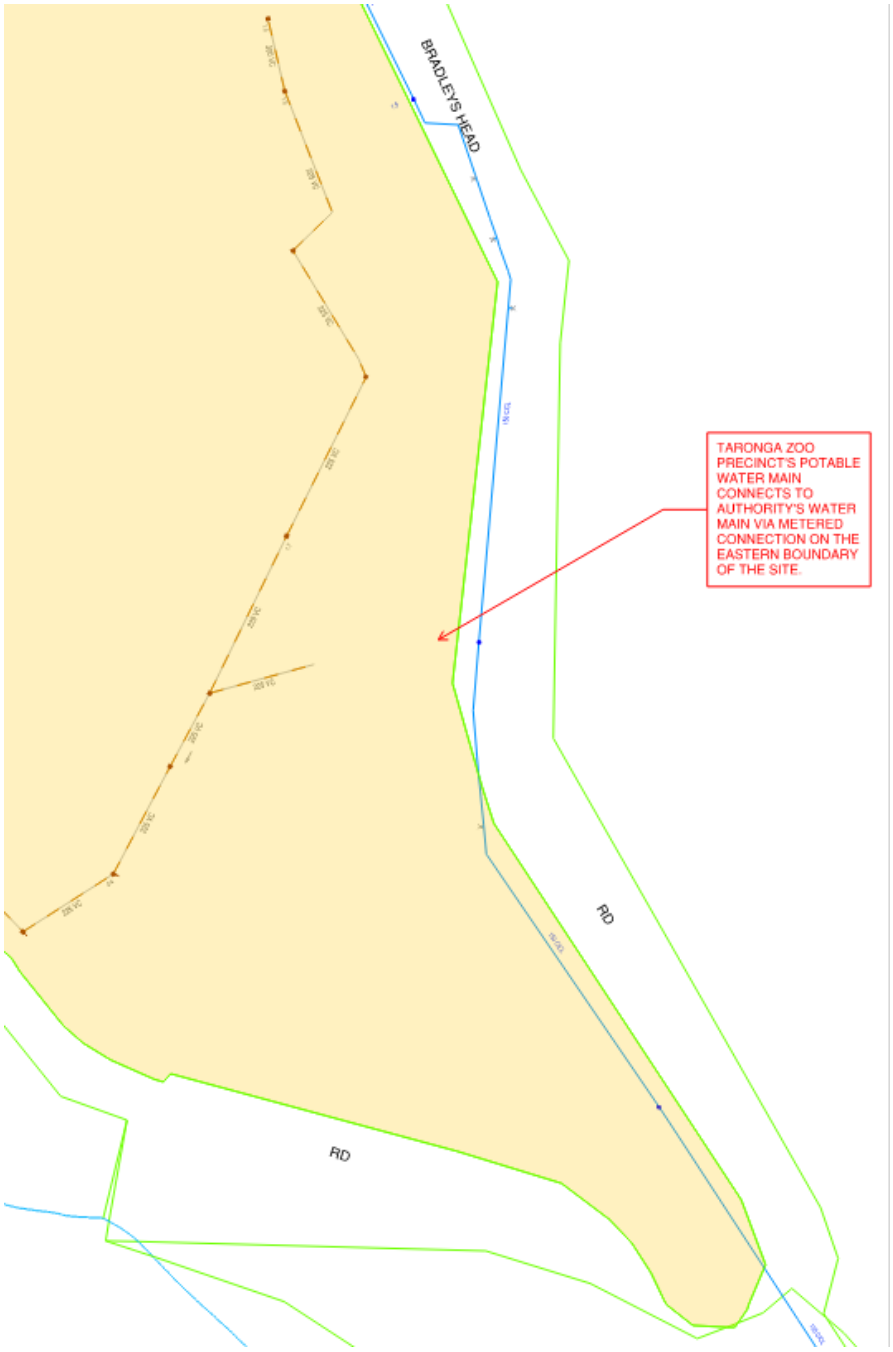


Figure 5 – Precinct's Authority Water main connection.

10.1.2 REQUIRED SERVICES DIVERSIONS

Sewer – Nutrition Building

The Underground Utilities Survey drawings received for the site indicates an existing sewer main that traverses through the redundant Refrigerators storage building will need to be diverted to accommodate the new Nutrition building.

