BUILDING SERVICES ENGINEERS

WET FIRE SERVICES REPORT

for

Pet Medical

14 Aberdeen Street

Muswellbrook NSW 2333

Project No:

MN13667

Client:

PB Eveleigh Plan Service

Prepared By:

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1 Introduction

Marline Newcastle Pty Ltd have been commissioned by PB Eveleigh Plan Service to investigate the site and assess the requirements with respect to wet fire protection systems necessary for compliance with the current codes of practice.

The specific essential services which are the focus of this report include:

- Fire Hydrants
- Fire Hose Reels
- Portable Fire Extinguishers

This scope associated with this report includes the following:

- Existing Building Description
- Available Authority Infrastructure
- Building Classifications Under BCA
- Requirements Under BCA
- Methodologies to Achieve Compliance
- Recommendations

2 Site Description

2.1 Site Location

The existing Pet Medical facility is located at 14 Aberdeen Street Muswellbrook.

The site is on the northern side of Aberdeen Street west of the New England Highway.

Two drive in, drive out, roadway entries are available for access from Aberdeen Street and two drive in, drive out entries are available from the New England Highway.

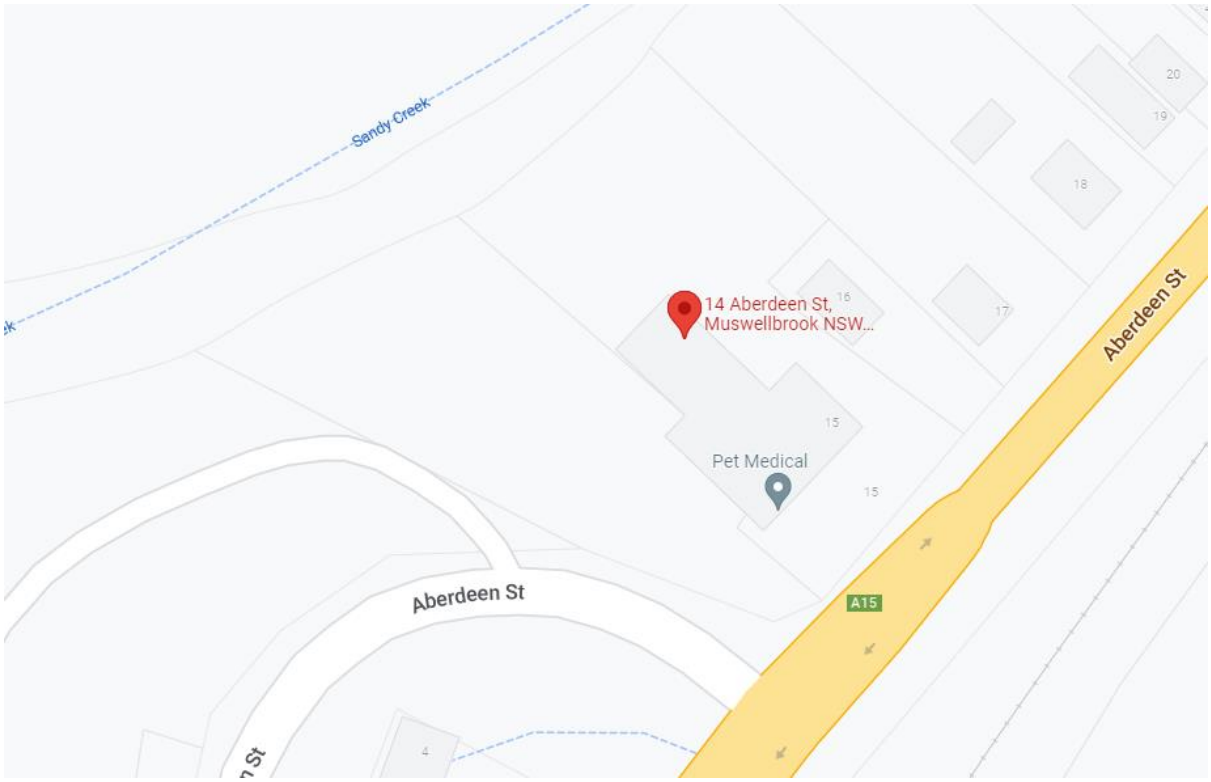

Figure 2.1.1 – Site Location Plan

The main entry to the building is via the New England Highway entry.

