

Determination 2026/030

Compliance of a Unit without a Type 4 fire alarm system

Unit 3/20C Gills Road, Albany, Auckland

Summary

This determination considers whether a two-level Unit, in an existing commercial building, would comply with the Building Code without a Type 4 alarm system. The determination considers whether the evacuation time allows occupants to move to a place of safety in the event of fire.

In this determination, unless otherwise stated, references to “sections” are to sections of the Building Act 2004 (“the Act”) and references to “clauses” are to clauses in Schedule 1 (“the Building Code”) of the Building Regulations 1992.

1. The matter to be determined

- 1.1. This is a determination made under due authorisation by me, Andrew Eames, Principal Advisor Determinations, for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment (“the Ministry”).¹
- 1.2. The parties to the determination are:
 - 1.2.1. Z Vujkov, the owner of Unit 3 (“the Unit”) who applied for this determination (“the owner”)
 - 1.2.2. Auckland Council, carrying out its duties as a territorial authority or building consent authority (“the authority”).
- 1.3. In accordance with section 170(a), I have consulted with Fire and Emergency New Zealand (“FENZ”) in making this determination as it relates to a matter of fire safety.
- 1.4. The determination concerns whether the Unit, which forms one part of a larger commercial building, would comply without a Type 4 fire warning system.² The alarm system was installed in the Unit under a building consent³; its installation was instigated after previous building work was carried out to enlarge the area of an intermediate floor in the Unit. The owner now believes the Unit would comply without the alarm system, which is disputed by the authority.
- 1.5. The matter to be determined, in terms of section 177(1)(a), is whether the Unit would comply with clause C4.3 without a Type 4 fire alarm system.
- 1.6. In deciding this matter, I must consider whether the evacuation time⁴ allows occupants of the Unit to move to a place of safety in the event of a fire, so they are not exposed to any of the criteria described in clause C4.3(a), (b) and (c).

¹ The Building Act 2004, section 185(1)(a) provides the Chief Executive of the Ministry with the power to make determinations.

² A Type 4 system is an automatic fire alarm system activated by smoke detectors and manual call points and sounders.

³ Reference number BCO10000682 dated 29 June 2015.

⁴ Clause A2 ‘Interpretation’; **evacuation time** means the time between the ignition of a fire affecting a building and the time when all the occupants of the building have reached a **place of safety**. Place of safety means...‘(a) a safe place...in the vicinity of a building, from which people may safely disperse after escaping the effects of a fire. It may be a place such as a street, open space, public space or an adjacent building’.

Issues outside this determination

1.7. The determination does not consider:

- 1.7.1. the authority's decisions to grant and issue the building consent BCO10000682 and the associated code compliance certificate⁵
- 1.7.2. the authority's decisions to issue any notices to fix or infringement notices to the owner, or any matters arising from a Building Warrant of Fitness or ongoing maintenance and inspection of the specified systems in the Unit (including the Type 4 fire alarm system)
- 1.7.3. the authority's decision regarding the application for a certificate of acceptance⁶ which included the building work carried out to enlarge the area of the intermediate floor.
- 1.7.4. the Building Code compliance of any other unit, or of the multi-unit building as a whole, including whether features or uses elsewhere in the building would require an alarm system serving this Unit.

2. The building work

- 2.1. The Unit at ground floor level is approximately 129m² in area. It is separated from the adjacent units by 200mm thick concrete block walls. The ground floor space includes a workshop for the fabrication and alteration "of stainless steel items and accessories", and a toilet, and has a large roller shutter door, and a single (outward opening) pedestrian door leading to an outside hardstanding.
- 2.2. The Unit incorporates a partially partitioned intermediate floor, approximately 54m² in area.⁷ It includes a storage area, meeting room, toilet, and rest room. Access to the intermediate floor, from ground floor level, is via a spiral staircase. The underside of the intermediate floor is fire-rated to a 30-minute 'fire resistance rating'.
- 2.3. Other than an existing Type 4 alarm system (which also includes some heat detectors), the Unit also contains emergency lighting and illuminated exit signage.

