Enlightened FIRE SOLUTIONS
SPECIALISTS IN FIRE ENGINEERING

Market Shed 1 and Shed 2, 362 Matakana Valley Road, Matakana

New Building Fire Report

25 November 2022
Project Number: 221490
Revision: 2

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Document Control & Verification

Title: Market Shed 1 and Shed 2, 362 Matakana Valley Road, Matakana, New Building , Fire Report

Client: Dean and Kim Munroe, Three Blokes Limited

Project Number: 221490

Rev	Date	Revision Details	Prepared By	Reviewed By	Verified By
0	10 Nov 22	New building Fire Report	Meet Patel	Megan Valedein	
1	18 Nov 22	Removal of Café Use	Meet Patel		
2	25 Nov 22	Exit Signs	Meet Patel		

Summary of Fire Report Requirements

NOTE: These recommendations are not suitable to be used as a specification for the fire requirements – it is intended as guidance for the key requirements, the user is to read the entire report. This report does NOT provide construction details. Protection of property, including the building structure and contents and tenants' property has not been incorporated. This is to be considered by the building owner, tenants' and their insurers. Evacuation Scheme requirements for buildings as detailed in Fire and Emergency New Zealand Regulations 2018 have not been addressed.

***NOTE**: This document has been prepared for the sole use of our Dean and Kim Munroe, Three Blokes Limited, for the particular brief and on the terms and conditions agreed with our client. It may not be used or relied on (in whole or in part) by anyone else, or for any other purpose or in any other contexts, without our prior written agreement.*

NOTE: If intumescent paint is used to provide a fire resistance rating, the limiting temperatures of each structural element to be obtained from the structural engineer and particular attention required to ensure compatibility of the system; steel preparation, primer, intumescent paint, and any topcoat etc. proposed and the required clearances from other building features need to be carefully considered.

1. Fire Safety Systems

   1.1. A Type 2 manual fire alarm system as per F7/AS1 to be provided throughout Shed 1 and Shed 2

   1.2. The fire alarm panel shall be located close to the FENZ attendance point. Approval for the location is to be sought from the FENZ by the fire alarm contractor.

2. Means of Escape

   2.1. Escape route shall remain unobstructed at all times.

   2.2. The doors can swing in either direction.

   2.3. All exit door-locking devices shall:

   a) Be clearly visible, located where such a device would be normally expected and, in the event of a fire, designed to be easily operated without a key or other security device, and allow the door to open in the normal manner. If the operation of a locking device is unusual, such as the pressing of a button close to the door, it shall have signage that complies with NZBC F8, and

   b) If they are of an electromechanical type, in the event of a power failure or door malfunction be either automatically switch to the unlocked fail-safe condition or be readily opened by an alternative method satisfying the requirements of (a) above.

3. Signs

   3.1. For Shed 1, Units 1A and 8A, Signs complying with building code clause F8 are required for the escape routes. They need to be placed above each external door and internal doors if the exit is not obvious. In the event of failure of the normal lighting, the visibility of the Exit signs shall be maintained by illumination powered by an alternative supply. Refer to the drawings in Appendix A for proposed locations of Exit signs. NOTE: Additional Exit signs may be required following fitouts. NOTE: No illuminated Exit signs are required in this building if there is no emergency lighting system – for example visibility in escape routes for the stairs is provided by Ecoglo not electrical emergency lighting.

   3.2. For Shed 2, Signs complying with building code clause F8 are required for the escape routes. They need to be placed above each external door and internal doors if the exit is not obvious. No illuminated Exit signs are required in this building as there is no emergency lighting system - Refer to the drawings in Appendix A for proposed indicative locations of Exit signs.

4. Visibility in Escape Routes

4.1. For Shed 1, Unit 1A and Unit 8A visibility in escape routes is required as per NZBC F6, it can either be emergency lighting as per F6/AS1 or other alternatives such as photoluminescent products. For the building, it is required for stairs internal in unit 1A and Unit 8A, and wherever the travel distance to reach ONE Exit is over 20 m.

5. Fire/Smoke Separations

5.1. Penetrations in fire/smoke separations need to be sealed to the same rating as the fire/smoke barrier. This requires significant attention to the product manufacturers testing and to ensure use of the product is consistent with the testing. **NOTE**: All load bearing walls and supporting elements to fire rated walls are required to be fire rated to the same rating as the element it is supporting. Penetration in load bearing walls are to be appropriately sealed. This may require a double thickness of plasterboard.

5.2. 70% of the south wall, evenly distributed, is required to achieve a one-way fire resistance rating of (120)/120/120. The required fire resistance rating of the wall and their supporting primary elements are to be verified by a structural engineer (in particular for the stability and after-fire stability).

5.3. Downlights/recessed lights if provided shall be installed in accordance with NZBC Clause G9. Recessed luminaires (downlight) if installed in a fire separation, the downlight to be suitably fire rated.

5.4. Fire separations to extend into eaves and soffits as relevant.

6. Interior Surface Finishes

6.1. Interior surface finishes for the building must meet the requirements of the table below. Pay attention to any exposed insulation.

Internal Surface Finish requirements

Fire protection	Maximum Permitted *Group Number*				
	Exit ways and Importance Level 4 buildings: walls and ceilings	Sleeping spaces where care or detention is provided: walls and ceilings	Other sleeping spaces (excluding within household units) and crowd spaces: ceiling surfaces Retail	Other sleeping spaces (excluding within household units) and crowd spaces: wall surfaces Retail	All other occupied spaces: walls and ceilings
Unsprinklered	N/A	N/A	2-S	2-S	3
Sprinklered	N/A	N/A	N/A	N/A	N/A

Surfaces of Building Services

Building Services	Maximum Permitted *Group Number*	
	Unsprinklered	Sprinklered
Internal faces of ducts for HVAC systems and kitchen exhaust ducts[1]	1-S	N/A
External faces of ducts, acoustic treatment, and pipe insulation within exitways[1]	N/A	N/A
Acoustic treatment and pipe insulation within sleeping uses	N/A	N/A
External faces of ducts for HVAC systems[1]	3	N/A

NOTE 1: Surfaces of rigid and flexible ductwork for HVAC systems are considered as Group Number 1-S when the ductwork complies with the fire hazard properties set out in AS 4254

Refer to the Section on Interior Surfaces (in the body of the report) for the co-relation of wall and ceiling surface finishes derived from Australian or European classifications to the Group Number requirements of NZBC Clause 3.4(a) shown in the table above, without the need for further testing.

Critical radiant flux requirements for flooring

Area of Building	Minimum critical radiant flux when tested to ISO 9239-1	
	Unsprinklered	Sprinklered
Exitways in all buildings and sleeping areas and treatment rooms in risk group SM, SI[1]	N/A	N/A
Non-sleeping firecells accommodating more than 50 people	N/A	N/A
All other Occupied spaces, other than household units	1.2 kW/m^2	N/A

NOTE 1: For unsprinklered buildings (SI) the critical radiant flux requirements is 4.5 kW/m^2

6.2. Suspended flexible fabrics shall, within all occupied spaces including exitways have a flammability index no greater than 12 (and no greater than 5 when used as underlay to roofing or exterior cladding exposed to view).

6.3. If foamed plastics building materials or exposed combustible materials form part of a wall, ceiling or roof system, the complete system shall achieve a group number as detailed above and they shall comply with the flame propagation criteria as specified in AS1366 for the materials being used.

