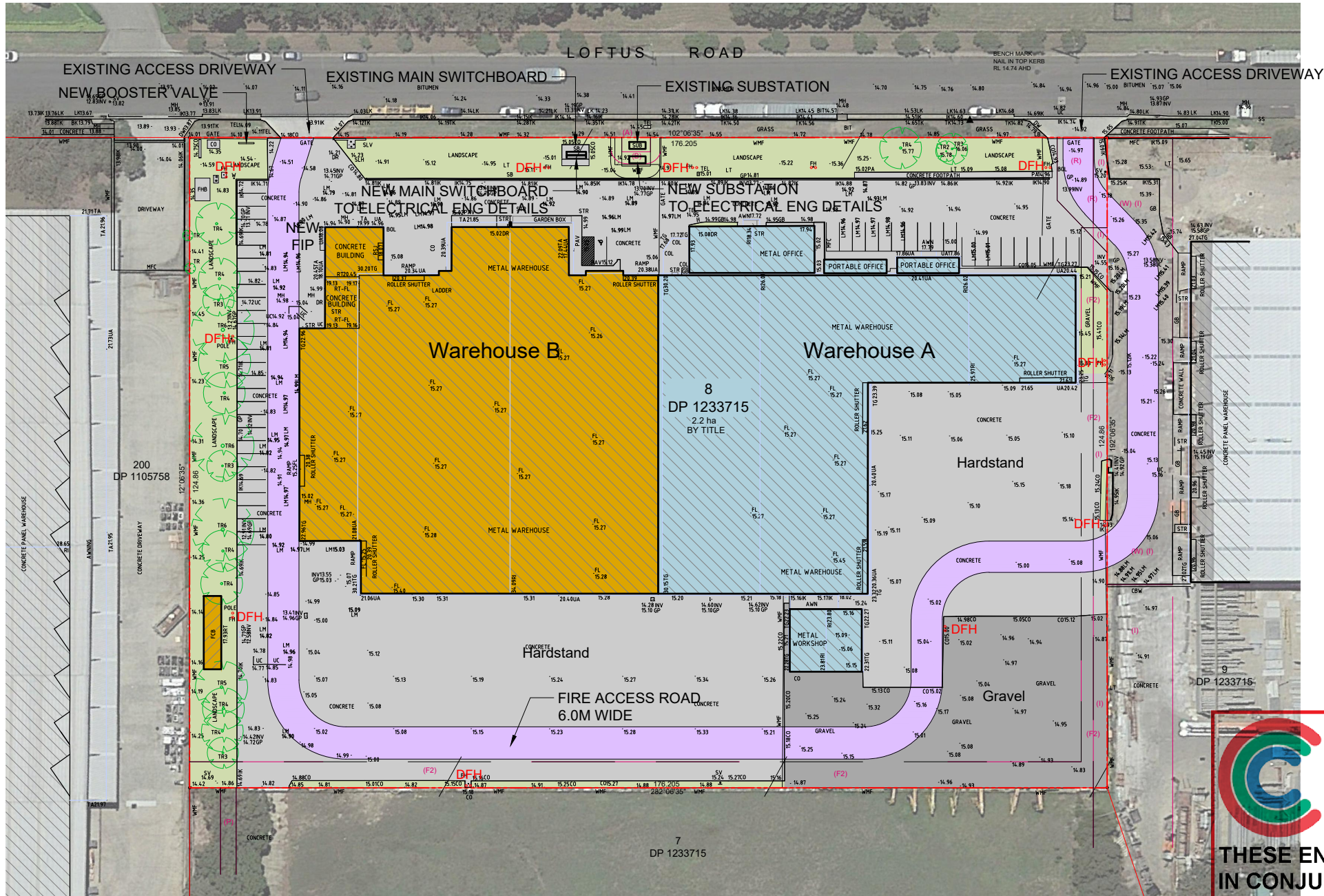




Fire Access Road - 6.0m wide

DFH Double Fire Hydrants

AREA SCHEDULE

|           | A        | B        | Total    |
|-----------|----------|----------|----------|
| Warehouse | 3,332sqm | 4,141sqm | 7,473sqm |
| Office    | 254sqm   | 469sqm   | 723sqm   |
| Total     | 3,586sqm | 4,610sqm | 8,196sqm |

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Site Area = 2.2Ha (By Title)

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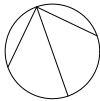
CONSENT DATE 29/09/2020

SITE PLAN

EASEMENT(S) - ENCUMBERANCE(S) AFFECTING SUBJECT PROPERTY

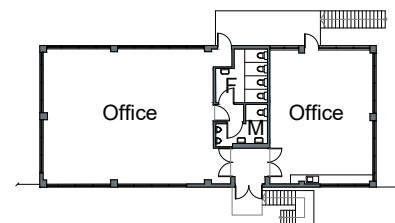
- (A) - EASEMENT FOR PADMOUNT SUBSTATION 2.75 WIDE (VIDE DP1258374)
- (B) - RESTRICTION ON USE OF LAND (VIDE DP1258374)
- (I) - EASEMENT TO DRAIN WATER 10.675 AND 15.24 METRES WIDE (VIDE DP 533033)
- (F2) - EASEMENT FOR FLOOD MITIGATION WORKS 5 WIDE & VARIABLE (VIDE DP 1233715)
- (P) - EASEMENT TO DRAIN WATER 1.5 & 3 WIDE (VIDE DP 1233715)
- (R) - RIGHT OF ACCESS 9.6 WIDE & VARIABLE (VIDE DEALING AM754799)
- (W) - RIGHT OF ACCESS 12.58 WIDE (VIDE DP 1233715)

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GROUND FLOOR PLAN



LEVEL 1 FLOOR PLAN

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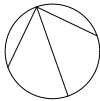
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Version: 1, Version Date: 09/09/2020

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ISSUE B  
ISSUE A

ISSUED FOR DA  
ISSUED FOR REVIEW

03/08/2020  
02/07/2020



Project  
**FIRE SERVICES UPGRADE**  
Location  
**30 LOFTUS ROAD YENNORA, NSW**  
Project Number  
**1984**

Scale  
1:500 @ A3

Drawing Title  
**FLOOR PLANS**  
Date  
**3 AUGUST 2020**  
Drawing Number  
**LTS-1.02(B)**



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CONSENT NO. DA2020/0488

# STATEMENT OF ENVIRONMENTAL EFFECTS

CONSENT DATE 29/09/2020

30 Loftus Road, Yennora NSW 2161

Prepared for: Cumberland City Council | Project No. 200012 Development Application

Date: 17 August 2020 | Status: Final

## Town Planning Consultants

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ABN 42 612 150 526



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## DOCUMENT CONTROL TABLE

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| 22 July 2020               | Draft           | Danielle Long  | Adam Mainey        |
| 17 August 2020             | Final           | Danielle Long  | Adam Mainey        |

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## 1. INTRODUCTION

This Statement of Environmental Effects (SEE) has been prepared to accompany a Development Application to Cumberland City Council for a voluntary fire services upgrade at No. 30 Loftus Road Yennora.

This Statement has been prepared in accordance with the following:

- Sprinkler System Specification, prepared by RG Fire Consultancy, dated 01 June 2020
- Certificate of Compliance for Fire Services, prepared by RG Fire Consultancy, dated 04 August 2020
- Survey Plan, prepared by Real Serve, dated 31 March 2020
- BCA Capability Statement, prepared by Concise Certification, dated 03 August 2020
- Hydraulic Services Plans, prepared by Inline Hydraulic Services, including:

| Drawing No: | Description:                       | Date:          |
|-------------|------------------------------------|----------------|
| H01         | Cover Sheet and Legend             | 04 August 2020 |
| H02         | Site Plan                          | 04 August 2020 |
| H03         | Floor Plan – Hose Reel Coverage    | 04 August 2020 |
| H04         | Floor Plan – Fire Hydrant Coverage | 04 August 2020 |

- Fire Services Drawings, prepared by RG Fire Consultancy, including:

| Drawing No: | Description:                       | Date:          |
|-------------|------------------------------------|----------------|
| F01-D       | Sprinkler System – Warehouse A & B | 04 August 2020 |
| F02-C       | Sprinkler System – Detail Sheet    | 02 August 2020 |

- Architectural Plans, prepared by Tim Farrell Pty Ltd, including:

| Drawing No:  | Description: | Date:          |
|--------------|--------------|----------------|
| LTS-1.01 (C) | Site Plan    | 03 August 2020 |
| LTS-1.02 (B) | Floor Plans  | 03 August 2020 |
| LTS-1.03 (B) | Sections     | 03 August 2020 |
| LTS-1.04 (B) | Elevations   | 03 August 2020 |

The purpose of this report is to describe the proposed development and its context in relation to the proposed development. It provides an assessment of the proposed development in light of the provisions of Section 4.15 of the Environmental Planning and Assessment Act 1979.

This report aims to demonstrate that the proposed development is appropriate within its context and within the framework of the relevant planning policies.

This statement addresses issues arising from the proposed fire services upgrade in light of the following planning controls:

- Environmental Planning and Assessment Act 1979;
- Environmental Planning and Assessment Regulation 2000;
- Holroyd Local Environmental Plan 2013;
- Holroyd Development Control Plan 2013;
- Provisions of Section 4.15 of the Environmental Planning and Assessment Act 1979.

The assessment relies upon the following information:

- The subject land is zoned IN1 General Industrial under the Holroyd Local Environmental Plan 2013.
- The immediate context of the site and surrounding character.
- The relevant provisions of the Holroyd DCP 2013 for industrial controls and public notification.

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## 1.1. BACKGROUND

The proposed development comprises a voluntary fire services upgrade at No. 30 Loftus Road Yennora. The development has been proposed due to a recognition that current services are deficient in terms of compliance with the Building Code of Australia and relevant Australian Standards. Having regard to correspondence with the project BCA consultant and Fire Services Engineers it has determined that new fire services are required in order to bring the existing system into compliance with current Australian Standards. This application seeks approval to upgrade the existing system to provide an adequate level of life safety and protection of the buildings.

## 2. SITE & CONTEXT ANALYSIS

### 2.1 Subject Site Description

The site is legally described as Lot 8 in Deposited Plan 1233715 and is known as No. 30 Loftus Road, Yennora. The area of the site is approximately 2.2 ha.

The subject site is located in Yennora; and is located on the southern side of Loftus Road approximately 0.6 km north east of Fairfield, 0.7 km south west of Guildford, 1.2 km south east of Smithfield and is located within the Local Government Area (LGA) of Cumberland. Figure 1 illustrates the context of the site within the locality.

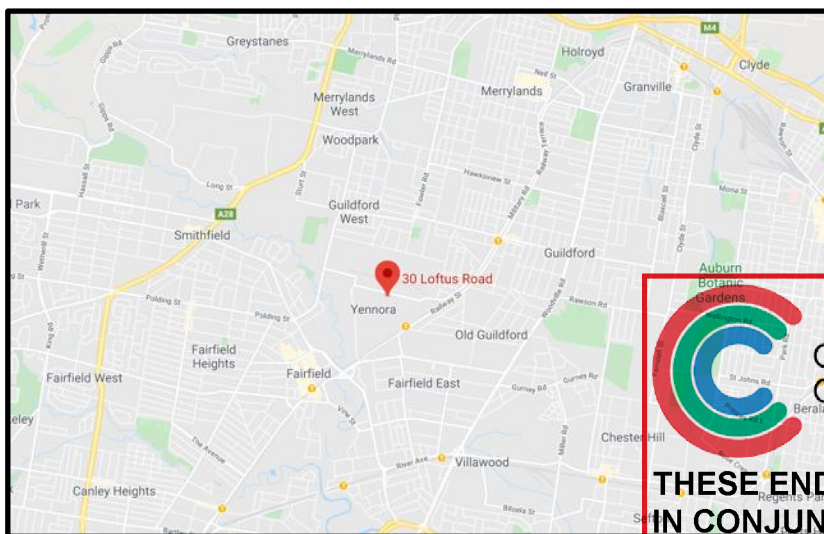


Figure 1: Map location of site (Google Maps, 2020)

### 2.1. Existing Building and Associated Structures

The subject site is occupied by an existing two storey warehouse building of masonry and metal construction (see Figure 2), along with associated attached offices (some of which are portable) and storage/garage areas. The site is currently divided into two separate tenancies known as Warehouse A and B. The tenancies are separated by an internal wall within the building, and a chain link fence separating the front and rear setback areas of each tenancy. This chain link fence follows the line of the internal wall division. Figure 3 depicts the site in the vicinity of the tenancy division (see yellow line indicating approximate location of division).

Warehouse A features a metal roof consisting of two gables facing the primary road of Loftus Road, while Warehouse B features a higher roof presenting a single gable towards Loftus Road. In addition to the warehouses and attached buildings, the rear setback areas of each warehouse include a detached building.

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The buildings generally contain a single-storey floor plan, while an exception being the office associated with Warehouse B, which also includes a first floor. The warehouses are accessible by both pedestrians and vehicles via entry doors and roller doors at the ground floor level. In addition to the above, Warehouse B office is accessible via external stairs to the first floor.

The main building (not including attached offices/storage/garage) has a setback from the primary road of approximately 30 metres. The attached development within this front setback area has a setback of approximately 18 metres. The setback of the building (and attached development) from the eastern side boundary is approximately 5 m, approximately 20 m from the western side boundary, and 30 m from the rear boundary.

In addition to the above, the detached building with the setback of Warehouse A has a setback from the rear boundary of approximately 20 m. The detached building within the setback of Warehouse B is located in close proximity from the western side boundary, with a setback of approximately 3 m from this boundary, and a setback of approximately 22 m from the rear boundary.

The front setback area contains vehicular access to the site, with a driveway at each side of the overall allotment for each warehouse tenancy. In addition to the above, the front setback areas include hardstand parking areas and a landscaping buffer; while the rear setback contains hardstand parking area, gravel and soft landscaping along the western perimeter.

Signage visible from the public domain indicates that Warehouse A is currently operated by Porter Group, a heavy equipment hire company. Warehouse B is currently vacant.



Figure 2: 30 Loftus Road; viewed from Loftus Road (Google Maps, 2020)



Figure 3: [left] 30 Loftus Road showing area in vicinity of tenancy division; viewed from Loftus Road [right] Warehouse B – currently vacant (Concise Planning, 2020)



Figure 4: [left] Warehouse A [right] Warehouse B; as viewed from Loftus Road (Source: Concise Planning Pty Ltd, 2020)

## 2.2. Land Zoning

The subject site is zoned IN1 General Industrial under the Holroyd Local Environmental Plan 2013 (HLEP2013) (Figure 5). Clause 2.3 of the HLEP2013 sets out the land use table for the IN1 General Industrial zone as follows (**emphasis added**):

### 2 Permitted without consent

Nil

### 3 Permitted with consent

Depots; Freight transport facilities; Garden centres; General industries; Hardware and building supplies; Industrial training facilities; Kiosks; Light industries; Liquid fuel depots; Neighbourhood shops; Oyster aquaculture; Places of public worship; Roads; Take away food and drink premises; Tank-based aquaculture; **Warehouse or distribution centres; Any other development not specified in Item 2.**

### 4 Prohibited

Agriculture; Air transport facilities; Airstrips; Amusement centres; Animal boarding or training establishments; Boat launching ramps; Boat sheds; Camping grounds; Car parks; Caravan parks; Cemeteries; Charter and tourism boating facilities; Commercial premises; Correctional centres; Crematoria; Eco-tourist facilities; Educational establishments; Entertainment facilities; Environmental facilities; Exhibition homes; Exhibition villages; Extractive industries; Farm buildings; Forestry; Function centres; Health services facilities; Heavy industrial storage establishments; Helipads; Highway service centres; Home businesses; Home industries; Home occupations; Home occupations (sex services); Industries; Information and education facilities; Jetties; Livestock processing industries; Marinas; Mooring pens; Moorings; Pond-based aquaculture Recreation facilities (major); Registered clubs; Research stations; Residential accommodation; Restricted premises; Sawmill or log processing works; Sex services premises; Stock and sale yards; Tourist and visitor accommodation; Veterinary hospitals; Water recreation structures; Wharf or boating facilities



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The proposed fire services upgrade is intended to increase the level of safety and protection of property within the context of the existing site uses at No. 30 Loftus Road Yennora.

### Warehouse A

Warehouse A is used for the sales and hire of construction equipment such as loaders and excavators. Vehicle sales and hire premises are characterised as follows by the Dictionary of the Holroyd LEP 2013:

**vehicle sales or hire premises** means a building or place used for the display, sale or hire of motor vehicles, caravans, boats, trailers, agricultural machinery and the like, whether or not accessories are sold or displayed there.

**Note.**

Vehicle sales or hire premises are a type of **retail premises**

It is noted that neither *retail premises* nor *vehicle sales or hire premises* is listed explicitly under the HLEP2013 IN1 Land Use Table (above). In this regard, as the development is not specified in item 2 or 4; the existing use is considered to be permitted with consent under the HLEP2013.

### Warehouse B

Warehouse B is currently a vacant warehouse. Warehouses are permitted with consent under the provisions of the HLEP2013.

In summary; as outlined above, the existing site uses are permissible with consent under the HLEP2013. It is recognised that the proposed fire services upgrade is being undertaken in order to support the existing site uses, and as such it is considered that the proposed development is permissible with consent under the provisions of the HLEP2013.

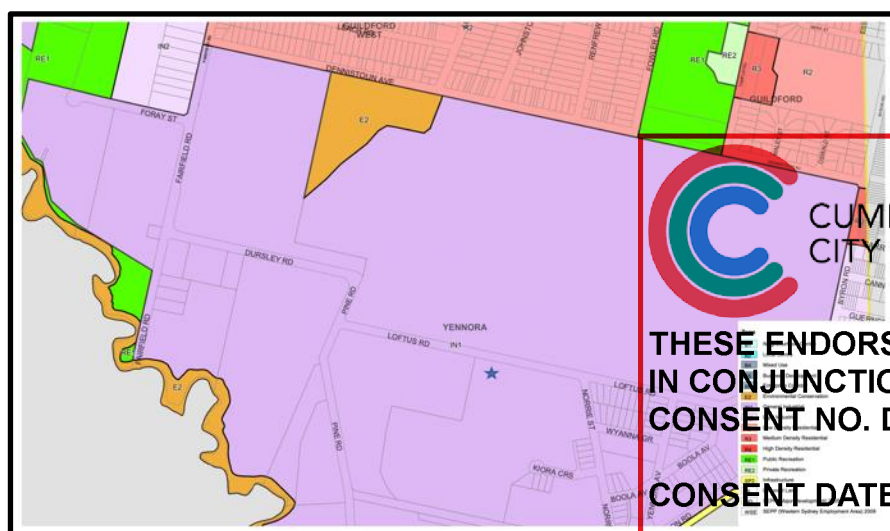


Figure 5: Land Zoning Map. Extract from Holroyd Local Environmental Plan 2013 (Source: NSW Legislation, 2020).

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### **2.3. Heritage**

The subject site is not listed as an item of environmental heritage, nor is it located within a heritage conservation area under the provisions of the Holroyd Local Environmental Plan 2013. Figure 6 presents an extract from the Heritage Map which forms part of the HLEP2013, illustrating the physical relationship of the subject site to existing heritage items in the vicinity.



Figure 6: Heritage Map. Extract from Holroyd Local Environmental Plan 2013 (Source: NSW Legislation, 2020).

## 2.4. Neighbouring Buildings

As stated above, the subject site is located within an industrial area in Yennora and is surrounded by a number of warehouse buildings with industrial uses. Figure 10 provides an aerial view and illustrates the configuration of the site and its relationship to adjoining developments.



Figure 7: Relationship of the site to adjoining properties (Source: Six Maps, 2020).

### No. 38 Pine Road (west)

To the west of the subject site is an irregularly shaped corner allotment, known as No. 38 Pine Road (Figure 8). The site is bound by Pine Road to the west and Loftus Road to the north and has an area of approximately 7.5 ha. The site contains an existing masonry two-storey industrial building with box guttered roof. According to signage visible from both Loftus and Pine Road; the site appears to be currently operated by multi-modal freight and logistics company DB Schenker.

The site is bounded by a fence running along the perimeter of both primary and secondary road boundaries. Setback areas of both the primary and secondary roads contain soft landscaping and driveways/hardstand areas.



Figure 8: 38 Pine Road, as viewed from Loftus Road (Source: Concise Planning, 2020)

No. 1 Norrie Street (east)

To the east of the subject site is a No. 1 Norrie Street (Figure 9); a corner allotment of approximately 1.5 ha bounded to the east by Norrie Street and to the north by Loftus Road. The lot is accessible via both Loftus Road and Norrie Street and consists of a two-storey warehouse building. The building is primarily of masonry construction, with the exception of a glassed office-space area located in the vicinity of the Loftus Road setback. The setback from the Loftus Road boundary contains a fenced concrete car parking area.

Signage visible from both Loftus Road and Norrie Street indicates that the site is operated by XL Precast, a manufacturer of precast concrete walls, columns and floors.



Figure 9: 1 Norrie Street, as viewed from Loftus Road (Source: Concise Planning, 2020).

No. 14-54 Dennistoun Avenue (north)

To the north of the subject site is 14-54 Dennistoun Avenue Yennora, also known as Yennora Distribution Park. This site is significantly larger than the subject allotment; with an area of approximately 70.4 ha. The site has boundaries with multiple roads; including Dennistoun Avenue, Loftus Road, Byron Road, and Pine Road. The site is occupied by multiple tenancies; each with separate truck entrances.

The Holroyd Development Control Plan 2013 contains a chapter pertaining specifically to Yennora Distribution Park (being *Chapter 9 Yennora Distribution Park within Part D: Industrial Controls*), and notes that it is one of the most significant industrial sites in Sydney.

Viewed from Loftus Road, the site contains warehouse buildings of masonry and metal construction, as well as infrastructure relating to intermodal-modal freight management; including railway lines and overhead shipping container hoists. The site also contains hard-stand parking areas. The front setback area in the vicinity of the subject site is buffered from Loftus Road via soft landscaping, trees and sloping terrain.



Figure 10: No. 14-54 Dennistoun Avenue, as viewed from Loftus Road (Source: Concise Planning, 2020).

#### No. 7 Kiora Crescent Yennora (south)

The allotment to the rear of the subject site is approximately 2.6 ha in size and appears to be currently vacant (zoned IN1 General Industrial).

## **2.5. Surrounding Area**

### Locality

As described earlier, the subject site is located within an IN1 General Industrial zone under the Holroyd Local Environmental Plan 2013. The subject site has a primary road boundary of Loftus Road. The street character immediately surrounding the subject site consists primarily of industrial buildings and associated infrastructure.

### Street Pattern

The area in which the subject site is located is characterised by a coarse-grained urban development pattern; consisting of a grid-like pattern of streets servicing large lots in order to accommodate industrial developments.

Loftus Road is the primary road and is a two-way street. Parking is available and not time limited. Small no stopping zones are associated with truck ingress/egress driveways. Untimed parking is available immediately in front of the subject site on both sides of Loftus Road.





Figure 11: Loftus Road [left] looking west from subject site; [right] looking east from subject site (Source: Concise Planning, 2020).

