

From: Ed Claridge <ed.claridge@aucklandcouncil.govt.nz>
Sent: Wednesday, 23 March 2016 4:46 p.m.
To: Michael Belsham
Cc: Chris Rutledge
Subject: RE: Guidance - Fire Safety Measures for High Rise Buildings [UNCLASSIFIED]

Thanks Michael,

Let's discuss – perhaps tomorrow as I am in the middle of something now.

I wouldn't have involved you directly in these jobs necessarily but if you wouldn't take exception to me sending you through the documents it might be worth a look for your reference. These 2 jobs are relatively low rise so I am not overly concerned if we have a 2 storey and 5/6 storey building with unprotected steelwork in them. However, some of the issues surrounding documentation and process are interesting.

These are the comments that I have raised so far:

1. Please explain why additional (subsequent to Beca) Time equivalence (Te) calculations have been undertaken to determine the required period of fire resistance. The report is written in terms of using the Beca Te calculations (as currently consented) and does not discuss why additional calculations have been subsequently presented by ^{s 9(2)(b)(ii)} or their relevance to the design and outcome. Additionally;
 - a. The drawings and documentation indicate that the building has an approximate footprint of 70m by 30 m. Please explain why the calculations appear to have used building dimensions of 86m by 30m
 - b. Please explain why the Te calculations have used a FLED of 480 and 1394 MJ respectively for both calculations
 - c. Please explain why the Te calculations have used an Fm factor of 0.5. An Fm factor of 0.5 is only applicable to structures that can 'develop a dependable deformation capacity...'. It is questionable whether this value is appropriate for a structural steel design that proposes to remove all of the passive fire protection from the structural steelwork given that such a design would have 'less resilience to accommodate variations from the calculated fire severity.'

So as you can possibly glean from these comments, we have an existing design in place and consented. A consent amendment has then been lodged to not fire rate the steelwork and uses calculations that reduce the original fire rating requirements using revised Te calcs – with no justification on why they are using different inputs.

Lets discuss

Regards

Ed Claridge | Principal Fire Engineer
Ph: (09) 353 9372 | ^{s 9(2)(a)}
Auckland Council, 35 Granam Street, Auckland
Visit our website: www.aucklandcouncil.govt.nz

From: Michael Belsham [mailto:Michael.Belsham@mbie.govt.nz]
Sent: Wednesday, 23 March 2016 4:34 p.m.
To: Ed Claridge
Cc: Chris Rutledge
Subject: RE: Guidance - Fire Safety Measures for High Rise Buildings [UNCLASSIFIED]

Ed,

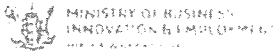
If you want another independent look you could send it me too. I don't have structural background but will be looking for robustness in design for the tall buildings.

Kind Regards,

Michael Belsham
FIRE ENGINEER

Building System Performance Branch | Building Resources & Markets
Ministry of Business, Innovation & Employment
Level 5, 15 Stout Street, PO Box 1473, Wellington 6143

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From: Ed Claridge [mailto:ed.claridge@aucklandcouncil.govt.nz]
Sent: Wednesday, 23 March 2016 1:25 p.m.
To: Michael Belsham; Brian Meacham
Cc: Chris Rutledge
Subject: RE: Guidance - Fire Safety Measures for High Rise Buildings [UNCLASSIFIED]

Michael, Brian,

FYI – I have just reviewed two 'alternative' structural fire designs, which fortunately are for low rise buildings but I have found issues with the design. Coincidentally the designs ^{s 9(2)(b)(ii)} reviewed by ^{s 9(2)(a)} are the current proposed design team for the ^{s 9(2)(b)(ii)} and the issues with these designs made me go back and revisit this determination:

<http://www.building.govt.nz/assets/Uploads/resolving-problems/determinations/2009/2009-100.pdf>

This determination also involved the same designer and reviewer and it is interesting to read through the determination some years later and find that we are not only in the same position but it would appear to me that nothing has changed – except that we are now in C/VM2 territory.

The determination has many interesting statements throughout including:

“The determination has exposed an anomaly in C/AS1 when it is applied to buildings of this particular nature”

“... it is an extremely serious matter to propose that an 18 storey building may be supported on exposed steel structure that only has a 15 minute fire rating ... this is not the intent of the compliance documents. [NZFS is] unaware of any building code internationally that would allow such a low fire rating in a basement beneath a sprinklered tall building.”

“All basement beams are unprotected based solely it appears, on the qualitative statement that these elements ‘... will maintain stability without applied fire protection...’ This is in contrast to the upper levels where calculations based on the HERA Report R4-1313 are referenced.

“Where fire protection to the basement columns is shown, the manner in which the protection is applied is not specified. Instead alternative methods are offered some of which are described as ‘partial protection’ which appear not be supported by detailed analysis.”

“For the reasons stated in 7.2.11 it is not clear that C 4.3.3 has been satisfied. The unprotected columns, beams and the consequence of any ‘local instability’ require proper engineering calculations to be carried out.”

On a positive note ^{s 9(2)(a)} appears to be available to provide the Council with independent expert advice in this area. Please keep this confidential at the moment but I would suggest if we can agree the engagement with ^{s 9(2)(a)} that he would be a useful additional person to pull into the mix when discussing a way forward with these issues.

Regards

Ed Claridge | Principal Fire Engineer
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Auckland Council, 35 Graham Street, Auckland
Visit our website: www.aucklandcouncil.govt.nz

From: Michael Belsham [<mailto:Michael.Belsham@mbie.govt.nz>]
Sent: Friday, 4 March 2016 9:25 a.m.
To: Ed Claridge
Cc: Chris Rutledge
Subject: Guidance - Fire Safety Measures for High Rise Buildings [UNCLASSIFIED]

Ed,

We had a managers meeting to discuss this guidance. It was decided not to release the guidance at this time until we had further discussions with overseas experts on a way forward.

However if you receive a submission for a tall building that you are uncomfortable with please contact us and we can look to publish the guidance to assist with encouraging designers to adopt better standards.

How is progress with updating the policy and FEB Guidance? As discussed a joint publication would be advantageous.

Kind Regards,

Michael Belsham
FIRE ENGINEER

Building System Performance Branch | Building Resources & Markets
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michael.belsham@mbie.govt.nz | Telephone: +64 (4) + 896 5613 ^{s 9(2)(a)}
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s 9(2)(a)

From: Ed Claridge <ed.claridge@aucklandcouncil.govt.nz>
Sent: Wednesday, 23 March 2016 2:54 p.m.
To: Brian Meacham; Michael Belsham
Cc: Chris Rutledge
Subject: RE: Guidance - Fire Safety Measures for High Rise Buildings [UNCLASSIFIED]
Attachments: ^{s 9(2)} IAFSS China.jpg
(a)

Thanks Brian,

I chaired a session at this conference in China so was in the front row when this paper was presented!

By coincidence it was the last time I saw ^{s 9(2)(a)}

Regards

Ed Claridge | Principal Fire Engineer
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 Auckland Council, 35 Granam Street, Auckland
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From: Brian Meacham [mailto:Brian.Meacham@mbie.govt.nz]
Sent: Wednesday, 23 March 2016 2:29 p.m.
To: Ed Claridge; Michael Belsham
Cc: Chris Rutledge
Subject: RE: Guidance - Fire Safety Measures for High Rise Buildings [UNCLASSIFIED]

Ed,

Thanks for your note. I skimmed the determination. Interesting read.

You may find the attached to be of interest. They are similar articles (same authors) but the CTBUH article has a more detailed technical focus.

Regards,
Brian

From: Ed Claridge [mailto:ed.claridge@aucklandcouncil.govt.nz]
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Ed Claridge, Principal Fire Engineer
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From: Michael Belsham [<mailto:Michael.Belsham@mbie.govt.nz>]

Sent: Friday, 4 March 2016 9:25 a.m.

To: Ed Claridge

Cc: Chris Rutledge

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However if you receive a submission for a tall building that you are uncomfortable with please contact us and we can look to publish the guidance to assist with encouraging designers to adopt better standards.

How is progress with updating the policy and FEB Guidance? As discussed a joint publication would be advantageous.

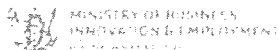
Kind Regards,

Michael Belsham
FIRE ENGINEER

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From: Ed Claridge <ed.claridge@aucklandcouncil.govt.nz>
Sent: Thursday, 17 March 2016 4:07 p.m.
To: Michael Belsham; Brian Meacham
Cc: Chris Rutledge
Subject: Auckland fire Policy and meeting.
Attachments: AC2318 Fire protection policy EC Draft 2.doc; FEB 85 CSE Auckland Council response 01032016.pdf

Follow Up Flag: Flag for follow up
Flag Status: Flagged

Hi Brian, Michael,

Firstly thank you for your time yesterday.

Personally I find these discussions very helpful and they give me some comfort that we are receiving support from the Ministry in terms of discussing some of the challenges that we are both facing.

I have attached the letter I showed you yesterday regarding 85 Customs Street. Whilst I was under pressure to provide a response and this was sent prior to the meetings yesterday, hopefully it sends a similar message regarding our position with what we discussed.

Also I have attached my draft proposals to our Fire Policy. I would appreciate any comments you may have on this and would welcome further discussion. There is some more work to be done on this but I would like to get it out ASAP and in a coordinated approach with any advise that MBIE may be providing particularly with regards to FEB's.

I am trying to treat this as an update rather than a wholesale change.

