



Determination 2010/126

The refusal to issue a code compliance certificate for a deck to a house at 29 Glenalmond Road, Mount Eden, Auckland



1. The matters 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 (“the Department”), for and on behalf of the Chief Executive of that Department. The applicants are the owners, S and S Kirk (“the applicants”), and the other party is the Auckland City Council (“the authority”)², carrying out its duties as a territorial authority or building consent authority.
- 1.2 This determination arises from the decisions of the authority to refuse to issue a code compliance certificate and to issue a notice to fix for four year old alterations to a house because it was not satisfied that elements of the building work complied with certain clauses³ of the Building Code (First Schedule, Building Regulations 1992) and that the work was not carried out in accord with the Building Consent. The

¹ The Building Act, Building Code, compliance documents, past determinations and guidance documents issued by the Department are all available at www.dbh.govt.nz or by contacting the Department on 0800 242 243.

² After the application was made, and before the determination was completed, Auckland City Council was transitioned into the new Auckland Council. The term authority is used for both.

³ 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.

authority's concerns about the compliance of the alterations relate to the weathertightness of the tiled deck addition to the house (see paragraph 3.4).

- 1.3 The matter to be determined⁴ is therefore whether the authority was correct in its decisions to refuse to issue a code compliance certificate and to issue a notice to fix for the building work.
- 1.4 In deciding this matter, I must consider whether the tiled deck as installed on the building ("the deck floor") complies with Clause E2 External Moisture and Clause B2 Durability of the Building Code. The deck floor includes the components of the system (such as the membrane, the fibre-cement substrate and the deck tiles) as well as the way the components have been installed and work together.
- 1.5 In making my decision, I have considered the submissions of the parties, the report of the expert commissioned by the Department to advise on this dispute ("the expert") and the other evidence in this matter. I have evaluated this information using a framework that I describe more fully in paragraph 5.

2. The building work

- 2.1 The building work consists of additions and alterations to an existing house; being the extension of an existing basement which includes part of the garage and a study, and the construction of a deck over the extension.

2.2 The deck

- 2.2.1 The 18m² deck is constructed as part of the garage extension below. The deck area contains two bay windows and has a tiled floor over a membrane on a 20mm compressed fibre-cement substrate. There is weatherboard-clad balustrade to three sides of the deck. The existing wall boards were not cut when the balustrade was attached to the house wall therefore no saddle flashings were installed.
- 2.2.2 The deck does not have a drain along the outer edge as consented, but relies on the slope of the deck to direct water away from the house and to the outlets. To achieve this, the deck floor falls from the house to the balustrade and from the centre of the balustrade outwards to two drainage outlets which are piped through the walls to discharge into the surfacewater system. The deck also has an overflow outlet at one end.

2.3 The deck membrane system

- 2.3.1 The deck membrane is a 1.0mm thick sheet waterproofing membrane for use under ceramic or stone tile finishes on external decks and balconies. This is laid over a 20mm compressed fibre-cement substrate.
- 2.3.2 The membrane system has been appraised by BRANZ⁵. The appraisal states that the membrane will comply with Clauses E2 and B2, providing the system is 'designed, used, installed and maintained' according to the conditions described in the certificate. These conditions include:

⁴ Under sections 177(1)(b), 177(2)(d) and 177(2)(f) of the Act

⁵ BRANZ Appraisal Certificate No. 449 (2010)

- buildings to be within the scope of E2/AS1, with timber framed decks
- deck falls to be a minimum of 1:60 (1°)
- substrates to be plywood treated to H3.2 (CCA treated) or compressed fibre-cement sheets
- membrane to be installed by trained applicators approved by the manufacturer, in accordance with the manufacturer's technical literature.

2.3.3 The membrane installer has provided an 'applicator workmanship warranty' dated 5 December 2006. The warranty covers materials and workmanship for periods of five years and fifteen years respectively.

3. Background

3.1 The authority issued the original building consent for the alterations (No. B/2004/15516) in November 2004. I have not seen a copy of the building consent, but the approval stamp on consent drawings shows 29 October 2004 therefore I assume the consent to have been issued under the 1991 Building Act.

3.2 The membrane installer's producer statement indicates that construction was undertaken in December 2006.

3.3 On 23 June 2010 the authority carried out a final inspection of the work. The inspection record identified various defects and variations from the consent.

