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Matakana Sawmill

362 Matakana Valley Road

MATAKANA

Fire Engineering Strategy Report

17/11/2017

Quality Management

Issue/revision	A	B	C	
Description	Building Consent			
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Matakana Sawmill

Fire Engineering Strategy Report

Date: 17/11/2017

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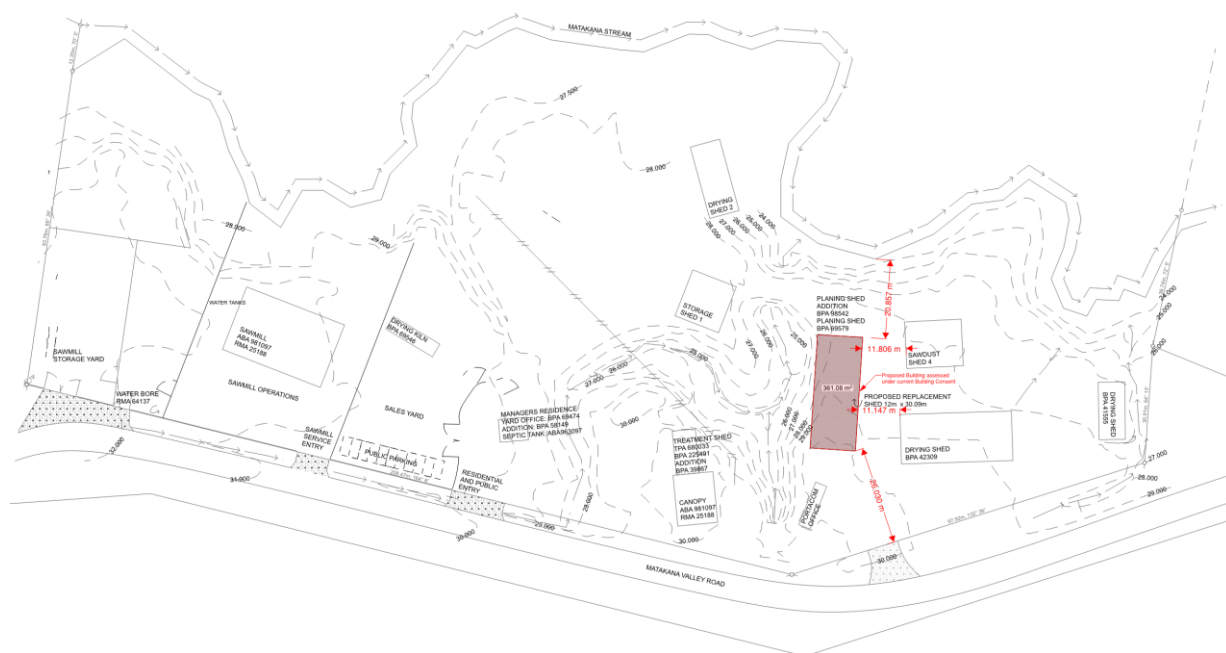
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1.0 ABSTRACT

This Fire Engineering Strategy Report has been prepared to achieve Building Consent Approval and Building Code Compliance, for the proposed new building at Matakana Sawmill, 362 Matakana Valley Road, Matakana for Three Blokes Ltd.

The works incorporates the construction of a new Sawmill Building, sub-divided into two business areas; Manufacturing and Process Area and a Workshop for Matakana Sawmill.

The Fire Engineering Strategy Report will provide a basis to prove acceptable solution fire safety and fire egress considerations and designs in full compliance with the **New Zealand Building Code** for the new building area; when measured against the provisions within **Sections 17** of the **Building Act**.



Site Plan – Property Limits

Referenced Architectural Drawings – Campbell Registered Architects Ltd

Architectural Drawing No. 202 A – PROPOSED SITE PLAN

Architectural Drawing No. 203 A – FLOOR PLAN

Architectural Drawing No. 204 A – FOUNDATION PLAN

Architectural Drawing No. 205 A – SECTION

Architectural Drawing No. 206 A – SECTIONS

Architectural Drawing No. 207 A – SECTIONS

Architectural Drawing No. 208 A – ELEVATIONS

Architectural Drawing No. 209 A – ELEVATIONS

Architectural Drawing No. 202 A – ROOF PLAN

2.0 INTRODUCTION

2.1 Building Description and Controls

The new building will be built on the Matakana Sawmill property, as a single level, single fire cell building within the property boundaries, with boundary separation distances in excess of 15m from any relevant boundary.