The current live Policy for comparison can be found at:

<http://www.aucklandcouncil.govt.nz/EN/ratesbuildingproperty/consents/Consent%20documents/ac2318fireprotectionpolicy.pdf>

The attached version contains tracked changes so you can easily see the differences if you wish to compare the current and proposed directly

Regards

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Fire Protection Policy



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Document control

Version 1 approved 27 June 2013

Version 2 approved 09 August 2013

Version 3 approved 27 September 2013

Version 4 approved 16 April 2014 (changes to reflect MBIE guidance on Means of Escape)

Version 5 approved 08 October 2014 (update requirements for NZFS)

Version 6 DRAFT

Purpose

This document provides guidance for building owners, designers and reviewers in regards to the Council's role in consenting fire designs. It is intended that there is an understanding of Council's expectations in respect to the process involved for fire designs.

The following documents must be read in conjunction with this policy

- Auckland Council's Producer Statement Policy if producer statements are offered as part of the design process; and
- MBIE Guidance requesting information about means of escape from fire for existing buildings (published December 2013)

Background to changes

In April 2012, the Ministry of Business Innovation and Employment* (MBIE) introduced significant changes to the Building Code (the Code) in respect to the fire protection of buildings. These changes include the introduction of six new Code clauses and supporting documents. The new Code clauses became mandatory from April 2013.

The previous Code clauses contained performance requirements that were not specific or quantified. The design process was inefficient, did not allow for innovation and designs were often disputed resulting in costly delays. The new Code provides for greater efficiency because it is clearer and more specific providing more design choices, which should result in less delays and cost savings.

Comment [EC1]: This is no longer necessary, but could be left in for background.

Effective dates

All applications lodged for building consent from 10 April 2013 onwards must be designed in accordance with the new Building Code clauses for Protection from Fire (C1-C6).

Where an amendment to an existing building consent is applied for (lodged or approved prior to 10 April 2013), which was designed using the old Code Documents (C1-C4), the amendment may be designed in accordance with C1-C4.

Comment [EC2]: I don't believe that this situation would now occur as the 'transition period' has well and truly ended.

Irrespective of whether a code compliance certificate is issued for an existing building, new building work must be designed in accordance with C1-C6.

Overview

Compliance with the Building Code can be achieved by following one of two approved design solutions: the Acceptable Solutions (AS) or the Verification Method (C/M2). Where neither of these solutions is appropriate, there is a third option, specific design, i.e. a design that does not follow either the AS or C/M2 in its entirety.

Documentation

It is expected that the standard and quality of documentation to accompany a building consent application must be in accordance with Practice Note 22 published by the Institute of Professional

Comment [EC3]: See comment from steve.lambert@rosini.college

* Previously Department of Building and Housing (DBH)

Engineers (IPENZ) and the Ministry of Business Innovation and Employment (MBIE), as guidance under s.175 of the Building Act 2004.

When the fire designer produces documentation for the appropriate discipline to incorporate into their building consent/construction documents, the fire designer and other disciplines share responsibility for correct interpretation and accurate representation in the other disciplines' documents. Primary responsibility for co-ordinating the design correctly rests with the consultants for the other design disciplines. However, it is expected that the building consent documents (e.g. drawings, wall, door and window schedules, and surface finish schedules) will be referred back to the fire designer who will undertake a secondary review of the documents for compliance with the fire engineering design.

All designs shall be accompanied by design coordination statements to confirm that the design documentation submitted for consent has been co-ordinated with and accurately transferred to the drawings. This statement would usually be provided by the fire designer but for non-complex work can be provided by other appropriate parties.

1. Design using the Acceptable Solutions

There are seven Acceptable Solutions based on risk groups, refer to page 214724 for a list of these.

For both **NEW BUILDINGS** and **EXISTING BUILDINGS** a design based on the Acceptable Solutions, must fully comply with all of the requirements of the Acceptable Solutions.

It cannot incorporate aspects of the verification method to demonstrate compliance with the New Zealand Building Code (the Code), except where the only non-compliance relates to the prevention of horizontal spread of fire. In this instance, another methodology may be used. If this departure is performed or reviewed by a person listed on the Auckland Council Producer Statement Register CREng and a PS1 or PS2 has been provided for this aspect only, then the design can be lodged as an Acceptable Solution and checked for compliance by Council staff. Where computer modelling is used for the horizontal spread calculation a PS2 shall also be provided. This PS2 need only cover aspects of the design related to horizontal spread of fire.

When submitting a design using the Acceptable Solutions additional information maybe required; please refer to the table below, which summarises these requirements.

| Design using the Acceptable Solutions CI/AS1-7 | Fire engineering brief (FEB) | Assessment of ex. buildings MOE from fire | NZFS design review ² required | Approval options |
|--|------------------------------|---|---|---|
| New buildings | No | N/A | No | Council regulatory review or PS1 from engineer listed on Auckland Council PS Register |
| Alterations to existing buildings | No | Yes | Only if design has more than a minor ³ effect on a specified | Auckland Council PS Register |

² Refer Gazette Notice No. (49) May 2012

³ An example of minor effects on the fire safety systems could be the alteration of the tone or type of sounding or visual alert for an alarm; relocating a couple of smoke detectors or sprinkler heads which do not require a redesign of the sprinkler system hydraulics.

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|---|----|-----|--------------------------------|--|
| Change of use that results in an alteration | No | Yes | system relating to fire safety | |
|---|----|-----|--------------------------------|--|

Note:

- All new building work must fully comply with the New Zealand Building Code
- Where a change of use or a subdivision occurs, protection of other property will also need to be addressed

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2. Design using the Verification Method

The Verification Method (CVM2) provides for 10 design scenarios; each scenario must be considered and an analysis undertaken, where appropriate, in order to demonstrate compliance with the Code clauses for Protection from Fire.

It is permissible to demonstrate compliance for parts of a building or for some design scenarios through compliance with Acceptable Solution requirements.

When using CVM2 the designer must have the competence to perform the work, e.g. there is an expectation that an experienced CPEng fire engineer perform this work⁴.

Designs undertaken in accordance with CVM2 shall be subject to the Fire Engineering Brief process and the design approach 'agreed in principle' by the Council.

When submitting a design using CVM2, please refer to the table below to determine additional requirements

| Design using the Verification Method CVM2 | Fire engineering brief (FEB) | Assessment of ex-buildings MOE from fire | NZFS design review required | Approval options |
|---|------------------------------|--|---|---|
| New buildings | Voluntary | N/A | No | Council regulatory review or Regulatory review by CPEng fire engineer listed on Auckland Council PS Register evidenced by PS2 |
| Alterations to existing buildings | Voluntary | Yes | Only if design has more than a minor effect on specified system relating to fire safety | |
| Change of use that results in an alteration | Voluntary | Yes | | |

Notes:

- The designer must submit flowcharts for each of the 10 design scenarios are no longer present in the current Verification Method and as such are not required to be provided in support of a FEB or design. However, they remain a useful communication tool to describe the applicable design route for each design scenario
- Where a change of use or a unit title subdivision occurs, protection of other property must also be addressed
- All CVM2 designs must be completed and peer reviewed by a Council - CPEng - fire engineer approved engineer (refer footnote 43)
- FEB process is voluntary if design involves full use of CVM2
- The FEB is a communication document not a design document

Refer to Extent of Documentation

The extent and level of documentation provided to support a FEB will be dependent on the specific nature of the project, the assessment methodology and approaches proposed. This can range from a simple email or short letter outlining a minor deviation or to seek agreement with a proposed

Comment [EC4]: I am not sure of the value of this statement. The only time I have heard of this being done it failed miserably. Also what's the difference if we get a PS1 anyway?

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⁴ Council acknowledges that there is a shortage of suitably qualified and experienced fire engineers able to carry out fire designs. Council also recognises that such persons need to gain experience in the role. In this circumstance, it is permissible for a designer to be mentored by a CPEng fire engineer listed on Councils Producer Statement Register who shall monitor the designer's work through to completion.

⁵ Refer Gazette Notice No. (48) May 2012

assessment method to a single problem (also referred to as an FEB 'Lite'), or to a significant FEB process involving substantial documentation, a range of stakeholders and meetings over a sustained period of time. Generally however, most FEB's will utilise the CVM2 design methodology requiring sufficient documentation to record and agree the location of the proposed design fires and other necessary CVM2 criteria. Typically this would include a report and drawings.

Good quality documentation aids the understanding of an FEB and will help to reduce the amount of feedback and correspondence generated between stakeholders.

- Fire engineering brief (FEB) process ~~Fire engineering brief (FEB) process~~ section for further details

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3. Specific design

Specific designs may be used where a building is not designed using either the Acceptable Solutions or C/M2. Applicants must contact Council before proceeding with the design; the designer must explain the reasons why the fire design for that building is outside the parameters of AS or C/M2 design.

Where designs fall outside of the scope of the Acceptable Solutions or C/M2 and the designer wishes to use parts of either the Acceptable Solutions or C/M2 as part of the proposed design it is strongly recommended that designers communicate this intent with the Council prior to lodgement of the Fire Engineering Brief.

When using specific design a CPEng fire engineer must perform the work and the design reviewed by an engineer listed on the Auckland Council Producer Statement Register.

When submitting a specific design, refer to the table below, to determine additional information required.

| Specific design (alternative solution) | Fire engineering brief (FEB) | Assessment of ex-buildings MOE from fire | NZFS design review required | Approval options |
|---|------------------------------|--|-----------------------------|---|
| New buildings | Yes | N/A | Yes | Council regulatory review or Regulatory review by CPEng fire engineer listed on Auckland Council PS Register evidenced by PS2 |
| Alterations to existing buildings | Yes | Yes | Yes | |
| Change of use that results in an alteration | Yes | Yes | Yes | |

Notes:

- Council must be notified prior to commencing with a specific design
- Where a change of use or a unit title subdivision occurs, protection of other property must also be addressed
- All specific design should be performed by a CPEng fire engineer
- All applications involving specific designs are subject to the FEB process

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⁶ Refer Gazette Notice No 49 May 2012

Fire engineering brief (FEB)

The FEB is a documented process that defines the scope of work for a fire engineering analysis and the basis of the analysis. The purpose of this process is to identify and discuss at a high-level, the fire-safety design parameters and to communicate the outline at an early stage with all relevant stakeholders. Verification of the detail or design is NOT not expected or required at this stage.