Notes:

- **The Fire and Emergency New Zealand (Fire Safety, Evacuation Procedures, and Evacuation Schemes) Regulations may require fire extinguishers although fire hose reels are generally acceptable as well.**
- **Emergency lighting requirements are only the minimum to meet the New Zealand Building Code. However, for the purposes of providing for Health & Safety of staff within the building, security or for operational purposes there may be additional requirements.**
- **Insurance companies and other regulations may have fire safety requirements as well.**

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New Building Fire Report for Market Shed 1 and Shed 2, 362 Matakana Valley Road, Matakana

1.0 Scope Limitations

This report does not cover NZBC Clause F3 Hazardous Substances & Processes that is separate and the Health and Safety at Work (Hazardous Substances) Regulations 2017 applies.

This report does not cover Building Code Clause D1 or Acceptable Solutions D1/AS1 requirements.

Protection of property, including the building structure and contents and tenants' property has not been incorporated. This is to be considered by the building owner, tenants' and their insurers.

Evacuation Scheme requirements for buildings as detailed in Fire and Emergency New Zealand (Fire Safety, Evacuation Procedures, and Evacuation Schemes) Regulations 2018 have not been addressed.

2.0 Purpose of Report

The purpose of this report is to review the requirements necessary to satisfy Building Consent Authority (Council) that the proposed building will comply with the provisions of the New Zealand Building Code (NZBC).

This report is a performance document intended to be used by other consultants (such as architect, structural engineer, electrical engineer, mechanical engineer, etc.) to prepare documentation (such as drawings and specifications) for consent, tender and construction purposes. It is not a detailed specifications document for tender or construction purposes. The consultants whose documentation is required to incorporate the requirements of this report are expected to have read this report, understood the implications to their scope of work and incorporated the relevant requirements into their documentation.

This report is for the construction of two new market sheds on the site.

3.0 Background

The Council is unable to issue a building consent, unless they are satisfied that the proposed building would satisfy the requirements of the current NZBC.

4.0 Design Philosophy

New Zealand Building Code compliance is demonstrated using the

- *C/AS2 Acceptable Solution for Buildings other than Risk Group SH, Amendment 2, 05 November 2020*

Referenced Documents

- *Acceptable Solutions and Verification Methods for NZBC Clause F6 Visibility in Escape Routes – Third Edition, Amendment 4, 1 January 2017*

- *Acceptable Solutions and Verification Methods for NZBC Clause F7 Warning Systems – Fourth Edition 10 April 2012*
- *Acceptable Solutions and Verification Methods for NZBC Clause F8 Signs – Second Edition, Amendment 4, 1 January 2017*

5.0 Building Description

There are two existing sawmill sheds (shed 1 and shed 2), which will be replaced with two new market sheds (shed 1 and shed 2). The sheds will be used for retail and workshop purposes.

Shed 1 comprises of 10 workshops. The dimension for the shed 1 is 12m x 30m, typical Unit size is approximately 5.7m x 5.8m. The building has an apex height of approximately 6m. Workshops Units 1 and 8 are designed to be a double unit and open to Unit 1A and Unit 8A.

Shed 2 comprises of 2 workshops. The dimension for shed 2 is 7m x 15m each Unit is approximately 7.5m x 6.7m. The building has an apex height of approximately 5m.

5.1 Risk Group and Occupant Load

The risk group is based on C/AS2/Table 1.1. The occupant loads are calculated from occupant densities provided in C/AS2/Table 1.2. The occupant loads are shown in Table 1.

Risk group WB is workshop use and has an occupant density of 5m^2/person. Risk group CA is retail use and has an occupant density of 3.5m^2/person.

Table 1: Risk Group and Occupant Load

Area[1]	Risk Group[2]	Occupant Density (m^2/p)	Gross Area (m^2)	Occupant Load (p)
Shed 1				
Workshop 1	CA/WB	3.5/5	33	10/7
Workshop 1A	CA/WB	3.5/5	33	10/7
Workshop 2	CA/WB	3.5/5	33	10/7
Workshop 3	CA/WB	3.5/5	33	10/7
Workshop 4	CA/WB	3.5/5	33	10/7
Workshop 5	CA/WB	3.5/5	33	10/7
Workshop 6	CA/WB	3.5/5	33	10/7
Workshop 7	CA/WB	3.5/5	33	10/7
Workshop 8	CA/WB	3.5/5	33	10/7
Workshop 8A	CA/WB	3.5/5	33	10/7
Shed 2				
Workshop Unit 9	CA/WB	3.5/5	49	14/10
Workshop Unit 10	CA/WB	3.5/5	49	14/10

Note 1: Spaces used for intermittent activities (e.g., toilet facilities and common passageway) are not assessed for occupant load.

6.0 Fire Safety Systems

This section specifies the appropriate requirements for the building based on C/AS2/Part 2: *Requirements for Firecells, fire safety systems and fire resistance ratings* unless stated otherwise.

6.1 Firecell Floor Area

For risk group CA, the floor area of an unsprinklered firecell shall not exceed 5000 m^2. For risk group WB, the floor area of an unsprinklered firecell shall not exceed 5000 m^2 when less than 15 m from a boundary. The building complies as the floor area of shed 1 is approximately 360m^2, and the floor area of shed 2 is approximately 105m^2.

6.2 Specification of Fire Safety Systems and Fire Resistance Ratings

The respective minimum fire safety systems and fire resistance ratings for the building are shown in Table 2 below:

Table 2: Fire Safety Systems and Fire Resistance Ratings

Area	Risk Group		Escape Height (m)	Storage Height (m)	Fire Safety System	Fire Resistance Rating	
						Life Rating (min)	Property Rating (min)
Shed 1	CA		0	<3m	Type 2,18	60	120
Shed 2	CA		0	<3m	Type 2,18	60	120

Note 1: The primary risk group with the most onerous fire safety requirements is risk group CA.

The above table indicates the following:

- ***2:*** Manual fire alarm system as per NZS 4512 is required where the escape routes serve more than 50 people. A direct connection to the Fire Service is not required if a phone is available for 111 calls.
- ***18:*** Fire hydrant system as per NZS 4510 is required where the Fire Service hose run distance, from the Fire Service vehicular access to any point on any floor, is greater than 75 m. The hose run distance for shed 1 and shed 2 complies.
- ***Life Rating:*** A fire resistance rating of 60 minutes is required to control internal fire and smoke spread where internal firecells are required.
- ***Property Rating:*** A fire resistance rating of 120 minutes is required to control external fire spread.

6.3 Fire Safety Systems to be Installed

The following fire safety precautions are proposed to be installed in the building:

- A Type 2 manual fire alarm system as per F7/AS1 is to be provided throughout Shed 1 and Shed 2.
- Visibility on escape routes as per NZBC F6.

Notes:

- **The Fire and Emergency New Zealand (Fire Safety, Evacuation Procedures, and Evacuation Schemes) Regulations 2018 may require fire extinguishers although fire hose reels are generally acceptable as well.**
- **An Evacuation Scheme is required for buildings detailed in Subpart 7 of the Fire and New Zealand (Fire Safety, Evacuation Procedures, and Evacuation Schemes) Regulations 2018. In general evacuation schemes are required where 100 or more people can gather in a common venue or place of assembly, facilities for employment for more than 10 people, accommodation provided for more than 6, storage or processing of hazardous substances, and care facilities.**

7.0 Means of Escape

Referenced paragraphs are from C/AS2/Part 3: *Means of Escape* unless stated otherwise.

7.1 Number of Escape Routes

Based on C/AS2/Table 3.1, the building is required to have a minimum of two escape routes for any occupied space with occupant load more than 50 people. The escape routes are required to be separated by no less than 8 m.

The workshop units in shed 1 and shed 2 are allowed to have a single escape route as the occupant load of the units is no more than 50 people and the escape height is no greater than 10m for an unsprinklered building.

7.2 Height and Width of Escape Routes

The clear height of an escape route shall be no less than that required by D1/AS1 across the full width.

