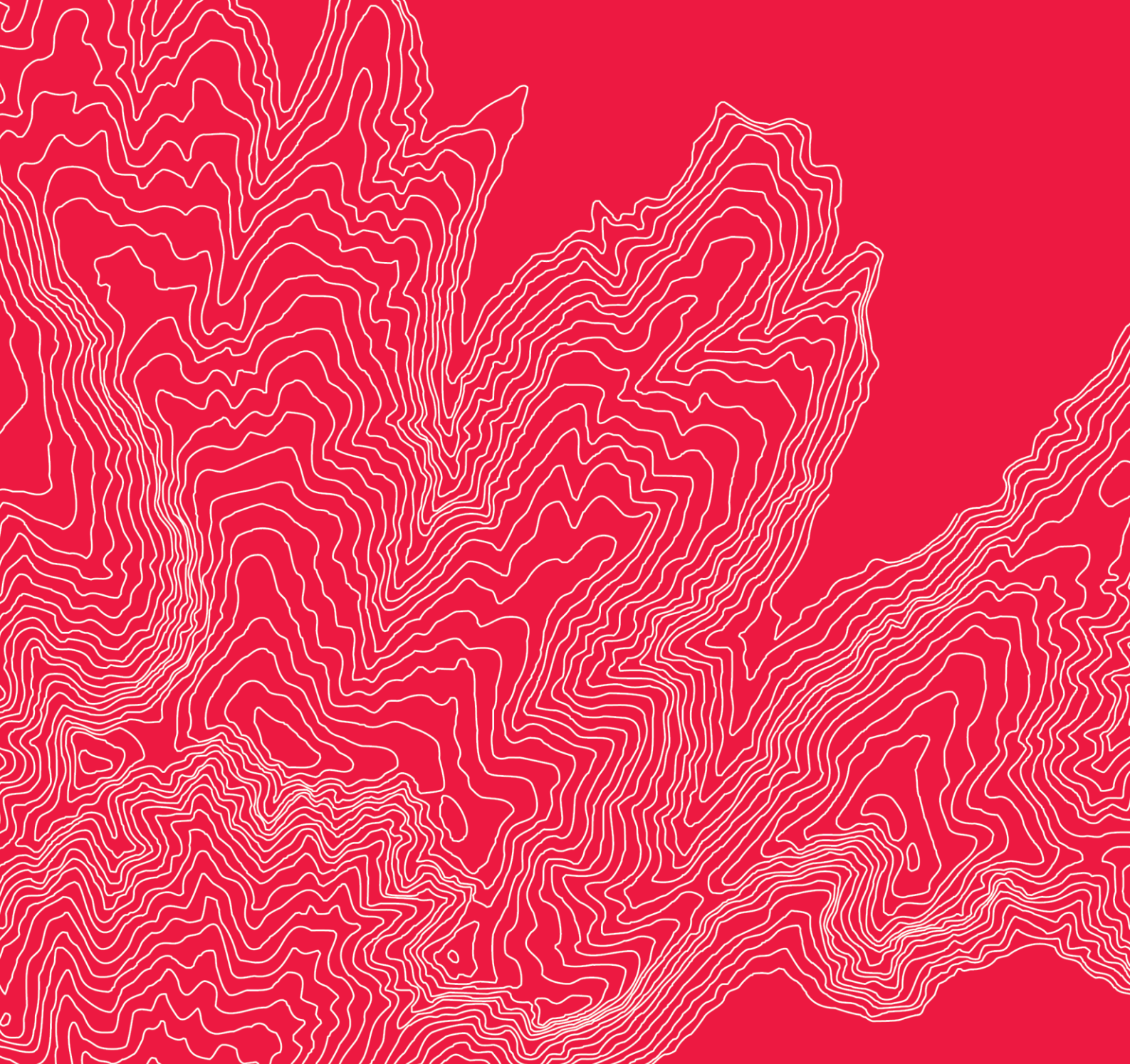




DSA Summary Report

Version A

**eliot
sinclair**

36 Weld Street, Hokitika

Prepared for Westland District Council
503048

DSA Summary

36 Weld Street, Hokitika
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Quality Control Certificate

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Executive Summary

Purpose

Eliot Sinclair & Partners Limited (Eliot Sinclair) has completed a Detailed Seismic Assessment (DSA) of the Westland District Council building at 36 Weld Street, Hokitika. This report is a brief summary prepared at the Council's request. It covers only those parts of the building that scored below 34%NBS, and discusses the consequences if those elements reach their probable capacity.

Overall Result

The building scored 25%NBS (IL2), which corresponds to a Grade D building under the NZSEE grading scheme. This indicates a high earthquake risk, approximately 10 to 25 times greater than that of a similar new building. A score below 34%NBS means the building is classed as earthquake-prone under the Building (Earthquake-prone Buildings) Amendment Act 2016.