Fire engineers should refer to the International Fire Engineering Guidelines or other recognised standards⁷ for further information regarding the content of an FEB.

Where a trial or preliminary design is presented within an FEB document or a calculation is provided the correctness or result will not be checked and/or approved prior to building consent stage. Trial designs provide a useful benchmark to understanding the likely outcome but will not be subject to prior approval before consent stage.

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Extent of Documentation

The extent and level of documentation provided to support a FEB will be dependent on the specific nature of the project, the assessment methodology and approaches proposed. This can range from a simple email or short letter outlining a minor deviation or to seek agreement with a proposed assessment method to a single problem (also referred to as FEB 'Lite'), or to a significant FEB process involving substantial documentation, a range of stakeholders and meetings over a sustained period of time. Generally however, most FEB's will utilise the CVM2 design methodology requiring sufficient documentation to record and agree the location of the proposed design fires and other necessary CVM2 criteria. Typically this would include a report and drawings.

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Fire engineering brief (FEB) process

Refer to the following table to determine whether an FEB is required:

| CIAS | CVM2 | Specific design |
|------|-----------|-----------------|
| No | Voluntary | Yes |

If an FEB is required, the applicant must complete the online form to ensure that Council are aware of the proposal and to initiate a request to commence the FEB process. Council officers will review the FEB documentation to determine whether sufficient information has been provided to commence the process and provide initial feedback. If documentation is adequate, Council officers will then consider whether a meeting is required and confirm their level of involvement with the FEB going forward.

- Refer to our website to locate the on-line form *AC1027 Application to commence FEB process*
- On-line applications are automatically sent to the FEB team via email
- Council represent their own interests during the FEB process regardless of whether a peer reviewer has been engaged

⁷ BS 7974 Application of fire safety engineering principles to the design of buildings ISO/TR 13387-1:1999 Fire safety engineering Part 1

- All relevant stakeholders must be copied into any communications

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Note: all information on the online form must be completed; if documentation is not available or applicable, applicants must note this on the form. If documentation is available, it must be attached and submitted with the online application.

~~Stakeholders involved in the FEB process should understand the critical design inputs. If stakeholders cannot agree with the design inputs, the reasons are documented and recorded in the minutes and must be addressed at consent stage. There is no sign off for an FEB.~~

Where possible the extent of Council involvement will be limited where confidence is obtained via production of appropriate documentation and peer review involvement. Typically once Council has been satisfied that their involvement in the process can be limited, this will be communicated to the designer and peer reviewer including Councils expectations regarding closing out the FEB process and the expectations of the peer reviewer to enable the Council to accept the FS2 in good faith at the time of consent.

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Meeting location

If a meeting is required, it will normally be held at 35 Graham Street, Auckland; alternatively, meetings may be held elsewhere by mutual agreement. If a meeting is not necessary, the FEB process may be conducted via email or other agreed process.

If a meeting proceeds, it is preferable that all stakeholders attend; however, there is no requirement for them to do so. Stakeholders are welcome to attend the meeting via telephone conferencing if they are unable to attend the meeting.

Stakeholders include but are not limited to:

- Council
- NZ Fire Service
- Fire engineer
- Architect or designer
- Building owner
- Specialists (e.g. emergency lighting, warning systems, etc.)
- Peer reviewer (means a chartered professional engineer experienced in fire design and listed on Auckland Councils Producer Statement Register)
- Insurance representative
- Building management
- Tenant

Stakeholders may ask questions of the designer; however, to maintain the integrity of the process, they must not make or influence design decisions.

| FEB process response timeframes vs. activity request | Timeframe |
|---|----------------|
| FEB notification and document acceptance | 3 working days |
| FEB process (document review, meeting if required, outcome of review) | 6 working days |
| Administration (updating Pathway Council's computer system, with the meeting records) | 1 working day |

Fees

Fees for Council's participation in the FEB process are set according to Auckland Council's Schedule of Fees and Charges and are a set fee based on a one-hour meeting; charged as per the fee for a pre-application meeting. If the meeting extends beyond one hour, additional fees are payable and are based on the hourly rate chargeable for the staff member in attendance. The cost of reviewing the application prior to the meeting is also payable and based on an hourly rate for the staff member concerned.

Consent Documentation Notes:

As consent documentation needs to be final and complete, it is expected that the design fire report and consent documentation include the following:

- A copy of the decision advising the outcome of the FEB process must accompany the building consent application
- Council officers represent Council interests during the FEB process, even if the applicant opts for a peer review
- The FEB, including the agreement by all the stakeholders and Council.
- The fire design, including any calculations must be complete and final.
- Documentation and coordination statements in accordance with Practice Note 22.
- A co-ordination statement from the fire engineer as required by Practice Note 22 and confirming the fire engineer has undertaken a lead PN22 co-ordination role.
- A PS1 covering C1 to C6 and F5, F7 & F8 (where applicable)
- Confirmation that the fire engineer will provide a PS4 including the level of construction monitoring services to be provided.

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Section 112 alterations to existing buildings

Section 112.1

A building consent authority (BCA) must not grant a building consent for the alteration of an existing building, or part of an existing building, unless the BCA is satisfied that, after the alteration, the building will

- a) comply as is reasonably practicable with the provisions of the building code that relate to
 - i. means of escape from fire; **AND**
 - ii. access and facilities for persons with disabilities (if this is a requirement in terms of s.118); **AND**
- b)
 - i. if it complied with the other provisions of the Building Code immediately before the building work began, continue to comply with those provisions; or
 - ii. if it did not comply with the other provisions of the Building Code immediately before the building work began, continue to comply at least to the same extent as it did then comply

Section 112.2

Despite subsection (1), a territorial authority (TA) may, by written notice to the owner of a building, allow the alteration of an existing building, or part of an existing building, without complying with the provisions of the Building Code specified by the TA, if the TA is satisfied that

- a) if the building work were required to comply with the relevant provisions of the Building Code, the alteration would not take place; **AND**
- b) the alteration will result in improvements to attributes of the building that relate to
 - iii. means of escape from fire (refer next section); **OR**
 - iv. access and facilities for persons with disabilities; **AND**
- c) the improvements referred to in paragraph (b) outweigh any detriment that is likely to arise as a result of the building not complying with the relevant provisions of the Building Code

An alteration means any building work to re-build, re-erect, repair, enlarge or extend the building. For alterations to existing buildings, the designer must consider all of the building, not just the new building work and provide an assessment to Council.

In addition to the assessment for means of escape from fire – refer next section, access and facilities for disabled persons must also comply as near as is reasonably practicable. Other code clauses must perform no worse than they did before the alteration for s.112 (1).

The information collected is best summarised in a table (gap analysis), which must describe existing features in the building, current code requirements; and options to upgrade the level of compliance (where there is a deficiency). The emphasis should be on upgrading the means of escape from fire and access and facilities rather than finding reasons not to upgrade.

If the work does not need a building consent then there is no need to consider s.112; however, if a building consent is required the assessment should be rigorous and thorough.

All new building work must fully comply with the Code.

For further guidance, refer to

- Practice Note AC2226 s.112 and applying the term as near as reasonably practicable to existing buildings on our website; or
- the Ministry of Business Innovation and Employment's website www.mbie.govt.nz

Assessment of the Means of Escape from Fire for Existing Buildings

When an alteration to an existing building, change of use or subdivision is proposed, an assessment of the means of escape from fire for the existing building must be performed.

Council has adopted guidance information published by MBIE entitled 'Requesting Information about Means of Escape from Fire'. This guidance provides a recommended approach for assessing the Means of Escape from Fire for existing buildings. It includes a mechanism for determining the level of assessment a building requires; it is an analysis of the risk associated with the building to determine the shape and form of the assessment.

| Score | Risk profile | Type of assessment required |
|-------|--------------|-------------------------------|
| 0-11 | Low | Statement of proposed changes |
| 12-19 | Medium | Gap analysis |
| 20+ | High | CVM2 |

The assessment must be updated every time that work requiring a building consent is undertaken on the building to provide a living document about the buildings history.

Once the building has been assessed, the designer can commence the design to establish compliance with C1-C6. Ideally as well as written reports, the assessment will include marked drawings, which provide sufficient pictorial information to identify key systems and locations.

Notes:

- The assessment must be updated whenever future alterations occur
- In addition to the requirements for means of escape from fire, options to upgrade the level of compliance for other code clauses must be provided as per the requirements of s.112
- All new building work must fully comply with the Code unless a waiver or modification is approved

Applying the term as near as is reasonably practicable

Sections 112, 115 and 116 of the Building Act require that the certain provisions of the building code are shown to comply on an 'as nearly as is reasonably practicable' basis also known as ANARP. Council Practice Note AC2226 has been developed to provide a clear understanding of the application of s.112 of the Building Act 2004 and in particular how to apply the term reasonable and practicable. Council advice can also be sought for specific applications as part of a pre-application meeting.

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ASSESSMENT undertaken prior to carrying out work on a building

An owner may choose to get an assessment of their building, well before any building work is proposed. This ensures that provides the owner with information to support them in making a decision as to whether they will know with certainty whether their building needs to be upgraded or not and will be alerted to any potential risks or issues. An FEB is NOT required in this instance.

A copy of the assessment may be placed on Council's property file for future reference. Building consent may also be applied for if the assessment is to be relied upon for future consent applications and for example it is to be treated as the 'base building' fire report.

If as a result of the assessment, the building is identified as being dangerous, Council will issue a notice under s.124 of the Building Act.