This assessment will endeavour to provide for deemed to satisfy solutions for the fire safety and fire egress designs to achieve full compliance with the provisions within the **NZ Building Code Clause C (Protection from Fire)**, measured in turn against the following acceptable solution;

- **NZBC C/AS5: Acceptable Solution for Buildings used for Business, Commercial and Low-Level Storage (Risk Group WB)**, as a building or part of a building with controlled storage up to 3.0m storage height, other than some areas within the processing areas.

As the acceptable solution is being used for an assessment of a new building, the new building will be measured to the extent necessary for compliance with **Building Act s17**.

Section 17– “All building works must comply with the building code”.

- All building work must comply with the [building code](#) to the extent required by this Act, whether or not a building consent is required in respect of that building work.

3.0 EXECUTIVE SUMMARY

For the proposed new building to achieve compliance with **NZBC C/AS5: Acceptable Solution for Buildings used for Business, Commercial and Low-Level Storage (Risk Group WB)**, as a building or part of a building with controlled storage up to 3.0m storage height, and sequentially **Sections 17 of the Building Act**, the following fire safety designs will be provided.

■ **Building Use and Occupancy**

Building Use

The new building will operate as a single level, single fire cell building located within the Matakana Sawmill site.

The building will be split into two separate business areas;

- Business Area 1: Manufacturing and Process Area for Matakana Sawmill, and;
- Business Area 2: Workshop for Matakana Sawmill.

Matakana Sawmill will provide for processing timber and manufacturing timber products, with controlled storage up to 3.0m storage height, other than some areas within the processing areas.

There is no requirement within **NZBC C/AS5** to provide for fire separation between individual business areas, as the building will be considered as a single fire cell.

However, to provide for a degree of business protection the wall separating the two business areas will be provided with a nominal 60-minute fire resistance rating.

Building Occupancy

The occupancy for the new building will be assessed as 30:

- Business Area 1: Manufacturing and Process Area for Matakana Sawmill: 20, and;
- Business Area 2: Workshop for Matakana Sawmill: 10.

However, the Client has advised the building will operate with a maximum of 5 people; therefore, the occupancy estimated above is to satisfy the **NZBC C/AS5: Table 1.2**, for the purpose of provisions for fire safety systems and means of escape.

The building use and the occupancy, for the new building, will achieve compliance by achieving the acceptable solution provisions within the **NZBC C/AS5: Part 1: General, Table 1.1** and **Table 1.2**, and; therefore, will achieve compliance with the provisions within **Building Act s17**; by complying with the provisions within the current acceptable solutions within the building code

■ **Fire cells**

The floor area of the un-sprinklered fire cells can be unlimited as the fire cell (building) is located 15m or more from a relevant boundary; however, it is noted that the floor area of the fire cell (building) will be 366m², compliance achieved.

■ **Fire Safety Precautions**

A Type 2 alarm will not be required as the escape routes serve less than 50 people, the building is a single level building and the building capable of controlled storage up to 3.0m storage height, other than some areas within the processing areas.

A Type 18 building fire hydrant system will not be required as the Fire Service hose run distance from the Fire Service Vehicular access to any point on any floor is less than 75m, with Fire Service access directly from Matakana Valley Road.

■ **Fire Ratings**

The fire resistance ratings that apply to the WB risk group, new building can be referenced, as:

- Life rating of 60 minutes: applied to the fire cell separations and support structure, the means of escape and control of internal spread of fire and smoke, as the building will remain un-sprinklered, and;
- Property rating of 120 minutes: applied to the fire rating requirements for the control of external spread of fire, as the building will remain un-sprinklered.

As the building will be assessed as a single level, single fire cell building there will be no requirement to achieve compliance with the fire resistance rating provisions within the building code.

However, as noted the building will be split into two separate business areas; a Manufacturing and Processing Area and a Workshop Matakana Sawmill.

There is no requirement within **NZBC C/AS5** to provide for fire separation between individual tenancies, as the building will be measured as a single fire cell building.

However, to provide for a degree of business protection the wall separating the two business areas will be provided with a nominal 60-minute fire resistance rating.

■ **Emergency lighting**

Visibility in escape routes, emergency lighting system, will be required over the change in level within the open path escape route.

New Emergency lighting will be provided will be provided over the change in level within the open path escape route.

The emergency lighting will be installed as an integral component of the life safety systems during construction. The design responsibility for the emergency lighting will be that of the Electrical Engineer, to comply with **NZBC F6/AS1**. On completion of the installation the entire installation shall be tested, commissioned and certified as complying with **NZBC F6/AS1**, by the issue of a producer statement complying with **NZBC F6/AS1**.

■ **Illuminated Exit Signs**

Escape routes will be identified by illuminated exit signs, located as follows:

- At each point in the open path where a door provides access to a final exit
- To clearly indicate each door that gives access to an exit way or final exit;
- To clearly identify the route of travel through each exit way.