Parts of the Building Below 34%NBS

The following parts of the building scored below 34% NBS:

- **Foundation piles, east and west ends (25%NBS):** The seismic demand on the concrete piles under the building could exceed their assessed capacity. However, if the piles are compromised, the gravity load path is expected to be maintained through bearing of the concrete foundation beams (located above the piles) on the fill below.
- **Top floor roof frame fixings (25%NBS):** The steel frames holding up the roof could pull loose from the floor. Sway is expected to increase, which could lead to localised collapse of the roof in open areas without walls.
- **Top floor walls and steel bracing straps (25%NBS):** The seismic demand on the walls that resist sway in the top floor could exceed their assessed capacity. Localised areas of the roof could collapse in open areas without walls.
- **Ground floor boiler room wall (30%NBS):** The seismic demand on the concrete wall is likely to exceed its assessed capacity. This could cause extensive damage to the wall but collapse of the floor structure is unlikely.
- **South Stairwell connections (30% NBS):** The seismic demand on the connections between the south stairwell and the building could exceed their assessed capacity. The stairwell could detach from the building in localised areas near the column. This is unlikely to cause any collapse mechanism for the building or stairs globally but could lead to extensive damage and compromise the ability to exit the building via the stair following an earthquake.
- **South Library extension connection to building:** The seismic demand on the connection between the rafters and the building could exceed its assessed capacity. This could lead to collapse of the roof structure in the area supported by the affected rafters.

Recommendation

We recommend the Council plans strengthening of these parts. A concept scheme for upgrading the building to achieve 34%NBS is presented in Section 5. We support the NZSEE recommendation to strengthen to as close to the standard of a new building as reasonably practicable, and at least 67%NBS. The decision on continued occupancy of the building remains with the owner and tenant.

1. Introduction

Eliot Sinclair & Partners Limited (Eliot Sinclair) has been engaged by Westland District Council to provide a short summary of the Detailed Seismic Assessment (DSA) it carried out for the Council building at 36 Weld Street, Hokitika, dated 25 September 2026. This report addresses only the building parts and elements assessed at below 34%NBS and discusses what may happen if the forces on these parts exceed what they are likely to withstand. The full assessment was carried out generally in accordance with the EQ-Assess guidelines, *The Seismic Assessment of Existing Buildings* (July 2017).

The building is given a score called %NBS (percentage of New Building Standard). The %NBS rating measures the ultimate seismic structural capacity of a building relative to the minimum required of a new building on the same site under the current New Zealand Building Code. The lower the score, the higher the risk to people inside. A building rated below 34%NBS is considered earthquake-prone under the Building (Earthquake-prone Buildings) Amendment Act 2016.

This summary is prepared for the Council as our client. The method, assumptions and results for the whole building are in the full DSA report (503048, Version A, 25 September 2026).

2. Building Overview

The building was constructed around 1948 as the Hokitika Post Office, a two-level reinforced concrete structure of about 1,220 m². In the early 1990s it was extended and a third level of about 575 m² was added on top, with a steel-framed roof. It is used as an office building for 300 people or fewer (Importance Level 2).

The concrete floors and walls carry most of the building's load. The top floor and roof are lighter, with steel frames and plasterboard-lined timber walls. The whole building stands on concrete piles that extend about 3.6 m below the ground floor, through a layer of fill, to pads bearing on sand.

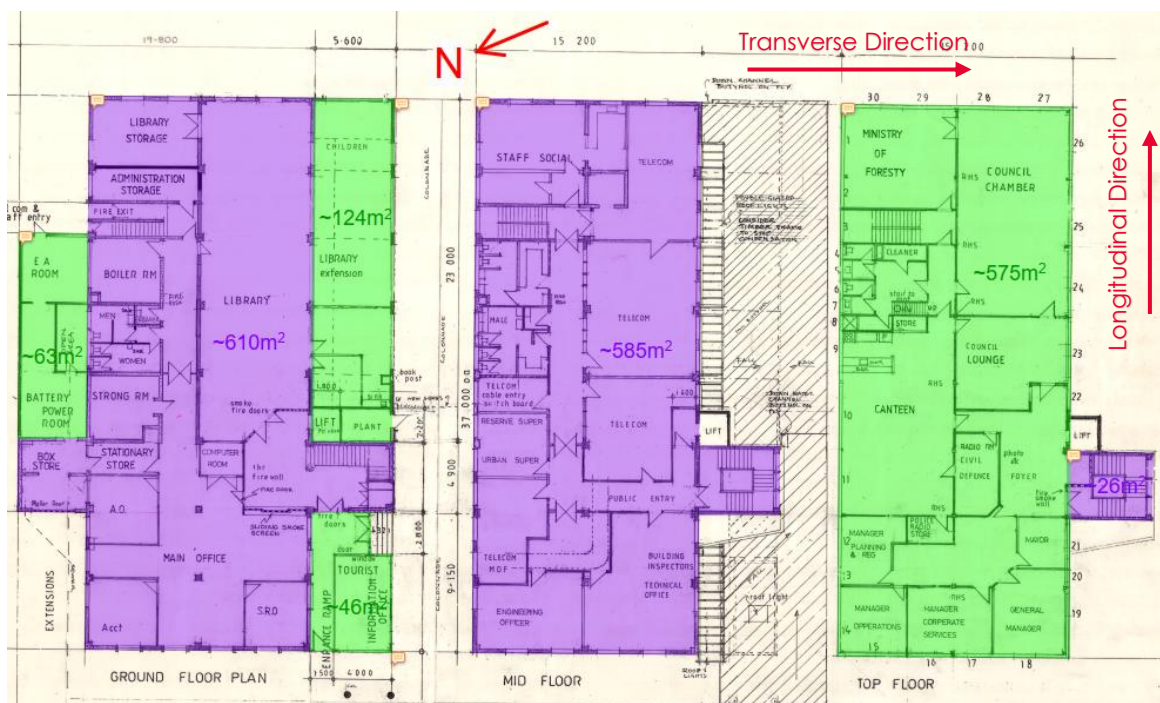


Figure 1. Floor plan of the buildings after alterations and additions in circa 1990. Additions (green) to the original building (purple)