## **THE PROPOSAL**

### **2.6. Description of Works**

This section of the report should be read in conjunction with:

- Architectural Plans, prepared by Tim Farrell Pty Ltd, dated 03 August 2020
- Sprinkler System Specification, prepared by RG Fire Consultancy, dated 01 June 2020
- Hydraulic Services Plans, prepared by Inline Hydraulic Services, dated 04 August 2020
- Fire Services Drawings, prepared by RG Fire Consultancy, dated 02 and 04 August 2020

The plans and specifications indicate the following works:

The installation of:

- Installation of a Building Occupant Warning System (BOWS) to AS 1670.1-2018.
- Installation of a new Fire Sprinkler System to AS 2118.1-2017 including:
  - Connection to town main connection
  - New backflow device and booster valve
  - New in-ground main and conduit (including excavation and make good of driveway)
  - Construction of a new weatherproof sprinkler valve and fire hydrant/stand enclosure.
  - New sprinkler booster assembly.
- Upgrade of existing Fire Hydrant System including alterations to ring main to AS 2419.1-2005.



### **2.7. General Design Objectives**

The proposal seeks approval for a voluntary upgrade of the existing hydrant system and installation of a new sprinkler system associated with the existing warehouse building. The development has been proposed due to a recognition that current services are deficient in terms of compliance with the Building Code of Australia and relevant Australian Standards. Having regard to correspondence with the project BCA consultant and Fire Services Engineers it has determined that new fire services are required in order to bring the existing system into compliance with current Australian Standards.

The proposal is designed in a manner that is sympathetic to the streetscape by resulting in minimal changes to the appearance of the building when viewed from the public domain. The proposal aims to match the

scale of the existing buildings in terms of height as to provide an overall compatible design with the existing development. The proposed development will not result in an overall reduction of car parking spaces provided on the subject site.

The proposed development will have an overall maximum building height of 1.35 metres above ground level (existing). The proposed development will not result in any change to the existing gross floor area/ floor space ratio of the subject site as per the definition of Gross Floor Area under the HLEP2013.

### 3. EVALUATION PURSUANT TO PLANNING INSTRUMENTS

The application has taken into consideration relevant provisions of Holroyd Local Environmental Plan 2013 and Holroyd Citywide Development Control Plan 2013.

#### 3.1. Holroyd Local Environmental Plan 2013

The following provisions of the LEP are relevant to the proposal:

##### LEP Part 2 .1 Land Use Zoning

Clause 2.1 of the HLEP2013 outlines the requirements for Land Zoning. The site is located within the IN1 General Industrial zone. General industries are permitted with the consent of Council within the land use zone. The objectives of the IN1 General Industrial zone are as follows:

- To provide a wide range of industrial and warehouse land uses.
- To encourage employment opportunities.
- To minimise any adverse effect of industry on other land uses.
- To support and protect industrial land for industrial uses.
- To enable other land uses that provide facilities or services to meet the day to day needs of workers in the area.

By increasing the level of safety for existing users of the site along with increasing the level of protection for property; the proposed fire services upgrade is considered to support all zone objectives relating to the provision and protection of industrial/warehouse land uses.

##### LEP Part 4.3 Height of Buildings

Clause 4.3 of the HLEP2013 outlines the requirements for the Height of Buildings. There is no provision for maximum height for the site under the HLEP2013 (Figure 12). The proposed new sprinkler system includes a new sprinkler valve and fire indicate panel enclosure with a height of 1350 mm. In this regard it is considered that the proposed development complies with the requirements of Clause 4.3 of the HLEP2013.



Figure 12: Height of Buildings Map. Extract from Holroyd Local Environmental Plan 2013 (Source: NSW Legislation, 2020).



There are no other relevant provisions identified in the Holroyd Local Environmental Plan 2013 that are applicable to the proposed development.

### 3.2. Holroyd Development Control Plan 2013

#### PART D Industrial Development

##### DCP Part D Industrial Controls

Part D of the HDCP2013 applies to This Part applies to development on land zoned Industrial under Holroyd Local Environmental Plan 2013 and for development types permissible within Industrial zones as detailed within this Part. The relevant provisions are as follows:

#### 2.5. Setbacks

##### Objectives

The objectives of this part are as follows:

- To minimise any adverse impact of development and buildings on the surrounding area.
- To create a pleasant visual amenity within and external to the site.
- To provide adequate acoustic buffers so that any impact is minimised.
- To enable the landscaping treatment of street frontages when viewed from public areas.
- To ensure adequate building access consistent with fire safety for industrial buildings.
- To provide public parking within the street frontage.
- To ensure that the physical separation between industrial and residential land uses characteristic of the existing development on site are maintained over the longer term.

The specific controls included under this part are not relevant to the proposed development. Notwithstanding, the proposed development meets the objectives of this part by providing a balance between maintaining acceptable streetscape amenity whilst providing new fire services that provide an adequate level of life safety and protection of the buildings.

The majority of the fire services upgrade will comprise internal works to the existing warehouse and office buildings. The proposed new secure wire mesh enclosure is located in line with the existing setback of the garage/storage area on the north-west corner of Warehouse 1. The new structure is a steel mesh enclosure being 1350 mm in height, 1850 mm wide and 450 mm deep. This will be used for storing fire fighting equipment.

In this regard, within the context of the existing larger warehouse buildings, it is considered that the proposed new structure will not impose an increased appearance of bulk or scale to the Loftus Road Streetscape. In addition to the above, existing landscaped areas are to be maintained.

In summary, it is considered that the proposed new development will not have any adverse impact on the amenity and functionality of the existing site as outlined in the objectives above; and therefore complies with the requirements of this part.

### 3.3. Section 4.15 Assessment

#### 1 (a) (i) Environmental Planning Instruments

The proposed development is permitted with the consent of Council under the Holroyd Local Environmental Plan 2013. The proposal meets the objectives and relevant development standards of the Holyroyd Local Environmental Plan 2013 and accordingly, approval is supported as discussed in detail within this Statement of Environmental Effects (SEE).



### 1 (a) (ii) Draft Environmental Planning Instruments

There are no known draft environmental planning instruments that are applicable to the subject site.

### 1 (a) (iii) Development Control Plan

The proposed development complies with all relevant provisions under the Holroyd Development Control Plan 2013.

### 1 (a) (iv) The Regulations

The proposal satisfies the relevant provisions of the Environmental Planning and Assessment Regulation 2000. The Environmental Planning and Assessment Regulation 2000 has Building Code of Australia (BCA) requirements. These requirements will be satisfied at the time of the Construction Certificate (CC).

### 1 (b) Likely Impacts of Development

#### (i) Impact on the Natural Environment:

The proposed development will not result in any adverse impacts on the natural environment and results in the orderly development of land. The proposal will result in fire services upgrade of an existing building.

#### (ii) Impact on the Built Environment:

The proposed fire services upgrade will have minimal impact on the built environment and will not increase bulk or scale on the Loftus Road streetscape.

#### (iii) Social and Economic Impacts in the Locality:

The proposed development will have a positive social and economic impact on the area. The proposed development will result in positive economic impacts by supporting the overall economic activities of current and future tenants of No. 30 Loftus Road. The proposed development contributes positively to the site by increasing the existing level of safety and protection to both life and property.

### 1 (c) Suitability of the site for the proposed development

Having regard to the characteristics of the site and its location, the proposed development is considered to be appropriate in that:

- The land is zoned to permit the works;
- The nature and form of the proposed development is broadly consistent with the development controls which apply to the site.
- The size and dimensions of the land are suitable for the proposed development.
- The site has access to all utility services to accommodate demand for water, electricity, gas and telecommunications.

The development is not expected to result in any unacceptable or undesirable impacts, nor will it impinge on the amenity of adjoining tenancies and is therefore considered that the site is suitable to accommodate the proposed development.

### 1 (d) Any submission made

Cumberland Council will undertake a notification period in accordance with their policies.

### 1 (e) The public interest

The proposed development is considered to be in the wider in the public interest for the following reasons:

- It is consistent with the objectives of the Environmental Planning and Assessment Act 1979, specifically because it represents the economic and orderly development of land.



- The proposal is in accordance with the Holroyd Local Environmental Plan 2013 and the Holroyd Development Control Plan 2013.
- The proposal provides a responsive design in terms of relationship to adjoining development and establishes an appropriate streetscape and human scale through the adoption of sound urban design principles;

#### 4. CONCLUSION

This Development Application (DA) seeks approval for a voluntary fire services upgrade at No. 30 Loftus Road Yennora.

The aim of this report has been to:

- Describe the proposal;
- Illustrate compliance of the proposal with relevant statutory considerations;
- Provide an assessment of the likely environmental impacts of the proposed development.

The proposed development has been assessed in accordance with the provisions of:

- Holroyd Local Environmental Plan 2013.
- Holroyd Citywide Development Control Plan 2013.
- Section 4.15 of the Environmental Planning and Assessment Act 1979.

Having regard to the aforementioned assessments it is considered that the proposed development is acceptable and that it should be approved.



**Danielle Long**  
Assistant Town Planner



**Adam Mainey** - Director  
Bach of Urban and Regional Planning (Hons)  
Grad Diploma of Building Surveying

**THESE ENDORSED PLANS ARE TO BE READ  
IN CONJUNCTION WITH DEVELOPMENT  
CONSENT NO. DA2020/0488**

**CONSENT DATE 29/09/2020**

03 August 2020

Cumberland City Council  
PO Box 42  
Merrylands NSW 2160

Attn: The General Manager

Dear Sir/Madam,

**REFERENCE: 30 LOFTUS ROAD YENNORA NSW 2162  
BUILDING CODE OF AUSTRALIA 2019 (BCA) CAPABILITY STATEMENT**

Concise Certification Pty Ltd have been commissioned by One Five One Properties Pty Ltd C/- Plan Project Management Pty Ltd to undertake a detailed desktop assessment of the proposed development against the requirements of the National Construction Code Series (Volume 1) - Building Code of Australia 2019 Amendment 1 (BCA).

It is understood that the proposed development will be the subject of a Development Application (DA) pursuant to the Environmental Planning & Assessment Act and this BCA Capability Statement has been prepared in support of the submission to Council for its consideration as part of the Development Consent determination.

The following Concise Certification Pty Ltd Team Members have contributed to this assessment:

- Steven Rodriguez (Director / A1 Accredited Certifier)
- Luke Oldfield (Director / A1 Accredited Certifier / Peer Review)
- Adam Mainey (Director / A2 Accredited Certifier / Town Planner)

The team members above consist of A1 Unrestricted Accredited Certifiers and Planning Consultants who have vast experience in these types of projects.

**STATEMENT OBJECTIVES:**

The key objectives of the report are as follows:

- Undertake an assessment of the proposed development against the deemed to satisfy provisions of the National Construction Code Series - Volume 1- Building Code of Australia 2019 Amendment 1, pursuant to the provisions of Clause 145 of the Environmental Planning & Assessment Regulation 2000.
- Identify essential fire safety measures that are applicable to the proposed development in accordance with Clause 166 of the Environmental Planning and Assessment Regulation 2000.
- Identify any Deemed-to-Satisfy compliance departures that require further resolution/attention by the design team, by either way of design change or Performance Based Solutions prior to the submission of the Construction Certificate application.
- Issue a collaborated fire engineering summary outlining the key compliance departures identified by the design team, that are requiring consideration by the Council and the Fire & Rescue NSW in order to ensure the Fire Engineering strategy considers all matters requiring attention prior to the formal submission to (Fire & Rescue NSW).
- Verify that the referenced documentation has been reviewed by an appropriately qualified Building Surveyor to demonstrate that compliance with the BCA / Access to Premises – Building Standard 2010 is readily achievable.
- Enable the Registered Certifier to satisfy its statutory obligations under Clause 145 of the Environmental Planning and Assessment Regulation 2000, whilst also taking into due consideration the provisions under Sections 28 and 29 of Part 3 of the Building and Development Certifiers Act 2018 and Clauses 24 and 25 of Part 4 of the Building and Development Certifiers Regulation 2020.

This Capability Statement is not intended to identify all issues of compliance or non-compliance with the BCA with such other issues to be appropriately addressed prior to issue of the Construction Certificate approval. Rather This BCA Capability Statement serves to confirm that the design can be readily addressed without the need for redesign and/or resubmission to the Local Consent Authority.

The findings of this BCA Report do not relieve the PCA of their statutory obligations under the EP&A Act & BPB Act and they are to be satisfied that the proposal meets their requirements prior to approval.

## **STATEMENT OBJECTIVES:**

The following documentation has been reviewed, referenced and/or relied upon in the preparation of this report:

- National Construction Code Series – Volume 1 – Amendment 1 of the Building Code of Australia 2019 Amendment 1 (BCA)
- National Construction Code Series – Guide to the Building Code of Australia 2019
- Environmental Planning & Assessment Act 1979
- Environmental Planning & Assessment Regulation 2000
- Fire Services Plans (Sprinklers) prepared by RG Fire Consultancy dated 2<sup>nd</sup> August 2020
- Fire Services Plans (Hydrants and Hose Reels) prepared by In Line Hydraulic Services dated 30<sup>th</sup> June 2020
- Architectural Plans prepared by Tim Farrell Pty Ltd as detailed in the table below;

| Plan Number | Document Name | Revision | Date           |
|-------------|---------------|----------|----------------|
| LTS – 1.01  | Site Plan     | (B)      | 03 August 2020 |
| LTS – 1.02  | Floor Plans   | (B)      | 03 August 2020 |
| LTS – 1.03  | Sections      | (B)      | 03 August 2020 |
| LTS – 1.04  | Elevations    | (B)      | 03 August 2020 |

## **REPORT LIMITATIONS & EXCLUSIONS**

The limitations and exclusions of this report are as follows:

- This report is based on a review of the referenced documentation in the report above and is a high level assessment against Deemed to Satisfy Clauses C2.2, C2.3, C2.4 and E1.4 & E1.5 of the BCA only. Reference to other clauses has been provided as informative however they have not been assessed in detail.
- This Report does not address issues in relation to the design, maintenance or operation electrical, mechanical, hydraulic or fire protection services, Utility Services Provider Requirements (Water, Gas, Telecommunications and Electricity supply authorities), Local Government Act and Regulations, Occupational Health and Safety Act and Regulations or the like.
- This assessment does not incorporate an assessment against the detailed requirements of the BCA Referenced Australian Standards and it's the responsibility of design and installation contractors to demonstrate and achieve compliance for all new works.
- The commentary within this BCA Assessment Report does not relieve the Design Practitioners, Principal Building Practitioners, Accredited Practitioners (Fire Safety) and/or any associated Building Suppliers and Sub Contractors from their statutory obligations under the Work Health Safety Act, Safety in Design Principles, EP&A Regs/Act and /or their statutory duty of care obligations under the Design and Building Practitioners Act 2020.
- The commentary within this BCA Assessment Report does not relieve the Registered Certifier/Principal Certifier from their statutory obligations under EP&A Regs/Act, Building and Development Certifiers Act/Regs and they are to be satisfied that the proposal meets their requirements under the relevant Acts and Regulations.
- The commentary within this BCA Assessment Report does not relieve the Fire Safety Officer from their statutory obligations under EP&A Regs/Act, Building and Development Certifiers Act/Regs and they are to be satisfied that the proposal meets their requirements under the relevant Acts and Regulations.
- Concise Certification Pty Limited cannot guarantee acceptance of this report by the Local Council, NSW Fire Brigades or other approval authorities.
- It is important to note that without the written permission from Concise Certification Pty Ltd, no part of this report may be reproduced in any form or by any means. This report is based solely on client instructions and therefore should not be relied upon or used by any third party without prior knowledge and instructions from Concise Certification Pty Ltd.

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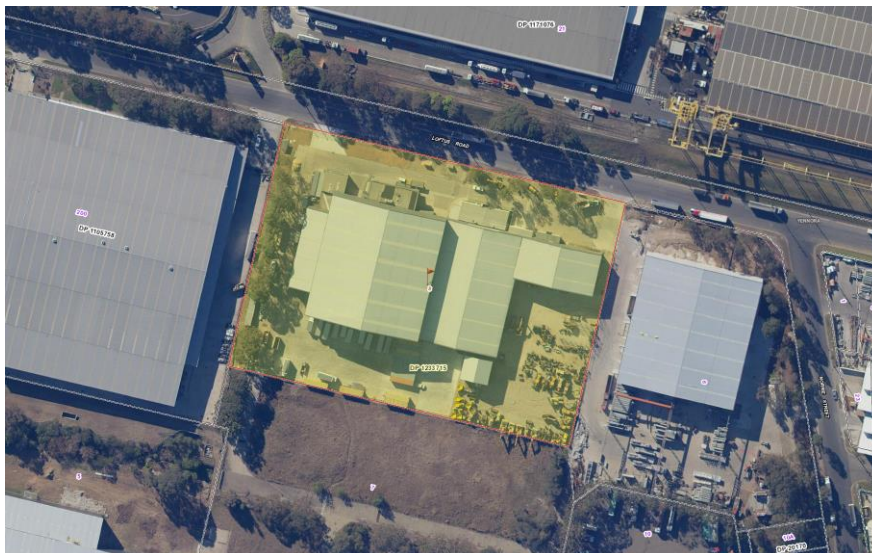
## **RELEVANT VERSION OF THE BCA:**

Pursuant to Clause 98 & 145 of the Environmental Planning and Assessment Regulation 2000 (EP&AR) all new building work must comply with the current provisions of the National Construction Code Series (Volume 1) Building Code of Australia (BCA). Furthermore, the development is subject to compliance with the relevant requirements of the BCA as in force at the time the application for the Construction approval is made. In this regard, it is understood that the Construction application will be made prior to the 1<sup>st</sup> May 2022, as such **BCA 2019 Amendment 1** Version applies to the subject development.

## **EXISTING & PROPOSED DEVELOPMENT**

The **existing building**, the subject of this report, is located at 30 Loftus Road Yennora NSW and is wholly contained within a single allotment which is legally identified as Lot 8 in DP 81233715. The site is rectangular in shape and has an approximate site area of 2.2ha.

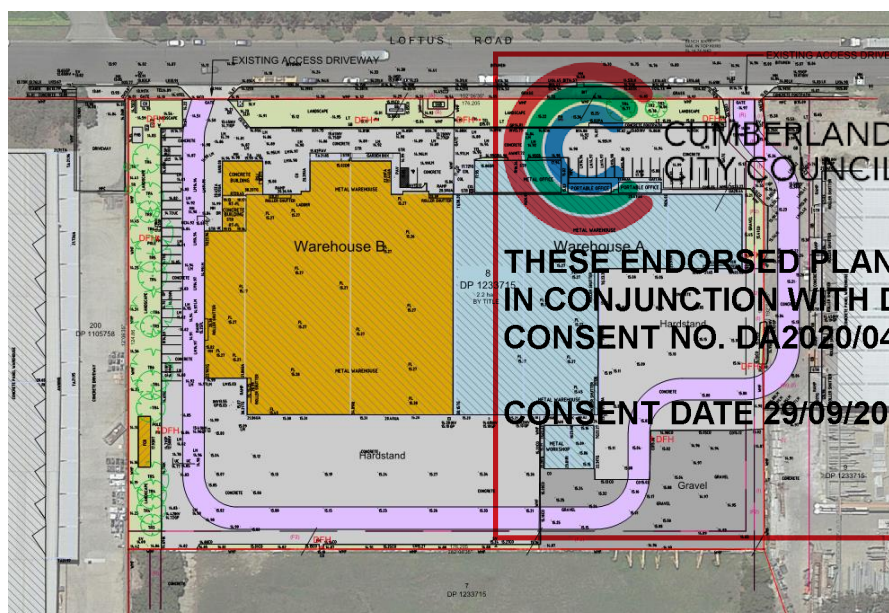
The existing building, the subject of this report, is an existing 2 storey industrial warehouse development consisting predominantly of warehouse space and ancillary offices. The existing warehouse is currently separated into two (2) separate tenancies.



**Figure 1 – Satellite Image (Source: Six Maps - July 2020)**

The existing development has external off-street carparking, hardstand and a perimeter access road. Principal pedestrian and vehicular access are via two (2) existing driveways accessed off Loftus Road which is on the northern side of the site. The Eastern, Western and Southern sides are land locked and adjoin other existing industrial warehouse developments and a green field site.

The site is benefited by a Right of Carriageway which connects Loftus Road and provides access to the site along the Eastern side and this carriageway will be retained.



**Figure 2 – Existing Site Plan (Source: Tim Farrell Pty Ltd)**

The existing Warehouse is currently divided up into two (2) tenancies known as Warehouse Unit A and Warehouse Unit B and these arrangements will remain unchanged. There is an intertenancy wall however this is not a fire wall and there is no means of fire separation anywhere in the building as it is all deemed a single warehouse with an oversized fire compartment.

The external facades consist of a combination of masonry and steel cladding materials and the building has a structural steel portal frame and steel roof sheeting. The building envelop will also remain unchanged as part of the DA application to Council.

**The proposed works**, the subject of this report, are limited to a voluntary fire services upgrade to bring the buildings fire services and fire safety strategy into conformity with the current BCA requirements for a Large Isolated Building. These works can be summarised as follows:

1. Installation of new **Fire Sprinkler System** and infrastructure such as the construction of new sprinkler installations, new valve sets and new booster assembly;
2. Installation of a new **Building Occupant Warning System** throughout the entire warehouse development;
3. Upgrade of the existing **Fire Hydrant System** and infrastructure such as the construction of a new hydrant ring main, new external hydrant installations and upgrade of the existing booster assembly and pump-set where necessary;
4. Upgrade of the existing **Brigade Vehicular Perimeter Access** provisions by ensuring passage around the perimeter of the building is available via the existing hardstand and driveways and ensuring fencing/gates have appropriate provisions in place.
5. Upgrade of **Emergency Lighting ,Exit Signage and Door Latch** hardware provisions throughout.
6. **Ancillary make good works** associated with the fire services upgrade works above.

#### **BUILDING CODE OF AUSTRALIA - SUMMARY OF KEY COMPLIANCE MATTERS:**

Arising from our preliminary desktop assessment of the existing and proposed development against the Deemed-to-Satisfy provisions and Performance Requirements of National Construction Code Series – Building Code of Australia 2019 (Amendment 1), the following key characteristics are noted.

