YGL Consulting Pty Ltd
PO Box 443 Summer Hill NSW 2130
0488 981275
www.yglconsulting.com.au
admin@yglconsulting.com.au

Fire Engineering Report Rev01

166 Allworth Road Allworth NSW

For

The Farmer's Wife Distillery

2022j0452

April 2023

Executive Summary

YGL Consulting Pty Ltd has been commissioned to develop a Performance Solution that addresses the nominated design variations in the project from the Deemed-to-Satisfy (DtS) Provisions of the National Construction Code (NCC) Volume One Building Code of Australia (BCA 2019 Amendment 1) and to demonstrate that the Performance Solution detailed in this report complies with the relevant Performance Requirements of BCA 2019 Amendment 1.

The proposed development is a new café and distillery with ancillary storage located at 166 Allworth Road Allworth NSW.

The variations from the Deemed-to-Satisfy provisions of BCA 2019 Amendment 1 for the subject building that are to be assessed are summarised below.

No	Relevant BCA Section /Clause	DTS Variation	Identified Performance Requirements / Assessment Methods
1	BCA E1.3 Fire hydrants AS 2419.1-2005 Fire hydrant installations System design, installation and commissioning (Clause 7.3)	Under AS2419.1 Section 2.3.1.1, where the unassisted water supply cannot meet the flow and pressure requirements of Table 2.2, a fixed on-site fire pump(s) shall be installed to meet the flow and pressure requirements of Table 2.3. Under AS2419.1 Section 7.2, a booster assembly is required if a pumpset is installed. No pumpset and booster assembly are proposed, therefore the above form non-compliances under Section 2.3.1.1 & Section 7.2.	EP1.3 A2.2 (1)(a) A2.2 (2)(b)(ii)

The following list primarily relates to the fire safety strategy proposed under the performance solution and does not provide a comprehensive list of fire safety measures required by the DtS provisions of the BCA. The fire safety measures shall be read in conjunction with the DtS provisions of the BCA.

- Permit the proposed hydrant system to not have pumpsets and booster assembly;
- Provide a total of 460,000 L of fire fighting water storage to satisfy AS2419.1-2005;
- The fire water storage tanks and suction points shall be arranged such that each building can be protected by 2x30m hose length and 10m water stream;
- The fire water storage tanks shall comply with the requirements of Section 5 Water Storage under AS2419.1-2005 “Fire hydrant installations Part 1: System design, installation and commissioning” and AS 2304—2011 “Water storage tanks for fire protection systems”;
- A block plan and appropriate signage shall be provided at a prominent location (carpark entry) to indicate the location of water tank and suction points;
- The suction connection shall be compatible with suction connections of the local FRNSW and NSWRFS stations where any differences in connection sizes occur;
- Where a tank is not located in a secure area, all valves shall be locked in the closed position with a padlock key suitable to the needs of the local fire brigade;

- All other aspects of the hydrant system shall comply with AS2419.1-2005 as well as the details under Midcoast Council DA Condition 49 (Ref DA-34/2018).
- The above requirements in relation to the proposed performance solutions shall be shown on the building essential fire safety schedule;
- All fire safety systems required by relevant DtS Provisions and performance solutions in the subject building shall comply with standards of performance on the building Fire Safety Schedule and be maintained in accordance with the Australian Standard of performance applicable to the building;
- This fire engineering assessment is based on the building geometry, uses and planning control as described in this report; should the building use and main building configuration be changed, a fire engineering review shall be undertaken to assess its validity for any new building use and configuration.

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1. Introduction

1.1 Scope of this Report

YGL Consulting Pty Ltd has been commissioned to develop a Performance Solution that addresses the nominated design variations in the project from the Deemed-to-Satisfy (DtS) Provisions of the National Construction Code (NCC) Volume One Building Code of Australia (BCA 2019 Amendment 1) and to demonstrate that the Performance Solution detailed in this report complies with the relevant Performance Requirements of BCA 2019 Amendment 1.

The proposed development is a new café and distillery with ancillary storage located at 166 Allworth Road Allworth NSW.

This Fire Engineering Report (FER) documents the fire engineering analysis associated with design variations detailed in Section 4.2 and has been prepared in accordance with performance-based fire engineering principles as outlined in Australian Fire Engineering Guidelines (AFEG)[1].

Appropriate fire safety measures are proposed under a performance solution to address the variations and listed in Section 7. The implementation of these measures shall be the responsibility of the relevant design disciplines and contractors.

1.2 Relevant Stakeholders

The relevant stakeholders for the project include the following in the table below.

Table 1 Stakeholders

Description	Details	
Client	The Farmer's Wife Distillery	Kylie Sepos
Hydraulic Engineer	Marline	Ian Bracken
Fire brigade	FRNSW	-
Building Certifier	Midcoast Council	Nicholas Green (BDC1242)
Fire Safety Engineer	YGL Consulting Pty Ltd	Yuguang Li Certifier - Fire Safety BDC0774 Professional Engineer - Fire Safety PRE0000566

1.3 Referenced Documentation

The fire engineering analysis is based on the following information:

- A set of architectural drawings, Project No 161018 Rev D dated 25/02/22 (attached in Appendix 1);
- A Hydraulic Services site plan, Project No: MN12249, Revision 4 for Client Review dated 04.05.22 by Marline (attached in Appendix 2);
- A fire engineering proposal by YGL Consulting (Our Ref: 2022p0695 dated 23/03/22) defining the scope of this fire engineering report;

1 Australian Building Codes Board, Australian Fire Engineering Guidelines, 2021, Canberra: Australian Building Codes Board.

- A Fire Engineering Brief Questionnaire (FEBQ) V01 to address the booster issue prepared by YGL Consulting and submitted to FRNSW on 06/03/23;
- An email from FRNSW received on 21/03/23 confirming (attached in Appendix 3) that a Fire Engineering Brief Questionnaire will not be provided for the project;
- Project related phone conversations and emails, including the correspondence from the certifier commenting on the above-mentioned FEBQ;

1.4 Performance Based Design Brief (PBDB)/FEBQ

The FEBQ form (for submission to FRNSW) is considered to function as a Performance Based Design Brief (PBDB) as part of the process under BCA A2.2(4)(a).

The FEBQ referenced above has been prepared in accordance with performance-based fire engineering principles as outlined in Australian Fire Engineering Guidelines (AFEG)[1]. The purpose of the PBDB is to outline the scope of work for the Fire Engineering Analysis associated with the design variations detailed in Section 4.2, set down the basis on which the Fire Engineering Analysis is undertaken, and serve as an agreement of the objectives, proposed trial designs, analysis methods and acceptance criteria prior to the start of the analysis.

FRNSW confirmed by email on 21/03/23 that a Fire Engineering Brief Questionnaire will not be provided for the project.

The FRNSW job / reference numbers for the subject development are:

- Project Reference: FRN23/1052
- Job Number: BFS23/1133
- SRID Number: 8000026820

The preparation of the FER is on the basis that there are no further comments received from the stakeholders.

1.5 Scope and limitations

This report: has been prepared by YGL Consulting Pty Ltd for The Farmer's Wife Distillery and may only be used and relied on by The Farmer's Wife Distillery for the purpose agreed between YGL Consulting Pty Ltd and The Farmer's Wife Distillery as set out in section 1.1 of this report.

YGL Consulting Pty Ltd otherwise disclaims responsibility to any person other than The Farmer's Wife Distillery arising in connection with this report. YGL Consulting Pty Ltd also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by YGL Consulting Pty Ltd in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. YGL Consulting Pty Ltd has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by YGL Consulting Pty Ltd described in this report. YGL Consulting Pty Ltd disclaims liability arising from any of the assumptions being incorrect.

YGL Consulting Pty Ltd has prepared this report on the basis of information provided by The Farmer's Wife Distillery and others who provided information to YGL Consulting Pty Ltd (including Government authorities), which YGL Consulting Pty Ltd has not independently verified or checked beyond the agreed scope of work. YGL Consulting Pty Ltd does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

This Fire Engineering Report does not consider prescribed fire safety matters that fall within the jurisdiction of the relevant fire service. The report provides a review of documentation to determine the extent of compliance for the nominated fire safety issues. It does not include operational checks of fire safety equipment, verification of construction techniques, fire resistance levels or the witnessing of fire drills or exercises, and should therefore not be treated as a full compliance or conformance audit for any fire safety system. The operational status of systems, items of equipment and staff training should be addressed as part of the enforcement, maintenance, testing, training and management procedures for the building.

This assessment is consistent with the objectives and limitations of the BCA and therefore does not consider arson (other than as a source of initial ignition), multiple simultaneous ignition sources, use of accelerants, acts of terrorism, protection of property (other than adjoining property), business interruption or losses, or personal or moral obligations of the owner/occupier. These issues can be considered, but have been specifically excluded from the scope of this report.

Where not specifically mentioned, the building design is expected to meet the prescriptive requirements of all relevant codes and legislation at the time of construction and / or at the time of production of this document.

Where further fire safety related non-compliances are identified after the issue of this report, it is the responsibility of the building owner(s)/proponent(s) to ensure the compliance with the BCA to be achieved for the subject development.

This fire engineering performance solution is derived on the basis of reasonable assumptions regarding Disability Discrimination Act (DDA) issues. That is, all physically and intellectually disabled occupants within the building are capable of evacuating to the fire exit of their own accord, or are assisted by other building occupants.

2. Building and Occupant Characteristics

2.1 Principal Building Characteristics

The building parameters for the subject buildings under the current BCA are as listed in the FEBQ and shown in Table 2 below.

Table 2 BCA Parameters

Description	Building 1
Classes	Class 6 / 7b
Floor area	1,440 m^2
Rise in Storeys (BCA C1.2)	One (1)
Levels contained	One (1)
Effective Height (BCA Schedule 3)	<12m
Type of Construction (BCA C1.1)	C

The site location is shown below in Figure 1.

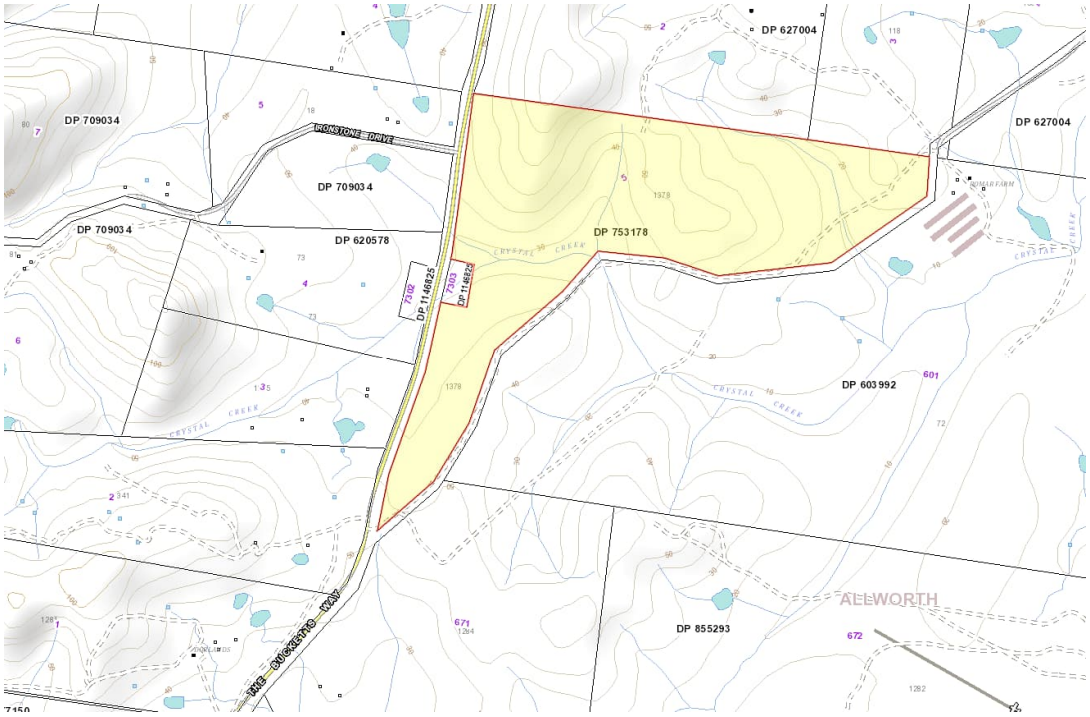


Figure 1 Site location (accessed from Six Maps 07/04/22)

2.2 Dominant Occupant Characteristics

Occupant characteristics of the subject buildings are assumed as follows.

Table 3 Occupants Characteristics

Description	Details
Distribution and occupants' roles	Occupants in the building are expected to be of mixed age and gender population.
State and activity at the outbreak of fire	Occupants are generally expected to be awake and alert during the day and as such expected to respond to any cues indicating that an emergency is present.
Physical and mental attributes	The occupants are assumed to be able to perceive the fire risk, interpret fire cues and implement decisions independently in a potential emergency situation. Occupants have been assumed to be of sound mind and body.
Level of assistance required and available	In this analysis people with disability in the building (if any) are assumed to be capable of evacuating to an exit either by themselves or with the assistance of others.
Emergency training and familiarity with the building	Staff have been assumed to be familiar with the building's egress routes and expected to assist the visitors to exit the building in the fire emergency.