3. Seismic capacity of elements less than 34% NBS(IL2)

The results of the Detailed Seismic Assessment are reported as a %NBS. The %NBS value contains uncertainty because of the assumptions and simplifications made during the assessment. There are many variables in seismic assessment, and estimating the relative life safety risk for a particular building is uncertain. Among other factors, this uncertainty comes from the random nature of earthquakes, the complex response of buildings to earthquake shaking (particularly at the point of structural failure), the variability in construction quality, and the lack of accurate records of buildings' construction. Because of these factors, %NBS should be viewed as indicative of the engineer's confidence in the expected seismic performance of the building, rather than as an exact prediction¹.

Please refer to Section 5 of the full DSA report for the assumptions used in the analysis.

Table 1 lists the parts of the building that scored below 34%NBS(IL2). The lowest score, 25%NBS, sets the rating for the whole building.

Table 1. Elements Below 34%NBS(IL2)

Building element	Direction of shaking	%NBS	What limits it
Foundation concrete piles (east and west ends)	Across the building	25%	Flexural/bending strength of the piles.
Top floor steel roof frames: fixings to the floor	Across the building	25%	Strength of the fixings holding the frame legs down.
Top floor plasterboard walls and steel flat straps	Along the building	25%	Bracing strength of the walls and bracing straps.
Ground floor boiler room concrete wall (Grid 7)	Across the building	30%	Flexural/bending strength of the wall.
South Stairwell connection to the building floor boiler	Across the building	25%	Connection of the stairwell wall to the building.
South Library Extension Rafter connection to the main building	Across the building	<34% [#]	Connection of the rafters to the building.

[#] The post installed anchor connecting the rafters to the main building are unlikely to meet the C2 requirements for post installed anchors in cracked concrete should be strengthened to meet current seismic provisions for post installed anchors. Their capacity are difficult to quantify and the failure could result in collapse of the roof structure and are hence assessed as being less than 34%NBS.

¹ July 2022 MBIE - Seismic Risk Guidance for Buildings

3.2. Top Floor Portal Frame Hold downs (25%NBS)

Element description: The roof is supported vertically and laterally by steel frames. The legs of these frames are fixed down to the concrete floor by what are likely to be shallow embedded anchors.

Risk: In an earthquake shaking across the building, the seismic demands on the anchors could exceed their assessed capacity, and the anchors could pull out. The frames could then lean and sway excessively. In this scenario localised sections of the roof and/or associated ceiling systems could collapse, mostly in open areas that have no timber-framed walls to hold the roof up.

Basis of analysis: The anchor type and installation method are unknown. However, given the age of the building and the seismic provisions in place at the time, the anchors are likely to comprise shallow embedded mechanical expansion fixings and are unlikely to comply with the seismic requirements for post-installed anchors as per current requirements.