It is envisaged the sewer pipe is currently serves multiple buildings upstream including the Taronga Institute of Science and Learning building.

As part of the works package, the existing sewer pipe will need to be diverted around the proposed footprint of the new Nutrition building. The diversion works shall be staged to ensure the upstream Zoo building's being served by the sewer pipe will remain operable during all phases of the diversion works. Refer to Sewer main diversion sketch (Figure 3) for further information.

The exact location and invert levels, size and location of the existing pipe will need to be investigated and confirmed during the next design stage.

All new works to the precinct's sewer mains will be in accordance with both the WSA (Water & Sewerage Code of Australia) & AS3500.2.

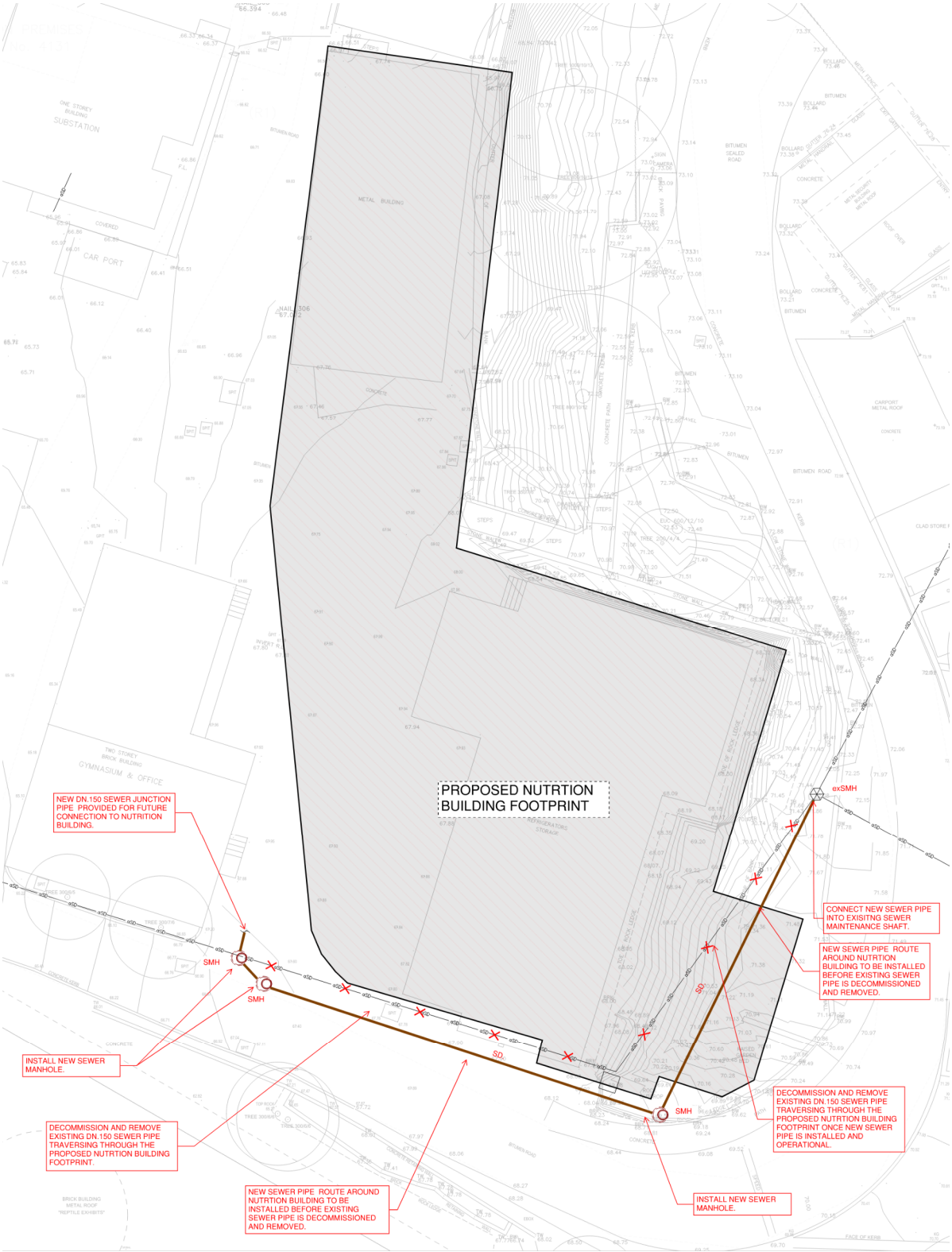


Figure 6 - Nutrition Building Sewer Diversion sketch

Potable Water & Natural Gas – Nutrition Building

The Underground Utilities Survey drawings received for the precinct indicates existing Potable water & Natural gas mains that traverses through the redundant Storage building will need to be diverted to accommodate the new Nutrition building.