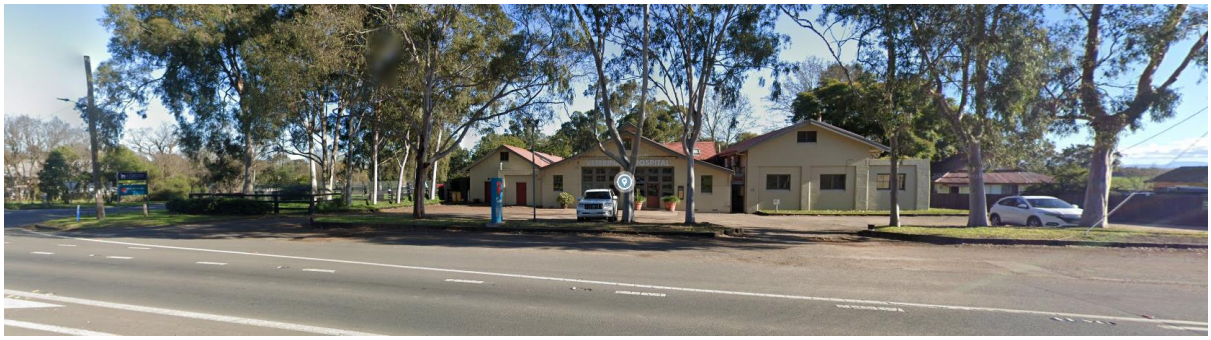

Figure 2.1.2 – New England Highway Entry Driveways

Figure 2.1.3 – Aberdeen Street Entry Driveways

2.2 Site Lots

The site is approximately 1.074ha in area comprising Lot 1 in DP220699 and Lot 21 in DP 830326.

Figure 2.2.1 – Existing Lot and DP Plan

The Lot 21 in DP 830326 portion comprises the main Pet Medical facility while Lot 1 in DP220699 comprises The Equine Podiatry and Lameness Centre.

3 Existing Building Description

The Pet Medical facility comprises three main buildings as follows:

- Storage and meals building (northern building)
- Main administration and consultation building (central building)
- Roofed horse stalls (western building)