Sites with multiple buildings

Where new building work is proposed on a single building, which is part of a group of buildings, the assessment is only required on the building, which is the subject of the new building work; for example:

- A gymnasium is being altered in a school, the building assessment / fire report only needs to relate to the gymnasium (in this scenario, the gymnasium must be freestanding and not attached to other buildings or linked to specified systems within the complex).

The designer must establish whether any specified systems (within the existing building) are integrated into other buildings in the complex. If this is the case, information about these specified systems must be included as part of the assessment.

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Section 115 change of use

Every building or part of a building has a 'use' that has been categorised by law. For the purposes of the application of s.115 of the Building Act, that use is specified in Schedule 2 of the Building (Specified Systems, Change the Use, and Earthquake-prone Buildings) Regulations 2005 (the Regulations).

Schedule 2 describes the uses for all or parts of buildings into four broad activity groups:

- crowd activities
- sleeping activities
- working, business or storage activities, and
- intermittent activities

A change of use occurs when:

- a building's (or part of a building's) use, as defined in the Regulations, changes from one use (the old use) to another (the new use), and
- the new use has more onerous or additional Building Code requirements than the old use⁶

To demonstrate compliance with s.115 of the Building Act 2004, an assessment of the means of escape from fire for the whole of the building must be provided.

In addition to the means of escape from fire, protection of other property, sanitary facilities, structural performance and fire-rating performance must also be assessed to as near as is reasonably practicable.

The requirements for building alterations to existing buildings are set out in s.112 of the Building Act. However, the requirements of s.115 are more onerous. Therefore, if both a change of use and alterations are going to occur, the requirements of s.115 will usually apply and take precedence over s.112.

For further guidance, refer to

- Practice Note AC2205 *Change of Use* on our website or
- the Ministry of Business Innovation and Employment's publication, *Change of Use, A guide for Christchurch City Council*, which can be found on their website at http://www.building.govt.nz/userfiles/file/publications/building/building_act/change-of-use-guidance-ccc.pdf or http://www.dbh.govt.nz/UserFiles/Files/Publications/Building/Building_A%20change%20of%20use%20guidance-CCC.pdf

⁶ Code requirements for the new use of a building maybe more onerous than the old use if there is a greater risk to life or the fire hazard is increased

Schedule 1: Exemption 10 Interior non-residential alterations

Schedule 1 provides for a number of exemptions for building work that does not require a building consent. Exemption 10 allows for non-residential buildings to be altered internally, without the need for a building consent.

Note: a building consent is required if the proposed building work reduces compliance with the Building Code of the following aspects.

- Means of escape from fire
- Protection of other property
- Sanitary facilities
- Structural performance
- Fire-rating performance
- Access and facilities for people with disabilities; or
- Modifying or affecting any specified systems

An owner may choose to put a record of the exempt work on file for record-keeping purposes.

- If an owner chooses to put a record of exempt building work on file, they should use application form AC2111 *Record of exempt building work*; this form is on our website.
- There is a small charge to cover the cost of scanning this record; Council do not review the application and merely place the record on file.
- No letters or documents are issued acknowledging acceptance of this record; however, if required a date stamped copy of the application form can be retained by the owner as a record of Council receiving this information.
- Detailed plans should accompany the application.

At present, there is very little guidance available to Council as to what constitutes minor work, we are therefore reliant on guidance information published by the Department of Building and Housing (now MBIE/MBIE). Regardless of whether a building consent is required, all building work, must comply with the Building Code.

Some situations where a building consent is not required:-

- The owner of a retail store decides to do an internal fit out that includes new linings and finishes, shelving, clothes racks and simple low partitions. The escape routes are not reduced (e.g., total open paths stay the same) and the building work does not affect any existing specified systems.
- A restaurant undergoes an alteration that includes redecorating and new seating areas. The work does not affect escape routes (e.g., total open paths stay the same) and the building work does not affect any existing specified systems.
- Installing a window in a non-load bearing partition between a factory storage room and hallway to allow natural light into the hallway
- Replacing linings and finishes within a retail shop where the work does not affect compliance with any fire-rating requirements and surface finishes comply with the Building Code

⁹ Ministry of Business, Innovation and Employment, GUIDANCE Building work that does not require a building consent, 'A guide to Schedule 1 of the Building Act 2004', Third edition 2014

- Removing a sink and a wash hand basin from a disused cleaners' cupboard in a shopping complex, where the removal of the hand basin does not reduce compliance with Building Code provisions relating to sanitary facilities, as other fully complying facilities are available nearby in the complex.
 - *Any alteration work to sanitary plumbing must be carried out in accordance with the Plumbers, Gasfitters, and Drainlayers Act 2006*

Installing new walls and partitions (even non-load bearing ones) close to sprinkler heads may reduce the effectiveness and compliance of the sprinklers, which are part of a specified system. Installing new walls or partitions may also increase total open paths. Work of this nature will necessitate a building consent; however, where the work is considered to be relatively minor, there is provision under Schedule 1 clause 2 for Council to grant an exemption (refer next section).

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Schedule 1: Exemption 2

Exemption 2 provides Council with the ability to exempt building work from the requirement for a building consent.

If an owner wishes to apply for an exemption, they should use application form AC2119 *Application to request an exemption under exemption 2 of Schedule 1 of the Building Act*. The same level of information required for a building consent is required in support of the application together with the justification for seeking an exemption.

- a statement from an ~~CPEng~~ fire approved fire engineer must be provided confirming that the building work has no effect ~~or~~ does not reduce the compliance of any existing fire safety features together with a list of fire safety features and what will change as a result of the building work
- if an exemption is granted, an assessment of s.112 is not required

Council will review the application and grant or refuse the request accordingly, a deposit is payable at lodgement. The full cost of reviewing and determining whether an exemption is viable is based on an hourly rate. Please refer to the fee schedule for further information about fees and charges.

Examples of situations where an exemption maybe considered¹⁰

- A shop within a mall is changing hands and the new tenant wants to install a new shop front, shelving and partitions. The replacement of the shop front involves a structural design for the new glass; the work does not impact on the superstructure of the existing building (structural or otherwise) and has been designed by a chartered professional engineer who has supplied a PS1
- An office on level nine of a 14-storey office / retail block has a need for additional offices. The space underwent a significant refurbishment in 2011, which was consented. The tenants needs have changed and additional offices are required within the existing fire cell. The work involves reconfiguring three of the existing offices to create five smaller offices. The location of the new walls will have an impact on the location of sprinkler heads, which will need to be moved / replaced; the work on the system does not affect flow rates and has no effect on egress routes

¹⁰ There is guidance available at <http://www.building.govt.nz/UserFiles/File/Publications/Building/Technical-reviews/2012-wellington-technical-review.pdf> <http://www.doh.govt.nz/Files/File/Publications/Building/Technical-reviews/2012-wellington-technical-review.pdf>

New Zealand Fire Service (NZFS)

The NZFS have two roles where fire designs are involved; firstly, they are a stakeholder in the Fire engineering brief (FEB) process and secondly Council are required to send NZFS certain applications for their comment if they so choose under s.47 of the Building Act 2004. The Fire Service also approve aspects of the design in respect of fire fighting facilities and as such should be consulted prior to consent stage where approval is required for any fire fighting facilities to be provided.

1. FEB process – engineers@fire.org.nz

NZFS provide feedback on

- o the content of the FEB; and
- e the suitability of fire fighting facilities

The table below summarises the application types that require input from the NZFS

| Application type | Acceptable Solutions | C/M2 | Specific design |
|---------------------------------|----------------------|---------------------|-----------------|
| New building | No | Voluntary FEB input | Yes |
| Alteration to existing building | No | FEB input Voluntary | Yes |
| Change of use | No | FEB input Voluntary | Yes |
| Subdivision | No | FEB input Voluntary | Yes |

As part of the FEB process it is expected that Fire Fighting Facilities Checklist be completed as required by the NZFS. Further information can be found on the NZFS website.

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2. Building consents that must be sent to the NZFS fire engineering unit for comment.

Section 46 of the Building Act specifies that certain applications for building consent must be provided to the NZFS for comment. The New Zealand Gazette Notice (No. 49) published on 3rd May 2012 defines the types of application that must be sent to NZFS.

The NZFS have 10 working days to review these applications and provide a memorandum to the BCA. This timeframe sits within the 20-working day statutory timeframe that the BCA has to process an application for building consent. To expedite this process, the Fire Engineer responsible for the fire design must state in their report if the building is required to be reviewed by the FEU.

Designs for building consent must be submitted to the FEU when both Criteria 1 and Criteria 2 below are met.

CRITERIA 1 Building type

Buildings (or parts of buildings) used for:

- gathering together of 100 or more people (for any purpose)
- employment for 10 or more people
- accommodation for 6 or more people (other than in 3 or fewer household units)
- hazardous substances in quantities exceeding prescribed minimum amounts
- early childhood facilities
- nursing, medical, or geriatric care
- specialised care for persons with disabilities

⁽¹⁾ <http://fire.org.nz/business-fire-safety/building-design/pages/building-act-2004.html>

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- lawful detention of people (not home or community detention)

The following buildings are excluded:

- crown buildings that are specified by the Minister in the Gazette
- premises of diplomatic missions
- single household units
- buildings in which every fire-cell is a household unit separated vertically from the other fire-cells, and each fire-cell has independent and direct egress to a safe place outside the building
- an internal fit-out, unless the fit-out relates to a change of use outbuildings or ancillary buildings

CRITERIA 2 – Designs / building work type

- Designs for new buildings using alternative solutions (not using an Acceptable Solution or Verification Method) to comply with any of the following Building Code clauses:
 - C1-C6 Protection from Fire (or C1-C4 Fire Safety, until 9 April 2013)
 - D1 Access routes
 - F6 Visibility in escape routes
 - F8 Signs, or
- When waivers or modifications to any of the above Building Code clauses are required, or
- Alterations, change of use or subdivisions that have a more than minor effect on fire safety systems

Example

- Criteria 1 + Criteria 2 = FEU

The table below summarises the application types that must be sent to the NZFS (refer to the Ministry of Business Innovation and Employment's Building Controls Update #132 for a more detailed explanation)

| Application type | Acceptable Solutions | C/M2 | Specific design |
|---|---|---|-----------------|
| New building | No | No | Yes |
| Alteration to existing building ¹² | Only if the design has more than a minor effect on a fire safety system | Only if the design has more than a minor effect on a fire safety system | Yes |
| Change of use | | | Yes |
| Subdivision | | | Yes |

| The Council may also, at their discretion, seek NZFS input as part of the Consent review process.