It is envisaged the sewer pipe is currently serving multiple buildings upstream including the Taronga Institute of Science and learning building.

As part of the works' package, the existing water main will need to be diverted around the proposed footprint of the new Nutrition building. The diversion works shall be staged to ensure the upstream Zoo building's being served by the sewer pipe will remain operable during all phases of the diversion works.

The exact location and invert sizes and location of the existing pipes will need to be investigated and confirmed during the next design stage.

All new works to the precinct's water and gas mains will be in accordance with both the WSA (Water & Sewerage Code of Australia), AS3500.2 & AS5601.

Refer to Water & Gas main diversion sketch (Figure 3) for further information.

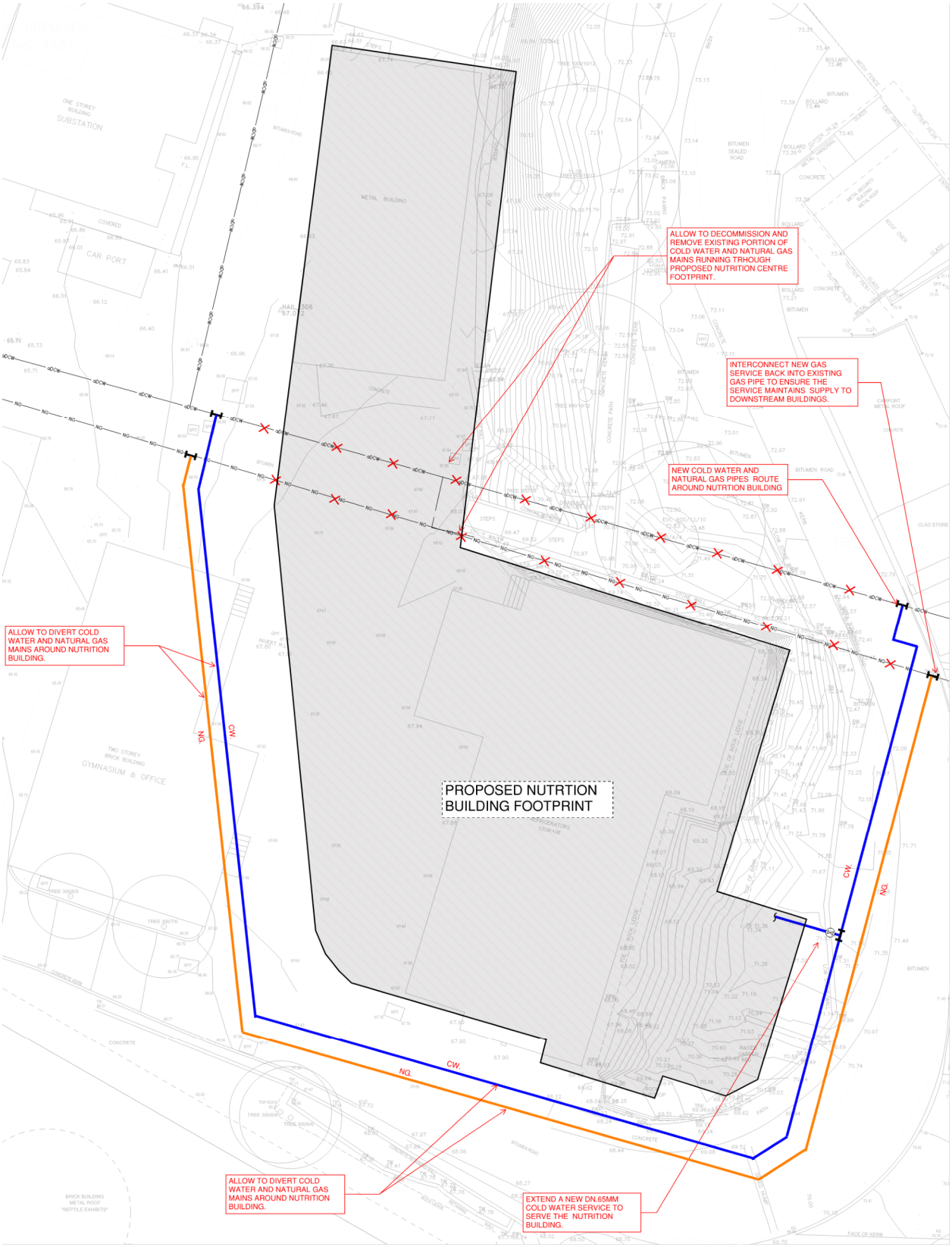