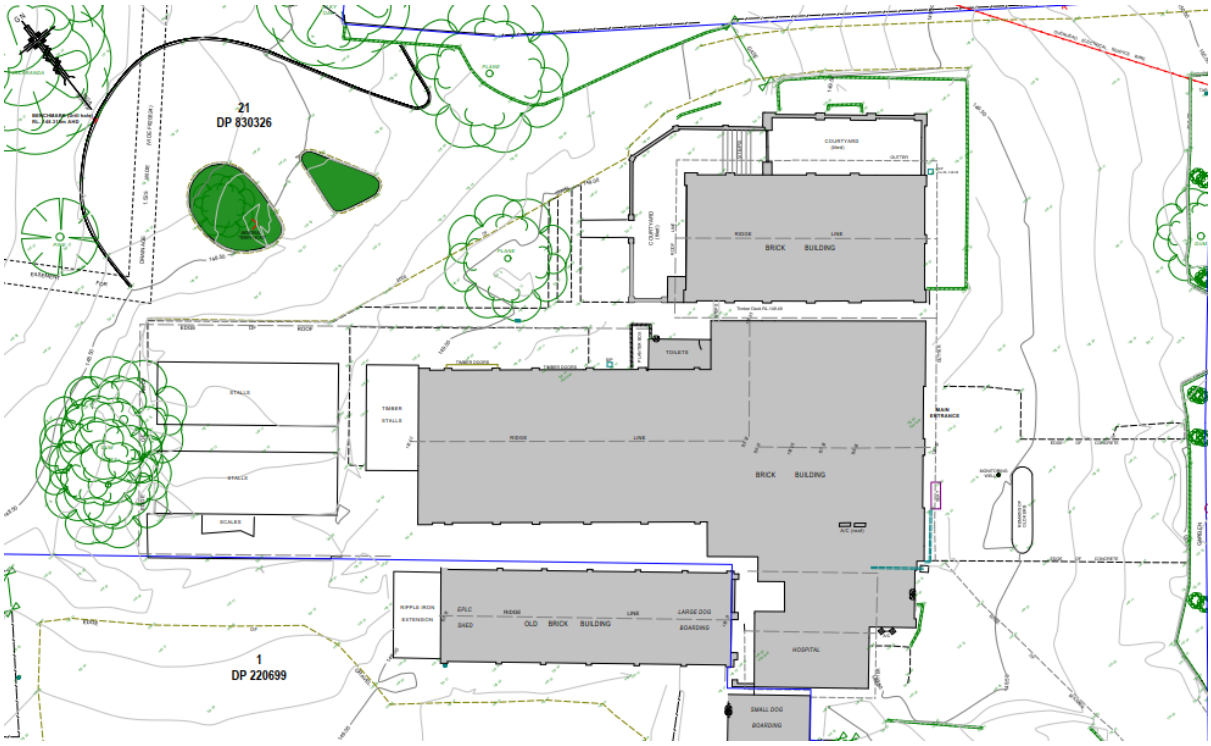

Figure 3.1 – Site Survey

3.1 Storage & Meals Building

The existing storage and meals building comprises an external brick façade with internal elevated timber floors.

The building comprises a suspended ground floor and elevated first floor.

Floor structures are constructed of timber.

