

# Taronga Zoo

## Fire and Hydraulic Services Infrastructure Report



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Client: Taronga Zoo Conservation Society

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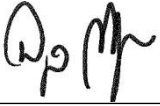
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## Introduction

AECOM Pty Ltd. have prepared this report to describe the works, associated with the infrastructure services at the existing Taronga Zoo site, and its adequacy to accommodate the proposed Australia Habitat and Taronga Wildlife Retreat.

## 1.0 Hydraulic Services

### 1.1 Sanitary Drainage

#### 1.1.1 Existing Services

The site's sanitary drainage is provided from a connection point to the authority's main, in the North West corner of the Taronga Zoo site's boundary. The site's sewer infrastructure pipework extends throughout the property, where individual branch drain connection points, provide connection points to individual buildings.

The existing site sewer drainage system is assumed to have adequate capacity to cater for the proposed new works. Further calculations will need to be undertaken to confirm the capacity.

It is envisaged that diversions will need to be undertaken on the existing sewer infrastructure, to accommodate the new Restaurant Pod.

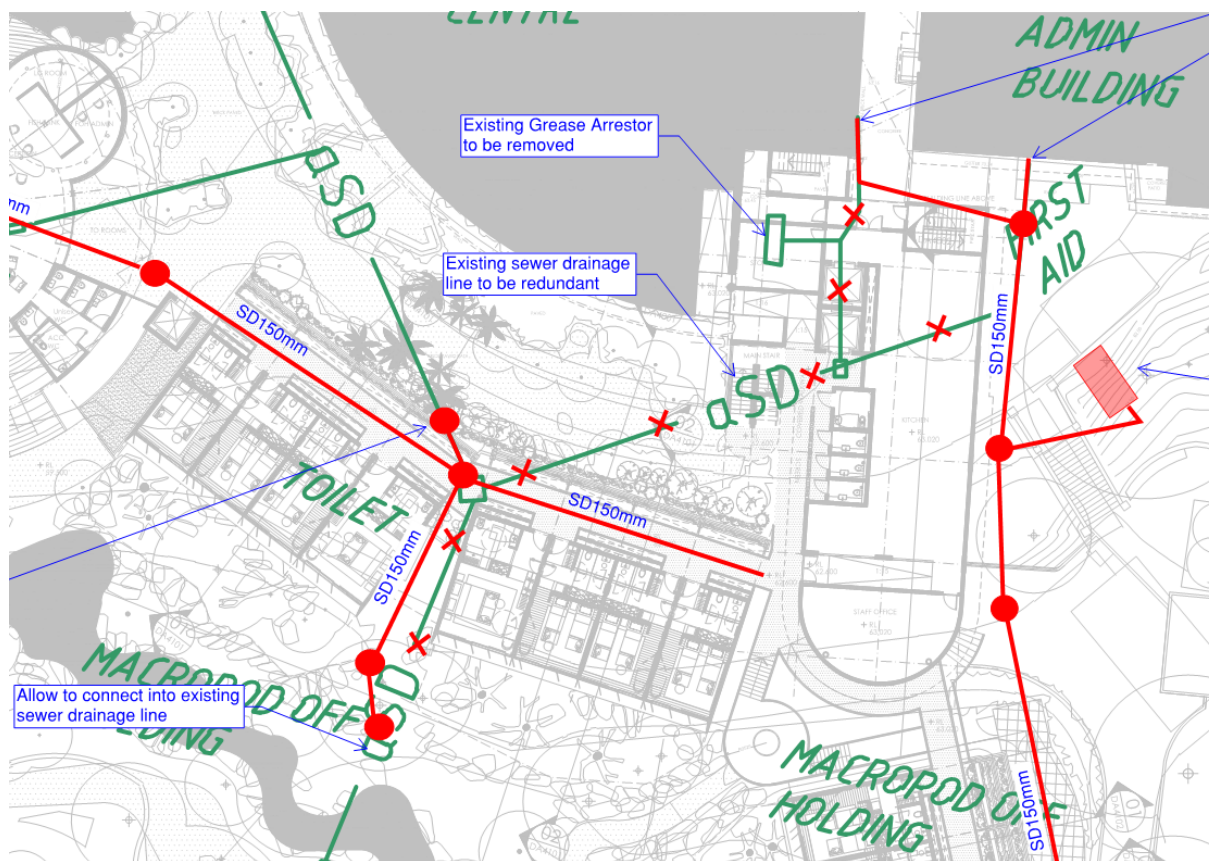


Figure 1. Diversion of existing sewer infrastructure to accommodate the new Restaurant Pod.