3. Hazard Assessment and Fire Protection Measures

3.1 Retail Shop Fire Hazards

The expected fire risk associated with a retail shop can be represented by that of a shopping centre. The risk of a fire fatality in a shopping centre is very low due to the nature of the activities performed in the centre. This is demonstrated by data calculated by FCRC[2] on the average rate of fire fatalities in shopping centres and compared with residential occupancies. For shopping centres, the calculated rate of fire fatalities in Australia is approximately 1 fatality per 1000 fires. For the same period of time the calculated rate of fatalities in residential occupancies was 7.4 fatalities per 1000 fires.

Similar US data gathered in the FCRC research indicates a fatality rate of 1.12 fatalities per 1000 fires in shopping centres. This figure is considered by BHP Steel, who gathered the relevant data, to be high as it includes factors unlikely to be present in shopping centres such as the victims being impaired or asleep, or the involvement of flammable liquids - particularly petrol.

The statistical data supporting the above analysis can be found in the NSWFB report[3] that during the year of 2001/2002 for building types of 'Shop, store, office, storage; the area of fire origin has been recorded to be: Garage, carport, vehicle storage area 13.4%; Kitchen, cooking area 10.3%; Office 5.9%; Sales, showroom area 5.7%; and Waste or rubbish area, container 5.4%.

The smoke generated from a potential fire will be managed by the passive compartmentation. In the areas with full height partitions, there will be immediate fire cues only for the occupants in the room of origin and for the rooms directly adjacent.

Occupants in the rooms remote from the area of origin will have no direct fire cues but they are in an area of relative safety as smoke would take a significant time to reach these rooms. They will be alerted by the building alarm system or by escaping occupants.

3.2 Preventative and Protective Measures

3.2.1 General

Whilst the passive fire protection measures endeavour to minimise the spread of fire and smoke, the objective of active fire protection measures (e.g. fire fighting equipment) is to control the impact and spread of a building fire.

Other issues to be addressed to contribute to the fire safety levels of the building include the quality of installation, commissioning and maintenance. The reliability of the systems installed is a major factor for the continued maintenance of the life safety levels.

Confirmation on inspection of Essential Fire Safety Measures for the existing building has been provided by the client and included in Appendix 2.

The fire safety measures shall comply with DtS requirements applicable to the subject building. For detailed measures and standards of performance refer to Schedule of Statutory Fire Safety

[2] Bennetts I.D., Poh KW, Poon SL, Thomas IR, Lee AC, Beever PF, Ramsay GC and Timms GR , 'Fire Safety in Shopping Centres', Final Research Report, Fire Code Reform Centre Project 6, August 1998.

[3] New South Wales Fire Brigade Annual Statistical Report 2001/02 incorporating a Ten Year Review 1989/90 to 1998/99, New South Wales Fire Brigades, 2003.

Measures. It shall be the responsibility of the building owner to assure that fire safety systems are regularly maintained and clear access to egress paths is always maintained.

3.2.2 Fire Safety Subsystems

The preventative and protective measures provided to the sub-systems (as defined in Australian Fire Engineering Guidelines) that are affected by the DtS variations are outlined below.

Table 4 Relevant Sub-Systems

Subsystem	Considerations
Sub-system A Fire Initiation and Development and Control	Fire hazard properties of construction materials used in the building work are expected to comply with BCA Spec C1.10.
Sub-system B Smoke Development and Spread and Control	The building is expected to be provided with appropriate passive fire separation.
Subsystem C Fire Spread and Impact and Control	Fire spread is considered to be limited by appropriate fire rated construction and fire brigade intervention.
Sub-system D Fire Detection, Warning and Suppression	Fire detection may be by smoke detection or occupant vigilance or both. The suppression is mainly by occupant and fire brigade intervention.
Subsystem E Occupant Evacuation and Control	Egress provisions in the building are assumed to be in accordance with the BCA DtS provisions.
Sub-system F Fire Services Intervention	The subject building is expected to have a reasonable fire brigade access. Appropriate means for brigade intervention is to be provided in accordance with the BCA DtS provisions, except for the variation associated with the hydrant system addressed in this report.

Sub-system F are considered as the most relevant ones associated with non-compliance issues listed in Section 4.2.

4. Non-compliance Issues to be Assessed

4.1 Objectives

The Objectives from BCA 2019 Amendment 1 Guide Section E1 are listed below.

The specific objectives in relation to this report are those associated with the relevant Performance Requirements applicable to the variations from DtS provisions for the proposed building work.

There is no specific request from the client regarding protection of property (other than adjoining property as required by BCA).

EO1

The Objective of this Part is to—

(a) safeguard occupants from illness or injury while evacuating during a fire; and

(b) provide facilities for occupants and the fire brigade to undertake fire-fighting operations; and

(c) prevent the spread of fire between buildings.

4.2 Variations from Deemed-to-Satisfy Provisions

The variations from the Deemed-to-Satisfy provisions of BCA 2019 Amendment 1 for the subject building that are to be assessed are summarised in Table 5. These issues are to be addressed using a fire engineering assessment under a Performance Solution to demonstrate compliance with the relevant Performance Requirements of BCA 2019 Amendment 1.

Table 5 Variations from DtS Requirements

No	Relevant BCA Section /Clause	DTS Variation	Identified Performance Requirements / Assessment Methods
1	BCA E1.3 Fire hydrants AS 2419.1-2005 Fire hydrant installations System design, installation and commissioning (Clause 7.3)	Under AS2419.1 Section 2.3.1.1, where the unassisted water supply cannot meet the flow and pressure requirements of Table 2.2, a fixed on-site fire pump(s) shall be installed to meet the flow and pressure requirements of Table 2.3. Under AS2419.1 Section 7.2, a booster assembly is required if a pumpset is installed. No pumpset and booster assembly are proposed, therefore the above form non-compliances under Section 2.3.1.1 & Section 7.2.	EP1.3 A2.2 (1)(a) A2.2 (2)(b)(ii)

4.3 BCA Compliance Structure

4.3.1 Compliance (A2.0)

Compliance with the NCC is achieved by complying with—

(1) the Governing Requirements of the NCC; and

(2) the Performance Requirements.

4.3.2 Meeting the Performance Requirements (A2.1)

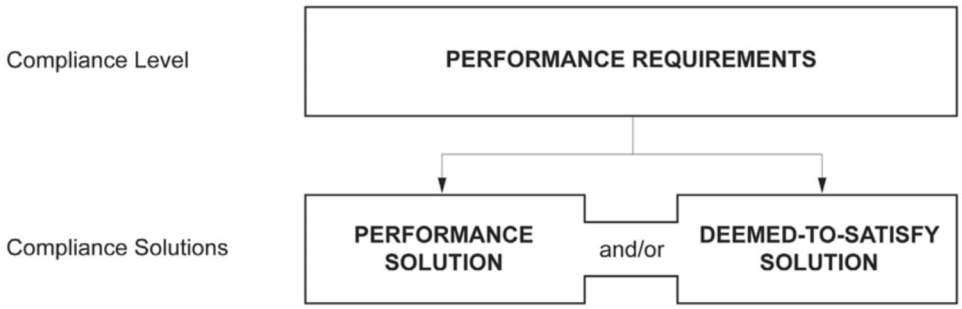
Performance Requirements are satisfied by one of the following, as shown in Figure 1:

(1) A Performance Solution.

(2) A Deemed-to-Satisfy Solution.

(3) A combination of (1) and (2).

Figure 1: NCC compliance option structure



4.3.3 Performance Solution (A2.2)

(1) A Performance Solution is achieved by demonstrating—

(a)compliance with all relevant Performance Requirements; or

(b)the solution is at least equivalent to the Deemed-to-Satisfy Provisions.

(2) A Performance Solution must be shown to comply with the relevant Performance Requirements through one or a combination of the following Assessment Methods:

(a) Evidence of suitability in accordance with Part A5 that shows the use of a material, product, plumbing and drainage product, form of construction or design meets the relevant Performance Requirements.

(b) A Verification Method including the following:

(i)The Verification Methods provided in the NCC.

(ii)Other Verification Methods, accepted by the appropriate authority that show compliance with the relevant Performance Requirements.

(c) Expert Judgement.

(d) Comparison with the Deemed-to-Satisfy Provisions.

(3) Where a Performance Requirement is satisfied entirely by a Performance Solution, in order to comply with (1) the following method must be used to determine the Performance Requirement or Performance Requirements relevant to the Performance Solution:

(a) Identify the relevant Performance Requirements from the Section or Part to which the Performance Solution applies.

(b) Identify Performance Requirements from other Sections or Parts that are relevant to any aspects of the Performance Solution proposed or that are affected by the application of the Performance Solution.

(4) Where a Performance Requirement is proposed to be satisfied by a Performance Solution, the following steps must be undertaken:

(a) Prepare a performance-based design brief in consultation with relevant stakeholders.

(b) Carry out analysis, using one or more of the Assessment Methods listed in (2), as proposed by the performance-based design brief.

(c) Evaluate results from (b) against the acceptance criteria in the performance-based design brief.

(d) Prepare a final report that includes—

(i) all Performance Requirements and/or Deemed-to-Satisfy Provisions identified through A2.2(3) or A2.4(3) as applicable; and

(ii) identification of all Assessment Methods used; and

(iii) details of steps (a) to (c); and

(iv) confirmation that the Performance Requirement has been met; and

(v) details of conditions or limitations, if any exist, regarding the Performance Solution.

4.3.4 Deemed-to-Satisfy Solution (A2.3)

(1) A solution that complies with the Deemed-to-Satisfy Provisions is deemed to have met the Performance Requirements.

(2) A Deemed-to-Satisfy Solution can show compliance with the Deemed-to-Satisfy Provisions through one or more of the following Assessment Methods:

(a) Evidence of suitability in accordance with Part A5 that shows the use of a material, product, plumbing and drainage product, form of construction or design meets a Deemed-to-Satisfy Provision.

(b) Expert Judgement.

...

4.3.5 A combination of solutions (A2.4)

(1) Performance Requirements may be satisfied by using a combination of Performance Solutions and Deemed-to-Satisfy Solutions.

(2) When using a combination of solutions, compliance can be shown through the following, as appropriate:

(a) A2.2 for assessment against the relevant Performance Requirements.

(b) A2.3 for assessment against the relevant Deemed-to-Satisfy Provisions.

(3) Where a Performance Requirement is satisfied by a Performance Solution in combination with a Deemed-to-Satisfy Solution, in order to comply with (1), the following method must be used to determine the Performance Requirement or Performance Requirements relevant to the Performance Solution:

(a) Identify the relevant Deemed-to-Satisfy Provisions of each Section or Part that are to be the subject of the Performance Solution.

(b) Identify the Performance Requirements from the same Sections or Parts that are relevant to the identified Deemed-to-Satisfy Provisions.

(c) Identify Performance Requirements from other Sections or Parts that are relevant to any aspects of the Performance Solution proposed or that are affected by the application of the Deemed-to-Satisfy Provisions that are the subject of the Performance Solution.

4.4 Application

The proposed building work is to achieve compliance with the BCA using a combination of the Deem-to-satisfy (prescriptive) Solutions and Performance Solutions (Performance Solutions).

This report assesses the Performance Solutions for those building features that do not meet the Deem-to-satisfy provisions, as identified in Section 4.2. It is understood that all other features of the building comply with the Deem-to-satisfy provisions of the BCA or as permitted by the relevant building certifier.

A Building Solution complies with the BCA if it complies with the Performance Requirements of the BCA according to Clause A2.0. The performance requirements relevant to Performance Solutions are identified according to Clause A2.2. The Assessment Methods of A2.2 (2) (b)(ii) will be used to determine compliance with the Performance Requirements of the BCA as identified in Table 5.

The analysis will incorporate the absolute manner and qualitative methodology to assess the performance solutions for compliance with the Performance Requirements of BCA 2019 Amendment 1.

5. Assessment Methodology and Acceptance Criteria

5.1 General

The objective of the fire engineering analysis is to demonstrate compliance with the relevant Performance Requirements of BCA.

The following methods of analysis are provided in accordance with the Australian Fire Engineering Guidelines for the assessment of the identified BCA DtS non-compliant issues. The use of these methods is further detailed in Section 6.

Due to the nature of the non-compliances, a qualitative approach in accordance with the Australian Fire Engineering Guidelines is predominantly used to determine compliance with the identified Performance Requirements.

5.2 Fire Brigade Intervention Model (FBIM) Guideline

This FBIM[4] guideline describes the model, how it should be used, and provides the necessary supporting data. As such, this document is largely self-contained and can be used when quantitative estimates of fire brigade operational times are required.

This guideline has been developed to provide a guide to support consideration of the intervention activities of fire brigades into building design.

Section 2 addresses structural firefighting operations and consists of an operational overview of Australasian region fire brigades.

The use of FBIM is described in more detail in Section 3. This section provides an overview of the fire engineering discipline and how FBIM relates to the overall process with an emphasis on the International Fire Engineering Guidelines (IFEG[5]) published by the ABCB. This section also covers the vital issues of safety margins using percentiles and sensitivity analyses.