⁵ Dated 10 January 2017.

⁶ Number COA-1247360.

⁷ I have relied on the calculated floor area as detailed in a 'Fire Engineering Design' report dated 3 September 2013. However, I note FENZ believe the intermediate floor area is approximately 67m², but it is not clear how it reached that assessment.

3. Background

- 3.1. In 2013, the owner engaged a fire engineer to prepare a fire design report⁸ for the Unit ("the 2013 report") "to accompany an application for certificate of acceptance for minor partitioning alterations and an extended intermediate floor within the existing structure". The 2013 report was based on an assessment against Acceptable Solution C/AS5⁹ (for a risk group of WB)¹⁰, and included:
- 3.1.1. A recommendation to install a Type 4 alarm system (along with some additional "heat detection") due to the increased area of the intermediate floor which exceeded, by approximately 2.4m², the 40% limit provided in Acceptable Solution C/AS5.¹¹
 - 3.1.2. "Removing the excess floor area would not reduce the population or provide any improvement to life safety or means of escape ... [the authority should] accept the minor excess floor area on the basis of [being] reasonably practicable."
 - 3.1.3. The calculated occupant load is "4 persons" (based on C/AS5, tables 1.1 and 1.2). A single means of escape is permitted by C/AS5 (paragraph 3.13.1) since the firecell population is less than 50 persons.¹²
 - 3.1.4. The escape height is less than 4m.
 - 3.1.5. A recommendation to fire-rate the underside of the intermediate floor and the "exposed steel support structure". A "fire rating of 30 minutes" for the intermediate floor is "permitted by C/AS5 [paragraph] 4.13.4".¹³
 - 3.1.6. The "actual" dead end open path from the intermediate floor is 20m, and 19.25m from the ground floor. These are less than the 25m permitted by C/AS5, Table 3.2, for no fire alarm system or a Type 2 system (manual call points).
 - 3.1.7. The height and width of the escape routes comply with C/AS5, paragraphs 3.3.1 and 3.3.2 respectively.
 - 3.1.8. The final exit door opens outwards and is 1980mm high and 910mm wide; however, the "existing dead lock is to be replaced" with a locking device that does not rely on using "a key".

⁸ 'Fire Engineering Design' report dated 3 September 2013.

⁹ Acceptable Solution C/AS5, amendment 3, effective on 1 July 2014 until 30 May 2017.

¹⁰ For 'Business, commercial and low level storage' (as described in C/AS5, table 1.1).

¹¹ C/AS5, paragraph 4.13.6 b). There is a similar requirement set down in the current Acceptable Solution C/AS2, second edition, effective 28 July 2025, paragraph 4.10.2.2. The area of 2.4m² is the difference between the current floor area of 54m² minus 40% of 129m² (ie 51.6m²).

¹² Similar to the current Acceptable Solution C/AS2, Table 3.1.2.3 and sub-section 3.8.

¹³ Similar to the current Acceptable Solution C/AS2, paragraph 4.10.2.1.

- 3.1.9. Emergency lighting, in accordance with clause F6, is required to be installed “to the stairway”.
- 3.1.10. Exit signage, in accordance with clause F8, is required on the “escape routes and exit doors”.
- 3.1.11. “New internal finishes are to comply with [C/AS5 sub-section] 4.17 and tables 4.1 [‘Surface finish requirements’] and 4.2 [Critical radiant flux requirements for flooring’]”.
- 3.2. On 29 June 2015, the authority issued a building consent¹⁴ for work including installation of a Type 4 fire alarm system, emergency lighting, exit signage, and fire rating to the underside of the intermediate level.¹⁵
- 3.3. On 16 November 2016, the authority carried out an inspection of the building work associated with the building consent, including the Type 4 fire alarm system, and subsequently issued a code compliance certificate on 10 January 2017.
- 3.4. In 2023, the owner and the authority began communicating about whether the Type 4 alarm system was necessary for the ongoing compliance of the Unit.
- 3.5. On 25 May 2026, in an email to the owner, the author of the 2013 report stated,

[The consented fire design] was based on the acceptable solutions current at the time which required the automatic fire alarm. [The authority] would not accept ‘ANARP’¹⁶ to omit the alarm and also required the already small intermediate floor to be reduced as it exceeded the 40% limit of the acceptable solution.