The minimum width of an escape route in an open path is 700 mm for horizontal travel as the occupant load is no more than 50 people, and a single means of escape is permitted.

NOTE: There may be other requirements to satisfy Clause D on the NZ Building Code.

7.3 Height and Width of Doors

The clear height of any door opening shall be no less than 1955 mm for the required width of the opening.

The minimum clear width of a door in an open path is 760 mm and, when multi-leaf, has no single leaf less than 500 mm. The minimum clear width may be reduced to 600 mm if it is not an accessible route.

7.4 Capacity of Means of Escape

The capacity of the means of escape is determined by the size of the doors and escape routes. A typical 810 mm door is suitable for escape capacity of 116 occupants and 860 mm door is suitable for 123 occupants. The capacity of means of escape for the building is observed to be sufficient.

7.5 Length of Escape Routes

The maximum escape route lengths are as shown in Table 3 below:

Table 3: Length of Escape Routes

Area	Risk Group[1,3]	Dead End Component of Open Path Length (m)		Total Open Path Length (m)	
		Allowed[2]	Actual	Allowed[2]	Actual
Shed 1					
Workshop 1	CA/WB	20	8	50	8
Workshop 1A	CA/WB	20	10	50	10
Workshop 1 & 1A **COMBINED**	CA/WB	20	20	50	20
Workshop 2	CA/WB	20	8	50	8
Workshop 3	CA/WB	20	9	50	9
Workshop 4	CA/WB	20	8	50	8
Workshop 5	CA/WB	20	8	50	8
Workshop 6	CA/WB	20	9	50	9
Workshop 7	CA/WB	20	8	50	8
Workshop 8	CA/WB	20	8	50	8
Workshop 8A	CA/WB	20	10	50	10
Workshop 8 & 8A **COMBINED**	CA/WB	20	20	50	20
Shed 2					
Workshop Unit 9	CA/WB	20	11	50	11
Workshop Unit 10	CA/WB	20	11	50	11

Note 1: The risk group with the shortest allowable length has been used.
Note 2: The allowed travel distances reflect the Type 2 alarm system.

As shown above, the lengths of escape routes have been complied with.

7.6 Door Swing, Locking Devices

There are no more than 50 people in each unit (including the combined occupant loads of units 1, and 1A and units 8, and 8A). Therefore, the doors can swing in either direction.

NOTE: For manual sliding doors the occupant load is limited to less than 20 people.

If the operation of a locking device is unusual, such as the pressing of a button close to the door, it shall have signage that complies with NZBC F8.

All exit door-locking devices shall:

a) Be clearly visible, located where such a device would be normally expected and, in the event of a fire, designed to be easily operated without a key or other security device, and allow the door to open in the normal manner. If the operation of a locking device is unusual, such as the pressing of a button close to the door, it shall have signage that complies with NZBC F8, and;

b) If they are of an electromechanical type, in the event of a power failure or door malfunction be either automatically switch to the unlocked fail-safe condition or be readily opened by an alternative method satisfying the requirements of (a) above – an emergency release is required and well as automatic release.

All the exit doors are to remain clear at all times.

7.7 Signage

For Shed 1, Units 1A and 8A, Signs complying with building code clause F8 are required for the escape routes. They need to be placed above each external door and internal doors if the exit is not obvious. In the event of failure of the normal lighting, the visibility of the Exit signs shall be maintained by illumination powered by an alternative supply. Refer to the drawings in Appendix A for proposed locations of Exit signs. NOTE: Additional Exit signs may be required following fitouts. NOTE: No illuminated Exit signs are required in this building if there is no emergency lighting system – for example visibility in escape routes for the stairs is provided by Ecoglo not electrical emergency lighting.

For Shed 2, Signs complying with building code clause F8 are required for the escape routes. They need to be placed above each external door and internal doors if the exit is not obvious. No illuminated Exit signs are required in this building as there is no emergency lighting system - Refer to the drawings in Appendix A for proposed indicative locations of Exit signs.

7.8 Visibility in Escape Routes/Emergency Lighting

For Shed 1, Visibility in escape routes is required as per NZBC F6, it can either be emergency lighting as per F6/AS1 or other alternatives such as photoluminescent products. It is required in the following places:

a) at every change of level in an escape route – internal or external steps,

Final locations to be determined by others.

For the building, it is required for all the stairs internal in unit 1A and Unit 8A, and wherever the travel distance to reach ONE Exit is over 20 m. NOTE: The travel distances noted on the drawing are not intended to be specific escape routes as described in F6/AS1.

There are no requirements for visibility in the escape route within Shed 2 as the travel distance to reach ONE exit is less than 20m.

NOTE: The travel distances noted on the drawing are not intended to be specific escape routes as described in F6/AS1.

8.0 Control of Internal Fire and Smoke Spread

Referenced paragraphs are from C/AS2/Part 2: *Fire Resistance Ratings* and C/AS2/Part 4: *Control of Internal Fire and Smoke Spread* unless stated otherwise.

8.1 Fire/Smoke Separations – Internal Separations

No internal fire separations are required or proposed.

8.2 Fire/Smoke Separation Construction/Penetration Fire/Smoke Stopping

Penetrations in fire/smoke separations need to be sealed to the same rating as the fire/smoke barrier. This requires significant attention to the product manufacturers testing and to ensure use of the product is consistent with the testing. This may require a double thickness of plasterboard.

Firecell and smoke cell effectiveness shall be maintained by ensuring continuity of fire and smoke separations at separation junctions, and around joints where doorsets, protected shafts and penetrations occur. Where fire separations meet other fire separations or rated parts of external walls, they shall be shall meet the manufacturer's criteria.

To seal penetrations in smoke separations, the intent is to prevent spread of smoke in the early stages of the fire. Therefore, it is considered that using a product such as an acrylic fire rated sealant to seal any gaps in the smoke separation is acceptable on reasonable grounds.

Vertical fire separations and external walls shall terminate as close as possible to the external roof cladding and primary elements providing roof support, with any gaps fully fire stopped.

Fire stops shall have a fire resistance rating of no less than that required for the fire separation within which they are installed. The methods of installation shall be identical with those of the prototype used in tests to establish their FRR. The material selected shall be approved as appropriate for the type and size of the gap or penetration, and for the type of material and construction used in the fire separation.

Fire separation to extend to the underside of the roof as applicable and extend into any soffit/eave as applicable.

The penetrations to be sealed and tested as per standards AS 1530 part 4 or NZ/BS 476 part 21 and 22. To avoid the passage of smoke through fire separations and smoke separations, gaps shall be sealed with fire resistance materials complying with AS 1530.4.

NOTE: For any non-standard situation, technical support is to be obtained from the product manufacturer prior to installation.

8.3 Downlights

Downlights/recessed lights if provided shall be installed in accordance with NZBC Clause G9. Recessed luminaires (downlight) if installed in a fire separation, the downlight to be suitably fire rated.

8.4 Concealed Spaces

The spread of fire in concealed spaces and cavities shall be avoided by ensuring that extensive voids do not pass from one firecell to another. Any concealed space and cavities within internal walls or floors which are fire separations, or within external walls, shall have cavity barriers or be fire stopped at all common junctions.

For CA risk group, within unsprinklered firecells, roof space and ceiling space areas shall be subdivided by fire separations or provided with detection in accordance with NZS 4512 to prevent the hidden spread of fire. Any space between ceilings and roofs or floors above shall not exceed 400 m^2 in area, measured at ceiling level, and 30 m in length or width. There are no concealed spaces in Shed 1 and Shed 2.

9.0 Control of External Fire Spread

Referenced paragraphs are from C/AS2/Part 2: *Fire Resistance Ratings*, and C/AS2/Part 5: *Control of External Fire Spread* unless stated otherwise.

