

Determination 2008/25

Determination regarding the weathertightness of a unit in an apartment block at 10 Ruskin Street, Parnell, Auckland



South Elevation (Unit 1A is outlined)

1. The matter to be determined

- 1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004¹ (“the Act”) made under due authorisation by me, John Gardiner, Manager Determinations, Department of Building and Housing, for and on behalf of the Chief Executive of that Department. The applicant is the owner of Unit 1A, Mr W Young (“the applicant”), and the other party is Auckland City Council (“the territorial authority”). I note that the Body Corporate 197217 (“the body corporate”) represents the owners of the other 15 individual units in the building, who I consider to be related parties to this matter.

¹ The Building Act 2004 is available from the Department’s website at www.dbh.govt.nz

- 1.2 The determination arises from the territorial authority's decision to issue code compliance certificates for certain remedial work ("the remedial work") carried out to the building. The decision to issue the code compliance certificates is disputed by the applicant.
- 1.3 The matter for determination is whether the claddings as installed to the east elevation (including to the decks) of Unit 1A ("the unit"), or to other associated areas that may affect the weathertightness of the unit, ("the claddings") comply with Causes B2 "Durability" and E2 "External Moisture" of the Building Code² (First Schedule, Building Regulations 1992). By "the claddings as installed" I mean the components of the systems (such as the backing materials, the flashings, the joints and the coatings) as well as the way the components have been installed and work together.
- 1.4 I note that the applicant has also claimed (refer paragraph 4.1) that the territorial authority improperly issued the building consents for the remedial work. I have reviewed the background to these consents and, based on the information available to me, I consider that there is no evidence that the territorial authority acted inappropriately in issuing the building consent, together with the subsequent amended consent, for the remedial work. This matter is consequently not considered further within this determination.
- 1.5 I also note that there appears to be a number of disputes or claims related to the building, which are referred to within the application documentation. I consider that issues subject to litigation or arbitration are matters for the parties involved to resolve through the appropriate judicial or tribunal processes. They are matters that are outside the matters I can determine under section 177 of the Act. This determination is limited to issues related to the weathertightness of Unit 1A as outlined above.
- 1.6 In making my decisions, I have considered the submissions of the parties, the report of the independent expert commissioned by the Department to advise on this dispute ("the expert"), and the other evidence in this matter. I have evaluated the information using a framework that I describe more fully in paragraph 6.
- 1.7 In this determination, unless otherwise stated, references to sections are to sections of the Act and references to clauses are to clauses of the Building Code.

2. The building

- 2.1 The unit is in a multi-storey rectangular building situated along a south-sloping site in a moderate wind zone for the purposes of NZS 3604³. The building is four storeys high to the north and five storeys to the south street elevation, which provides the main entry to the stairwell/lift area and ramps to basement car parking areas. Construction is specifically engineered reinforced concrete and concrete block, with a mixture of tilt slabs, poured and precast concrete walls, retaining walls, columns and beams, concrete masonry party walls and concrete floor slabs. Except for fire-rated boundary and party walls, the exterior walls are timber-framed infills, with

² The Building Code is available from the Department's website at www.dbh.govt.nz.

³ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

monolithic cladding and aluminium windows. The plan and form is moderately complex, with parapets above external walls and a low-pitched membrane roof.

2.2 The building has a total of 16 residential units, with 5 units per floor for the three upper levels. Unit 1A is on the south east corner of the first floor, with vehicular ramps to the basement car park below and an upper level carpark occupying the balance of the floor. This determination relates to the east elevation of the building.

2.3 The expert has noted no evidence of timber treatment. Given the original date of construction in 1999, and the lack of other evidence, I consider that the external wall framing is likely to be untreated. I note that the more recent remedial work to the east elevation was undertaken in 2004 and 2005, and I consider that the timber used in this work is likely to be treated.

2.4 The decks

2.4.1 Each unit has cantilevered concrete decks to the east elevation, with tiles laid over fibreglass-reinforced liquid-applied membrane. Except for Unit 1A (and parts of the second floor), open metal balustrades are fixed to timber-framed deck up-stands that have metal cappings and monolithic cladding to the outer face.

2.4.2 The deck to Unit 1A extends past the recess to the living room wall, with the deck floor raised over the narrow end to allow fire egress from the bedroom window (“the deck extension”). The balustrade is concrete and steps up at the deck extension to maintain the required balustrade height. The short balustrade return at the south end of the deck extension is timber-framed and clad in monolithic cladding.