#### **Section A – General Provisions:**

**The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section A of the BCA subject to compliance with the following:**

The building has the following key building characteristics and classifications as determined by Volume 1 of the Building Code of Australia are as follows:

| <b>BUILDING CHARACTERISTICS</b>  |                                                                                                                                                                                                                |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>– BCA CLASSIFICATION:</b>     | Class 5 (Administrations), Class 7b (Warehouse Storage), Class 8 (Manufacturing/Processing) & Class 10a (Pump House)                                                                                           |
| <b>– RISE IN STOREYS:</b>        | Two (2)*                                                                                                                                                                                                       |
| <b>– TYPE OF CONSTRUCTION:</b>   | Type C Construction (Table 5 of BCA Spec C1.1)                                                                                                                                                                 |
| <b>– EFFECTIVE HEIGHT:</b>       | Less than 12m                                                                                                                                                                                                  |
| <b>– FIRE COMPARTMENTATION:</b>  | Greater than 2,000msq & 12,000msq (greater than 8,118/m <sup>3</sup> and 120,600m <sup>3</sup> ) Large Isolated Building                                                                                       |
| <b>– CLIMATE ZONE:</b>           | Climate Zone 6                                                                                                                                                                                                 |
| <b>– CRITICAL FIRE SERVICES:</b> | Sprinklers (AS2118.1-2017), BOWS (AS1851-2005), Fire Hose Reels (AS2441-2005), Extinguishers (AS2444-2001), Emergency Lights & Exit Signs (AS2293.1-2018) and Perimeter Access Road (EPNSW Guidelines)         |
| <b>– SPECIAL CONSIDERATIONS:</b> | Large Isolated Building, Fire & Rescue NSW Guideline "Access for Fire Brigade Vehicles", Fire Engineering Strategy required by Fire Safety Engineer & Hydrant coverage to external Hardstand Areas Recommended |

**Note 1:** The existing building has oversized fire compartments – which includes Floor areas and Volumes. As such the building will be assessed as a Large Isolated building pursuant to Clauses C2.2, C2.3, C2.4, E1.5 & E2.2 of the BCA.

**Note 2:** It is understood that there are no internal mezzanines or floors within the Warehouse Units which have internal ceiling heights greater than 6m (above or below) the mezzanine floor and as such the building has a rise in storeys of two (2).

**Note 3:** Future Uses and Hazards have not been considered and the design has been prepared for Ordinary Hazard Classifications as advised by the design team.

**Note 4:** Detailed fire compartment plans including Floor Areas and Volumes are to be provided by the architect to accompany the FEBQ and Construction Certificate applications.

## **SECTION B – STRUCTURAL PROVISIONS:**

**The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section B of the BCA subject to compliance with the following:**

1. BCA Clauses B1 – B3 Structural provisions: Structural engineering documentation for structural works must comply with the structural provisions of BCA Clauses B1.1, B1.2 & B1.3.

Structural engineer is to review roof structure and confirm it is structurally adequate for fire services infrastructure and structural design for new sprinkler tank slabs, pump room and other ancillary structural works required.

**Note:** The Structural details and design certification to the satisfaction of the Registered Certifier are to be provided with the Construction Certificate application stage.

## **SECTION C – FIRE RESISTANCE AND COMPARTMENTATION:**

**The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section C of the BCA subject to compliance with the following:**

7. BCA Clause C1.1 & C1.2 - (Type of Construction and Rise in Storeys): The rise in storeys of the building is a maximum of two (2) and there are no internal floors or mezzanines within the warehouse portions of the buildings which have internal ceiling heights greater than 6m above or below. As such the building will be of Type C Construction. Refer to Table 5 of BCA Specification C1.1 and comments below for further information in this regard.

8. BCA Specification C1.1 & BCA Clause C3.2 / C3.4 - (FRL's & Protection of Openings): External walls and openings located within them that are exposed to a fire source feature need protection accordingly.

*In this regard, there are no external walls or openings located within 3m of any fire source features and no protection is required.*

9. BCA Clauses C2.2, C2.3 & C2.4 – (Requirements for Vehicular Access & Large Isolated Buildings): Given the existing fire compartments of the Warehouse exceed the limitations of BCA Clause C2.2, the building is to be designed as Large Isolated Buildings.

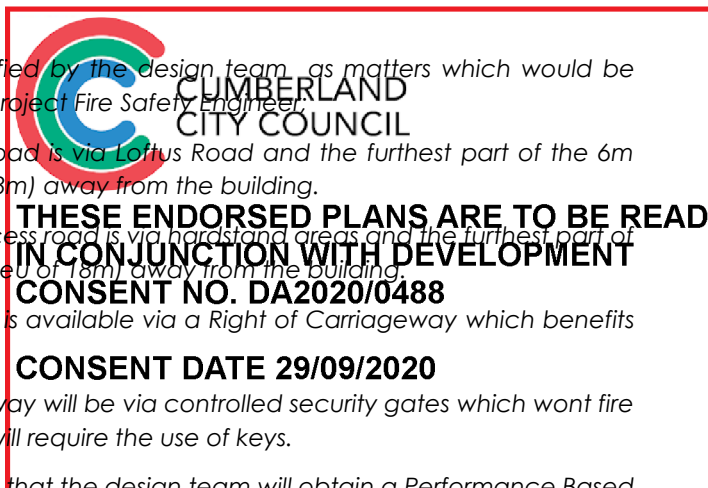
The BCA requires Large Isolated Buildings of this nature to be provided with continuous Perimeter vehicular access around all four (4) sides and the Brigades will require compliance with Fire & Rescue NSW Guideline "Access for Fire Brigade Vehicles".

**In this regard,** the following areas have been identified by the design team as matters which would be requiring further consideration by justification by the project Fire Safety Engineer:

- (i) North – the Northern side perimeter access road is via Lottus Road and the furthest part of the 6m access road is approximately 32m (in lieu of 18m) away from the building.
- (ii) South – the Southern side of the perimeter access road is via hardstand areas and the furthest part of the 6m access road is approximately 32m (in lieu of 18m) away from the building.
- (iii) East – the Eastern side perimeter access road is available via a Right of Carriageway which benefits the subject site.
- (iv) Access to the site including Right of Carriageway will be via controlled security gates which won't fire trip open in the event of an emergency and will require the use of keys.

**Fire Engineered Performance Solution:** It is understood that the design team will obtain a Performance Based Solution prepared by a Fire Safety Engineer to rationalise the proposed vehicular access departures accordingly. In this regard, the report will need to demonstrate compliance with BCA Performance Requirement CP9 and be prepared to the satisfaction of the Registered Certifier and Fire & Rescue NSW at the FEBQ and Construction Certificate stages.

**Note:** Architectural and Civil details and design certification to the satisfaction of the Registered Certifier and Fire Safety Engineer are to be provided with the CC application which satisfy the provisions of the Fire & Rescue NSW Fire Safety Guideline (Access for Fire brigade vehicles and fire fighters) [https://www.fire.nsw.gov.au/gallery/files/pdf/guidelines/vehicle\\_access.pdf](https://www.fire.nsw.gov.au/gallery/files/pdf/guidelines/vehicle_access.pdf).



## SECTION D – ACCESS AND EGRESS:

**The existing/proposed development will generally satisfy the DTS provisions & Performance Requirements of Section D of the BCA subject to the compliance with the following:**

10. BCA Clauses D1.2 & D1.6 & D1.13 - (Number of Exits Required): The building is understood to have adequate number of exits readily available.
11. BCA Clauses D1.4 & D1.5 - (Egress Travel Distances): In accordance with the provisions of this clause, no point on the floor must be more than 20 metres from a single exit or a point of choice where travel in different directions is available. Where alternative exits are available the total distance may be increased to 40m accordingly and the distance between these alternative exits when measured back through a point of choice must not exceed 60m.

**In this regard**, the following areas have been identified by the design team as matters which would be necessitating further justification from the project fire safety engineer;

- (i) Egress distances from the furthest to a point of the floor to a point of choice (throughout) will be addressed to be up to 25m (in lieu of the maximum 20m); and
- (ii) Egress distances from the furthest to a point of the floor to the nearest Exits (within the warehouse portions) will be addressed to be up to 60m (in lieu of the maximum 40m); and
- (iii) Egress distances between alternative exits (within the warehouse portions) will be addressed to be up to 100m (in lieu of the maximum 60m);

**Fire Engineered Performance Solution:** It is understood that the design team has engaged the services of a Fire Safety Engineer to develop a Performance Based Solution to rationalise the extended egress distances accordingly. In this regard, the report will need to demonstrate compliance with BCA Performance Requirements DP4 & EP2.2 and be prepared to the satisfaction of the Registered Certifier and Fire & Rescue NSW at the FEBQ and Construction Certificate stages.

12. BCA Clause D1.8 - (Enclosures Beneath Stairs): Any rooms located under the egress stairs serving the First Floor Levels will require fire ratings to achieve a minimum FRL of 60/60/60 mins and the doors protected with self-closing --/60/30 fire doors.
13. BCA Clauses D1.9 - (Non-Required Fire Isolated Stairways): The open stairs are non-required fire isolated stairs as they connect no more than 2 levels and the arrangements are understood to comply with the DTS provisions of this clause with regard to continuous travel and their discharge locations being within 20m to a road or open space.
14. BCA Clauses D2.13, D2.14, D2.16 & D2.17 - (Stairways and Barriers): The egress stairways will be upgraded and provided with compliant colour contrasting non-slip nosing's, adequate handrails and balustrades provisions to aid in safe access and occupant evacuation. Handrail and balustrade details will also comply with the provisions of AS1428.1-2009. Tread and riser dimensions are to be considered where the coverings/nosing's are being altered.
15. BCA Clause D2.21 - (Operation of Latch): A door in a required exit or in a path of travel to an exit must be readily openable from the side facing a person seeking egress by a single downward action or pushing action on a device located between 900mm and 1100mm above finished floor level. The hardware is to also comply with Section 13 of AS1428.1-2009 (as applicable to the use).
16. BCA Clauses D3/AS1428.1 - (Accessibility): Access and facilities for people with disabilities will need to be provided to satisfy the requirements of Part D3 of the BCA & AS1428.1-2009, and the Access to Premises – Buildings Standards 2010 satisfying the client's obligations under the DDA.

The concessions under BCA Clause D3.4 may be applied to the warehouse and other ancillary areas where it would be considered inappropriate because of the particular purpose for which the area is used and/or where areas would pose a health or safety risk for people with a disability, access could be exempted from upgrade/compliance accordingly. In this regard, the services of an accessibility consultant are recommended to be obtained at the CC stages.



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## SECTION E – ESSENTIAL FIRE SAFETY MEASURES:

**The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section E of the BCA subject to the compliance with the following:**

17. BCA Clause E1.3 - (Fire Hydrants): The existing fire hydrant system will be upgraded in accordance with AS2419.1-2005.

Given the building is required to be assessed as a **large isolated building**, a fire hydrant ring main and series of isolation valves will need to be incorporated into the design.

The existing booster assembly and pump-set located at the North-Western entrance will be upgraded to the degree necessary to meet the operational requirements of Fire & Rescue NSW. Open yard protection and protection is also recommended to be provided.

**In this regard**, the following areas have been identified by the design team as matters which would be necessitating further justification from the project fire safety engineer;

- (i) There will be external fire hydrants located within 10m of the external walls of the building which will not have compliant radiant heat shield protection and access to these hydrants may be via the Right of Carriageway.

**Fire Engineered Performance Solution:** It is understood that the design team has engaged the services of a Fire Safety Engineer to develop a Performance Based Solution to rationalise the fire hydrant departures accordingly. In this regard, the report will need to demonstrate compliance with BCA Performance Requirement EP1.3 and be prepared to the satisfaction of the Accredited Certifier and Fire & Rescue NSW at the FEBQ and Construction Certificate stages.

**Note 1:** The fire services design engineer must demonstrate that they are Competent Fire Safety Practitioner (CFSP) registered with the Fire Protection Association of Australia (FPAA) or Registered with the Building Professionals Board (BPB). Furthermore, the designer must have suitable qualifications in the respective fields they are designing to, and their design details and certifications are to identify any shortfalls or departures associated with the either the BCA or the relevant Australian Standards.

**Note 2:** Architectural & Fire Services details and design certifications are to be prepared by a suitably qualified design practitioners (Registered Architect and Fire Services Engineers) to the satisfaction of the Registered Certifier are to be provided with the Construction Certificate application. Fire Safety Engineering Report prepared by a C10 Certifier in Fire Safety is to also be provided.

18. BCA Clause E1.4 - (Fire Hose Reels): Fire hose reel coverage has been checked and appears to be in accordance with AS2441-2005.

19. BCA Clause/Specification E1.5 – (Automatic Fire Suppression – Sprinklers): A sprinkler system is required to be installed in a building when required by Table E1.5 and the system must comply with Specification E1.5.

This clause requires "Occupancies of Excessive Hazard" to be sprinkler protected where storage quantities exceed 4m in height and volumes exceed 1,000mcb in any fire compartment with a floor area greater than 2,000m<sup>2</sup> or 12,000m<sup>3</sup>.

It also requires "Large Isolated Buildings" to be provided with sprinklers systems to address the oversized fire compartments.

In this regard, the existing building is considered to entail or accommodate both an Occupancy of Excessive Hazard and it is also a Large Isolated buildings which therefore will require sprinkler protection throughout.

**Note 1:** The fire services design engineer must demonstrate that they are Competent Fire Safety Practitioner (CFSP) registered with the Fire Protection Association of Australia (FPAA) or Registered with the Building Professionals Board (BPB). Furthermore, the designer must have suitable qualifications in the respective fields they are designing to, and their design details and certifications are to identify any shortfalls or departures associated with the either the BCA or the relevant Australian Standards.

**Note 2:** Architectural & Fire Services details and design certifications are to be prepared by a suitably qualified design practitioners (Registered Architect and Fire Services Engineers) to the satisfaction of the Registered Certifier are to be provided with the Construction Certificate application.



20. BCA Clause E1.6 - (Portable Fire Extinguishers): Portable fire extinguishers are to be installed in accordance with clause E1.6 and AS 2444-2001 and also to protect buildings that don't have fire hose reel coverage.

**Note:** Architectural details and Design Certification to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

21. BCA Clause/Specification E2.2a - (Smoke Hazard Management): Class 2 to 9 buildings must comply with the provisions of the Clause / Specification and Tables within to manage smoke during a fire. Smoke hazard provisions apply to buildings and are to be installed in accordance with Table E2.2a & E2.2b as applicable.

The building will be provided with an automatic fire suppression system (sprinklers) throughout and the system will be installed in accordance with AS2118.1- 2017.

A Clause 7 Building Occupant Warning system must be provided in accordance with AS1670.4-2018.

A fire indicator panel needs to be installed at the Estate Wide Fire Control Centre and depending on the Fire Safety Strategy from the Fire safety engineer, the Main Entrances may also require SUB-FIP's or Mimic panels. System Monitoring will also be required with back to base interface as per Clause 7.

Mechanical ventilation systems in the building are required to be designed in accordance with AS/NZS 1668.2-2012 (A/C systems) and will need to be interfaced to the FIP to auto shut down on activations of the buildings fire alarms.

The size of the Warehouse does not trigger the need for smoke exhaust and/or smoke clearances fans as it is understood to not exceed 18,000m<sup>2</sup> and/or 108,000m<sup>3</sup>.

**Note 1:** The fire services design engineer must demonstrate that they are Competent Fire Safety Practitioner (CFSP) registered with the Fire Protection Association of Australia (FPAA) or Registered with the Building Professionals Board (BPB). Furthermore, the designer must have suitable qualifications in the respective fields they are designing to, and their design details and certifications are to identify any shortfalls or departures associated with the either the BCA or the relevant Australian Standards.

**Note 2:** Architectural & Fire Services details and design certifications are to be prepared by a suitably qualified design practitioners (Registered Architect and Fire Services Engineers) to the satisfaction of the Registered Certifier are to be provided with the Construction Certificate application. Fire Safety Engineering Report prepared by a C10 Certifier in Fire Safety is to also be provided.

22. BCA Clauses E4.2 - E4.8 -(Emergency Lighting & Illuminated Exit Signs): Emergency lighting and illuminated exit signs will require installation throughout the building in accordance with AS2293.1-2018.

**Refer to appendix for fire schedule.**



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## **CONCLUSION:**

This report contains an assessment of the referenced architectural documentation for the proposed development located at 30 Loftus Road Yennora NSW, against the Deemed-to-Satisfy provisions and Performance Requirements of the National Construction Code Series (Vol 1) Building Code of Australia 2019 (Amendment 1).

The detailed desktop assessment of the building was carried out against the technical provisions of the BCA pursuant to Clause 145 of the Environmental Planning and Assessment Regulation 2000. It is noted that the proposed works must comply with the relevant requirements and this can be achieved by complying with the following:

- a) Complying with the Deemed-to-satisfy (DTS) Provisions; or
- b) Formulating a Performance Solution which considers one or more of the BCA Assessment methods and which –
  - i) Complies with the Performance Requirements; or
  - ii) Is shown to be at least equivalent to the DTS provisions; or
- c) A combination of the above.

In view of the above assessment, we can confirm that subject to the matters outlined in this report above being adequately addressed by the Registered Design Practitioners (Architects/Structural Engineer), Registered Building Practitioner (Builder), Accredited Practitioners - Fire Safety (Fire Services Designers), C10 Certifier Fire Safety (Fire Safety Engineer), Accredited Access Consultant, ESD consultants and other key Stakeholders, that compliance with the BCA will be readily achieved accordingly.

Should you require further assistance or clarification please do not hesitate to contact the undersigned at [steven@concisecert.com.au](mailto:steven@concisecert.com.au) or on 0423 424 161.

Kind Regards,



Steven Rodriguez  
A1 Registered Certifier  
Concise Certification Pty Ltd

Refer to Attached Appendix 1 - Fire Safety Schedule



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## APPENDIX 1 – EXISTING/PROPOSED FIRE SAFETY SCHEDULE

The following comprises a preliminary fire safety schedule containing statutory fire safety measures that will apply to the new buildings

| Statutory Fire Safety Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Design/Installation Standard                                                                                                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Alarm Signalling Equipment<br>- Main FIP at FCC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | AS 1670.3 – 2004 and Manufacturer's Specification                                                                                      |
| Automatic Fire Detection and Alarm System<br>(Subject to fire engineers' discretion)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | BCA Spec E2.2a & AS1670.1-2015 and Manufacturer's Specification + Fire Engineered Performance Based Solution                           |
| Automatic Fire Suppressions System<br>(Sprinkler System)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | BCA Spec. E1.5 & AS 2118.1 – 2017, Manufacturer's Specification                                                                        |
| Building Occupant Warning System                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | BCA Spec E2.2 and/ or Clause 3.22 of AS 1670.4 – 2018                                                                                  |
| Emergency Lighting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | BCA Clause E4.4 & AS 2293.1 - 2018                                                                                                     |
| Exit Signs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | BCA Clauses E4.5, E4.6 & E4.8 and AS 2293.1 – 2018                                                                                     |
| Fire Hose Reels                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | BCA Clause E1.4 & AS 2441 – 2005                                                                                                       |
| Fire Hydrant Systems                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | BCA Clause E1.3 & AS 2419.1 – 2005 + Fire Engineered Performance Based Solution                                                        |
| Lightweight Construction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | BCA Clause C1.8 & AS 1530.4 – 2005                                                                                                     |
| Paths of Travel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | EP & A Regulation Clause 186 + Fire Engineered Performance Based Solution                                                              |
| Portable Fire Extinguishers (Common areas and MSB)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | BCA Clause E1.6 & AS 2444 – 2001                                                                                                       |
| Perimeter Vehicular Access                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | BCA Clause C2.4 + Fire Engineered Performance Based Solution                                                                           |
| Fire Engineered Performance Based Solutions for the following:<br>- <u>BCA Clause C2.4</u> : Rationalisation of the perimeter vehicular access provisions around the building – including having the access road up to 32m away from the building (in lieu of 18m) and access via the ROW;<br>- <u>BCA Clause D1.4</u> : Rationalisation of the extended egress travel distances to a point of choice being up to 25m (in lieu of 20m).<br>- <u>BCA Clause D1.4</u> : Rationalisation of the extended egress travel distances being up to 55m (in lieu of 40m).<br>- <u>BCA Clause D1.5</u> : Rationalisation of the extended egress travel distances between alternative exits being up to 100m (in lieu of 60m).<br>- <u>BCA Clause E1.3</u> : Rationalisation of the hydrant system arrangements including location of the external hydrants being located within 10m of the external walls and any other departures identified by the Fire Services Consultants. | The relevant Performance Requirements associated with the proposed Fire Engineered Performance Solutions:<br>- CP9, DP4, EP1.3 & EP2.2 |



CUMBERLAND  
CITY COUNCIL

**THESE ENDORSED PLANS ARE TO BE READ  
IN CONJUNCTION WITH DEVELOPMENT  
CONSENT NO. DA2020/0488**

**CONSENT DATE 29/09/2020**

**Note 1:** Information from the base building fire safety schedule dated 3<sup>rd</sup> of May 2019 was relied upon in preparing this Fire Schedule.

**Note 2:** The above performance solutions include Category 2 fire safety provisions and pursuant to Clause 144 of the EP&A Regulation 2000, formal fire engineering brief and report referrals to Fire & Rescue NSW may be require prior to the CC application stage.

# RG FIRE CONSULTANCY

14 Narrabeen St  
Narrabeen NSW 2101  
M: 0419 409 119

e: [richard@rgfire.com.au](mailto:richard@rgfire.com.au)

FPAS Accredited Designer (No. FSD1661) NSW & Vic  
ABN 51 080 369 820

5<sup>th</sup> August 2020  
Plan Management  
PO Box 43  
Mortdale NSW 2223

## 30 Loftus Rd Yennora (Project) Certificate of Compliance for Fire Services

I, Richard George, on behalf of RG Fire Consultancy Pty Ltd, Professional and Qualified Fire Services Engineers, certify in accordance with clause A5.2 of the Building Code of Australia 2019 - Vol. 1 (BCA) that the design for the above Project is compliant with the requirements of the BCA.