New Illuminated **EXIT** signs will be provided within the new horizontal open paths to the Retail Store and at each final exit way.

Illuminated exit signs will be installed tested and commissioned in full compliance with **NZBC F8/AS1**.

The fire cells, fire safety systems and fire resistance ratings, to the new building, will achieve compliance with the acceptable solutions within **NZBC C/AS5 Part 2 – Fire cells, fire safety systems and fire resistance ratings** and; therefore, will achieve compliance with the provisions within **Building Act s17**; by complying with the provisions within the current acceptable solutions within the building code.

■ **Means of escape**

The means of escape to the new building will achieve full compliance with the acceptable solutions within **NZBC C/AS5 Part 3: Means of Escape** and will achieve compliance with the provisions within **Building Act s17**; by complying with the provisions within the current acceptable solutions within the building code.

■ **Control of Internal Spread of Fire**

The control of internal spread of fire within the new building, will achieve full compliance with the provisions within acceptable solution **NZBC C/AS5, Part 4: Control of Internal Fire and Smoke Spread** and will achieve compliance with the provisions within **Building Act s17**; by complying with the current acceptable solution provisions within the building code.

■ **Control of External Spread of Fire**

As the new building will be located within the Matakana Sawmill site a minimum of 20m from the nearest relevant boundary, there will be no risk to other properties; therefore, there will be no requirement to assess the boundary conditions and the control of external fire spread.

Based on the above consideration the new building will achieve compliance with the applicable **NZBC C/AS5: Part 5 - Control of external horizontal fire spread** and will achieve compliance with the provisions within **Building Act s17**; by complying with the current acceptable solution provisions within the building code.

■ **Fire Fighting**

The Fire Service access will be to the front of the building directly from Matakana Valley Road.

The New Zealand Fire Service hose run distance from the Fire Service Vehicular access to any point on any floor is less than 75m; negating the requirement for a building hydrant system.

4.0 NZBC Acceptable Solution Compliance Model Assessment

4.1 Summary

The fire safety and fire egress recommendations provided within this report; required for the new Sawmill building to be located within the property at 362 Matakana Road, Matakana, will achieve compliance with the provisions within **Building Act s17**, by fully complying with the provisions within the building code, as established within the following sections.

4.2 NZBC C/AS5: Part 1: General

General Description

The new Sawmill Building will be assessed under the provisions within **NZ Building Code Clause C (Protection from Fire)**, measured against the following acceptable solution;

- **NZBC C/AS5: Acceptable Solution for Buildings used for Business, Commercial and Low-Level Storage (Risk Group WB)**, as a building or part of a building of manufacturing or processing capable of controlled storage up to 3.0m storage height, other than some limited areas within the processing areas, as;
- A single level, single fire cell building located within the Matakana Sawmill site.

It is noted that the building will be split into two separate building areas; a Manufacturing and Process Area and a Workshop for Matakana Sawmill.

There is no requirement within **NZBC C/AS5** to provide for fire separation between individual building areas, as the building will be considered as a single fire cell.

However, to provide for a degree of business protection the wall separating the two business areas will be provided with a nominal 60-minute fire resistance rating.

Table 1.0: Building Occupancy

Table 1.0		Calculated Occupancy Loads	
Location	Area (m ²)	Occupant Density (m ² /person)	Design No of Occupants
New Building Areas			
Matakana Sawmill			
Workshop Area	15	5	3
Manufacturing and Process Area	100	10	10
Storage Area	100	100	1
Lunchroom	30	5	6
		Total	20
Matakana Sawmill			
Process Area	95	10	10
		Total	10
		Building Total	30

Note 1: Occupancy based on the following conditions.

The building occupancies for the new building areas have been taken from **NZBC C/AS5 – Table 1.2**, with the occupancy for the new building areas, for fire safety and means of escape assessment has been estimated at 30.

However, the Client has advised the building will operate with a maximum of 5 people; therefore, the occupancy estimated above is to only satisfy the **NZBC C/AS5: Table 1.2**, for the purpose of provisions for fire safety systems and means of escape.

Conclusion

Based on the above analysis, the occupancy and the building use, for the new building will achieve compliance by achieving the acceptable solution provisions within the **NZBC C/AS5: Part 1: General, Table 1.1** and **Table 1.2**, and; therefore, will achieve compliance with the provisions within **Building Act s17**; by complying with the provisions within the current acceptable solutions within the building code.

4.3 NZBC C/AS5 Part 2: Fire cells, fire safety systems and fire resistance ratings

Provision of fire cells

The floor area of the un-sprinklered fire cells can be unlimited as the fire cell (building) is located 15m or more from a relevant boundary; however, it is noted that the floor area of the fire cell (building) will be 366m², compliance achieved.