Section 4 provides an overview of FBIM and serves as an introduction to the main body of this document, Section 5, that contains the model. The methodology consisting of flow charts for the most relevant fire brigade activities is also defined in Section 5.

The data necessary to undertake scenario assessments can be accessed from the accompanying dataset[6].

[4] The Australasian Fire Authorities Council (AFAC), Fire Brigade Intervention Model Manual V3.0, 14 April 2020, Doctrine ID 3068.

5 Australian Building Codes Board, International Fire Engineering Guidelines, 2005, Canberra: Australian Building Codes Board.

[6] The Australasian Fire Authorities Council (AFAC), Fire Brigade Intervention Model Dataset FBIM Reference Document Version 2020.05, May 2020

6. Performance Solutions 1 – Omission of Hydrant Pump/Booster

6.1 Prescriptive Requirements

E1.3 Fire hydrants

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

(i) having a total floor area greater than 500 m2; and

(ii) where a fire brigade is available to attend a building fire.

(b) The fire hydrant system—

(i) must be installed in accordance with AS 2419.1, …

…

AS2419.1-2005 Fire hydrant installations Part 1: System design, installation and commissioning

SECTION 2 SYSTEM DESIGN

…

2.3 REQUIRED SYSTEM PERFORMANCE

2.3.1 Flow requirements

2.3.1.1 General

...

Where the unassisted water supply cannot meet the flow and pressure requirements of Table 2.2, a fixed on-site fire pump(s) shall be installed to meet the flow and pressure requirements of Table 2.3.

…

SECTION 7 Fire brigade booster assembly

…

7.2 WHEN A BOOSTER ASSEMBLY IS REQUIRED

A fire brigade booster assembly shall be fitted to each fire hydrant system where—

…

(d) a pumpset is installed;

…

6.2 Proposed Performance Solution

6.2.1 Description of Non-compliance

The proposed development includes a café and distillery for gin production.

Under the hydrant code AS2419.1 Clause 3.2.2.2, external hydrants may be used to provide the coverage comprising 2x30m hose length and 10m water stream provided the hoses can reach within the door of any rooms.

Under AS2419.1 Table 2.1, the number of fire hydrant outlets required to flow simultaneously is two (2).

According to AS2419.1 Table 2.2, the minimum required flow rate and residual pressure for the external feed hydrant are 20L/s and 150 kPa respectively.

Under AS2419.1 Section 4.2, the minimum capacity of the source of water supply for fire hydrant installations shall be not less than that necessary to satisfy the minimum flow rates, for a duration of not less than 4 hours. This is equivalent to a total of 288,000 L water storage. A total of 460,000 L storage (=220kL x 2 + 20kL) is proposed.

The above requirements are to be understood to be implemented in the hydrant design.

Under AS2419.1 Section 2.3.1.1, where the unassisted water supply cannot meet the flow and pressure requirements of Table 2.2, a fixed on-site fire pump(s) shall be installed to meet the flow and pressure requirements of Table 2.3.

Under AS2419.1 Section 7.2, a booster assembly is required if a pumpset is installed.

No pumpset and booster assembly are proposed, therefore the above form non-compliances under Section 2.3.1.1 & Section 7.2.

A preliminary wet fire design is shown below.

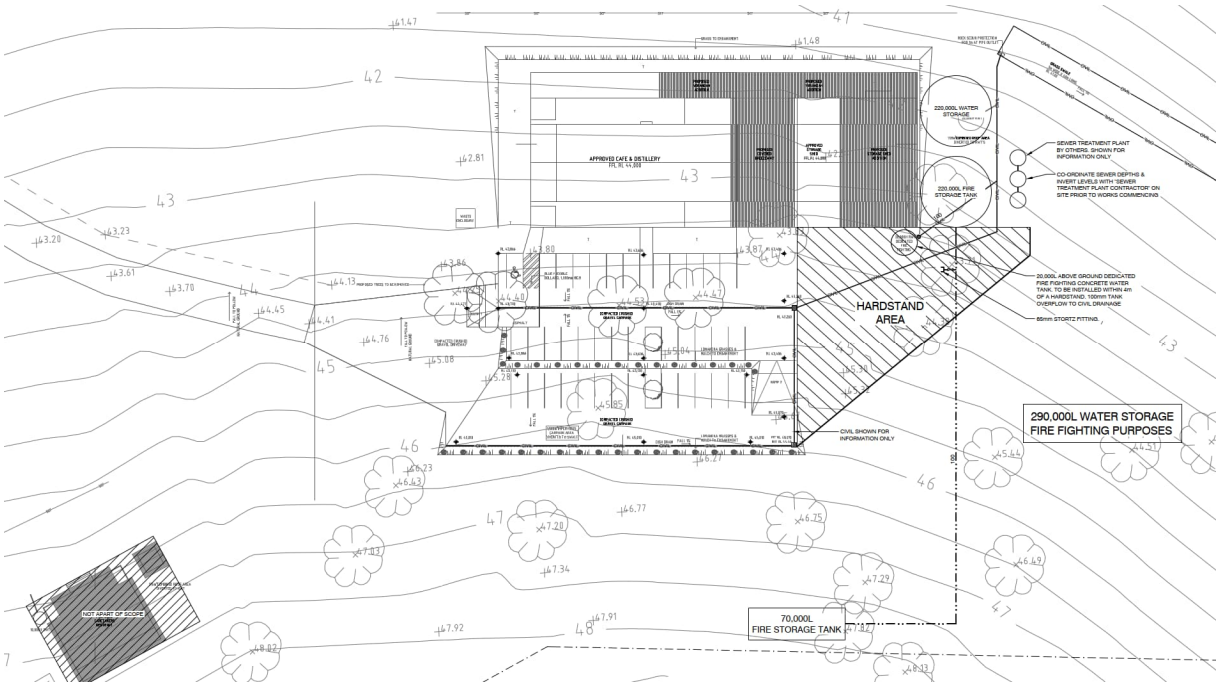


Figure 2 Hydrant system site plan

6.2.2 Performance Solution

Under a performance solution the following are proposed:

- Permit the proposed hydrant system to not have pumpsets and booster assembly;
- Provide a total of 460,000 L of fire fighting water storage to satisfy AS2419.1-2005;

- The fire water storage tanks and suction points shall be arranged such that each building can be protected by 2x30m hose length and 10m water stream;
- The fire water storage tanks shall comply with the requirements of Section 5 Water Storage under AS2419.1-2005 “Fire hydrant installations Part 1: System design, installation and commissioning” and AS 2304—2011 “Water storage tanks for fire protection systems”;
- A block plan and appropriate signage shall be provided at a prominent location (carpark entry) to indicate the location of water tank and suction points;
- The suction connection shall be compatible with suction connections of the local FRNSW and NSWRFS stations where any differences in connection sizes occur;
- Where a tank is not located in a secure area, all valves shall be locked in the closed position with a padlock key suitable to the needs of the local fire brigade;
- All other aspects of the hydrant system shall comply with AS2419.1-2005 as well as the details under Midcoast Council DA Condition 49 (Ref DA-34/2018).

6.3 Methodology and Acceptance Criteria

Compliance with the BCA is to be achieved by formulating a Performance Solution which complies with the Performance Requirements of the BCA. The proposed performance solution is assessed against the relevant performance requirements as detailed in Section 4.2, i.e. EP1.3.

The performance solution associated with the hydrant system is assessed in an absolute manner with a qualitative approach.

The associated acceptance criteria are that an acceptable level of safety for the brigade personnel can be demonstrated and the proposed fire hydrant system is appropriate for fire-fighting operations.

6.4 Qualitative Analysis

6.4.1 Fire Station Locations

There are overall philosophical Fire Brigade objectives throughout Australia to protect life, property and the environment from fire according to the Fire Brigade Intervention Model (FBIM)[4].

Over and above the requirements of the BCA, the Fire Brigade has functions with regard to property protection and considerations of occupational health and safety for its employees which are commensurate with the Fire Safety Strategy to be incorporated.

In the absence of specific times the Fire Engineering Guidelines[7] recommends a ten minutes (10) fire brigade arrival time with a further twenty (20) minutes set-up time for a city environment. This results in a total of 30 minutes from ignition to commencement of extinguishment, however in most cases the actual fire brigade intervention time is expected to be less than 30 minutes.

The nearest FRNSW fire stations are:

- RAYMOND TERRACE Fire Station located at 3-5 Leisure Way, Raymond Terrace NSW 2324 which is approximately 34.7 km from the subject building;

[7] Fire Code Reform Centre ltd, Fire Engineering Guidelines, First Edition March1996

- DUNGOG Fire Station located at 78 Lord Street, Dungog NSW 2420 which is approximately 44.4 km from the subject building; and
- TEA GARDENS Fire Station located at 135 Marine Drive, Tea Gardens NSW 2324 which is approximately 51.9 km from the subject building.

The fire station locations are obtained from www.fire.nsw.gov.au.

6.4.2 FBIM Analysis

A Fire Brigade Intervention Model (FBIM) has been undertaken for the subject building to demonstrate the fire brigade arrival, setup and search/rescue times. The following are details of the assumptions used in this FBIM analysis:

- The initial brigade notification is via fire alarms, telephone call by general public or a combination of aforementioned means of notifications;
- The fire stations assigned to the initial turnout are located at the distance of 34.7 km for RAYMOND TERRACE Fire Station;
- Where the values are obtained from FBIM Dataset, the mean values are used;
- The first appliance would be expected to commence the initial attack on the fire.

The following table provides a summary of the FBIM results for a fire in the subject site at 166 Allworth Road Allworth NSW.

Table 6 Brigade Intervention Time (minutes)

Chart	Events	Estimated Time (min)	FBIM Dataset Version 2020.05 Table Reference
1	Time for fire brigade notification	5	Telephone notification
2 & 3	Time to dispatch resources	3	Table D & E (0.5+1.5+1)
4	Time to reach kerb side	27	Google map
5, 6 & 7	Time to assess and access fire	1	Table F2, H, L, M & P
8	Time to travel to set up area	0	See above
9	Time for firefighter travel	0	See above
10 & 11	Time for water set up	4	Table V
12	Time for search and rescue	1	-
13 & 14	Time for other property protection	0	-
15	Time to control and extinguish the fire	3	-
16	Time for environment protection	5	-
	TOTAL	49	

6.4.3 Consideration of Fire Brigade Intervention

The nearest permanent FRNSW fire station is RAYMOND TERRACE Fire Station, which is located at 3-5 Leisure Way, Raymond Terrace and approximately 34.7 km from the subject site.

The first attending fire brigade unit is estimated to be able to arrive within 35 minutes from a fire ignition.

It is expected that NSW Rural Fire Services stations could be the first line of defence in a structure fire situation due to the rural location of the subject site.

The proposed fire water storage is to be listed on the Essential Fire Safety Schedule and regularly maintained; therefore it is considered to be equivalent to town water supply in terms of the reliability.

The time involved with locating and connecting the fire hose to water storage is not expected to vary significantly from the situation where street hydrants or onsite feed hydrants are relied upon by the fire brigade personnel during fire brigade intervention.

A block plan and appropriate signage are proposed at a prominent location (carpark entry) to indicate the location of water tank and suction points. This would assist the first and second responding units to identify the onsite hydrants and water storage and expedite the fire intervention activities.

Therefore the hydrant system with respect to the provisions of booster and pump is considered appropriate for fire brigade intervention, although not complying with AS2419.1-2005 which is referenced in the current BCA.

6.4.4 Fire Water Quantity Based on the Fire Loads

Fuel loads (MJ/m^2)

Table 3.4.1a of IFEG[5] suggests the following fire load density figures for distiller and restaurant related occupancies:

- Distilling plant, combustible materials 200 MJ/m^2
- Liquor mfg 500 MJ/m^2
- Liquor store 700 MJ/m^2
- Liqueur mfg 400 MJ/m^2

And

- Restaurant 300 MJ/m^2
- Café 400 MJ/m^2
- Canteen 300 MJ/m^2

Water cooling capacity in fire fighting

Fire Brigade Intervention Model[5] (FBIM) Chart 15 notes recommend that interior firefighting hose streams delivering water at 5 L/s have an extinguishing capacity of 8 MW, comprising the theoretical absorption capacity and the smothering effect of the steam. For a 20 L/s hydrant flow, the extinguishing capacity is assumed to be 32 MW.

Peak HRR

The peak HRR for the subject building has been assumed to be the maximum extinguishing capacity of 32 MW associated with the maximum hydrant flow.

Water storage

The water supply quantities needed to adequately fight a fire in the subject building are summaried below in Table 7 and Table 8, along with other relevant parameters. Each occupany is separately considered, i.e. Dining, Store and Production.

Note the efficiency of water application of 15% has been applied to the extingsuishing capacity of 8MW per 5L/s. Furthermore the HRR is assumed to be constant throughout the burnout time, effectively ignoring the application of water resulting in decaying HRR released from a fire.

Table 7 relates to the average fire load density, while Table 8 is based on 1.5 times of the average fire load density as a redundancy scenario.