This certification is given in relation to the design drawings listed in the table in section 3 below and is subject to the following:

### 1. Scope of Works – Fire Services

The services included under this Certificate are as follows:

- a) Fire Sprinkler System
- b) Occupant Warning System

### 2. Relevant Design Standards

In preparing the design for the Project, we have relied on the following standards:

| Standard No     | Description                                               |
|-----------------|-----------------------------------------------------------|
| AS 2118.1-2017  | Automatic fire sprinkler systems – Part 1 General systems |
| AS 1670.1-2018  | Fire detection, warning, control & intercom systems       |
| BCA E1.5        | Sprinklers                                                |
| BCA E2.2a cl. 7 | Building occupant warning system                          |

### 3. Design Drawings

| Drawing No. | Description                         | Revision | Dated      |
|-------------|-------------------------------------|----------|------------|
| F01         | Sprinklers system – Warehouse A & B | 1        | 29/09/2020 |
| F02         | Sprinkler system – Detail sheet     | 1        | 02/08/2020 |

Yours faithfully



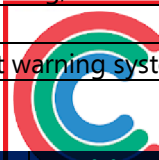
**Richard George**

Fire services engineer

**Competent Fire Safety Practitioner**

FPAS Design Accreditation No: FSD 1661 (NSW & Vic. Wet & Dry fire services)

FPAS Fire Safety Assessment Accreditation No: F001661A

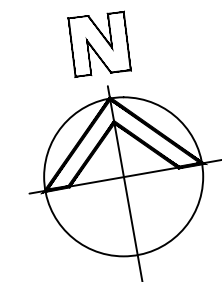


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CONSENT NO. DA2020/0488

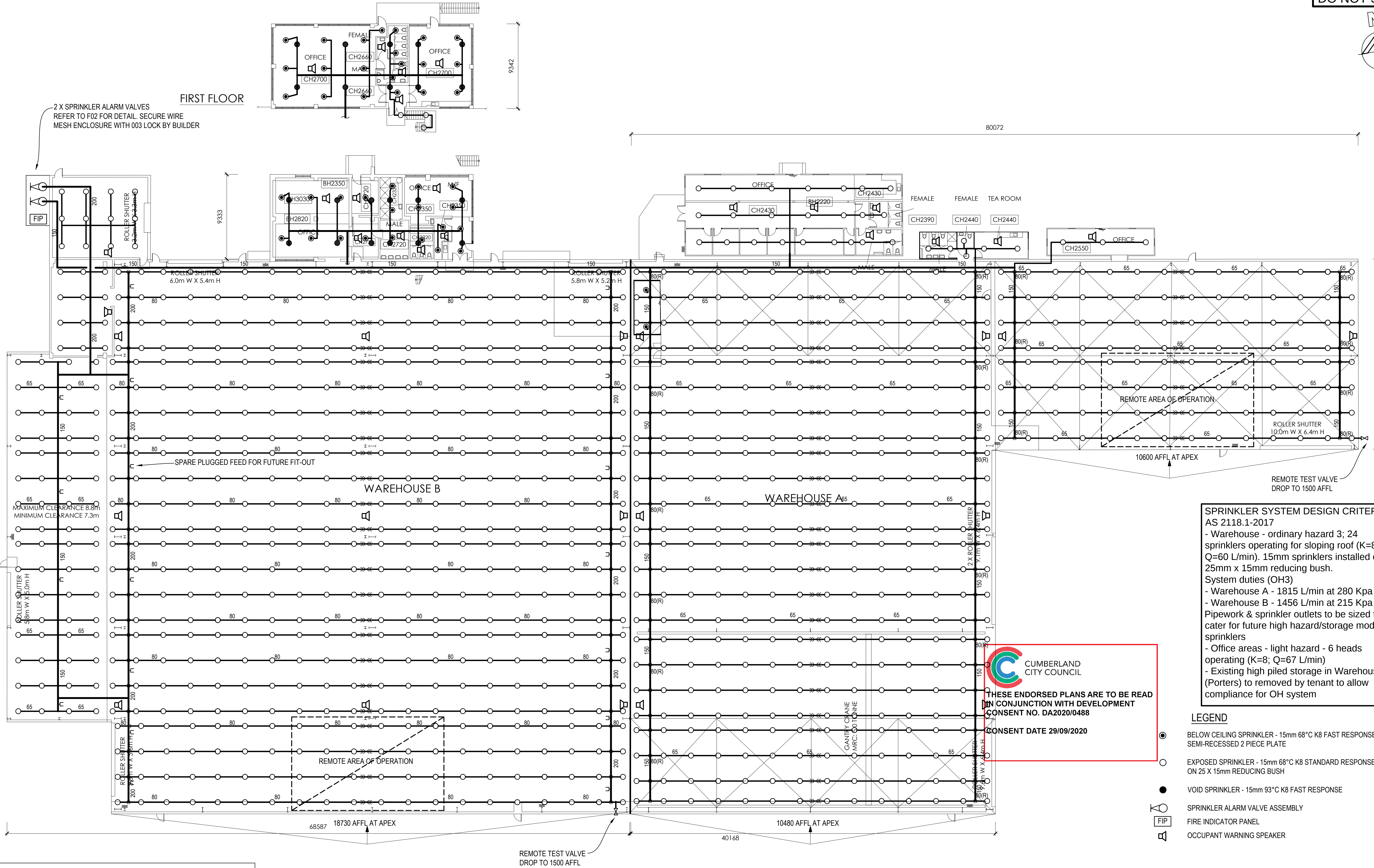
CONSENT DATE 29/09/2020

DO NOT SCALE



FIRST FLOOR

2 X SPRINKLER ALARM VALVES  
REFER TO F02 FOR DETAIL. SECURE WIRE  
MESH ENCLOSURE WITH 003 LOCK BY BUILDER



**SPRINKLER SYSTEM DESIGN CRITERIA**  
AS 2118.1-2017

- Warehouse - ordinary hazard 3; 24 sprinklers operating for sloping roof (K=8; Q=60 L/min). 15mm sprinklers installed on 25mm x 15mm reducing bush.
- System duties (OH3)
- Warehouse A - 1815 L/min at 280 Kpa
- Warehouse B - 1456 L/min at 215 Kpa

Pipework & sprinkler outlets to be sized to cater for future high hazard/storage mode sprinklers

- Office areas - light hazard - 6 heads operating (K=8; Q=67 L/min)
- Existing high piled storage in Warehouse B (Porters) to be removed by tenant to allow compliance for OH system

- LEGEND**
- BELOW CEILING SPRINKLER - 15mm 68°C K8 FAST RESPONSE WHITE SEMI-RECESSED 2 PIECE PLATE
  - EXPOSED SPRINKLER - 15mm 68°C K8 STANDARD RESPONSE INSTALLED ON 25 X 15mm REDUCING BUSH
  - VOID SPRINKLER - 15mm 93°C K8 FAST RESPONSE
  - ⊙ SPRINKLER ALARM VALVE ASSEMBLY
  - ⊞ FIRE INDICATOR PANEL
  - ⊞ OCCUPANT WARNING SPEAKER

 CUMBERLAND CITY COUNCIL

THESE ENDORSED PLANS ARE TO BE READ IN CONJUNCTION WITH DEVELOPMENT CONSENT NO. DA2020/0488

CONSENT DATE 29/09/2020

THIS IS A DESIGN & CONSTRUCT CONTRACT  
THE FIRE CONTRACTOR SHALL ALLOW FOR  
FULL CO-ORDINATED DESIGN TO ACHIEVE  
AUSTRALIAN STANDARD COMPLIANCE

| REV | REVISION DETAILS                          | BY | APP | DATE    |
|-----|-------------------------------------------|----|-----|---------|
| C   | FOR DA - WAREHOUSE A & B NAMING CORRECTED | RG | RG  | 4-8-20  |
| C   | FOR DA                                    | RG | RG  | 2-8-20  |
| B   | TENDER ISSUE                              | RG | RG  | 1-6-20  |
| A   | PRELIMINARY                               | RG | RG  | 16-4-20 |

This drawing designed by CFSP: Richard George  
FPAS accredited designer No. - FSD1661  
Fire services designed to following:  
- AS 2118.1-2017 - Automatic Fire Sprinkler Systems - General Requirements

  
Date: 17/4/20

Project Management:

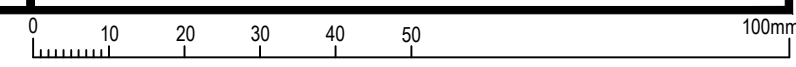


DESIGN BY:  
**RG FIRE CONSULTANCY**  
14 NARRABEEN ST NARRABEEN  
TELEPHONE 0419 409 119  
EMAIL - richard@rgfire.com.au  
FPAS Design Accreditation No. FSD 1661

PROJECT:  
**30 LOFTUS RD  
YENNORA**

DRAWING TITLE:  
**SPRINKLER SYSTEM  
WAREHOUSE A & B**

|                |                 |
|----------------|-----------------|
| DATE: APRIL 20 | DRAWN: RG       |
| SCALE: 1:200   | DESIGN: RG      |
| PROJECT No. —  | DRAWING No: F01 |
|                | ISSUE: D        |



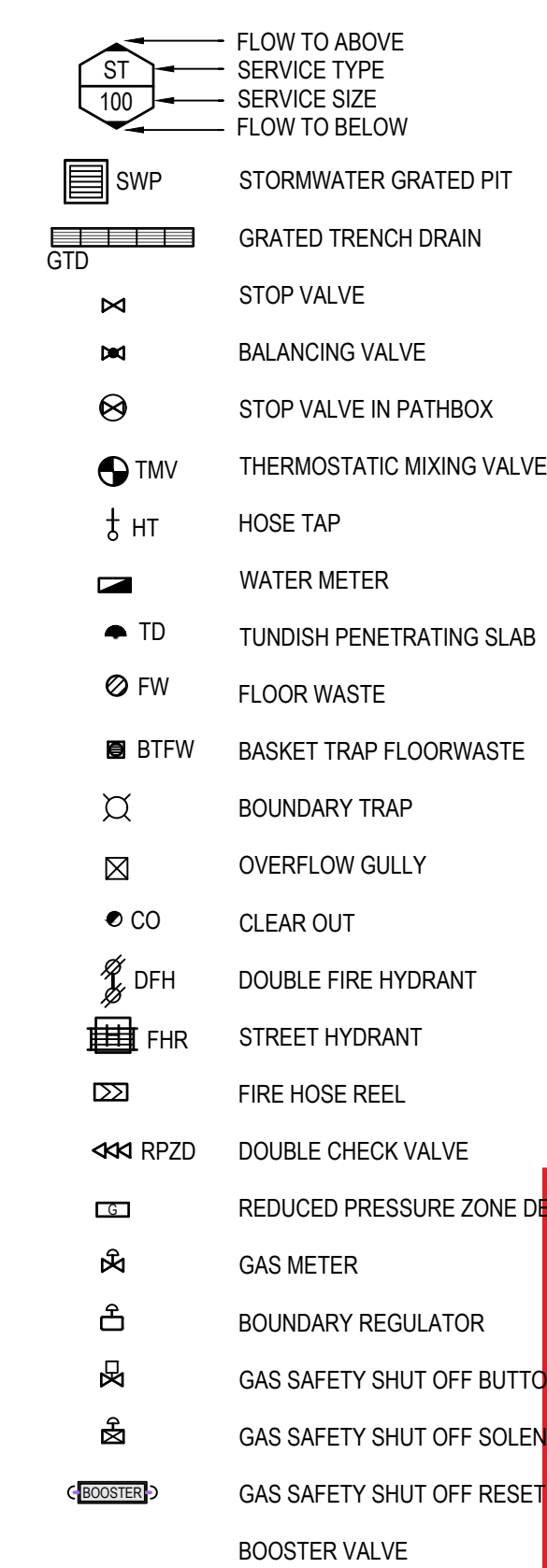
The logo for IN LINE HYDRAULIC SERVICES. The words "IN LINE" are in a large, bold, blue sans-serif font. Below them, the words "HYDRAULIC SERVICES" are in a smaller, blue sans-serif font, separated by a thin blue horizontal line.

# HYDRAULIC SERVICES

| DRAWING SCHEDULE |                                       |
|------------------|---------------------------------------|
| H01              | COVER SHEET & LEGEND                  |
| H02              | SITE PLAN                             |
| H03              | FLOOR PLAN<br>FIRE HOSE REEL COVERAGE |
| H04              | FLOOR PLAN<br>FIRE HYDRANT COVERAGE   |

**LEGEND**

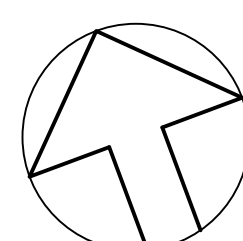
- SW STORMWATER
- S SUBSOIL
- SD SEWER DRAINAGE
- V VENT PIPE
- C COLD WATER
- RWR RAINWATER REUSE
- H HOT WATER
- G GAS
- F FIRE HYDRANT
- FHR FIRE HOSE REEL
- HL HIGH LEVEL SERVICE
- e EXISTING SERVICE



|         |                              |
|---------|------------------------------|
| B       | BASIN                        |
| BT      | BOUNDARY TRAP                |
| BTFW    | BASKET TRAP/FLOORWASTE       |
| CO      | CLEAROUT                     |
| CW      | COLD WATER                   |
| DFH     | DOUBLE FIRE HYDRANT          |
| DP      | DOWNPPIPE                    |
| DWG NO  | DRAWING NUMBER               |
| Ex or e | EXISTING                     |
| FHR     | FIRE HOSE REEL               |
| FW      | FLOOR WASTE                  |
| GAS     | GAS                          |
| GTD     | GRATED TRENCH DRAIN          |
| HL      | HIGH LEVEL                   |
| HT      | HOSE TAP                     |
| HW      | HOT WATER                    |
| HWU     | HOT WATER UNIT               |
| IL      | INVERT LEVEL                 |
| MR      | MAIN ROOF                    |
| OF      | OVERFLOW GULLY               |
| PA      | PEDESTRIAN AWNING            |
| RL      | REDUCED LEVEL                |
| RPZD    | REDUCED PRESSURE ZONE DEVICE |
| SHR     | SHOWER                       |
| SK      | SINK                         |
| ST      | STACK                        |
| SWST    | STORMWATER PIT               |
| TD      | TUNDISH                      |
| TTD     | TRAPPED TUNDISH              |
| TMV     | THERMOSTATIC MIXING VALVE    |
| VP      | VENT PIPE                    |

THESE ENDORSED PLANS ARE TO BE READ  
IN CONJUNCTION WITH DEVELOPMENT  
CONSENT NO. DA2020/0488  
CONSENT DATE 29/09/2020

|            |          |                         |  |            |      |         |
|------------|----------|-------------------------|--|------------|------|---------|
|            |          |                         |  |            |      |         |
|            |          |                         |  |            |      |         |
|            |          |                         |  |            |      |         |
|            |          |                         |  |            |      |         |
| P2         | 04.08.20 | DEVELOPMENT APPLICATION |  |            |      |         |
| P1         | 30.06.20 | PRELIMINARY ISSUE       |  |            |      |         |
| No.        | Date     | Details                 |  | No.        | Date | Details |
| Amendments |          |                         |  | Amendments |      |         |



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Hydraulic Consultant

**IN LINE**  
HYDRAULIC SERVICES

UNIT 19, 18 WURROOK CIRCUIT, CARINGBAH NSW 2229  
PO BOX 284, GYMEA NSW 2227  
PHONE NO (02) 9526 1923  
EMAIL : paul@inlinenhs.com.au www.inlinehydraulicservices.com.au

Project  
30 LOFTUS ROAD  
YENNORA

## HYDRAULIC SERVICES COVER SHEET & LEGEND

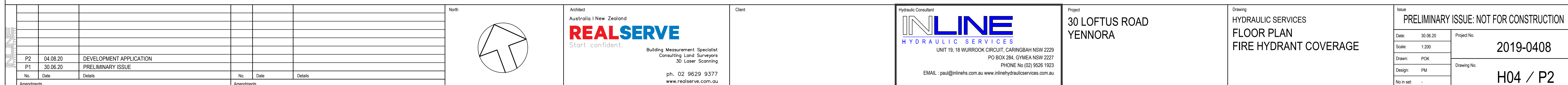
Issue PRELIMINARY ISSUE: NOT FOR CONSTRUCTION

|            |          |             |           |
|------------|----------|-------------|-----------|
| Date:      | 30.06.20 | Project No. | 2019-0408 |
| Scale:     | NTS      |             |           |
| Drawn:     | POK      | Drawing No. | H01 / P2  |
| Design:    | PM       |             |           |
| No in set: | -        |             |           |

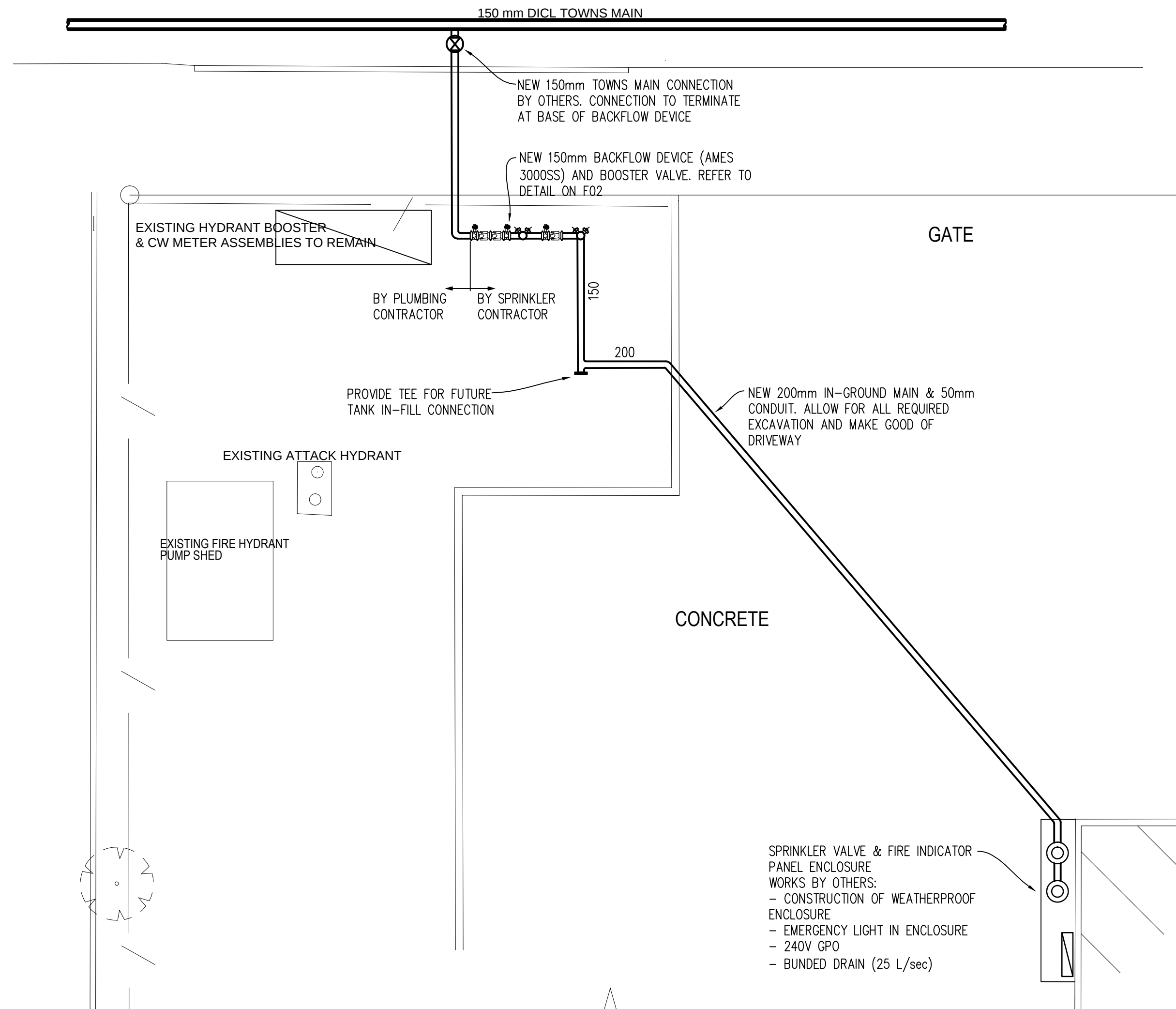




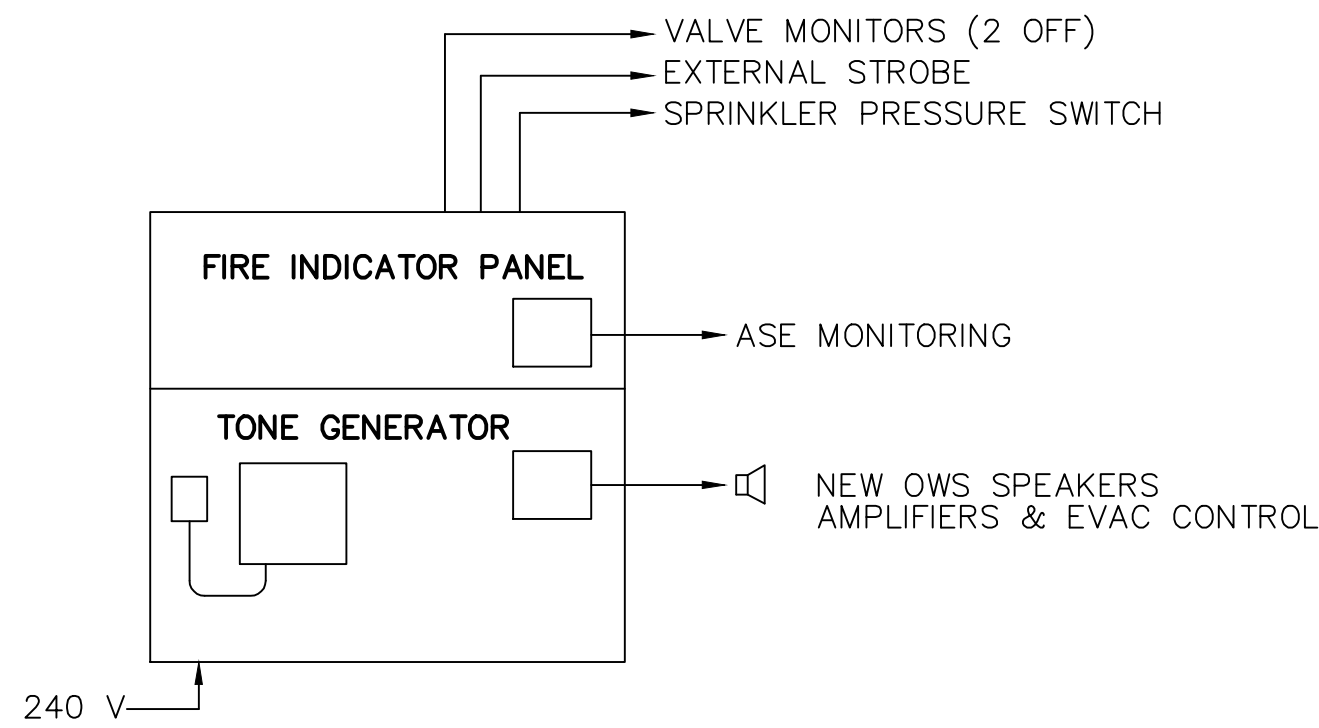
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|-----------|----------|-----------------------------------------|-----------|
| Issue     |          | PRELIMINARY ISSUE: NOT FOR CONSTRUCTION |           |
| Date:     | 30.06.20 | Project No.                             | 2019-0408 |
| Scale:    | 1:200    |                                         |           |
| Drawn:    | POK      |                                         |           |
| Design:   | PM       | Drawing No.                             | H03 / P2  |
| No in set | -        |                                         |           |