2.5 The wall claddings

2.5.1 The monolithic cladding to the south elevation is the system used in the original construction. For this elevation, it is a “Harditex” system with 7.5 mm thick fibre-cement sheets fixed through the building wrap to the framing, and finished with an applied textured coating system.

2.5.2 The monolithic cladding system to the east elevation is the subject of this determination, and was replaced during the remedial work completed in 2005 (refer paragraph 3.20). For this elevation, it is a “Monotek” system with 7.5 mm thick fibre-cement sheets fixed over 50mm x 20mm H3.2 battens fixed through the building wrap to the framing, and finished with an applied textured coating system.

2.6 The walkway planters

2.6.1 The second floor and above have internal walkways along the west boundary wall of the building, with a series of voids to provide lightwells.

2.6.2 On the second floor, built-in planters are located below the voids. The end of the southern planter sits partly above the entry foyer to Unit 1A, with the other planters above the upper level carpark.

3. Background

- 3.1 The territorial authority issued a building consent (No. HC/98/06801, “the original consent”) for the building on 10 November 1998. I note that this building consent was issued under the Building Act 1991. Construction appears to have taken place over the following year, with a code compliance certificate issued on 10 November 1999.
- 3.2 According to the applicant (refer paragraph 3.21), the building was weathertight for the next few years. However, it appears that leaking was experienced in some parts of the building, and the builder sought advice from a specialist building inspection company (“the inspection company”).
- 3.3 In a letter to the apartment owners dated 27 June 2002, the builder provided a list of items still to be attended to, which included investigating the horizontal bands, and indicated that work could not start until 18 July. According to the applicant, the investigation of the interstorey joints exposed those areas to moisture penetration.
- 3.4 In a letter to the apartment owners dated 19 August 2002, the builder stated that scaffolding had been erected as remedial work was being undertaken to the front of the building (the south elevation). The builder noted the recent publicity in regard to “leaking buildings”, and assured the owners that the extent of the problems would be ascertained and correct remediation measures would be carried out. The builder explained that the inspection company had:
- ...given us verbal instruction on how to remedy the area. They are working on and will be giving us a written report in the near future.
- We have ascertained to this point that there are no structural problems but there is some superficial damage and some waterproofing details that need attention.
- 3.5 In a letter to the builder dated 10 September 2002, a member of the body corporate committee expressed concern about the water penetration into the building and the lack of progress in the remedial work. According to the applicant, the scaffolding was removed in April 2003 with no repairs to the interstorey joints.
- 3.6 I have no evidence of the extent of any remedial work to the south elevation in 2002, as referred to by the builder in the above letter. Although the applicant has stated that this work involved cladding removal (refer paragraph 3.21), I note that a 2004 inspection (refer paragraph 3.14) reported that, in recent times, only remedial sealing and repainting work appeared to have been carried out to the south elevation.
- 3.7 It appears that the inspection company prepared a report dated December 2002 (and amended in February 2003), which I have not seen. The report apparently identified problems and set out remedial work required to the building.
- 3.8 The body corporate subsequently engaged a multi-disciplinary consultancy firm (“the consultants”), which provided a further report (which I have also not seen). On 27 March 2003, the body corporate resolved to proceed with the consultants’ recommended remedial work, with a levy to be raised from the unit owners for the required work.