#### 1.1.2 New Services

All sanitary drainage fixtures located within the proposed Accommodation Pods, Guest Lodge and Restaurant Pod will gravitate to the site's existing sewer infrastructure service. It is currently envisaged that no new sewer pumping stations will be required.

## 1.2 Stormwater Drainage

### 1.2.1 Existing Services

The site's stormwater drainage is provided from a connection point to the authorities' main, in the North West corner of the Taronga Zoo site's boundary.. The site's stormwater drainage service extends around the site to convey all surface and building roofed area run-off.

It is envisaged that diversions will need to be undertaken on the existing stormwater infrastructure, to accommodate the new Accommodation Pods.

The existing site stormwater drainage system is assumed to have adequate capacity to cater for the proposed new works. The projects Civil engineer will need to confirm the adequacy of the existing system.

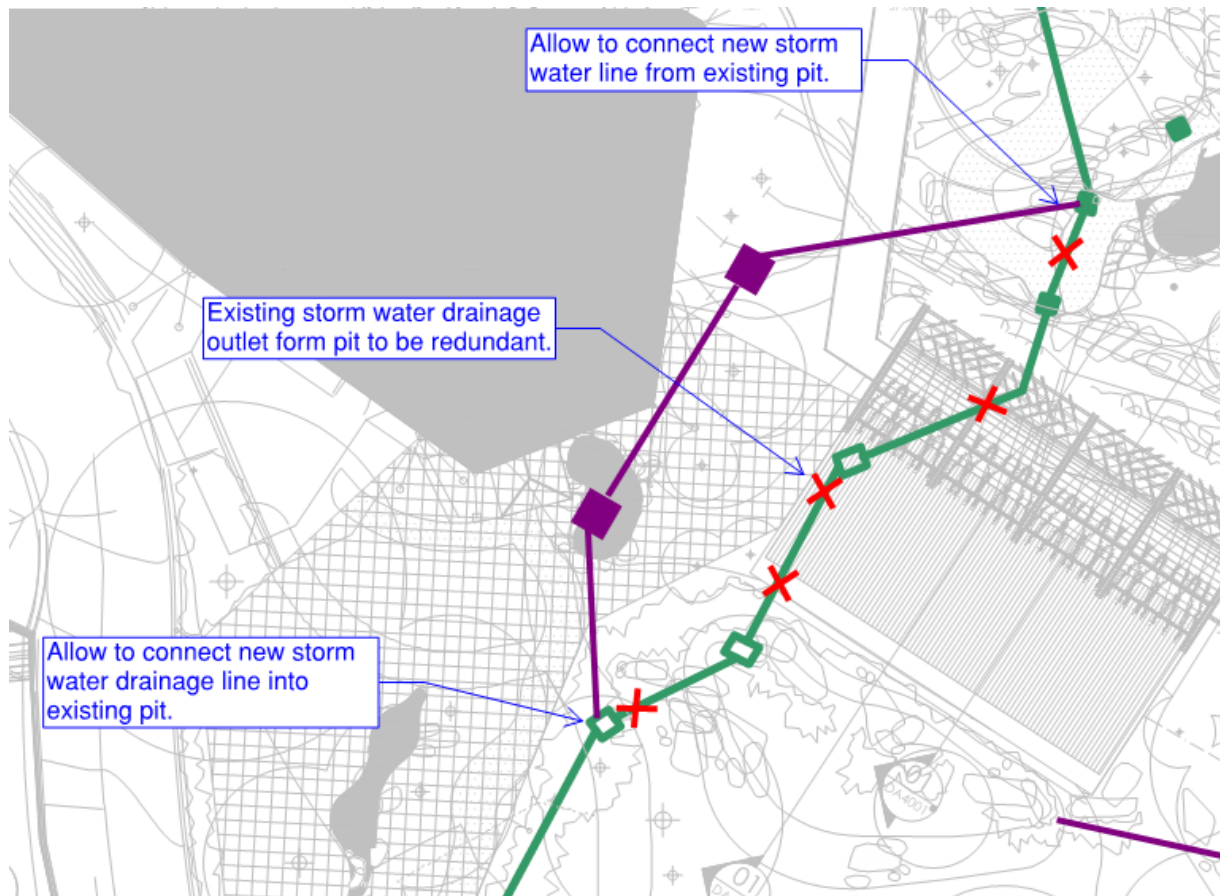


Figure 2 . Diversion of existing stormwater infrastructure to accommodate Pods.

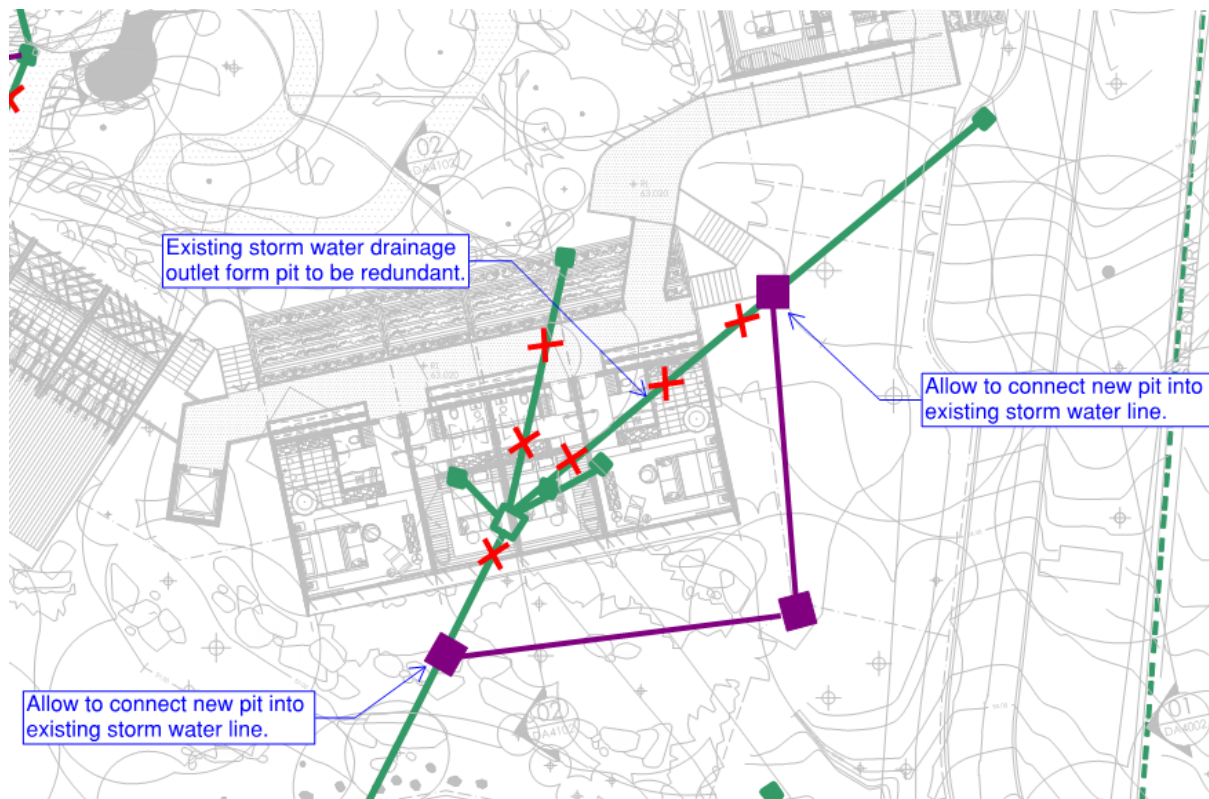


Figure 3. Diversion of existing stormwater infrastructure to accommodate Pods.