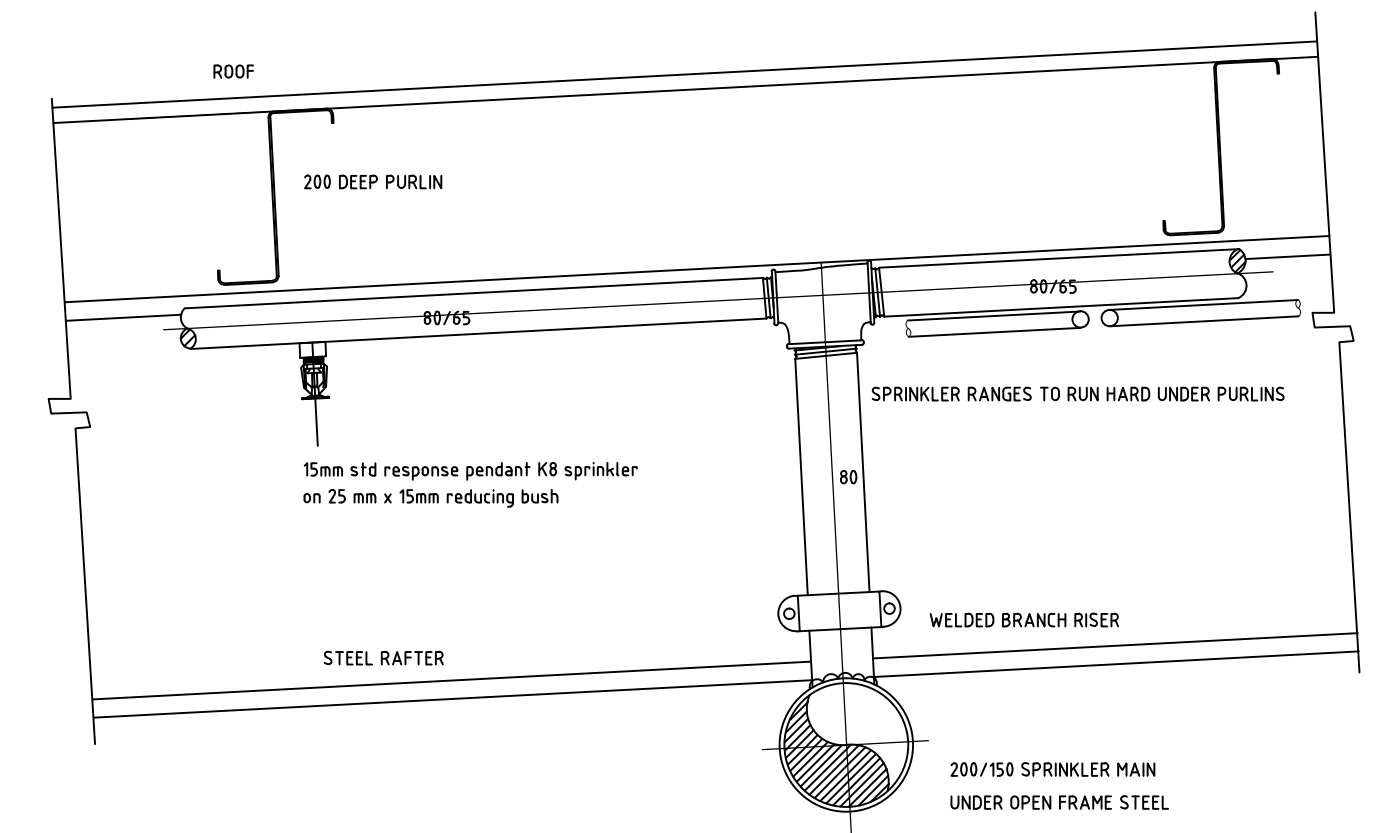
DO NOT SCALE



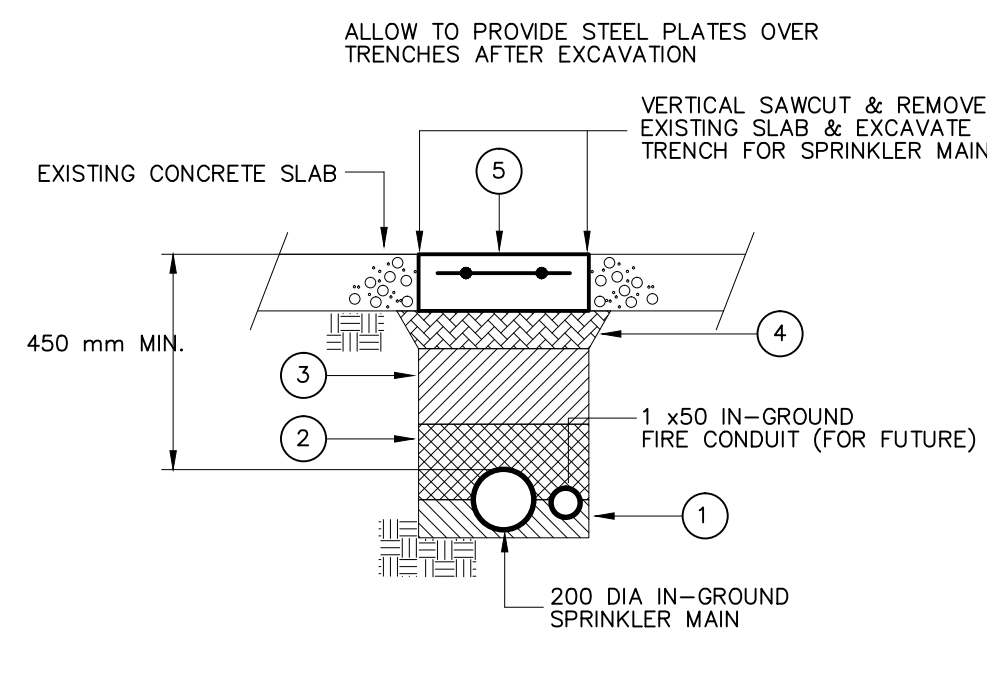
SPRINKLER SYSTEM WATER SUPPLIES (1:100)



FIRE ELECTRIC SCHEMATIC

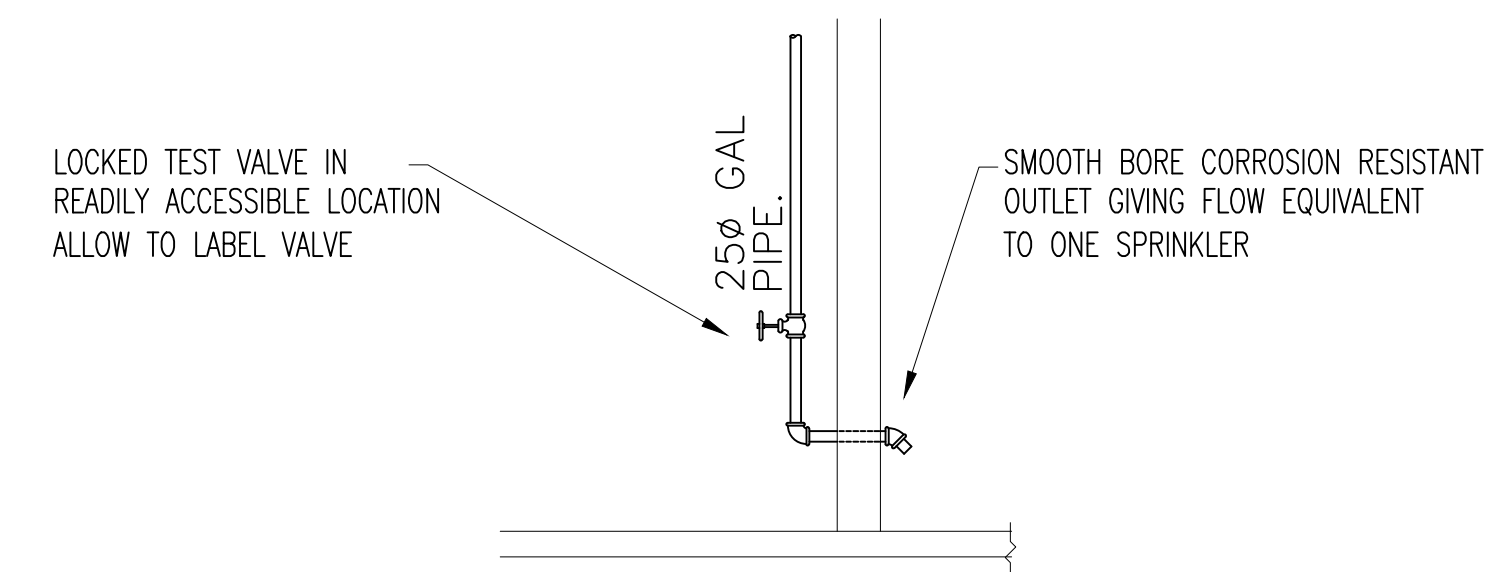


TYPICAL SPRINKLER PIPE DETAIL



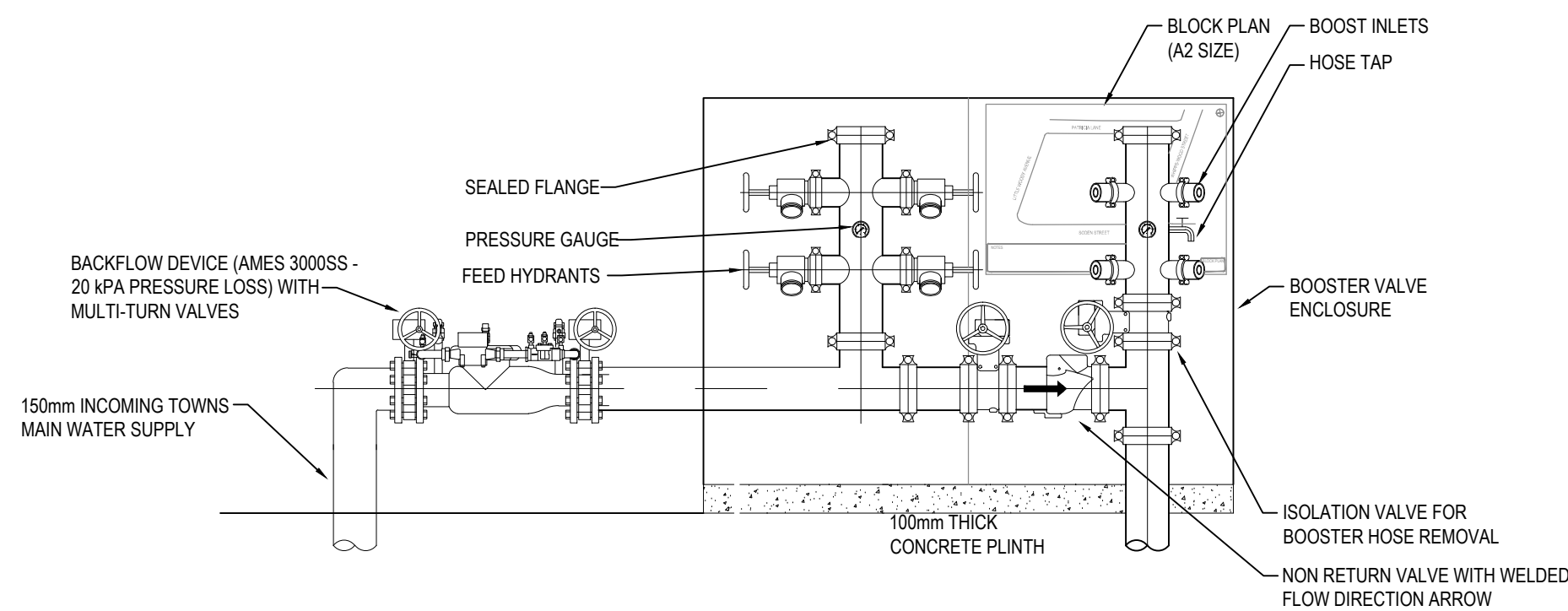
IN-GROUND PIPE DETAIL

| ITEM | DESCRIPTION                                                                                     |
|------|-------------------------------------------------------------------------------------------------|
| 1    | 75mm COARSE BEDDING SAND                                                                        |
| 2    | 200mm COARSE BEDDING SAND WASHED IN & COMPACTED                                                 |
| 3    | 200mm COARSE BEDDING SAND WASHED IN & COMPACTED IF REQUIRED TO ACHIEVE DEPTH OF COVER.          |
| 4    | 100mm N32 (32MPa) CONCRETE & VIBRATED IN BY CONCRETOR.                                          |
| 5    | NEW N32 CONCRETE THICKNESS TO MATCH EXISTING SLAB WITH F82 MESH & 50mm COVER. ALL BY CONCRETOR. |



REMOTE TEST VALVE

- NOTES:
- ENCLOSURE DIMENSIONS: 1350mm HIGH x 1850mm WIDE x 450mm DEEP.
  - WHERE BOOSTERS OR FEED FIRE HYDRANTS ARE INSTALLED IN A CABINET OR RECESS, THE FRONT FACE OF ALL CONNECTIONS SHALL BE WITHIN 150mm OF THE FRONT FACE OF THE CABINET OR RECESS.
  - ENTIRE BOOSTER VALVE ARRANGEMENT IS TO BE INSTALLED IN ACCORDANCE WITH AS2419.1, AS2419.2 & AS2419.3.
  - PROVIDE INSTALLATION DETAILS INCLUDING DIMENSIONS FOR APPROVAL PRIOR TO CONSTRUCTION.
  - SUPPORTS NOT SHOWN.
  - ALL FIRE HYDRANTS INSTALLED WITH STORTZ FITTING.



SPRINKLER BOOSTER VALVE ASSEMBLY

# Statement of Available Pressure and Flow

Sydney  
WATER

Paul McDonald  
18 Wurrook Circuit  
Caringbah, 2229

Attention: Paul McDonald

Date: 21/04/2020

Pressure & Flow Application Number: 844845  
Your Pressure Inquiry Dated: 2020-04-02  
Property Address: 30 Loftus Road Yennora 2161

The expected maximum and minimum pressures available in the water main given below relate to modelled existing demand conditions, either with or without extra flows for emergency fire fighting, and are not to be construed as availability for normal domestic supply for any proposed development.

## ASSUMED CONNECTION DETAILS

|                                                                                    |                       |
|------------------------------------------------------------------------------------|-----------------------|
| Street Name: Loftus Street                                                         | Side of Street: South |
| Distance & direction from Nearest Cross Street: 225 metres West from Normie Street |                       |
| Approximate Ground Level (AHD):                                                    | 15 metres             |
| Nominal Size of Water Main (DN):                                                   | 150 mm                |

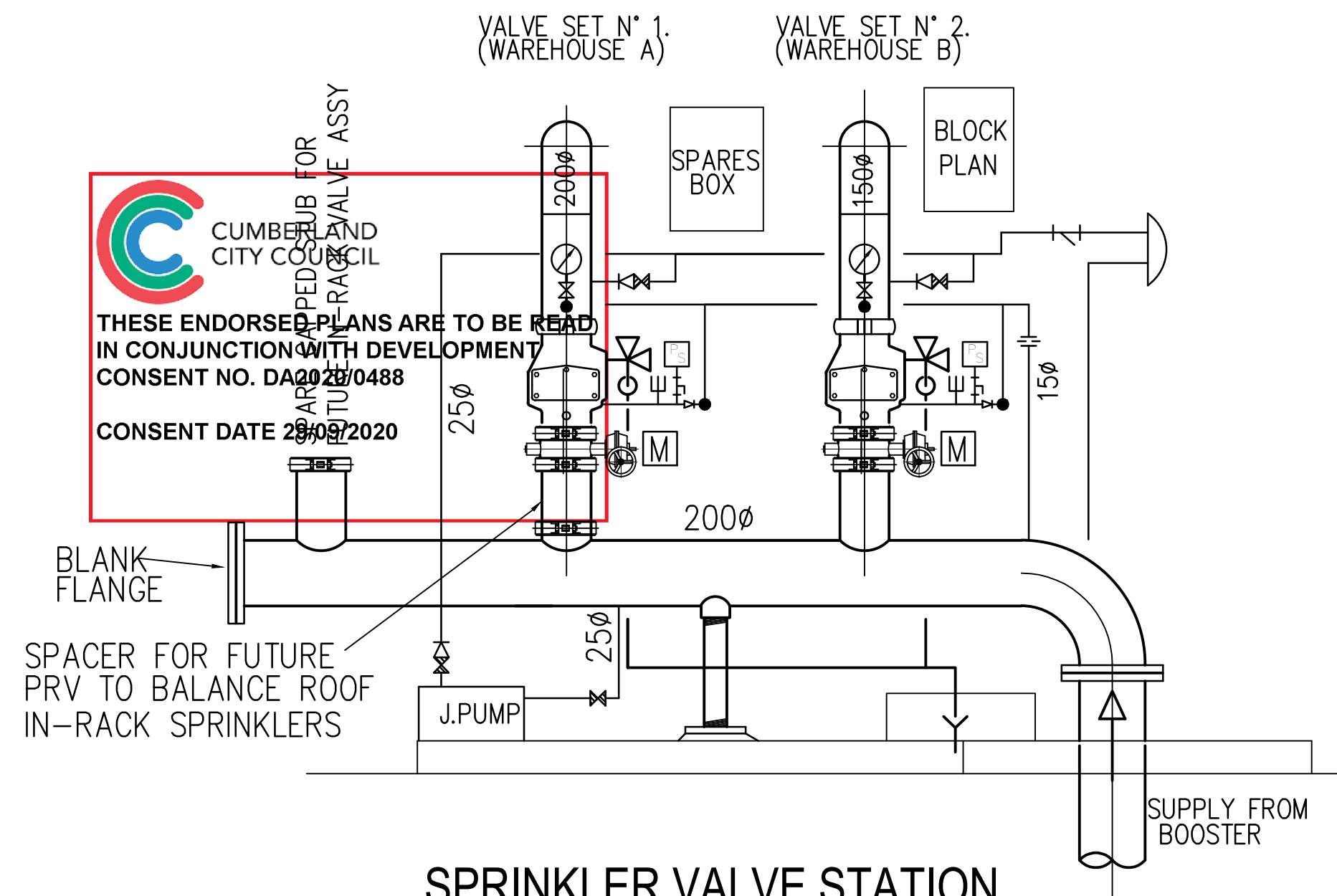
## EXPECTED WATER MAIN PRESSURES AT CONNECTION POINT

|                          |               |
|--------------------------|---------------|
| Normal Supply Conditions |               |
| Maximum Pressure         | 47 metre head |
| Minimum Pressure         | 40 metre head |

| With PROPERTY FIRE PREVENTION SYSTEM DEMANDS                                                                                              | Flow l/s | Pressure head m |
|-------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------------|
| Fire hose Reel Installations<br>(Two hose reels simultaneously)                                                                           | 0.66     | 39              |
| Fire Hydrant / sprinkler installations<br>(Pressure expected to be maintained for 95% of the time)                                        | 5        | 39              |
|                                                                                                                                           | 10       | 39              |
|                                                                                                                                           | 15       | 38              |
|                                                                                                                                           | 20       | 36              |
|                                                                                                                                           | 25       | 35              |
|                                                                                                                                           | 30       | 33              |
|                                                                                                                                           | 40       | 29              |
|                                                                                                                                           | 50       | 24              |
| Fire installations based on peak demand<br>(Pressure expected to be maintained with flows<br>combined with peak demand in the water main) | 5        | 39              |
|                                                                                                                                           | 10       | 38              |
|                                                                                                                                           | 15       | 37              |
|                                                                                                                                           | 20       | 36              |
|                                                                                                                                           | 25       | 34              |
|                                                                                                                                           | 30       | 33              |
|                                                                                                                                           | 40       | 29              |
|                                                                                                                                           | 50       | 23              |
| Maximum Permissible Flow                                                                                                                  | 67       | 11              |

(Please refer to reverse side for Notes)

TOWNS MAIN PRESSURE STATEMENT

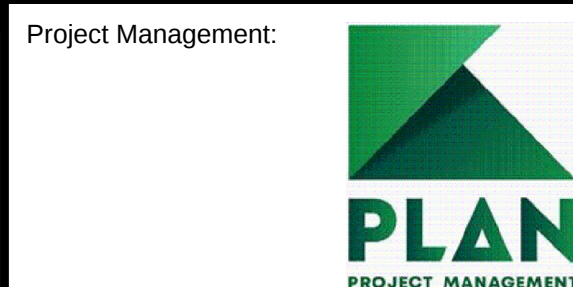


SPRINKLER VALVE STATION

THIS IS A DESIGN & CONSTRUCT CONTRACT  
THE FIRE CONTRACTOR SHALL ALLOW FOR  
FULL CO-ORDINATED DESIGN TO ACHIEVE  
AUSTRALIAN STANDARD COMPLIANCE

| REV | REVISION DETAILS | BY | APP | DATE    |
|-----|------------------|----|-----|---------|
| C   | FOR DA           | RG | RG  | 2-8-20  |
| B   | TENDER ISSUE     | RG | RG  | 1-6-20  |
| A   | PRELIMINARY      | RG | RG  | 16-4-20 |

This drawing designed by CFSP: Richard George  
FPAS accredited designer No. - FSD1661  
Fire services designed to following:  
- AS 2118.1:2017 - Automatic Fire Sprinkler Systems - General Requirements  
Date: 17/4/20



DESIGN BY:  
RG FIRE CONSULTANCY  
14 NARRABEEN ST NARRABEEN  
TELEPHONE 0419 409 119  
EMAIL - richard@rgfire.com.au  
FPAS Design Accreditation No. FSD 1661

PROJECT:  
30 LOFTUS RD  
YENNORA

DRAWING TITLE:  
SPRINKLER SYSTEM  
DETAIL SHEET

DATE: APRIL 20  
SCALE: NTS  
PROJECT No. -  
DRAWING No: F02  
ISSUE: C  
DRAWN: RG  
DESIGN: RG

---

# SPRINKLER SYSTEM SPECIFICATION

---

## 30 Loftus Rd Yennora

**Issue**      **A**

**Date**        **1.06.20**

---

**RG Fire Consultancy**

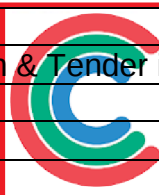
14 Narrabeen St Narrabeen NSW 2101  
Phone: 0419 409 119

Email: richard@rgfire.com.au  
FPAS Accredited Designer (**No. FSD1661**) NSW & Vic

---

### Document History

| Revision | Date    | Amendments                   |
|----------|---------|------------------------------|
| A        | 1/06/20 | DA submission & Tender issue |
|          |         |                              |
|          |         |                              |
|          |         |                              |

**CUMBERLAND  
CITY COUNCIL**

**THESE ENDORSED PLANS ARE TO BE READ  
IN CONJUNCTION WITH DEVELOPMENT  
CONSENT NO. DA2020/0488**

**CONSENT DATE 29/09/2020**

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# 1 INTRODUCTION

## 1.1 INTRODUCTION

The following is a brief description only of the proposed sprinkler services for the site:

- The project involves the installation of a fire sprinkler system and occupant warning system to existing warehouses A and B and associated office areas. The sprinkler system pipework is to be installed to cater for storage mode sprinklers for future proofing the building. The sprinkler heads and water supplies for this contract shall be for an ordinary hazard occupancy only.
- Sprinkler system water supplies (towns main connection, backflow device, booster valve and 200mm main to valve sets).



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## 2 GENERAL CONTRACT CONDITIONS

### 2.1 CONTRACT

This Design and Construct Contract provides for the design, supply, installation, testing and commissioning and maintenance of the sprinkler system and occupant warning system required for 30 Loftus Rd Yennora.

The fire services included as part of this Contract are:

- Sprinkler system throughout all areas to AS 2118.1-2017.
- Occupant warning system to AS 1670.1-2018
- Full design and documentation

The Contract includes the provision of all design, materials, labour, cartage, freights, tools, plant, appliances and all other works necessary though not specifically mentioned, to the true intent and meaning of this specification and the accompanying drawing, to the entire satisfaction of the Project Manager/Consulting Engineers.

**The tender offer being sought for this contract is a Design & Construct submission.**

It shall be recognised that the Fire Consultants have prepared the tender documentation contained herein with best intentions in mind. The tender documents describe the scope of work and design status as currently identified. It shall be accepted, as a contract condition, that the Contractor shall facilitate evolution of the design to meet the Principals and other parties needs as they become better identified.

