

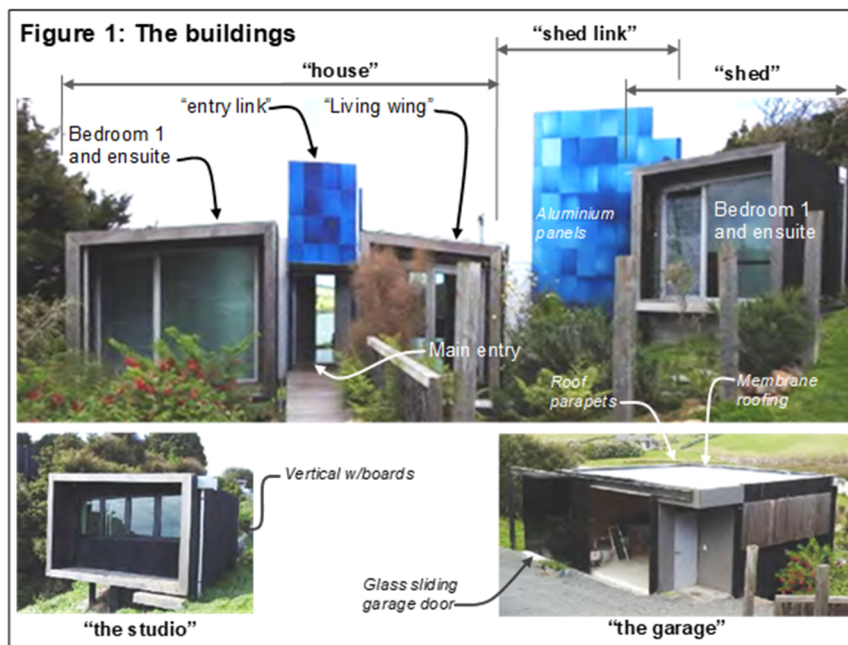
Determination 2024/036

The proposed refusal to issue a code compliance certificate for a house

4B Kotare Road, Kaipara

Summary

This determination concerns the authority's proposed refusal of a code compliance certificate. The determination considers whether the building work complies with the building consent, and whether particular elements of the building work comply with the relevant clauses of the Building Code.



The legislation discussed in this determination is contained in Appendix A. 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.

The Act and the Building Code are available at www.legislation.govt.nz. Information about the legislation, as well as past determinations, compliance documents (eg Acceptable Solutions) and guidance issued by the Ministry, is available at www.building.govt.nz.

1. The matter to be determined

- 1.1. This is a determination made under due authorisation by me, Andrew Eames, Principal Advisor Determinations, Ministry of Business, Innovation and Employment (“the Ministry”), for and on behalf of the Chief Executive of the Ministry.¹
- 1.2. The parties to the determination are:
 - 1.2.1. the owner H Gabites (“the owner”), represented by the architect for the buildings, who was also the builder for some of the building work (“the designer”)
 - 1.2.2. Kaipara District Council (“the authority”), carrying out its duties as a territorial authority or building consent authority
 - 1.2.3. the purchasers, L and M Jonas (“the purchasers”), who have signed a sale and purchase agreement in respect of the owner’s property, which has contingent settlement provisions.
- 1.3. The owner and the authority are joint applicants in this determination.
- 1.4. The application arises from the authority’s decision² to refuse to issue a code compliance certificate for the construction of the house carried out under building consent BC141403. The authority considered the work did not comply with the building consent or the Building Code.
- 1.5. That building consent was amended in July 2022 to include building work that had been carried out to construct the shed and shed link under building consent BC130605. The effect of the amendment is the scope of work carried out under two consents is now administered under a single building consent number (BC141403-1A) and for which there can be only one code compliance certificate issued.

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

² The authority initially issued notification on 5 July 2019 under section 95A refusing to issue the code compliance certificate for BC141403. A second notification under section 95A was sent on 6 October 2021.

- 1.6. The matter to be determined³ is the authority's proposal to refuse to issue a code compliance certificate for the building work carried out under building consent BC141403 for the reasons set out in the authority's application for determination. I have considered the authority's proposal only in respect of the building work originally carried out under BC141403 to construct the house because that was the scope of building work for which the applications were made.
- 1.7. In making this determination I have considered whether the building work carried out under building consent BC141403 complies with the building consent.⁴ I have also considered whether particular aspects of the building work, in dispute between the parties, comply with the Building Code⁵. These include:
- 1.7.1. Whether the external envelope of the dwelling complies with Clause B2 Durability and Clause E2 External moisture. The external envelope includes elements such as the various external wall systems, the windows, the parapets and the roof cladding systems, as well as the way components have been installed and work together.
- 1.7.2. Whether other items as set out in Table 1 (see Appendix B) comply with relevant clauses of the Building Code.
- 1.8. In considering compliance of the building work, I have taken into account that the authority has granted a modification of clause B2.3.1 to the effect that the durability periods start from the date of 21 June 2015. This means that some periods in clause B2.3.1 have already passed.
- 1.9. I have also considered the authority's requests for documentation, including producer statements, product warranties, construction statements and certification (see paragraphs 6.26 to 6.29).

Matters outside this determination

- 1.10. Determinations can consider matters of Building Code compliance and decisions of an authority but cannot consider some of the other issues raised such as those related to the authority's processes and procedures. The determination therefore does not consider matters outside those I can determine under section 177.
- 1.11. The building work relating to the construction of the house shell, including the foundations, steel portals and SIP wall and roof panels, is subject to a certificate of acceptance. That building work is outside the scope of this determination.
- 1.12. This determination does not consider building work carried out under building consent number BC130427 to construct the garage, BC130461 to construct the studio, or BC130605 to construct the shed and shed link.

³ Under sections 177(1)(b) and 177(2)(d) of the Act.

⁴ Section 94(1)(a).

⁵ Section 17.

1.13. I have not considered the authority's decision to grant building consent BC141403.

The previous application for a determination

1.14. The owner previously applied for a determination⁶ in relation to the building work that forms the subject of the current determination, as well as for various other building work on the property including the shed and shed link that are attached to the house to form the dwelling.

1.15. The Ministry engaged member of the New Zealand Institute of Architects as an independent person ("the expert") to carry out an assessment of the building and provide a report.⁷ Two draft determinations of that determination were issued to the parties involved, and the owner subsequently withdrew the application in March 2021.

1.16. Although the scope of the current determination differs from the earlier application, I am satisfied that some of the evidence gathered during the first application remains relevant to the assessment of the building work considered here. This includes the report of the expert,⁸ but only insofar as it concerns the building work to construct the house that is subject to this determination.

2. The building work

2.1. The owner's property is a large rural site within a sea spray zone and high wind zone as described in NZS 3604⁹ and the buildings are assessed as having a moderate to high weathertightness risk¹⁰.

2.2. On the property there is a dwelling, garage, and studio (see figure 1). The construction of the dwelling was described in the building consents as the "house", "shed" and "shed link" (see figures 1 and 2). I have continued to use these labels for simplicity despite the fact that the "shed" is a habitable space that contains a bedroom, ensuite bathroom and living area and forms part of the dwelling. It is only the house that is the subject of this determination, and information on the shed and shed link is included for context.

2.3. The house accommodates the main entry unit, which opens to the living unit to the north and a master bedroom unit to the south. In the living unit there is:

2.3.1. an open hall area between the entry and the shed/link

⁶ Determination reference number 3162.

⁷ The expert carried out an assessment of the building on 17 September and 3 October 2019.

⁸ Dated 18 November 2019.

⁹ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

¹⁰ When utilising the risk matrix assessment procedure in Acceptable Solution E2/AS1.

- 2.3.2. a dining area to the west, stepping down to a lower living area
- 2.3.3. a raised sitting platform opening onto the west deck
- 2.3.4. a kitchen area to the east, opening onto a small deck to the east.
- 2.4. The shed link contains stairs that link the house and shed. It also houses a storage area (labelled as a “cupd” in figure 2 below) with a mezzanine level over. The mezzanine is accessed from the top of the stairs in the link between the house and shed.