### 1.2.2 New Services

Rainwater collected from the new Accommodation Pods and Guest Lodge roof areas will discharge into a common in ground rainwater harvesting tank, via the new the roof water drainage system. The overflow from the rainwater tank will extend and connect into the existing Taronga Zoo stormwater infrastructure.

### 1.3 Trade waste Drainage

#### 1.3.1 Existing Services

Where greasy fixtures are located within the existing Taronga site, localised grease arrestors are provided. The grease arrestors are connected to the existing sewer drainage infrastructure.

A localised grease arrestor is provided to receive the greasy discharges from the existing Taronga Centre, which will need to be removed to accommodate the Restaurant Pod.

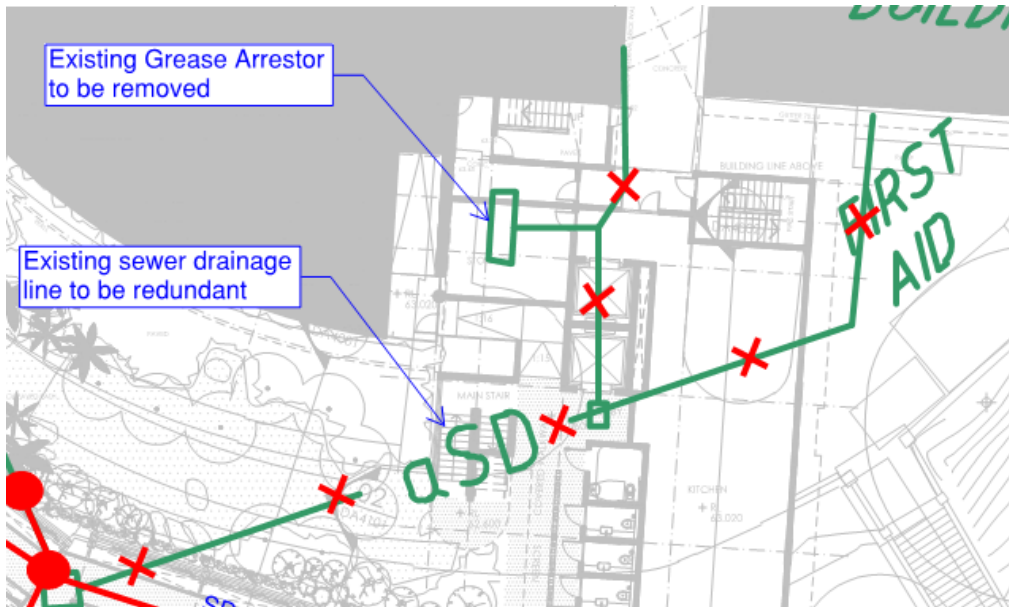


Figure 4. Removal of existing Grease Arrestor.

#### 1.3.2 New Services

A new 5000 litres in-ground grease arrestor will be provided (outside new building envelope) to convey all greasy discharges from the existing Taronga Centre and new Restaurant Pod. The new grease arrestor will discharge treated waste to the existing sewer drainage infrastructure