The alternative was to provide a ‘specific design’ or ‘C/VM2 design’...

We had considered a design option based on...(Available Safe Egress Time v Required Safe Egress Time) but due to the very limited size of the premises this was not a practical option.

...

Preliminary modelling undertaken in 2013 indicated

- I. the intermediate floor lost tenability due to smoke layer height at 130 seconds after fire start.
- II. The automatic fire alarm did not activate until 153 seconds – far too late to be of use.

¹⁴ BCO10000682.

¹⁵ The installation and compliance of emergency lighting, exit signage and fire-rating to the underside of the intermediate level are not in dispute between the parties and have therefore not been considered further in this determination.

¹⁶ As nearly as is reasonably practicable.

Although the alarm was required by the acceptable solution, we do not consider a fire alarm system which activates after tenability limits to be of any significant life safety benefit. In a small, low occupancy premises, such as this one, the occupants would typically become aware of fire due to other triggers (eg sight or smell of smoke, or audible queues [sic] etc).

In this small premises the 20% and 40% figures used to limit the size of intermediate floors and used to determine fire alarm type seem to have little relevance or logical basis.

The acceptable solution could allow an intermediate floor of up to 20% of the ground floor area, with up to 50 people on it without an automatic fire alarm. However it does not permit this small intermediate floor without an automatic alarm due to [its] percentage ratio of the ground floor, even though its [sic] only accessible intermittently by one person.

...

This premises is a workshop fabricating stainless steel marine components occupied usually by one or two people, and:

- Single owner-occupier, familiar with the layout
- Not a public-use building
- No sleeping or accommodation use
- Very low occupancy and activity
- [intermediate floor] subject to minimal intermittent use only
- Short travel distances...This remains within the 25m limit for [risk group] WB with no fire alarm
- Direct exit to open air
- Fire-rated protection to the underside of the [intermediate floor]
- No hazardous substances stored or used

Whilst an automatic fire alarm is usually an essential component for a specific fire engineering design, I do not consider an automatic fire alarm that activates after tenability has been reached to provide any worthwhile benefit for either specific design or an acceptable solution. We consider the means of escape could have been accepted as complying ANARP without the alarm considering the size, nature and use of the premises.

The occupant(s) would be expected to become aware of any fire due audible or visual queues [sic] or smelling the smoke before the alarm is likely to activate.

4. Submissions

The owner

- 4.1. The owner considers the Unit “satisfies the performance requirements of Clause C4 without reliance on a Type 4 alarm system” and submits (in summary):
- 4.1.1. They are “not proposing an alternative specified alarm system in place of the Type 4 system”.
 - 4.1.2. “The AS3786:2014 compliant smoke and heat alarms currently installed in the unit are present as supplementary early-warning measures only.¹⁷ They are not relied upon as a replacement specified system or as the primary basis for demonstrating Building Code compliance”.
 - 4.1.3. “The building is occupied by a single owner-occupier ... Customers attend only briefly for drop-off and collection”.
 - 4.1.4. “The [intermediate floor] is not in active use and is not used for storage. It is accessed only intermittently ... There are no obstructions affecting escape from the [intermediate floor]”.
 - 4.1.5. “The Type 4 [alarm system] requirement appears to arise from the prescriptive intermediate-floor provisions, rather than from any identified failure in Clause 4 life-safety performance in this particular building”.
 - 4.1.6. The Unit “enables the occupant to detect fire conditions and reach a place of safety before untenable conditions develop”.
 - 4.1.7. “Approximate evacuation walking time from the furthest accessible point on the [intermediate floor] to [the] final exit is approximately 10-18 seconds”.
 - 4.1.8. “Approximate evacuation walking time from the furthest accessible point on the ground floor level to [the] final exit is approximately 8-16 seconds”.