9.1 Horizontal Fire Spread from External Walls

Any part of an external wall enclosing a firecell are not permitted to be an unprotected area shall have a fire resistance rating based on the property rating. The maximum unprotected areas of the external walls are shown in **Error! Reference source not found.** below:

Table 4: Permitted Unprotected Areas – Entire Building

Location	Risk Group	Distance to the relevant boundary (m)	Width of firecell (m)	Percentage of Unprotected Areas	
				Allowed (%)	Provided (%)
Ground Floor					
South wall	CA	5.5	15	30	3% - OK
Largest Opening					
South wall	CA	>10[1]	-	23%	3%

For Shed 1 all walls have sufficient distance to the boundary.

For Shed 2 North, East, and West walls have sufficient distance to the boundary. The south wall is located approximately 5m away from the boundary. 70% of the south wall, evenly distributed, is required to achieve a fire resistance rating of (120)/120/120. The required fire resistance rating of the wall and their supporting primary elements are to be verified by a structural engineer (in particular for the stability and after-fire stability).

There are two windows (W.12 and W.13) currently on the south wall of shed 2. As per the Door and window schedule received, the area of these unprotected openings is 2.1 m^2 (1.04 m^2 per window).

The total area of the wall is 69 m^2. The south wall is allowed to have 30% of unprotected opening which is 30% x 69m^2 = 20.7m^2. The percentage of unprotected opening provided is 3%, hence it is acceptable to have these opening on the south wall.

No part of the roof (of the lean-to roof over) is allowed to be closer than 0.3m to the boundary.

10.0 Surface Finishes

The interior and exterior surface finishes for the building must meet the requirements of C/AS2 with respect to inhibiting the spread of fire.

10.1 Interior Surfaces

Surface finish requirements for new walls, ceilings, ducts, floorings and suspended flexible fabrics:

Note: Retail surface finishes are the limiting criteria.

C/AS2 – Risk Group CA/WB - Surface finish requirements for walls, ceilings, ducts and insulation are shown below in Table 5 and Table 6, respectively. CA has the more conservative requirements which are noted below.

Table 5: Internal Surface Finish requirements

Fire protection	Maximum Permitted *Group Number*				
	Exitways and Importance Level 4 buildings: walls and ceilings	Sleeping spaces where care or detention is provided: walls and ceilings	Other sleeping spaces (excluding within household units) and crowd spaces: ceiling surfaces Retail	Other sleeping spaces (excluding within household units) and crowd spaces: wall surfaces Retail	All other occupied spaces: walls and ceilings
Unsprinklered	N/A	N/A	2-S	2-S	3
Sprinklered	N/A	N/A	N/A	N/A	N/A

Table 6: Surfaces of Building Services

Building Services	Maximum Permitted *Group Number*	
	Unsprinklered	Sprinklered
Internal faces of ducts for HVAC systems and kitchen exhaust ducts[1]	1-S	N/A
External faces of ducts, acoustic treatment, and pipe insulation within exitways[1]	N/A	N/A
Acoustic treatment and pipe insulation within sleeping uses	N/A	N/A
External faces of ducts for HVAC systems[1]	3	N/A

NOTE 1: Surfaces of rigid and flexible ductwork for HVAC systems are considered as Group Number 1-S when the ductwork complies with the fire hazard properties set out in AS 4254.

Table 7 below demonstrates the co-relation of wall and ceiling surface finishes derived from Australian or European classifications to the Group Number requirements of NZBC Clause 3.4(a) shown in the table above, without the need for further testing.

Table 7: Co-relation of wall and ceiling surface finishes

New Zealand Group Number according to NZBC Clause C3.4(a) using ISO 9705:1993	Australian Group Number according to NCC Specification C1.10 Clause 4 using AS ISO 9705:2003	European Classification using to EN 13501-1:2007
Group Number 1S	Group 1, and a smoke growth rate index not more than 100	Class A1, A2 or B and Smoke production rating s1 or s2
Group Number 1	Group 1	Class A1, A2 or B
Group Number 2S	Group 2, and a smoke growth rate index not more than 100	Class C and Smoke production rating s2 or s2
Group Number 2	Group 2	Class C
Group Number 3	Group 3	Class D
Group Number 4	Group 4	Class E and F

Table 8: Critical radiant flux requirements for flooring

Area of Building	Minimum critical radiant flux when tested to ISO 9239-1	
	Unsprinklered	Sprinklered
Exitways in all buildings and sleeping areas and treatment rooms in risk group SM, SI[1]	N/A	N/A
Non-sleeping firecells accommodating more than 50 people	2.2 kW/m^2	N/A

If foamed plastics building materials or exposed combustible materials form part of a wall, ceiling or roof system, the complete system shall achieve a Group Number as detailed above and they shall comply with the flame propagation criteria as specified in AS1366 for the materials being used.

Suspended flexible fabrics shall, within all occupied spaces including exitways have a flammability index no greater than 12 (and no greater than 5 when used as underlay to roofing or exterior cladding exposed to view).

10.2 External Surfaces

The external wall cladding systems do not have any requirements as the distance to the relevant boundaries from each shed is 1 meter or more, and the building heights are less than 10m.

11.0 Fire Fighting

11.1 Information for Firefighters

The fire alarm panel shall be located close to the Fire Service attendance point. Approval for the location is to be sought from FENZ by the fire alarm contractor.

12.0 Compliance Schedule/Maintenance

The compliance schedule for the fire protection features from this report have been noted on the attached compliance schedule (refer to Appendix B – Fire Compliance Schedule Items).

13.0 References

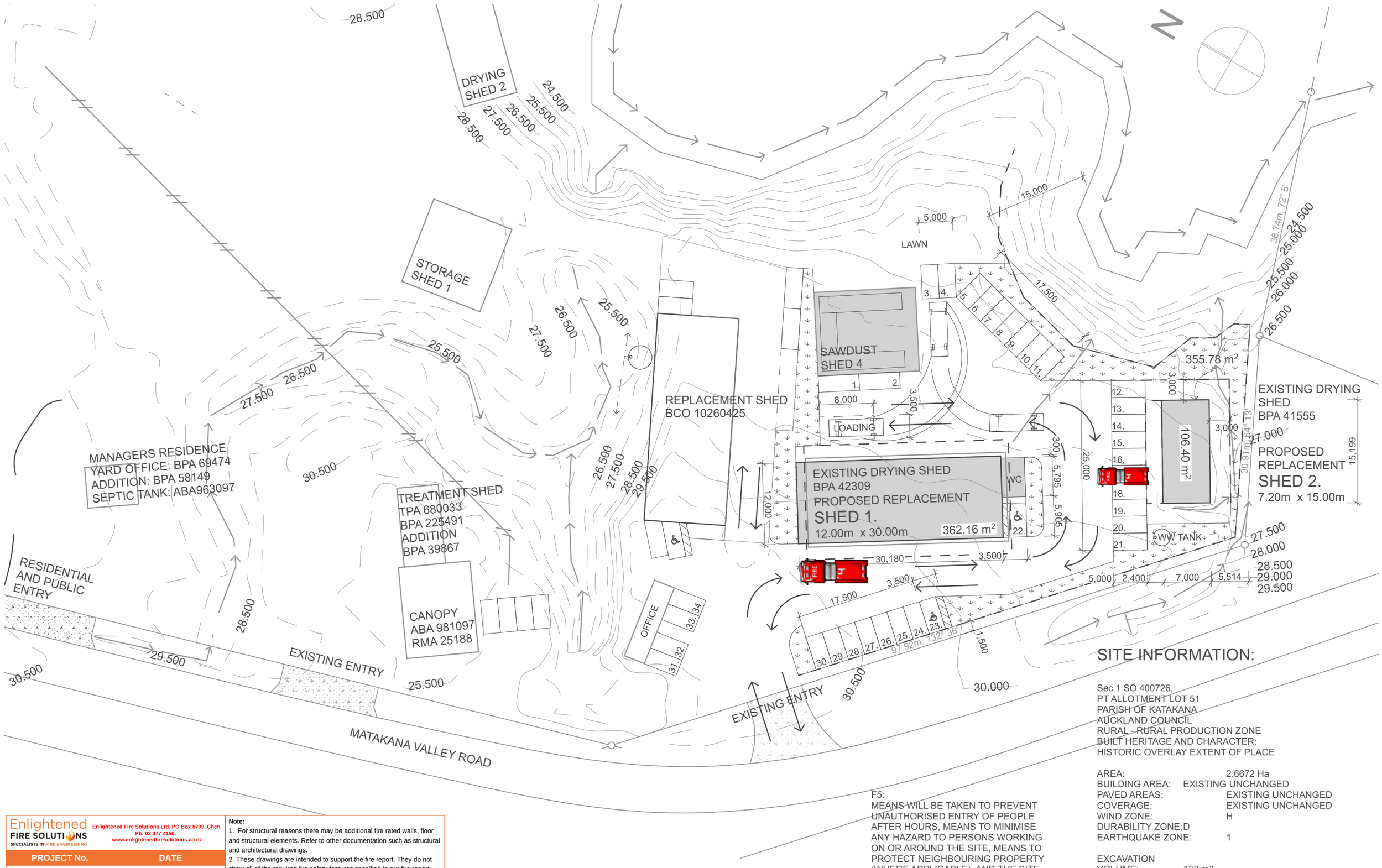
C/AS2 Acceptable Solution for Buildings other than Risk Group SH, Amendment 2, 05 November 2020.

