

holmes
fire & safety

FIRE SAFETY STRATEGY REPORT

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ADIDAS MUSEUM FITOUT

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NATHAN AUSTRALIS
CUSTOMS STREET
AUCKLAND CITY

For

Offices in

New Zealand

Australia

USA

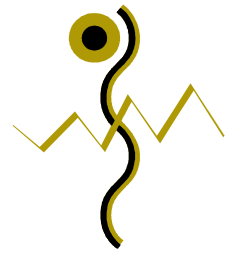
COOPER AND COMPANY

9 May 2011

Version A

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REPORT ISSUE AUTHORISATION

Project: Adidas Museum fitout – Nathan Australis Building
Project No. 50563.54

Version	Date	Status	Written	Reviewed
A	9 May 2011	For Consent	KRD	JMC

Version	Extent of revision

Written By:

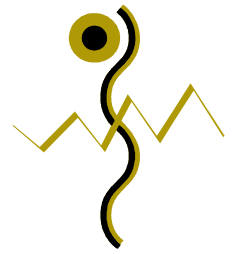
Kathryn Devine
BE (Hons), MEFireE

Reviewed by:

Jim Clarke
BE, MEFireE, MSFPE, FIPENZ, CPEng, IntPE

This report caters specifically for the requirements for this project and this client. No warranty is intended or implied for use by any third party and no responsibility is undertaken to any third party for any material contained herein.

Consideration of protection of the building owner's property is not included unless this has been specifically requested.



1 PURPOSE

The purpose of this report is to determine the minimum fire safety precautions that must be installed within the ground floor of the Nathan Australis building at Customs Street, Auckland City to demonstrate compliance with Section 112 of the New Zealand Building Act 2004 with respect to the fire regulations.

This is a legal requirement whereby it must be shown that after the completion of works, the objectives of the New Zealand Building Code relating to means of escape from fire are satisfied to the extent required by the Act.

This fire safety strategy report is a performance document that is to have been used by the Architect and other consultants in implementing their detailed design and preparing their working drawings and specifications. This report also includes a scope of works advising of fire safety issues affecting architecture, building services and structure in accordance with the requirements of the New Zealand Building Code.

The consultants whose documentation is required to incorporate the requirements of this fire strategy report are expected to have read this report, understood the implications as it affects their scope of work and have incorporated the relevant fire safety requirements into their drawings and specifications.

2 DESIGN PHILOSOPHY

To demonstrate compliance with the relevant fire safety clauses of the Building Code, the design approach accepted for the previous fire design for this space has been continued in this report. This was based on a limited upgrade of fire safety features to cater for a restricted area of use and a limited design life. The Acceptable Solution C/AS1 (Fire Safety) was generally adopted as the design basis but acceptance was given for only partial compliance on the basis of what was considered reasonably practicable.

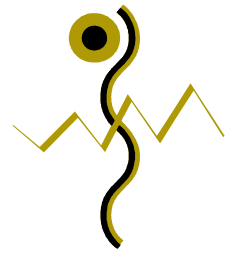
2.1 Fire Service Design Review Unit

In accordance with section 46(1) of the Building Act 2004 some kinds of applications for Building Consent must be provided to the New Zealand Fire Service Commission for review by the Fire Service Design Review Unit.

The proposed works constitute an internal fit-out only, therefore under Clause 3(c) of the Gazette we believe this application need not be forwarded to the Fire Service Design Review Unit.

3 GENERALLY

The proposed works consist of an internal fitout of the ground floor of the Nathan Australis building to house a museum for Adidas memorabilia. It is intended that this museum be in place from September 2011 – July 2012.



This report is based on a shell fitout only. When the internal layout is known an additional assessment will be required.

The existing building has four levels above ground level and is predominantly of concrete construction. The building has a manual fire alarm system with supplementary smoke detection.

The building has been reviewed previously by Holmes Fire and Safety in a Fire Report dated 18 July 2006 which addressed the use of the ground floor as a retail store for a limited life of five years. The upper floors of the building were to remain vacant, apart from a small office on the first floor. This will be continued during the period that the ground floor is used as a museum.