- 3.9 On 4 June 2003, the body corporate wrote to the consultants to confirm that they had “been appointed to provide a comprehensive report on the building and on costings to repair, and on any urgent repairs needed.”
- 3.10 The territorial authority issued a building consent (No. BLD36030754301, the “first consent”) dated 14 October 2003 for “Remedial works to joinery/cladding for leaking problems.” I note that the first consent was issued under the Building Act 1991, and included the following condition:
- This building consent is valid for 6 months from the date of issue. If reasonable progress has not been made within 6 calendar months, your building consent is liable for cancellation.
- 3.11 On 15 December 2003, the Weathertight Homes Resolution Service (WHRS) received an application from the applicant in respect of Unit 1A.
- 3.12 In a letter to the territorial authority dated 18 February 2004, the consultants noted that the body corporate had been unable to engage a suitable contractor for the remedial work and requested that the 6 month period to start construction be extended. A subsequent letter dated 4 March 2004 from the body corporate to the territorial authority indicates that the period was extended to 15 October 2004.
- 3.13 The applicant engaged the services of a different specialist building inspection company (“the applicant’s consultant”), who inspected the building on 30 April 2004 to assess areas associated with the leaks into Unit 1A. (I assume that the report provided to the applicant should be dated 6 May 2004 rather than 2003, based on the date of the inspection). The report noted that the inspection was “a brief visual survey” and also that no moisture readings were taken. The report described various weathertightness defects, including cracks and lack of horizontal jointers in the wall cladding, and inadequate parapet flashings, membrane, drainage and sealing of penetrations in the roof cladding.
- 3.14 On 11 May 2004, a WHRS assessor visited the building and provided a report on Unit 1A dated 21 June 2004. The WHRS assessor noted that “an element of disagreement appears to be taking place with [the applicant] and a number of the other owners and the Body Corporate committee”. The WHRS assessor noted that, in recent times, only remedial sealing and repainting work appeared to have been carried out to the front elevation (refer paragraph 3.5). The WHRS assessor noted damage resulting from water entry into Unit 1A, which included moisture penetration from:
- the deck balustrade fixings above Unit 1A
 - the monolithic-clad timber-framed sections of Unit 1A’s deck balustrade
 - the roof parapets, membrane joints, skylights, penetrations and drainage outlets
 - the inter-storey junctions, which lacked flashings.
- 3.15 The applicant also engaged the services of a specialist roof installation and maintenance company (“the roof advisor”), which inspected the roof and provided a report dated 24 May 2004. The roof advisor noted the problems associated with the

roof parapets, membrane joints, skylights, penetrations and drainage outlets and recommended work required to remedy these areas.

- 3.16 I note that the third version of the Compliance Document for Clause E2 was issued in June 2004. The Acceptable Solution E2/AS1 included details for monolithic claddings of the type used in this building. At that time the implementation date for E2/AS1 was 1 February 2005, although some designers and territorial authorities began to use the information prior to that date.
- 3.17 Under cover of a letter to the territorial authority dated 22 September 2004, the consultants forwarded a set of amended drawings “which incorporate the latest E2 requirements for the re-cladding of the above building” and noted that the building contractor was scheduled to start work in October.
- 3.18 An application to amend the first consent was sought on 7 October 2004. After requesting and receiving further additional information, the territorial authority issued a new building consent (No. BLD36030754302, the “second consent”) dated 12 October 2004 for “Amend to BLD36030754301 – modification of windows and recladding exterior”. The second consent was issued under the Building Act 1991.
- 3.19 On 16 October 2004, the territorial authority requested the specification of the cladding system, which the consultants described in a facsimile dated 18 October 2004 as “James Hardie’s ‘Monotek’ over a cavity system”.
- 3.20 It appears that the work to the east elevation was subsequently completed, with a partial pre-clad inspection recorded on 5 April 2005. According to the applicant, the building work was closed in by 25 May 2005.
- 3.21 In a letter to the territorial authority dated 29 September 2005, the applicant set out his understanding of the history of the building’s remediation (refer paragraphs 3.2 and 3.5) noting that, after construction, the building was:

...in good condition until 2 years later when the [building contractor] came back and removed the cladding and left it off and caused leaking. Since then the “Body Corporate” has tried unsuccessfully to repair the building as it leaks even more.”

The applicant set out his concerns in regard to the weathertightness of the building and aspects of the remediation work and two building consents. Further correspondence continued between the applicant and the territorial authority.

- 3.22 Following an inspection on 30 October 2006, the territorial authority issued a notice to fix dated 9 November 2006 to the body corporate and the unit owners. The territorial authority stated that it was not satisfied that the building work complied with the Building Code, or with the Building Act, and recommended that a suitably qualified person be engaged to review the notice to fix and to develop a proposed scope of work for review. The “particulars of contravention or non-compliance” attached to the notice listed requirements regarding the following matters:

- 2.0 Issues relating to cladding.
- 2.1 Items not installed per the manufacturer’s specifications.
- 2.2 Items not installed in accordance with acceptable/alternative solutions approved under the consents.

- 2.3 Items not installed per accepted trade practice.
- 3.0 Changes to the building consents.
- 4.0 Other building related issues.

With respect to the first four matters, the territorial authority required that, if the proposal for addressing the non-compliant items is accepted, it would:

..then form the basis for you to make an application for an amended building consent confirming compliance with the building code.