¹² The reference to an alteration in Item 1(c) of the Gazette Notice means that building consent applications for alterations that effect fire safety systems must be reviewed by the NZFS

Risk Groups and Uses

Risk groups in C/AS1-7 of the Protection from Fire clauses are used to establish risk in terms of fire safety measures; they only apply to the Acceptable Solutions.

| Risk group | Description |
|------------|--|
| SH | Houses and multi-unit dwellings with no more than one unit above another |
| SM | Other residences and accommodation |
| SI | Places of care or detention |
| CA | Places where people undertake activities other than working |
| WB | Places where people work |
| WS | Places where people work with higher risk / storage |
| VP | Places for cars, trucks, boats etc. |

Uses relate to the use(s) of the building and whether a change of use has occurred; they are in Schedule 2 of the Building (Specified Systems, Change the Use and Earthquake-Prone Building) Regulations 2005.

| Use | Description |
|-----|--------------------------------|
| CS | Crowd small |
| CL | Crowd large |
| CO | Crowd open |
| CM | Crowd mercantile |
| SC | Sleeping care |
| SD | Sleeping detention |
| SA | Sleeping accommodation |
| SR | Sleeping residential |
| SH | Single household |
| WL | Working low |
| WM | Working medium |
| WH | Working high |
| WF | Working fast |
| IA | Intermittent activity (low) |
| IB | Intermittent activity (medium) |

Building consent documentation

The **standard and quality of documentation** must be in accordance with Practice Note 22 published by the Institution of Professional Engineers (IPENZ) and the Ministry of Business Innovation and Employment (MBIE), as guidance under s.175 of the Building Act 2004.

The design team usually coordinates the various design disciplines involved. As fire engineering overlaps so many other disciplines, the fire engineer may review associated documentation, to ensure that it reflects the requirements of the fire design, before the application for building consent is submitted; however, there is no expectation that the fire engineer signs off on other trades requirements or inputs.

Note:

- The reviewer does not assume responsibility for the design of the elements involved but is responsible for verifying that the intent of the design has been met

Producing quality documentation for building consent will significantly improve Council (or the reviewer's) ability to process the application for building consent and ~~ensure~~ provide a more seamless and efficient (time and cost) process. Fire safety design must be properly communicated and incorporated into the final design documentation submitted for building consent.

Practice Note 22 describes the type and extent of information required to record fire design requirements, how to communicate these to other members of the design team and the type and extent of information required to support applications for building consent. It also lists expectations of the designers and their responsibilities for producing plans and specifications for construction.

The Practice Note also provides guidance about the form of design documentation with *considerable emphasis* on graphical communication, rather than the traditional textual based reports.

Detailed floor plans must accompany fire reports depicting safe paths for each level of the building including basements (and any lifts serving the basement).

A PS1 shall be provided to declare that the overall fire design demonstrates compliance with the Building Code. The PS1 shall provide confirmation that any calculations or computer modelling used in the design (e.g. BRANZFIRE B-Risk or FDS) is appropriate for the application and that the modelling, ~~including engineering or engineering~~ calculations, represents the building geometry (and function) in the final building design.

Only a ~~person~~ CPEng specialising in fire and listed on the Auckland Council Approved Producer Statement Register can issue producer statements for acceptance by Council. The computer model shall be analysed appropriately for the design by the design engineer; it is not the role of the peer reviewer to perform the analysis. Hard copies of the input files for fire modelling must be included with consent documentation.

For BRANZ and B-Risk simulations a hard copy of the results file must be included with consent documentation. The simulation settings must ensure that all inputs are reflected in this file. Smokeview files showing the modelling geometry and graphs indicating smoke layer heights and other important results should be included within the report write-up to support the analysis and conclusions made.

For FDS simulations a hard copy of the input and output files i.e. the .fds file and the .csv output files including the data analysis (these maybe in MS Xcel or other suitable format) must be included with consent documentation. Electronic input and output files are to be provided for each analysis to

support an external review should that be required. Files provided on a USB drive or similar media can be accepted by Council at the time of lodgement. This can be discussed during the FEB process.

The documentation submitted should be sufficient to allow a regulatory reviewer and third party to fully understand the modelling undertaken and enable them to review the input and output sufficiently to confirm the assessment methodology and the results meet the requirements of the Fire Engineering Brief.

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Peer reviews

Auckland Council's Producer Statement Policy must be read in conjunction with this policy if producer statements are offered as part of the design process.

A peer review is regarded by Auckland Council as a regulatory review carried out by a design professional on a designers work; a producer statement design review (PS2) is issued on completion. The applicant nominates the peer reviewer prior to the application being submitted for consent.

Producer statements are not specifically referred to in the Building Act 2004. However, they can be considered as part of the building consent process, in terms of giving Council reasonable grounds to be satisfied that the building work complies with the Building Code and provides an efficient and cost-effective service to clients.

If the peer reviewer is on the Auckland Council Producer Statement Register, Council will accept the PS2 in good faith and is completely reliant on it when processing the consent application, to establish compliance with the Building Code. Apart from checking the authors' details, the content of the producer statement and level of insurance, no further limited checks will be made by Council unless the application is selected for audit, is considered high risk or is of specific interest. The peer reviewer shall not have any direct involvement or financial interest in the company providing the initial design.

The peer reviewer must ensure they hold an appropriate level of insurance for the work involved and follow all requirements of the Auckland Council Producer Statement Policy. The ACENZ website provides a risk estimator tool for determining the level of insurance required. A copy of the risk estimator worksheet must be attached to the building consent application together with confirmation that an appropriate amount of insurance is held.

The acceptance of a producer statement is entirely at Council's discretion. Council reserves the right to perform additional reviews of the information to ensure quality and consistency is maintained in the review of designs for compliance with the New Zealand Building Code.

Although Council has no objection to a peer reviewer participating in the FEB process, to maintain the integrity of the review, the reviewer should be independent of the design process.

High-Risk design work

High risk in this context means a project where a high risk to life is present such as a building with very high occupant numbers or sleeping occupancies in multi-storey buildings and has a different meaning to that defined within AC2301. High-risk design work is subject to either a peer review or regulatory review. The decision as to which option is agreeable and who performs this role is at the sole discretion of Council. This decision is typically made before the FEB process is started and the peer reviewer is engaged.

Examples of High risk projects include:

- Projects involving specific design
- Non sprinkled sleeping accommodation in multi storey buildings
- Sleeping accommodation having only a single means of escape
- Buildings with more than 1000 occupants
- Non sprinkled buildings with large occupancies more than 500 occupants

Comment [EC5]: We need a way of capturing actual high fire risk work rather than saying all CVM2 and fire design work is high risk, which AC2301 currently suggests

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- Buildings exceeding 20 storeys in height
- Shopping centres/Malls
- Stadia
- Transportation

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Regulatory review

At the time of submitting a building consent, if Council does not have the in-house capacity to assess an application or a PS2 has NOT been provided by a suitably qualified CREng and approved fire engineer, Council may choose to engage the services of such a person to conduct the review on its behalf.

The purpose of a regulatory review¹³ is to assess whether the design complies with relevant regulations, consent requirements and legislative requirements. The reviewer does not assess the design objectives, process, options, assumptions or method, only the submitted design and tests the outcome against regulatory parameters.

There is no direct relationship between the reviewer and the designer, although the reviewer may ask the designer questions about inconsistencies in the work. Communication between the designer and the reviewer is important.

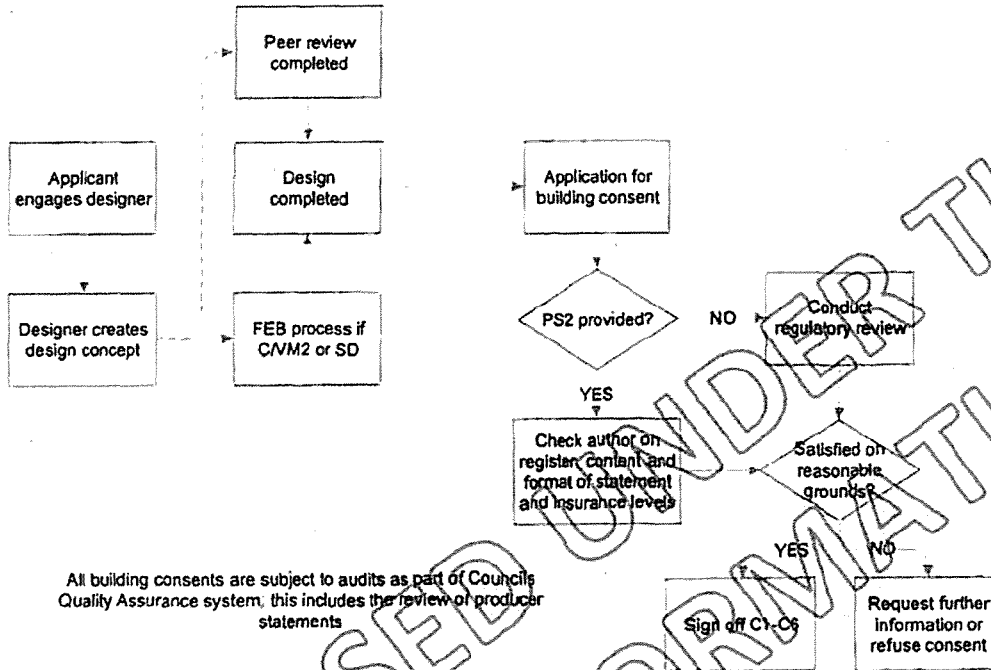
The reviewer's role is to identify areas of the design that need to be addressed and invite the designer to resolve them to the reviewer's satisfaction. The reviewer does not become involved in resolving the issues. This allows the designer to comment and state a position before the report is submitted.