The building has been measured with an approximately floor area of 168m2

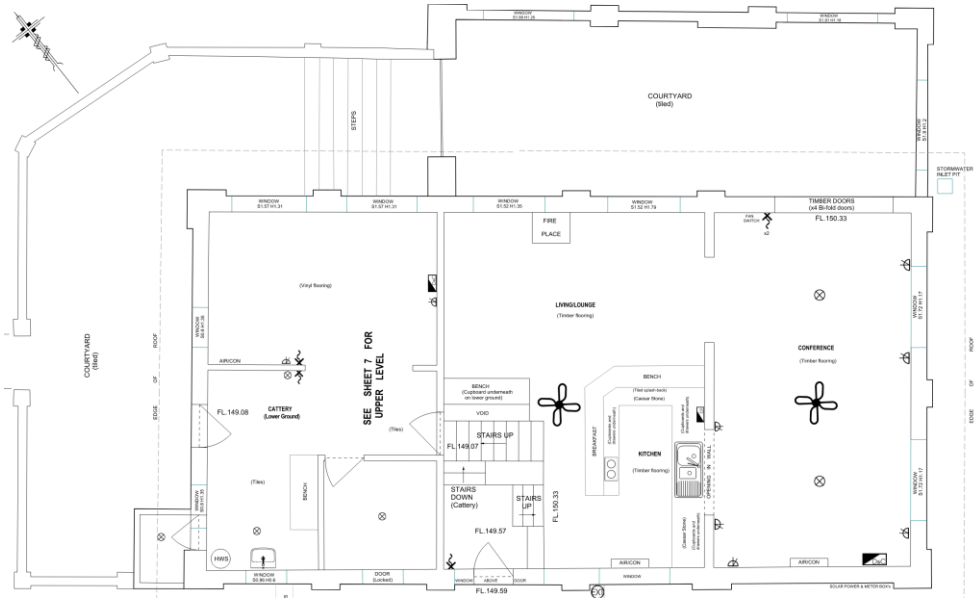

Figure 3.2.1 – Existing Ground Floor Layout

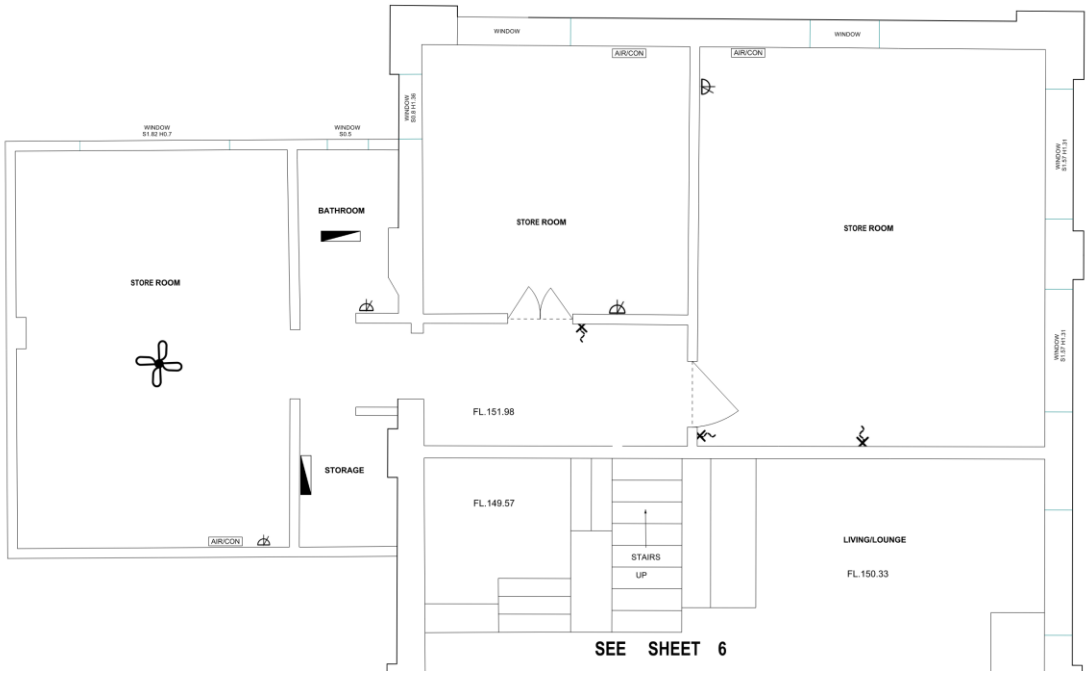

Figure 3.2.2 – Existing First Floor Layout

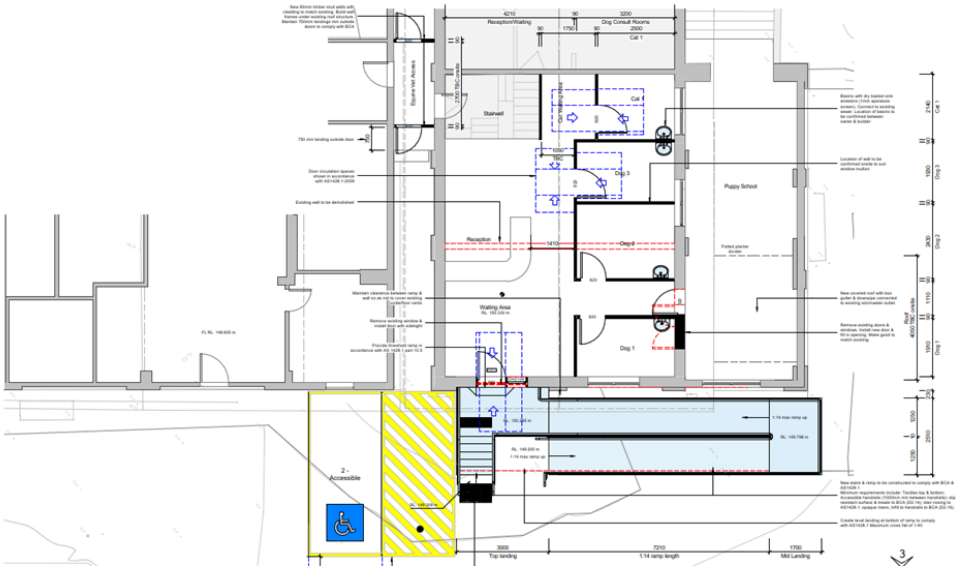

Figure 3.2.3 – Proposed Ground Floor Works

3.2 Main Administration & Consultation Building

The main administration and consulting rooms are positioned on the ground floor at varying floor levels.