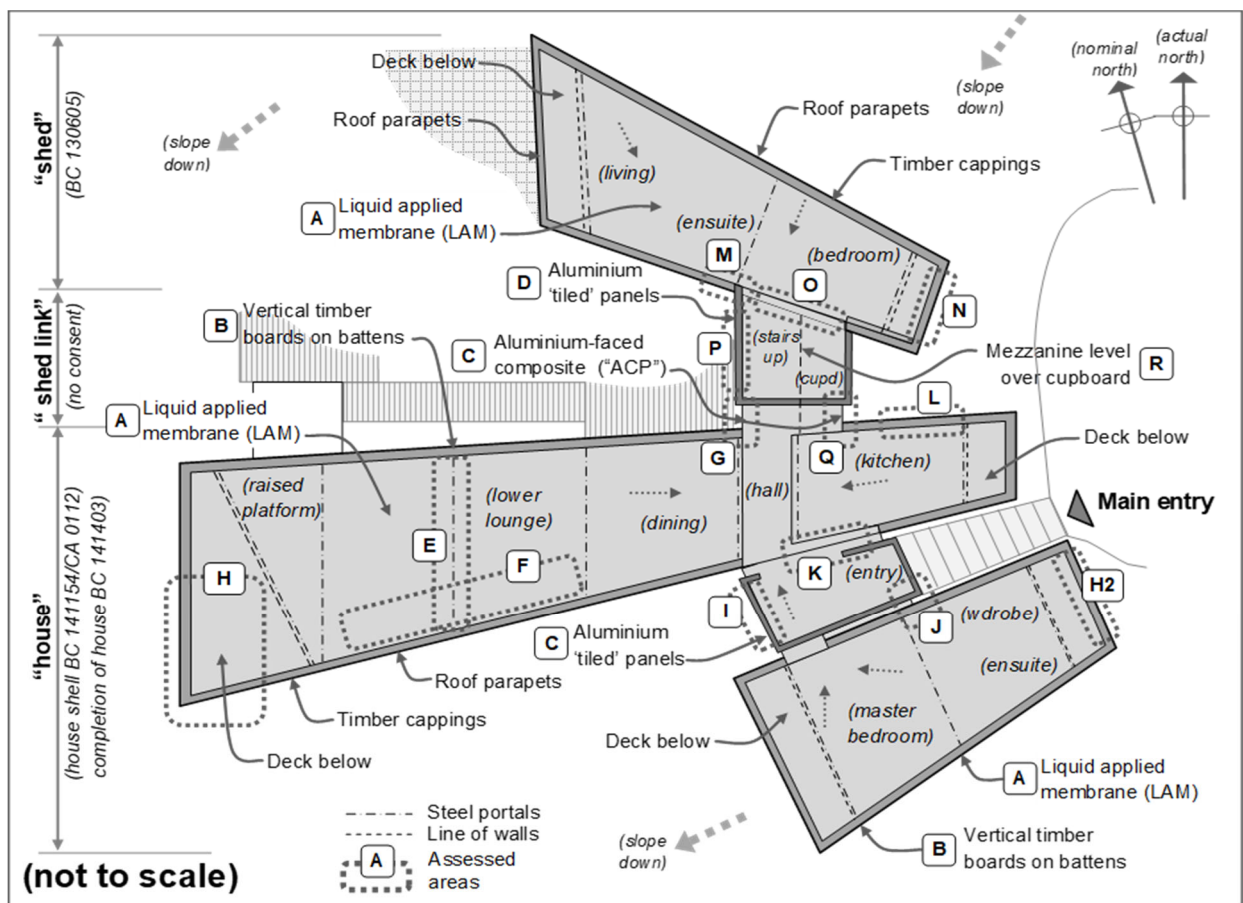


Figure 2: Site plan – the dwelling as constructed¹¹

- 2.5. The construction includes concrete block retaining walls and steel portal frame foundations cast into concrete pile foundations to suit the slope of the site. The remaining structure comprises steel portal frames, with structural insulated panel (“SIP”) wall, floor and roof panels. Walls are generally overlaid with vertical cedar boards,¹² with aluminium surfaces to link wall SIPs and membrane roofing to low-pitched roof SIPs. Doors and windows are aluminium.

¹¹ “Assessed areas” in figure 2 refer to areas of the dwelling assessed by the expert.

¹² Various terms have been used by the parties when referring to the cedar boards.

- 2.6. The SIP manufacturer and supplier (“the SIP supplier”) provides a variety of different insulated panels, with different profiles, cores and surfaces to suit different purposes. The 1200mm wide structural panels have a fire retardant treated expanded polystyrene (“EPS”) core with continuous colour-coated steel skins laminated over both sides and interlocked tongue-in-groove joints.
- 2.7. Based on details provided by the designer, Figure 3(A1) shows roof panels detailed by the designer, overlaid with liquid applied membrane (“LAM”) with slip joint tape at panel joints, and Figure 3(A2) shows cut panels with purpose-made joints.

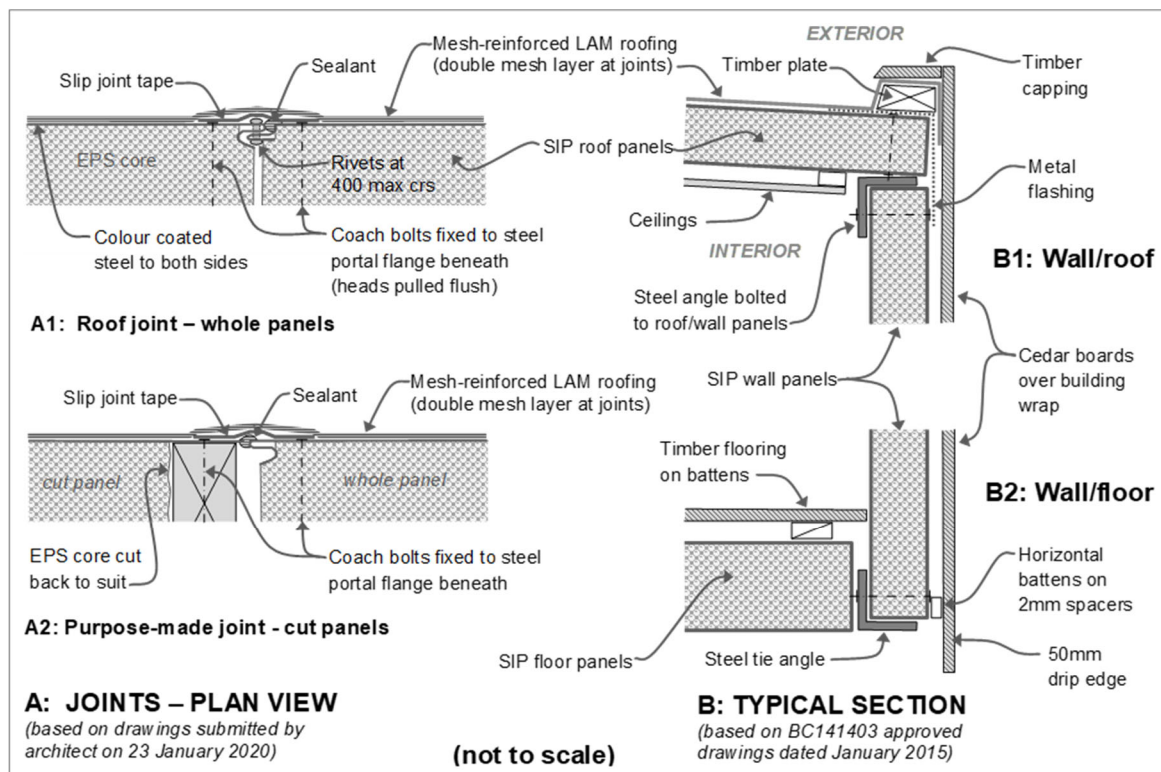


Figure 3: SIP construction

- 2.8. The walls to the house use a rainscreen system comprising square edge vertical cedar boards installed over building wrap and battens to underlying SIP wall panels. The horizontal battens are screwed through neoprene washers that form 2mm spacers to allow some drainage. There are cedar facings to projecting walls, floors and roofs framing the decks.

3. Background

- 3.1. The history leading to this determination is extensive. The following is a summary only and is not intended to represent every action or occurrence over the preceding 10 years.

The original house consent

- 3.2. The designer lodged an application for a building consent for a house in early 2014 (BC 141154).
- 3.3. Following requests for further information, processing of the consent was suspended.
- 3.4. The designer commenced construction without the consent having been granted, and the house shell (foundations, steel portals, and SIP wall and roof panels) was substantially completed by mid-2014.
- 3.5. The authority issued a notice to fix on 21 July 2014, and subsequently the designer applied for a certificate of acceptance on 23 July 2014 for the building work that had been done.¹³
- 3.6. The authority initially issued a certificate of acceptance on 15 September 2014, which only covered the foundations for the house.¹⁴ This was superseded by a second certificate issued by the authority (No. CA0112) on 29 September 2014, with the work noted as “Foundations / Structural steel portals / Insulated wall and roof panels”. Although the certificate did not specifically refer to the floor panels, these were included in documents accompanying the application and the authority’s inspection of the shell.

Building consent BC141403 for the house

- 3.7. On 15 October 2014, the designer lodged an application for a building consent for ‘additional work to convert [the shell] to dwelling’, attaching documents that included some changes and additions.¹⁵ The application included a list of code clauses, including B1 Structure and E2 External Moisture, for which compliance with

¹³ The authority’s records included a note stating, ‘agree to restrict works to decks, security of structure and temp weathertightness subject to later inspection’.

¹⁴ The certificate of acceptance was based on a plan dated October 2014, which did not include the shed or the shed link.

¹⁵ The pantry and laundry were deleted from the link unit, the main entry moved to form the entry link between the living and sleeping units, a bay added to the north wall of the kitchen to accommodate a pantry, an unidentified outline of a link (noted as “abutting porch to shed” on elevations).

the Building Code was proposed to be achieved as an alternative solution (as opposed to Acceptable Solutions or Verification Methods).¹⁶

3.8. The authority issued building consent No. BC 141403 on 8 January 2015 for 'additional work to convert CA0112 to dwelling on original BC1411154'. The approved consent drawings included changes in plan and the following changes in form:

- (1) vertical cedar board 'weatherscreen' fixed over building wrap and horizontal battens to aluminium-faced SIP wall panels
- (2) parapet walls and internal gutters added to all roofs, with cedar capping
- (3) cedar plates to edges of SIP floor, wall and roof panels surrounding decks
- (4) decks overlaid with acrylic roofing membrane on fibre-cement sheet substrate on tapered battens
- (5) side-fixed glass balustrades added to decks with falls greater than 1.5m.