14.0 Conclusions

We believe the proposed building will satisfy the fire safety requirements of the New Zealand Building Code if the fire requirements provided in this report are implemented. These are noted in the summary and the drawings.

Appendix A – Drawings

Dwg #	Rev #	Date	Description
Fire #1	Rev 0	10 Nov 22	Site Plan
Fire #2	Rev 1	25 Nov 22	Shed 1 Floor Plan Fire Notes
Fire #3	Rev 2	25 Nov 22	Shed 2 Floor Plan Fire Notes
Fire #4	Rev 1	18 Nov 22	Shed 2 Elevations
Fire #5	Rev 1	18 Nov 22	Shed 2 Sections



SITE INFORMATION:

Sec 1 SO 400726,
PT ALLOTMENT LOT 51
PARISH OF KATAKANA
AUCKLAND COUNCIL
RURAL - RURAL PRODUCTION ZONE
BUILT HERITAGE AND CHARACTER:
HISTORIC OVERLAY EXTENT OF PLACE

AREA:	2.6672 Ha
BUILDING AREA:	EXISTING UNCHANGED
PAVED AREAS:	EXISTING UNCHANGED
COVERAGE:	EXISTING UNCHANGED
WIND ZONE:	H
DURABILITY ZONE:	D
EARTHQUAKE ZONE:	1
EXCAVATION VOLUME:	133 m3
AREA:	488 m2

F5:
MEANS WILL BE TAKEN TO PREVENT UNAUTHORISED ENTRY OF PEOPLE AFTER HOURS, MEANS TO MINIMISE ANY HAZARD TO PERSONS WORKING ON OR AROUND THE SITE, MEANS TO PROTECT NEIGHBOURING PROPERTY (WHERE APPLICABLE), AND THE SITE WILL BE KEPT IN A SAFE AND TIDY MANNER

Enlightened FIRE SOLUTIONS
SPECIALISTS IN FIRE ENGINEERING
Enlightened Fire Solutions Ltd, PO Box 8709, Chch.
Ph: 03 377 4160.
www.enlightenedfiresolutions.co.nz

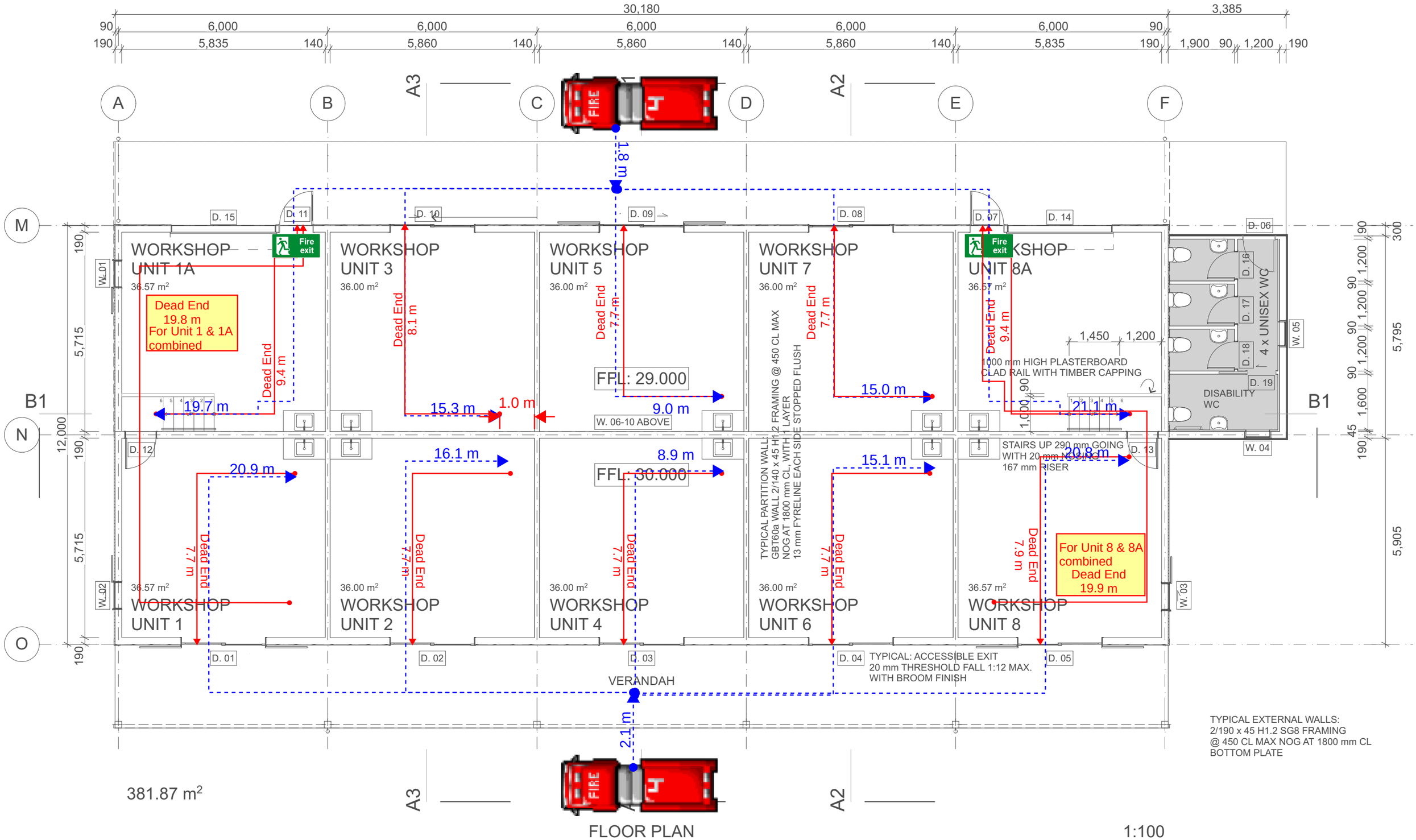
PROJECT No.	DATE
221490	10 November 2022

DRAWING TITLE
Site Plan

DWG No.	Rev.
Fire #1	0

Note:
1. For structural reasons there may be additional fire rated walls, floor and structural elements. Refer to other documentation such as structural and architectural drawings.
2. These drawings are intended to support the fire report. They do not show all of the required fire safety features specified in our fire report.
3. This drawing must not be considered as a detailed construction drawing.
4. Unless instructed otherwise by the fire engineer, all fire separations must extend to the underside of the slab or floor/roof cladding above with all gaps at the junction appropriately fire and smoke stopped.
5. Penetrations in Fire/Smoke barriers are to be appropriately sealed in accordance with manufacturers specifications.
6. The Plasterboard thickness of the fire rated walls and ceilings needs to be sufficient thickness for sealing fire penetrations.