Table 7 Fire fighting water supply – based on average fire load density

	Fuel loads density	Floor area	Fuel loads	Peak HRR	Burnout time	Hydrant Flow Needed	Water storage
Dining	400 MJ/m^2	395 m^2	158000 MJ	32 MW	4,938 s	20 L/s	98,750 L
Store	1600 MJ/m^2	155 m^2	248000 MJ	32 MW	7,750 s	20 L/s	155,000 L
Production	1000 MJ/m^2	236 m^2	236000 MJ	32 MW	7,375 s	20 L/s	147,500 L

Table 8 Fire fighting water supply – based on 1.5 x average fire load density

	Fuel loads density	Floor area	Fuel loads	Peak HRR	Burnout time	Hydrant Flow Needed	Water storage
Dining	600 MJ/m^2	395 m^2	237,000 MJ	32 MW	7,406 s	20 L/s	148,125 L
Store	2400 MJ/m^2	155 m^2	372,000 MJ	32 MW	1,1625 s	20 L/s	232,500 L
Production	1,500 MJ/m^2	236 m^2	354,000 MJ	32 MW	11,063 s	20 L/s	221,250 L

The minimum quantity of the fire fighting water storage is therefore estimated to be 401,250 L for base case scenario. The reuslt for redundancy study is 601,875 L.

A total of 460,000L of fire fighting water storage has been proposed for the development which satisfies the water quantity requirement of base case scenario (401,250 L). As a DtS provision, AS2419.1-2005 requires 288,000 L fire water storage, for four (4) hours of water supply to sustain the 20 L/s hydrant flow. Therefore, the water storage is above the minimum requirement of AS2419.1 and provide further redundancy. Note the DtS fire water quantity is less than the base scenario outcome.

The omission of pumps from the hydrant system would rely on using the pumping equipment on brigade tankers and result in additional setup time for fire brigade. The additional time associated with searching for water tank, obtaining static water and charging delivery hose has been considered to take approximately four (4) minutes. This is considered to involve additional setup time of two (2) minutes and has been included in the total fire brigade intervention time of 49 minutes. This additional time is not considered to have adverse impact on the fire fighting activities due to the good visibility and simple layout of the subject building.

It is also noted that multiple exits are provided to the perimeter of the buildings onsite. The layout of these exits, in conjuection with the generally open nature of the building, are expected to result in complete evacuation of the building prior to a fully developed fire. The use of the hydrant system is therefore considered to be a property protection measure as it has limited benefits with regard to the life safety of building occupants.

6.4.5 Consideration of Fire Water Provision for Bush Fire

The subject industrial site is located in a rural area which is also subject to bushfire risk as indicated in Figure 3 below.

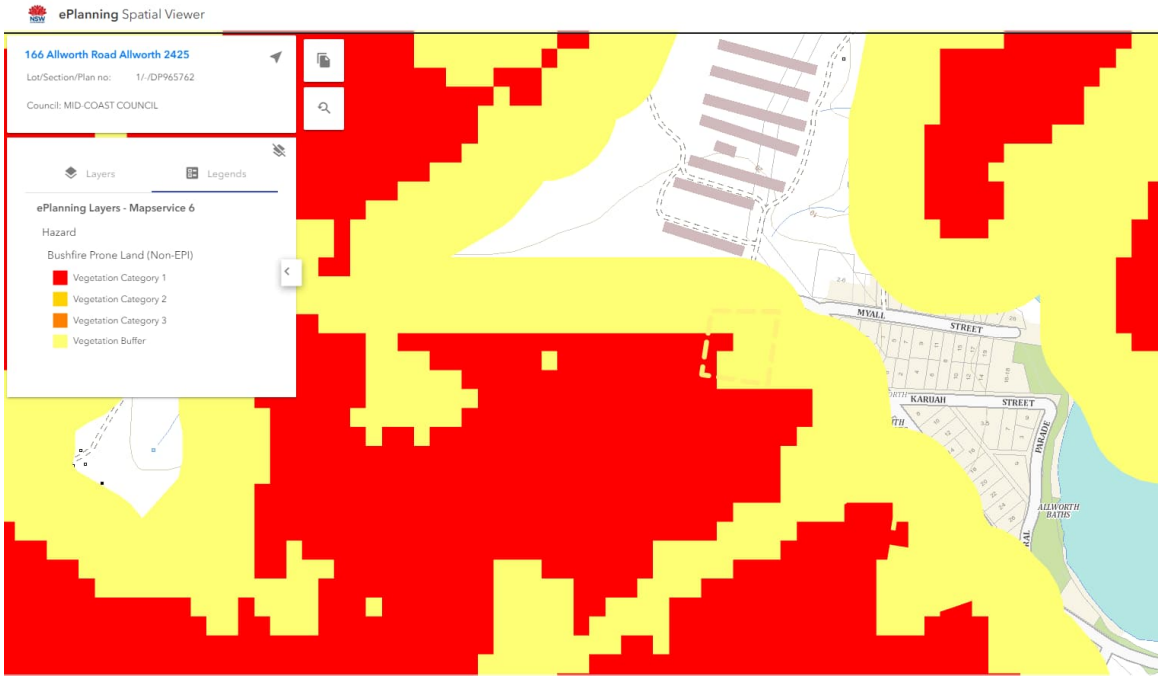


Figure 3 Bush fire prone land involving the subject site (accessed from ePlanning Spatial Viewer on 27/03/23

The NOTICE OF DETERMINATION (Development Application No: DA-34/2018) from Midcoast Council contains various fire fighting infrastructure requirement under Condition 49. NSW Rural Fire Service requirements. The relevant hydrant water related requirements are reproduced below, which are expected to be implemented in the design and installation of fire hydrants and considered to supplement the need of a structure fire fighting.

i. In recognition that no reticulated water supply is available to the development, a total of 20,000 litres firefighting water supply shall be provided to the proposed dwelling. In addition the onsite water storage facility at the proposed café/distillery shall be made accessible by firefighting personnel and appliances for firefighting purposes. The firefighting water supplies shall be installed and maintained in the following manner: .

(a) Firefighting water supply may be provided by a tank, a swimming pool or a dam that shall be located no more than 20 metres from the approved structure.

(b) New above ground firefighting water supply storage's are to be manufactured using non-combustible material (concrete, metal, etc). Where existing firefighting water supply storage's are constructed of combustible (polycarbonate, plastic, fibreglass, etc) materials, they shall be shielded from the impact of radiant heat and direct flame contact.

(c) Non-combustible materials (concrete, metal, etc) will only be used to elevate or raise firefighting water supply tank(s) above the natural ground level.

(d) A 65mm metal Storz outlet with a gate or ball valve shall be fitted to any firefighting water supply tank(s) and accessible for a fire fighting truck.

(e) The gate or ball valve, pipes and tank penetration are adequate for the full 50mm inner diameter water flow through the Storz fitting and are constructed of a metal material.

(f) All associated fittings to the firefighting water supply tank(s) shall be non-combustible.

(g) Any below ground firefighting water supply tank(s) constructed of combustible (polycarbonate, plastic, fibreglass, etc) materials shall be shielded from the impact of radiant heat and direct flame contact.

(h) A hardened ground surface for firefighting truck access is to be constructed up to and within 4 metres of the firefighting water supply (tank or Storz fitting).

(i) Any firefighting water supply tank(s) located below ground shall be clearly delineated to prevent vehicles being driven over the tank.

(j) All water supplies for firefighting purposes shall be clearly signposted as a fire fighting water supply.

(k) Below ground firefighting water supply tank(s) shall have an access hole measuring a minimum 200mm x 200mm to allow firefighting trucks to access water direct from the tank.

(l) Firefighting water supply tank(s) and associated fittings, located within 60 metres of a bushfire hazard and on the hazard side of an approved building, shall be provided with radiant heat shielding to protect the tank from bush fire impacts and maintain safe access to the water supply for fire fighters.

(m) A Static Water Supply (SWS) sign shall be obtained from the local NSW Rural Fire Service (RFS) and positioned for ease of identification by RFS personnel and other users of the SWS. In this regard:

i. Markers must be fixed in a suitable location so as to be highly visible; and

ii. Markers should be positioned adjacent to the most appropriate access for the water supply.

6.5 Conclusion and Consideration of Functional Statement and Performance Requirements

Under BCA Function Statement EF1.1, a building is to be provided with fire-fighting equipment to safeguard against fire spread, so that the fire brigade has the necessary equipment to undertake search, rescue, and fire-fighting operations. The fire engineering analysis has demonstrated that the fire brigade personnel are able to undertake fire brigade intervention using the proposed fire hydrant system appropriate to the expected fire hazard. Therefore the hydrant system is considered to be able to facilitate the needs of the fire brigade to the degree necessary.

In order for the proposed building work to comply with the Performance Requirements of the BCA, it must be demonstrated that each of the performance solutions identified in Section 4.2 complies with the corresponding Performance Requirement clauses.

It is considered that the performance solution associated with the hydrant system meets the performance requirements EP1.3.

Performance Requirements EP1.3	Considerations
A fire hydrant system must be provided to the degree necessary to facilitate the needs of the fire brigade appropriate to—	
(a) fire-fighting operations; and	This has been considered in the assessment
(b) the floor area of the building; and	Similar to a DtS design and considered
© the fire hazard.	This has been considered in the assessment
Application: **EP1.3 only applies to a building where a fire brigade is available to attend.**	

7. Recommendations

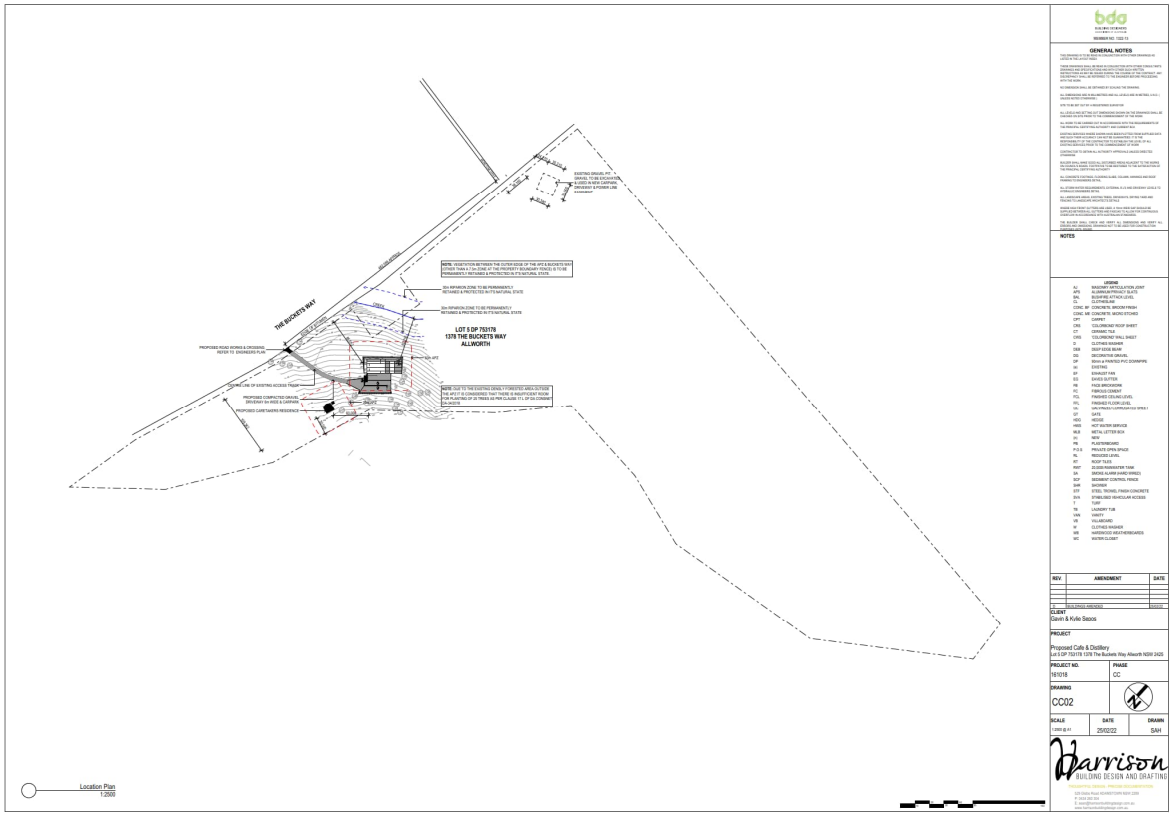
This report has been prepared in accordance with performance-based fire engineering principles as outlined in the Australian Fire Engineering Guidelines to demonstrate that the Performance Solution outlined in this report, complies with the relevant Performance Requirements of BCA. All other building parameters are understood to meet the DtS requirements of the BCA or as permitted by the Building Certifier and/or Consent Authority.