The entire building is currently being assessed by Holmes Fire and Safety as part of a proposed refurbishment which will include a building wide upgrade of the fire safety features. While the proposals for the building upgrade are being considered, the use as a museum rather than a retail store will result in a reduced design occupant load and no change in the required fire safety precautions. Therefore this is not regarded as a change of use with respect to the requirements of the building code.

3.1 Limitation of Scope

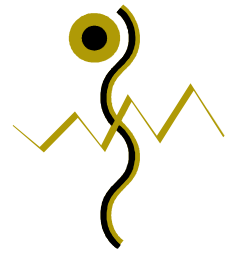
Fire safety precautions as required by Table 4.1 of C/AS1 have been considered for the building as a whole. Otherwise, the scope of this assessment is limited to the area of alteration. The ground floor of the building has independent means of escape from the upper levels. Therefore, given the above and the scope of the proposed alterations we believe this is reasonable.

4 SCOPE OF WORKS

We believe that the proposed alterations to the ground floor of the Nathan Australis Building will be in compliance with the objectives of the New Zealand Building Code to the extent required by the Building Act, based on implementation of the following Scope of Works. This should be read in conjunction with the attached Fire Safety Plans.

4.1 Fire Alarm and Fire Protection System Works

- 4.1.1 The existing smoke detectors on the ground floor are required to be maintained on the ground floor with installation in accordance with NZS 4512. Coverage of the detectors is to be as outlined in the previous report for this level and as indicated on the attached fire safety sketch.
- 4.1.2 The existing manual fire alarm system is required to be modified on the ground floor to suit the new layout as necessary for compliance with NZS 4512.



4.2 Passive Fire Protection Works

4.2.1 The existing construction of the first floor is to be maintained as part of these works as permitted in the previous fire report for this building.

4.2.2 The construction to the stair serving the upper level includes a smoke separation between the stair and the ground floor. The existing construction is to be maintained during these works.

4.2.3 Any new smoke separations may be provided either by non-combustible imperforate construction, a flame barrier, material that achieves suitable performance after 10 minutes exposure under the standard test for fire resistance, or be toughened or laminated glass (as per C/AS1), or incorporate automatic smoke curtains.

4.2.4 All penetrations through fire or smoke separations (created by wires, cables, pipes, flush boxes, etc) that are created or uncovered as part of these works are required to be fire stopped with systems (collars, wraps, sleeves, mastics, etc) that are approved for the proposed use (e.g. rating, orientation, penetration type, construction type) in accordance with AS 1530 and AS 4072.1. Fire stopping systems are required to be installed strictly in accordance with the manufacturer's instructions.

4.2.5 All doors within smoke separations are required to be fitted with door closers and smoke seals to the top and vertical edges.

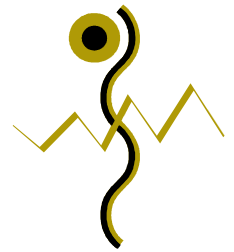
4.3 Miscellaneous Requirements

4.3.1 Doors are required to open in the direction shown on the attached plans.

4.3.2 All locking devices on doors on escape routes shall be clearly visible, located where such a device would normally be expected, designed to be easily operated without a key or other implement and allow the door to open in a normal manner.

4.3.3 Any doors on escape routes that are fitted with electronic locking devices shall also be fitted with a push button or switch that releases the lock and allows the door to be opened (in the direction of escape) without a swipe card or key code, unless the doors act under free handle. This push button or switch may be placed behind a break-glass panel but must be clearly labelled "Emergency door release". Electromechanical locks that are not free handle are required to unlock (fail safe/open) in the event of power failure or door malfunction.

4.3.4 Fire related safety features within the ground floor are required to be provided with signage in accordance with F8/AS1.



- 4.3.5 Exit signage is required to be installed throughout the ground floor in accordance with F8/AS1 (note that F8/AS1 3.5.1 permits signs to be internally illuminated, externally illuminated or self luminous).

Schematic locations of exit signs are shown on the attached plans; however these do not take account of possible obscuration due to the installation of storage racks, plant, furniture and other fittings and therefore should not be assumed to depict all required signs.

- 4.3.6 Emergency lighting is not currently provided within the ground floor and is required to be installed in accordance with F6/AS1.

- 4.3.7 Throughout the ground floor, any new surface finishes being installed as part of these works shall meet the following early fire hazard indices limitations (when tested to AS 1530.3).

