



engineering
new zealand
te ao rangahau

DISCIPLINARY COMMITTEE – UPHELD COMPLAINTS LESSONS TO BE LEARNT

CASE STUDY
AUGUST 2023 – FIRE REPORT

INTRODUCTION

Engineering New Zealand receives around 50 concerns and complaints about Chartered Professional Engineers and members each year.

Not all complaints are upheld, but they typically relate to:

- miscommunication,
- inattention to client care,
- a misunderstanding over what the engineer has been engaged to do (or what they can't do),
- serious issues of competence, or
- ethical conduct.

Reflections on past complaints that an Engineering New Zealand Disciplinary Committee has upheld can offer valuable lessons for engineers.

We will review an upheld complaint from a past Disciplinary Committee decision every two months. The purpose of this project is not to name and shame, but to provide information so we can learn and grow. Wherever possible, we have anonymised the case.

We invite you to reflect on the lessons to be learnt.

Background

In 2012 the complainant acting as the New Zealand Fire Service (NZFS) advisor to the relevant Building Control Authority, received a Fire Report that the complainant considered sub-standard.

The Fire Report concerned the conversion of part of an existing building from offices to a dental clinic. The area was a small part of a larger complex. The report was headed 'Fire Assessment in Accordance with C/AS1 (2005)' and stated that it treated the area of the conversion "in isolation". It comprised a two page report and a DENTEC Fitout Solutions floorplan with travel distances to exits added by the respondent.

The complainant stated that "the NZFS has significant concerns with regard to this design and its potential impact on the safety to all occupants of the building". He highlighted their concerns that the compliance document C/AS1 had not been applied correctly and that there was insufficient information in the report to determine whether the design was adequate. The complainant also noted that "The fire report has neither assessed the occupancy of the rest of the building nor provided any justification for their exclusion (eg by fire separating this tenancy from the rest of the building)."

In the subsequent investigation, the respondent engineer did not profess to be a 'Fire Engineer' and fire engineering was not included as a competency in his CPEng assessment.

Key issues

1. Did the engineer meet the competency standards expected of a reasonable engineer in providing the fire-related work he had undertaken?
2. Did the engineer breach the Code of Ethics in the Rules, specifically S43 of the Code: 'Take reasonable steps to safeguard health and safety'?

Decision

The Disciplinary Committee found that the engineer has, through providing a Fire Report which was not sufficiently detailed to support his conclusions under the provisions of the Approved Solution C/AS1, and which failed to consider the requirement in S112 of the Building Act to report on the means of escape for the building as a whole, failed to performed his duties as a CPEng with respect to:

- The Chartered Professional Engineers of New Zealand Act 2002 (CPEng Act) section 21 (1)(b) 'Breached the Code of Ethics in the Chartered Professional Engineers of New Zealand Rules (No 2) 2002 (Rules), specifically (what was then) rule 43 of the Code: 'Take reasonable steps to safeguard health and safety' and
- The CPEng Act section 21 (1)(c) 'has performed engineering services in a negligent or incompetent manner': in this case the Committee finds that the engineer was not incompetent but was negligent.

Text from the original fire report

FIRE ASSESSMENT IN ACCORDANCE WITH C/ASL (2005)

It is proposed to convert the existing area of offices to be used as a dental clinic.

The area is part of the larger xxxxx complex. While it is separate from the remainder of the building there is a (locked) door for access.

For this assessment the area is treated in isolation, but the fire alarm system is to be integrated into the total complex.

The Purpose Group is WL and Fire Hazard Category 2.

Occupancy has been assessed in terms of the code as 39 people, but based on actual usage will be rather less than this number.

Means of escape requires two exits and these are provided. The minimum width is 273mm and hence the acceptable door width for each exit is 760 mm and this is provided. Doors must be either hinged to open both ways or open outwards.

Illuminated exit signs should be provided to comply with F6 of the Building Code.

The maximum escape paths are Dead end 5.5m and Total Open 24.5m and these are in compliance with the code requirements.

As noted above the fire safety requirements are to be met by providing a Type 4 alarm system interconnected with the alarm system within the total building. The minimum requirement would be for a Type 2 system and hence the proposed system complies.