Figure 7 - Water & Gas services diversion sketch

10.1.3 NEW SERVICES

SEWER – Nutrition Building

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

A new DN.150 sanitary drainage service will be extended from the precinct's sewer main to serve the Nutrition building.

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

Nutrition Building's Approximate Wastewater Discharge		
Daily wastewater discharge	2800	**L/day**
Peak wastewater flow rate	3.6	**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.

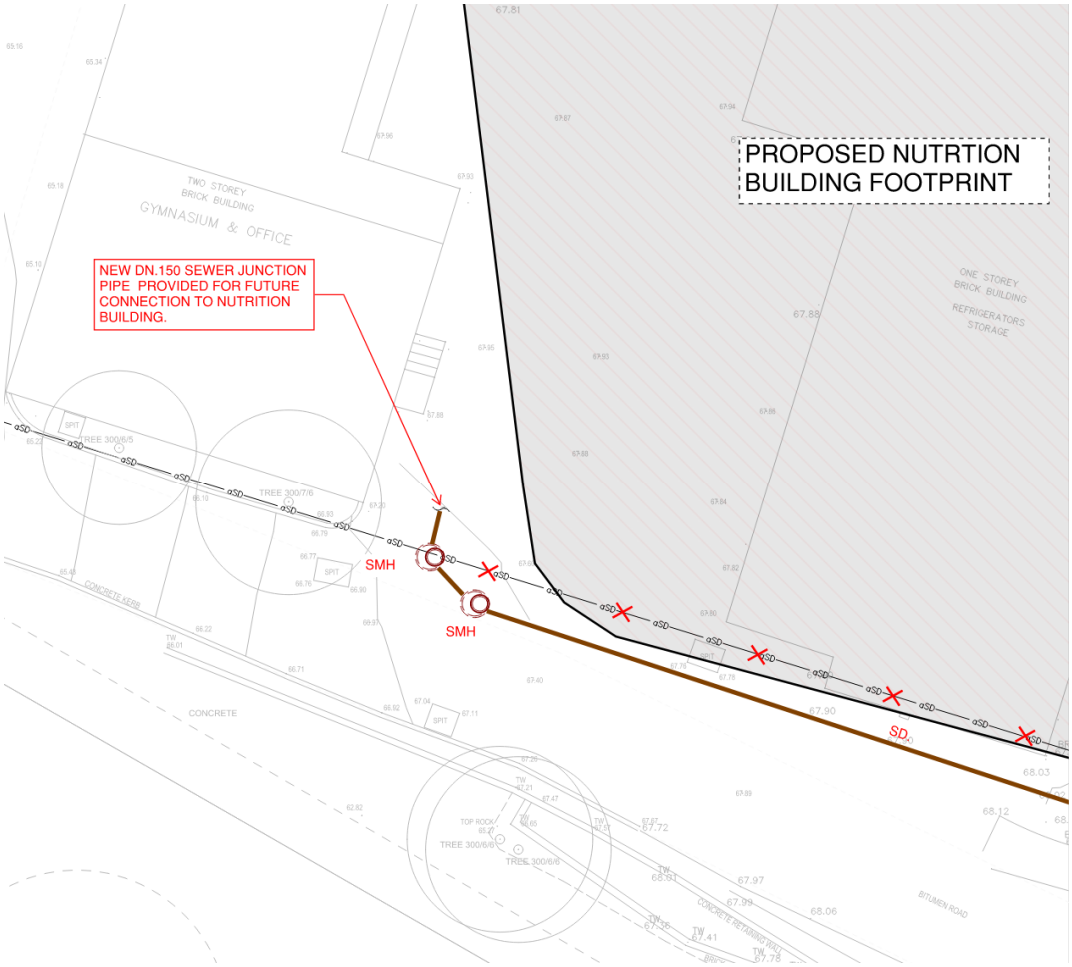


Figure 8 – Nutrition building sewer connection sketch

WATER – Nutrition Building

It is envisaged amplification works to the precinct's potable mains to accommodate the Nutrition 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 Nutrition building's potable water loads. Additionally, a detailed survey shall be undertaken to confirm the potable main's size.