- 3.23 Ongoing correspondence and phone calls between and about the parties continued, with the applicant making various allegations of inappropriate behaviour. With regard to the matter to be determined, the concerns relating to weathertightness appeared to be associated with continuing moisture penetration into the unit from:
- the deck area above Unit 1A
 - the remedial work to Unit 1A's deck floor and balustrade
 - the roof parapets, membrane joints, skylights, penetrations and drainage outlets
 - the inter-storey junctions
 - the planters in the internal walkway.
- 3.24 It appears that various discussions took place between the consultants, the relevant manufacturers and territorial authority, with regard to the work needed to the areas identified in the notice to fix. Agreement was also reached to separately identify those portions of the remedial work that were considered to be substantially completed.
- 3.25 The remaining work to the east elevation was apparently completed, and the territorial authority inspected the revised and reduced remedial work on 6 April 2007, and confirmed that all relevant outstanding items on that elevation were complete.
- 3.26 On 21 June 2007, the territorial authority issued code compliance certificates for the two building consents, subject to the following conditions:
- This Code Compliance Certificate covers recladding remedial work to the decks on the east elevation only, all other work is excluded.
- (I note that, although the above wording implies that the certificates are for the work to the east decks only, it is apparent from various information and correspondence from the territorial authority that the code compliance certificates were intended to cover all of the work to the east elevation.)
- 3.27 On 27 July 2007, the territorial authority received an application for a third consent to cover the remaining recladding work to the building (refer paragraph 3.29).
- 3.28 In a letter to the territorial authority dated 30 July 2007, the applicant attached photographs of leaks and defects, outlined various defects and breaches of the building code, noted that his unit was still leaking and the causes of the leaks

appeared to have been duplicated in the remedial works, and challenged the legitimacy of the code compliance certificates, stating:

...my apartment building leaks more than it did before! The Council has issued Code Compliance Certificates for non-compliance, faulty workmanship and a visibly leakier building rehabilitation. This was done even when Council's own inspectors failed the numerous mandatory inspections or lack of particularly before any wet area covering materials were applied, hence the Notice to Fix No.2595.

3.29 In a letter to the applicant dated 30 August 2007, the territorial authority noted that the property file had been reviewed and discussed and that many of the applicant's concerns had been answered in a previous letter to the body corporate. The territorial authority considered that it had acted "entirely appropriately", and made the following comments (in summary):

- The scope of the first and second consents was revised to reflect building work only for the east elevation and revised drawings were submitted to reflect this.
- No consents were issued retrospectively, with the second consent being an amendment to the earlier one.
- It is at the discretion of the territorial authority whether a formal application for amendment is necessary, and it was decided that this was not needed in regard to the items listed in the notice to fix dated 9 November 2006.
- No additional amendments have been lodged or approved, although the application for a third consent, which is to carry out the remaining recladding work, was received on 27 July 2007.
- The contractor carried out the remedial work under the supervision of the consultants, who acted on behalf of the body corporate.
- The scope of remedial work was discussed on-site and approved in principle to allow the work to continue.
- Discussions with the consultants related to each item in the notice to fix and, in certain situations, decisions were made on acceptable alternative solutions that would comply with the building code.
- No breaches or contraventions exist and the code compliance certificates have been issued accordingly.
- The consultants remain involved in the ongoing remediation of the building, and there is ongoing communication about the work involved, between the consultants, the body corporate and the territorial authority.
- There had been no notice of defects or failures to any of the other units.

The territorial authority concluded by stating:

Council continue to ensure that your building is built in accordance with the building code. Whilst carrying out our regulatory role Council have a number of tools at our disposal, namely the NZ Building Code and Act. There are provisions which allow council to accept alternative solutions should we deem the outcome to meet the performance requirements and objectives of the code.

Your building has yet to be fully completed in terms of what was proposed under [the first consent], however, the opportunity to complete the building envelope may exist under the recent application, which is currently being processed.

- 3.30 On 20 November 2007 an application for a determination was received by the Department.
- 3.31 The territorial authority subsequently issued a third building consent to the body corporate on 19 December 2007, to cover the balance of the remedial work to the building. That consent was issued under the Building Act 2004. Further correspondence ensued from the applicant to the territorial authority and to the Department, alleging that written authority from all of the owners had not been given. The third consent does not fall within the scope of this determination.

4. The submissions

- 4.1 The applicant accompanied the application with a letter to the Department dated 15 November 2007, which noted:

...my apartment is leaking for the second time because of the non-compliant rehabilitation building work that was carried out under non-compliant Building Consents and therefore Council has issued two non-compliant conditional Code Compliance Certificates for this work that is in breach of the Building Code.