For walls and ceilings in public areas:

- SFI not > 2 and SDI not > 5;

For walls and ceilings in the stairs (not exitways) and corridors:

- SFI not > 7 and SDI not > 5;

For walls and ceilings in any BOH areas:

- SFI not > 9 and SDI not > 8, or
- SFI not > 5 and SDI not > 10;

For HVAC ducts:

- Internal surfaces SFI not > 0 and SDI not > 3, and
- External surfaces SFI not > 7 and SDI not > 5.

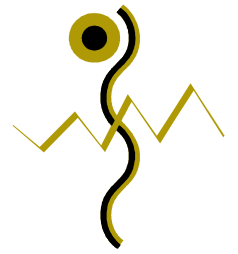
For suspended flexible fabrics:

- FI not > 12.

Underlay to exterior cladding or roofing when exposed to view in occupied spaces:

- FI not > 5.

(SFI = Spread of Flame Index, SDI = Smoke Developed Index, FI = Flammability Index)



- 4.3.8 Any foamed plastic building materials are not permitted to be exposed and shall be protected by encapsulation with a flame barrier. The flame barrier shall provide a fire resistance rating of 10 minutes for integrity. The foamed plastic is also to meet the flame propagation criteria as specified in AS 1366. It is strongly recommended that foamed plastic materials are not used.
- 4.3.9 The use of fibre cement board products as part of a fully tested and certified fire separation will require specific consideration between the specifier of the product and the supplier to ensure that a tested and approved methodology for sealing of any penetration can be achieved in accordance with AS 1530 and AS 4072.1.
- 4.3.10 Any downlights shall be designed and installed to C/AS1 Part 9 and the manufacturer's requirements.

The scope of works above lists the fire safety precautions needed for compliance with the fire safety requirements of the Building Code and should be read in conjunction with the plans appended to this report. Information contained within the following sections of this report is technical information intended to assist in the approvals process only.



5 MEANS OF ESCAPE

5.1 Purpose Groups and Occupant Loads

The following is a summary of the design occupancies and purpose group classifications within the building. The occupant loads for the upper levels are as detailed in the previous report for this building, dated 18 July 2006.

Table 1: Summary of Purpose Groups and Occupant Loads

Level	Description	Purpose Group	FHC	Area (m ²)	Occupant Density (occ/m ²)	Occupant Load
G	Museum	CL	1	820	0.25	205
G	BOH	IA	1	112	0.02	2
G	Total					207
1	Office	WL	2	125	0.1	13
2-4	Vacant space	IA	-	-	-	0

The above occupant loads are based upon the methods recommended in C/AS1.

5.2 Fire Safety Precautions

The following summarises the fire safety precautions for the building from C/AS1.

Table 2: Fire Safety Precautions Required

Purpose Group	Occupant Load	Escape Height (m)	F Rating (min)	Alarm Type	Other Protection Required
CL	207	0	0	2f ¹	16, 18c
WL	13	<4	60	2af	16, 18c

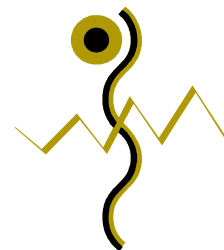
Explanatory Notes:

¹ As permitted by Table 4.1/2/Note 7, a type 2f fire alarm system is permitted in CL purpose groups where the occupant load is less than 250 people.

a Not required where the escape routes serve an occupant load of no more than 50.

16 Visibility in escape routes.

18 Fire hydrant system.



- f A direct connection to the Fire Service is not required provided a telephone is installed and freely available at all times to enable 111 calls to be made.

Given the above, the proposed fire safety features are shown below with comparison to the requirements of C/AS1.

Table 3: Proposed Fire Safety Precautions

Feature	C/AS1 Requirement	Existing/Proposed Features
Fire Rating	(60)/60/60 between firecells.	Limited occupancy and existing heavy timber flooring as accepted in 2006 consent approval.
Alarm System	A manual fire alarm system. A direct connection to the fire service is not required provided that a telephone is installed and freely available to enable '111' calls to be made.	A manual fire alarm system. Supplementary smoke detectors are installed within the building as detailed in the fire report dated 18 July 2006.
Visibility in Escape Routes	Emergency lighting fixtures to be provided in accordance with F6/AS1.	Emergency lighting fixtures are not presently provided within the main area of the ground floor and are to be provided in accordance with F6/AS1.
Fire Hydrant System	Not required as Fire Service hose run distance is less than 75 m.	Not required as Fire Service hose run distance is less than 75 m.