RECOMMENDED TO PRINT IN COLOUR



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PROJECT No.	DATE
221490	25 November 2022

DRAWING TITLE

Shed 1 Floor Plan Fire Notes

DWG No.	Rev.
Fire #2	1

Note:
1. For structural reasons there may be additional fire rated walls, floor and structural elements. Refer to other documentation such as structural and architectural drawings.
2. These drawings are intended to support the fire report. They do not show all of the required fire safety features specified in our fire report.
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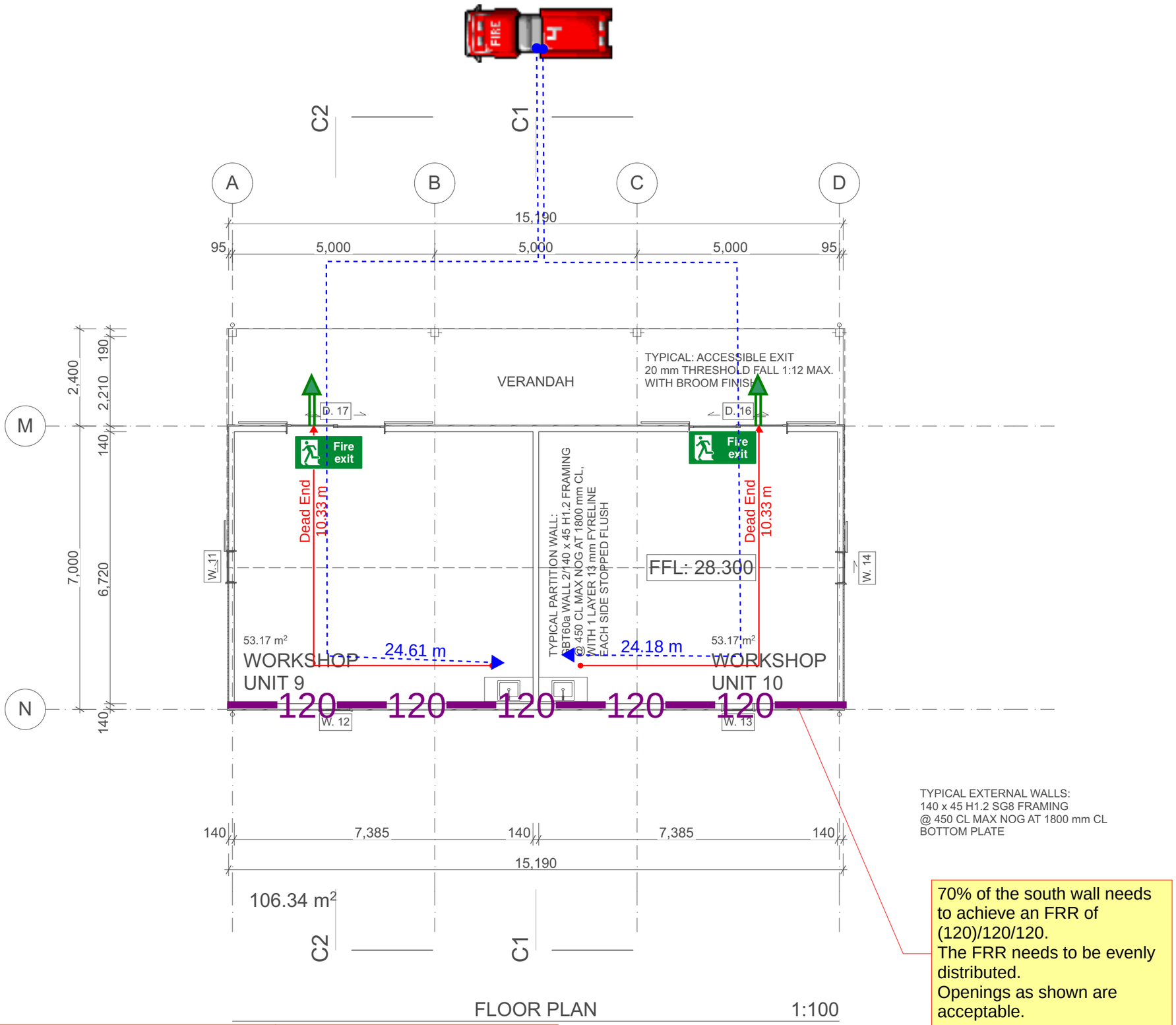
5. Penetrations in Fire/Smoke barriers are to be appropriately sealed in accordance with manufacturers specifications.
6. The Plasterboard thickness of the fire rated walls and ceilings needs to be sufficient thickness for sealing fire penetrations.

RECOMMENDED TO PRINT IN COLOUR

LEGEND

- Direct access to the outside
- Fire exit — New Exit signs (Indicative) as per F8
- Dead End / Total Open Path (DEOP / TOP)
- 1.22 m — Hose Run Distance



FLOOR PLAN 1:100

TYPICAL EXTERNAL WALLS:
140 x 45 H1.2 SG8 FRAMING
@ 450 CL MAX NOG AT 1800 mm CL
BOTTOM PLATE

70% of the south wall needs to achieve an FRR of (120)/120/120.
The FRR needs to be evenly distributed.
Openings as shown are acceptable.

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PROJECT No.	DATE
221490	25 November 2022