The Contractor shall ensure that appropriately skilled personnel are available to undertake all design works associated with this contract.

### 2.2 DEFINITIONS

In constructing this specification, the following words shall have the meaning assigned to them below unless there is something in the subject or context inconsistent with such construction:

Project Manager Plan Project Management

Contractor shall mean the nominated Contractor as specified in this specification and as shown in the accompanying drawings.

Consulting Engineer shall mean RG Fire Consultancy

Approved where the term "approved" is used in this specification it shall be taken to mean approved or selected by the Project Managers/Consulting Engineers. The Project Managers/Consulting Engineers will be the sole judge and will determine what is and what is not approved and items mentioned as being approved shall be formally accepted by the Project Manager/Consulting Engineers before the Contractor orders same or uses same.



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## 2.3 CONDITIONS OF CONTRACT

The works shall be carried out in accordance with this specification and the accompanying drawings and General Head Conditions of Contract.

The Contractor will be employed, instructed and paid by the Project Manager and will be required to conform strictly to the general organisation and discipline of the job as imposed by the Project Manager. The Contractor shall commence work, deliver materials and stage operations in such a manner as to suit the Project Manager's construction program.

The Contractor or supplier nominated to carry out the work or supply the items specified herein shall be expected to sign a Contract or supply agreement with the Project Manager.

## 2.4 NO VARIATION CONTRACT

The Contractor shall not be entitled to any variations in contract price for works specified within the Specification under this contract.

**The Contractor must allow for all costs associated with completion of the works as specified, whether resulting from design development, construction circumstances, coordination, or conditions of approval imposed by the relevant Authorities.**

The Contractor shall only be entitled to a variation in contract price, after specific request for change beyond the specified Scope of Works has been issued in writing, directly and exclusively from the Project Manager.

## 2.5 TIME

The successful Contractor will be required to conform to the Project Manager's construction program.

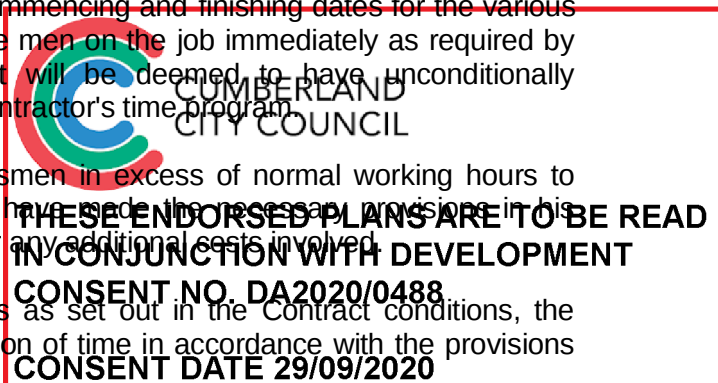
The Contractor shall prepare in co-operation with the Project Manager and for inclusion in a time and progress schedule, a chart indicating commencing and finishing dates for the various sections of the work. The Contractors shall place men on the job immediately as required by the Contractor and by accepting the Contract will be deemed to have unconditionally guaranteed completion in accordance with the Contractor's time program.

Should the Contractor require to work his tradesmen in excess of normal working hours to attain the time schedule, he will be deemed to have made the necessary provisions in his tender and no compensation will be authorised for any additional costs involved.

If completion of the work is delayed for reasons as set out in the Contract conditions, the Contractor will consider written claims for extension of time in accordance with the provisions of that clause.

## 2.6 INSURANCE

The Contractor and Project Manager will effect and maintain an insurance policy, insuring the works against loss and damage for the full reinstatement value. The policy will cover equipment, materials and works, whether existing, temporary, or permanent, in the course or erection or completed and on site or adjacent. The policy will not cover the Contractor's plant, machinery or tools, or any mechanically propelled vehicles, all of which items will be the responsibility of the Contractor.



Any loss suffered by the Contractor and coming within any exclusion provision of or any loss excess prescribed by the Contractor's insurance policy, shall never the less remain to be borne by the Contractor.

The Contractor shall effect Public Liability Insurance and Workers Compensation, or Employers Liability Insurance in accordance with the requirements of the Contract conditions, and extended to include the name of the Contractor as principal.

The amount of Public Liability and Employers Liability insurance shall be unlimited for each and every claim.

## 2.7 ACCESS

The Contractor will be allowed access to the site during the hours worked by the Contractor, and shall make special arrangements with the Contractor should he require to work at other than those hours. Access shall be restricted to such entrances, routes and ways as the Contractor may direct.

## 2.8 CO-OPERATION

The Contractor shall co-operate with Contractors in all trades and so carry out this works as to cause the least inconvenience to others.

## 2.9 SETTING OUT

The Contractor shall thoroughly examine the specification and drawings, check up all dimensions immediately after the Contract is awarded, and shall obtain such measurements and information as may be required to carry out the work to the complete satisfaction of the Project Managers/Consulting Engineers.

The Contractor shall provide datum set-out lines and levels to facilitate setting out by the Contractor.

## 2.10 SUPERVISION & SITE MEETINGS

The Contractor shall supervise fully the whole of the works of this Contract and including the works of any Contractors and suppliers.

For this purpose, and in addition to a General Foreman, he shall provide an approved, responsible, efficient Supervisor who shall be empowered to receive and carry out instructions from the Contractor. The Supervisor shall be appointed to run and control the project and his duties in respect of the project shall be to supervise and co-ordinate the works of all persons engaged under this Contract.

The Contractor shall arrange regular site meetings at a frequency dictated by the progress of the works. Such meetings shall be attended by the Contractor's Supervisor when required by the Project Managers or Contractor.



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## 2.11 DRAWINGS

### 2.11.1 Tender Drawings

The performance based drawings, as scheduled, are issued as a guide only and shall be considered to be diagrammatic and approximate. The drawings and specifications are intended to be mutually explanatory and complete, but all work called for by one, even if not by the other, shall be fully executed.

Should the documents be in conflict, the Contractor will be deemed to have included for the larger quantity and/or the more expensive components, as applicable.

The Contractor will be deemed to have included for redesign, together with additional pipework and fittings as a result of co-ordination with other trades and structure.

### 2.11.2 Shops Drawings

The Contractor shall be responsible for the preparation of all necessary co-ordinated design, manufacturing and installation shop drawings covering the services included under this Contract. The Contractor shall confirm final installation dimensions by the site measurement to ensure satisfactory set-out and co-ordination with the structure and other services.

All such shop drawings shall be submitted in reproducible negative form. Such drawings shall be submitted to the Contractor for checking and then to the Project Managers and Consulting Engineers for review. Manufacture and/or installation as applicable shall not be commenced prior to the Project Manager's or Consulting Engineer's review.

Shop drawings shall reflect the following services:

Architectural layout including the reflected ceiling where applicable;  
 All air conditioning ductwork suitably shaded;  
 Electrical lighting layout including all cable trays and bus ducting;  
 Structure including all beams, columns and set-downs;  
 All pipe sizes, and associated levels together with detail sections as appropriate;  
 Quantities of all types of sprinklers.  
 Hazard, design density, area of operation and operating sprinklers used by calculations.

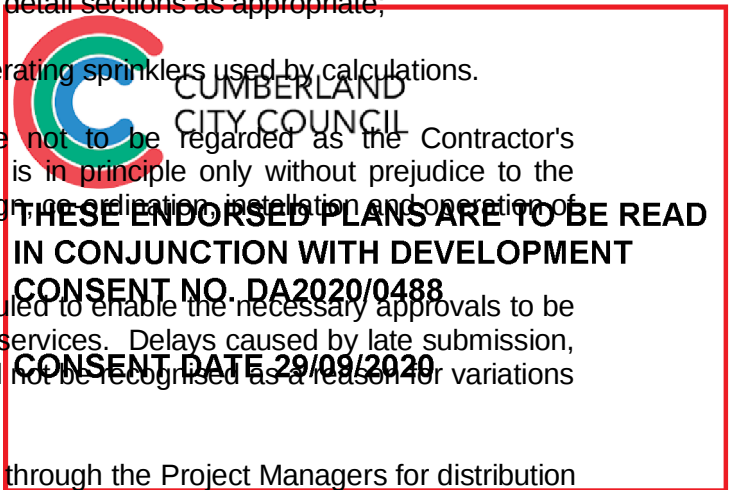
The Project Manager/Consulting Engineers are not to be regarded as the Contractor's checking agents. Review of the shop drawings is in principle only without prejudice to the responsibility of the Contractor for the proper design, co-ordination, installation and operation of the services.

The preparation of shop drawings shall be scheduled to enable the necessary approvals to be gained and for the program for installation of the services. Delays caused by late submission, incorrectness or inadequacy of shop drawings will not be recognised as a reason for variations to the contract time or Contract sum.

The shop drawings shall be submitted in pdf form through the Project Managers for distribution within five (5) working days prior to commencement of installation.

### 2.11.3 As-Installed Drawings

On completion of the works, and prior to the issue of the Notice of Practical Completion, the Contractor shall supply all as-built drawings in approved electronic form showing the complete



services installation as-installed. The Contractor shall also provide three (3) sets of prints of these drawings, bound into the Operating and Maintenance Instructions or in a separate folder.

#### 2.11.4 Block plans

Provide block plans as required by AS 2118 installed in the form of a permanent diagram, which is water resistant and fade resistant. The block plans shall be issued for approval to the Consulting engineers prior to installing.

#### 2.11.5 Base Line data

The Contractor shall provide all required baseline data as required by AS 2118 but not limited to:

- Stop valve schedule
- Pressure gauge schedule
- Sprinkler riser pipe design criteria
- Labelling of all valves
- SSVI plate

### 2.12 REGULATIONS, FEES & NOTICES

The services installations covered by this Contract shall be complete with all equipment necessary for their satisfactory operation, control, maintenance, and safety under all normal conditions of service, and shall comply in every respect with the regulations and by-laws of all Authorities having jurisdiction, including the latest requirements of the following, as applicable:

Local Council  
 Department of Industrial Relations  
 Sydney Water  
 SAA Wiring Rules  
 Fire and Rescue NSW  
 Department of Local Government  
 Scientific Services Laboratories  
 All relevant Australian Standards and Building Code of Australia.

The Contractor shall obtain and fill in all notices required by the various Authorities when necessary and pay all fees in connection therewith, and shall submit for approval all necessary drawings and obtain all consents required to permit execution of the works.

#### 2.13 MATERIALS AND WORKMANSHIP

Unless indicated otherwise the whole of the materials used in this work shall be new, of first quality and of approved manufacture and type. All materials shall be to the approval of the Project Managers/Consulting Engineers. No approval of the Project Managers/Consulting Engineers shall be deemed an acceptance of materials or workmanship not complying with the requirements of this Contract.

The whole of the workmanship shall be first-class, neat and to the entire satisfaction of the Project Managers/Consulting Engineers.

The installation throughout shall comply in every respect with the various codes published by the Standards Association of Australia, together with any additional requirements which may be specified herein.

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## 2.14 ALTERNATIVES

Generally, tenderers shall adhere to the types of plant and equipment detailed in the drawings and specification. When these requirements preclude tenderers from offering plant of their standard manufacture, alternatives may be submitted for approval.

Unless such alternatives are accepted in writing by the Project Managers/Consulting Engineers through the Contractor, the Contractor shall comply with detailed requirements of the Specification.

## 2.15 SAMPLES

The Contractor shall submit to the Contractor samples of selected equipment and fittings to be used in the works for approval by the Project Managers/Consulting Engineers.

Generally the following samples shall be submitted:

One (1) of each type of sprinkler head and escutcheon plate.

## 2.16 PROTECTION OF PLANT & MATERIALS

The Contractor shall be entirely responsible for all apparatus, equipment and appurtenances furnished by him or his Contractor in connection with the works.

Special care shall be taken to protect all such goods in a suitable manner.

The protection shall include covers to prevent moisture, grit, plaster and other foreign substances from entering the working parts of plant and equipment. Seal and protect all open ends of ductwork, piping and conduit, as applicable, whilst in storage and during course of installation, and protect adequately all electrical and control equipment.

All materials, goods and equipment forming part of this Contract must be complete, intact and in new order when the Project Manager takes over the responsibility for the works, and it shall be the liability of the Contractor to safeguard such materials, goods and equipment until then.

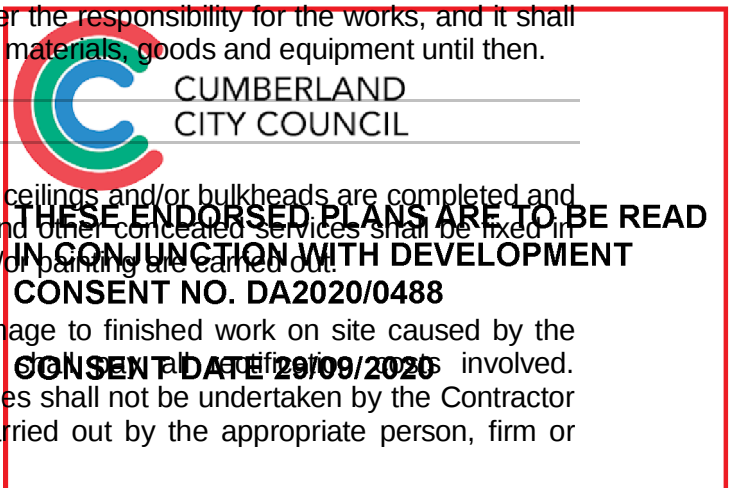
## 2.17 PROTECTION OF PROPERTY

Services shall be installed before plastering, false ceilings and/or bulkheads are completed and all ductwork, piping and conduit, as applicable, and other concealed services shall be fixed in position before decorative work, floor finishes and/or painting are carried out.

The Contractor shall be responsible for any damage to finished work on site caused by the execution of the work of his Contractor and shall rectify it at his expense. Rectification of damage to the works of other trades shall not be undertaken by the Contractor but will be arranged by the Contractor to be carried out by the appropriate person, firm or Authority at the expense of the Contractor.

## 2.18 DAMAGE TO FINISHES

The Contractor shall be responsible for the refinishing or replacement of any part of his installation damage prior to the installation being taken over by the Project Manager.



## 2.19 INSPECTION & TESTS

The Project Manager/Consulting Engineers may at any time during the progress of the works, test and examine any material used and inspect the workmanship employed and may reject any material and workmanship that are not in accordance with the specification and drawings. The Contractor shall provide such assistance as may be required by the Project Managers/Consulting Engineers to carry out tests including facilities for inspection at works. On completion the installation shall be tested in the presence of the Consulting Engineers by the Contractor and passed over by the Authorities having jurisdiction over the works.

Three (3) copies of all approvals and tests certificates issued by the Authorities shall be submitted to the Contractor.

All plant and equipment having electrical connections shall be tested for insulation and earth resistance and passed by the Supply Authority. The Consulting Engineers shall be given seven (7) days written notice of commencement of final tests.

The Contractor shall provide all fees, labour, materials and instruments required by the purpose of carrying out tests and shall make good at his own expense any defects disclosed during tests.

## 2.20 OCCUPATION

The Project Manager reserves the right to take over any completed portion of the works for the purpose of installing equipment and fittings or for occupation and the Contractor shall co-operate with the Contractor and the Project Manager and shall arrange his works to this end as required.

Such entry and occupation shall not constitute acceptance, shall not provide grounds for extension of time or for compensation and shall not relieve the Contractor of his responsibility to complete the Contract.

Where partial occupation occurs, the guarantee, warranty and defects liability period for the relevant sections of the services installations will operate from the date of such occupation.

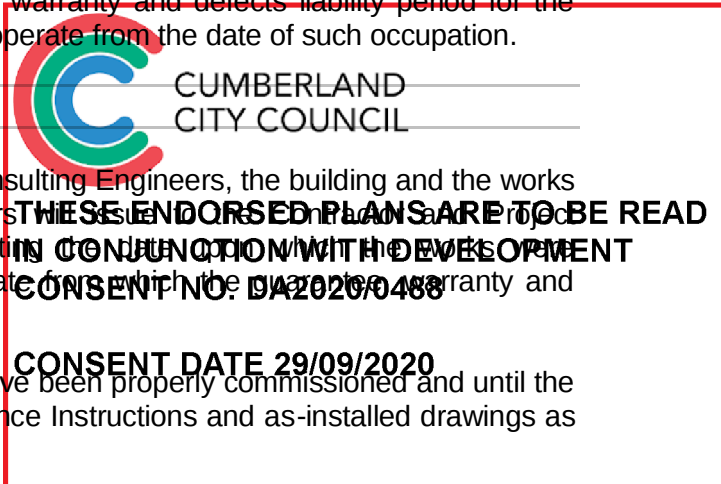
## 2.21 NOTICE OF PRACTICAL COMPLETION

When, in the opinion of the Project Managers/Consulting Engineers, the building and the works are practically completed, the Project Managers/Consulting Engineers shall issue to the Project Manager a Notice of Practical Completion stating the date on which the building and the works are practically completed. This date shall be the date from which the guarantee and defects liability period shall operate.

This notice will not be issued until the systems have been properly commissioned and until the Contractor has supplied Operating and Maintenance Instructions and as-installed drawings as specified.

## 2.22 PERFORMANCE GUARANTEE

By accepting the Contract, the Contractor will be deemed to have guaranteed the performance of the installations under normal working conditions for a period of twelve (12) months from the date of practical completion of the works.



Should the installation or any part thereof fail to fulfil the requirements of this specification, performance of the relevant equipment shall be corrected by the Contractor at his own expense or the equipment will be liable to rejection.

The Contractor shall be responsible for the replacement of any portion of the installation so rejected and for all costs incurred thereby, including the costs of any associated works of other trades. The guaranteed period for the replacement portion shall then be extended to cover twelve (12) months trouble free performance.

## 2.23 WARRANTY

All plant, equipment and materials supplied under this Contract shall be covered by twelve (12) months warranty against faulty manufacture, workmanship and/or materials. The Contractor shall be responsible for the rectification and/or replacement of any portion of the installation which fails under warranty.

The warranty period shall commence as from the date of practical completion or replacement, as applicable, but extension of the period shall be made in respect of replaced portions only.

## 2.24 DEFECTS LIABILITY

The Contractor shall be responsible for rectification of all defects in the work due to faulty materials and/or workmanship, for a period of twelve (12) months after all work is completed and handed over. Such defects shall be made good immediately on receipt by the Contractor of advice from the Contractor.

Any defects discovered during the defects liability period which are due to default or negligence of the Contractor in the performance or observance of any of his obligations shall extend the period to enable such defects to be made good by the Contractor, and to allow the whole work after being made good in every respect to be proved satisfactory.

Should the Contractor fail to commence to rectify defects within seven (7) days of written notice so to do, the Contractor will have the right to have all such defects rectified by others at the risk and expense of the Contractor.

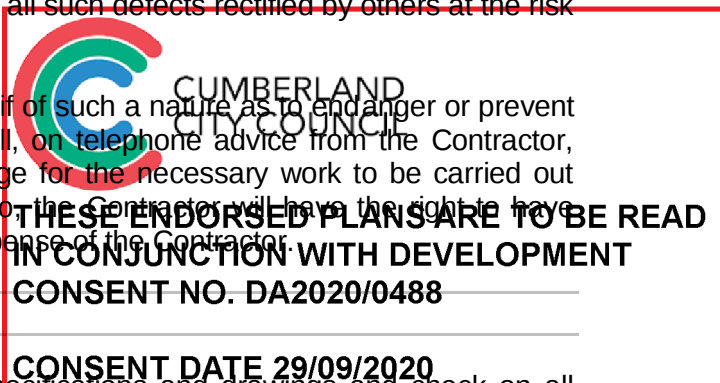
If any defect requiring attention under this clause is of such a nature as to endanger or prevent the operation of any service, the Contractor shall, on telephone advice from the Contractor, Project Manager or Consulting Engineers, arrange for the necessary work to be carried out immediately. If the Contractor is unable so to do, the Contractor will have the right to have such defects rectified by others at the risk and expense of the Contractor.

## 2.25 FINAL LOCATION AND UNIFORMITY

This Contractor shall thoroughly examine the specifications and drawings and check on all dimensions immediately after this contract is awarded and shall obtain such measurement and information as may be required to carry out the work.

The location shown on the drawings for all equipment and accessories are approximate only. The final locations will be determined on site to comply with site requirements and relevant Standard and Codes of Practice.

In general, and where practical, locate equipment to a pattern formed by columns, beams, batons, and other services.



All sprinklers, detectors etc. shall be installed clear of light fittings and other ceiling mounted fixtures.

## 2.26 OPERATING & MAINTENANCE INSTRUCTIONS

The Contractor shall provide operating and maintenance instruction manuals which shall comprise a description of each installation, its operation and the regular operating and maintenance routines to be adopted.

Three (3) sets of these instruction manuals shall be provided, printed on A4 size paper adequately bound to the Project Manager's approval into volumes with rigid covers of plastic finish to withstand continual usage.

### Manuals shall include:

#### General Description of Systems and Equipment:

Include brief overall description of systems and design references.

#### Details Description of Systems and Equipment:

Include detailed description of each individual system and the equipment involved.

#### Starting and Stopping:

Include detailed information, in a logical sequence, for starting and stopping all equipment. The write-up shall also incorporate after hours and emergency operation.

#### Controls:

Include full technical details of the control systems for normal and emergency operation of the system, including all control settings and tolerances.

#### Equipment Schedule:

Include schedule of equipment showing quantity, location, type, supplier etc. and a valve schedule.

Procedures to reset any ancillary equipment that may have been activated.

#### Schedule of Suppliers:

A schedule of all suppliers with addresses and contact details.

#### Maintenance of Systems and Equipment:

Include maintenance duties in general, daily and all other periodic maintenance, lubrication chart and spare parts list.

#### Manufacturer's Literature:



Include manufacturer's data or maintenance and operation of all equipment installed. Do not include irrelevant data that does not pertain to the model of equipment actually installed. Such irrelevant information shall be erased from data sheets, etc.

Include any miscellaneous charts, graphs, descriptions, data, etc. needed for complete maintenance and operating instruction of all systems and equipment installed.

#### Drawing List:

Prepare complete drawing list of all "As-Installed Drawings".

The supply of all necessary information for the satisfactory operation and maintenance of the services shall form part of this Contract.



### 3 ASSOCIATED WORK & INFORMATION

#### 3.1 GENERAL

The Works to be executed under this contract shall comprise the design, supply, installation and testing of the fire protection services.

The Tenderer shall make all necessary site visits to ascertain site conditions and extent of work.

Tenderers shall submit a Fixed Price based on the contract program.