If the review is conducted during the consent processing stage, Council will recover the costs from the building consent applicant in the normal manner.

High-level overview of the design and consent approval process

¹³ An independent reviewer may be engaged by Council to carry out the design review. Please refer to the Auckland Council Producer Statement Policy for further information

Peer reviewer may be engaged at any stage prior to application for consent



All building consents are subject to audits as part of Councils Quality Assurance system, this includes the review of producer statements

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Construction monitoring

Appropriate levels of construction monitoring are necessary to provide confidence to Council that the design engineer, or their representative, has actively monitored and observed the building being constructed in accordance with their design expectations and also to confirm that the building will operate as required in accordance with the consented fire design.

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The extent and scope of construction monitoring to be undertaken should be agreed as part of the Fire Engineering Brief process and confirmed within the documentation submitted for consent approval. A PS4 shall be provided to support Code Compliance Certification of the building and to confirm that the design meets the designer's requirements for fire for all C/VM2 and specific designs. The IPENZ/ACENZ Guidance on Construction Monitoring Services¹⁴ provides a useful reference to the various levels of construction monitoring that may be appropriate for each individual case. However, a more detailed description and agreed level of scope may be necessary for specific projects. Refer also to IPENZ PN22 for further information.

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Not all designs and building consent applications will need the design engineer to undertake construction monitoring and the production of a PS4. For all fire design work undertaken in accordance with C/VM2 and specific design, construction monitoring by the design engineer is expected unless agreed otherwise as part of the Fire Engineering Brief process. Designs undertaken in accordance with the Acceptable Solutions may require construction monitoring to be undertaken at the discretion of Council, dependant on the complexity of the proposed works and fire safety systems proposed. For Acceptable Solution designs for new and existing buildings it is recommended that fire designer propose a level of construction monitoring commensurate with the complexity of the design. Where no discussion of construction monitoring is provided within the consent documentation the Council may require a specific level of construction monitoring as part of the approvals process.

Certificate for Public Use

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If the building is to be occupied by the public before the Code Compliance Certificate is issued, there will need to be an application for a Certificate for Public Use. The management procedures associated with this certificate shall be included in the consent application and reviewed by the Peer Reviewer.

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Fire design review process

In this section, reviewer means both the peer reviewer and regulatory reviewer.

The reviewer must:

- comply with both this policy and the Auckland Council's Producer Statement policy
- not perform any design work which is the subject of the review
- document all requests for additional information in writing and submit these to Council together with any supplementary documentation received during the review
- consider all relevant New Zealand Building Code clauses; i.e. D1, F6, F7 and F8 (as applicable to the C clauses)
- consider any legislative requirements; i.e. sections 67, 112, 115 or 116A
- summarise and list any fire safety features or specified systems required for the compliance schedule including listing any inspection and maintenance procedures

¹⁴ https://www.ipenz.org.nz/ipenz/forms/pdfs/Construction_Monitoring_Services.pdf

Formatted: English (New Zealand)

- consider whether it is appropriate for the fire engineer to monitor construction and provide a producer statement construction review on completion of the building work
 - the scope of construction monitoring and agreement to provide a producer statement construction review must be reached prior to the issue of the building consent

Before completing the review, the reviewer must provide Council with their professional opinion in respect to

- any request for a waiver or modification
- the assessment of what is as *near as reasonably practicable*
- the New Zealand Fire Service memorandum and the applicants response to this

On conclusion of the review, the reviewer must provide a producer statement design review and verify they hold an appropriate amount of insurance. The reviewer must also complete a design summary, the design summary must

- not include any exclusions or limitations
- summarise documentation reviewed during the assessment
- confirm the intent of the FEB process has been met (if applicable)
- detail all correspondence reviewed / received (written and verbal)
- precisely describe the extent of the review

At the end of the review, the information on Council's file must be complete. It must be adequate such that if the report is revisited in the future, that all decisions, reasons for decision and the outcome is understood. For this reason communication between the various parties must be clear and traceable. A schedule of questions and responses presents the most robust and common methodology for recording and closing out design review items. Long email trails and phone calls, whilst a common form of communication do not support a transparent process and important decisions impacting the design including the reasoning behind any decisions made must be documented in an appropriate format.

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1/03/2016

Enright Consulting Pty Ltd
ABN 42 138 439 559
PO Box 84
Black Rock
Victoria 3193
AUSTRALIA

Dear Tony

FEB number: PG/2015/1481
Address: 85 Customs Street East, Auckland
Description: Volume 1: Tower Building

Fire Engineering Brief (FEB)

Thank you for submitting the revised FEB dated 25 January 2016. Rev 4 (FC reference FC 1503 FEB)

UNDER THE
BUILDING ACT

- Fire resistance ratings of structures and the associated consequences of post fire stability, reinstatement and collapse given the increase in risks with height
- Increased risks associated with external vertical fire spread

Through discussions to date we would expect that the design team and other stakeholders are aware of the above concerns and that specific design challenges such as the single stair located at the top of the building remain a focus of the design. This letter serves as a record of the above concerns and to document council expectations going forward with the project.

Project Peer reviewer

Please note that for the Council to accept a PS2 in lieu of a full regulatory review we would require confidence that the peer reviewer acts on our behalf and fulfils the obligations expected in accordance with the AC2301 Producer Statement Policy. To date the council has seen limited involvement of the peer reviewer in the process. Given the significance of this building and for the reasons given above Council may seek further independent review of the documentation when it is submitted for consent to enable us to be reasonably satisfied that the building does comply with the Code and is appropriately safe.

Fire Service

Discussions with the Fire Service are on-going and we have been party to the correspondence provided to date including Fire Service email of the 23rd December 2015. It is noted that we have not yet seen any formal fire service correspondence provided in the form of a letter as would typically be the case in response to acceptance and closing out an FEB and presume that the Fire Service will continue dialogue with you, potentially independently of the Council, to work through the fire fighting needs for the project.

With regards to the Building Code clause C5—Access and safety for fire fighting operations, Council will expect confirmation from the Fire Service that their needs have been met to enable consent to be granted.

General FEB Expectations

Please note the following FEB, building consent and peer review expectations: As the Building Consent application is to include a peer review (PS2) in support of a producer statement design (PS1), this will reduce the need for a full review to be completed by Council. As the Council may not be carrying out a full regulatory review, the PS2 will be accepted under the following circumstances:

- The peer reviewer will provide confirmation that any requirements of the FEB have been satisfied and that the FEB process has been completed.
 - The peer reviewer will confirm that the proposed Compliance Schedule is correct.
 - The peer reviewer will provide a copy of any proposed conditions / advice notes for including in the Building consent. Further consultation with council may be required.
 - The peer reviewer will provide detailed documentation confirming the scope and extent of the review as per the AC2301 Producer Statement Policy.
- The building consent documentation must include:
 - The FEB including the acceptance of all other stakeholders.
 - The fire design, including all relevant documentation and any calculations. This must be complete, final and consistent with all documentation submitted.
 - Relevant documentation conforming to IPENZ Practice Note 22.
 - A PS1/PS2 covering C1 to C6, F6, F7 & F8 (where applicable).
 - General CVM2 expectations:

- a. The fire report is to clearly explain what analysis has been undertaken including location of FDS monitoring devices, how venting derived and used, D*/delta calculation etc.
- b. Peer reviewer needs to check validity of the modelling, input-outputs of modelling, fire growth, HRRPUA, acceptance criteria measurement points, smoke control calculations etc. for compliance with CVM2.
- c. All communication should be copied to council.
- d. Please provide fire modelling input and outputs at consent stage for council records. Electronic files submitted via USB or hard drive is acceptable.

Please find attached our response to the discussion items following the first FEB meeting and our responses (EC-1502-Q&A-101-(2)). We can continue to communicate and record these and any other discussion points using this schedule and once all items are closed out will provide written confirmation that Council will 'agree in principle' with the design concept.

If you have any further queries regarding this matter, please contact the undersigned quoting the above project details.

Yours faithfully



Ed Claridge
Principle Fire Engineer
ed.claridge@aucklandcouncil.govt.nz
BUILDING CONTROL - 35 Graham Street, Auckland Central

From: Ed Claridge <ed.claridge@aucklandcouncil.govt.nz>
Sent: Friday, 4 March 2016 10:42 a.m.
To: Michael Belsham
Cc: Chris Rutledge
Subject: RE: Guidance - Fire Safety Measures for High Rise Buildings [UNCLASSIFIED]

Hi Michael,

Yes my email was a bit vague, sorry. I was referring to the ^{s 9(2)(b)(ii)} design. Council has had further meetings about other projects but we have yet to get into specific discussions about fire engineering and any FEB's on them yet.