The authority

- 4.2. The authority is of the view “that the requirement for a Type 4 alarm remains”.

FENZ

- 4.3. FENZ provided the following comments:
- 4.3.1. “A proposal to remove the consented Type 4 system must demonstrate continued compliance with the Building Code. The three approaches available are C/AS2, C/VM2 and a performance-based approach”.

¹⁷ Australian Standard AS 3786:2014 *Smoke alarms using scattered light, transmitted light or ionization*.

4.3.2. Under the C/AS2 compliance pathway...

... the requirement for a Type 4 alarm system is triggered when an intermediate floor that is not completely open exceeds 20% of the floor area below – not 40% as indicated by [the owner]. The current [intermediate floor] area is measured to be 51.9%, more than double that 20% limit. The size of the intermediate floor (relative to the ground floor) puts this building outside the scope of C/AS2.

4.3.3. Under the C/VM2 compliance pathway, the Unit “does not satisfy the minimum ceiling height limit. Therefore, under C/VM2 an automatic fire alarm system is required”.¹⁸

4.3.4. Under the performance-based compliance pathway...

... [although] **the actual movement time [to a place of safety] is short**, the time taken for an occupant to become aware of the fire cannot be determined with any reliability. An occupant in the [intermediate floor] offices has limited connection to the downstairs space so visual and auditory cues of a fire are obstructed. This situation creates the potential for the fire to develop undetected. [my emphasis]

4.3.5. The Unit “without an alarm system clearly provides a lower level of safety, suggesting compliance is not achieved without an alarm system”.

4.3.6. In conclusion, “it would be difficult to robustly demonstrate compliance [of the Unit] without a fire alarm system” and “the determination application has not demonstrated how the building meets the performance requirements of Clause C4.3 without a Type 4 fire alarm system”.

5. Discussion

5.1. The matter to be determined is whether Unit 3/20C Gills Road would comply with clause C4.3 without a Type 4 fire alarm system.

5.2. In deciding this matter, I must consider whether the evacuation time would allow occupants of the Unit to move to a place of safety in the event of a fire.

Legislation

5.3. A purpose of the Act is people who use buildings can do so safely and can escape from the building if it is on fire.¹⁹

¹⁸ I have assumed FENZ were referring to Verification Method C/VM2, second edition, effective 28 July 2025, paragraph 3.2.3.1.

¹⁹ Section 3.

5.4. Buildings must be provided with an effective means of giving warning of fire²⁰ and a means of escape to ensure there is a low probability of occupants of those buildings being unreasonably delayed or impeded from moving to a place of safety, and that those occupants will not suffer injury or illness as a result²¹.

5.5. Section 7 defines 'means of escape from fire' as:

...in relation to a building that has a floor area, –

- (a) means continuous unobstructed routes of travel from any part of the floor area of that building to a place of safety; and
- (b) includes all active and passive protection features required to warn people of fire and to assist in protecting people from the effects of fire in the course of their escape from the fire.

5.6. In this case, the relevant performance clause is C4.3:

C4.3 The evacuation time must allow occupants of a building to move to a place of safety in the event of a fire so that occupants are not exposed to any of the following:

- (a) fractional effective dose of carbon monoxide greater than 0.3:
- (b) a fractional effective dose of thermal effects greater than 0.3:
- (c) conditions where, due to smoke obscuration, visibility is less than 10m except in rooms of less than 100m² where visibility may fall to 5m.

Compliance with clause C4.3

5.7. Clause C4.3 is concerned with ensuring occupants of buildings are able to evacuate to a place of safety within an acceptable period in the event of fire. This requires considering the range of active and passive features required to warn people of fire and features which assist in protecting people from the effects of fire while they navigate the route of travel from any part of the floor area to a place of safety. In this case the floor area includes an intermediate floor.