The building has been measured at approximately 487m2

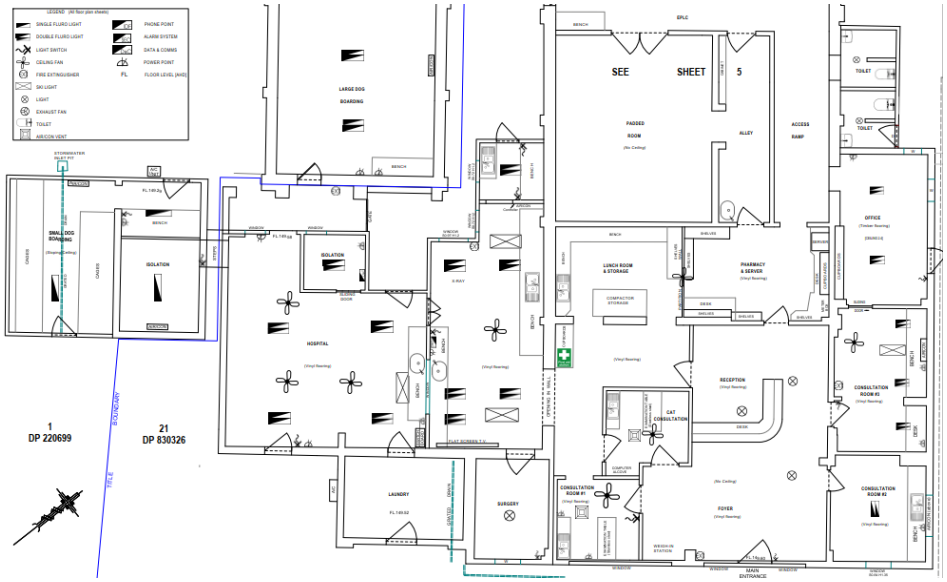

Figure 3.1.1 – Existing Ground Floor Layout – Part 1 (east)

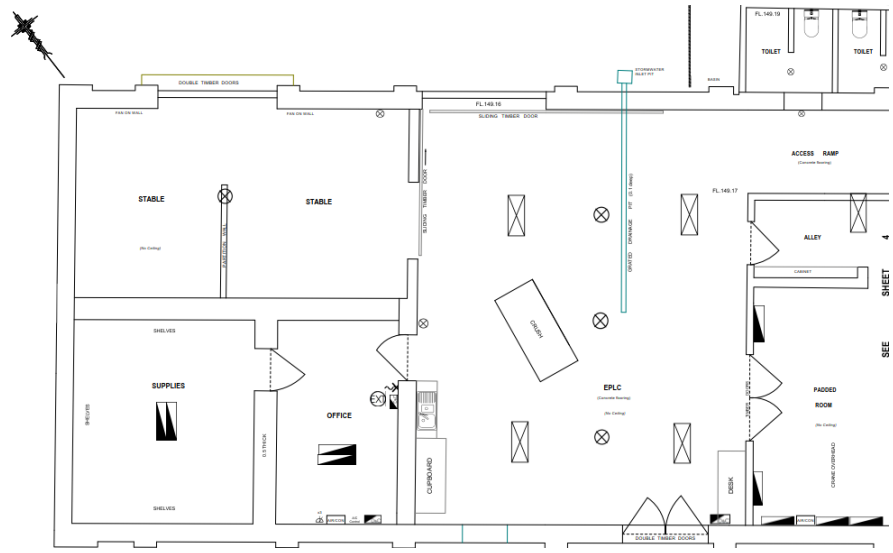

Figure 3.1.2 – Existing Ground Floor Layout – Part 2 (West)

3.3 Horse Stalls

The existing horse stalls building comprises open sided horse enclosures with a colourbond roof structure.