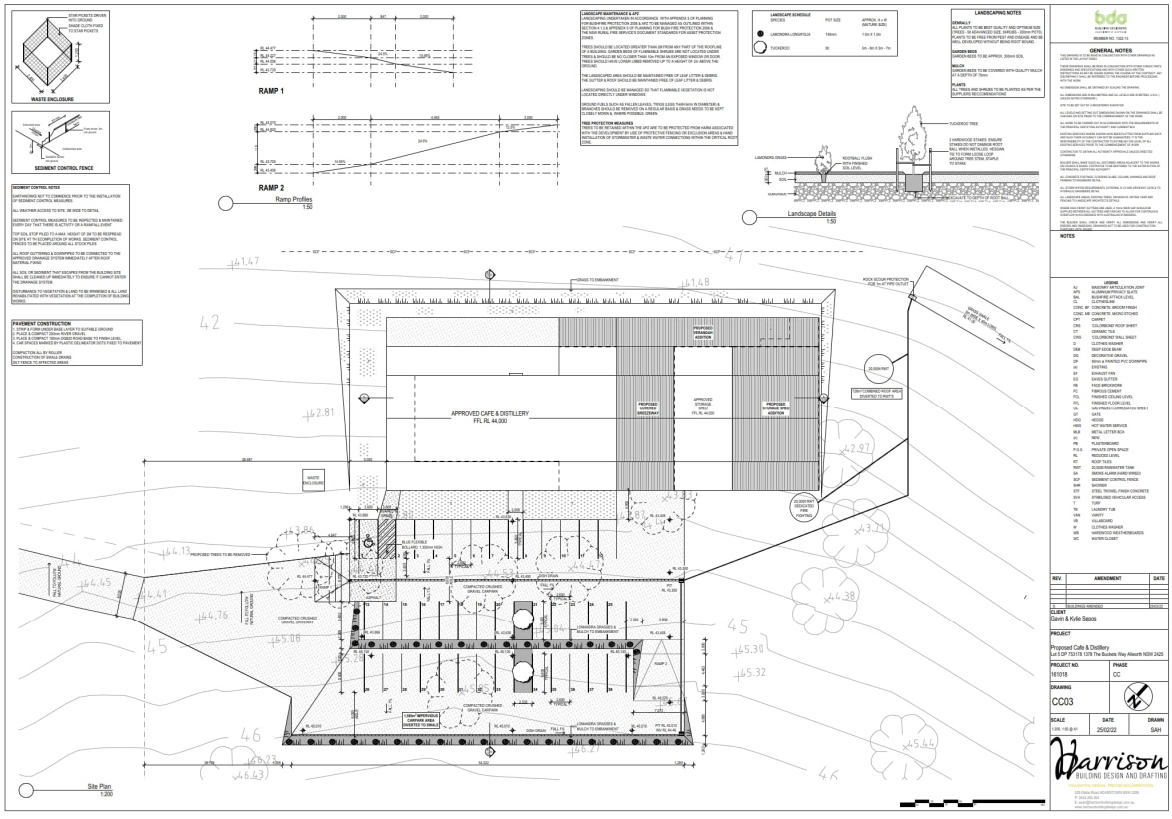
Fire safety strategy for the proposed fire hydrant system upgrade is to be provided by a combination of the prescriptive and alternative fire safety measures in order to provide an acceptable level of fire safety within the subject building.

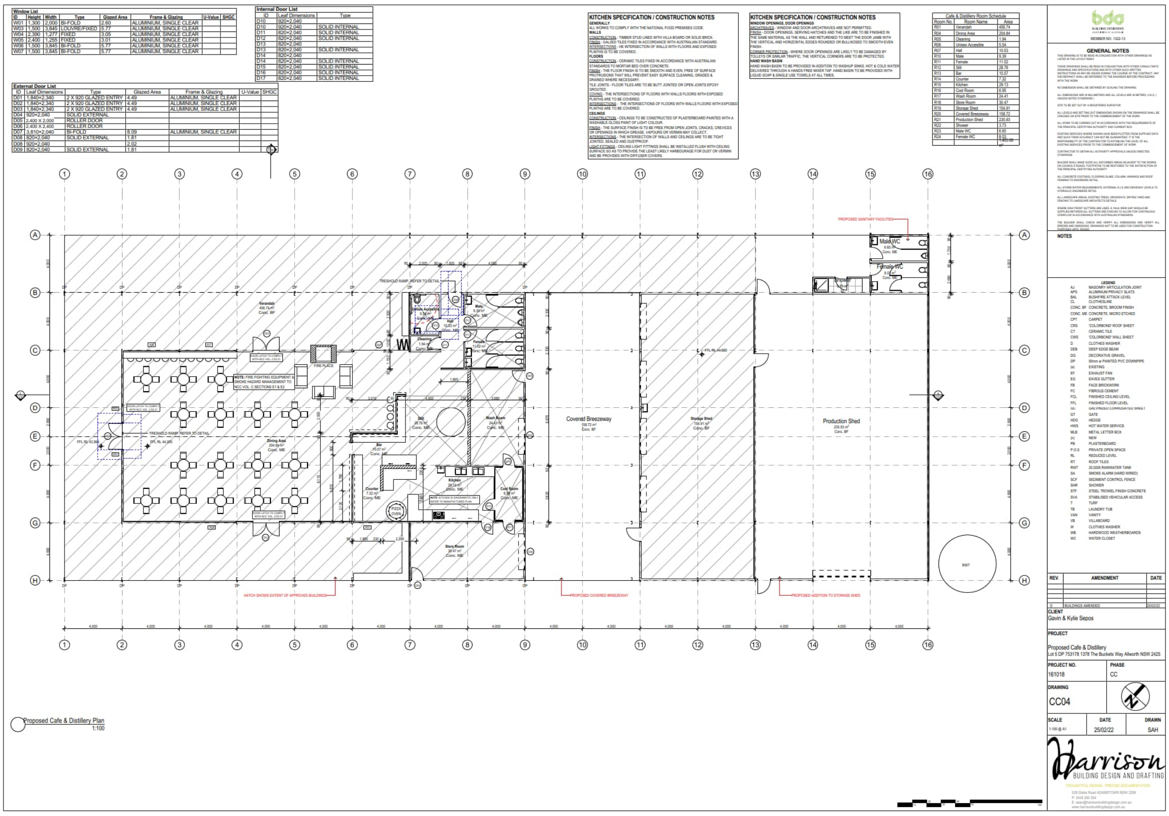
The following list primarily relates to the fire safety strategy proposed under the performance solution and does not provide a comprehensive list of fire safety measures required by the DtS provisions of the BCA. The fire safety measures shall be read in conjunction with the DtS provisions of the BCA.

- Permit the proposed hydrant system to not have pumpsets and booster assembly;
- Provide a total of 460,000 L of fire fighting water storage to satisfy AS2419.1-2005;
- The fire water storage tanks and suction points shall be arranged such that each building can be protected by 2x30m hose length and 10m water stream;
- The fire water storage tanks shall comply with the requirements of Section 5 Water Storage under AS2419.1-2005 “Fire hydrant installations Part 1: System design, installation and commissioning” and AS 2304—2011 “Water storage tanks for fire protection systems”;
- A block plan and appropriate signage shall be provided at a prominent location (carpark entry) to indicate the location of water tank and suction points;
- The suction connection shall be compatible with suction connections of the local FRNSW and NSWRFS stations where any differences in connection sizes occur;
- Where a tank is not located in a secure area, all valves shall be locked in the closed position with a padlock key suitable to the needs of the local fire brigade;
- All other aspects of the hydrant system shall comply with AS2419.1-2005 as well as the details under Midcoast Council DA Condition 49 (Ref DA-34/2018).
- The above requirements in relation to the proposed performance solutions shall be shown on the building essential fire safety schedule;
- All fire safety systems required by relevant DtS Provisions and performance solutions in the subject building shall comply with standards of performance on the building Fire Safety Schedule and be maintained in accordance with the Australian Standard of performance applicable to the building;
- This fire engineering assessment is based on the building geometry, uses and planning control as described in this report; should the building use and main building configuration be changed, a fire engineering review shall be undertaken to assess its validity for any new building use and configuration.

Appendix 1. Architectural Drawings






Proposed Cafe & Distillery Plan
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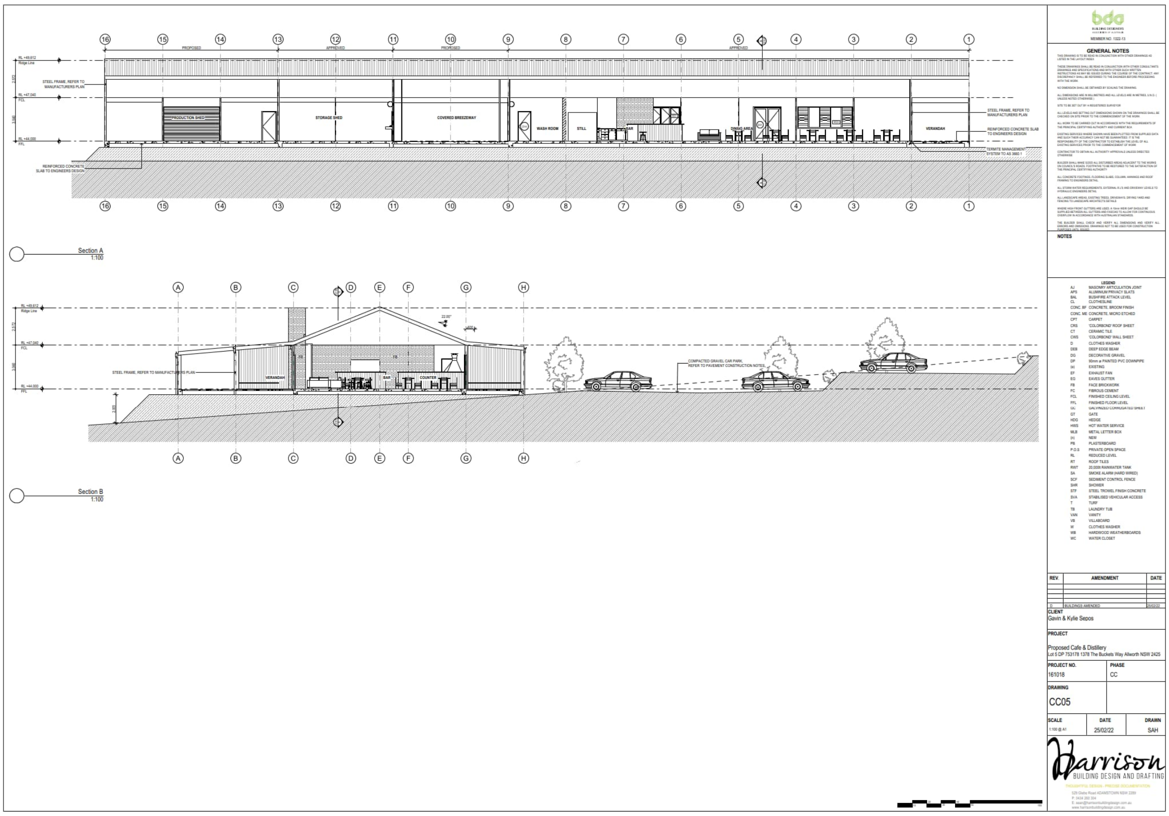
Production Shed
Client
Gavin & Kylie Sepos
Project
Proposed Cafe & Distillery
Drawing
CC04
Date
25/02/22
Drawn
SAH
Harrison
BUILDING DESIGN AND DRAFTING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Section B
1:100
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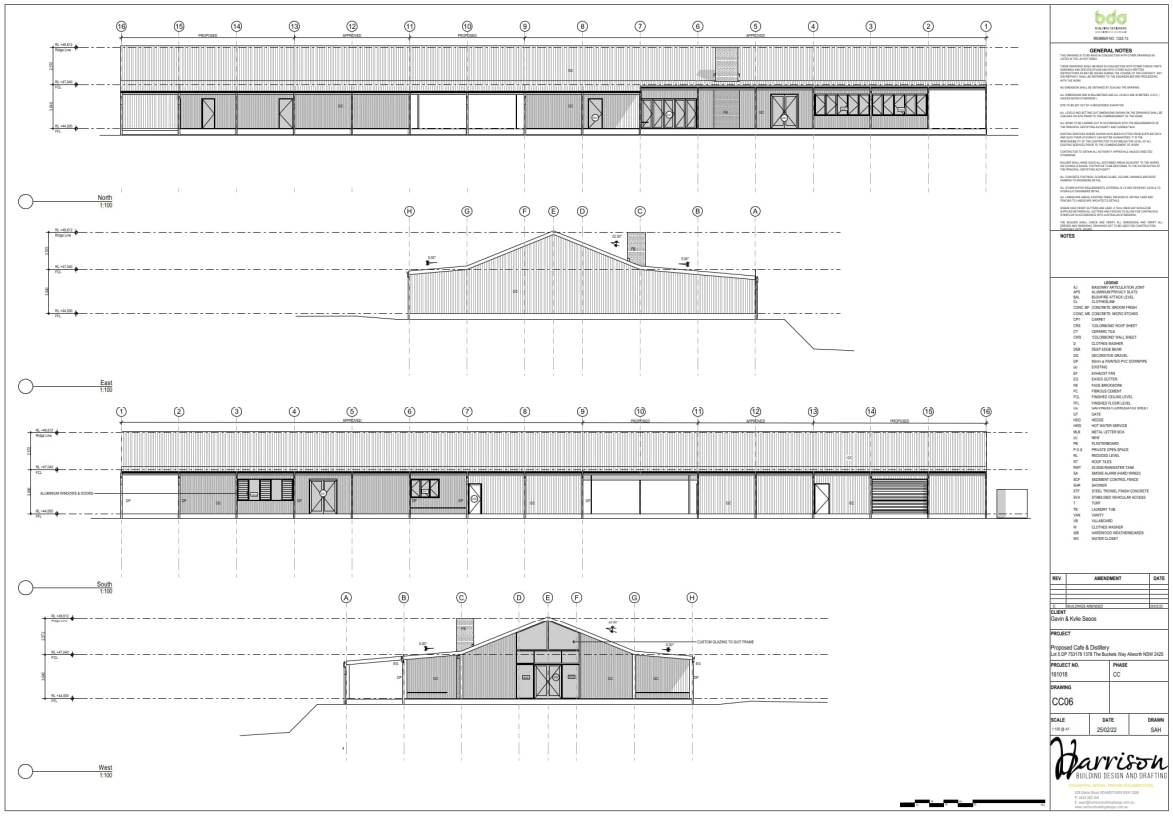
Gavin & Kylie Sepos
Project
Proposed Cafe & Distillery
Drawing
CC05
Date
25/02/22
Drawn
SAH
Harrison
BUILDING DESIGN AND DRAFTING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East
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South
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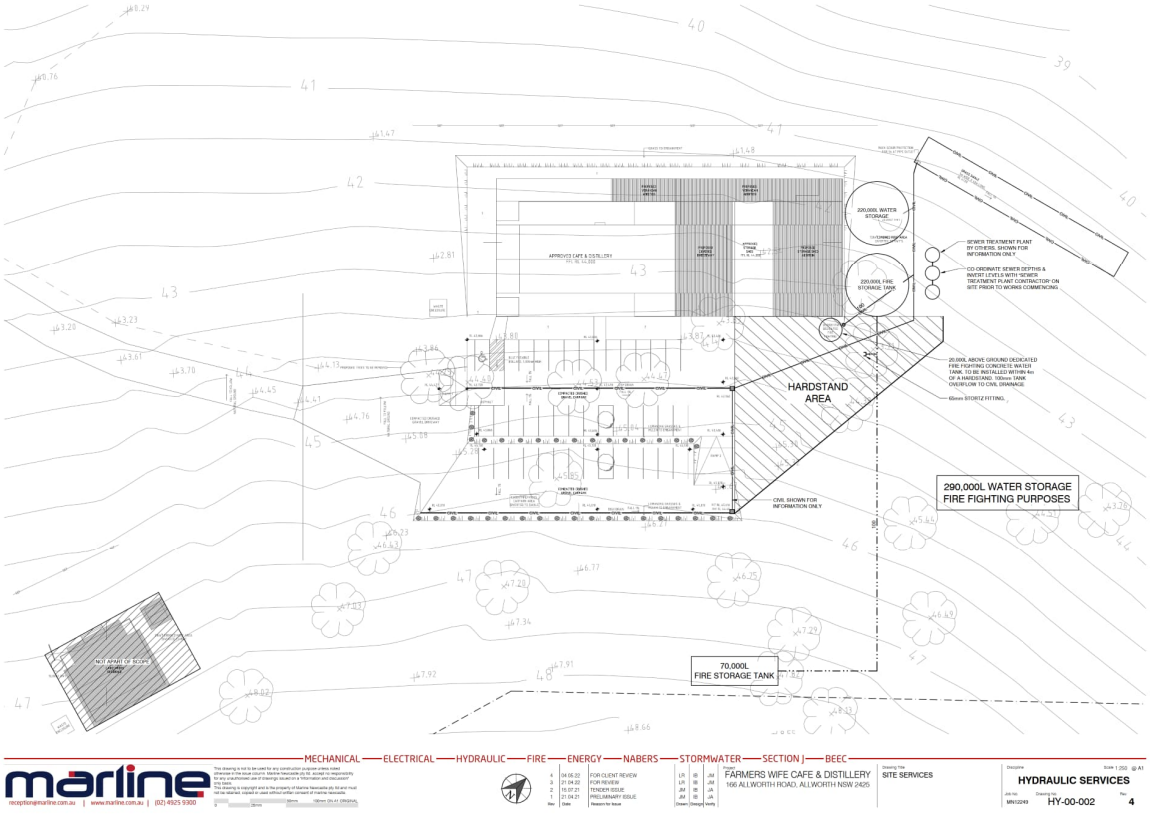
LEGEND
REV.
AMENDMENT
DATE
CLIENT
Gavin & Kylie Sasos
PROJECT
Proposed Cafe & Distillery
Lot 6 DP 733178 1378 The Bucketts Way Allworth NSW 2425
PROJECT NO.
161018
PHASE
CC
DRAWING
CC06
SCALE
1:100 @ A1
DATE
25/02/22
DRAWN
SAH
Harrison
BUILDING DESIGN AND DRAFTING