Internal wall and ceiling linings are required to have a Spread of Flame Index less than 5 and a Smoke Development Index less than 10 or SFI less than 9 and SDI less than 8.

It is noted that there is an existing hose reel within this area. This is to be removed to bring the building up to date with current regulations.

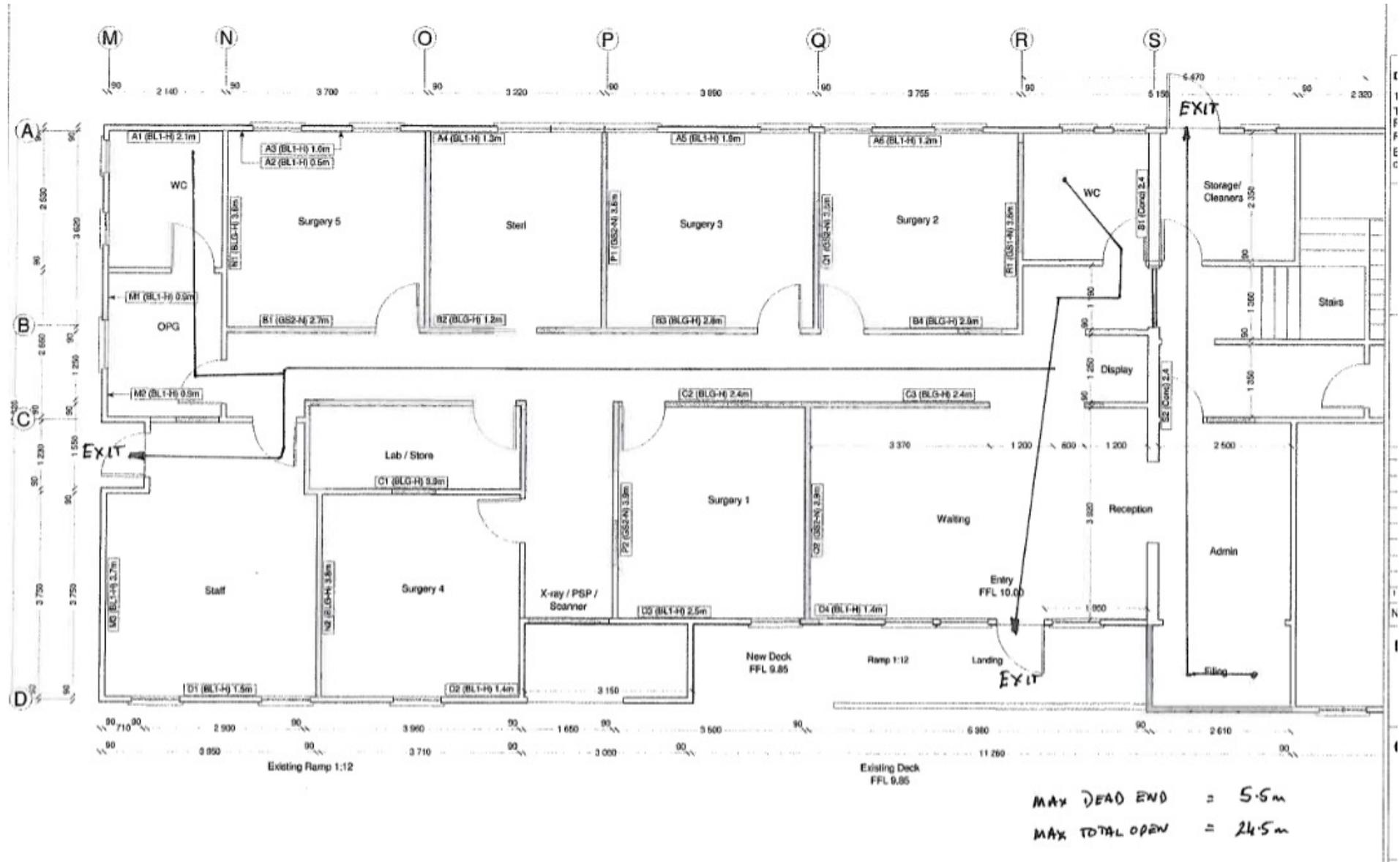
There are no changes to the external walls of the building and hence no additional fire rating requirements are needed.