A new DN.65 potable water service will be extended from the precinct's potable main to serve the Nutrition building.

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

Nutrition Building's Approximate Potable water demand		
Daily potable water usage	3462	**L/day**
Peak water flow rate	3	**L/s**

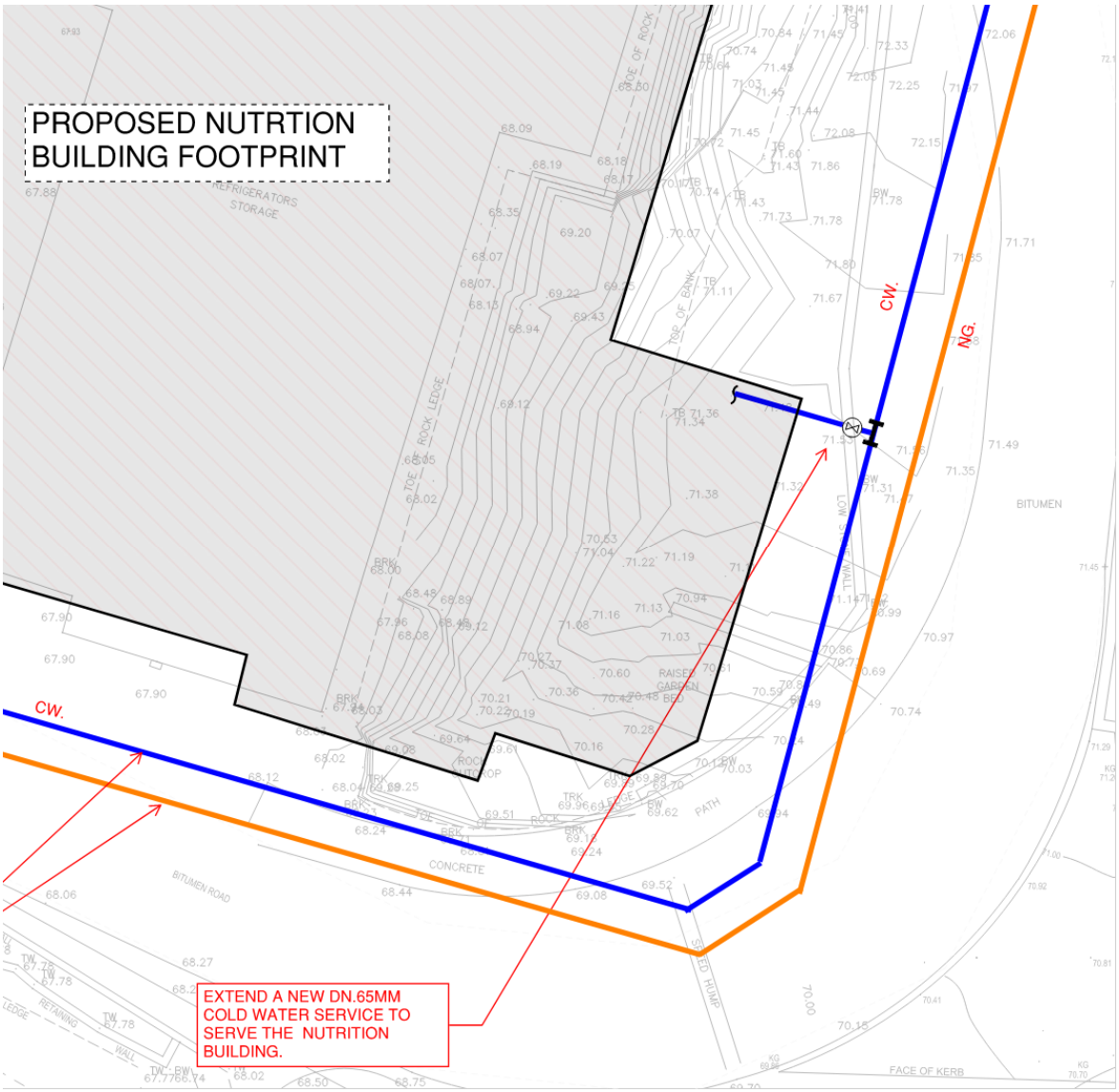


Figure 9 – Water connection sketch

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.