The new building will operate as a single level, single fire cell building located within the Matakana Sawmill site.

As previously noted the building will be split into two separate business areas; a Manufacturing and Process Area and a Workshop for Matakana Sawmill.

There is no requirement within **NZBC C/AS5** to provide for fire separation between individual tenancies, as the building will be considered as a single fire cell.

However, to provide for a degree of business protection the wall separating the two business areas will be provided with a nominal 60-minute fire resistance rating.

Fire Safety Systems

To assess the fire safety systems to be installed into the building; the Manufacturing and Process Area and the Workshop for Matakana Sawmill; an assessment of the area will be provided below, based on the predicted maximum building occupancy of 30, Risk Group WB, escape height <4.0; as a building or part of a building capable of controlled storage up to 3.0m storage height, other than some areas within the processing areas.

WB Risk Group – Building

Table 2.0 Alarm types for various occupant loads, storage heights and escape heights			
Occupant load	Capable of storage height (m)	Apex height (m)	Escape height (m)
			<4.0
<100 people	<3	N/A	Type 2 ¹ Type 18 ²

Note 1: Type 2 alarm:

Type 2 alarm not required as the escape routes serve less than 50 people, the building is a single level building and the building capable of controlled storage up to 3.0m storage height.

Note 2: Type 18:

- Building fire hydrant system, not required as the Fire Service hose run distance from the Fire Service Vehicular access to any point on any floor is less than 75m, with Fire Service access directly form Matakana Valley Road.

Conclusion

The provision of fire cells and the fire safety systems, for the new building, will achieve compliance by achieving the acceptable solution provisions within the **NZBC C/AS5: Table 2.0** and **Paragraph 2.2.1** and; therefore, will achieve compliance with the provisions within **Building Act s17**; by complying with

the provisions within the current acceptable solutions within the building code.

Fire Resistance Ratings

The fire resistance ratings that will apply to the current WB risk group can be referenced as:

- Life rating of 60 minutes: applied to the fire cell separations and support structure, the means of escape and control of internal spread of fire and smoke, as the building will remain un-sprinklered, and;
- Property rating of 120 minutes: applied to the fire rating requirements for the control of external spread of fire, as the building will remain un-sprinklered.

Application of the FRRs

As the building will be assessed as a single level, single fire cell building there will be no requirement to achieve compliance with the fire resistance rating provisions within the building code.

However, as previously noted the building will be split into two separate business areas; a Manufacturing and Process Area and a Workshop for Matakana Sawmill.

There is no requirement within **NZBC C/AS5** to provide for fire separation between individual tenancies, as the building will be measured as a single fire cell building.

However, to provide for a degree of business protection the wall separating the two business areas will be provided with a nominal 60-minute fire resistance rating.

Conclusion

The fire resistance ratings, to the new building, will achieve compliance with the acceptable solutions within **NZBC C/AS5 Part 2 – Fire cells, fire safety systems and fire resistance ratings** and; therefore, will achieve compliance with the provisions within **Building Act s17**; by complying with the provisions within the current acceptable solutions within the building code.

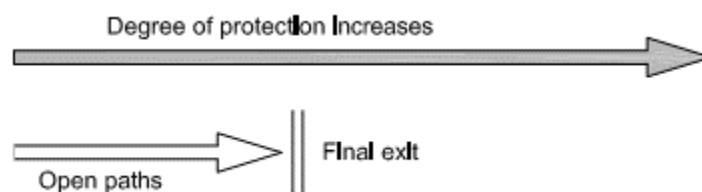
4.4 NZBC C/AS5 Part 3: Means of Escape

Each business building area will provide for means of escape, with the components of the escape routes in ascending order of protection, which will include open paths, exit ways, incorporating final exits. The escape routes will not pass from a higher to lower level of protection in the direction of escape.

Each business building area will provide for individual means of escape from fire which incorporate horizontal open path escape routes, which will provide protection to all occupants escaping to a safe place from a fire, to the outside the building, via final exits.

Independent open paths and final exits will be permitted to each business area escape routes, as the travel distances are within the allowable lengths for open paths.

Escape routes will comply with **NZBC D1**, with ramps, stairs, landings, handrails, doors and openings complying with the provisions within **NZBC D1/AS1**.



Escape Route Flow Diagram

Minimum number of escape routes from the building

Except where single means of escape are permitted, each business area will be served by two escape routes in accordance with the building occupancies, as indicated in Table 4.0

Number of Escape Routes

Table 3.0 Minimum number of escape routes from the building		
Risk Group	Number of Occupants	Minimum number of escape routes
WB	Up to 500	2

The Matakana Sawmill Manufacturing and Processing business area will be served by two independent means of escape and final exits.

