

FIRE DESIGN REPORT
189 Shakespeare Street
Cambridge
MINOR ALTERATIONS

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APPENDIX 1 – Drawings - egress routes

Issue 1

September 2017

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1 Purpose

The purpose of this report is to show compliance with the New Zealand Building Code (NZBC) for means of escape from fire as required by the Building Act 2004 for an alteration to an existing building. This report is based on the Acceptable Solution C/AS4 to meet the NZBC Protection from Fire clauses C1-C6.

The work is of a minor nature and involves the repositioning of some displays and installation of food display cabinets and espresso coffee machine behind a new counter.

This report addresses the requirements of the Building Act 2004 only and does not address owners or tenants property protection unless specifically referenced. This report is specific to the building and client, it is not to be used by any third party and no responsibility is taken for any third party who uses this report.

Issues that may arise under the Fire Safety and Evacuation Regulations 2006 should be discussed directly with the New Zealand Fire service (NZFS).

This report does not examine any storage, ventilation or bunding requirements for hazardous substances as defined in the Hazardous Substances and New Organisms Act 1996 (HSNO) or Building Code clause F3- Hazardous Substances and Processes, and in particular the Hazardous Substances (classes 1 to 5 controls) Regulations 2001. It is assumed that any hazardous substances not stored as required by the Regulations are in such small quantities as to have minimal effect on the fire load of the building. Building owners should contact an EPA Test Certifier for advice on compliance.

This fire design is a performance document, intended to be used by the Architect and other consultants in implementing their detailed design and preparing their working drawings and specifications. The consultants whose documentation is required to incorporate the requirements of this fire design are expected to have read this report, understood the implications as it affects their scope of work and have incorporated the relevant Protection from Fire requirements into their drawings and specifications.

2 Introduction

The building is an existing BP service station providing petrol and other retail goods and services. This is a single level building.

The building height is not relevant for this assessment.

This report is based on drawings supplied by Technitrades Architecture for the proposed MINOR ALTERATION. The work involves repositioning of some displays and installation of food display cabinets and espresso coffee machine behind a new counter.

The proposed work is of a very minor nature and this report only considers the affected area.

****NOTE THERE IS NO EFFECT ON ANY SPECIFIED SYSTEM AND THE WORK IS OF SUCH A MINOR NATURE THAT NO BUILDING CONSENT IS REQUIRED.***

3 Occupancy

The Building contains the following risk groups and storage and escape heights based on Table 1.1 of C/AS4.

Location	Risk Group	Escape Height (m)
Retail	CA	0
Workshop – existing. No changes to this area	WB	0

The occupant numbers in the building are as follows based on Table 1.2 of C/AS4

Location	Floor Area (m ²)	Occupant density (m ² /person)	Number of Occupants
Retail	Existing 67m ² (Approximately)	10	6.7
Staff areas (lunchroom etc.)	15	10	1.5
Workshop	N/A – no work or changes in this area		
TOTAL			Less than 10

4 Fire Safety Systems

The following table summarises the fire safety systems suggested for the building.

	<p>For <100 people, <3.0 m storage height and 4 m escape height:</p> <p>a) Type 2 alarm system. A direct connection to the Fire Service is not required where a phone is available at all times for 111 calls.</p> <p>This system is not required where the escape routes serve no more than 50 people and:</p> <p>i) the building is a single level building, and</p> <p>ii) if the building is used for storage, the storage height is less than 3.0 m, and</p> <p>b) Type 18 building fire hydrant system, unless the Fire Service hose run distance from Fire Service vehicular access to any point on any floor is less than 75 m.</p>
	NO ACTIVE FIRE SAFETY PRECAUTIONS ARE REQUIRED

Emergency lighting may be necessary where any changes of level occur on escape routes to provide the minimum Lux as required by F6/AS1 throughout the building.

5 Means of Escape

5.1 Number of Escape Routes

This building is provided with two means of escape from the main floor area. These are open path escape routes with a minor dead end as shown on the attached plan.

The existing egress is completely unaffected by this minor alteration. The open plan layout allows for easier assessment of any problems that may require evacuation of the premises. Capacity remains the same and travel distances remain the same.

5.2 Width and Height of Escape Routes

The following table details the minimum widths of escape routes in the building.

Location	Horizontal Travel (mm)	Vertical Travel (mm)
All areas	850 <i>Egress doors provided with ample capacity to serve the entire occupant load.</i>	N/A

The escape routes in the building as shown on the drawings comply with this requirement. (C/AS4).