- 4.2 The applicant forwarded copies of:

- a 23 page draft affidavit dated 15 November 2007
- the applicant's consultant's report dated 6 May 2004
- the roof advisor's report dated 24 May 2004
- the WHRS report dated 21 June 2004
- some of the consent documentation for the remedial works
- correspondence with the territorial authority
- correspondence with the body corporate
- correspondence with the WHRS
- the notice to fix dated 9 November 2006
- the code compliance certificates dated 21 June 2007
- various other statements, letters and information.

- 4.3 The territorial authority made a submission in the form of a letter to the Department, dated 4 January 2008, which clarified the background to the building remediation work, noting that the applicant considers that, for various reasons, the building consents for the remediation work were issued improperly (refer paragraph 1.4). The territorial authority outlined the history of the remediation work and included the following summarised points:

- The first and second consents covered remedial work to wall claddings, damaged timber framing, window and doors, decks, and the internal walkway lightwells and planters.
- A notice to fix was issued on 9 November 2006, which included the requirement for a consent amendment to be applied for (refer paragraph 3.22).
- When the above notice was issued, the body corporate intended to complete all of the consented work.
- It was subsequently decided that only remedial work to the east elevation would be completed, which included replacing damaged timber framing, recladding and re-waterproofing of the decks.
- The outstanding issues related to the east elevation (as outlined in the notice to fix) were minor, and it was therefore decided that a consent amendment was unnecessary.
- Following discussions with the consultants and the body corporate, a process was agreed on in order to regularise the work that had been completed to date.
- The consultants requested the territorial authority, in writing, to delete the work to the north and south elevations, the roof and the walkway planters.
- Following receipt and approval of the request, two code compliance certificates were issued for the work completed on the east elevation.
- A third consent for the balance of the remedial works was issued in 2007.

The territorial authority noted that:

In retrospect, a "cleaner" approach might have been for a formal amendment to be issued that deleted all uncompleted work, with the subsequent issue of a CCC that required no condition.

4.4 The territorial authority forwarded:

- the consent drawings and documentation for the remedial works
- correspondence with the applicant
- correspondence with the body corporate and the consultants
- the notice to fix dated 9 November 2006
- the code compliance certificates dated 21 June 2007
- various other statements, letters and information.

4.5 Copies of the submissions and other evidence were provided to each of the parties. Neither party made any further submissions in response to the submission of the other party.

4.6 The draft determination was forwarded to the parties for comment on 5 March 2008. The territorial authority accepted the draft determination on 28 March 2008.

4.7 In a letter to the Department dated 14 March 2008, the applicant generally accepted the draft determination and expanded on various points included in the background

to the matter as outlined in paragraph 3. I have considered these comments and have amended the draft as I consider appropriate. The applicant repeated his assertions that the owners of the units had not consented to various changes to the first consent and the second consent for remedial works, concluding:

This has also allegedly allowed the same small group of individuals involved, who without the owners written consent and under the urgency that this situation causes, attempt to legalise the raising of more large capital streams through levies and legal fees from unwitting owners to readdress their resulting ineffective rehabilitation scheme, the contraventions, the resulting leaks and the alleged negligence that has resulted from the granting of 2 Conditional Code Compliance Certificates, the subject of this determination.

4.8 In a letter to the Department dated 31 March 2008, the body corporate noted that copies of the draft determination had been forwarded to the other unit owners and to the consultants undertaking the remediation programme and stated:

The Body Corporate Committee has discussed the findings and we confirm that [the consultants] and the current contractor will be instructed to undertake further investigations in relation to the areas of concern identified in your report. We also confirm that the Body Corporate's intention is to carry out any remedial work that may be necessary to remedy any defects that are identified and confirmed.

5. The expert's report

5.1 As discussed in paragraph 1.6, I engaged an independent expert to provide an assessment of the condition of those building elements subject to the determination. The expert is a registered architect specialising in building surveying.

5.2 The expert inspected Unit 1A and associated areas of the building on 14 December 2007 and 24 January 2008, and furnished a report that was completed on 11 February 2008. The expert noted that there were also areas of concern to the applicant which fell outside the scope of his report, including:

- issues affecting other units and common property
- issues relating to the issuing of the building consents
- issues not related to compliance with the building code.