DRAWING TITLE

Shed 2 Floor Plan Fire Notes

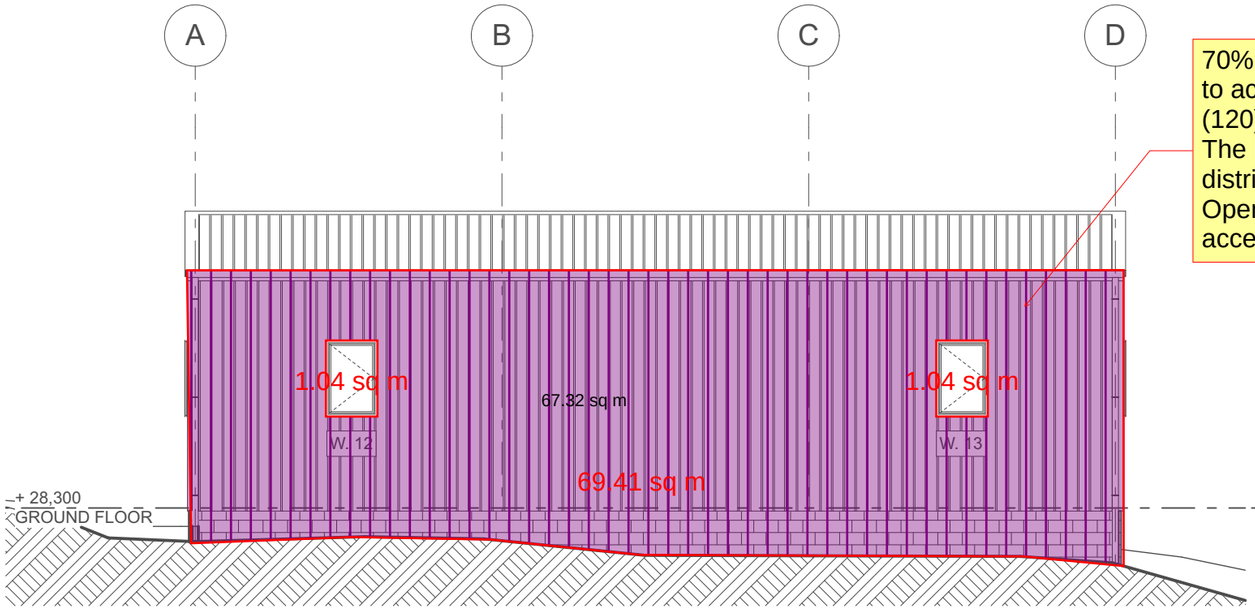
DWG No.	Rev.
Fire #3	2

Note:
1. For structural reasons there may be additional fire rated walls, floor and structural elements. Refer to other documentation such as structural and architectural drawings.
2. These drawings are intended to support the fire report. They do not show all of the required fire safety features specified in our fire report.
3. This drawing must not be considered as a detailed construction drawing.
4. Unless instructed otherwise by the fire engineer, all fire separations must extend to the underside of the slab or floor/roof cladding above with all gaps at the junction appropriately fire and smoke stopped.
5. Penetrations in Fire/Smoke barriers are to be appropriately sealed in accordance with manufacturers specifications.
6. The Plasterboard thickness of the fire rated walls and ceilings needs to be sufficient thickness for sealing fire penetrations.

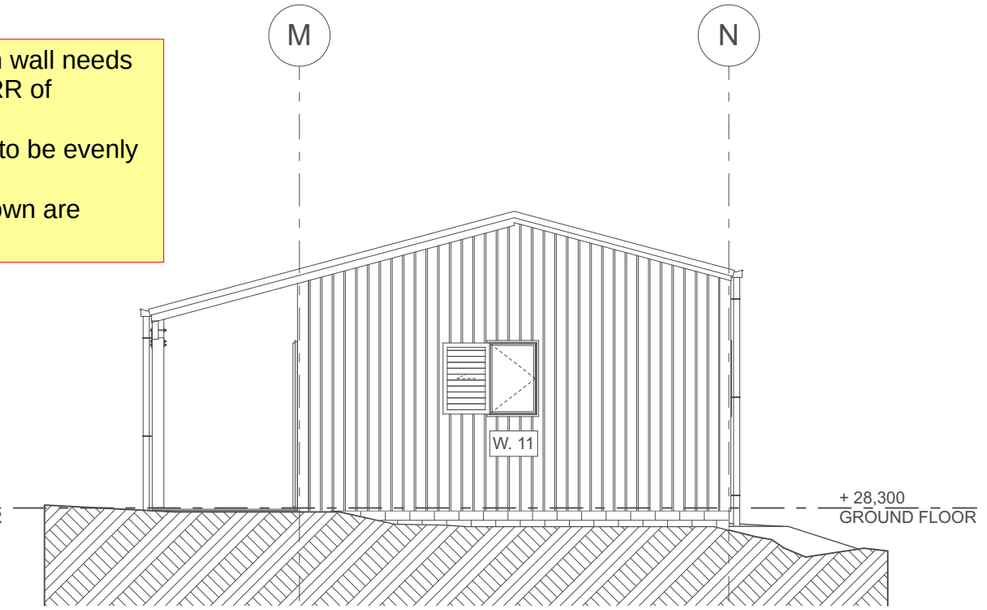
RECOMMENDED TO PRINT IN COLOUR

LEGEND

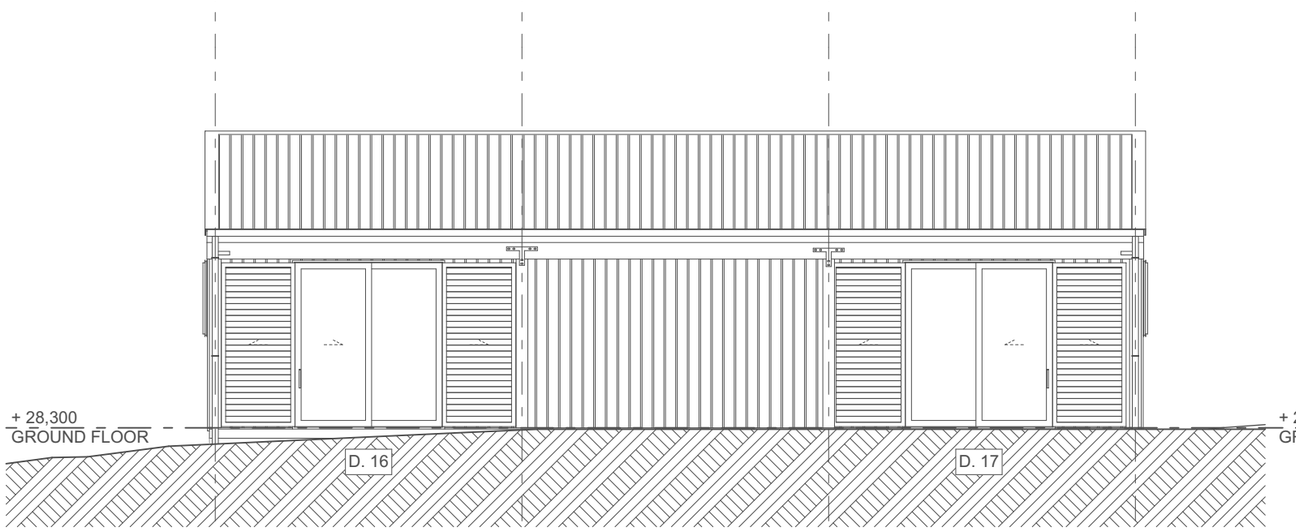
- Direct access to the outside
- Fire exit — New Exit signs (Indicative) as per F8
- Dead End / Total Open Path (DEOP / TOP)
- 120 — (120)/120/120 fire separation
- 1.03 m — Hose Run Distance



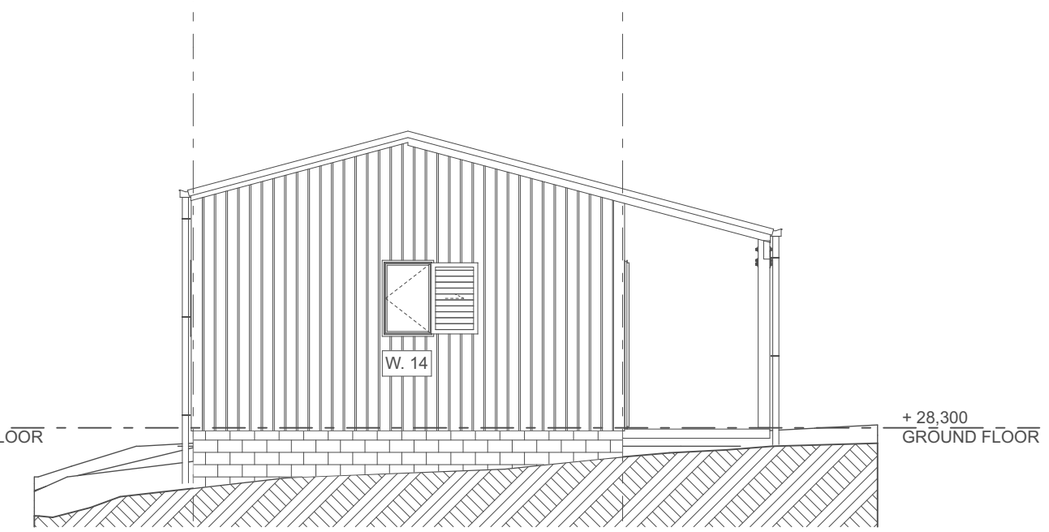
SOUTH ELEVATION 1:100



WEST ELEVATION 1:100



NORTH ELEVATION 1:100



EAST ELEVATION 1:100

SHED 2 ELEVATIONS

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PROJECT No.	DATE
221490	18 November 2022