3.4 The notice to fix

3.4.1 The authority subsequently issued a notice to fix to the applicants on 22 July 2010. This stated that the authority was not satisfied that the building work complied with the Building Code in 'a number of respects'. Council was also concerned the work had not been carried out in accordance with the consented details.

3.4.2 The authority attached a 'photo file' of the decks to the notice to fix, which cited non-compliance with various Building Code clauses (including B2 and E2). Included in the details of contraventions were the following items relating to the deck:

- 2.0 a) Raised removable surfaces of tiles or timber shall be provided over the underlying deck surfaces. Access to the underlying surface must be provided for cleaning and maintenance. This requirement has not been met.
- 2.0 b) All flashings shall be installed in such a way as to direct water away from the building and prevent ingress of moisture. Council is not satisfied that the saddle flashings at the junction of the balustrade and the dwelling have been installed correctly or at all.
- 2.0 c) Roofs and exterior walls must prevent the penetration of water that could cause undue dampness, damage to building elements or both.
- 2.0 f) There shall be a 35mm gap between the bottom of the wall cladding system and the roof cladding or finished deck material.

3.4.3 The applicant requested a determination regarding the items a, b and f however I include item c in its relationship to the others. Other items in the notice have been resolved by the parties and are not a part of this determination.

3.4.4 The Department received an application for a determination on 14 September 2010.

4. The submissions

4.1 The applicants made a submission in the form of an attachment to the application, which set out the background to the dispute and described the deck.

4.2 The applicants forwarded copies of:

- drawings of the alterations
- the membrane installer's producer statement and warranty
- the authority's letter and notice to fix dated 22 July 2010
- additional photos taken during and after construction.

4.3 A draft determination was issued to the parties for comment on 17 November 2010. The applicant accepted the draft without comment.

4.4 The authority did not accept the draft and in a submission, dated 25 November 2010, raised matters that it had traversed in previous determinations regarding tiling of membrane decks. The submission concluded by saying that 'any damage to the membrane for whatever reason will go undetected, until damage to other building elements, often structural element, becomes obvious' and that 'access to the underlying weathertight surface, for cleaning and maintenance', must be provided to satisfy the requirements of the building code.

4.5 I acknowledge the authority's position but I do not accept that it is not possible to install a tiled-membrane deck that is fully code-compliant. In my view the risks associated with such decks can be managed through proper design, detailing, construction practices, inspection, and maintenance (refer paragraph 6.3); and taking full cognisance of manufacturers' installation instructions with respect to the substrate, the membrane, and the tiles.

5. The establishment of code compliance

5.1 In order for me to form a view as to code compliance of the deck floor as installed, I need to establish what evidence is available. In the case of the deck membrane system and installation, the evidence consists of:

- the BRANZ Appraisal Certificate No. 449 (2005) for the membrane system
- the membrane applicator's producer statement (PSN 9461) and warranty
- the applicants photos showing installation in progress, the upturn around the edges of the deck and the completed deck
- the report of an independent expert.

- 5.2 I accept that the BRANZ appraisal and the other standards provide independent expert opinion on the qualities and expected performance of the membrane system, with the applicator's information confirming the particular membrane used and the installation by an approved applicator of the membrane.
- 5.3 Taking into account this evidence, and in the absence of any evidence to the contrary, I am satisfied that the products used in the tiled deck are adequate for the purposes used in this building. The compliance of this particular deck will therefore be dependent on the installation of the products, and the deck's design and construction.

5.4 The expert's report

- 5.4.1 As mentioned in paragraph 1.5, I engaged an independent expert to assist me. The expert is a member of the New Zealand Institute of Building Surveyors. The expert visited the house on 27 October 2010 and forwarded a brief report on 28 October 2010.
- 5.4.2 The expert took non-invasive moisture readings in associated internal walls and found no elevated readings. He also removed downlights from the ground floor space below the deck to take invasive moisture readings into the deck framing and recorded two moisture levels of 10 and 12%.
- 5.4.3 The expert found the deck slopes vary from 0.2 degrees to 1.3 degrees, less than the 1 in 60 (1 degree) required in the BRANZ appraisal. Therefore to determine whether the deck was code-compliant water was sprayed on the house and deck. It immediately dispersed to the northern edge of the deck then fell to the outlets, the surface dried and there was no ponding.
- 5.4.4 The expert advised the overall build quality is good and there are three movement joints in the tiles along the deck. However the weatherboard clearances to the deck were minimal and there were some signs of the grout between the tile cracking.
- 5.4.5 The expert also advised there were no signs of any tile movement which indicates that after four years the substrate fixing has demonstrated its adequacy.