5.3 The expert noted that the remedial work to the east elevation appeared to be generally in accordance with the consent drawings, except that there were a number of "non-standard conditions" which had not been detailed, including:

- the overflows through the deck up-stands
- the raised section of Unit 1A's deck
- the short timber-framed section of Unit 1A's balustrade.

5.4 The expert noted that the east walls had been re-clad with Monotek over a drained cavity which, apart from items identified in paragraph 5.8.3, generally appeared to accord with the details in E2/AS1 and with the manufacturer's details, with sealant vertical joints and "h" mouldings at horizontal joints. The expert also noted that, as the wall heights were over 2 storeys high, the cladding was beyond the scope of E2/AS1 and the territorial authority would have needed to assess the wall details as

alternative solutions. The cladding was generally “straight and fair”, with the coating “uniform, well adhered and free from discolouration or other signs of aging” and the joint sealant flexible and well-adhered, although several details appeared to be “poorly formed”.

5.5 The expert noted that the remedial work to the east concrete decks included the removal of the original tiles, the application of a fibreglass mesh-reinforced liquid-applied membrane, new tiles, cappings to deck up-stands and new side fixings to the metal balustrades. For the main concrete section of Unit 1A’s deck, cladding clearances, cladding base details and the deck slope appeared adequate. The deck membrane was taken up the wall to form an up-stand of about 90mm at the main deck area.

5.6 The expert noted that the windows were face-fixed, with metal head flashings and no sill or jamb flashings. The deck membrane up-stand extended behind the sill flange of the deck doors, with no separate sill flashing. Door and window installation appeared satisfactory, although the presence of air seals, flexible flashing tape etc (which should have been inspected at the pre-clad stage) could not be verified.

5.7 Moisture levels

5.7.1 The expert took non-invasive moisture readings and inspected the interior of Unit 1A, noting some peeling paint and nail popping on the interior partition between the living room and the carpark area, with marks on the skirting. As moisture levels in the framing were low, it was not possible to determine whether the damage was the result of an ongoing intermittent issue or dated from before the remedial works.

5.7.2 The expert also noted carpet stains, dampness and corroding carpet fixings at the east wall of the east bedroom (“Bedroom 2”), on the other side from the deck extension. Non-invasive readings indicated elevated moisture levels along the latter wall.

5.7.3 The expert took 5 invasive moisture readings from the inside (using long probes to reach the outer side of the framing), and recorded the following elevated readings in the bottom plate:

- 33% at the northeast corner of Bedroom 2
- 20% at the north end of the east window of Bedroom 2

The other readings varied from 11% to 14%. Moisture levels that vary significantly from the norm after cladding is in place generally indicate that external moisture is entering the structure. The expert noted that the inspection was in mid-summer, and was of the opinion that higher moisture levels would be likely during wetter times of the year.

5.7.4 The expert considered that the moisture apparent in the east bedroom wall could result from one possible defect, or a combination of possible defects, in the following associated areas:

- Defects in the raised section of deck on the other side of the wall.
- Inadequate weatherproofing of the deck upstand of Unit 2A above.

- Defects in the roof parapets above.
- Defects in the new cladding system above.

5.7.5 The expert considered that further investigation (beyond the scope of his report) is necessary to confirm the cause(s) of the moisture penetration into the east wall of Bedroom 2.

5.8 The deck areas (including walls)

5.8.1 The expert noted that a narrow section of Unit 1A's deck extended past the bedroom window, with the deck floor raised by a step at the northeast corner of Bedroom 2. (I note that this rise appears to place the bottom plate of the bedroom east wall below the level of the tiles on the deck extension).

5.8.2 The concrete balustrade is texture-coated, with the coating carried down to the tiles surface. The balustrade steps up to correspond with the raised floor, with a short section of timber-framed balustrade at the return end. Saddle flashings are called for in the drawings, and should have been inspected as part of pre-cladding inspections.

5.8.3 Commenting specifically on the deck area of Unit 1A and the associated deck elements of Unit 2A above, the expert observed that:

- the glass fibres in the deck membrane are clearly visible in the upstands
- the base of the wall cladding is in contact with the tiled riser of the deck step
- the slope to the raised deck extension is inadequate
- the downpipe penetrating the main concrete deck lacks a flexible collar flashing (reliant on sealant only) and water is able to penetrate into the garage area below
- the downpipe penetrating Unit 2A's deck above appears to be similarly detailed, as water can penetrate onto Unit 1A's deck area
- a channel to provide overflow drainage has been cut into the timber-framed deck upstand to Unit 2A's deck above and appears to be inadequately weatherproofed, with no flashings or drip edges and relying solely on the liquid-applied membrane for weathertightness
- some cladding areas are painted a dark colour, which may cause excessive movement and stress (particularly at the deck up-stands).