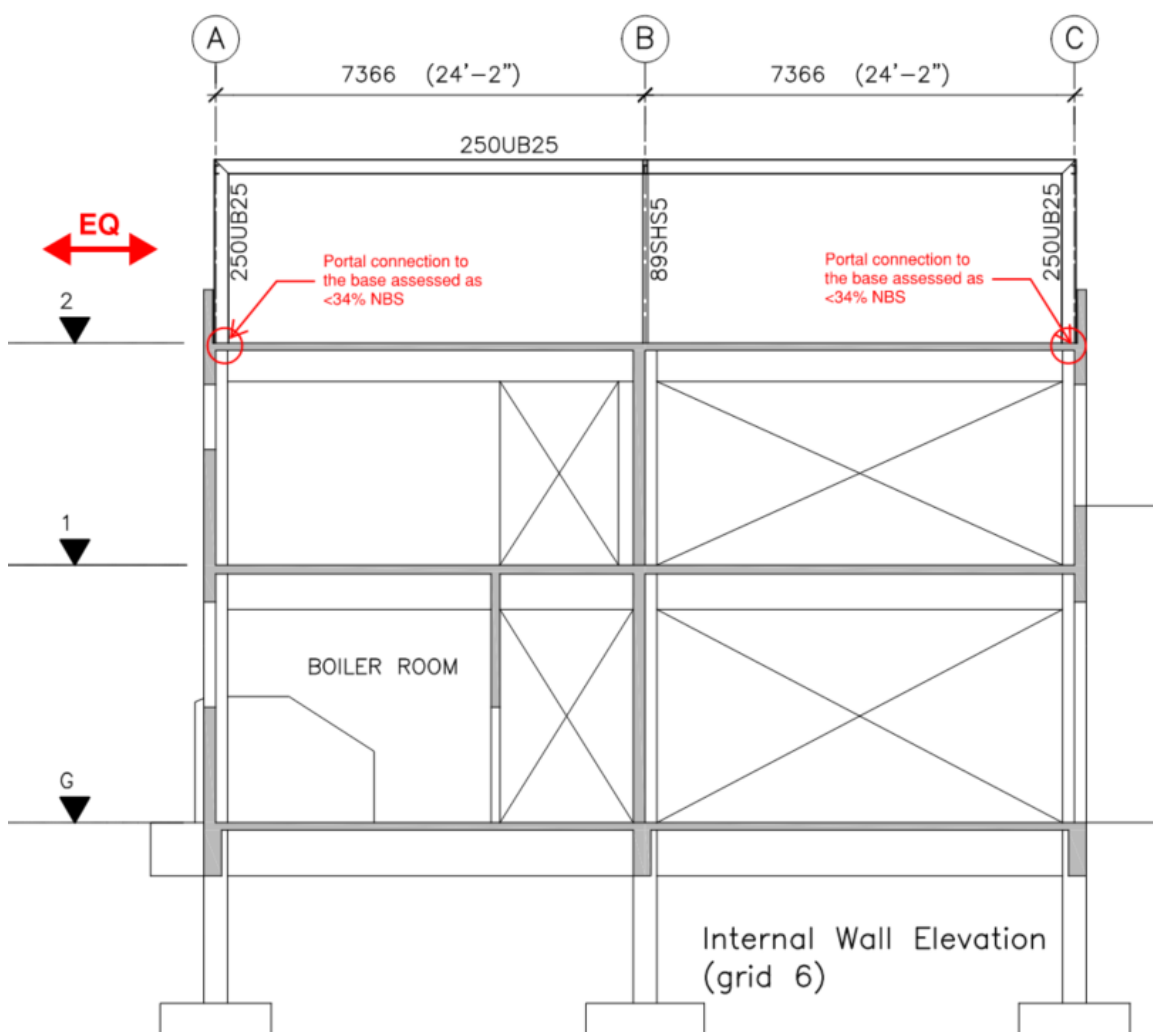


Figure 2. Typical Portal Frame elevation highlighting the hold down connection rated as less than 34% NBS

3.3. Top Floor Walls and Steel flat bracing (25%NBS)

Element description: Along the building, the top floor relies on plasterboard-lined timber walls and thin steel bracing straps to resist sway.

Risk: In an earthquake shaking the building along its length, the seismic demand on these walls and straps could exceed their assessed capacity, and they could move excessively. In this scenario, localised sections of the roof and/or associated ceiling systems could collapse, particularly in open areas that have no timber-framed walls to hold the roof up.

Basis of analysis: No drawings were available for the construction of these walls or the connections of the steel straps to the floor. Hence, our analysis is based on site observations together with the adoption of probable strength properties derived from industry guidance documents, so the assessed rating is a best estimate.

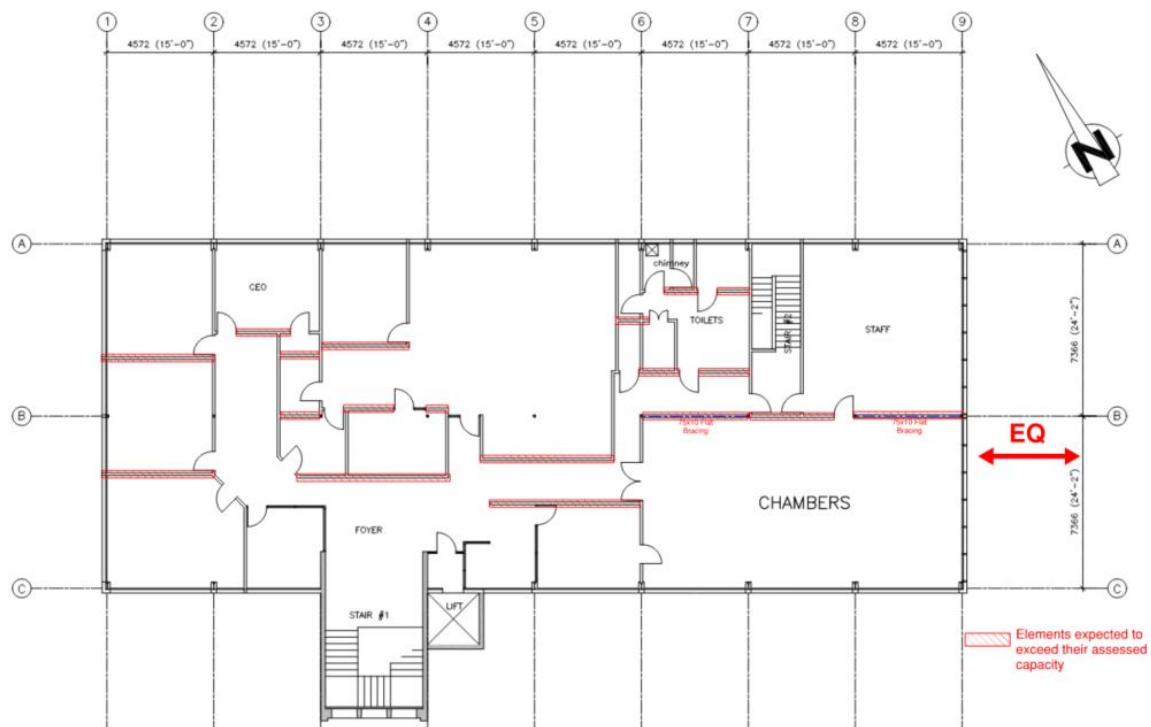


Figure 3. Third floor plan – red hatch denotes items that are expected to exceed their assessed capacity.