There is direct access to the building from the car park and hose run distances are less than 75m and hence no hydrant system is required.

This is a relatively simple alteration to the existing building and provided that the above recommendations are followed there will be suitable fire safety provided to protect the area.

Drawings

Figure 1: Original report – proposed fit out solution.



YOUR REFLECTION

Based on the information provided, consider your answers to the following three questions.

What do you identify as the problem?

If you were engaged to resolve the problem, how would you do so? Sketch on the drawings and describe your thought process.

How would you have stopped this from occurring in your own company?

AN EXPERT'S VIEW

The design was carried out in accordance with Acceptable Solution C/AS1 which was in force prior to 2012. Amendment 9 of the Acceptable Solution was current at the time of the design. It states in the Introduction that the Acceptable Solution is “particularly appropriate for simple low rise buildings” and also provides a guide for using the document for “those who are unfamiliar with the document and are not fire engineering specialists.” Therefore, the Engineer did not need to be a fire engineering specialist to complete the design, nevertheless this did not relieve the fire report author from presenting a robust design. There were serious shortcomings in the application of the Acceptable Solution to the design.

The report was slightly longer than a page and included a floor plan of the area of work and some escape route lengths. The report omitted the following.

1. The work being undertaken was an alteration to a building and that Section 112 of the Building Act applied.
2. Assessment of means of escape for the rest of the building.
3. The current version of the Acceptable Solution to use was Amendment 9 rather than Amendment 5 referenced in the report.
4. No discussion of fire separations, number of floor levels or population in each firecell.
5. No justification for the required fire safety precautions.

In September 2011 IPENZ published Practice Note 22 “Guidelines for Documenting Fire Safety Designs”. This publication provides a basic outline for the contents of a fire report. If it had been followed many of the omissions in the report would have been rectified.

Section 112 of the Building Act requires that ‘the building’ complies with the provisions of the building code for means of escape from fire, as nearly as is reasonably practicable, and continue to comply with other provisions of the building code to at least the same extent as before the alteration. Section 112 does not limit the scope of assessment to just the area of work but addresses the entire building.

Subsequent to the date the fire report was written, MBIE published on 2 December 2013 “Requesting information about means of escape from fire for existing buildings”. This outlines the extent of information required which can range from a simple “statement of change” for new buildings with a current fire report to a full building assessment. While this was not available to the fire report author, it provides a starting point for current fire report authors carrying out an assessment for an alteration. To determine the level of assessment required, a Fire Engineer needs to determine the building age and previous fire reports that are on record for the building and the extent that they cover the building. To obtain this information normally requires a search of the council property file.

Apart from a simple “statement of change”, the more rigorous assessments require an understanding of the current state of the building to be able to compare how the building is currently constructed and used with what would be required if it were a new building. Most of this information can be found on existing plans and fire reports, however the state and use of a building can change over time. It is good practice to carry out a building inspection to ensure that the layout is as per the known plans, that the fire safety systems are as stated in previous fire reports and that fire separations are in the correct locations, fire doors are in operation and any easily visible passive fire is compliant. If the fire report author had undertaken a site visit, they would have determined that one of the fire exits was no longer available. This is a fundamental feature of the egress design.

By following the documentation guidelines in Practice Note 22 and carrying out a site visit the fire report author would have been in a much better position to demonstrate to the BCA how the alteration would comply with Section 112 of the Building Act. For current fire report authors carrying out Section 112 assessments, the MBIE guidance is also an invaluable tool for determining the level of rigor that needs to be applied to an assessment.

It is also worth noting that while a CPEng was not required to carry out the fire engineering design, all members of Engineering New Zealand are bound by a code of ethics which includes taking reasonable steps to safeguard health and safety and to act competently.