Appendix 2. Hydraulic Site Plan



Appendix 3. FEBQ/PBDB WILL NOT BE PROVIDED - FEBQ V1 - 166 Allworth Road Allworth - The Farmer's Wife Distillery - YGL Consulting Pty Ltd - THE FARMERS WIFE DISTILLERY PTY LTD - SRID 8000026820

Yuguang Li

From: Fire Safety <FireSafety@fire.nsw.gov.au>
Sent: Tuesday, 21 March 2023 6:05 PM
To: kylie@farmerswifedistillery.com.au
Cc: Nick.Green@MidCoast.nsw.gov.au; Ian Bracken; Yuguang Li
Subject: FEBQ/PBDB WILL NOT BE PROVIDED - FEBQ V1 - 166 Allworth Road Allworth - The Farmer's Wife Distillery - YGL Consulting Pty Ltd - THE FARMERS WIFE DISTILLERY PTY LTD - SRID 8000026820

Follow Up Flag: Follow up
Flag Status: Flagged

Hello,

Fire & Rescue NSW (FRNSW) acknowledge receipt of your application and supporting documents for a Fire Engineering Brief Questionnaire/Performance Based Design Brief.

In this instance, FRNSW advises that an Fire Engineering Brief Questionnaire/Performance Based Design Brief **will not be provided.**

The decision not to assess the version submitted is not to be interpreted as FRNSW support for the proposal nor an objection to the proposal, only that FRNSW does not have the resources to review and provide stakeholder comment on this proposal.

For any future correspondence regarding this matter, we request that you quote your below reference numbers:

Project Reference:	**FRN23/1052**
Job Number:	**BFS23/1133**
SRID Number:	**8000026820**

Should you have any further queries, please contact the Fire Safety Branch by replying to this email.

Regards,

KAT MALAPETSAS
Administration & Project Officer
CSD Admin & Project Services | Fire and Rescue NSW

T: (02) 9742 7434
E: firesafety@fire.nsw.gov.au
A: 1 Amarina Ave, Greenacre, NSW, 2190
Locked Bag 12, Greenacre, NSW, 2190

PREPARED FOR ANYTHING.

Appendix 4. DA Conditions – No 49. NSW Rural Fire Service requirements

45. Ongoing maintenance of food premises

The food premises must at all times comply with the requirements of the *Food Act 2003*, the Food Standards Code and *Australian Standard 4674 - 2004 Design, construction* and fit-out of food premises.

Reason: To maintain public health and safety.

46. Private water supply

The private water supply must be operated and maintained in accordance with the submitted drinking water 'quality assurance program'. Water supplied to the premises must consistently meet the requirements of the National Health and Medical Research Council *'Australian Drinking Water Guidelines'* (2011), and the following testing must be undertaken:

a) The microbial quality of the water provided to the premises must be monitored at least monthly by testing for the organism Escherichia coli (E. coli). Water samples must be tested at a laboratory accredited by the National Association of Testing Authorities (NATA) and records kept at the premises.
b) The chemical and physical quality of the water must be tested at least annually. Water samples must be tested at a laboratory accredited by the National Association of Testing Authorities (NATA) and records kept at the premises.

Reason: To ensure public health and safety.

47. Swale Maintenance

The swale and vegetation within the swale is maintained in perpetuity by the owner.

Reason: To ensure water quality requirements as contained in the Water Sensitive Design section of the Great Lakes Development Control Plan are met.

48. Implementation of the Approved Final Landscape Plan

The Registered Proprietor of the land, or their agents, shall fully implement all of the required actions outlined in the approved Final Landscape Plan as per the instructions set-out in that plan for the life of the approved development.

Reason: To appropriately conduct landscaping on the subject land.

OTHER AGENCY CONDITIONS

49. NSW Rural Fire Service requirements

The development proposal is to comply with the drawing titled "Proposed Café & Distillery" prepare by Harrison Building Design and Drafting, and dated June 2017.

a. Asset Protection Zones

The intent of measures is to provide sufficient space and maintain reduced fuel loads so as to ensure radiant heat levels of buildings are below critical limits and to prevent direct flame contact with a building. To achieve this, the following conditions shall apply:

i. At the commencement of building works and in perpetuity the property around the buildings to a distance of 30 metres shall be maintained as an asset protection zone (APZ). The APZ shall consist of a 20 metre inner protection area (IPA) and a 10 metre outer protection area (OPA) as outlined within section 4.1.3 and Appendix

5 of 'Planning for Bush Fire Protection 2006' and the NSW Rural Fire Service's document 'Standards for asset protection zones',

b. Water and Utilities

The intent of measures is to provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building. To achieve this, the following conditions shall apply:

i. In recognition that no reticulated water supply is available to the development, a total of 20,000 litres firefighting water supply shall be provided to the proposed dwelling. In addition the onsite water storage facility at the proposed café/distillery shall be made accessible by firefighting personnel and appliances for firefighting purposes. The firefighting water supplies shall be installed and maintained in the following manner:

(a) Firefighting water supply may be provided by a tank, a swimming pool or a dam that shall be located no more than 20 metres from the approved structure.

(b) New above ground firefighting water supply storage's are to be manufactured using non-combustible material (concrete, metal, etc). Where existing firefighting water supply storage's are constructed of combustible (polycarbonate, plastic, fibreglass, etc) materials, they shall be shielded from the impact of radiant heat and direct flame contact.

(c) Non-combustible materials (concrete, metal, etc) will only be used to elevate or raise firefighting water supply tank(s) above the natural ground level.

(d) A 65mm metal Storz outlet with a gate or ball valve shall be fitted to any firefighting water supply tank(s) and accessible for a fire fighting truck.

(e) The gate or ball valve, pipes and tank penetration are adequate for the full 50mm inner diameter water flow through the Storz fitting and are constructed of a metal material.

(f) All associated fittings to the firefighting water supply tank(s) shall be non-combustible.

(g) Any below ground firefighting water supply tank(s) constructed of combustible (polycarbonate, plastic, fibreglass, etc) materials shall be shielded from the impact of radiant heat and direct flame contact.

(h) A hardened ground surface for firefighting truck access is to be constructed up to and within 4 metres of the firefighting water supply (tank or Storz fitting).

(i) Any firefighting water supply tank(s) located below ground shall be clearly delineated to prevent vehicles being driven over the tank.

(j) All water supplies for firefighting purposes shall be clearly signposted as a fire fighting water supply.

(k) Below ground firefighting water supply tank(s) shall have an access hole measuring a minimum 200mm x 200mm to allow firefighting trucks to access water direct from the tank.

(l) Firefighting water supply tank(s) and associated fittings, located within 60 metres of a bushfire hazard and on the hazard side of an approved building,

shall be provided with radiant heat shielding to protect the tank from bush fire impacts and maintain safe access to the water supply for fire fighters.

(m) A Static Water Supply (SWS) sign shall be obtained from the local NSW Rural Fire Service (RFS) and positioned for ease of identification by RFS personnel and other users of the SWS. In this regard:
   i. Markers must be fixed in a suitable location so as to be highly visible; and
   ii. Markers should be positioned adjacent to the most appropriate access for the water supply.

Note: The definition of below ground dedicated firefighting water supply tank(s) is when the outlet valve is located below natural ground level.

ii) Electricity and/or gas services to the proposed development are to comply with section 4.1.3 of 'Planning for Bush Fire Protection 2006'.

c. Access

The intent of measures for property access is to provide safe access to/from the public road system for fire fighters providing property protection during a bush fire and for occupants faced with evacuation. To achieve this, the following conditions shall apply:

i. Property access roads shall comply with section 4.1.3 (2) of 'Planning for Bush Fire Protection 2006',

d. Evacuation and Emergency Management

The intent of measures is to provide suitable emergency and evacuation (and relocation) arrangements for occupants. To achieve this, the following conditions shall apply:

i. Arrangements for emergency and evacuation of the proposed cade/distillery are to comply with section 4.2.7 of 'Planning for Bush Fire Protection 2006',

e. Design and Construction

The intent of measures is that buildings are designed and constructed to withstand the potential impacts of bush fire attack. To achieve this, the following conditions shall apply:

i. Construction of the proposed dwelling shall comply with Sections 3 and 7 (BAL 29) Australian Standard AS3959-2009 'Construction of buildings in bush fire-prone areas' and section A3.7 Addendum Appendix 3 of 'Planning for Bush Fire Protection' 2006.

ii. All new class 10 structures as defined by the "Building Code of Australia" attached to or within 10 metres of the dwelling shall Sections 3 and 7 (BAL 29) Australian Standard AS3959-2009 'Construction of buildings in bush fire-prone areas' and section A3.7 Addendum Appendix 3 of 'Planning for Bush Fire Protection' 2006.

f. Landscaping

i. Landscaping within the required asset protection zone is to comply with the principles of Appendix 5 of 'Planning for Bush Fire Protection 2006'.