11 FIRE SERVICES

11.1.1 FIRE HYDRANT WATER SUPPLY

The underground utilities survey drawings received for the precinct indicates the existing fire hydrant main to traverse through the redundant Storage building which may need to be diverted to accommodate the new Nutrition building.

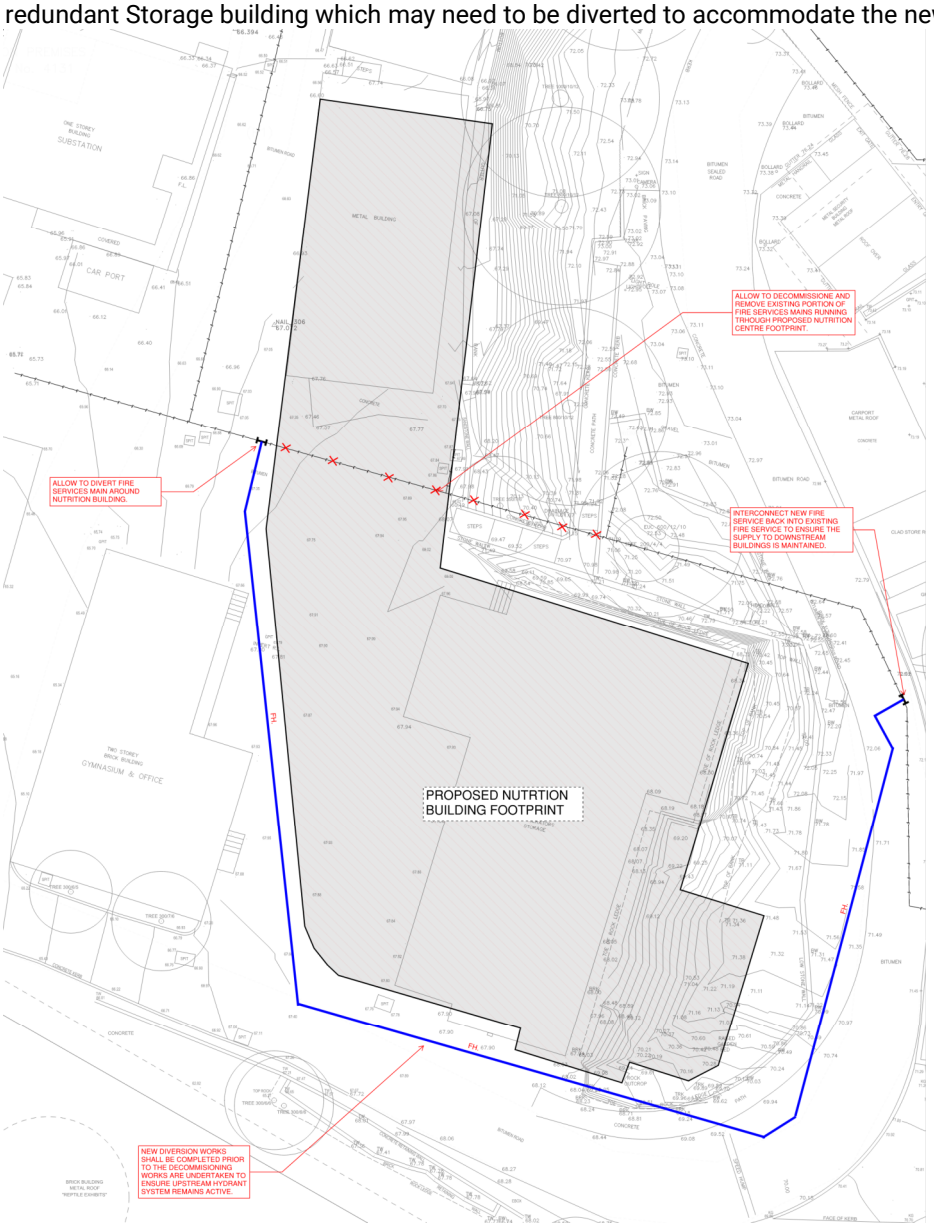


Figure is an indicative sketch of the proposed fire hydrant main diversion.