3.9. The building consent conditions outlined a list of required inspections, which included pre-wrap and post-wrap, deck/roof membrane and pre-line building and plumbing. The designer maintains that these inspections were carried out by the designer as the 'designated architect', they were documented and those documents submitted to the authority, and subsequently "verified" by two final inspections.

3.10. The 'scope of works' in the approved consent specification identified the following work to be carried out by the designer:

- (1) acrylic reinforced liquid roofing membrane to SIP roof panels
- (2) cedar rain-screens to SIP wall panels
- (3) all internal carpentry.

Final inspections

3.11. The building work on the dwelling was substantially complete by June 2015.

3.12. An inspection was carried out on 12 December 2016, which was identified as a 'final inspection'.

3.13. In a letter to the owner dated 12 December 2016, the authority noted that there was rust to the foundation structural steel and stated that an engineer was required

¹⁶ Under Section 22(2) a person who complies with an Acceptable Solution or Verification Method must, for the purposes of the Act, be treated as having complied with the provisions of the Building Code to which that Acceptable Solution or Verification Method relates.

to confirm that structural integrity has not been compromised by corrosion,¹⁷ and that various producer statements were required.

- 3.14. No further inspection was requested, and the authority wrote to the owner on 16 March 2017 as notification under section 95A of the Act that it would not be issuing the code compliance certificate.
- 3.15. The owner later called for a final inspection, which was carried out on 10 April 2019. In a letter to the owner on the same date, the authority noted 'no further inspection required' but also identified the inspection outcome as 'Fail' identifying the following issues:
- 3.15.1. Finishes not in compliance with building consent (Clauses B2 and E2)
 - 3.15.2. Lack of warranties and guarantees for some items (Clause B2 and E2)
 - 3.15.3. Lack of compliance of fire safety systems (Clause C)
 - 3.15.4. Lack of compliance of access routes (Clause D1).
- 3.16. A further final inspection was carried out in May 2019, which also failed.
- 3.17. On 7 June 2019, the designer provided a PS4–Construction review, signed by the designer, relating to the building work on the house.
- 3.18. Following a meeting on 13 June 2019, the authority emailed the designer to confirm the outstanding items that still needed to be completed, including in regard to the house (in summary):¹⁸
- (1) gaps at entry deck
 - (2) [this item concerned subfloor steel framing that was subject to the certificate of acceptance]
 - (3) [this item concerned stairs in the shed link under a different consent]
 - (4) wrap to bottom edge of building wrap to cedar rain screen
 - (5) fixings of rain screen and cedar facings
 - (6) access for recheck of hot water cylinder and parapets required
 - (7) outstanding producer statements and documentation.

¹⁷ The foundations structural steel was subject to the certificate of acceptance and is not within the scope of building consent BC141403.

¹⁸ Various matters were also raised in regard to the shed (BC 130605).

- 3.19. Further correspondence passed between the parties without resolution. The designer maintains that all the above areas were resolved, with 'items remedied and/or documents provided'.

The 2019 refusal to issue a code compliance certificate

- 3.20. In a letter to the owner dated 5 July 2019, the authority refused to issue a code compliance certificate for the building work. The authority referred to the time elapsed since the issue of the building consent (BC141403) and stated that it was "unable to be satisfied on reasonable grounds that the completed work on the building complies with the Building Consent".
- 3.21. The authority set out reasons for its refusal. Some of the reasons concern elements of the building that were the subject of the certificate of acceptance,¹⁹ and so I have not considered those further. The remainder were:

The method used to waterproof the abutting panels was not inspected by [the authority], is not detailed on the consent and shows evidence of movement and failure.

The timber parapet capping has been nailed through the top in various places and is not as per the approved fixing details.

The deck barrier constructed is not as per the consent.

Insufficient inspections were undertaken by [the authority] to confirm compliance with the building consent.

The 2021 refusal to issue a code compliance certificate

- 3.22. The owner applied for a determination in 2019 (see paragraphs 1.14 to 1.16). The application was later withdrawn, meaning the determination was never made.
- 3.23. On 11 June 2021, the authority reviewed its file, and confirmed its decision that it was not satisfied the building work complies with the Building Code. The authority wrote to the owner recommending that they appoint a building consultant to assess the work and develop a pathway towards compliance and resolution.
- 3.24. On 14 June 2021, the owner applied for a minor variation in regard to the glass balustrade fixings that varied from the approved building consent.
- 3.25. In July 2021, the designer wrote to the authority about the possibility of a certificate of acceptance being issued to cover all of the outstanding building work. The parties then met to try to identify a mutually acceptable solution.

¹⁹ Such as the thickness of the SIPs panels used for the roof and related engineering calculations and R-value, and corrosion of the steel structural beams.

- 3.26. On 6 October 2021, the authority carried out a further final inspection which failed on multiple counts, with the reasons set out in a letter also dated 6 October 2021.
- 3.27. In this letter, the authority also stated that an amendment to the building consent would be required to ensure the identified areas of non-compliance could be 'remediated and constructed in accordance with the building consent and building code'. The authority recommended that a Building Surveyor be engaged to report on the areas of concern identified by the authority, as well as any other areas of potential damage that the authority may not have detected during the site inspection. The surveyor's report should then be submitted to the authority for review. The authority placed all further inspections on hold until the owner had furnished 'amended plans, documentation and evidence of compliance in accordance with the building consent and in accordance with the New Zealand Building Code'.
- 3.28. On 19 October 2021, the authority reissued its letter of 6 October 2021, detailing the areas of non-compliant building work. Other than a few minor amendments, the matters detailed are the same as those in the 6 October letter.

The building surveyor's report

- 3.29. The owner arranged for a registered building surveyor ("the Building Surveyor") to assess the compliance of the building work against the approved building consent documents for BC141403. The building surveyor provided a report dated 15 November 2021.
- 3.30. Several items were excluded from the scope of this report, such as the building work that was subject to the certificate of acceptance, whether the approved consent documents and alternative solutions comply with the Building Code, the standard of the workmanship, the accuracy of the producer statements²⁰, and the house's compliance with the Building Code.
- 3.31. Overall, the building surveyor concluded that the house 'has generally been constructed in accordance with the Approved Building Consent'. However, there were some items that had not been included in the consent documents or not detailed, and some aspects of the building work that departed from the building consent. The building surveyor recommended the owner submit an amendment to include the following items with construction details:²¹

²⁰ A producer statement is a professional opinion based on sound judgment and specialist expertise. It is not a product warranty or guarantee of compliance. While producer statements are well-established and widely used, they have no particular status under the Building Act 2004.

²¹ In an email from the authority on 18 July 2022, the authority stated, "A number of minor variations were recommended which have been actioned and processed." It is unclear if these variations address all of the recommendations from the building surveyor.

The installation of a window in the link.^[22]

Method of fixing and sealing the blue aluminium panels.

Steps into the sunken lounge area.

The location of the fireplace in the lounge.

ACM cladding to the link.

Ensuite layout and construction details.

3.32. In the report, the building surveyor also made observations about specific aspects of the building work. The parties have subsequently commented on these observations in their submissions. I have included a summary of the comments in Table 1 (see Appendix B).

3.33. On 19 November 2021, the owner queried the status of the code compliance certificate application. The authority advised the owner its decision remained 'pending', due to disagreement with the designer over the building surveyor's report. In essence, the authority had reviewed the report and had concerns about its scope and conclusions, while the designer considered the report's findings to be binding on the authority in terms of its decision whether to issue the code compliance certificate.

The application for a determination

3.34. On 25 November 2021, the owner applied for a determination about the authority's decision to refuse to issue a code compliance certificate for the building work carried out under building consent BC141403.

3.35. On 2 December 2021, the authority applied for a determination about its proposal to again refuse to grant a code compliance certificate in relation to BC141403. The authority set out its reasons, maintain the view that the building work did not comply with the building consent. The authority also identified concerns regarding compliance with the Building Code, with reference to its inspection report of 6 October 2021 (refer paragraph 3.26).

3.36. On 30 November 2021 and 10 December 2021, the Ministry sought further information from the parties.

3.37. In December 2021, the owner and purchasers entered into sale and purchase agreement for the owner's property, with contingent settlement provisions. The purchasers were subsequently added as parties to this determination.

3.38. On 17 January 2022, the Ministry accepted the authority's and owner's applications and advised that the two applications would be dealt with together in this

²² The building work to construct the link was carried out under BC130605 and is not the subject of this determination.

determination.²³ The Ministry also requested information from the parties about whether any building work had been carried out on the dwelling since 3 October 2019 (being the date of the expert's site visit) and to clarify the remaining matters in dispute.

4. Submissions

The owner

- 4.1. The owner made a submission with their application for a determination. The submission set out the background to the application, including the owner's latest application for a code compliance certificate for the building work on the house, the authority's letter of 6 October 2021, which the owner takes as a refusal to issue a code compliance certificate, and the subsequent inspection and report by the building surveyor.
- 4.2. The owner states that:
 - 4.2.1. all building work on the house has been carried out in accordance with the building consent, and the application for a 'minor amendment'
 - 4.2.2. remedial work on the house has been undertaken since the authority's letter of refusal
 - 4.2.3. the building surveyor's inspection and report was agreed by the authority and owner to be 'the defining document as to whether a [code compliance certificate] should be issued'; the agreement was that the report is 'full and final'
 - 4.2.4. the building surveyor certified that all of the building work complies with the building consent, subject to the approval of the minor amendment submitted to the authority in July 2021
 - 4.2.5. despite this, the authority has refused to issue a code compliance certificate and given no grounds for its refusal.
- 4.3. The owner and designer also made a submission in response to the authority's application for a determination (in summary):
 - 4.3.1. The owner reapplied for a code compliance certificate on 20 October 2021, following the authority's review of the building work on 11 June 2021 and its decision that the work still did not comply.