The Matakana Sawmill Workshop area will be served by a single means of escape and final exit.

Height of escape routes

The clear height of the escape routes for the existing and new building areas will be/remain 2100mm across the full height of all escape routes.

All door openings within, or giving access to all escape routes for both risk groups will be/remain with a clear height of no less than 1955mm.

Widths of escape routes

The width of all available horizontal escape routes based on building area total occupancy of 20 for the Matakana Sawmill Manufacturing and Processing business area, will be no less than 1000mm.

Not an accessible route or accessible stair

Escape routes that are not an accessible routes or accessible stairs could be a minimum of 850mm for horizontal travel and 1000mm for vertical travel, except in the following cases:

- Where an escape route is within an exit way its width will be no less than 1000mm, and;
- Where there is no requirement for people with disabilities, the occupant load will be less than 50 and the escape route will be within an open path, its width may be reduced to 700mm for horizontal travel and 850mm for vertical travel.

Accessible routes and accessible stairs

Accessible escape routes; open paths and dead end open paths will be a minimum of 1200mm for horizontal travel and 1100mm for vertical travel.

Provision of unusable escape routes

Except where the dead end open paths and single escape routes are permitted, the total required width of the escape routes within the un-sprinklered fire cell will be available should the widest of the escape routes be unusable, due to the location of the fire or any other emergency.

Horizontal escape route with a single direction of escape

The escape routes with a single means of escape will be wide enough, at any point, to take the full occupant load from all contributing occupied spaces.

Horizontal escape route with two directions of escape

Horizontal escape routes with two directions of escape will have sufficient width for the full length of the route, to allow for the full occupant load from all contributing occupied spaces.

Vertical escape routes from the Matakana Sawmill Manufacturing and Processing business area will have sufficient width for the full length of the route, to allow for the full occupant load from all contributing occupied spaces.

Handrails and limitations to stairway widths

To provide safe evacuation on stairs, the stair ways will be provided with a minimum of one handrail.

Obstructions

The escape routes will not be obstructed by access control systems, such as revolving or automatic sliding doors, chains, turnstiles, sliding bars, crowd control barriers or similar devices.

Minor Projections

Minor projections will comply with the requirements of **Acceptable Solution NZBC D1/AS1**, such as signs, switches, alarm sounders and similar projections.

Handrails

Handrails will comply with **Acceptable Solution NZBC D1/AS1**, by projecting no more than 100mm into the width of the stairway.

Door assemblies

Door assemblies will not reduce the width of the exit ways by no more than 125mm, when the door is fully

open.

Lengths of escape routes

The lengths of the dead end and total open paths will not exceed the distances given in Table 4.0 below and will be adjusted for reductions on stairs.

Open paths

The open paths lengths, including dead end open paths will be determined utilising the following:

- a) **Start point:** the length measured from no more than 1.0m from the most remote point in the space, and;
- b) **Risk group:** the lengths of total open paths, including dead end open paths will apply to risk group WB, and;
- c) **Furniture and fittings:** as the furniture and fittings are generally unknown allowance will be made for the travel distance around obstructions, such as furniture, fittings and office equipment.
- d) **Multiple escape routes:** as there will be more than one escape route required, open paths lengths from any point on a floor to no fewer than two exits from the fire cell will not exceed the lengths specified in Table 4.0.
- e) **Termination:** open paths will end at final exits, to an external safe place.

Travel Distances on escape routes serving risk group WB

Table 4.0	Travel Distances on escape routes serving risk group CA
	No system and Type 2 system
Dead end open path – single direction	25m
Two or more directions	60m

Maximum permitted dead end open path travel distance in accordance with **NZBC C/AS2: Table 2.3.**

Table 5.0	Measured travel distances on escape routes serving risk group CA			
Building Area	No of escape routes path	Dead end open path travel (m)	Total open path Two direction travel (m)	Compliance Status
New Building Areas				
Matakana Sawmill				
Manufacturing and Processing	2	-	20/20	Achieved
Amenities	1	16	-	Achieved
Lunchroom, Offices and Showroom	1	9	-	Achieved
Matakana Sawmill				
Workshop	1	18	-	Achieved

Stairs

The plan length measured dead end open path travel distance on the stairs has been taken as 1.2 times the measured length plus the plan length of the landing.

Open Paths

All open paths will satisfy the following requirements

As there will be two open paths serving Matakana Sawmill Manufacturing and Processing business, they will be separated from each other and remain separated from each other until reaching the final exits.