A combination of external and internal fire hydrants will be required to serve the Nutrition Building to achieve coverage in accordance with AS2419.1-2005. The fire hydrant water supply will be provided by the existing site wide fire hydrant system. The existing site wide fire hydrant system performance will be reviewed to ensure that compliant pressure and flow can be achieved to each of the fire hydrants provided to the buildings.

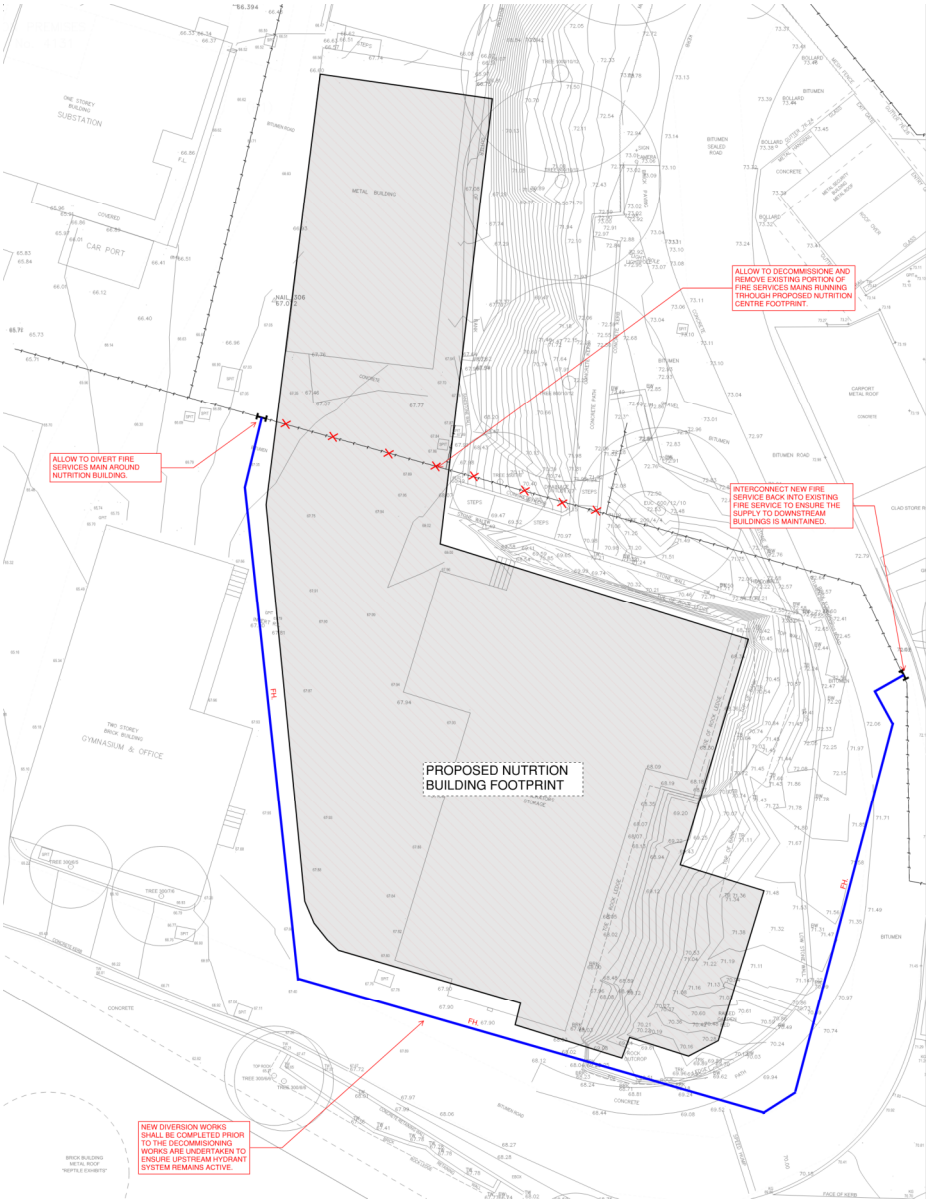


Figure 10 - Fire Hydrant service diversion to accommodate the new Nutrition building.

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