5.8.4 The expert also noted that the deck downpipes and overflow channel details appeared to be repeated elsewhere on the east decks of the building.

5.9 The roof

5.9.1 The expert noted the following issues in regard to the roof:

- Some repairs are apparent, using liquid-applied membrane over butyl laps.
- A number of defects are apparent, including membrane joints, gutters, parapet cappings.

- The roof repairs undertaken during the 2005 remedial work appeared ineffective, and moisture may be entering the walls of the building via the defects.

5.9.2 The expert noted that the remedial work to the roof area is included in the third consent, and is not part of the work covered by the code compliance certificates that were issued in respect of the first and second consents.

5.10 A copy of the expert's report was provided to each of the parties.

5.11 In a letter to the Department, dated 20 February 2008, the applicant generally concurred with the expert's report.

6. Evaluation framework: east elevation

6.1 In evaluating the design of a building and its construction, it is useful to make some comparisons with the relevant Acceptable Solutions⁴, which will assist in determining whether the features of the building work are code compliant. However, in making this comparison, the following general observations are valid:

- Some Acceptable Solutions cover the worst case, so that they may be modified in less extreme cases and the resulting alternative solution will still comply with the Building Code.
- Usually, when there is non-compliance with one provision of an Acceptable Solution, it will be necessary to add some other provision to compensate for that in order to comply with the Building Code.

6.2 The approach in determining whether building work is weathertight and durable and is likely to remain so, is to apply the principles of weathertightness. This involves the examination of the design of the building, the surrounding environment, the design features that are intended to prevent the penetration of water, the cladding system, its installation, and the moisture tolerance of the external framing. The Department and its antecedent, the Building Industry Authority, have also described weathertightness risk factors in previous determinations⁵ (for example, Determination 2004/1) relating to cladding and these factors are also used in the evaluation process.

6.3 The consequences of a building demonstrating a high weathertightness risk is that building solutions that comply with the Building Code will need to be more robust. Conversely, where there is a low weathertightness risk, the solutions may be less robust. In any event, there is a need for both the design of the cladding system and its installation to be carefully carried out.

6.4 Weathertightness risk

6.4.1 In relation to these characteristics I find that the east elevation of this building:

- is built in a moderate wind zone

⁴ An Acceptable Solution is a prescriptive design solution approved by the Department that provides one way (but not the only way) of complying with the Building Code. The Acceptable Solutions are available from The Department's Website at www.dbh.govt.nz.

⁵ Copies of all determinations issued by the Department can be obtained from the Department's website.

- is a maximum of five storeys high
- is fairly complex in plan and in form
- has cantilevered concrete decks, with concrete and timber-framed balustrades to Unit 1A and timber-framed deck up-stands to other decks
- has monolithic cladding which is fixed over a drained cavity
- has parapets to the roof
- has external wall framing that is untreated, so providing no protection against decay if the framing absorbs and retains moisture.

6.4.2 The east elevation has been evaluated using the E2/AS1 risk matrix. The risk matrix allows the summing of a range of design and location factors applying to a specific building design. The resulting level of risk can range from 'low' to 'very high'. The risk level is applied to determine what claddings can be used on a building in order to comply with E2/AS1. Higher levels of risk will require more rigorous weatherproof detailing; for example, a high risk level is likely to require a particular type of cladding to be installed over a drained cavity.

6.4.3 When evaluated using the E2/AS1 risk matrix, the weathertightness features outlined in paragraph 6.4.1 show that the east elevation of the building demonstrates a high weathertightness risk rating. I note that the monolithic cladding to this elevation incorporates a drained and ventilated cavity as required by E2/AS1.

6.5 Weathertightness performance: east elevation

6.5.1 Generally the remedial work associated with Unit 1A appears to have been undertaken in accordance with good trade practice and to the cladding manufacturer's instructions. However, taking account of the expert's report, I conclude that investigation and remedial work is necessary in respect of the following:

- the up-stands to the deck membrane
- the junction of the raised deck section with the wall, including at the step riser
- the inadequate slope to the raised deck extension
- the inadequately flashed downpipe penetrations through the concrete decks to Unit 1A and through the deck above
- the inadequately flashed overflow drainage channel to the deck above
- the dark colour of the deck up-stands.