DRAWING TITLE

Shed 2 Elevations

DWG No.	Rev.
Fire #2	

Note:
1. For structural reasons there may be additional fire rated walls, floor and structural elements. Refer to other documentation such as structural and architectural drawings.
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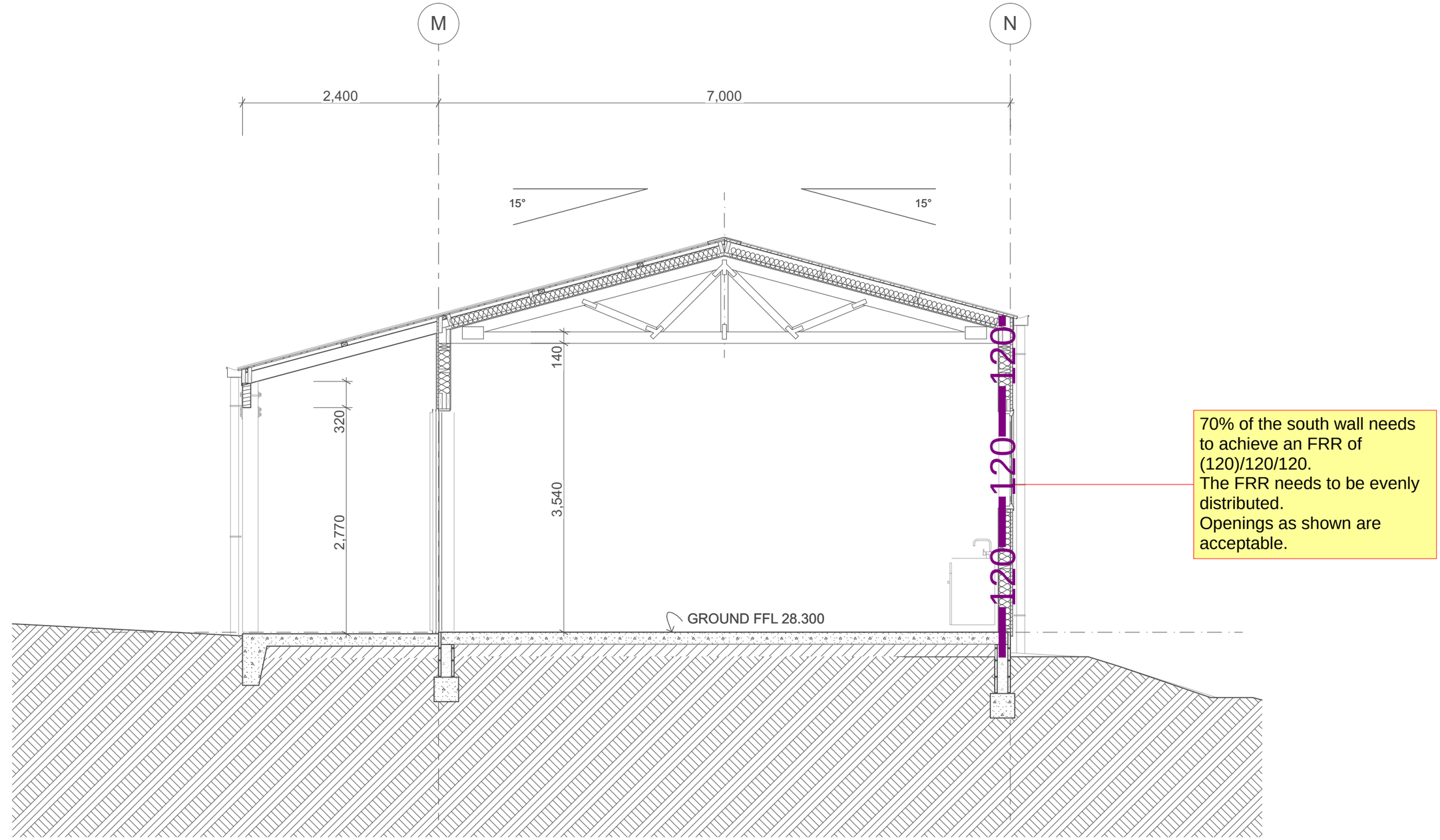
5. Penetrations in Fire/Smoke barriers are to be appropriately sealed in accordance with manufacturers specifications.
6. The Plasterboard thickness of the fire rated walls and ceilings needs to be [illegible] as per above.

RECOMMENDED TO PRINT IN COLOUR

LEGEND

120 (120)/120/120 fire separation



70% of the south wall needs to achieve an FRR of (120)/120/120.
The FRR needs to be evenly distributed.
Openings as shown are acceptable.

SECTION CC 1:50

SHED 2 SECTION CC

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PROJECT No.	DATE
221490	18 November 2022

DRAWING TITLE
Shed 2 Section

DWG No.	Rev.
Fire #5	1

Note:
1. For structural reasons there may be additional fire rated walls, floor and structural elements. Refer to other documentation such as structural and architectural drawings.
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5. Penetrations in Fire/Smoke barriers are to be appropriately sealed in accordance with manufacturers specifications.
6. The Plasterboard thickness of the fire rated walls and ceilings needs to be sufficient thickness for sealing fire penetrations.

RECOMMENDED TO PRINT IN COLOUR

LEGEND

120 (120)/120/120 fire separation

Appendix B – FIRE Compliance Schedule Items

		Existing	New or Modified	Removed
1	Automatic systems for fire suppression			
2	Automatic or manual emergency warning systems for fire or other dangers		X	
3	Electromagnetic or automatic doors or windows (for example, ones that close on fire alarm activation)			
3/1	Automatic doors			
3/2	Access controlled doors			
3/3	Interfaced fire or smoke doors or windows			
4	Emergency lighting systems			
5	Escape route pressurisation systems			
6	Riser mains for use by fire service			
7	Automatic back-flow preventers connected to a potable water supply			
8	Lifts, escalators, travelators, or other systems for moving people or goods within buildings			
8/1	Passenger carrying lifts			
8/2	Service lifts			
8/3	Escalators and moving walks			
9	Mechanical ventilation or air conditioning systems			
10	Building maintenance units			
11	Laboratory fume cupboards			
12	Audio loops or other assistive listening systems			
12/1	Audio loops			
12/2	FM radio frequency systems and infrared beam transmission systems			
13	Smoke control systems			
13/1	Mechanical smoke control			
13/2	Natural smoke control			
13/3	Smoke curtains			
14	Emergency power systems for, or signs relating to, a system or feature specified in any of the clauses 1 to 13			
14/1	Emergency power systems			
14/2	Signs relating to specified systems		X	

COMPLETE THIS SECTION ONLY IF THE BUILDING CONTAINS OR WILL CONTAIN ANY OF THE SYSTEMS ABOVE

15	Any or all of the following systems and features, so long as they form part of a building's means of escape from fire, and so long as those means also contain any or all of the systems or features specified in clauses 1-6, 9 & 13			
15/1	Systems for communicating spoken information intended to facilitate evacuation			
15/2	Final Exits		X	
15/3	Fire separations		X	
15/4	Signs for communicating information intended to facilitate evacuation		X	
15/5	Smoke separations			
16	Cable Cars			