The height of an escape route is to be a minimum of 2100 mm, any doors are required to have a minimum clear height of 1955 mm. (C/AS4/3.3.1)

5.3 Capacity of Means of Escape

The capacity of the means of escape is determined by the size of the doors and escape routes. By observation, the capacity is sufficient for the design occupant load given the escape routes available and relatively low occupant load. Egress capacity has been assessed and approved at the time of construction.

5.4 Travel Distance – there is a minor change but actual distances will still fall within the parameters set by the compliance documents.

In accordance with C/AS4/Table 3.2, the maximum permitted and actual dead end and open path travel distances are:

Location	Allowable DEOP (m)	Allowable TOP (m)	Actual DEOP (m)	Actual TOP (m)
Main floor worst case	40	100	6.3	18.8 Via lunchroom

The travel distances are complied with as shown on the table. (REFER ATTACHED TABLE 3.2)

5.5 Doors – swing and locking devices

Doors on escape routes are required to open in the direction of escape if there are more than 50 occupants using the doors. (C/AS4/3.15.3) The doors as shown on the drawings comply with this requirement.

All exit door locking devices should be clearly visible, located where such a device would normally be expected, designed to be easily operated without a key or other security device, and allow the door to open in the normal manner. (C/AS4/3.15.2) Any doors that are electronically locked are required to unlock in the event of a fire alarm to allow people to escape. (C/AS4/3.15.7)

5.6 Signage

Fire exit signage is erected throughout the building in compliance with F8/AS1. Exit signage shall be internally illuminated where an emergency lighting system is installed.

5.7 Miscellaneous

Exit doors and exitways are to remain clear at all times. Exitways shall not be used for storage of goods, solid waste or solid waste containers, or for entry into solid waste chutes. (C/AS4/3.12.1)

6 Internal Spread of Fire

6.1 Fire/Smoke Separations

There are no fire or smoke separations affected by this minor alteration.

7 External Spread of Fire

Consideration of external fire spread is not necessary for this assessment.

10 Fire Fighting

Fire Service vehicular access is already provided. A hard standing is provided within 20 m of the entrance – this is provided at the front of the building.

11 Conclusion

This report shows that the proposed minor alteration to 189 Shakespeare Street Cambridge will achieve compliance with the NZ Building Code as required by the NZ Building Act. This is subject to the assumptions and requirements being met within this report. No building consent is required for this work. The main requirements of the report are summarized below however the report needs to be read in its entirety to ensure all requirements are met.

1. All exit door locking devices should be clearly visible, located where such a device would normally be expected, designed to be easily operated without a key or other security device, and allow the door to open in the normal manner.
2. Any doors that are electronically locked are required to unlock in the event of a fire alarm to allow people to escape.
3. Fire exit signage is erected throughout the building in compliance with F8/AS1. Exit signage shall be internally illuminated as part of any emergency lighting system
4. Any gaps in, or services that penetrate, through fire or smoke rated construction are to be fire rated using certified proprietary systems such as fire collars, fire wraps, intumescent systems etc. The systems are to be installed as required by the certification and manufacturer of the product.
5. Surface finishes: **Surface finish requirements for walls, ceilings, ducts and insulation**