6.5.2 I note the expert's comment in paragraph 5.8.4 with regard to the downpipe penetrations and overflow channels to other deck areas on the east elevation, and draw these matters to the attention of the consultants and the territorial authority for further investigation.

6.5.3 I also note the expert's comments in paragraph 5.9 on the condition of the roof to the building, and accept the possibility that this could be contributing to the moisture

penetration into the east wall of Unit 1A. However, I note that remedial work to the roof is included in the third consent.

6.6 Probable cause(s) of moisture penetration

6.6.1 I note the expert's comment in paragraph 5.7.4, and accept that further investigation is required to determine whether the moisture penetration into the east wall of Unit 1A has resulted from defects in one or more of the following elements:

- the raised section of deck extension
- the deck upstand of Unit 2A above
- the roof parapets above
- the new cladding system above.

6.6.2 Of the possibilities outlined above, I consider that the elevated moisture levels measured in the bottom plate of the east wall of Bedroom 2 is most likely to relate to the deck extension, where the inadequately sloped deck floor is raised above the level of the bottom plate. This configuration, in combination with a membrane installation of questionable quality and lack of cladding clearance at the riser (as identified in paragraph 5.8.3) produces a risk that moisture may penetrate through any weakness in the membrane and/or the wall junction, then accumulate in the lower level bottom plate of the framing without any means of dissipating.

6.6.3 I consider that this raised deck area requires particular investigation, which should include invasive moisture testing, with removal of tiles as necessary, to determine the weathertightness of the underlying construction.

7. Discussion

7.1 I consider the expert's report establishes that the current performance of the remedial work to the east elevation of Unit 1A is not adequate because it is allowing water penetration into the unit at present. Consequently, I am satisfied that the east elevation of the building does not comply with Clause E2 of the Building Code.

7.2 In addition, the building is also required to comply with the durability requirements of Clause B2. Clause B2 requires that a building continues to satisfy all the objectives of the Building Code throughout its effective life, and that includes the requirement for the house to remain weathertight. Because the deck and cladding faults on the east elevation are likely to allow the ingress of moisture in the future, the east elevation of the building does not comply with the durability requirements of Clause B2.

7.3 Because the faults identified with the remedial work occur in discrete areas, I am able to conclude that satisfactory investigation and rectification of the items outlined in paragraphs 6.5.1 and 6.6 will result in the building being brought into compliance with Clauses B2 and E2.

7.4 Normally the presence of these faults would be grounds for me to consider reversing the decision of the territorial authority to issue the code compliance certificates for

the first two consents. I note that both those consents were issued under the Building Act 1991. However in this case no useful purpose would be served by my taking that action. There is still an “open” consent in place for the remediation of the building and building work is still being carried on. In these circumstances I consider the work to make these faults good could be incorporated as an amendment to the current consent as described in paragraph 8.

- 7.5 Effective maintenance of claddings is important to ensure ongoing compliance with Clauses B2 and E2 of the Building Code and is the responsibility of the building owner. The Department has previously described these maintenance requirements, including examples where the external wall framing of the building may not be treated to a level that will resist the onset of decay if it gets wet (for example, Determination 2007/60).

8. What is to be done now?

- 8.1 I note that this building is the subject of ongoing remedial work under the supervision of the consultants, part of which is work that was originally covered by the first consent. The current remedial work is covered by the third consent, and is under the supervision of the same consultants. The ultimate aim must be to bring the building as a whole into compliance with the building code, and I therefore suggest that, with the agreement of the parties, the defects and recommendations identified in paragraphs 6.5.1 and 6.6 could be incorporated in the current or remaining remedial work. I note that the body corporate has now confirmed that further investigation will be undertaken, with remedial work carried out as necessary (refer paragraph 4.8).
- 8.2 The territorial authority should require the owners to bring the east elevation into compliance with the Building Code, by identifying the defects listed in paragraphs 6.5.1 and 6.6 and referring to any further defects that might be discovered in the course of that work, but not specifying how those defects are to be fixed. It is not for me to decide directly how the defects are to be remedied and the elevation brought to compliance with the Building Code. That is a matter for the body corporate (with its consultants) to propose and for the territorial authority to accept or reject.

9. The decision

- 9.1 In accordance with section 188 of the Act, I determine that the remedial work to the east elevation of this building does not comply with Clauses E2 and B2 of the Building Code.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 22 April 2008.

John Gardiner
Manager Determinations