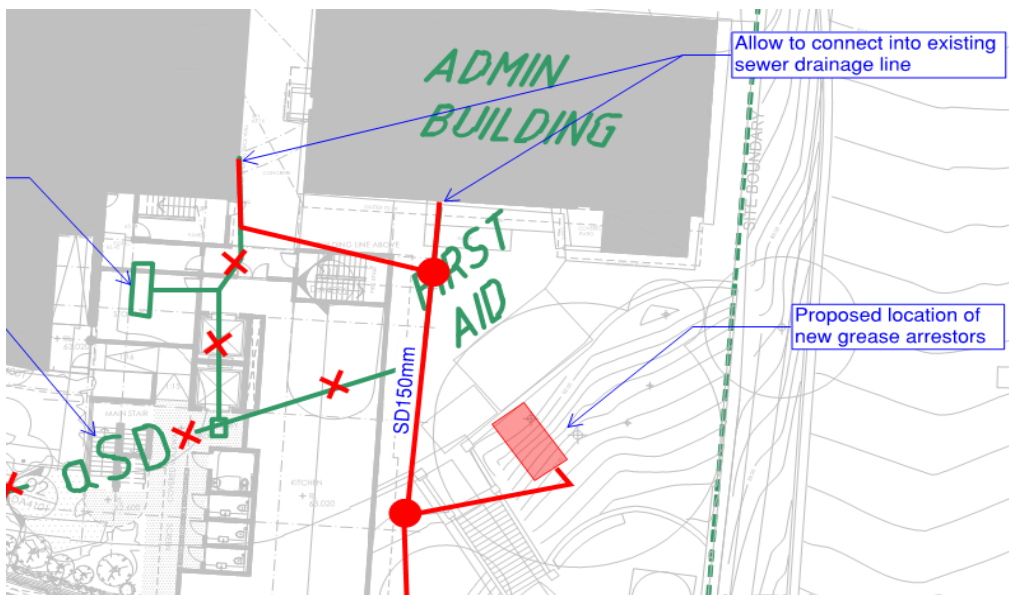


Figure 5. New Grease Arrestor location.

## **1.4 Cold Water Service**

### **1.4.1 Existing Services**

The site's existing water service is provided by a direct connection to the authorities' main, located in Bradley's Head Rd. Recent testing has identified that the supply pressure to the northern areas of the site are quite low. Rectification works including an additional supply point and interconnection are currently being investigated to address the pressure issues.

The site's cold water infrastructure pipework extends around the site to provide individual supply points to each building.

It is understood no diversion works are required on the service to facilitate the new Australia Habitat and Taronga Wildlife Retreat.

### **1.4.2 New Services**

A new cold water connection, including sub-meter and localised booster pumps are proposed to serve the Accommodation Pods and Guest Lodge building. The Taronga Centre expansion (restaurant pod) is envisaged to be provided from the existing connection point.

## **1.5 Hot Water Service**

### **1.5.1 Existing Services**

The site's existing hot water service consists of individual hot water plants serving each building, or group of buildings.

### **1.5.2 New Services**

Two new gas fired centralised hot water systems, complete with flow and return pipe, will be provided to supply the following areas:

- Accommodation Pods and Guest Lodge
- Restaurant Pod

There is currently no allowance to provide solar re-heat for the centralised hot water systems.

## **1.6 Fire Hydrant Service**

### **1.6.1 Existing Services**

The site's fire hydrant service is provided from a connection to the authorities main. The Fire hydrant infrastructure service extends around the site to supply to hydrant landing valves, complete with a fire brigade booster assembly and on site pumping appliance.

It is understood that the sites infrastructure is proposed to be upgraded to address the low pressures currently available. Upgrade works include:

- Relocation of the existing booster assembly
- New connection to the authorities' watermain
- Interconnection of existing ring mains

### **1.6.1 New Services**

New Fire hydrant landing valves will be provided to achieve floor coverage to the Accommodation Pods, Restaurant Pod and Guest Lodge, via a new connections form the site's Fire Hydrant service infrastructure.

All new fire hydrant landing valve outlets are assumed to be positioned in accordance with Deem-to-Satisfy provisions of the BCA.

## **1.7 Natural Gas Service**

### **1.7.1 Existing**

The site's gas service is provided from the connection to the authority's main via a boundary regulator and meter set. The site's natural gas infrastructure service extends around the site to supply individual gas supply connections to buildings.

It is understood that no upgrade or diversion works are required to the site's infrastructure services to accommodate the new Accommodation Pods, Restaurant Pod and Guest Lodge.

### **1.7.2 New**

New gas supply points to the Accommodation Pods and Guest Lodge's appliances will be provided via new individual connection points provided from the site's gas infrastructure service.