²³ Section 186(2) provides the chief executive may consider related applications together.

- 4.3.2. This latest code compliance certificate application addresses all the outstanding matters raised by the authority, and the building work has been shown to be 'correct' by the building surveyor.
- 4.3.3. The parties to the previous determination (3162) agreed 'that it would be set aside as unresolved and irrelevant' and would be over-ridden by the building surveyor's report. The building surveyor's report is 'binding', 'final' and 'not contestable'.
- 4.3.4. As-built plans and documents were provided to the authority on-site on 17 November 2021, as recommended by the building surveyor.
- 4.3.5. The building work was assessed as compliant when the building consent was applied for. Only the authority's later final inspections / reports raised issues with non-compliances.
- 4.3.6. The owner also responded to the authority's submissions about the building surveyor's report.

The authority

- 4.4. The authority made a submission with its application for a determination, which included the basis for its proposal to again refuse to issue the code compliance certificate.
- 4.5. The authority stated it was unable to be satisfied on reasonable grounds that the building work complies with the building consent. In addition, with reference to the final inspection on 6 October 2021, the authority was of the view that some building work did not comply with the Building Code. Particular areas of non-compliance identified included:
 - 4.5.1. parapet construction, cladding and flashing – non-compliant with Building Code clauses B1, B2 and E2, and not constructed in accordance with the building consent
 - 4.5.2. skillion roofs – non-compliant with Building Code clauses B1, B2 and E2
 - 4.5.3. finishes – non-compliant with Building Code clause B2 and not constructed in accordance with the building consent
 - 4.5.4. external moisture – non-compliant with Building Code clause E2, and not constructed in accordance with the building consent.
- 4.6. The authority also commented on points raised in the building surveyor's report dated 15 November 2021 (see Table 1, Appendix B).
- 4.7. In an email from the authority on 18 July 2022, the authority stated, "A number of minor variations were recommended which have been actioned and processed."

- 4.8. I note it is unclear whether the minor variations referred to by the authority address all of the variations from the building consent that had been identified and whether those variations have been approved by the authority.

The draft determination

- 4.9. A draft determination was issued to the parties for comment in March 2024.
- 4.10. The authority accepted the draft without comment.
- 4.11. The owner did not accept the draft determination and provided comments which are considered in Appendix B: Table 1 Submissions and assessment.
- 4.12. The purchasers did not provide comment on the draft.

5. Expert's report

- 5.1. As noted in paragraphs 1.15 and 1.16, the Ministry engaged an independent expert to assist in relation to an earlier application for determination concerning the dwelling. I have considered the expert's report on the building work, but only insofar as it is relevant to the matters in this determination that concern building work carried out under BC141403.
- 5.2. The parties involved in the previous determination had the opportunity to respond to the expert's report, and the report was subject to a separate review.²⁴
- 5.3. A summary of the main points from the expert's report are set out in Table 1 (Appendix B).

6. Discussion

Refusal to issue the code compliance certificate

- 6.1. Section 94(1)(a) of the Act requires an authority to 'issue a code compliance certificate if it is satisfied, on reasonable grounds' that the building work complies with the building consent.
- 6.2. Based on the building work and building consent at the time the applications for this determination were lodged, the building work was not in accordance with building consent BC141403. This includes but may not be limited to the following:

²⁴ The Ministry commissioned a review of the expert's report by a registered architect. The review considered the expert's report, the comments of the designer, and how the expert's report was incorporated into the first draft of the previous determination.

- 6.2.1. location of the fireplace installed in the lounge, which was installed at the northern side rather than as proposed at the eastern end
 - 6.2.2. the ensuite not in accordance with the approved floor plan
 - 6.2.3. the change from a side fixed deck balustrade to top fixed
 - 6.2.4. the use of foam in place of timber fillets in some complex roof junctions.
- 6.3. On these factors alone the test under section 94(1)(a) had not been satisfied at the time the authority made its decision on 6 October 2021 and when it applied for this determination. On that basis, I confirm the authority's proposal to refuse to issue the code compliance certificate.
- 6.4. There was also building work carried out that was not detailed in the plans. This includes the steps to the sunken lounge and the addition of a wearing surface or duckboards to protect deck membranes.
- 6.5. The owner has submitted minor variations to the authority. I note that any new decision by the authority regarding a code compliance certificate for BC141403-1A will need to take into account any amendments or minor variations that have been approved, and any changes to the building work that may have occurred since (such as removal of foam at roof junctions).

Compliance with the Building Code

- 6.6. Although the test under section 94(1)(a) is compliance with the building consent, where consent documentation lacks clarity or sufficient details to establish compliance with the Building Code, my approach is to consider whether those features of the building work as constructed comply with the Building Code. In this case the parties have also been in dispute about whether some of the building work complies with the Building Code.
- 6.7. Table 1 (in Appendix B) sets out the details for areas of building work carried out under BC141403 that are considered in this determination, along with points made by the parties. The relevant clauses of the Building Code and my conclusions are set out below.
- 6.8. As I have concluded that some of the building work carried out under BC141403 did not comply with the Building Code, I am confirming the authority's decision on 6 October 2021 to refuse to issue the code compliance certificate and its proposed decision when it applied for this determination.
- 6.9. I have identified some aspects of the building work where insufficient information has been provided for me to assess compliance with Building Code.

External moisture (E2)

6.10. The relevant clauses of the Building Code concerning external moisture are:

E2.3.1 Roofs must shed precipitated moisture. In locations subject to snowfalls, roofs must also shed melted snow.

E2.3.2 Roofs and exterior walls must prevent the penetration of water that could cause undue dampness, damage to building elements, or both.

E2.3.7 Building elements must be constructed in a way that makes due allowance for the following:

- (a) the consequences of failure:
- (b) the effects of uncertainties resulting from construction or from the sequence in which different aspects of construction occur:
- (c) variation in the properties of materials and in the characteristics of the site.

6.11. I conclude the following building work constructed under building consent BC141403 complies with clause E2 (item numbers in brackets – refer to Table 1):

6.11.1. The roof parapet capping (1)

6.11.2. The parapet walls over the entrance, in relation to the aluminium tiles (4)

6.11.3. The wall assembly, insofar as it relates to the timber rainscreen (5)

6.11.4. The external joinery, with and without flashings (6)

6.12. There is insufficient information to reach a conclusion on the compliance of the overflow pipes through the SIP walls at RWH1 and RWH2. (2)

6.13. The owner has carried out some repairs to the roof membrane, and it will be for the authority to assess the compliance of the repaired membrane before deciding whether to issue a code compliance certificate for BC141403-1A. This decision will need to take into account the modification of clause B2.3.1 and evidence of in-service performance.

Access (D1)

6.14. Regarding the stairs to the sunken lounge²⁵ and the gap alongside the boardwalk at the front entrance, the relevant clauses are D1.3.1(a) and (c), and D1.3.3(j):

D1.3.1 Access routes shall enable people to:

(a) safely and easily approach the main entrance of *buildings* from the apron or *construction edge* of a *building*,

...

(c) move into spaces within *buildings* by such means as corridors, doors, stairs, ramps and lifts,

...

²⁵ The compliance of a set of stairs in the shed link and to an adjacent mezzanine area have also been in dispute between the parties. This building work was not carried out under building consent BC141403, and so is not within the scope of this determination.

D1.3.3

Access routes shall:

...

(j) have smooth, reachable and graspable handrails to provide support and to assist with movement along a stair or ladder.

6.15. The boardwalk does not comply with clause D1.3.1(a) due to the gap along the sides. (10)

6.16. Regarding the steps to the sunken lounge (12), the owner has advised the steps have since been removed and rebuilt but provided no further details. It will therefore be for the authority to assess the step as altered (if it has not already) before making a new decision whether to issue a code compliance certificate for BC141403-1A.

Internal moisture (E3)

6.17. The relevant clauses of the Building Code concerning internal moisture in the wet area/shower are:

E3.3.6

Surfaces of *building elements* likely to be splashed must be constructed in a way that prevents water splash from penetrating behind linings or into *concealed spaces*.

6.18. The wet area / shower (11) complies with clause E3.3.6.

Prevention of fire occurring (C2)

6.19. The relevant performance clause is C2.2:

The maximum surface temperature of *combustible building materials* close to fixed appliances using controlled combustion and other fixed equipment when operating at their design level must not exceed 90°C.

6.20. I have not received information or evidence from the parties about whether the flue (13) has been installed in the manner described in the installation details. It will therefore be for the authority to assess the flue (if it has not already) before making a new decision whether to issue a code compliance certificate for BC141403-1A.

Safety from falling (F4) and [B1]

6.21. The change to a top fixed balustrade (9) was the subject of an application for amendment and the balustrade has since had a capping channel added. It will be for the authority to assess the compliance of the barrier as amended (if it has not already) before making a decision whether to issue a code compliance certificate for BC141403-1A

Durability (B2)

6.22. Building elements are required to comply with the durability requirements of Clause B2, which requires a building to satisfy all the objectives of the Building Code throughout its effective life, and that includes a requirement to remain weathertight and structurally sound.