Regards

Ed Claridge | Principal Fire Engineer
 Ph (09) 353 9372 | ^{s 9(2)(a)}
 Auckland Council, 35 Granam Street, Auckland
 Visit our website: www.aucklandcouncil.govt.nz

From: Michael Belsham [mailto:Michael.Belsham@mbie.govt.nz]
Sent: Friday, 4 March 2016 10:23 a.m.
To: Ed Claridge
Cc: Chris Rutledge
Subject: RE: Guidance - Fire Safety Measures for High Rise Buildings [UNCLASSIFIED]

Ed,

Can I ask if specific high rise is new submission or is it one that we know of already (s 9(2)(b)(ii) send me the FEB at all?

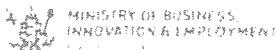
Can

Kind Regards,

Michael Belsham
 FIRE ENGINEER

Building System Performance Branch | Building Resources & Markets
 Ministry of Business, Innovation & Employment
 Level 5, 15 Stout Street, PO Box 1473, Wellington 6143

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From: Ed Claridge [mailto:ed.claridge@aucklandcouncil.govt.nz]
Sent: Friday, 4 March 2016 9:55 a.m.
To: Michael Belsham
Cc: Chris Rutledge
Subject: RE: Guidance - Fire Safety Measures for High Rise Buildings [UNCLASSIFIED]

Thanks Michael,

With regards to the specific high rise building my time was running out so I wrote them a letter with regards to our position on the design. This highlighted our concerns with regards to the suitability and use of C/VM2 and areas where it may not be adequate but did acknowledge that the proposed design did consider some aspects that were above minimum C/VM2 requirements etc. Hopefully this at least records for the record that there are concerns during the FEB stage. Probably best if I don't send the letter to you directly but I can show you it next time we catch up.

I also had another discussion with the fire service about them being clear on their position as to whether the design can meet fire fighting needs. I have asked them to provide a clear response because at the moment we just have email correspondence between parties and the possibility of a design that is becoming too far advanced for any real changes to be made without substantial pain. There have also been discussions muted about the fact that the fire service DRU won't be seeing the consent documentation as it is not a requirement of the Gazette notice. My view is that we have every intention of sending it to the fire service irrespective of whether the gazette mandates this or not.

As for our FEB guidance and policies I intend to issue this to s 9(2)(a) Monday so hopefully I can get it to you very soon.

I'll be in touch next week to discuss timing.

Regards

Ed Claridge | Principal Fire Engineer
Ph (09) 353 9372 | s 9(2)(b)(ii)
Auckland Council, 35 Graham Street, Auckland
Visit our website: www.aucklandcouncil.govt.nz

From: Michael Belsham [mailto:Michael.Belsham@mbie.govt.nz]
Sent: Friday, 4 March 2016 9:25 a.m.
To: Ed Claridge
Cc: Chris Rutledge
Subject: Guidance - Fire Safety Measures for High Rise Buildings [UNCLASSIFIED]

Ed,

We had a managers meeting to discuss this guidance. It was decided not to release the guidance at this time until we had further discussions with overseas experts on a way forward.

However if you receive a submission for a tall building that you are uncomfortable with please contact us and we can look to publish the guidance to assist with encouraging designers to adopt better standards.

How is progress with updating the policy and FEB Guidance? As discussed a joint publication would be advantageous.

Kind Regards,

Michael Belsham
FIRE ENGINEER

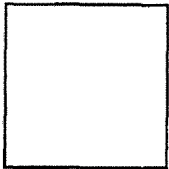
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Fire Safety Measures for High-rise Buildings

With the advent of high-rise developments in Auckland city the following guidance is provided to supplement the Verification Method C/VM2.

High-rise buildings have a series of challenges in terms of safe evacuation, fire-fighting and protection of other property and the wider society. There are range of specialist features that should be considered for high-rise buildings that are not described in C/VM2. Designers and BCA's should consider the issues that are unique to tall buildings when applying C/VM2 such that the safety of the building has sufficient robustness to mitigate the fire risks of occupancy at height and to the surrounding community.

For the purposes of this guidance a high-rise building means a building exceeding 20 Storeys (current limit of the Acceptable Solutions).

A useful reference for designing the fire safety measures for high-rise buildings is SFPE's **Engineering Guide: Fire Safety for Very Tall Buildings**. The guide can be accessed at the link below:

<https://sfpe.site-ym.com/store/ViewProduct.aspx?id=4603146>

The fire safety issues and the corresponding measures to address them that must be considered in the fire designs for high-rise buildings include:

- Protection of Special Hazards / Risk Assessment
- Reliability of Fire Safety Systems
- Staged/Phased Evacuation Design and Refuge Areas
- Robustness of Structure
- Combustibility of Façade Materials
- Fire Fighting Access and Facilities at Height
- Passive Fire Protection

The fire designs for high-rise buildings will either apply the Verification Method or a specific design. In both cases the design and consenting process will include a Fire Engineering Brief (FEB). The fire safety issues relating to high-rise buildings noted above should be addressed in the FEB process to feed into the design process.

In deciding whether or not to approve a building consent application for a high-rise building, the BCA should have regard to whether the FEB process has addressed the fire safety issues listed above and whether the consequent fire design incorporates appropriate measures that address the issues applying to the building. This should inform the BCA's consideration whether there are 'reasonable grounds' to approve the building consent.

This guidance for high-rise buildings is issued as an interim measure. The fire safety issues and corresponding measures that need to be considered for high-rise buildings will be incorporated into the compliance documents.

From: Ed Claridge <ed.claridge@aucklandcouncil.govt.nz>
Sent: Thursday, 2 March 2017 11:34 a.m.
To: Michael Belsham
Subject: RE: C/VM2 Measurement and threshold of tenability conditions in stairs [UNCLASSIFIED]
Attachments: Visibility in Stairwells EC comments.docx

Thanks,

Some comments on the attached.

Regards

Ed Claridge | Principal Fire Engineer
 Ph (09) 353 9372 | s 9(2)(a)
 Auckland Council, 35 Granam Street, Auckland
 Visit our website: www.aucklandcouncil.govt.nz

From: Michael Belsham [mailto:Michael.Belsham@mbie.govt.nz]
Sent: Thursday, 2 March 2017 10:47 a.m.
To: Ed Claridge
Subject: RE: C/VM2 Measurement and threshold of tenability conditions in stairs [UNCLASSIFIED]

As requested! Any comments?

Kind Regards,

Michael Belsham
 FIRE ENGINEER

Building System Performance Branch | Building Resources & Markets
 Ministry of Business, Innovation & Employment
 Level 5, 15 Stout Street, PO Box 1473, Wellington 6143

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From: Ed Claridge [mailto:ed.claridge@aucklandcouncil.govt.nz]
Sent: Thursday, 2 March 2017 10:07 a.m.
To: Michael Belsham; s 9(2)(a)
Cc: Christine Duncan; s 9(2)(a)
Subject: RE: C/VM2 Measurement and threshold of tenability conditions in stairs [UNCLASSIFIED]

Hi Michael,

Thank you for the response. This is particularly useful in confirming how this issue should be treated, including the long standing issue of the 'blip' and the challenges we are having with the plethora of single means of escape and tall buildings that we are seeing.

Dare I suggest that this would warrant an FAQ repeating what you have stated below. However, I am sure that it won't be long before you more about this from other sources.

Regards

Ed Claridge | Principal Fire Engineer
Ph (09) 353 9372 | ^{s 9(2)(a)}
Auckland Council, 35 Graham Street, Auckland
Visit our website: www.aucklandcouncil.govt.nz

From: Michael Belsham [<mailto:Michael.Belsham@mbie.govt.nz>]
Sent: Thursday, 2 March 2017 9:46 a.m.
To: Ed Claridge; ^{s 9(2)(a)}
Cc: Christine Duncan
Subject: RE: C/VM2 Measurement and threshold of tenability conditions in stairs [UNCLASSIFIED]

Hi Ed,

The code specifies that visibility shall be monitored within the stair but doesn't give specifics of the locations which needs to be decided in the FEB.

I would agree that monitoring directly outside the door is too onerous and monitoring one floor above would be suitable as this is a test of the conditions for other floors escaping.

I also note that escape should consider other floors escaping. Is the phased evac one or more floors at a time? As part of the amendment we are looking to elevate the comment in 3.2.5 to the text as follows:

The egress analysis should be undertaken for the entire length of the ~~escape route~~ ensuring that the flow of occupants is not restricted at some point closer to the ~~final exit~~.

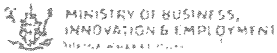
C/VM2 is test of the design and this case the test is showing that there is insufficient smoke management within the stairwell. The Code is absolute and does not allow for 1 or 60 second 'blip' in tenability. Location and method of measurement however can be varied if agreed by all parties.

Kind Regards,

Michael Belsham
FIRE ENGINEER

Building System Performance Branch | Building Resources & Markets
Ministry of Business, Innovation & Employment
Level 5, 15 Stout Street, PO Box 1473, Wellington 6143

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From: Ed Claridge [<mailto:ed.claridge@aucklandcouncil.govt.nz>]
Sent: Tuesday, 28 February 2017 6:55 p.m.
To: Michael Belsham; s 9(2)(a)
Subject: C/VM2 Measurement and threshold of tenability conditions in stairs

Dear all,

I hope you don't mind me contacting you all directly about this but the issue of measuring, the intent and consultants opinions regarding tenability limits in stairs has become particularly frustrating for me for various reasons recently. This issue also has implications for a number of significant projects and will remain an ongoing issue with the potential changes to C/VM2 if implemented particularly for tall buildings.