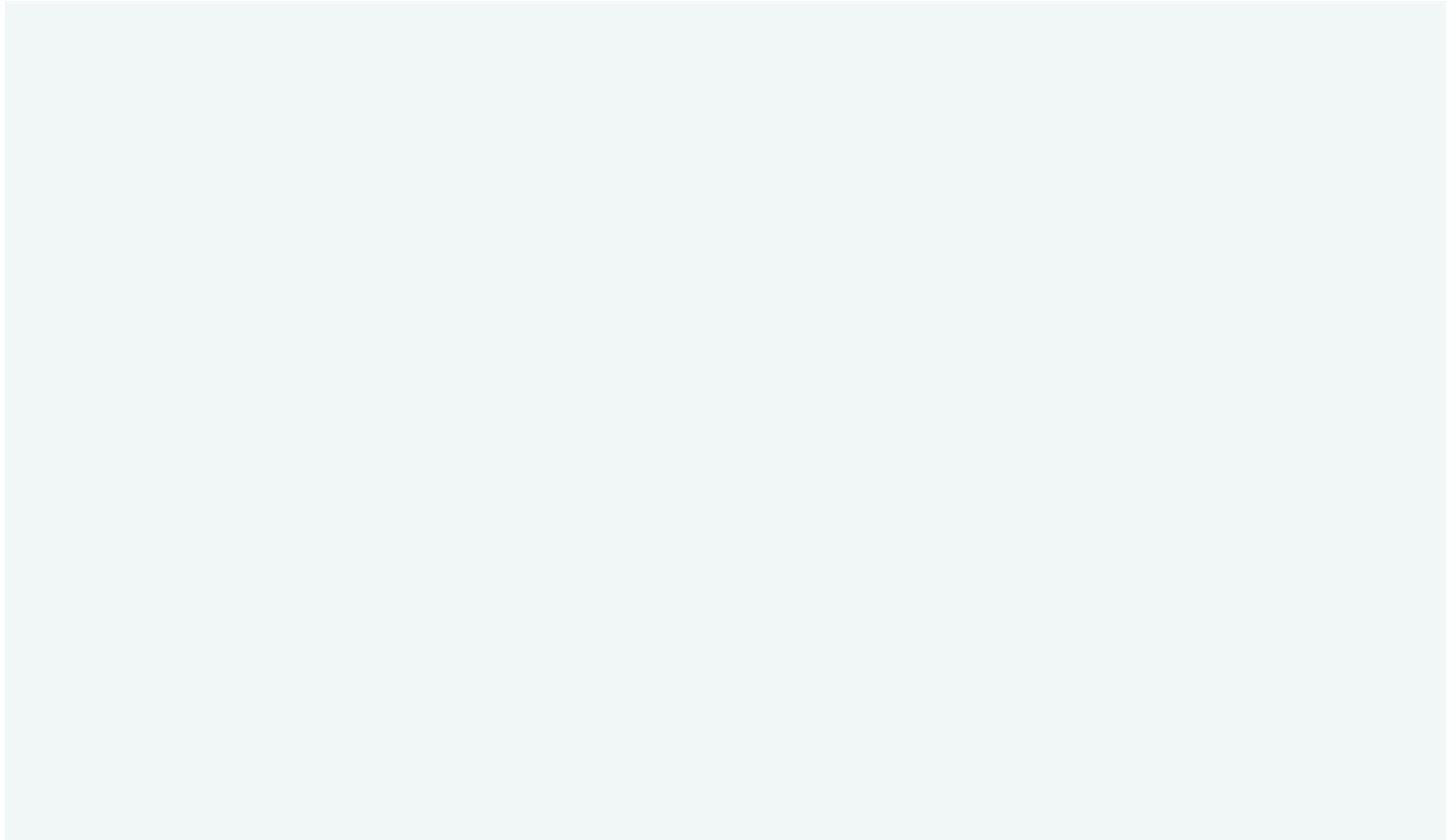
Some recommended steps for ensuring that a compliant fire report is produced for an alteration are:

1. Verify the current state of the building by
 - a. review previous consents (council property file)
 - b. conduct a site visit
2. Use the MBIE guidelines for “Requesting information about means of escape from fire for existing buildings” and attach the score sheet to the fire report
3. Have a fire report template(s) with all the necessary headings pre-prepared to complete
4. Check the MBIE website for the latest compliance documents which are free to download.

Try and have an internal review or buddy up with another engineer to do reviews. At a minimum leave the completed report for a day then print it out and read it to make sure it still makes sense before issuing it.

LESSONS TO BE LEARNT

What lessons can be learnt after reflecting on this upheld complaint?



EXAMPLE SKETCHES









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