## 2.0 Fire Services

### 2.1 Fire Sprinkler System

#### 2.1.1 Existing Services

Taronga Centre - The existing fire sprinkler system to the Taronga Centre is provided from the existing sprinkler infrastructure (Sprinkler Valve Room) located on ground floor.



#### 2.1.2 New Services

Restaurant Pod– The new Restaurant Pod will be served from the existing sprinkler valve room. The existing sprinkler system will be modified and upgraded to suit the new building.

All new sprinkler system works will be in accordance with the Deemed To Satisfy provisions of the NCC, the Fire Safety Engineering Report, and AS 2118.1-1999.

Accommodation Pods- The new fire sprinkler system to the rooms will be provided throughout each new pod (5 off). The sprinkler system shall be fed from a common riser, and each pod will be fed of a new shared sprinkler alarm valve (1 off) located adjacent to the existing external water main / external hydrant point (pictured below) which is located on the eastern end of the new proposed architectural plans.

All new sprinkler system works will be in accordance with the Deemed To Satisfy provisions of the NCC, the Fire Safety Engineering Report, and AS 2118.1-1999.



## 2.2 Fire Detection & Alarm System

### 2.2.1 Existing

Taronga Centre – The Fire Detection & Alarm System serving the Taronga Centre is provided from the existing fire indicator panel (Fire Sense AFP-2800) which is an analogue addressable fire indicator panel.



### 2.2.2 New

Restaurant Pod– The new Restaurant Pods will be served by the existing main fire indicator panel located at the main entry. The existing fire detection system will be modified and upgraded to suit the new building.

All new detection system works will be in accordance with the Deemed To Satisfy provisions of the NCC, the Fire Safety Engineering Report, and AS 1670.1-2004.

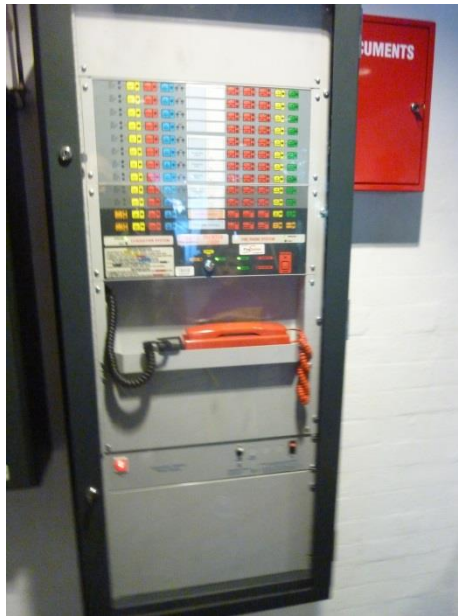
Accommodation Pods - The new Accommodation Pods will be served by a new fire indicator panel which will be located adjacent to the new sprinkler alarm valve. The system will consist of smoke detectors to the retreat rooms

All new detection system works will be in accordance with the Deemed To Satisfy provisions of the NCC, the Fire Safety Engineering Report, and AS 1670.1-2004.

## 2.3 Emergency Warning & Intercommunication System

### 2.3.1 Existing

Taronga Centre - The Emergency Warning & intercommunication System serving is provided from the existing master emergency control panel (FireSense INERTIA-2000). The system consists of loudspeakers, emergency call points, and warden intercom points.



### 2.3.2 New

Restaurant Pod- The new Restaurant Pod extension will be served by the existing master emergency control panel located at the main entry (adjacent to the fire indicator panel). The existing system will be modified and upgraded to suit the new building. This includes loudspeakers, emergency call points, and warden intercom points.

All new emergency warning & intercommunication system works will be in accordance with the Deemed To Satisfy provisions of the NCC, the Fire Safety Engineering Report, and AS 1670.4-2004.

Accommodation Pods- The new Retreat pods will be served by a Building Occupant Warning System, connected to the fire indicator panel serving the new Retreat.

## 2.4 Portable Fire Extinguishers

Portable fire extinguishers shall be provided throughout the new Australia Habitat and Taronga Wildlife Retreat, as required by the BCA E1.6.