3.4. Ground Floor Boiler Room Wall, Grid 7 (30%NBS)

Element description: A concrete wall in the boiler room resists earthquake shaking across the building at ground floor level.

Risk: In an earthquake shaking across the building, the seismic demand on this wall is likely to exceed its assessed capacity. This could lead to extensive damage to the wall, and the loads are expected to redistribute to adjacent walls on the ground floor. Local concrete cracking and spalling is likely, however the floor structure above is expected to remain supported by the frames and adjacent walls.

Basis of analysis: Wall reinforcement and geometric details are based on the available existing drawings. The wall has been assessed using Section C5 of the NZSEE guidelines.

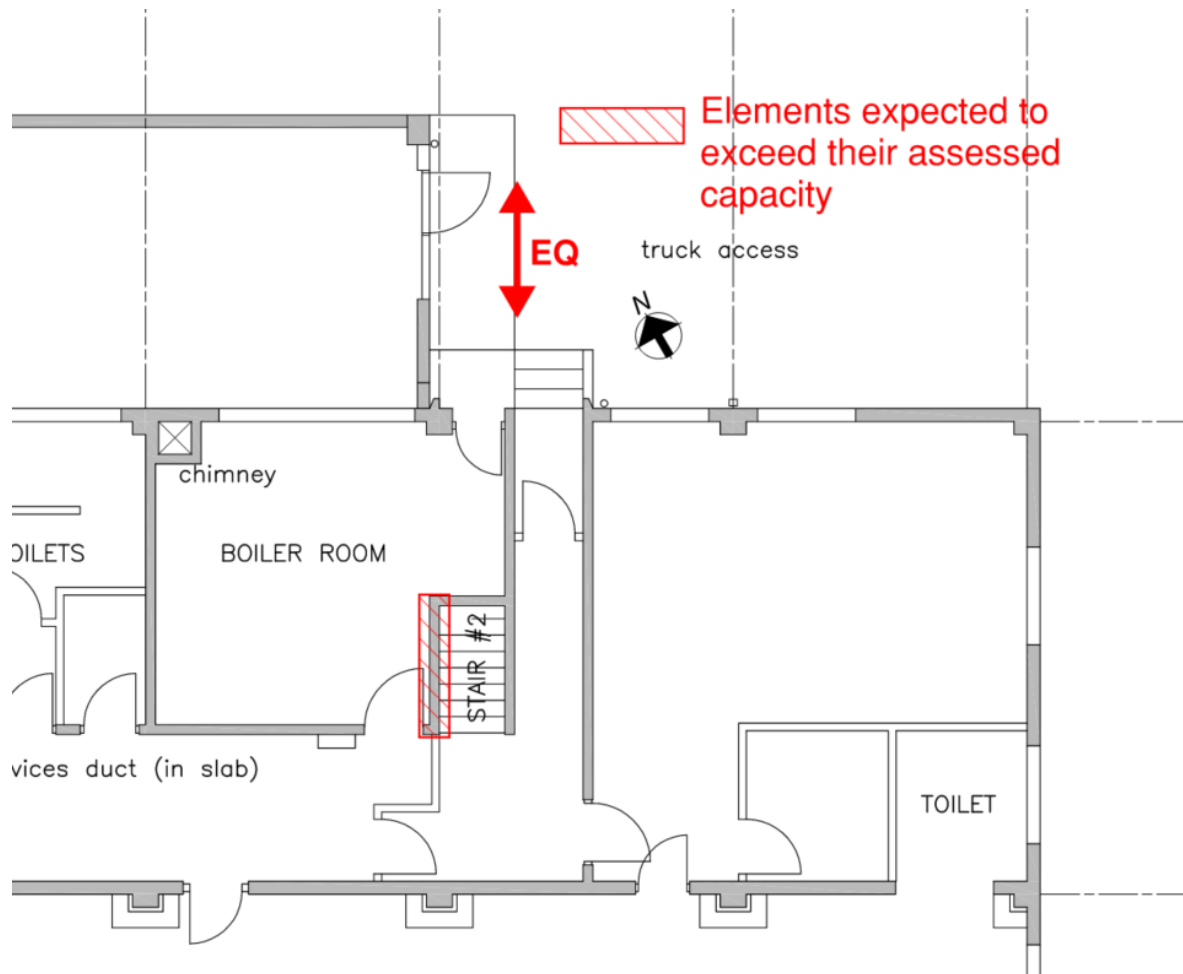


Figure 4. Ground floor plan – Wall adjacent to stairs in the boiler room is expected to exceed its assessed capacity.