The structure has been measured at approximately 153m2

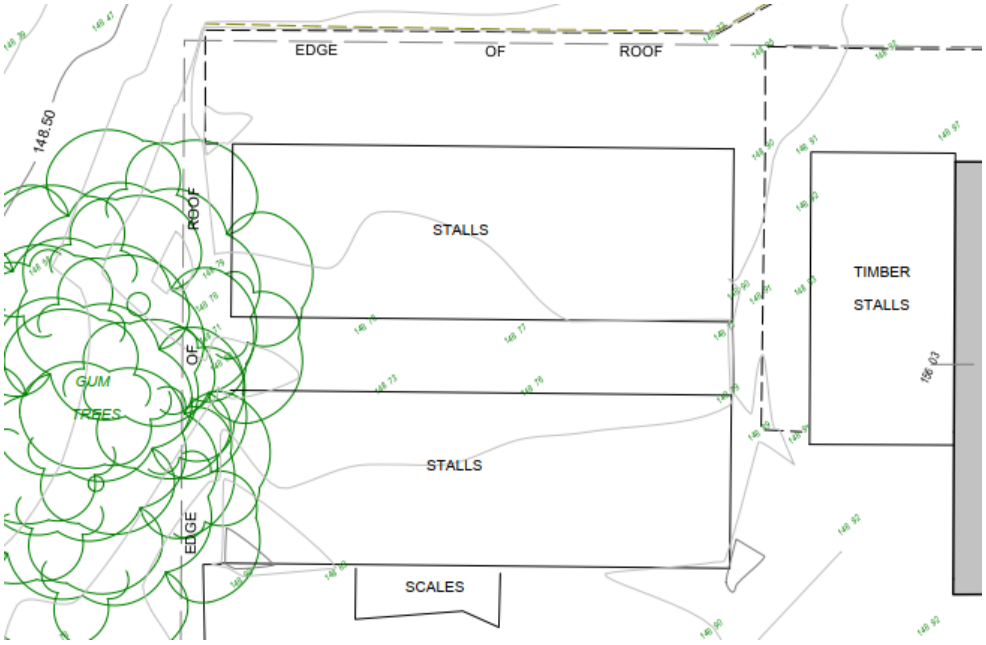

Figure 3.3.1 – Plan of Horse Stall Area

Figure 3.3.2 – Plan of Horse Stall Area

4 Available Authority Infrastructure

Muswellbrook Shire Council have an existing water main on the western side of the New England Highway

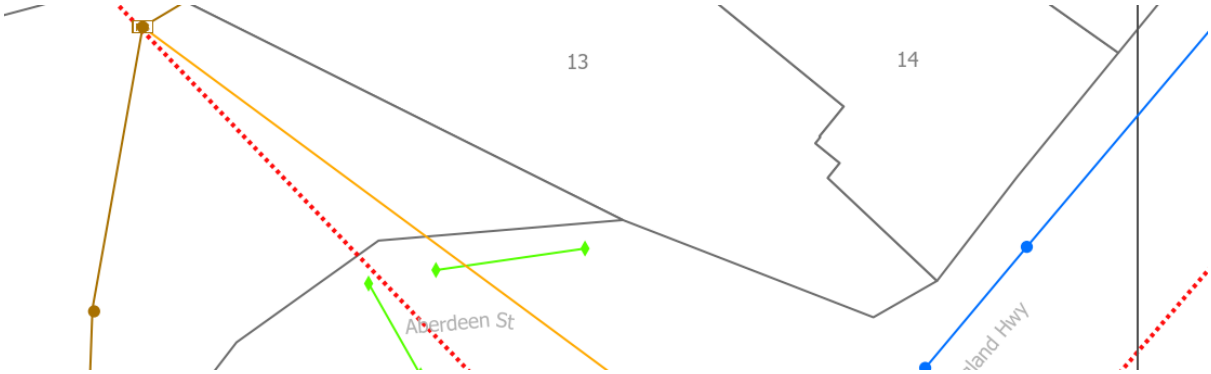

Figure 4.1 – Water Mains Plan

The capacity and performance of the existing water main is not known at this stage and will be subject to the outcome of the water mains pressure flow application.

An existing street hydrant associated with the Council water main is positioned adjacent the southern entry on the New England Highway.

Figure 4.2 – Existing New England Highway Street Hydrant – Looking South

Figure 4.3 – Existing New England Highway Street Hydrant – Looking West

An existing 25mm water meter assembly is located just inside the New England Highway boundary at the southern corner of the site.

Figure 4.4 – Existing New England Highway Water Meter

Figure 4.5 – Existing New England Highway Water Meter

The existing water meter does not appear to contain any backflow prevention.

The outlet of the water meter assembly appears to be reticulated in galvanized mild steel pipe and fittings.

5 Classifications Under BCA

The existing buildings are expected to be classified as follows:

- Existing Admin / Consulting Building – Class 5
- Existing Storage building– Class 7b
- Existing Horse Stalls – Class 10
- Proposed Consulting Rooms – Class 5

6 Requirements Under BCA

Based on the building floor areas mentioned, the distance between the buildings and the fire separation between the buildings, we believe that the overall floor area of the site will be over 500m2.

As such, the facility will require the following wet fire services systems to be provided:

- Fire hydrants
- Fire hose reels
- Portable fire extinguishers

6.1 Fire Hydrants

A building that requires a fire hydrant system is determined under BCA Clause E1.5.

E1.3 Fire hydrants

(a) A fire hydrant system must be provided to serve a building—

(i) having a total *floor area* greater than 500 m^2; and

(ii) where a *fire brigade station* is—

(A) no more than 50 km from the building as measured along roads; and

(B) equipped with equipment capable of utilising a fire hydrant.