5.3 Escape Route Features

The following summarises the configuration of the escape routes within the building.

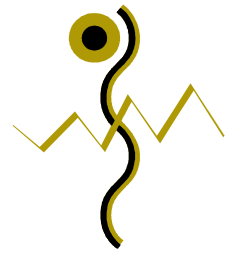
GROUND FLOOR

The ground floor museum will have multiple means of escape directly to the outside. These will be via the main entrance doors to Customs Street, as well as exit doors to Gore Street and Galway Street.

There is a single means of escape from the BOH service area and the egress door has an inward swinging leaf. Both situations are acceptable given the low occupant load in this space.

STAIR DISCHARGE

There is one stair serving the office on the first floor in the Australis building which exits directly to Gore Street at ground floor. The means of escape from the ground floor is independent of the means of escape from the upper floors.



5.4 Escape Route Widths

The occupant load of the ground floor is 207 people, Therefore, a minimum of two exits are required from the ground floor with clear widths of 1449 mm and 1863 mm for the horizontal and vertical egress widths respectively.

Assuming approximately half of the occupants are in each section of the ground floor, two exits are required from each section with minimum width of 850 mm and 1000 mm for the required horizontal and vertical egress widths respectively.

The front entry doors have an egress width of approximately 850 mm each and therefore the combined width will be the widest exit which needs to be discounted. The rear exit from the Nathan building has a width of 1100 mm while the side exit from the Australis building leading to Gore Street has a width of 800 mm. Based on this, the total exit width from the ground floor complies with the requirements of C/AS1.

The egress from the back of house area has an inwards swinging door. As the occupant load for this space is calculated to be less than 20 people, the door may continue to swing in the direction indicated. If the use of this area changes, this may require the door to be re-hung to swing in the direction of escape.

5.5 Travel Distances

As a manual fire alarm system is installed throughout, the permissible travel distances within the tenancy are 18 m and 45 m for dead end open path and total open path respectively. As a WL space, the BOH area has an allowable dead end travel distance of 24m.

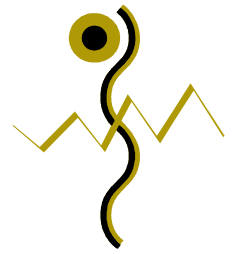
The actual travel distances for the shell layout are 8 m and 40 m and therefore comply with the requirements of C/AS1. For the BOH area, the dead end travel distance to the Galway St exit is 21m which is also acceptable.

When the internal fitout is known, the resulting travel distances will need to be checked to confirm compliance with the travel distance limitations outlined above.

6 SPREAD OF SMOKE AND FIRE

6.1 Internal Fire Rating Requirements

The requirements for the building have been assessed previously by Holmes Fire & Safety in the report dated 18 July 2006 which was accepted by Auckland City Council. This permitted the existing construction to be retained in the building based on restricted areas of use of the building and a limited design life before upgrading works were undertaken.



7 DUTY OF CARE

Please note that the solution we are proposing herein will meet the requirements of the New Zealand Building Code to the extent required by the Building Act with respect to the means of escape from fire only.