3.5. South Stairwell connection to the building (25%NBS)

Element description: The south stairwell walls provide lateral support to the building, resisting seismic shaking at all levels.

Risk: In an earthquake shaking across the building, the seismic demand on the connections between the stairwell and the building could exceed their assessed capacity. This could cause parts of the stairwell to separate from the building, particularly where the stairs connect to the floors near columns. This is unlikely to cause the building to collapse, because the floors are expected to transfer the forces to other structural walls. However, parts of the stairs could be badly damaged, which could compromise the ability to exit the building via the stair following an earthquake.

Basis of analysis: Existing drawings were used to determine how the stairs connect to the building. No specific details were available for the connection between the stair wall and the columns, so this connection was assumed to be similar to other wall-to-column connections in the building, and that assumption was used to assess the connection capacity.

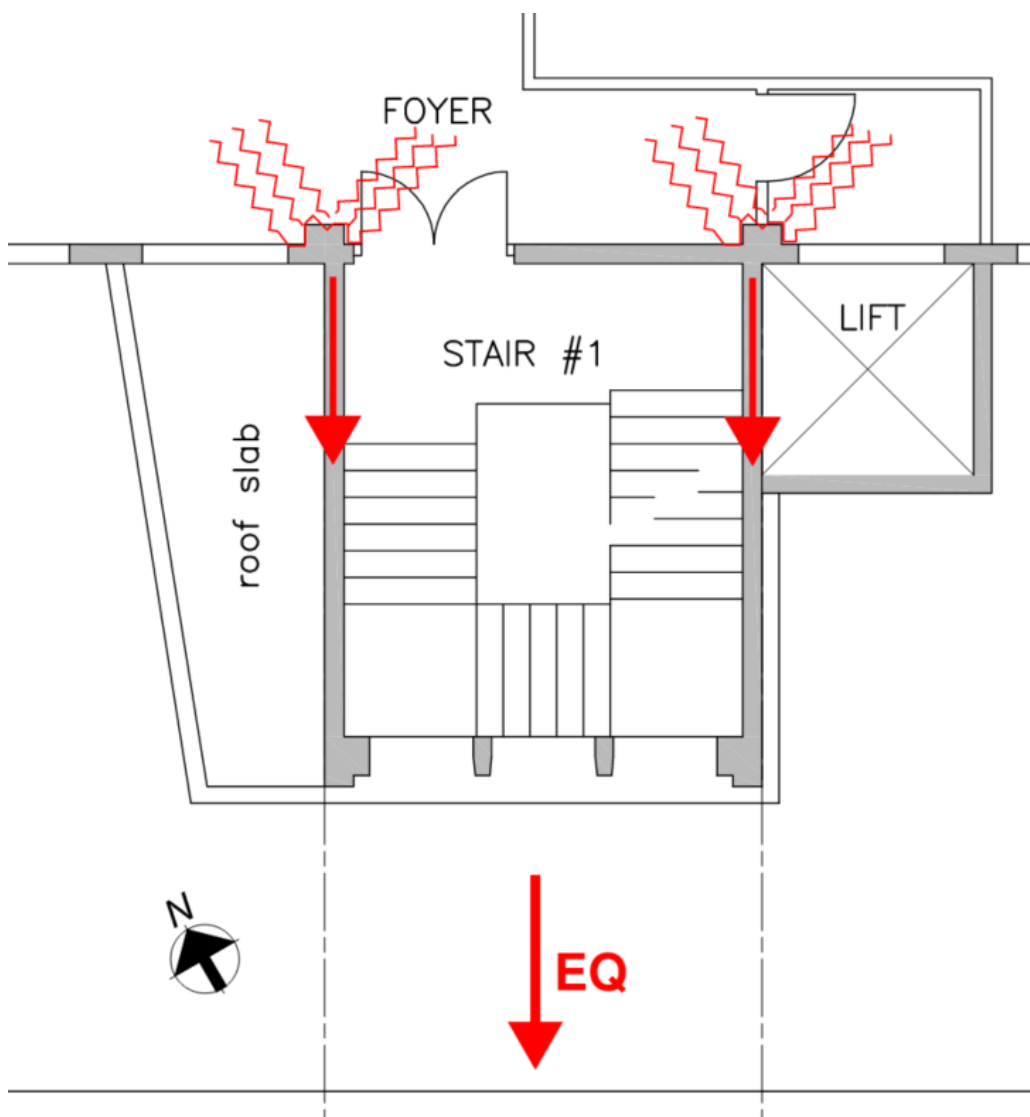


Figure 5. Plan view of the stairwell – connection between building and stairwell is rated at 25% NBS(IL2)

3.6. South Library Extension connection to the building (<34%NBS)

Element description: The rafters of the south library extension (now reception area) are connected to the main building, which supports the roof structure and resists seismic shaking in the across direction.

Risk: During an earthquake, the seismic demand on the connections holding the roof-supporting beams (rafters) to the building could exceed their assessed capacity. Failure of the connections is likely to be brittle and without warning. As a result, the rafters could come loose, which could cause the part of the roof they support to collapse.