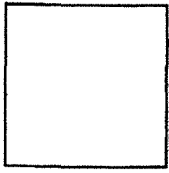
To get to the point of my concern it revolves around the issue of the 'Blip' and whether we can accept any loss of a tenability criterion in a staircase below that required by C/VM2 and whether the criteria should be treated as a threshold or not. I.e. does the design fail as soon as that point is breached or can we accept some sort of transient loss when this value is breached? We went through this issue with the single means of escape buildings some time ago when it was 'accepted' that some sort of transient loss could be accepted when the 5m visibility limit was breached. That issue has not been adequately resolved as far as I am aware but we are now experiencing similar issues when trying to deal with designs for the tall buildings and staircase visibility is an issue as per the MBIE FAQ 3.3. I understand that the revisions to C/VM2 may also introduce requirements for assessing a 10m visibility requirement for the fire service intervention in the stair and again this will introduce the same requirement without any definition of how to undertake the assessment (noting C/VM2 para 1.1).

Please keep this confidential at the moment but I have attached design advice dealing with a proposal to measure visibility in a tall building stair which should hopefully show the sort of issues I am dealing with. It has taken months of effort to even get it to this stage and I remain concerned that all I am seeing is assessments that keep being modified to make outcomes appear acceptable even though the issue is not resolved and smoke still gets into the stair. This follows using a zone model and now modifying measuring device locations and interpretations etc. as you will see.

To summarise the problem to me, the issue is that if we are allowing smoke to enter the stair, which C/VM2 clearly allows, then if the tenability limit is breached at all, is that a failure of the design? If not and the criterion can be breached what is an acceptable amount? If it can we can then go on to discuss how the measurement is undertaken and start addressing all the other issues associated with that. However, I am not convinced that we can accept that a design can be shown to be C/VM2 compliant on this issue if the tenability limit is exceeded at all?

Personally I am comfortable with some sort of 'blip' as we have discussed in the past but that needs better defining and the designs I am seeing are simply not addressing that issue appropriately. Any help would be appreciated so that we can try and address the issue sooner rather than later.

Regards



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Where and how do I need to monitor visibility in the stairwell?

NZBC C4.3 requires a minimum visibility of 5m within stairwells. For CFD modelling visibility is monitored 2m above floor level. Within a stairwell there are many floor levels.

When the stair door is open there may be ~~usually~~ an amount of smoke ejected into the stair which may or may not dissipates throughout the stair volume. This can cause local smoke obscuration at the stair opening and a transient loss of tenability conditions in the immediate location of the opening. The C/VM2 modelling is not intended to replicate 'real time' conditions as occupants would may have escaped before this dense smoke occurs or be within the stair or be about to enter the stair at that location or above it at some time during the localised effects. The modelling is intended to test the design for compliance with NZBC and show that tenability conditions in the stair would not hinder the evacuation process.

Comment [EC1]: I don't think that usually is appropriate here as we should not be designing buildings to allow smoke to enter the stairs at all and it should not be allowed to become common practice that fire design accepts this occurs in all cases. A good fire design would protect the escape routes to prevent smoke ingress by good design.

Stair visibility is critical to measure for all other floors escaping into the stair. It is therefore considered suitable to monitor visibility on the floors above the fire origin to test impact on other floors escaping. This requirement will most often require some degree of smoke management to the stairwell, but accepts that localised loss of tenability conditions immediately surrounding the opening may occur.

Note that the stair door opening times must allow for queuing in the stairwell and evacuation from other floors and merging flows.

The use of zone models for measuring tenability within stairs may not be appropriate to provide confidence in the assessment outcomes where the fire design indicates that smoke will be entering the stair for a prolonged period. The simplification and assumptions necessary for using a zone modelling approach to represent stair geometry needs to be carefully considered and agreed as appropriate during the Fire Engineering Brief process.

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From: Michael Belsham
Sent: Friday, 3 February 2017 4:07 p.m.
To: Edwin Claridge
Subject: FW: SFPE NZ Chapter - Technical meeting, Auckland Feb 22nd [UNCLASSIFIED]
Attachments: SFPE Tech meeting Fire design in SFO 2017-02.pdf

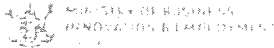
You should pop along and ask him about tall buildings....

Kind Regards,

Michael Belsham
 FIRE ENGINEER

Building System Performance Branch | Building Resources & Markets
 Ministry of Business, Innovation & Employment
 Level 5, 15 Stout Street, PO Box 1473, Wellington 6143

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From: s 9(2)(a)
Sent: Friday, 3 February 2017 3:58 p.m.
To: Secretary SFPE NZ Chapter
Subject: SFPE NZ Chapter - Technical meeting, Auckland Feb 22nd

Hi all,

The next Technical Meeting in Auckland will be held on Wednesday 22nd February. Arrive at 4pm for light refreshments prior to 4.15pm presentation start. Beca Auditorium, Pitt St, Auckland Central.

Brian Salyers (Holmes Fire, San Francisco) will discuss fire engineering relating to U.S. building code compliance. The discussion will include an overview of compliance on national, state and local levels: it will focus on San Francisco at the local level given Brian's work experience there.

He will provide project examples with the objective of creating an open dialogue with New Zealand practices.

See attached flyer for details.

Enjoy the long weekend!

--

Regards,

s 9(2)(a)

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Technical meeting - Auckland

Topic: Fire Engineering design and compliance in the US

Speakers: Brian Salyers (Holmes Fire, San Francisco)

Date: Auckland: Wednesday 22nd February 2017

Time: 4.00 pm arrival for 4.15 pm start

Locations: Auckland: Beca Auditorium, Pitt St, Auckland

No RSVP required.

Brian Salyers (Holmes Fire, San Francisco) will discuss fire engineering relating to U.S. building code compliance. The discussion will include an overview of compliance on national, state and local levels: it will focus on San Francisco at the local level given Brian's work experience there. He will provide project examples with the objective of creating an open dialogue with New Zealand practices.

Turn up early for light refreshments provided before the presentation.

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From: Ed Claridge <ed.claridge@aucklandcouncil.govt.nz>
Sent: Friday, 20 November 2015 4:32 p.m.
To: Michael Belsham
Cc: Chris Rutledge
Subject: RE: 85 CSE - FEB, MBIE and FEB Meeting [UNCLASSIFIED]
Attachments: 2. 85 Customs St - Description of Project.pdf; 3. 1502 FEB - 85 Customs Street East, Vol 1 (Tower) - r2.pdf; 5. Preliminary Design Drawings - Egress Routes.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Michael,

I have just sent through a meeting invite and attached is the FEB and plans (note that this is not everything and we have more plans).

I am keen to keep Tony aware of what information and discussions are being had out of professional courtesy so I will let him know that I have passed this on and the invite. Otherwise let's keep the dialogue going.

Regards

Ed Claridge | Principal Fire Engineer
 Ph (09) 353 9372 s 9(2)(a)
 Auckland Council, 55 Oranmuri Street, Auckland
 Visit our website: www.aucklandcouncil.govt.nz

From: Michael Belsham [mailto:Michael.Belsham@mbie.govt.nz]
Sent: Friday, 20 November 2015 4:24 p.m.
To: Ed Claridge
Cc: Chris Rutledge
Subject: RE: 85 CSE - FEB, MBIE and FEB Meeting [UNCLASSIFIED]

Ed,

Thanks for your note. I was just speaking to Simon Davis and we are keen to kept informed of progress. If you could just pass on the FEB and any plans available. I would be happy to attend FEB meeting please send through an invite. I'm available Nov 30th and Dec 2nd.

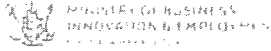
As discussed I'm more interested in how Tony has addressed fire-fighting than escape and keen to hear the philosophy.

Kind Regards,

Michael Belsham
 FIRE ENGINEER

Building System Performance Branch | Building Resources & Markets
 Ministry of Business, Innovation & Employment
 Level 5, 15 Stout Street, PO Box 1473, Wellington 6143

BUILDING PERFORMANCE



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From: Ed Claridge [<mailto:ed.claridge@aucklandcouncil.govt.nz>]
Sent: Friday, 20 November 2015 4:10 p.m.
To: Michael Belsham
Subject: FW: 85 CSE - FEB, MBIE and FEB Meeting

Hi Michael,

FYI – I spoke at some length with Tony about the situation and passing on the FEB to yourselves. As you can see Tony has effectively agreed to this, but he was keen to stress that he wanted the FEB meeting to enable him to explain the building and design philosophy including how the primary safety features are providing protection to the escape routes etc. as he is very aware of the building being seen as a single means of escape building of this height.

He also suggested it could be a good idea to get MBIE in the room as an observer (not a participant) to the FEB. I am not sure if that is an option given the timeframes and I did not include you on the FEB meeting invite initially as I don't necessarily believe that this is a viable option for all concerned and could get awkward depending on different people's views.

In any case possibly best if we have a quick chat about a way forward and what documentation you would like to see before I send it over.

As its Friday afternoon and I need a beer, lets catch up next week when you get 10 minutes.

Regards

Ed Claridge | Principal Fire Engineer
Ph (09) 353 9372 ^{59(2)(a)}
Auckland Council, 100 Victoria Street, Auckland
Visit our website: www.aucklandcouncil.govt.nz

From: Tony Enright [<mailto:tony@enrightconsulting.com>]
Sent: Thursday, 19 November 2015 12:20 p.m.
To: Ed Claridge
Subject: 85 CSE - FEB, MBIE and FEB Meeting

Dear Ed,

Thank you for your time by phone yesterday.

1. Please feel free to pass on the FEB to MBIE. I'd request that MBIE and other stakeholders do not reach conclusions until after the FEB meeting and probably even later than that after a degree of analysis. If MBIE are involved we request that this be on a 'without prejudice' basis as the design could become subject to an application for determination under S177(1)(a) of the Building Act 2004.

2. Regarding dates for the FEB meeting. Our preferred date and time would be Monday 30/11 in the afternoon or any time Wednesday 2/12. There is further flexibility but this gives a couple of targets.

Regards,

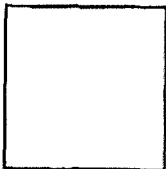
Tony Enright, PhD

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