6.23. The periods of time are set out in Clause B2.1.3. In summary, these are:

- 5 years for elements that are easy to access and replace and where failure would be easily detected during normal use;
- 15 years for the “building envelope” and other elements that are moderately difficult to access or replace, or where failure would go undetected during normal use but easily detected during normal maintenance;
- 50 years for elements that provide structural stability, or are difficult to access or replace, or where failure would go undetected during both normal use and maintenance.

6.24. I note that the concerns raised by the authority regarding corrosion of steel framing are not considered in this determination because those building elements are the subject of the certificate of acceptance, and so do not form part of the authority’s consideration for issuing a code compliance certificate for BC141403-1A.

6.25. The deck structure as constructed (8) in relation to moisture being trapped against the SIP at the end of the decks does not comply with clause B2 Durability insofar as it applies to clause B1.

Documentation

6.26. The authority required various documents from the owner, including:

6.26.1. producer statements for plumbing, potable water supply, pressure tests and the solid fuel heater

6.26.2. product warranties for the external membrane and the internal membrane used for the shower

6.26.3. a construction statement from the licensed applicator for the shower tanking

6.26.4. certification of the windows to confirm they are suitable for the wind zone and the exposed environment.

6.26.5. a gas certificate from a certified gas fitter.

6.27. The owner is of the view that all of the required paperwork has been provided to the authority, and because it is an “owner-builder project” warranties are not

required. The owner also states that sufficient documentation has been provided, including various reports.

- 6.28. As discussed in previous determinations²⁶, a code compliance certificate cannot be refused on the basis of the lack of producer statements, construction statements and warranties. These cannot be required as the only form of evidence to assess building code compliance.
- 6.29. It is for the authority to consider all evidence available to it, including the outcome of this determination, the various inspections and assessments and documentation, and identify any specific concerns regarding compliance for which further evidence or information may be needed.

7. Decision

- 7.1. In accordance with section 188 of the Building Act 2004, I determine that there were grounds for the authority's proposal to refuse to issue the code compliance certificate for the work to construct the house under BC 141403 and I confirm the authority's decision.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 23 July 2024.

Andrew Eames

Principal Advisor Determinations

²⁶ See for example 2023/021 and 2023/011

Appendix A: The legislation

The sections of the Act relevant to this determination include:

40 Buildings not to be constructed, altered, demolished, or removed without consent

- (1) A person must not carry out any building work except in accordance with a building consent....

44 When to apply for building consent

- (1) An owner intending to carry out building work must, before the building work begins, apply for a building consent to a building consent authority that is authorised, within the scope of its accreditation, to grant a building consent for the proposed building work.

45 How to apply for building consent

- (1) An application for a building consent must—
- (a) be in the prescribed form; and
 - (b) be accompanied by plans and specifications...
 - (d) contain or be accompanied by any other information that the building consent authority reasonably requires...
- (4) An application for an amendment to a building consent must,—
- (a) in the case of a minor variation, be made in accordance with section 45A; and
 - (b) in all other cases, be made as if it were an application for a building consent, and this section, and sections 48 to 51 apply with any necessary modifications.

45A Minor variations to building consents

- (1) An application for a minor variation to a building consent—
- (a) is not required to be made in the prescribed form; but
 - (b) must comply with all other applicable requirements of section 45.
- (2) Sections 48 to 50 apply, with all necessary modifications, to an application for a minor variation.
- (3) A building consent authority that grants a minor variation—
- (a) must record the minor variation in writing; but
 - (b) is not required to issue an amended building consent

49 Grant of building consent

- (1) A building consent authority must grant a building consent if it is satisfied on reasonable grounds that the provisions of the building code would be met if the building work were properly completed in accordance with the plans and specifications that accompanied the application.

94 Matters for consideration by building consent authority in deciding issue of code compliance certificate

- (1) A building consent authority must issue a code compliance certificate if it is satisfied, on reasonable grounds,—

- (a) that the building work complies with the building consent; and...

95A Refusal to issue code compliance certificate

If a building consent authority refuses to issue a code compliance certificate, the building consent authority must give the applicant written notice of—

- (a) the refusal; and
- (b) the reasons for the refusal.

96 Territorial authority may issue certificate of acceptance in certain circumstances

- (1) A territorial authority may, on application, issue a certificate of acceptance for building work already done—
 - (a) if—
 - (i) the work was done by the owner or any predecessor in title of the owner; and
 - (ii) a building consent was required for the work but not obtained; ...
- (2) A territorial authority may issue a certificate of acceptance only if it is satisfied, to the best of its knowledge and belief and on reasonable grounds, that, insofar as it could ascertain, the building work complies with the building code.
- (3) This section—
 - (a) does not limit section 40 (which provides that a person must not carry out any building work except in accordance with a building consent); and
 - (b) accordingly, does not relieve a person from the requirement to obtain a building consent for building work.

Appendix B: Table 1 Submissions and assessment

ROOF (E2)	
1	Roof parapets and capping
Authority	<p>The timber-capped parapet upstands around the roofs were not sufficiently detailed in the building consent. The parapets are not complete, and as constructed do not comply with the Building Code. They have also not been adequately maintained and are now showing signs of degradation.</p> <p>There are issues with the fixings, membranes, flashings and sealants, and the parapets' junctions with the cladding and rain screens. Parapets are inadequately sloped, so water may pool on them, and that they could be diverting water into the cladding cavity.</p> <p>Due to a lack of inspections at the times the parapets were built and the flashings and claddings installed, the authority cannot be certain of their compliance.</p>
Owner	<p>The owner states the parapet details were noted on the plans and approved as alternative solutions in the consent documentation following a site discussion with the authority, and they have been maintained in accordance with the maintenance schedule and are not suffering from any degradation. The owner is of the view that ponding on top of them would be physically impossible.</p> <p>The timber (western red cedar) parapet caps are part of the rainscreen. They are aesthetic and do not perform any weathertightness function. Similarly, the rainscreen's purpose is purely to deflect moisture away from the underlying 'weatherskin'.</p> <p>The fixings do not penetrate the flashings underneath. The flashings cover the weather envelope and are correctly installed and sealed. Even if water did over-shoot the flashings in certain weather conditions, it would run down the weatherskin behind the rainscreen.</p>
Building surveyor	<p>The building consent plans show two different details for the parapet/verge – details 1 and 4 do not have a cap, while details 6, 8 and 9 show a cedar cap. The parapet has been installed with a cedar parapet cap added around the perimeter in all areas where there is a junction between the parapet and the weather screen on the walls, including the sections above the window heads.</p> <p>The plans specify a powder-coated flashing to be installed under the parapet upstand, with the roof membrane passing over the upstand. At his inspection, the surveyor removed the weather screen board in two locations and flashing was present in both.</p> <p>The fixings for the parapet cap do not penetrate the flashing under the upstand. The cap is fixed to the upstand with 30mm screws – the</p>

	cap is 15mm thick and the upstand is 45mm.
Expert	A section of capping above the kitchen window was removed. The upstand detail was generally as illustrated on consent detail 9 [exception regarding membrane see item 3 below].
<p>My assessment</p> <p>The parapet flashing was detailed in the building consent to terminate behind the rain screen. The falls of the roof slope towards an internal gutter, meaning the water from the roof is not being discharged behind the rainscreen. Any water entering behind the rainscreen will move down the face of the SIP walls.</p> <p>While the authority also raised concerns about the capping being nailed through the top, I note the flashing is installed under the parapet upstand and the parapet cap fixings do not penetrate it.</p> <p>For these reasons I consider the construction of the parapet complies with clause E2.3.2.</p>	
2	Roof drainage
Authority	There are inadequate overflow outlets in the skillion membrane roofs, and the bedroom wing does not appear to have any overflow installed. In addition, the outlet penetrations through the cladding are not flashed or sealed.
Owner	<p>It is incorrect that there are inadequate outlets: the authority has been provided with photographs and documents showing the outlets.</p> <p>All outlet penetrations through the 'weatherskin' are fully sealed and flanged. The penetrations through the tiles are not, as this could lead to water getting trapped.</p> <p>The owner provided a copy of figure 2 annotated to show the direction of falls and location of rainwater heads, overflows and downpipes, and copies of photos of two rainwater heads and a perimeter upstand with capping removed.</p>
Building surveyor	<p>The roof overflow on the bedroom wing is detailed in the building consent and has been constructed in accordance with the consent.</p> <p>A rainwater head is at the lowest point of the gutter and the overflow is through a gap in the cedar capping.</p>
Expert	The roof slope varies, being 7.6° above the kitchen and 8.3° above the entrance where the authority had noted 'ponding' (Area K). Ponding appears to affect a very small area and is unlikely to compromise performance.

My assessment

The building consent plans included the location of the two rainwater heads, with a detail showing a 75mm downpipe outlet and notation for the overflow for RWH2 on the bedroom wing. The consent did not include details for the overflow and associated flashing.

Based on the building consent plans, I consider the downpipe sizes for RWH 1 and RWH 2 are adequate for the roof areas they serve (clause E1). I note the rainwater head and overflow serving the entrance and living wing (RWH 1) is apparent in photographs, and I accept the building surveyor's confirmation the rainwater head and overflow have been constructed in the location shown on the plans for the bedroom wing (RWH 2).

Regarding the flashing or sealing around the overflow, I note it is the SIPs that are acting as the external envelope in terms of clause E2. While the rainscreen will limit the amount of water reading the bedroom wall SIP, the roof flashing turns down behind the cedar rainscreen and capping does not extend over or past the vertical cedar boards (see also item 5 below). Water is therefore likely to reach the face of the bedroom wall SIP, and moisture trapped between the overflow pipe and cut panel is likely to corrode the panel.