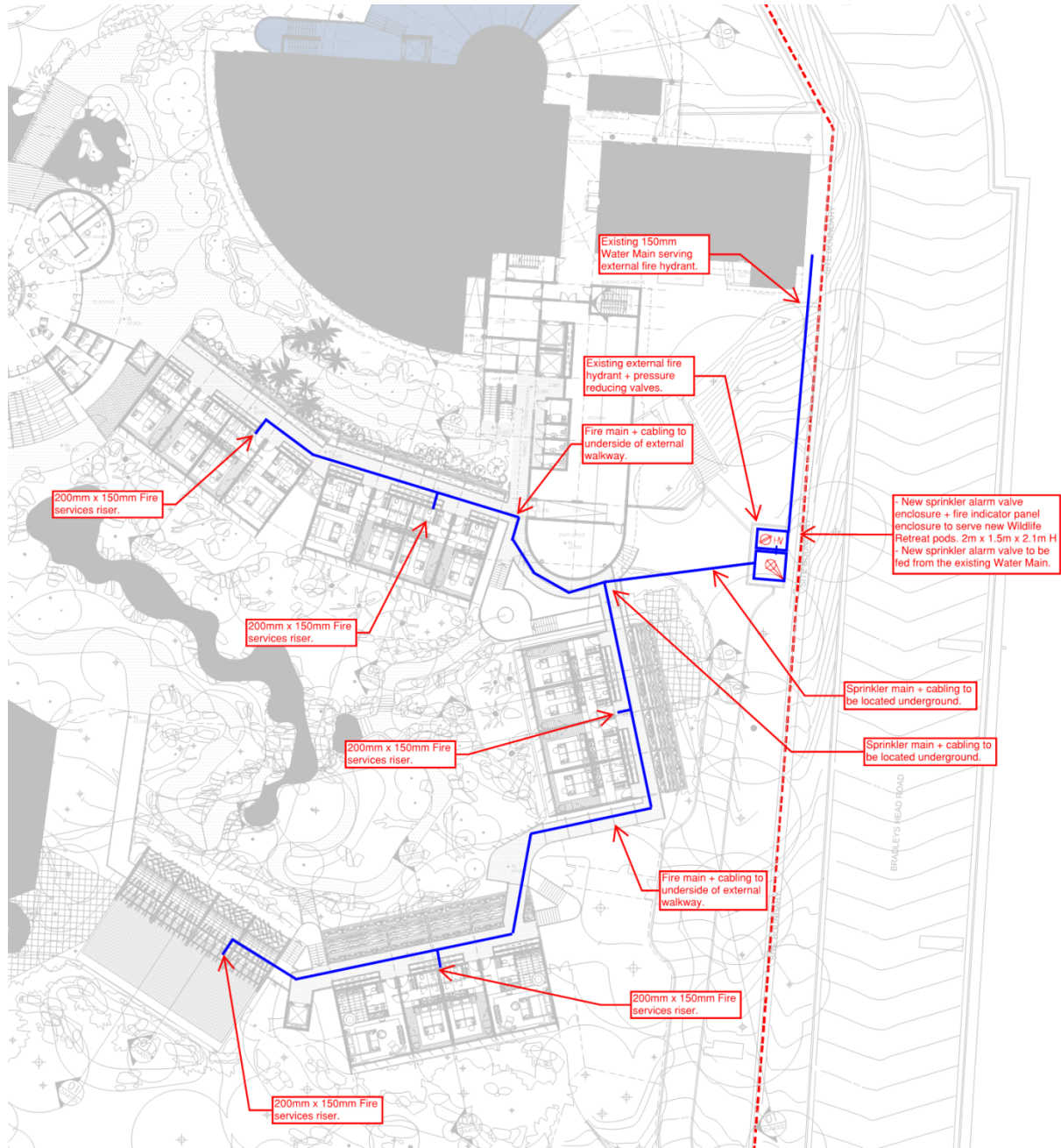


Figure 6. Fire Services system reticulation.