5.8. The Type 4 alarm system was installed because the enlarged intermediate floor installed exceeded the area limitations for intermediate floors in Acceptable Solution C/AS5, 4.13.6²² that were relied upon in the 2013 report. The intermediate floor is partly partitioned, and under the current Acceptable Solution C/AS2 the corresponding area limitation before a Type 4 alarm is required is 20% of the firecell floor area, rather than 40%. However, an Acceptable Solution is only one means of demonstrating compliance with the Building Code. C/AS2 is intended to capture

²⁰ Clause C4.1(a).

²¹ Clause C4.2.

²² Similar to the current C/AS2 paragraph 4.10.2.2

within its scope a wide range of buildings and is written with that purpose in mind. Alternative comparative approaches can be suitable depending on the particular features of an individual building. Any comparative approach must be undertaken carefully, with an understanding of the relationship between the provisions of the Acceptable Solutions and the relevant C Clauses.²³

- 5.9. The calculated occupant load for the Unit is four persons. The Unit is used as a workshop, there is no sleeping use, and it is not open to the public. I therefore consider that occupants are familiar with the Unit's layout, fire safety arrangements, and escape routes from both the ground floor and intermediate floor.
- 5.10. The Unit comprises a relatively small firecell with a floor area at ground level of 129m². The intermediate floor is only partially enclosed by internal partitions and doors. In these circumstances, I consider occupants are likely to quickly become aware of a fire through visual and auditory cues and smell²⁴. FENZ considers that an occupant in the intermediate-level offices has limited connection to the downstairs space. However, I do not consider this significantly increases the risk in this particular Unit given the low occupant load, the small firecell floor area, and the intermittent use of both the offices and workshop. I also note that there is an internal window, including an opening vent, in the intermediate-level office which would assist occupants' ability to observe conditions elsewhere in the Unit.
- 5.11. Once occupants become aware of a fire, I consider the evacuation time to reach a place of safety is short. The dead-end open path horizontal and vertical travel distances from both the ground floor (19.25 m) and the intermediate floor (20 m) do not themselves trigger a requirement for a Type 4 alarm system. I have also received no information indicating that the escape routes are obstructed or are not of an appropriate height and width.
- 5.12. Occupants evacuating from the intermediate floor descend a stair that is provided with emergency lighting and arrive immediately directly adjacent to the final exit from the building. The final exit is provided with illuminated exit signage and opens outward with a locking device that complies with C/AS2. The owner has provided evidence indicating that occupants can travel from the furthest points on either level to the final exit and a place of safety in approximately 30 seconds or less. I also note FENZ's acknowledgement that "the actual movement time [to a place of safety] is short".
- 5.13. Taking these factors together, I am satisfied that occupants would become aware of a fire in sufficient time and would be able to evacuate the Unit and reach a place of

²³ Some useful guidance can be found on the Building Performance website: [Departure from the Acceptable Solutions | Building Performance](#)

²⁴ Notwithstanding the plans provided by the owner show standalone smoke and heat detectors inside the unit at both levels. These appear to be domestic-type battery-only alarms so I have not placed as much emphasis on their performance as I would a system installed under *NZS4512:2021 Fire detection and alarm systems in buildings*.

safety before being exposed to untenable conditions. Accordingly, I consider the Unit would comply with clause C4.3 without a Type 4 alarm system.

- 5.14. I note additionally for parties that any proposal to remove the Type 4 alarm system will require a building consent. I also note that a compliance schedule will still be required due to the presence of specified systems other than the Type 4 alarm system (i.e. emergency lighting).

6. Decision

- 6.1. In accordance with section 188 of the Building Act 2004, I determine Unit 3/20C Gills Road would comply with clause C4.3 without a Type 4 alarm system.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 25 August 2026.

Andrew Eames

Principal Advisor Determinations