Separation will be achieved by diverging from the point where the two escape routes are required, at an angle no less than 90° until separated by a minimum distance of 8.0m.

Separate tenancies

The open paths will not pass through spaces containing the different tenancies.

Dead Ends

Dead end open path travel, as single means of escape will be provided from the following building areas:

- Matakana Sawmill Manufacturing and Processing Amenities, and;
- Matakana Sawmill Manufacturing and Processing Amenities, Office and Showroom, and;
- Matakana Sawmill Workshop;

These dead end open paths will serve no more than 50 people and will not exceed the travel distances for single direction escape routes.

Single Escape Routes

Single escape routes will be permitted from the referenced areas, as the following conditions will apply:

- a) The dead end open path will not exceed the travel distance of 25m.
- b) The total occupant load from each individual building area served by the escape route will be no greater than 50.
- c) The escape height will be less than 10m for the un-sprinklered building.

Door closures and latching

All swing doors on the escape routes will remain hinged on one vertical edge.

All swing doors will have door handles which will satisfy the requirements of **NZBC D1/AS1**, for use by people with disabilities. The sliding door from the Lunchroom will be acceptable serving less than 20 people.

All swing doors will be constructed and installed to ensure that the forces required to open these doors do not exceed those able to be applied:

- a) With a single hand to release the latch, where fitted.
- b) Using two hands to set the door in motion.
- c) Using a single hand to open the door to the minimum required width.

Locking devices

Locking devices will remain clearly visible, located where such a device would be normally expected and, during building occupancy, 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.

Direction of opening

Doors on final exits from the Matakana Sawmill Manufacturing and Processing business area and the Matakana Sawmill Workshop business area will swing open in the direction of travel, although the final exit doors will serve less than 50 people.

Degree and width of opening

The doors on the escape routes will satisfy the following provisions:

- In the open paths the doors will remain an unobstructed opening width of no less than 760mm, for accessible routes, and;
- Within the exit ways (including entry and final, exit doors), the doors will not reduce the minimum required exit way width by 125mm to, and:
 - 725mm in horizontal safe paths, and;
- Will remain as opening no less than 90°, and;
- Will remain opening into a floor area which:
 - a) Will extend for a distance of no less than the arc of the door swing, and;
 - b) Will be at the same level on both sides of the door for the full width of the escape route, and;
- When opened the doors will not cause the door swings to obstruct the minimum required width of any escape route.

Simple fastenings

The doors on the escape routes will remain fitted with simple fasteners that can be easily operated from the direction from which people will make their approach when making their escape.

Conclusion

The means of escape to the new building will achieve full compliance with the acceptable solutions within **NZBC C/AS5 Part 3: Means of Escape** and will achieve compliance with the provisions within **Building Act s17**; by complying with the provisions within the current acceptable solutions within the building code.

4.5 NZBC C/AS5 Part 4: Control of internal fire and smoke spread

As the new building will be assessed as a single level, single fire cell building there will be no bearing on the control of internal fire and smoke spread within the new building.

Fire cells

The new building will operate as a single level, single fire cell building located within the Matakana Sawmill site.

As previously noted the building will be split into two separate business areas; a Manufacturing and Process Area for Matakana Sawmill and a Workshop for Matakana Sawmill.

There is no requirement within **NZBC C/AS5** to provide for fire separation between individual tenancies, as the building will be considered as a single fire cell.

However, to provide for a degree of business protection the wall separating the two business areas will be provided with a nominal 60-minute fire resistance rating.

Structural stability during fire: WB Risk Group

As the fire separation wall between the two business areas; the Matakana Manufacturing and Process business area and the Matakana Sawmill Workshop business area is not required under the provisions within **NZBC C/AS5**, it is therefore considered the fire rated wall will not be subject to structural stability assessment and the post fire stability requirements.

Junctions of fire separation

Although the fire separation wall providing the nominal 60-minute fire separation between the two referenced Business areas will not be subject to structural stability, the junction with the external wall and the roof will terminate as close as possible to the external wall cladding and the roof cladding.

The business separation wall will be cut and packed around the timber girts to the external wall and the timber roof girts with all gaps between the separation wall and the external wall cladding and the roof cladding fully sealed with an approved intumescent fire sealant.

Sealing of gaps

To avoid the early passage of smoke and fire through the fire separation wall all gaps will be sealed with fire resistant materials complying with AS 1530.4, between the fire and smoke separation and the unrated parts of the external wall and the roof.

Exit ways

All exit ways will be external and separated by a minimum distance of 2.0m.

Subfloor spaces

The unoccupied subfloor space between the ground level and the lowest floor will not require a FRR as:

- a) External walls extend down to ground level and enclose the space, and;
- b) Access is available only for intermittent servicing of plumbing pipes and other static services, and;
- c) The space will not be used for storage and will not contain any installation; such as machinery or heating appliances which could create a fire hazard.