The construction of the overflow pipe and whether this was sealed or flashed at the external face of the SIP walls at either RWH1 or RWH2 is not clear, and so I cannot confirm whether this complies with clause E2.3.1.

3	Roof membrane
Authority	<p>The authority has concerns about the installation and durability of the roofing membrane, and the impact of these on compliance with clauses E2 and B2. These concerns are exacerbated because no product and installation warranties had been provided for the membrane, no plans or details for the roof membrane junctions had been provided, and no inspections took place of the roof substrate before the membrane was applied.</p> <p>Particular concerns relating to the membrane's fixings and penetrations include:</p> <ul style="list-style-type: none">• some roof fixings are visible through membrane• the chimney brace stay and butyl chimney flashing fixings are penetrating the membrane• the flue penetrations and fixings appear non-compliant• there is a pipe penetration through the membrane on the internal gutter. <p>Particular concerns relating to the membrane's application and durability include:</p> <ul style="list-style-type: none">• signs of pin holing• the membrane does not appear to have adhered to the clear sealant and may be incompatible

	<ul style="list-style-type: none"> • the membrane is peaking at the joints between the metal roof panels, possibly due to thermal movement • the sealant between the butyl chimney flashing and membrane roof is peeling and possibly separating. <p>Particular areas where the authority noted signs of possible moisture ingress / leaking include:</p> <ul style="list-style-type: none"> • the entry roof junction with the main building, particularly the cladding and flashing junctions either side • the rangehood penetration. <p>The authority considered further investigations were required in these areas to establish compliance.</p>
Owner	<p>The owner states that the roofing membrane complied with the Building Code and a product warranty/suitability statement has been provided by the supplier.</p> <p>With respect to the fixings and penetrations, the owner noted:</p> <ul style="list-style-type: none"> • it is inevitable the coach bolt roof fixings will ‘grin through’ the membrane • the chimney bracing stays are fixed to raised blocks with additional membrane overlays • the butyl chimney flashing is bedded into the membrane • the gutter pipe penetration complies with E2/AS1. <p>With respect to the membrane’s application and durability, the owner noted that the expansion joints between the metal roof panels are designed to allow movement.</p> <p>In response to the authority’s concerns, the owner made several repairs including:</p> <ul style="list-style-type: none"> • identifying and rectifying pin holing • replacing the clear sealant • replacing the membrane paint • re-riveting and sealing the rangehood cowl. <p>With respect to the areas of possible moisture ingress noted by the authority, the owner stated the durability period for the membrane is five years and there had been no signs of moisture ingress over the past nine years. There were no junctions in the membrane, and any ceiling staining would have happened during construction. There is no moisture present.</p> <p>The flashing and sealing of upstands and penetrations are homogenous with the membrane with additional coats to ensure a high build.</p>

	<p>In cases of flashings up walls and parapets there are underlying coloursteel flashings with the membrane coating over and above these. There was one area where the building surveyor requested some fairing be removed and this was done and has been viewed by the authority.</p> <p>The owner provided a copy of a letter from a building surveyor dated 10 July 2019, which stated that “overall the roof covering appears to be in an acceptable condition with minor items requiring attention. ... if these findings are attended to, the exterior coverings as inspected should continue to perform as required. [I note that the letter does not identify the ‘findings’ that require attention.]</p> <p>The owner also provided copies of extracts from the manufacturer’s documentation, including maintenance details that state “after 10 years wash down and recoat” and inspections.</p>
Building Surveyor	<p>The building consent showed the roof was to be mesh-reinforced acrylic membrane applied over the steel SIP and plywood fillets. However, no products were specified or product literature included in the consent for the roofing membrane.</p> <p>The builder [who was the designer in this case] has used a liquid applied membrane system consisting of fibre-reinforced mesh and a galvanised steel primer with alkyd resins and anti-corrosive pigments. Timber fillets and foam were used at complex junctions to smooth out the surface. The use of timber fillets is in accordance with the consent, but foam was not and has since been removed.</p> <p>The [designer] confirmed the following application sequence for the membrane:</p> <p><i>“The joints were layered with [sealing] tape for the slip layer, then 200mm tape applied over by a wet brush coat then the tape bedded in with the [membrane]. The top mesh was similar then about 2 overcoats rolled on.</i></p> <p>The system used and its application method were confirmed to be suitable by the liquid-applied membrane supplier. The application of the system was also inspected by a representative of the supplier at a site visit and confirmed to be satisfactory.</p> <p>The building surveyor concluded that the roof membrane had been applied in accordance with the building consent, and its application verified through two independent assessments by the supplier.</p>
Expert	<p>The expert confirmed the membrane system used. The expert removed part of the perimeter capping and found that the membrane over the upstand plate was only a single layer and not reinforced. This was contrary to the consent details, which showed a double thickness of reinforced membrane was to be used in this location. SIPs joints appeared rigid, with no rucking of the LAM though bumps apparent at rivet locations.</p> <p>The expert also noted the surface of the membrane was variable, without a uniform appearance, and the radius corners and upstand heights specified in the building consent had not been applied uniformly. The other requirements for the membrane in the specification,</p>

such as a water test and warranties had also not been provided.

In addition, the membrane used was not covered by any appraisal or certification system, and the supplier's website did not indicate it had been tested or achieved compliance standards. The system complies with the limited specification for the roofing given in the building consent but is an alternative solution and has no documentary evidence of its compliance.

The expert concluded that the inadequate membrane over the upstand plate and the variable application of the membrane elsewhere were non-compliant with the building consent.

Regarding compliance with the Building Code, the expert noted the SIP used for the roof were structural and required a 50-year durability period. Their design life was 15 years, but this could be extended through use of a 'sound membrane' and periodic recoating. However, given the issues noted and the lack of independent appraisal for the membrane, the membrane's compliance with clauses E2 and B2 is in doubt, especially at the junctions between the panels, and with gutters, rain heads, abutments etc.

My assessment

Departures from liquid applied membrane specification include the lack of uniform appearance to the finished membrane, less than minimum required radiused corners and upstand heights, and use of foam (since removed).

I have not received evidence of undue dampness or damage from moisture ingress through the roof membrane of the house, despite the issues identified by the authority and the expert, and the unspecified findings in the building surveyor's letter.

The concerns raised by the authority and the expert are relevant to the performance of the membrane. It is the prevention of moisture entering through the membrane and migrating through joints in the roof (including at wall junctions) that is relevant in terms of clause E2.3.2, and water becoming trapped against the SIP skins in terms of the durability of the SIPs (clause B2.3.1).

The inconsistent reinforcing over the perimeter upstand means the coating is more likely to be damaged and allow moisture ingress. However, the flashing provides protection against moisture ingress at the SIP wall/roof junction. Pin holes and penetrations are also vulnerable to moisture ingress. The performance of the membrane at penetrations and joins will be dependent on the flashing and sealing of those junctions.

I disagree with the owner's view that the durability period for the membrane is 5 years under clause B2.3.1(c). In my opinion the failure of the roof membrane would go undetected during normal use but would be easily detected during normal maintenance. For that reason, I consider the appropriate durability period for the roof membrane is 15 years.

The membrane has now been in place for some nine years and the supplier's recommendation is that it is cleaned and given a further two coats. Considering the modification of the start date for clause B2.3.1, the roof membrane is close to two-thirds of the way through its durability period. I note the supplier's recommendation is that the membrane is cleaned and given a further two coats. I suggest that this be carried out by a person suitably experienced in applying liquid membranes to ensure adequate coverage and correct application.

The owner has carried out some repairs to the membrane, including removing the foam. It will be for the authority to assess the compliance of the repaired membrane before deciding whether to issue a code compliance certificate for BC141403-1A, and this decision will need to take into account the modification of clause B2.3.1 and evidence of in-service performance.

EXTERNAL WALLS (E2)

4	The entry, including the parapet walls and aluminium tile cladding
Authority	The aluminium tiles stand higher than the parapet wall. This will allow water to pond on top of the wall, and may allow salt deposits and moisture to accumulate, causing early degradation and damage to the parapet flashings.