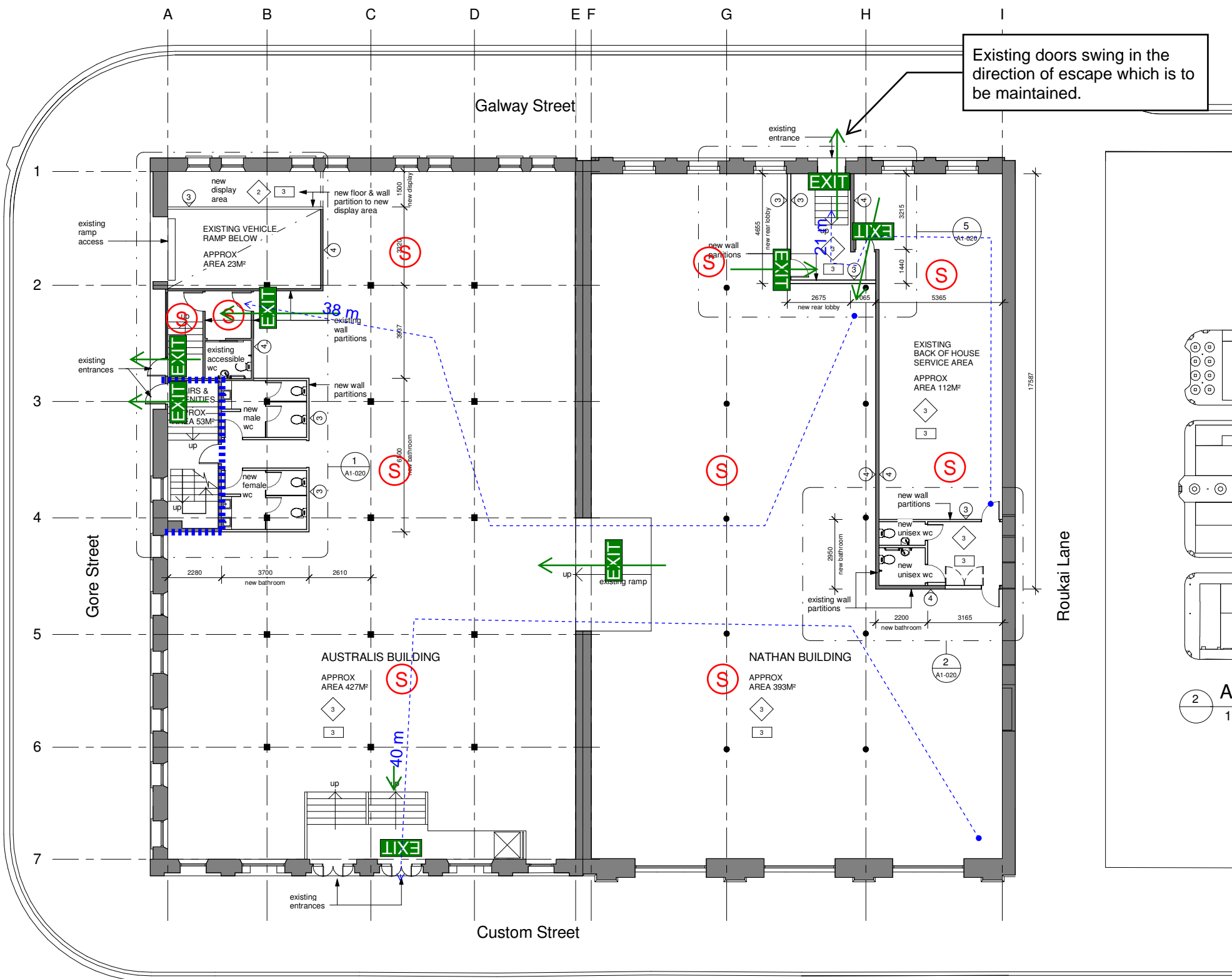
Under the New Zealand Building Act 2004, there is no requirement for the building owner to protect their own property other than to satisfy the life safety objectives of the Building Act. As such, in the event of a fire, it is possible that the property loss within the building could be significant.

The extent of emergency lighting specified in this fire report are minimum for fire safety only and does not specifically account for lighting that may be needed for other emergencies. Please note that other emergency lighting not specified in this report and not related to fire safety may be required for compliance with Clause F6 of the New Zealand Building Code.