Figure 6.1.1 – Extract from BCA Clause E1.5

The required performance of the fire hydrant system is set out within AS2419.1-2005.

Table 2.1 states that for a building comprising 1 or 2 storeys only, and under 1000m2 in fire compartment area, one operating hydrant is required which means that the water main and fire hydrant system performance flow rate is 10 litres per second (L/sec).

TABLE 2.1

NUMBER OF FIRE HYDRANT OUTLETS REQUIRED TO DISCHARGE SIMULTANEOUSLY ACCORDING TO BUILDING CLASSIFICATION AND FLOOR AREA

Building classification (see BCA)	Fire compartment floor area m^2	No. of fire hydrant outlets required to flow simultaneously (Note 1)
2, 3, 5 and 9 (1 or 2 storeys contained)	≤1 000	1
2, 3, 5 and 9 (1 or 2 storeys contained)	>1 000 ≤5 000	2
2,3,5 and 9 (3 or more storeys contained)	≤500	1
2,3,5 and 9 (3 or more storeys contained)	>500 ≤5 000	2
6, 7 and 8 (Note 2)	≤500	1
6, 7 and 8	>500 ≤5 000	2
All classes sprinklered	>5 000 ≤10 000	2
All classes sprinklered	>10 000	3
All classes unsprinklered	>5 000 ≤10 000	3
All classes unsprinklered	>10 000	3 plus one additional fire hydrant for each additional 5 000 m^2 or part thereof

Figure 6.1.2 – Extract from AS 2419.1-2005 Table 2.1

6.2 Fire Hose Reels

Although fire hose reels would normally be provided for a premises where fire hydrants are also required.

In this instance, due to the nature of the classifications of the building and the fact that internal fire hydrants will not be provided, fire hose reels are not required to be installed for building classifications of 1a, 5 or 10.

Therefore, fire hose reels will not be required for the development.

6.3 Portable Fire Extinguishers

Whether portable fire extinguishers are required for a building or not is set out within Clause E1.6 of BCA.

The relevant sections of BCA are extracted as follows:

E1.6 Portable fire extinguishers

(a) Portable fire extinguishers must be—

(i) provided as listed in Table E1.6; and

(ii) for a Class 2, 3 or 5 building or Class 4 part of a building, provided—

(A) to serve the whole Class 2, 3 or 5 building or Class 4 part of a building where one or more internal fire hydrants are installed; or

(B) where internal fire hydrants are not installed, to serve any *fire compartment* with a *floor area* greater than 500 m^2, and for the purposes of this clause, a *sole-occupancy unit* in a Class 2 or 3 building or Class 4 part of a building is considered to be a *fire compartment*; and

(iii) subject to (b), selected, located and distributed in accordance with Sections 1, 2, 3 and 4 of AS 2444.

Figure 6.3.1 – BCA Extract Clause E1.6

Table E1.6 Requirements for extinguishers

Occupancy class	Risk class (as defined in AS 2444)
General provisions—Class 2 to 9 buildings (except within *sole-occupancy units* of a Class 9c building).	(a) To cover Class AE or E fire risks associated with emergency services switchboards.[Note 1] (b) To cover Class F fire risks involving cooking oils and fats in kitchens. (c) To cover Class B fire risks in locations where flammable liquids in excess of 50 litres are stored or used (not including that held in fuel tanks of vehicles). (d) To cover Class A fire risks in normally occupied *fire compartments* less than 500 m^2 not provided with fire hose reels (excluding *open-deck carparks*). (e) To cover Class A fire risks in classrooms and associated corridors in primary and secondary schools not provided with fire hose reels. (f) To cover Class A fire risks associated with a Class 2, 3 or 5 building or Class 4 part of a building.

Figure 6.3.2 – BCA Extract Table E1.6

In this instance due to Table E1.6 section (d), portable for extinguishers are required to be installed.

The existing portable for extinguisher positions are depicted in the extract from the evacuation plan below.