Interior Surface finishes, walls, ceiling ducts and insulation

Table 7.0 below identifies the internal surface finish requirement for the altered building

Table 6.0	Surface finishes			
	Exit ways All occupied spaces in importance Level 4 buildings	All other occupied spaces.	Ducts for HVAC systems internal surfaces	Ducts for HVAC systems external surface. Acoustic treatment
	Maximum permitted Group Number			
Un-spinklered Fire cell	1S	3	1S	3

Table 8.0 below identifies the Critical radiant flux requirements

Table 7.0	Critical flux requirements for flooring	
Area of Building	Minimum critical radiant flux when tested to ISO 9239-1.	
Exit ways in all areas	Existing and new Floors	> 2.2 kW/m ²
All other occupied spaces	Existing and new Floors	> 1.2 kW/m ²

Note that the test standard differs from the former C/AS1 (2011) SFI/SDI requirements, and hence the SFI/SDI measurements from the now superseded AS1530.3 test cannot automatically be used to show compliance.

The NZBC uses ISO5660 as the test methodology for walls and ceilings and the Group number needs to be derived from this test (not AS3837). The two tests are similar; however, AS3837 will not automatically comply with the requirements of the NZBC unless supported by a testing laboratory opinion that the result would be the same if tested to ISO5660.

Flooring is required to meet a critical radiant heat flux level tested to ISO 9239-1: 2010.

Surface finish requirements do not apply to:

- Electrical switches, outlets, cover plates and similar small discontinuous areas.
- Pipes and cables.
- Handrails and general decorative trim such as architraves, skirting and window components including reveals.
- Damp-proof courses, seals, caulking, flashings, thermal barriers in cold store walls, and ground moisture barriers.
- Timber joinery and structural timber building elements such as columns, beams and portals.
- Individual door-sets and continuous areas of permanently installed openable wall partitions, having a surface area of not more than 52 % of the room floor area or 5 m², whichever is the greater.

The following surface finish requirements will be required.

Table 4.3 below identifies the surface requirements as provided.

Table 9.0		Surface finishes unsprinklered fire cell	
Location	Activity	Surface/Substrate	Group Number
	Exit ways	New wall linings: Painted GIB Board.	1S
	Exit ways	New wall linings: Painted steel.	1S
	Occupied spaces	New ceiling linings: Painted steel.	3
	Occupied spaces	New wall and ceiling linings: Painted steel	3
Flooring			CRF
Exit ways in all areas	Final exit ways	New Concrete floor	$> 2.2 \text{ kW/m}^2$
All other crowded spaces	Matakana Sawmill	New Concrete floor	$> 2.2 \text{ kW/m}^2$

Conclusion

The control of internal spread of fire to the new building, will achieve full compliance with the provisions within acceptable solution **NZBC C/AS5, Part 4: Control of Internal Fire and Smoke Spread** and will achieve compliance with the provisions within **Building Act s17**; by complying with the current acceptable solution provisions within the building code.

4.6 NZBC C/AS5 Part 5: Control of External Fire Spread

As the new building will be located within the Matakana Sawmill site a minimum of 20m from the nearest relevant boundary, there will be no risk to other properties; therefore, there will be no requirement to assess the boundary conditions and the control of external fire spread.

Based on the above consideration the new building will achieve compliance with the applicable **NZBC C/AS5: Part 5 - Control of external horizontal fire spread** and will achieve compliance with the provisions within **Building Act s17**; by complying with the current acceptable solution provisions within the building code.

4.7 NZBC C/AS5 Part 6: Fire Fighting

The Fire Service access will be to the front of the building directly from Matakana Valley Road.

4.8 NZBC C/AS5 Part 7: Prevention of fire occurring

Downlights

Recessed luminaires will be installed with clearances from building elements, including insulation by 100mm.

5.0 FIRE SERVICE ACT 1992 COMPLIANCE

The compliance requirements within the *New Zealand Fire Service Act: 1992* and the *Fire Safety and Evacuation of Buildings Regulations: 2006* is not addressed in this report.

Any issues that may arise under the *Fire Safety and Evacuation of Buildings Regulations: 2006* and the *Fourth Schedule of the Building Act*, will be discussed directly with the *New Zealand Fire Service*, prior to practical completion of the building.

It will be a condition of approval of compliance with the *Fire Service Act 1975* that an approved managed evacuation scheme should be put in place and reviewed for the new building.

The provision for providing the managed building evacuation scheme should be discussed directly with the *New Zealand Fire Service*.