	<p>In addition, the tiles are glued hard against the roof membrane at the parapet upstand and junctions, with no capillary break or gap to allow water to escape.</p> <p>In places, the tiles are also lifting away from the substrate, which may cause water to sit behind them and cause rust or degradation of the metal wall panels.</p>
Owner	<p>The aluminium tiles have gaps between them allowing water to escape. They are fixed with 2mm epoxy tape and are spaced off the underlying weather skin.</p> <p>The authority's officer has removed the tiles in the past to inspect their construction. They have been in place eight years, yet there is no evidence of corrosion. The flashings behind them are shown in the building consent and are visible for inspection.</p> <p>Water does not pond, or salt and moisture accumulate on top of the parapet walls, behind the tiles, as expressed by the authority.</p>
Building surveyor	<p>The 400x400mm aluminium composite material panels/tiles have been fixed directly to the SIP. There were no approved fixing details for the aluminium tiles in the consent.</p> <p>In the building consent, the walls with aluminium over-cladding were shown to have a flat capping that returned down inside the aluminium weather screen panels.</p>
Expert	<p>The SIPs are capable of complying with clause E2 and would only require periodic repainting to comply with clause B2. So, the aluminium tiles may be considered decorative, in which case they only need a 5-year service life to comply with clause B2, which seems likely to be achieved.</p>
<p>My assessment</p> <p>The aluminium tiles over the SIPs above the entry are higher than the parapet capping, which turns down behind the tiles. However, it is the SIPs, rather than the aluminium tiles, that are operating as the building's external weather envelope for the purpose of compliance with clause E2.</p> <p>The tiles appear to have been installed closely together without gaps between them and any drainage gap behind the tiles is limited to that provided by the epoxy tape used (2mm) which although limited will prevent external moisture being trapped against the SIP panels.</p> <p>Based on my understanding of the construction from the information provided, I consider the parapet walls over the entrance, in relation to the aluminium over-cladding, comply with clause E2.3.2.</p>	

5	External cladding / timber rain screen
Authority	<p>The cladding has not been adequately maintained, and is showing signs of degradation (cracking, twisting, cupping and separating from the parapet cap), allowing water to be diverted behind it. Some nails have popped out and some boards have come away from the cavity/substrate.</p>
Owner	<p>The ‘cladding’ referred to is a rainscreen, designed to deflect rain away from the structure and add to its “inherent weathertightness”.</p> <p>With respect to the authority’s specific areas of concern, the owner submitted:</p> <ul style="list-style-type: none"> • the rainscreen is open at the bottom to allow moisture to escape • there is no ‘excessive moisture’ behind the rainscreen – the metal SIP are warranted for exposure to the elements, with the rainscreen helping prevent UV and water degradation • if the building wrap was installed directly under the rainscreen boards it would not be exposed • 6 to 10mm gaps every 200mm between the rainscreen boards provide ventilation.
Building Surveyor	<p>The surveyor recorded that the as-built rain screen comprised 200mm x 15mm stained cedar boards, which were fixed vertically to 45mm x 20mm H3.1 battens. The battens are fixed horizontally to the SIP using tek screws and a neoprene washer to seal the joint. The length of the screws was not confirmed.</p> <p>The neoprene washer holds the batten off the SIP by 2 to 3mm. The screen boards are then fixed to the battens using 30mm stainless steel flat head annular groove nails that do not penetrate the SIP. Building paper has been used between the battens and the boards. The treatment of the battens was confirmed by the builder.</p> <p>The surveyor confirmed that the rain screen extends below the bottom batten. The screen boards have shrunk since they were installed, exposing the building paper to UV light between the board joints, and causing the building paper to disintegrate in these areas. However, in the surveyor’s opinion this does not affect the function of the weather screen.</p> <p>During the site visit, the surveyor removed two boards from the rain screen to assess the SIP for evidence of water pooling and deterioration, but none was observed.</p>
Expert	<p>The expert considered that the board fixings would not comply with E2/AS1, the BRANZ guide or any other industry standard or proprietary detail, because:</p>

	<ul style="list-style-type: none"> • the 30mm nails only penetrated 14mm into the 19mm battens • the battens were too thin to comply with recommendations for structural battens • the narrow space provided by rubber roofing washers in compression is unlikely to provide a durable drainage path • the double nailing and nailing close to the ends of boards, plus the exposure of the top edge are all contrary to normal standards and good practice. <p>The expert considered these issues may contribute to the premature deterioration of the boards, through further cupping, splits and fractures.</p> <p>In addition, the expert noted that the metal cap flashing on the parapet had been turned down between the boards and battens, leaving the top edge of the boards exposed.</p> <p>In the expert’s opinion, these matters meant there was a risk of moisture penetration behind the rainscreen sufficient to cause moisture-related damage. However, the expert noted that the SIP wall panels were capable of complying with clause E2 without the rainscreen, and would only require periodic repainting to comply with B2. Accordingly, the rainscreen could be considered decorative, meaning it only needed to be durable for five years to comply with clause B2, which it was likely to do.</p>
<p>My assessment</p> <p>The cedar rainscreen is exhibiting degradation and is allowing water to penetrate behind it. However, it is the SIP wall panels, rather than the cedar rainscreen, that is operating as the building’s external weather envelope.</p> <p>The SIP wall panels vulnerabilities are at junctions and joints, and where fixings penetrate the skins. The neoprene washers hold the battens off from the face of the panels and will protect the penetration.</p> <p>There is no evidence of moisture ingress at these points or trapped moisture causing corrosion of the panel skin. The wall assembly, insofar as it concerns the use of the rainscreen, complies with E2.3.2</p>	
6	Openings for external joinery (doors and windows)
Authority	<p>The external joinery lacks head and jamb flashings, including the aluminium joinery positioned in the steel I-beam portals, which does not have head flashings installed.</p> <p>Where windows do have head flashings, they do not extend past the joinery or have stop ends to prevent moisture from entering the</p>

	cavity.
Owner	<p>The aluminium windows in the steel portals / frames, are positioned ‘hard underneath a 1.3m eave’ with the junction sealed with polyurethane rods and modified silicone sealant.</p> <p>The windows are flashed with a proprietary flashing system, and the supplier has provided a PS3 for this.</p>
Building surveyor	<p>The building consent recorded that a proprietary flashing system was to be used and that it would be installed by the local supplier. The local supplier confirmed that it installed the flashing system in accordance with standard practice. The system was installed around the window in the dining room (W3) and kitchen (W5).</p> <p>The surveyor noted that there are two W5 windows shown on the building consent – one in the kitchen the other in the entrance. It is not known what flashing system was installed on the latter window.</p> <p>All the other windows and doors in the house do not have flashings as they have been installed into structural steel members in accordance with the building consent.</p>
<p>My assessment</p> <p>The windows in the dining room and kitchen have been installed with the proprietary flashing system, and there is nothing in the information provided to me that suggests there has been or is likely to be moisture ingress at these windows. It was clear in the plans that the flashings were to be installed for all joinery in SIP walls, and based on a photograph in the expert’s report, it appears a head flashing has been installed to the window (W5) in the entrance.</p> <p>Detail 4 of the approved plans shows other joinery installed directly against steel universal beams, with a bead of sealant between and a capping channel over on the interior side. The junction between the beam and the joinery on the external side is vulnerable to moisture ingress because it is reliant on sealant, which requires careful application and ongoing maintenance. However, these windows are set high up under wide eaves and will be less prone to wind driven rain.</p> <p>I conclude that the external joinery will comply with clause E2.3.2.</p>	

FLOOR & DECK (B2)	
7	Steel structure
Authority	The steel structural members for the floor and deck have not been maintained in accordance with maintenance schedule. There are visible signs of corrosion and rust, and signs that this has been painted over.
Owner	The building has been maintained fully in line with the maintenance schedule. Where paint has weathered, it has been stripped back and re-coated with a steel coating system.
My assessment	
This item is not part of the building work carried out under BC141403 and is the subject of the certificate of acceptance, and so is not a matter for consideration in this determination.	
8	Deck structure
Authority	<p>The authority is concerned that there was no inspection prior to the installation of ‘floating deck’ and the fixings used for it were unknown.</p> <p>The authority noted issues with its ongoing compliance including:</p> <ul style="list-style-type: none"> • cupping, twisting and raised fixings in places • water staining to the underside of the ‘subfloor frame soffit cladding’, where water is draining from the cladding cavity and being held in the subfloor • surface moisture on the underfloor lining, which may indicate moisture is being held in the underfloor cavity.
Owner	<p>The owner responded stating:</p> <ul style="list-style-type: none"> • there is some warping of the kwila decking boards, but these are independent of the deck structure and can be removed • all fixings used on the deck are visible • the only staining is to the deck edging and is from the kwila – the surveyor has inspected and confirmed the stains are superficial • the deck does not have either a subfloor or underfloor lining. The panels are exposed throughout.

Building surveyor	<p>The surveyor noted that there are three trafficable decks over the house’s SIP floor panels (the lounge, bedroom and kitchen decks) and one non-trafficable deck (the ensuite deck).</p> <p>The decks are all sealed with a fibre-reinforced acrylic membrane installed on an 18mm compressed sheet substrate, which is fixed with stainless steel screws to H3.2 tapered battens. All of the decks are ‘constructed to falls’. They are all overlaid with teak, which has been glued to the membrane for the lounge deck, and installed as “duck boards” over the remaining decks.²⁷</p> <p>The teak deck surfaces were added to the approved design to provide extra protection for the deck membrane.</p>
Expert	<p>The expert noted that the facing steel of the SIP below the ensuite deck had begun to rust where the timber deck boards contacted the top of the panel. This created concerns that the deck / SIP may not meet the durability requirements in clause B2.</p>
<p>My assessment</p> <p>Where deck boards have been installed directly to the membrane covered compressed fibre board without space for air to circulate under the boards, they are more likely to exhibit the effects of moisture such as cupping and twisting referred to by the authority over a shorter period of time than if they are installed with an air gap. However, because the boards on the decks are being used only to protect the underlying membrane, the cupping, twisting and lifting of boards is a matter of maintenance rather than structural performance.</p> <p>I note that the compressed board and blocking (which is set into the SIP) butts against the facing board. This means external moisture entering between the duck boards near the end of the deck can travel down the inside surface of the facing board to the SIP and moisture can be held between these elements. The continuous blocking is set into the SIP and fixed with screws top and bottom and corrosion of the SIP skin, due to moisture held in this area, will compromise that fixing. In this regard, I consider the deck structure as constructed does not comply with clause B2 Durability insofar as it applies to clause B1.</p>	
<p>DECK AND ENTRANCE (B1 and F4)</p>	
9	<p>Exterior glass balustrade to deck</p>
Authority	<p>The glass balustrades do not meet the minimum height requirements when measured from the deck surface. The structural fixings for the framing below deck are not visible and require verification.</p>

²⁷ The surveyor did not undertake invasive investigation during the site visit, but relied on the builder’s representations about the substrate and fixings used, and the level of treatment for the battens.