Basis of analysis: The anchor type and installation method are unknown. However, given the age of the building and the seismic provisions in place at the time, the anchors are likely to comprise shallow embedded mechanical expansion fixings and are unlikely to comply with the seismic requirements for post-installed anchors as per current requirements.

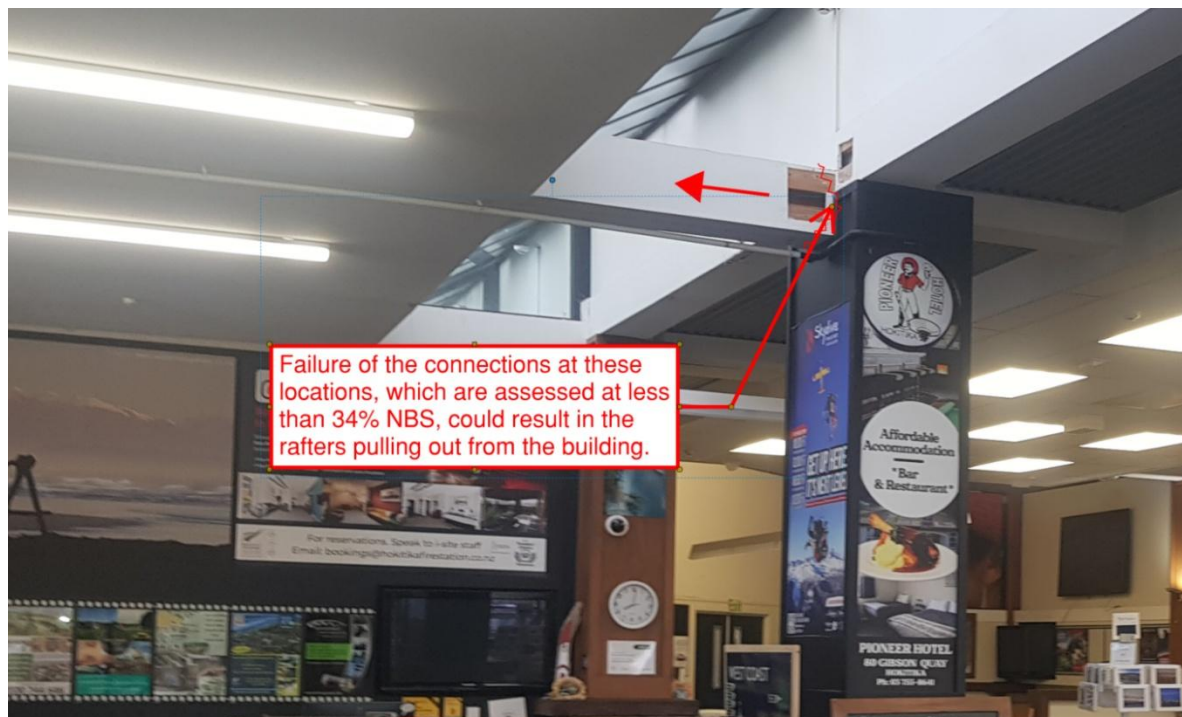
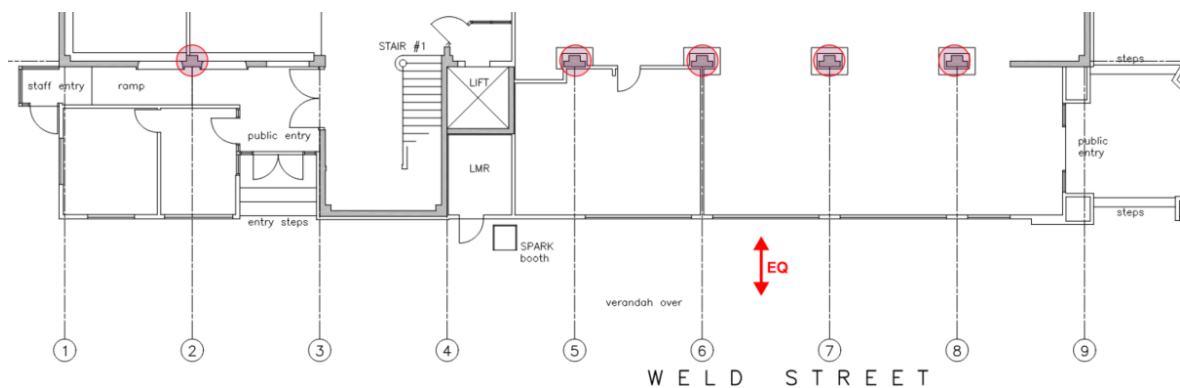


Figure 6. Ground floor plan view (top) – rafter to building connection highlighted in red circle are expected to be less than 34%NBS(IL2). Rafter picture with arrow pointing towards direction of force (bottom).

4. Seismic Grade & Relative Risk

All items discussed in Section 3 scored below 34%NBS. The building's overall seismic rating is governed by its weakest element and is assessed at 25%NBS. This places the building in Grade D, with a risk 10 to 25 times greater than that of a similar new building and classifies it as earthquake-prone under the Act.

The parts of the building not covered here scored 35%NBS or more. These are the first-floor shear walls (Grid 1 at 60%NBS and Grid B at 40%NBS), the ground floor south shear wall (Grid C at 55%NBS) and the north end piles (35%NBS, only just above the 34%NBS threshold). Details are in the full DSA report.