6.0 WAIVER

The compliance with the provisions of the ***NZBC C/AS5: Acceptable Solution for Buildings used for Business, Commercial and Low-Level Storage (Risk Group WB)***, is intended to cover life safety, safe egress of building occupants and protection to adjoining property. The building owner and their underwriters may require additional fire and life safety measures for additional protection to the building, the assets and the building occupiers.

Report Prepared by:

M. F. Gosden

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APPENDIX A – Compliance Schedule Information

A.1 Compliance Scheduling Information

The following matrix provides a list of the “Specified Systems” for this building, as identified within the fire engineering safety design.

The “Specified Systems” identified within Table A-1 are not a comprehensive list for the systems pertaining to the building.

Please ensure a comprehensive check of all possible systems is undertaken when compiling the Compliance Schedule.

The extent of coverage of the “Specified Systems” and the locations are identified within this report on the attached Fire Engineering Drawings, where shown and the specific Consultants drawings and documentation.

Table A.1		Compliance Schedule Information – Specified Systems		
SS	Specified System	Performance Standard	Maintenance	Inspections
4	Emergency Lighting systems including illuminated signs	NZBC: F6, F8 AS 2293:2005 (Emergency escape lighting and EXIT sign for buildings – luminaires and EXIT signs)	In accordance with: AS 2293:2005	By Owner/Occupier: Daily: Check the operation of the doors to check they are not locked, barred or blocked. Monthly: Check operation of the doors to check they are not locked, barred or blocked. 6 Monthly: As for monthly plus maintain door, check operation and installation of door. Operation of fail-safe devices, connections to fire alarm and emergency power supply
14	Signs relating to, a system or feature specified above	Signs will be visible under all foreseeable conditions, including interruption of mains power	Ensure Emergency lighting systems illuminate any signs. Signs are clean and legible	By Owner/Occupier: Monthly: Ensure signs in place where required, they are legible and clean and are illuminated. Record in Log Book. Annually: As per monthly and complete report and required forms
15	Any or all of the following systems and features, so long as they form part of the building's means of escape from fire, and so long as those means of escape also contain any or all of the systems or features specified in Clause 1 to 6, 9 and 13: Performance standard = NZBC C1-C6, F8, as appropriate			
15 (2)	Final exits Details: Designated final exit doors	NZBC C1-C6 Fire Safety and Evacuation of Building Regulations 1992. Compliance Schedule Handbook 2007. All final exit doors to be free of obstruction both sides of the door	Fire Safety and Evacuation of Building Regulations 1992. Compliance Schedule Handbook 2007.	Daily inspections by owner for crowd type occupancies. Monthly inspections for all other occupancies with annual inspection and maintenance by IQP. By Owner/Occupier: Daily: Check doors are not locked, blocked or barred. Weekly: As daily plus ensure escape routes to final exits do not contain combustibles and any fastenings open freely and easily and door

		and not locked, blocked or barred. Any panic furniture or simple fastenings should operate freely to release the door. Full opening of door width is required.		swings unobstructed to full width of opening. By IQP. Yearly: As above, complete report to owner and complete required forms
15 (4)	Signs for communicating information intended to facilitate evacuation.	NZBC: F8 Signs will be visible under all foreseeable conditions including interruption of mains power.	Immediate replacement or refurbishment of signs missing, incorrect or illegible.	Daily inspections by Owner for crowd type occupancies. Monthly inspections for all other occupancies with annual inspection and maintenance by IQP. By Owner/Occupier Monthly: Ensure signs in place where required, they are legible and clean and are illuminated. Record in log book. By IQP Annually: As per monthly and complete report and required forms

A.1 Construction Monitoring

Construction monitoring is only required for the purpose of the Client to attain independent certification, that the works have been completed in accordance with specified requirements.

APPENDIX B – Fire Engineering Drawings

Referenced Fire Engineering Drawings – Mangawhai Consulting Engineers

Fire Engineering Drawing No. FE-001 – PROPOSED SITE PLAN – FIRE ENGINEERING

Fire Engineering Drawing No. FE-002 – FLOOR PLAN – FIRE ENGINEERING

Fire Engineering Drawing No. FE-003 – SECTION – FIRE ENGINEERING

Fire Engineering Drawing No. FE-004 – SECTIONS– FIRE ENGINEERING

Fire Engineering Drawing No. FE-005 – SECTIONS – FIRE ENGINEERING

Fire Engineering Drawing No. FE-006 – ELEVATIONS – FIRE ENGINEERING

Fire Engineering Drawing No. FE-007 – ELEVATIONS – FIRE ENGINEERING

Fire Engineering Drawing No. FE-008 – ROOF PLAN – FIRE ENGINEERING