Owner	<p>The balustrades were initially 2mm too low in one place but have since had capping channels added to increase the height.</p> <p>The owner states the documentation for this change, including manufacturer's statements, was supplied to and approved by the authority.</p>
Building surveyor	<p>An amendment was submitted to the authority in early June 2021, requesting that the balustrades on the western elevation (master bedroom and lounge) be changed from the original face-fixed frameless glass balustrading system to a strut post frameless glass system. The latter balustrade system has since been installed.</p>
Expert	<p>The glass balustrade fixing for the lounge and bedroom decks had been changed from the originally approved side-fixed to a top-fixed detail using different components and fixings. The balustrade mini posts are visible, but what they are fixed to is concealed by several layers of construction, and the glass panels that form the balustrade moved about +/- 30mm under modest hand pressure.</p> <p>No calculations had been provided for the load transfer from the balustrade to the structural steel of the deck, via the cantilevered SIP floor panel, blocking etc.</p>

My assessment

The compliance concerns raised include the height of the glass balustrades as well as the ability to withstand force against the balustrade and transfer of the load to the deck structure. The movement of the glass balustrade raises the question of whether the balustrade complies with clause B1.3.1, B1.3.3(j) and F4.3.4(d).

The owner has advised that capping channels have been added to increase the height. I have received no information from the owner on the total height with the capping, nor whether the capping is continuous and fixed to the walls at either end.

Based on photographs in the expert's report, some of the balustrade posts are fixed close to the long edge of the decking timber. In addition, the distance of the post fixings from the edge of the deck and fixing of the duck boards indicates that the balustrade posts may not be fixed by all four screws through the batten, or if they are, the fixing furthest from the deck edge is likely to be close to the edge of the batten. This would reduce the effectiveness of the fixings (particularly those furthest from the deck edge) against the pull resistance with the balustrade under horizontal load from people leaning on it or impact against it.

I am of the opinion that a continuous rigid channel fixed along the top of the glass panes is likely to reduce the amount of deflection of individual panels. It would also reduce movement of the balustrade as a whole if that capping is adequately secured at each end. However, there is insufficient information provided about the channel and fixings to the structure for me to be satisfied that it complies with the Building Code.

I also note that the change to a top fixed balustrade was the subject of an application for amendment. It will be for the authority to assess the compliance of the barrier as amended (if it has not already) before making a decision whether to issue a code compliance certificate for BC141403-1A.	
10	Front entry/boardwalk
Authority	The boardwalk deck to the front entry of the house does not comply due to the gap on either side.
Owner	The gap at the side of the entry deck is less than 75mm and the owner states this was approved by one of the authority's officers.
Building surveyor	A timber deck has been constructed leading to the main entrance of the house, which was not shown on the building consent. Under Schedule 1 of the Act, decks and platforms with a fall distance of less than 1.5m can be constructed without a building consent.
<p>My assessment</p> <p>Clause 24 of Schedule 1 provides for decks, platforms, bridges and boardwalks and the like to be constructed without first obtaining building consent if it is not possible to fall 1.5 metres even if it collapses. If it meets the criteria of that exemption (I have no submissions from the parties confirming the height of the boardwalk above ground), then it is not a matter for the authority to consider in its decision whether to issue a code compliance certificate for BC141403-1A.</p> <p>Regardless of whether the construction of the boardwalk was exempt under Schedule 1, it is still required to comply with the Building Code.</p> <p>While a gap of 75mm will prevent a person falling through the gap entirely, and so they are unlikely to fall one metre or more, the gap is still wide enough that it would allow a person's foot or lower limb to pass through. For that reason, I am of the view the boardwalk does not comply with clause D1.3.1(a).</p>	
INTERIOR	
11	Wet area / shower (E3)
Authority	<p>Insufficient details have been provided on the consented plans for the design of the wet area. Specific details are required for outlets, falls, the threshold, extent of waterproofing, wall to floor junctions, and membrane to joinery details.</p> <p>No inspections were carried out for the internal tanking in the shower before the tiles and wet area linings were installed.</p> <p>In addition, there is no detail on the plans for the horizontal butt joint between the wall lining in the shower and the tile skirting upstand.</p>

	<p>There is mould and gaps in the sealant at this junction. There are also signs that the sealant is peeling around the aluminium full-height window in the shower cubicle, and has been reapplied.</p>
Owner	<p>The works have been carried out in accordance with Building Code requirements and have been used for eight years with no signs of concern.</p> <p>The owner states the works were inspected by the designer and were verified by an officer of the authority.</p> <p>Some mould has been cleaned off in the shower, but there has been no sealant failure. This is maintenance and there is no mould currently visible.</p> <p>The particular shower linings identified by the authority have not been used and there are no horizontal joints in the linings.</p>
Building surveyor	<p>The shower in the ensuite is noted on the floor plan only, but there are no construction details for it in the building consent.</p> <p>The floor plan in the consent indicates an open room for the ensuite, with falls towards a floor waste in one corner. The ensuite has not been constructed in accordance with this plan.</p> <p>The tiler had provided an applicator's producer statement for the waterproofing system used on the bathroom floor, which extends 75mm up the wall.</p>
<p>My assessment</p> <p>Construction details for the shower are not included in the approved consented documents and I have not seen as-built details. There is no suggestion that the wet area is constructed from a material that is not impervious, rather the concern relates to sealing the junction between the wall lining in the shower and the tile skirting upstand and whether moisture will penetrate behind the wall lining.</p> <p>I have not been provided with any evidence, such as moisture readings or photographs, that indicate the performance requirements in clause E3 are not being met and there is no indication from those that have been on site that they have observed signs of leaking.</p> <p>The statement for the waterproofing suggests the sealant is not the primary means of protecting underlying building elements from moisture. The sealant is easily monitored and able to be replaced as part of regular maintenance.</p> <p>On that basis, I conclude the wet area / shower complies with clause E3.3.6.</p>	

12	Stairs to sunken lounge (D1)
Authority	The construction of the stairs does not comply with clause D1. The authority's inspection record of 2016 noted a handrail was required.
Owner	The owner states that the stair construction was inspected and approved by officers of the authority. In responding to a draft of the determination the owner advised that the steps have been removed "and re-built as self supporting".
Building surveyor	The surveyor recorded that two sets of steps have been constructed into the sunken lounge, and that these were not included in the building consent.
<p>My assessment</p> <p>Steps to and from the lounge, at either end, form part of the access route within the building and are required to comply with clause D1.²⁸</p> <p>At the time the application for determination was lodged, there was a step installed from the raised dining area down to the sunken lounge. I have no information about a step at the other end of the lounge to the raised platform, other than the building surveyor's note that there were "two sets" of steps into the sunken lounge.</p> <p>I have not received any other information about the tread depth or riser height and have not considered compliance of the step itself, but rather the authority's inspection record noting a handrail would be required.</p> <p>Given the limited number of risers and that this is in a dwelling, I am of the view that handrails for steps into the sunken lounge are not necessary to meet the performance criteria of clause D1.</p> <p>The owner has advised the steps have since been removed and rebuilt but provided no further details. It will therefore be for the authority to assess the step as altered (if it has not already) before making a new decision whether to issue a code compliance certificate for BC141403-1A.</p>	
13	Freestanding solid fuel appliance (C2)
Authority	The separation distances and clearances between the metal flue and the polystyrene roof panel (a combustible material) are unknown.

²⁸ Clause A2 Interpretation: **access route** a continuous route that permits people and goods to move between the apron or *construction* edge of the *building* to spaces within a *building*, and between spaces within a *building*

Owner	The information about the free-standing solid fuel appliance was provided to the authority and claims this was approved, ²⁹ and the appliance complies with the Acceptable Solution.
Building surveyor	The fireplace installed is the same model as that shown in the supporting documents submitted with the building consent application, but it was installed on the northern side of the lounge rather than the eastern end as proposed. It is no longer possible to obtain a warranty for its installation. An amendment or site note is required to confirm on the site discussions.
<p>My assessment</p> <p>The fire appliance installation details were submitted for the building consent BC141403, with the diagram showing an outer casing directly fixed to nogs, with a 25mm air gap between the casing and the flue pipe. I have not received information or evidence from the parties about whether the flue has been installed in the manner described in the installation details. However, I note that this would be reasonably easy to inspect, either through onsite observation or provision of photos, by removing the ceiling plate. I leave this with the parties to resolve as inadequate information provided to me.</p>	
Gas bottle restraints	
Authority	The length of the chain used for the gas bottle would not prevent it from excessive movement, and this may cause damage to the gas connections. An alternative means of restraint is required or the gas bottle should be relocated closer to the fixing point.
Owner	The issue with the gas chain has been remedied.
<p>My assessment</p> <p>The owner has carried out further work and claims the authority has approved this. The owner did not provide evidence of that work or approval for the purpose of this determination. The authority can assess the gas bottle restraint as altered (if it has not already) before making a new decision whether to issue a code compliance certificate for BC141403-1A.</p>	

²⁹ The owner refers to an email dated 28 March 2024.