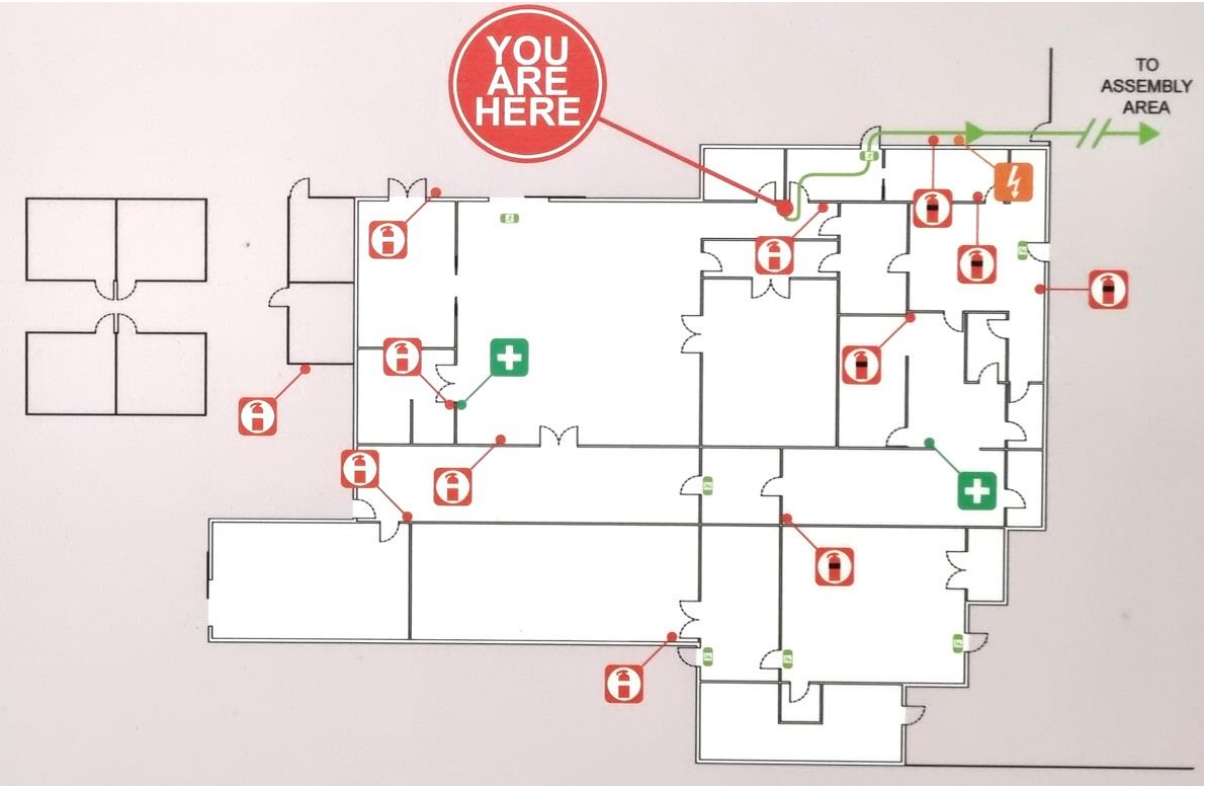

Figure 6.3.3 – Existing Portable Fire Extinguisher Positions

7 Methodologies to Achieve Compliance

7.1 Fire Hydrant System

The existing buildings and proposed changes have two options with respect to providing a fire hydrant system able to meet the requirements of BCA and the relevant standards.

Option 1 would be to utilize the existing street hydrant, which appears to provide the required coverage in accordance with the preliminary coverage plan below, subject to final design.

However, this option is dependent upon the water main having the required performance of at least 10 L/sec and a pressure of 150kPa.

If the water main is not able to provide this flow and pressure, then Option 2 will need to be considered.

Figure 7.1.1 – Fire Hydrant Planning (Street Hydrant)

Option 2 would comprise a system of tanks and pumps of capacity and duty yet to be determined, based on the actual water mains' ability to contribute to the system.

8 Recommendations

We make the following recommendations with respect to the wet fire protection services required for the project in the form of progressive actions:

1. Make application for a statement of available flow and pressure for the existing water main in the New England Highway

2. Assess the water mains performance and design the required fire hydrant system for the development, which would include any fire hydrant system design, fire hydrant coverage plans and certification that the design is in accordance with AS2419 and BCA E1.3.

3. Design and document any additional portable fire extinguishers required for the development and certification that the design is in accordance with AS2444 and BCA E1.6.