Document Status

Rev No	Author	Reviewer	Signature	Description	Date
01	Y Li	Y Li		For approval	13/04/23

END OF FIRE ENGINEERING REPORT

Performance-Based Design Brief / Fire Engineering Brief Questionnaire (FEBQ)

1 Document control

Applicant reference number Enter ref. no. **FRNSW reference number** FRNSW use only

Ver.	Author	Organisation	Status	Date
01	Yuguang Li	YGL Consulting Pty Ltd	Initial submission	6/03/2023
02	FRNSW	FRNSW	Response will not be provided	21/03/2023

2 Applicant

2.1 Agreement

As the applicant, I confirm the following:

- I agree to pay Fire and Rescue NSW (FRNSW) the charges set out in Clause 46 of the Fire Brigades Regulation 2014 (see Section 10).
- I agree to forward with this application the following documentation for FRNSW to review and provide advice on the assessment methods and acceptance criteria proposed for the given performance solution:

☑ Copy of proposed building plans and specifications
(e.g. relevant floor plans, elevations, site plan, section views, hydrant plan and schematic)
☐ BCA report or letter from an accredited certifier that identifies all non-compliances (if available)
☐ *CFD/zone modelling inputs form* (if applicable) (available on FRNSW website)
☐ *Performance solution summary table* (available on FRNSW website)

Name of fire engineer	Yuguang Li	BPB number	BDC 0774
Company name	YGL Consulting Pty Ltd		
Fire engineer's phone no.	0488981275		
Fire engineer's email	yuguang.li@yglconsulting.com.au		

2.2 Remittance advice information

Invoices will be issued based on the information provided below:

ASIC company name	**The Farmer's Wife Distillery**		
Australian business number	**23615779354** Trading name **The Farmer's Wife Distillery**		
Remittance contact name	**Kylie Sepos**		
Remittance street address	**166 Allworth Road Allworth NSW 2425**		
Remittance email address	kylie@farmerswifedistillery.com.au		
Remittance phone number	**0473001033**	Remittance fax number	NA
Purchase order ref. no.	If applicable	Project code ref. no.	If applicable
Project leader contact name	**Kylie Sepos**		

Project leader contact email	**As above**

3 Consultation

3.1 Stakeholders

Role	Name and BPB number	Organisation and phone	Email address
BCA consultant	NA	NA	NA
Certifier	Nicholas Green 1242	Midcoast Council 79557351 0418692557	Nick.Green@MidCoast.nsw.gov.au
FRNSW reviewers	FRNSW use only FRNSW use only	Fire and Rescue NSW 02 9742 7434	firesafety@fire.nsw.gov.au

3.2 Meeting details

Record the details of any meetings undertaken with FRNSW on the project.

Meetings undertaken	Type of Meeting	Meeting Date	Attendees
Description of Meeting	No meeting	**Meeting date**	**Enter names**
Description of Meeting	**Select**	**Meeting date**	**Enter names**
Description of Meeting	**Select**	**Meeting date**	**Enter names**

4 Project details

4.1 Premises

Premises name	The Farmer's Wife Distillery
Primary street address	166 Allworth Road Allworth NSW 2425
Secondary street address	Secondary street address (if applicable)
Premises suburb	Allworth
Lot and DP numbers	LOT 5 – DP 753178
Is the premises considered a significant development or a unique building (e.g. Sydney Football Stadium, Sydney Opera House, Crown Towers, etc.)?	**Select**

4.2 Proposed works

☑ New building
Amdt 1
☐ Refurbishment of an existing building
☐ Extension of an existing building
☐ Change in use within an existing building
Other: (provide details)

Applicable NCC: NCC 2019

For existing buildings:
Approximate year of construction: **Year**
Building code when constructed: **Select**

What is the proposed approval pathway?:

☐ Complying Development Certificate (CDC) ☑ Construction Certificate (CC) ☐ Crown works

☐ Voluntary upgrade ☐ Other: (provide details)

How many performance solution issues are proposed in this FEBQ? 1

How many Performance Requirements are being assessed? 1

Do any of the Performance Solutions proposed pertain to works already constructed on site? No

Provide details, including reference to relevant performance solutions / issue numbers

Are any of the solutions proposed as a result of:

An issue of a notice of intention to issue a fire order on the subject premise	No
An issue of a fire order on the subject premise	No
An audit of the existing building that has identified an existing non-compliance	No
Not being able to sign off an annual fire safety statement	No
(provide details)	

Additional Questions

Does the proposal include a reduction in water supply to the fire hydrant or sprinkler system?	No
Does the proposal relate to fire hydrant system flows and/or pressures?	Yes
Would the DtS provisions require the provision of an active fire safety system that is not proposed as part of the performance solution (i.e. is the performance solution deleting an active fire safety system)?	No
If the proposal includes a waste management facility, does it comply with the current FRNSW Fire Safety in Waste Facilities Fire safety guideline?	No
Has there been any previous IFSR submission(s) under Part 3 Division 3 of the *Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021* pertaining to this development? **(If yes, provide details and appropriate references)**	No

Will the premises likely be subject to a fire safety study, risk assessment or dangerous goods study? No

Note: Any study/risk assessment should be completed prior to submitting this FEBQ and should be attached to this application.

Have all departures from the deemed-to-satisfy (DtS) provisions of the *National Construction Code* (*NCC*) been identified for this proposed design (i.e. a BCA report or letter from an accredited certifier)? Yes – FEBQ reviewed by the certifier

Note: Any advice given is subject to all non-compliances being identified. Any new DtS departures identified, including any from the certifier determining the application for construction certificate, may affect FRNSW advice in respect to this performance solution.

Identify if any previous performance solution applies to the building:

N/A

Identify if any application has been/will be submitted for a fire safety exemption under Clause 188 of the *Environmental Planning and Assessment Regulation 2000* or under Section 111 of the *Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021*:

N/A

Identify if the premises is or will be subject to any development application (DA) conditions or special regulatory approvals (e.g. BPB conditions, ministerial conditions, crown building works):

Note: FRNSW will not comment on existing buildings subject to voluntary upgrade or change of use prior to the issuing of any DA conditions of consent, or conditions of an existing consent have been modified (i.e

section 4.55 of *Environmental Planning and Assessment Act 1979*). Comment will also not be provided if an order has been issued unless the Council agrees. The Council may seek advice during the DA review.

DA approved on 21 March 2018 reference number is DA-34/2018

4.3 Description of building

Main occupancy class	6	Largest fire compartment (within the building)	Area (m^2)	1,440
Other occupancy classes	7b		Volume (m^3)	9,521
Type of construction	C		Height (m)	9,521
Effective height (m)	0	Ground floor area (m^2)		1,440
Rise in storeys	1	Total floor area (m^2)		1,440
Levels contained	1	Total volume (m^3)		9,521
Does the building contain an early childhood centre?	No	Is the building or does the building contain a Data Centre?		No
Is the development a major hazard facility?	No			

Outline any additional building characteristics:

The proposed development is new café and distillery with ancillary storage.

The site location is shown below in Figure 1.

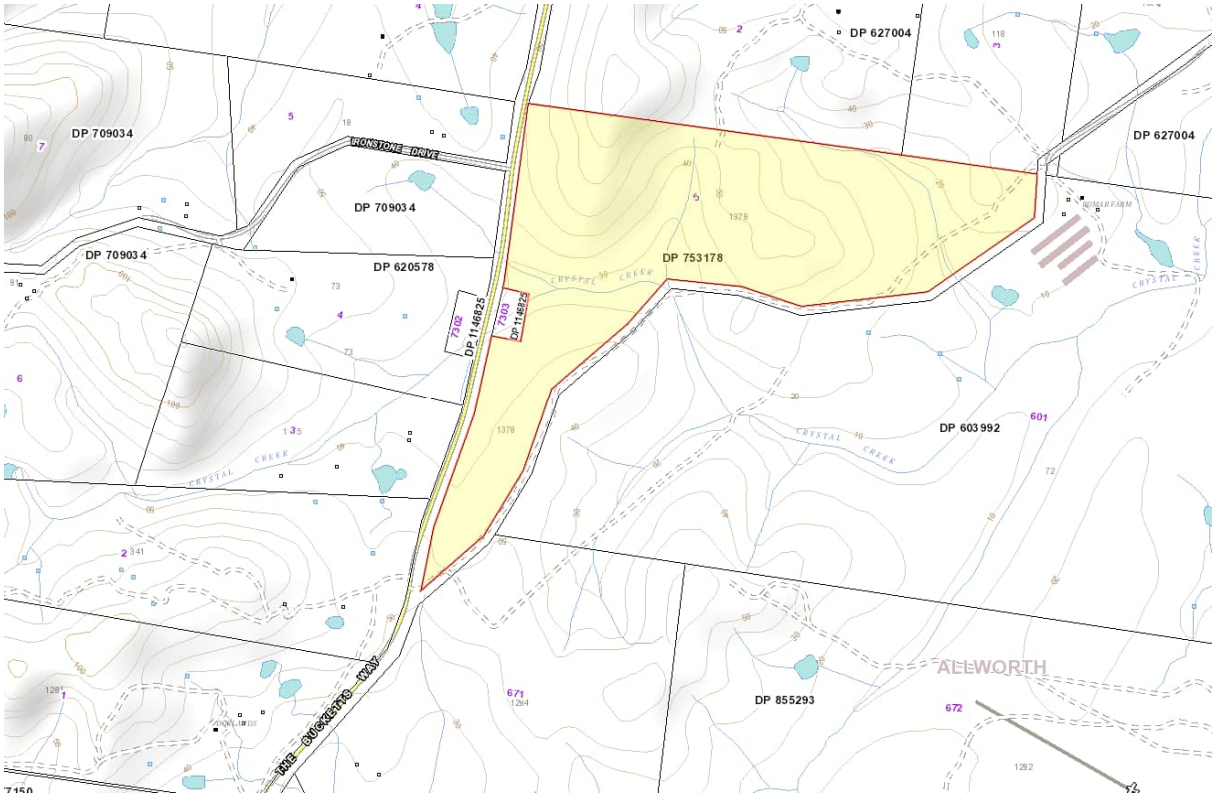


Figure 1 Site location (accessed from Six Maps 07/04/22)

Outline the services provided for fire brigade / fire services intervention:

Onsite hydrants and water storage tanks are proposed.

The electronic version of this design is attached with the submission.

Please see Section 7 Issue number: 1 for the proposed solution to omit pump/booster.

List key occupant characteristics for the building:

Occupants in the building are expected to be of mixed age and gender population.

Occupants are generally expected to be awake and alert during the day and as such expected to respond to any cues indicating that an emergency is present.

The occupants are assumed to be able to perceive the fire risk, interpret fire cues and implement decisions independently in a potential emergency situation. Occupants have been assumed to be of sound mind and body.

In this analysis people with disability in the building (if any) are assumed to be capable of evacuating to an exit either by themselves or with the assistance of others.

Occupants have been assumed to be familiar with the building's egress routes and expected to assist the visitors to exit the building in the fire emergency.

5 Hazards

Outline any hazards unique to the building:

Provide details

- ☐ Combustible external cladding
- ☐ Combustible waste (i.e. waste facility)
- ☐ Electricity supply system (e.g. substations)
- ☐ Battery system (e.g. BSS, BESS, ESS)
- ☐ Alternative electrical generation (e.g. solar, tri-gen)
- ☐ Electric vehicle charging
- ☐ Automatic storage and retrieval system (ASRS)
- ☐ Hazardous chemicals / dangerous goods (provide details)
- ☑ Other: Alcohol (Gin) Storage in shed (155m2 in area)
- ☐ Insulated sandwich panels
- ☐ Podium type building
- ☐ A basement level
- ☐ An atrium (Part G3 of BCA)
- ☐ Car stacker
- ☐ Green wall

Note: Clauses E1.10 and E2.3 of the NCC should be addressed when special hazards exist (e.g. car stacker, hazardous chemicals/dangerous goods).

6 Preventative and protective measures

Identify fire safety measures that are, or will be, provided throughout the building, including anything undecided, which should be mentioned as part of the FEBQ review. Additional information may be added to the comments section below to better describe any systems or indicate systems that may be subject to a performance solution.