#### 3.2 EXTENT OF WORK

- An automatic fire sprinkler system designed and installed in accordance with AS 2118.1 - 2017 and complying with the requirements of Fire & Rescue NSW and Building Code of Australia
- An occupant warning system designed and installed in accordance with AS 1670.1-2018 and complying with the requirements of Fire & Rescue NSW and Building Code of Australia
- The primary painting of all pipes and metal surfaces other than galvanised surfaces. The finish painting of all exposed pipework
- The delivery to site and off loading of all items necessary for this contract. (Include on and off loading of material hoist, if used)
- Fire rating of penetrations
- The necessary worksheets, drawings, quantity lists and associated information for the production of all prefabricated work to be supplied, manufactured and delivered to site by the Contractor
- The testing of the complete sprinkler and OWS installation
- All associated fees, permits, costs and charges for the relevant works
- 12 months maintenance of the installed works in accordance with AS 1851 – 2012
- On final completion, the Contractor shall forward the Completion Certificate, as installed drawings and Operating and Maintenance manuals to the Project Manager.

The only exclusions are those listed under Clause "Work By Others".

The Contractor shall ensure that the work is complete with all components and associated minor items necessary for satisfactory operation and maintenance with the exception only of those items listed under Clause "Work By Others".



### 3.3 WORK BY OTHERS

The work to be done by the Project Manager to enable the specified Contract Works to be performed is specified herein after. The Project Manager is required to bear the cost of such work and Tenderers are not to include same in their Tender Price.

The Contractor shall supply, provide and bear the cost of detail drawings for the guidance of others and shall be responsible for the setting out in conjunction there with and the supply of templates.

The Contractor shall supply all equipment and services to carry out the following specific items of work:

#### Works to be carried out by Builder

Lockable (003) wire mesh enclosure with colorbond roof around sprinkler alarm valves and FIP.

Clear openings through the building structures for passage of conduit, pipes etc., to Contractor's detail.

All cuttings, patchings, framing-up, furring-in and making good etc. associated with the building structure for the passage of pipes etc. Details shall be supplied by the Contractor. Note: All pipe penetrations through fire walls shall be sealed with fireproof non setting compound by the Contractor.

Provision of all holes in ceilings.

Provision of required signwriting on sprinkler valve room.

#### Works to be carried out by Electrical Contractor

Provision of 240V GPO in sprinkler valve enclosure.

Provision of 240V (essential supply) power to the fire indicator panel.

Provision of emergency light in sprinkler valve enclosure.

#### Works to be carried out by Hydraulics Contractor

Incoming 150 dia. towns mains connection terminating with an auto 5" back flange at base of backflow device.

Provision of sprinkler test drain capable of draining 25L/sec over a 10 minute duration located in sprinkler valve enclosure.



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### 3.4 FIRE STOPPING & RESEALING

Fire stopping of openings in floors, ceilings and walls where pipework and wiring passes through shall be sealed to prevent transmission of fire and smoke from one fire isolated area to another. All pipework to be treated as detailed in Clause 4.2 Piping Installation.

The sealing material for wiring shall be "Fire Research" - Fire barrier panels, fire pillows or similar approved materials.

Small holes, considered that clearance is sufficient to transmit fire and smoke, fire retardant sealant shall be used around the wiring, such as a fire stop putty or similar material.

---

### 3.5 ADDITIONAL ALLOWANCES

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Allow for the provision of the following additional fixtures within the tender quotation for final co-ordination with services and structure:

- 30 exposed sprinklers
- 10 below ceiling sprinklers
- 4 emergency warning speakers



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## 4 FIRE SPRINKLER SYSTEM

### 4.1 GENERAL

This section of the specification covers the supply and installation of the various components of the Fire Sprinkler System.

### 4.2 BASIS OF DESIGN

The arrangement and sizes of sprinkler pipework and spacing of sprinkler heads shall be generally as shown on the drawings and shall be in accordance with the Requirements of Australian Standard AS 2118.1 – 2017, BCA and Fire & Rescue NSW.

### 4.3 SOURCE OF WATER SUPPLY

The primary source of supply shall be from the town's main in Loftus Rd.

Sydney Water advise a 150 mm water main is located in Loftus Rd. and that the expected maximum and minimum pressure heads that could occur relative to an approximate ground level of 15 metres (AHD) are 47 metres and 40 metres respectively. During fire fighting the minimum pressure head is expected to be:

- 39 metres with a fire demand of 5 litres/second.
- 36 metres with a fire demand of 20 litres/second.
- 33 metres with a fire demand of 30 litres/second.
- 29 metres with a fire demand of 40 litres/second.
- 11 metres with a fire demand of 67 litres/second (max permissible flow)

The above information is for tendering purposes only and the Contractor is to obtain all necessary up to date information prior to submission of workshop drawings.

### 4.4 WET PIPE CONTROL VALVE ASSEMBLY

Supply and install 2 wet control valve assembly to the location shown, the valve assembly shall include the following:

A monitored sprinkler stop valve which shall isolate the water supply to the whole installation.

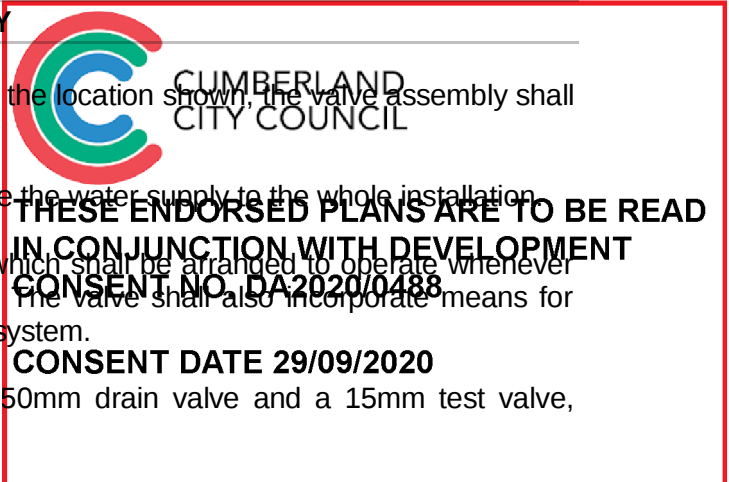
An alarm check valve which is normally closed, which shall be arranged to operate whenever the water pressure falls in the sprinkler system. The valve shall also incorporate means for admitting water to the local and monitoring alarm system.

A dual jump type control valve incorporating a 50mm drain valve and a 15mm test valve, draining into test drain.

Pressure gauges to indicate water pressure either side of the alarm check valve, complete with shut off cocks, or non-loss connectors.

Pressure switches as necessary to operate the alarm system via a new connection to the FIP.

Valved connections for the system jacking pump.



Water system proving equipment including testing element. Throttling valves shall be provided on both sides of testing element.

Sprinkler system block plan

"Sprinkler Stop Valve Inside" Plate.

#### 4.5 SPRINKLER JACKING PUMP

Supply and install one (1) electric jacking pump, located adjacent the installation valves.

The pump shall be a closed coupled centrifugal or turbine type with cast iron casing, bronze impeller and stainless steel shaft. The pump shall have a capacity of 22 litres/min. at a discharge pressure at least 120 greater than the maximum town main pressure.

The pump shall be manually controlled by a push button station in the valve area and arranged so that the pump will only run while the start button is depressed and will stop as soon as the button is released.

#### 4.6 PRESSURE SWITCHES

Pressure switches shall be the normally closed ON-OFF type with operating range to suit the pressures involved. Each switch shall have independent adjustment for the cut in point and operating differential.

#### 4.7 ALARM GONG

Supply and install where indicated or as directed by the Project Manager water driven gong as required, arranged to operate whenever the alarm check valve opens.

The alarm gong shall be of an approved type, 250mm diameter, having a totally concealed striker movement, with a bronze rotor and sleeve bearings. Provision shall be made for lubricating the rotor bearings.

The water connection from the alarm check valve shall be provided with an isolating valve securing in the open position.

Exhaust water to discharge to drain.

#### 4.8 SPRINKLER HEADS

Sprinkler heads shall be of appropriate temperature rating for positions indicated and installed in a pattern approved by the Project Manager. All sprinkler heads shall be approved by Scientific Services Laboratories.

Tenderers shall base their price on the number of heads shown on the drawings. However, they must submit a Schedule of Rates per head for each type of sprinkler. These prices will be used for determining extras or deductions from the contract price caused by an addition to or a reduction of the number of sprinkler heads actually installed.

The type of sprinkler heads shall be as follows:



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- Semi-recessed chrome glass bulb head with white two piece escutcheon plate in ceiling areas. Note deflector to be set 25 mm below bottom of plate.
- Standard brass finish, glass bulb sprinklers for plantrooms, concealed space and such areas where pipework is exposed.

#### 4.9 SPRINKLER GUARDS

In areas where sprinkler heads are liable to damage, and if the head is less than 2.2 metres from finished floor level, the head shall be protected by a wire mesh guard. The wire mesh shall not obstruct the normal function of the sprinkler heads. The guards shall be of cadmium plated steel of robust construction.

Where sprinkler heads are located in racking they shall be positioned so as not to interfere with the on/off loading of stock and be provided with purpose made galvanised guards suitably installed to afford the sprinkler maximum protection.

#### 4.10 SPARES

The Contractor shall supply a set spare sprinkler heads of each type and temperature rating, in a suitable box, fixed on the wall adjacent to the control valve position. A spanner for each type of sprinkler head shall be provided.

#### 4.11 AIR RELEASE VALVES

The Contractor shall provide air-release valves at the high point of each installation to allow entrapped air to escape. Discharge if any is to be piped to a suitable drain.

#### 4.12 REMOTE TEST VALVE

The Contractor shall provide a remote test valve with AS 2118 required signage and discharging into hydraulic drain line.

#### 4.13 ALARM SIGNAL MONITORING

Allow to provide privatised monitoring for a single brigade input on a one year agreement basis. The system monitoring shall comply with the requirements of AS 1670.3, AS 4428.6, AS 4418.2 and AS 2118. Provide alarm signalling equipment complying with AS 4428.6 to transmit the sprinkler or detector signal to an approved monitoring service provider. Allow to provide a back-up telephone link to service provider. Provide details of approved monitoring service provider inclusive of all service costs for a 12 month period.

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## 5 PIPING & VALVES

### 5.1 PIPING

#### 5.1.1 General

The extent of the fire services pipework to be supplied and installed under this Contract is as follows:

All sprinkler system piping.

All drain piping from equipment and connecting into the Contractor's drains, as shown on the drawing.

#### 5.1.2 Materials

Piping and pipe fittings shall conform to the following table and be suitable for the pressures involved.

| <u>DUTY</u>                              | <u>MATERIALS</u>                                                 |
|------------------------------------------|------------------------------------------------------------------|
| Sprinkler pipework above Control Valves. | AS 1074 black tubing.                                            |
| Sprinkler pipework below control valves  | AS 1074 galvanised tubing 'denso' wrapped or Blue Brute Class 16 |
| Sprinkler flexible droppers              | AS 2118-2017                                                     |
| Drains.                                  | AS 1074 galvanised tubing.                                       |

Where piping is exposed to the weather the piping shall conform to AS 1074 galvanised tubing.

All steel piping shall be completely free of rust and black steel piping painted externally before delivery to site. Care shall be taken to ensure that the piping stored on site is located away from damp locations to avoid the formation of rust.

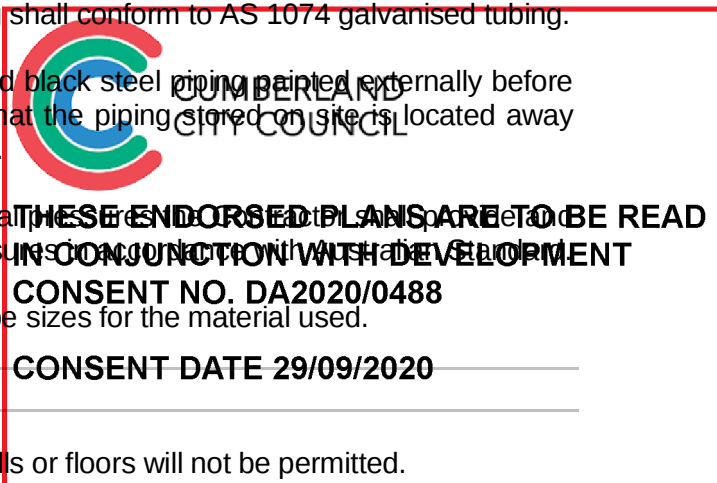
Where pipework is subjected to higher than normal pressures the Contractor shall select and install pipework and fittings suitable for such pressures in accordance with the relevant standards.

Pipe sizes shown on the drawings are nominal pipe sizes for the material used.

### 5.2 PIPING INSTALLATION

Grouting in the pipes where they pass through walls or floors will not be permitted.

Where pipework passes through building structures, sleeves shall be provided, sized to give a minimum of 13mm gap fully around the pipe. The length of collar is to suit the thickness of the structure; sleeves shall be 3mm copper for copper pipes and galvanised for other pipework.



Pipework passing through fire walls shall be sealed with fibrefran rope or other approved non-asbestos material, tamped tightly in the annular space between the pipe and the sleeve, with not less than two complete turns of fibrefran rope.

All metal sleeves shall be supplied and fixed in their exact locations by the Contractor, unless such sleeves are required to be built in where the Contractor shall supply the sleeves only. See clause "Work by Other Trades".

### 5.3 FLEXIBLE DROPPERS

Allow to provide stainless steel, braided flexible hoses to supply all below ceiling sprinklers. The minimum sizes shall be DN 25 for ordinary and high hazard. Flexible droppers shall be installed and fixed to the ceiling grid and comply with AS 2118 and the suppliers requirements.

### 5.4 DRAINING

Drain cocks, valves or plugs shall be supplied and installed to allow pipework containing trapped water to be drained which cannot normally be drained at sprinkler control valves.

Every drain shall be secured shut in such manner as to prevent interference by unauthorised persons.

All drains shall be made by welding a socket into the pipe. A 25mm cock with a male hose union to take a standard 20mm hose shall be fitted.

### 5.5 PIPE JOINTS

#### 5.5.1 Joints - Screwed

Screwed pipe threads shall be in accordance with AS B53 - 1961 British Standard Pipe Threads.

Male threads shall be tapered and cut long enough to screw to full depth of female threads (sockets).

Screwed joints shall be sealed with a non-hardening material such as cotton lard, spun yarn of New Zealand flax, white hemp yard or sintered PTFE mixed with a soft setting mineral lubricant, inert non-toxic, and solvent free.

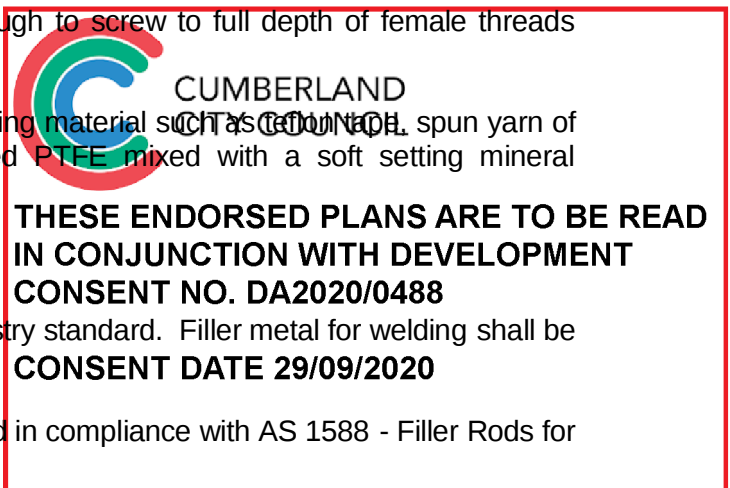
#### 5.5.2 Joints- Welded

All welded joints shall be made by approved industry standard. Filler metal for welding shall be of an approved quality.

Steel fittings shall be fusion welded with a filler rod in compliance with AS 1588 - Filler Rods for Welding.

Except where dictated by the type of pipe fitting or valve, steel piping over 50mm dia. may be welded.

Pipework shall be shop fabricated wherever possible. Where welding is carried out on site, the provisions of AS 1674 - 1990 "Australian Standard Rules for Fire Precautions in cutting and welding operations" shall be observed.



All site welding shall be carried out in accordance with AS 1674 - SAA Cutting and Welding Safety Code.

### 5.5.3 Demountable - Joints

Unless otherwise approved or directed by the Superintendent, de-mountable joints in piping shall be of the type specified herein. The number of de-mountable joints shall be kept to a minimum consistent with good engineering practice and shall only be provided as follows:

Where piping may have to be dismantled for maintenance purposes.

Where approved for ease of assembly.

At all connections to pumps, equipment, valves as applicable, instruments and gauges.

Demountable joints shall be of the flanged type for pipe of size 50mm and greater and shall be of the union type for pipe up to 40mm, except that union type joints shall not be installed in ceilings and similar concealed spaces.

### 5.5.4 Flanged Type Joints

Flanges shall be of an approved proprietary manufacture and the pressure ranges up to 1400 kPa the minimum acceptable flange dimensions shall be to Table 'E' of AS 2129. Pipework shall be flanged where maximum design pressure exceeds 1000 kPa on the upstream side of control valves.

Where components of plant and equipment are provided with heavier flanges and/or provide with raised faces, the mating flange on the pipe shall match the mating flange on the component.

In making the joints, flanges shall be pulled up evenly and tightly with galvanised mild steel bolts of correct diameter, length and number, with washers under the nuts.

In making the joint an approved jointing compound or gasket shall be applied to each joint face.

Jointing material of gaskets shall be of approved performed proprietary manufacture or type suitable for the service and/or duty conditions applicable and shall have thickness of not less than 0.8mm. Durable rubber insertion rings are acceptable.

### 5.5.5 Forged Steel Fittings

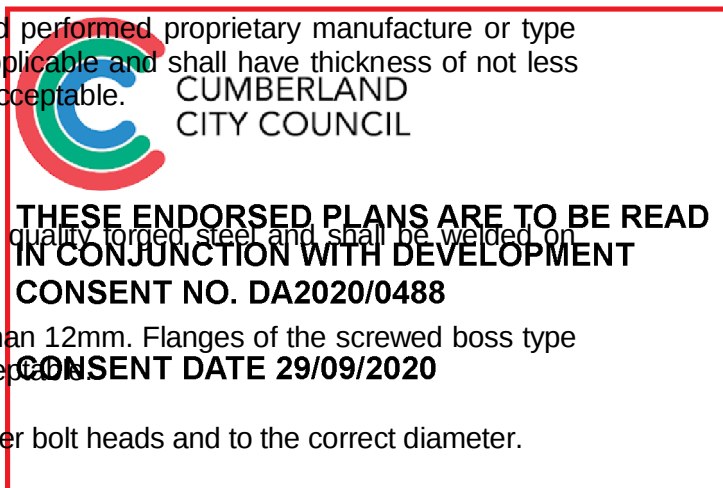
Flanges for black steel pipe shall be of the best quality forged steel and shall be welded on square with the run of pipe.

Plain flanges shall have a thickness of not less than 12mm. Flanges of the screwed boss type for pipes up to and including 100 NB shall be acceptable.

Flanges shall be machined on the joint faces, under bolt heads and to the correct diameter.

### 5.5.6 Cast Iron Flanges

Flanges for galvanised steel pipe and cast iron pipe shall be of machined quality cast iron, or the screwed boss type and shall be machined on the joint faces and under bolt heads and to the correct diameter.



Flanges shall be screwed on square with the run of pipe and the screwed joint on galvanised steel pipe shall be sealed with an approved jointing compound.

### 5.5.7 Mechanical Grooved Couplings

Pipes may be jointed by mechanical grooved couplings comprising an approved combination of couplings, gaskets and grooves. Grooves shall not be cut into pipes and rolled grooves shall be dimensionally compatible with couplings.

Gaskets shall be suitable for continuous service for both air and water in the temperature range - 40C to 150C and shall be pliable, smooth and free of obvious porosity and mould flash.

When coupling is assembled, gaskets shall be fully enclosed within the housing of the coupling.

Couplings and associated gaskets shall be selected and installed to suit maximum anticipated installation pressures.

### 5.5.8 Jointing Material

Unless otherwise directed or approved the jointing material used in the works for application to faces of flanges shall be as follows:

For flanged joints connect to pumps, valves and similar equipment approved jointing compound shall be used, the compound shall contain not less than 50% sintered PTFE mixed with a soft setting, mineral lubricant, inert, non-toxic and solvent free.

For all other flanged joints approved jointing compound suitable for durable rubber insertion rings may be used in lieu of above.

### 5.5.9 Union Type Joints

Generally: Unions shall be of an approved proprietary manufacture and shall have ground face joints with not less than 3mm draw on the joint faces.

Forged Steel Unions: Unions for steel pipes (either black steel or galvanised steel) shall be sealed with an approved jointing compound. Threads on pipes shall be tapered and the components screwed together to make a tight joint.

### 5.5.10 Copper Pipe

Joints in copper pipes shall be silver soldered using welding rod containing not less than 15% silver equal to Comweld Alloy 115 (brown tip). Joints using capillary fittings shall be Yorkway or equal.

## 5.6 PIPE BENDS AND SUPPORTS

All steel pipe bends shall be made either by forming the straight pipe to shape by cutting and welding, or by the use of standard fittings.

Pipes which are at all liable to be grasped as a hand hold, stood upon or similarly misused, are in every case to be supported.

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Where vertical pipes are exposed in rooms, they shall be secured at floor and ceiling; pipes up to 25mm shall have at least two intermediate supports.

Where pipe supports are exposed to the weather, they shall be 'hot dipped galvanised', unless otherwise specified.

## 5.7 CLEANING AND TESTING OF PIPEWORK

All cleaning and testing of pipework shall be carried out as early as possible after installation of each section of pipe but definitely before any joints are concealed, ceilings installed, or finishing trades have commenced.

All service pipework shall be thoroughly washed out and the system operated with a full flow of water until all foreign matter is removed.

Temporary connections to supply and drain shall be carried out as required and all equipment shall be by-passed during the cleaning and testing period.

All pipework shall be tested hydro-statically to 1400 kPa or 400 kPa greater than the maximum installation pressure whichever is the greater. The pressure in each test shall be maintained with pump disconnected for a minimum period of 24 hours.

After testing, each section of pipework shall be left full of water to prevent internal corrosion. If valves are used to seal off the tested section of the pipe, they shall be provided with a spigot for welding on the next section of pipe.

All cleaning and testing for final inspection shall be carried out in the presence and to the fully satisfaction of the Contractor.

Any instruments not capable of standing the test pressure shall be removed before testing and tested later at normal pressures.

## 5.8 VALVES

### 5.8.1 General

Provide all valves as shown on the drawings and as necessary for the safe and proper operation of the system. Valves shall be line sized unless noted otherwise. Valves shall be screwed or flanged to adjoining pipework as specified for the piping in the particular system.