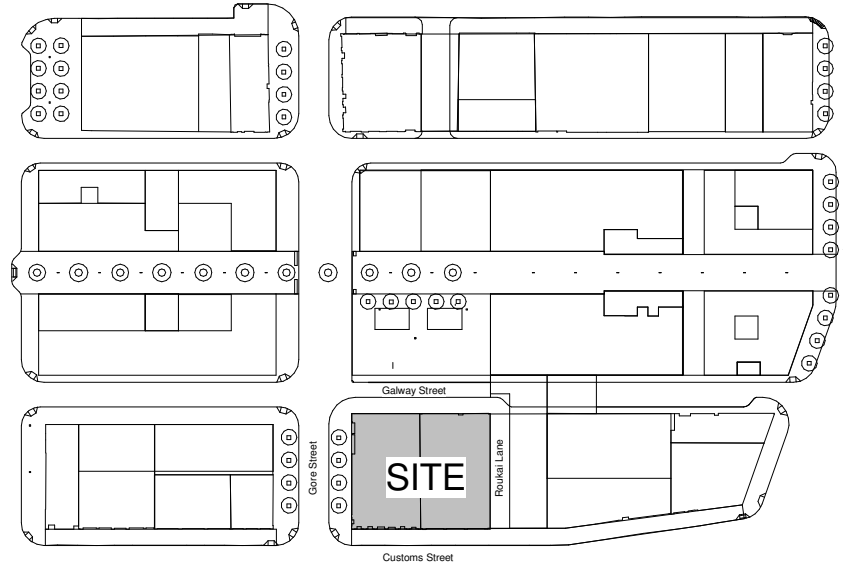
Escape route widths specified in this fire report are minimum widths for fire safety only and do not specifically account for widths that may be needed for access for people with disabilities. Also note that other escape routes features (not specified in this report) and not related to fire safety may be required for compliance with Clauses D1 and F4 of the New Zealand Building Code.

When doors to the building are provided with locks (for example to allow the building to be locked afterhours) there should be a place in a building management plan procedure, which has been approved by the building consent authority, to ensure that all escape route doors are unlocked when anybody is lawfully in the building.

Submission of this Report for Building Consent implies full understanding and acceptance of the above.



Existing doors swing in the direction of escape which is to be maintained.



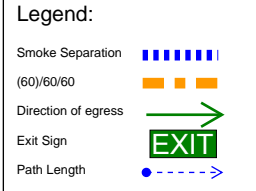
2 Adidas location map
1 : 1000

1 Ground floor - Adidas Museum
1 : 100

WALL TYPE	WALL FINISHES	FLOOR FINISHES	CEILING FINISHES
<ul style="list-style-type: none"> New timber partition wall Existing wall 	<ul style="list-style-type: none"> 1 'Tarkett' black vinyl, pencil cove at floor / wall junction on 6mm cement board wall lining 2 'Kermac K-standard' black toilets and cubical partitioning system to client's approval 3 New timber framed partition wall with 10mm gib lining to both sides, F4 stopped and paint finished to client approved colour scheme 4 Existing lined timber framed partition wall. Clean, make good and new paint finished to client approved colour scheme 	<ul style="list-style-type: none"> 1 New 'Tarkett' eminent vinyl - Safe T, black 2 New timber strip flooring to match existing, polyurethane finished 3 Existing solid native timber floor boards, polyurethane finished 	<ul style="list-style-type: none"> 1 New timber framed ceiling with 10mm Gib lining, F4 stopped and paint finish black to client approved colour scheme 2 Existing lined timber framed ceiling. Clean, make good and new paint finish to client approved colour scheme 3 Existing exposed underside of floor structure above

Notes:

1. These drawings must be read in conjunction with the fire report and are intended to support the fire report scope of works. They do not show all of the required fire safety features specified in our fire report.
2. Each floor is to be a fire separation. Refer to the fire report for the nominated floor fire ratings.
3. This drawing must not be considered as a detailed construction drawing. Detailed design of the various elements illustrated is to be undertaken by others.
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. Fire protection to structural elements & connections which form support to a fire separation must be undertaken in accordance with C/AS1 Part 5.
6. Unless noted otherwise, fire resistance ratings shown shall provide two way fire ratings.
7. Not all fire separations around ducts and shafts are shown.
8. Not to scale.



Rev	Date	By	Checked	Reason
A	09/05/11	KRD	JMC	Building Consent



Project Title
Adidas Museum Nathan Australis Building

Sheet Title
Fire / Smoke Separations & Egress

LOCAL AUTHORITY
CONSULTANTS

NOTES:
VERIFY ALL DIMENSIONS & SERVICE LOCATIONS ON SITE PRIOR TO COMMENCEMENT OF WORK. REFER ALL DISCREPANCIES TO THE ARCHITECT FOR RESOLUTION.

1 For consultant coordination
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PROJECT: No: Project Number
Australis Nathan Building Adidas Museum
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SHEET:
Location Plan & Ground Floor Plan

Job No
50563.54
Sheet No
FSK900
Rev
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