Strengthening the building to 34%NBS would place it in Grade C, which corresponds to a medium risk level and a risk 5 to 10 times greater than that of a similar new building. Damage would still be expected in a significant earthquake.

5. Concept Strengthening Design

The concept strengthening scheme outlined in the DSA report would improve the building's rating to 34% NBS. For the elements identified above, the scheme includes:

- **Foundations:** new concrete pads under the building so it stays supported even if the piles fail. Pads sitting on the existing fill suit firm, gravelly fill. Pads on new short piles suit soft, loose fill.
- **Top floor roof frames:** Install new fixings for the frame legs on grids A and C.
- **Top floor walls:** Install new fixings for the steel braced frame on grid B and new steel braced frames in the outer walls on grids A and C.
- **Boiler room wall:** Add new reinforced concrete layer added to the inside face of the Grid 7 wall.
- **South stairwell connection to the floor –** Add a new collector beam to transfer the loads.
- **South library extension (reception area) Rafter connection to the building –** install new epoxy anchors from the end plate of the rafters to the building.

Further detail is provided in the full DSA report.

Before design and costing can be finalised, we would need to validate/verify the following:

- Tests of the fill under the ground floor, to choose between the two foundation options.
- Checks of the anchors holding down the roof frames and of the steel strap connections.
- Scanning of the steel inside the key concrete walls, including the Grid 7 wall.
- Early involvement of a contractor to check that the work can be built.

6. Building (Earthquake Prone Buildings) Amendment Act 2026

Based on our understanding, the Building (Earthquake-prone Buildings) Amendment Act 2026 is expected to take effect from 1 July 2027. Under the proposed system, the existing earthquake-prone building (EPB) framework would be replaced, and the definition of an earthquake-prone building would be limited to specified buildings within designated seismic zones.

A building within scope of Building (Earthquake Prone Buildings) Amendment Act 2026 would be an earthquake-prone building if—

- a) the building is located in a medium or high seismic zone; and*
- b) either of the following applies:*
 - i) the building was designed before 1 January 1976 and is at least 3 storeys high and built of concrete or other heavy materials (as explained in the EPB methodology), and is evaluated, using the EPB methodology, as an earthquake-prone building; or*
 - ii) the building is built of unreinforced masonry (as explained in the EPB methodology) and is evaluated, using the EPB methodology, as an earthquake-prone building.*

Based on the above criteria, it is our interpretation that the building at 36 Weld street, Hokitika **would likely be classified as an Earthquake prone** building under the Building (Earthquake-prone Buildings) Amendment Act 2026.

From 1 July 2027, New Building Standard ratings (%NBS) will no longer be used to identify EPBs. No buildings will be required by the Building Act to have %NBS ratings. %NBS ratings would be voluntary². Notwithstanding the above, we consider it is likely that engineers would still be using %NBS to communicate building deficiencies to the building owners as it has been widely adopted.

The risk of building damage due to earthquakes has not changed. Aotearoa New Zealand is a seismically active country and earthquakes can occur anywhere. The new EPB system focuses on buildings that are expected to pose the greatest risk to life.³

The Act changes how buildings are classified and regulated. It does not change the underlying seismic hazard or a building's physical condition. A building's status under the new EPB system should not, by itself, be taken that its seismic risk has changed. Any conclusion about the building's actual seismic risk should be based on a building-specific engineering assessment.

² MBIE "Changes to the earthquake-prone building system" Building Performance <https://www.building.govt.nz/managing-buildings/managing-earthquake-prone-buildings/changes-to-the-earthquake-prone-building-system>.

³ MBIE, above n 1.

Disclaimer

This report has been prepared by Eliot Sinclair & Partners Limited ("Eliot Sinclair") only for the intended purpose as a Detailed Seismic Assessment Summary Report.

The report is based on:

- Desktop review of available building information and reports.
- On – site investigation of as-built structure.

Where data supplied by other external sources, including previous site investigation reports, have been relied upon, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by Eliot Sinclair for incomplete or inaccurate data supplied by other parties.

Whilst every care has been taken during our investigation and interpretation of describe conditions e.g., subsurface conditions available data to ensure that the conclusions drawn, and the opinions and recommendations expressed are correct at the time of reporting, Eliot Sinclair has not performed an assessment of all possible conditions or circumstances that may exist at the site.

Variations in conditions may occur between investigatory locations and there may be conditions such as include examples e.g. subsoil strata and features that were not detected by the scope of the investigation that was carried out or have been covered over or obscured over time. Eliot Sinclair does not provide any warranty, either express or implied, that all conditions will conform exactly to the assessments contained in this report.

The exposure of conditions or materials that vary from those described in this report, or occurrence of additional strong seismicity, or any update to the Building Act, NZBC or MBIE's Guidance may require a review of our recommendations. Eliot Sinclair should be contacted to confirm the validity of this report should any of these occur.

This report has been prepared for the benefit of Westland District Council and the regulatory authority for the purposes as stated above. No liability is accepted by Eliot Sinclair or any of their employees with respect to the use of this report, in whole or in part, for any other purpose or by any other party.