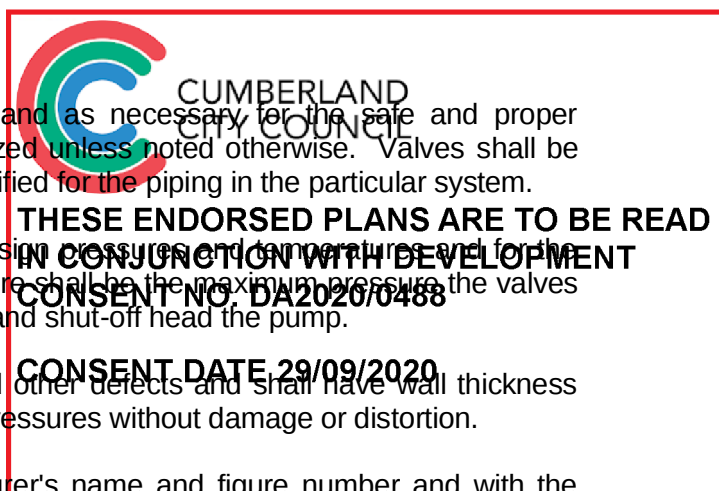
Valves and materials shall be suitable for the design pressures and temperatures and for the service conditions applicable. The design pressure shall be the maximum pressure the valves are subjected to including maximum towns main and shut-off head the pump.

All valves bodies shall be free from porosity and other defects and shall have wall thickness sufficient to withstand the maximum installation pressures without damage or distortion.

All valves shall be identified with the Manufacturer's name and figure number and with the valve size.

All valves of the one type shall be of the one manufacturer.

Valves shall be applied according to the particular manufacturer's written recommendations.



Any brass or gunmetal components shall be a type not subject to de-zincification.

All valve stems shall have stuffing box type packed glands unless noted otherwise. Gland packings shall be suitable for the particular service. O-ring stem seals are not acceptable.

Figure numbers in table refer to JOHN catalogue to indicate the standard required, unless noted otherwise.

Abbreviations are as follows:

|         |                                                                                                                   |
|---------|-------------------------------------------------------------------------------------------------------------------|
| BSP     | British Standard screw thread.                                                                                    |
| BST 'H' | British Standard flanges, table "H"                                                                               |
| BR      | bronze to AS 1565 yield 96.5 mPa, elongation 15% minimum.                                                         |
| SS      | stainless steel yield 386 mPa minimum, elongation 15% minimum grade 316.                                          |
| CI      | cast iron to BS 1452 grade 14.                                                                                    |
| CS      | cast steel to BS 592 grade A, ultimate tensile stress 430 Newtons/sq.mm minimum, elongation 22% minimum.          |
| GM      | Gun Metal to BS 1400 LG2.                                                                                         |
| MB      | manganese bronze to BS 250 grade A, ultimate tensile stress 465 Newtons/sq.mm minimum, elongation 20% minimum.    |
| NKL     | nickel - base copper - tin alloy for valve seats.                                                                 |
| SMH     | arsenically inhibited bronze, Alloy SMH (Extruded Metals P/L).                                                    |
| OS      | stem screw outside valve body, not in fluid.                                                                      |
| IS      | stem screw inside valve body, in fluid.                                                                           |
| SG      | spheroidal graphite cast iron to AS G9 SNG 24/17. Ultimate tensile stress 370 mPa minimum elongation 17% minimum. |

## 5.8.2 Valve Schedule

### Throttling Duty

65-80mm diameter Globe type John Fig 511 or equal BSP ends, BR body, SS disc and seat, MB stem screwed bonnet, OS stem.

100mm and over diameter Globe type, John Fig 201 or equal, BST 'E' ends, CI body, BR disc and seat, MB stem, bolted bonnet OS stem.

### Backflow valve

**150mm AMES 3000SS with multi-turn butterfly valves or rising spindle gate valves.**

### Isolating Duty

15-50mm diameter Gate type John Fig 59m or equal BSP ends, BR body, BR disc and seat, SMH stem, screwed bonnet OS stem.

65mm and over diameter Gate type John Fig 601 or equal, BST 'E' ends, CI body, BR disc and seat, SMH stem, bolted bonnet, OS stem.

### Non-Return Duty

15-50mm diameter Horizontal check type John Fig 4B or equal BSP ends, BR body, SS disc and seat, screwed bonnet.



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65-100mm and over diameter Horizontal check type John Fig 404 or equal, BST 'E' ends, CI body, NKL disc and seat, Bolted bonnet.  
or Wafer check type John fig. 430

150mm and over diameter Horizontal and vertical check type, John Fig 420 or equal BST 'E' ends, CI body, BR disc and seat BR stem, Bolted bonnet.

#### Gauge Cocks

10mm diameter taper plug type, John Fig 73 or equal, BSP ends, BR body, BR disc and seat.

#### Solenoid Test Valves

Mack NT Series or equal, normally closed, GM body and bonnet nut, PTFE Piston ring and valve, SS Pilot valve, MB Piston.

#### Strainers

Strainers shall be Y-type of bronze construction with BSP taper screwed ends up to 50 NB and cast iron or steel flanged 65 NB and above suitable for the pressure of the system.

Basket shall be perforated stainless steel or bronze sheet as tabled below:

Strainers shall be line sized and designed for a pressure drop of not more than 10 kPa at full flow when clean;

Strainers shall have screwed caps for basket removal.

The design of the strainer shall provide even flow through the basket and the basket section shall project well clear of the line of pipe. Strainers shall be manufactured by M.E. Mack & Co. Pty. Ltd. or equal.

### **5.9 LABELS**

All instruments, gauges, indicators, control equipment, valves, contactors, switches, starters, relays and cable terminals on switchboards, etc. installed as part of this work shall be clearly labelled and identified with the correct associated function.

Labels, except where otherwise specified, shall be of laminated plastic with neatly engraved uppercase red letters on white background. Plastic labels shall be attached by screw or rivet fixing.

Punch machine type strip lettering and stick-on markings will not be approved.

Lettering, except where otherwise specified, shall be not less than 15mm high. Lettering for items installed in switchboards and on control panels shall be not less than 20mm high unless otherwise approved or directed.

A brass disc, approximately 32mm diameter and 1.2mm thick shall be provided for each valve installed in the works. The discs shall be secured to the valves with heavy gauge copper wire.

Discs for Valves shall be stamped with an identification number or letter to correspond with the related fire control room instruction board.

All sprinkler pipe risers shall be identified with traffolyte stickers positioned on all levels.

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## 5.10 VALVE MONITORING

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All valves controlling the water supply to the sprinkler system shall be fitted with valve monitoring devices and connected to the fire indicator board. The valves to be monitored include, but not limited to:

Installation stop valves (2 off);

An approved anti-tamper "Type A" monitoring device shall be used and shall automatically protect the integrity of the monitoring device and associated wiring upon any attempt to tamper with or by-pass the installation. The anti-tamper monitoring device shall be installed in a neat and concealed manner arranged to operate against the valve turn wheel or sliding pointer indication arm.

Visual indication together with associated alarms shall be provided for each valve on the fire indicator board.

The fire indication panel shall provide an alarm as required by AS 2118. Sub-Contractor to allow for all wiring as required.



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## 6 PAINTING

### 6.1 PAINTING GENERAL

The Contractor shall carry out the painting of all equipment supplied in this Contract in the manner as described below. He shall also take all precautions against rusting or corrosion of all parts of his plant.

The Contractor shall allow for painting the external surface of all items of machinery, apparatus, equipment, fittings, piping, hangers, brackets, supports and bases installed as part of this Contract. All sheetmetal control cabinets switchboards and distribution board enclosures and similar shall be painted internally and externally.

Exposed pipework shall be painted with one coat of suitable metal primer, and two (2) finishing coats of an approved colour. The colour shall be as directed by the Contractor. Piping in valve enclosures, plantrooms, service corridors etc., shall be painted "signal red".

Piping in false ceiling spaces, pipe ducts and other non visible areas, in general need not be finish coated. (See clause "Surface Preparation". However, all brackets and hangers in these areas shall be given a priming coat prior to installation, with the exception of galvanised surfaces which are not required to be prime coated.

All hangers, brackets and sections of equipment which are inaccessible after installation shall be painted before they are installed.

Surfaces liable to be splashed or covered with oil shall be finished with an oil resistant enamel of an approved colour.

No painting shall be carried out during very hot, dusty, wet or frosty weather and painting shall be done only on surfaces which are thoroughly dry.

Excepting where otherwise specified or approved, all paints and finishes shall be applied by brush when carried out on site.

Skilled labour and efficient equipment in first class order shall be employed for all painting and preparation work.

#### 6.1.1 Surface Preparation

All surfaces shall be thoroughly prepared prior to painting and the primer used shall be suitable for the relevant surface.

The surface preparation shall include the following:

All masonry or concrete surfaces shall be smoothed and any cracks or depressions cut out and filled with an approved non-shrink filling compound. The surface shall be brushed free of dust and loose particles.

Galvanised or zinc sprayed steel surfaces and all non-ferrous services shall be cleaned of all dirt and grease and shall be given an application of PVC/Zinc chromate self-etching primer or similar before being prime coated.



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All black iron or steel surfaces shall be cleaned of all rust and scale by wire brushing and all grease, flux, etc., removed. They shall be treated with an approved phosphoric acid preparation for complete rust removal.

All cast iron surfaces such as pumps etc., shall be fully degreased.

All black steel piping shall be painted externally before delivery to site.

#### **6.1.2 Masking, Protection etc.**

Finished surfaces adjacent to work being painted shall be masked wherever necessary to avoid defacement.

Any walls, beams, columns and other elements or equipment which are not to be painted shall be protected where necessary to avoid defacement.

Masks made by this Contractor's painters on building surfaces, shall be removed by the Contractor. However, all costs shall be borne by this Contractor.

#### **6.1.3 Materials to be Used**

All paints and/or painting materials must be of first quality manufacture and shall comply strictly to the requirements of the relevant Australian Standard.



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## 7 ELECTRICAL WORK & WIRING INSTALLATION

### 7.1 EXTENT OF WORK

Details of the various major components of electrical equipment are specified elsewhere. In addition the Fire Protection Sub-Contractor shall provide all necessary circuit breakers, starters, relays, motor isolating switches, test switches and interlocks to achieve the functions specified in the specification.

The Fire Protection Sub-Contractor shall carry out all necessary wiring as indicated below:

- All wiring associated with the occupant warning and fire indicator panel.
- \* Wiring from fire indicator panel to the ASE.
- \* All wiring associated with the sprinkler valves including pressure switches, monitoring etc.

The whole of the work, including all extra-low voltage and signal circuits, shall be carried out in accordance with this specification, the drawings listed in the specification, Australian Standard 1670 - 1995 (Auto Fire Alarm Installations), the Australian Standard No. 3000 (SAA Wiring Rules), the Supply Authorities' Regulations and further instructions may be given during the progress of the work by and to the satisfaction of the Contractor.

The person or persons engaged in carrying out the electrical wiring work shall hold a current electrical contractor's licence, or carry out the work under the direct supervision of a person so licensed. A licensed electrician shall be on site at all times when electrical wiring work is in progress.

The installation shall be complete in every respect. All conductors, conduits and accessories necessary for safe and proper operation of the plant shall be supplied and installed to the satisfaction of the Builder, whether individually specified herein or not.

### 7.2 GENERAL

All wiring shall be carried out on the "loop-in" and "loop-out" system and no joints shall be made except at outlets.

All wiring shall be concealed unless otherwise specified on the drawings. Generally where electrical wiring in an area is concealed the fire alarm wiring shall also be concealed.

Wiring may be surface mounted in areas without ceilings (such as service ducts and the like) surface mounted in steel conduit in plantrooms and surface mounted in PVC conduit in carparks, but otherwise no wiring shall be surface mounted without written approval.

Where cables must be surface mounted, they shall be installed in such a manner as to conform with any pattern formed panelling, beams, battens, columns and the like, and in all cases shall be as unobtrusive as possible. All surface mounted cables shall be enclosed in approved duct or conduit as specified.

### 7.3 METHOD OF WIRING



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### 7.3.1 General

Install all wiring in accordance with an approved colour code, so that all wires are readily distinguishable.

All detector wiring shall be completely separated from 240 volt wiring and where it crosses 240 volt wiring a separating bridge of rigid non-conducting material shall be supplied and installed between the fire alarm and 240 volt wiring (AS 3000). In general, detector cables must be so spaced from all other wiring or otherwise protected, such that the magnitude of induced voltage in the detector circuit cannot cause a false alarm.

The minimum size of conductors shall be as follows:

|                             |                        |
|-----------------------------|------------------------|
| 240 volt                    | 2.5 sq. mm.            |
| D.C. wiring                 | 0.75 sq. mm (stranded) |
| Wiring to remote indicators | 0.75 sq. mm (flexible) |
| Multicore Cables            | 0.50 sq. mm (stranded) |

However, the Sub-Contractor shall size each circuit, with due regard to voltage drop, as well as the above minimum conductor size. If large cables are required on any circuit these shall be marked on the shop drawings sent for review.

No detector wiring shall be taken through the battery compartment of the fire indicator panel.

Bare conductors twisted together to form a connection at terminals of detectors, terminal strips, etc., will not be accepted.

### 7.3.2 T.P.S. Wiring

Where T.P.S. wiring is specified, the wiring shall consist of PVC insulated, red P.V.C. sheathed, 0.6/1K.V grade cable (red T.P.S.).

All T.P.S. cables shall be supported in false ceiling spaces by rigid PVC saddles. Where T.P.S. cables are to be surface mounted, they shall be installed in accordance with AS 3000.

### 7.3.3 Wiring in Conduit

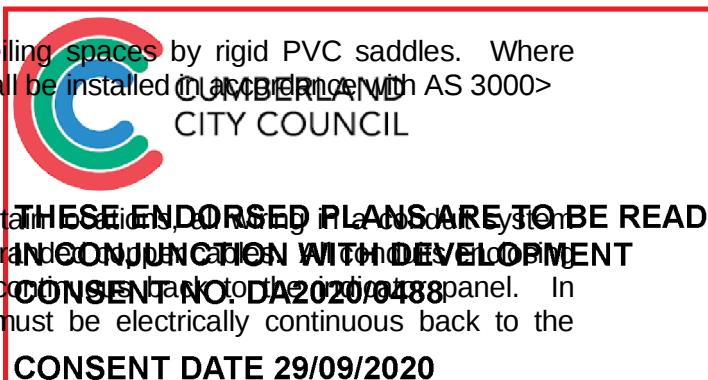
Other than red T.P.S. enclosed in conduit in certain locations, all wiring for a fire alarm system shall consist of P.V.C. insulated 0.6/1K.V grade stranded conductors. Single insulated cables must be mechanically protected back to the indicator panel. In addition, if steel conduits are employed, they must be electrically continuous back to the indicator panel.

### 7.3.4 Terminations

Connection of cables to studs or under screw heads, shall be by means of approved type of insulated crimp lugs fastened with the correct crimping tool, to Manufacturer's recommendations.

## 7.4 CONDUITS

### 7.4.1 General



All conduit shall be Class 'B' to comply with the Australian Standard Specification and shall be not less than nom. 20mm diameter. Conduit and fittings shall be free from internal and external burrs and projections.

All conduits shall be installed and fixed in position before cables are drawn in. Where conduits are to be concealed in concrete, they shall be laid above and below reinforcement and so fixed that pouring of concrete will not disturb them. Conduits so fixed, or exposed to weather shall be temporarily plugged with a suitable cap to prevent entry to water or foreign matter until cables are drawn and fittings installed.

In any case, conduits shall be pulled through with a brush or plug of cloth to ensure them clean and dry before cabling.

All conduit work shall be prepared for a draw-in system and boxes shall be placed at each outlet to allow conductors to be drawn in.

Where conduits are installed in concrete and brickwork and otherwise not accessible after installation, intermediate boxes, elbows and tees shall not be used, and easy sets in conduit shall be used. Minimum radius of sets in concrete slabs shall be 150mm radius.

Where conduits are surface, or concealed but readily accessible, they shall be run neatly square with the building members and inspection fittings and draw-in boxes shall be used throughout to ensure a complete draw-in system.

Between any two adjacent outlets, there shall not be more than four (4) normal bends, or their equivalent.

Conduits shall be sized such that the number of conductors installed does not exceed 75% of the number permitted by AS 3000.

Where surface mounted conduits are installed in carparks, plantrooms and areas where conduits may be susceptible to mechanical damage they shall be of steel.

#### 7.4.2 Rigid PVC Conduits

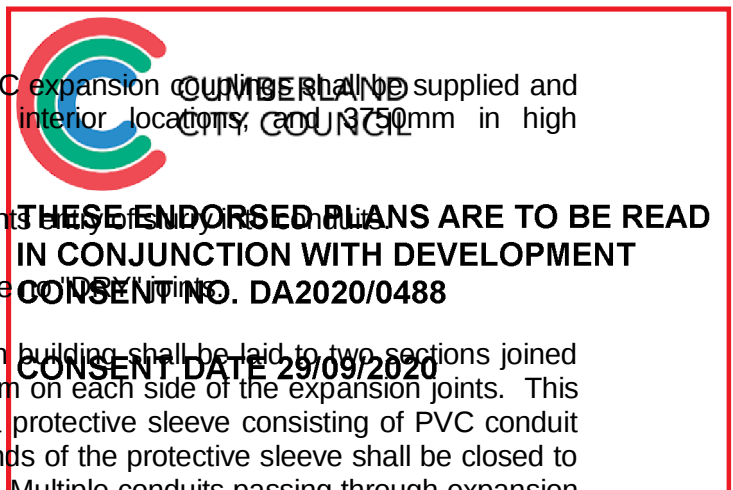
Wherever rigid PVC conduit is installed, rigid PVC expansion couplings shall be supplied and installed at 7500mm intervals (maximum) in interior locations, and 3750mm in high temperature areas, such as roof spaces.

Expansion couplings shall be of a type that prevents entry of foreign matter.

All joints shall be effectively glued so that there are no "dead" joints.

Each conduit passing through expansion joints in building shall be laid in two sections joined together with PVC flexible conduit extends 300mm on each side of the expansion joints. This flexible conduit shall be wholly enclosed within a protective sleeve consisting of PVC conduit with at least 3mm clearance all round, and the ends of the protective sleeve shall be closed to prevent entry of concrete or other foreign matter. Multiple conduits passing through expansion joints must be separated by a minimum of 100mm spacing.

All rigid PVC conduit shall be saddled to allow for expansion, at intervals not exceeding 600mm.



All outlet boxes shall be PVC. No holes shall be knocked out or drilled except those used for the entry of conduits, and boxes shall be of suitable size to accommodate fittings, wiring and conduits to be connected.

#### 7.4.3 Flexible PVC Conduit

Where flexible lines are required in a conduit system - such as for connections to detector in ducts - then standard electrical grade flexible PVC conduit shall be used, minimum size 20mm. Each end of each flexible conduit shall be fitted with a clamp type adaptor, giving an external conduit thread, which shall be screwed into corresponding internal conduit threads in the conduit system, and the piece of equipment to be connected.

#### 7.4.4 Steel Conduit

Where steel conduits are specified to be used, they shall be galvanised.

Should any conduit not fully meet the specification in respect of gauge, bore, etc., and if any cracking, peeling etc. of galvanising occurs during installation, the whole of the conduit from the particular batch (both installed, and to be installed) may be rejected.

All conduit ends shall be internally bevelled by reaming, to prevent damage to cable insulation.

All joints in screwed conduit embedded in concrete or brick shall be painted with rust resisting paint prior to jointing of conduits.

Each conduit passing through expansion joints in the building shall be laid in two sections, joined together with PVC covered flexible conduit extends 300mm on each side of the expansion joints. This flexible conduit shall be wholly enclosed within a flexible PVC conduit sleeve with at least 3mm clearance all round, and ends of the protective sleeve shall be closed to prevent entry of concrete, or other foreign matter. Multiple conduits passing through expansion joints must be separated by a minimum of 100mm spacing.

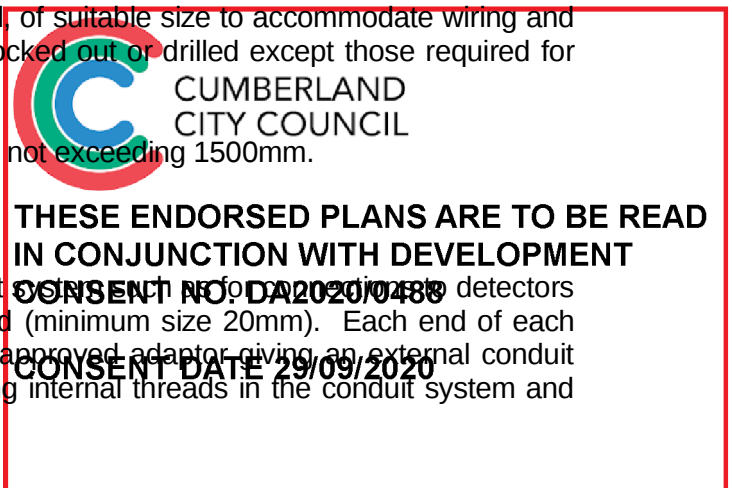
The entire steel conduit system shall be mechanically and electrically continuous.

All outlet boxes shall be cast iron or pressed steel, of suitable size to accommodate wiring and conduits to be connected. No holes shall be knocked out or drilled except those required for the entrance of conduits.

Steel conduits shall be tightly saddled, at intervals not exceeding 1500mm.

#### 7.4.5 Flexible Steel Conduit.

Where flexible links are required in a steel conduit system for connections to detectors in ducts, then flexible steel conduits may be used (minimum size 20mm). Each end of each section of flexible conduit shall be fitted with an approved adaptor giving an external conduit thread, which shall be screwed into corresponding internal threads in the conduit system and the piece of equipment connected.



Joints in wiring will not be allowed within ducts. All edges of ducts against which cables can bear, shall be bushed. Tees, bends, crosses and the like shall be of the same manufacture as the duct.

#### 8.4.4 System Speakers

The various types of loud speakers shall be supplied and installed in locations as shown on drawings.

Generally, flush type loud speakers shall be installed throughout the building where false ceilings are fitted and horn type speakers would be installed throughout such areas without ceilings.

The loud speakers shall be compatible to either 70 or 100 volt line.

The speakers shall be wired in a ring main manner and the inaudible tone generated in the Remote Amplifier Module is to monitor the total speaker circuit wiring.



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## 8 SCHEDULE OF RATES

### 8.1 GENERAL

The following rates will be used to price approved variations, and shall include all costs, profit and sales tax associated with the design, supply, installation, testing and commissioning of such works. The rate shall also allow for all materials, workshop drawing alterations, labour, cartage, freight, tools, plant scaffolding, painting, appliances etc.

#### 8.1.1 Additional Sprinklers (at any stage of the Fire Protection Contract)

The rate shall include; sprinkler head, escutcheon plate, all pipework, fittings, hangers, workshop drawing revision and painting.

Exposed sprinkler \$

Below ceiling sprinkler \$

#### 8.1.2 General

One (1) of installation recharge and drain down \$ .....

FULL NAME OF TENDERER: .....

SIGNATURE OF TENDERER: .....

WITNESS: ..... DATE: .....



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## 9 SCHEDULE OF PRICES

### 9.1 GENERAL

|                          |    |
|--------------------------|----|
| Design and documentation | \$ |
| Fire Sprinkler System    |    |
| Warehouse A              | \$ |
| Warehouse B              | \$ |
| Occupant warning system  | \$ |
| 12 Months Maintenance    | \$ |
| <hr/>                    |    |
| TOTAL                    | \$ |

FULL NAME OF TENDERER: .....

SIGNATURE OF TENDERER: .....

WITNESS: ..... DATE: .....



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