4.17.1 *Surface finish* requirements shall be as specified in Table 4.1

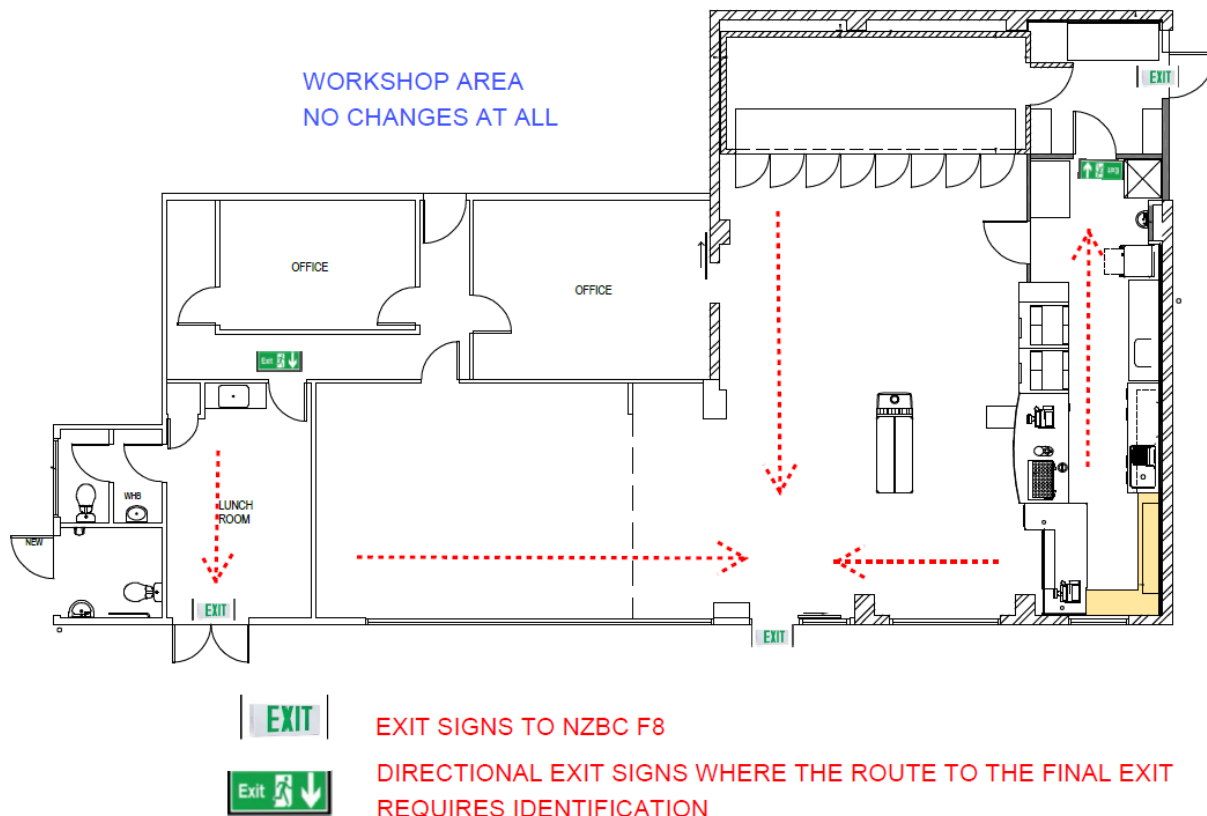
TABLE 4.1 SURFACE FINISHES

COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5	COLUMN 6	COLUMN 7
	<i>Exitways:</i> All occupied spaces in importance level 2 buildings	<i>Crowd spaces:</i> Wall linings	<i>Crowd spaces:</i> Ceiling linings	<i>All other occupied spaces:</i> Wall and ceiling linings	Ducts for HVAC systems – internal surfaces	Ducts for HVAC systems- external surfaces. Acoustic treatment and pipe insulation within air handling plenum
	MAXIMUM	PERMITTED	GROUP	NUMBER		
Sprinklered	1S	2S	2S	3	1S	3
Unsprinklered	2	3	2	3	2	3

***NOTE THAT THIS BUILDING IS IMPORTANCE LEVEL 2**

Buildings posing normal risk to human life or the environment, or a normal economic cost, should the *building* fail. These are typical residential, commercial, and industrial *buildings*.

EGRESS ROUTES



5.4 Travel Distance – there is a minor change but actual distances will still fall within the parameters set by the compliance documents.

In accordance with C/AS4/Table 3.2, the maximum permitted and actual dead end and open path travel distances are:

Location	Allowable DEOP (m)	Allowable TOP (m)	Actual DEOP (m)	Actual TOP (m)
Main floor worst case	40	100	6.3	18.8 Via lunchroom

The travel distances are complied with as shown on the table. (REFER ATTACHED TABLE 3.2)

Table 3.2 - FULL VERSION

	No system and Type 2 system	Type 4 system	Type 6 system	Type 7 system
<i>Dead end open path</i>	20 m	40 m	40 m	50 m
<i>Total open path</i>	50 m	100 m	100 m	120 m

If open path length increases for smoke detectors are being applied, where Acceptable Solution F7/AS1 allows heat detectors to be substituted for smoke detectors, not less than 70% of the floor shall be protected with smoke detectors. Heat detectors cannot be substituted for smoke detectors in stairways.

If smoke and heat detection systems are installed in order to extend permissible travel distance in accordance with this table and are not a requirement of Paragraph 2.2.1 then Fire Service connection is not required.