Suppression system	Detection system	Facilities for emergency services
☐ CA16 (existing building)	☐ AS 3786:2014	☐ Emergency lifts
☐ AS 2118.1-2017	☐ AS 3786-1993 (existing building)	☐ Fire control centre
☐ AS 2118.1-2006	☐ AS 1670.1:2018	☐ Fire control room
☐ AS 2118.1-1999 (existing building)	☐ AS 1670.1:2015 (existing building)	☐ Perimeter vehicular access
☐ AS 2118.2-2021 (wall-wetting)	☐ AS 1668.1:2015	☐ Standby power supply system
☐ AS 2118.2-2010 (wall-wetting)	☐ AS 1670.3-2018 (monitored)	**Occupant warning system**
☐ AS 2118.3-2010 (deluge)	☐ AS 1670.3-2004 (existing building)	☐ Building occupant warning
☐ AS 2118.4-2012 (residential)	☐ Smoke alarms	☐ EWIS
☐ AS 2118.5-2006 (domestic)	☐ Heat alarms	☐ SSISEP
☐ AS 2118.6-2012 (combined)	☐ Smoke detectors	☐ Break glass unit
☐ FPAA101D	☐ Heat detectors	☐ Visual / tactile alarm devices
☐ FPAA101H	☐ Flame detectors	**Signage**
☐ Fast response heads	☐ CO detectors	☑ Emergency lighting
☐ ESFR	☐ Multi-criteria fire detectors	☑ Exit and direction signs
☐ Storage mode sprinklers	☐ Aspirated smoke detection	☑ Warning and operational signs
☐ Gaseous suppression system	☐ Beam detection	**Protection of openings**
☐ Water mist system	**Water supply**	☐ Fire doors
Hydrant system	☐ Reticulated town main	☐ Smoke doors
☐ AS 2419.1-2021	☐ Private water main	☐ Solid core doors
☐ AS 2419.1-2017	☑ Onsite storage tank	☐ Fire windows
☐ AS 2419.1-2005	☐ Gravity tank/reservoir	☐ Fire shutters
☐ AS 2419.1-1994 (existing building)	☐ Dual supply (sprinklers)	☐ Wall-wetting sprinklers
☐ Ordinance 70 (existing building)	☐ Dual supply (hydrants)	☐ Fire curtain
☐ Dry fire hydrant system	**Smoke hazard management**	☐ Smoke curtain
☑ External hydrants	☐ Zone smoke control	☐ Safety curtain for openings
☐ Internal hydrants	☐ Purge system (existing building)	☐ Fire dampers
☐ Street hydrant coverage only	☐ Smoke and heat vents	☐ Smoke dampers
☐ Hydrant booster assembly	☐ Smoke exhaust	☐ Fire seals (intumescent)
☐ Pumpset	☐ Smoke baffles	☐ Medium temp. smoke seals
Firefighting equipment	☐ Ridge vents	☐ Fire collars
☐ Portable fire extinguishers	☐ Stair pressurisation	☐ Attenuation screens
☑ Fire hose reels (achieving 1L/s @450kPa with a pump	☐ Impulse / jet fans (in carpark)	

Additional information:

Provide any additional information relevant to the measures

7 Departures from the Deemed-to-Satisfy provisions

Issue number: 1 **Title:** Water Supply for Hydrants

Details of departures from DtS provisions:

The proposed development includes a café and distillery for gin production. The total floor area of the entire building is less than 1,000m2.

Under the hydrant code AS2419.1 Clause 3.2.2.2, external hydrants may be used to provide the coverage comprising 2x30m hose length and 10m water stream provided the hoses can reach within the door of any rooms.

Under AS2419.1 Table 2.1, the number of fire hydrant outlets required to flow simultaneously is two (2).

According to AS2419.1 Table 2.2, the minimum required flow rate and residual pressure for the external feed hydrant are 20L/s and 150 kPa respectively.

Under AS2419.1 Section 4.2, the minimum capacity of the source of water supply for fire hydrant installations shall be not less than that necessary to satisfy the minimum flow rates, for a duration of not less than 4 hours. This is equivalent to a total of 288,000 L water storage. A total of 460,000 L storage (=220kL x 2 + 20kL) is proposed.

The above requirements are to be satisfied in the hydrant design.

Under AS2419.1 Section 2.3.1.1, where the unassisted water supply cannot meet the flow and pressure requirements of Table 2.2, a fixed on-site fire pump(s) shall be installed to meet the flow and pressure requirements of Table 2.3.

Under AS2419.1 Section 7.2, a booster assembly is required if a pumpset is installed.

No pumpset and booster assembly are proposed, therefore form non-compliances under Section 2.3.1.1 & Section 7.2.

A preliminary wet fire design is shown below. The electronic version of this design is attached with the submission.

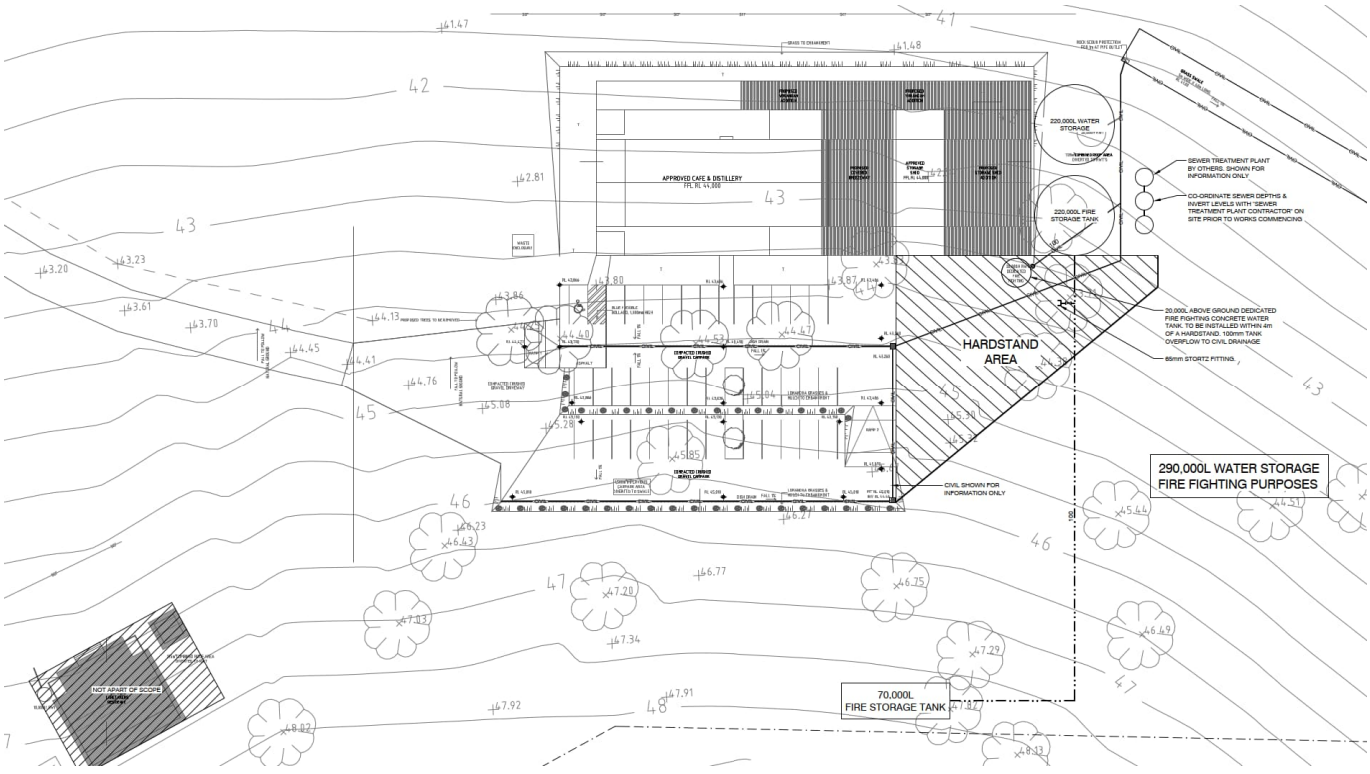


Figure 2 Hydrant system site plan

Applicable DtS provisions (including clause excerpt):	E1.3 Fire hydrants AS2419.1-2005 -Section 2.3.1.1 & Section 7.2	Applicable Performance Requirements:	EP1.3

List key fire safety measures:

Provide a total of 290,000L of fire fighting water storage to satisfy AS2419.1-2005;

The fire water storage tanks and suction points shall be arranged such that each building can be protected by 2x30m hose length and 10m water stream;

The fire water storage tanks shall comply with the requirements of Section 5 Water Storage under AS2419.1-2005 “Fire hydrant installations Part 1: System design, installation and commissioning” and AS 2304—2011 “Water storage tanks for fire protection systems”;

A block plan and appropriate signage shall be provided at a prominent location (carpark entry) to indicate the location of water tank and suction points;

The suction connection shall be compatible with suction connections of the local FRNSW and NSWRFS stations where any differences in connection sizes occur;

Where a tank is not located in a secure area, all valves shall be locked in the closed position with a padlock key suitable to the needs of the local fire brigade;

Proposed performance solution:

Permit the proposed hydrant system not to have pumpsets and booster assembly;

Performance solution:

☑ A2.2(1)(a) - Comply with all relevant performance requirements
☐ A2.2(1)(b) - Be at least equivalent to the DtS provisions

Assessment methods:

☐ A2.2(2)(a) - Evidence of suitability
☐ A2.2(2)(b)(i) - Verification methods provided in the NCC
☑ A2.2(2)(b)(ii) - Other verification methods accepted by the appropriate authority
☐ A2.2(2)(c) - Expert judgement
☐ A2.2(2)(d) - Comparison with the DtS provisions

Assessment approach:

☐ Comparative ☑ Qualitative ☑ Deterministic
☑ Absolute ☐ Quantitative ☐ Probabilistic

IFEG sub-systems used in the analysis:

☐ A – Fire initiation and development and control ☐ D – Fire detection, warning and suppression
☐ B – Smoke development and spread and control ☐ E – Occupant evacuation and control
☐ C – Fire spread and impact and control ☑ F – Fire services intervention

Acceptance criteria and factor of safety:

The associated acceptance criteria are that the proposed fire hydrant system is appropriate for fire-fighting operations.

Fire scenarios and design fire parameters:

See below under ‘Provide details on proposed modelling/assessment tools’.

Describe how fire brigade intervention will be addressed or considered:

The proposed hydrant system is not considered to have negative impact on brigade intervention.

Verification/validation analyses:

☐ Sensitivity studies ☐ Redundancy studies ☐ Uncertainty studies ☑ None

No sensitivity or redundancy studies are proposed for a qualitative analysis of this nature.

Provide details on proposed modelling/assessment tools:

The nearest FRNSW fire station is:

- RAYMOND TERRACE FIRE STATION located at 3-5 Leisure Way, Raymond Terrace NSW 2324 and 33.5km from the subject building

It is expected that NSW Rural Fire Services stations could be the first line of defence in a structure fire situation due to the rural location of the subject site.

The proposed fire water storage is to be listed on the Essential Fire Safety Schedule and regularly maintained; therefore it is considered to be equivalent to town water supply in terms of the reliability.

Furthermore, the water storage is above the minimum requirement of AS2419.1 and provide further redundancy. The proposed structure is single storey located in a rural area.

The time involved with locating and connecting the fire hose to water storage is not expected to vary significantly from the situation where street hydrants or onsite feed hydrants are relied upon by the fire brigade personnel during fire brigade intervention.

8 Construction, commissioning, management, use and maintenance

What considerations does the performance solution require during the construction phase?

There are no specific requirements as a result of the performance solution during the construction phase.

How will the performance solution affect commissioning of the systems (e.g. listed on fire safety schedule as essential or critical measure, combined new and old installations)?

As listed on the fire safety schedule.

How will the performance solution be addressed for ongoing building management and use (e.g. details to be provided in a 'fire safety management plan' for the building manager)?

As listed on the fire safety schedule.

How will any restrictions on fuel load/use/populations within the performance solution be managed and enforced (e.g. details to be provided in 'fire safety management plan')?

Any manage in use requirements shall be implemented during the building occupation.

How will the performance solution be addressed for maintenance (e.g. details included on fire safety schedule, location of fire engineering report on site, plain English summary adjacent to FIP)?

All fire safety systems required by relevant DtS Provisions and performance solutions in the subject building shall comply with the building Fire Safety Schedule and be maintained with the Australian Standard of performance applicable to the building.

9 Additional comments

Provide any additional comment relevant to the FEBQ

Note: Any in principle support extended for performance solution issues through consultation is contingent upon all assumptions, analyses and conclusions in the fire engineering report being fully justified, and referenced as appropriate, to demonstrate how the relevant performance requirements have been satisfied to the extent required by the agreed acceptance criteria.

10 Scheduled charges

FRNSW charge for the provision of services performed in connection with statutory fire safety as per the schedule of charges identified in clause 46 and schedule 3 of the *Fire Brigades Regulation 2014*.

The charge applicable is $2,600 for each day (or part of a day) spent by the Commissioner or a fire brigade member providing advisory, assessment or consultancy services.

Note: For a full description of the charges applicable including terms, payment options, applying for a waiver or reduction of the charges, please refer to the FRNSW website at firesafety.fire.nsw.gov.au.

11 Submission of this form

This completed form is to be emailed to firesafety@fire.nsw.gov.au.

All plans and specifications required by FRNSW for assessment are to be attached to the email (or sent separately if necessary due to file size). Refer to Submitting plans and specifications to FRNSW for further information.

12 Contact us

For further information contact the Fire Safety Branch on (02) 9742 7434 or email firesafety@fire.nsw.gov.au.