6. Discussion

6.1 General

- 6.1.1 The tiles on the deck are about 300mm square. With tile of this size movement joints are required at 3 metre intervals. These have been provided along the deck.
- 6.1.2 I make the following observations regarding compliance with details in the appraisal:

BRANZ Appraisal Certificate No. 449 (2010)	The deck in this house
Buildings to be within the scope of E2/AS1, with timber framed decks	The house is within the scope of E2/AS1 at time of construction, and the deck is timber framed.
Decks to be a maximum area of 40m ²	The deck is under the limit at about 18m ² .

Deck falls to be a minimum of 1:60 (1°)	The deck fall varies from 0.2° to 1.3° with an average slope of about 0.75 degrees. Water is shed with out ponding.
Membrane to be protected from UV exposure and damage with compatible adhesive-fixed tiles	Tiles were laid over the membrane with appropriate movement joints.
Membrane to be laid over treated plywood substrates or fibre-cement compressed sheet	The compressed fibre-cement board substrate was installed.
Membrane to be installed by trained approved applicators	The applicator is approved by the New Zealand agent of the membrane manufacturer.
When completed, the membrane will be impervious to water and give a weathertight deck	There are no signs of moisture under the deck. Moisture levels below the deck are low at about 9 to 12 %, indicating the deck is currently weathertight.
When completed, the membrane has a design life of 15 to 25 years.	The manufacturer warrants the membrane product for a period of 15 years.
The membrane will not require maintenance provided significant substrate movement does not occur and any damage to tiles or grout is immediately repaired.	There is minor maintenance work due where there are signs of tile joints that are deteriorating. Refer to paragraph 6.3.

6.1.3 In addition to the above I note the deck membrane has been in place since December 2006.

6.1.4 Taking into account the above, I am satisfied that the deck membrane has generally been installed to the membrane manufacturer's instructions and in accordance with good trade practice. However, taking account of the expert's annotated photographs, I conclude that the following remedial work is necessary to the tiled surface:

- the clearance between the bottom edge of the weatherboards and the tiles should be increased to 35mm.
- repair or replacement of the tile grout showing signs of cracking.

6.1.5 Notwithstanding that the deck floor has limited fall, thus potentially inhibiting drainage of rainwater from the deck surface, I note certain factors that contribute to, or demonstrate the water shedding capacity of the deck in this case:

- The deck floor is generally installed according to good trade practice and in accordance with the manufacturer's instructions, with adequate provision of drainage outlets from the deck.
- The deck surface is sheltered by walls and eaves and has a relatively small area of 18m².
- After four years, there is no evidence of moisture penetration through the deck.

These factors assist the tiled deck floor to comply with the weathertightness provisions of the Building Code.

6.2 Conclusion

6.2.1 I consider the expert's photographs and the other evidence have established that the current performance of the deck is adequate because it is preventing moisture penetration at present. Consequently, I am satisfied that the deck complies with Clause E2 of the Building Code.

- 6.2.2 However, the deck is 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 deck to remain weathertight. Because the tiling defects identified could result in ingress of moisture in the future, the deck does not comply with the durability requirements of Clause B2.
- 6.2.3 Because the faults identified with the tiles occur in discrete areas, I am able to conclude that satisfactory rectification of the items outlined in paragraph 6.1.4 will result in the deck being brought into compliance with Clauses B2 and E2 of the Building Code.
- 6.2.4 It is emphasised that each determination is conducted on a case-by-case basis. Accordingly, the fact that a particular tiled membrane system has been established as being code-compliant in relation to a particular building does not necessarily mean that the same system will be code-compliant in another situation.

6.3 Maintenance

- 6.3.1 Effective maintenance of the tiled finish to this deck will be particularly important to ensure ongoing compliance with Clauses B2 and E2 of the Building Code. This is the responsibility of the building owners. Maintenance will include regular inspection of the tiled surfaces and grout joints, with prompt repair or replacement if any signs of deterioration are noted. Taking account of the limited fall to this deck, attention should also be paid to any settlement of the deck.

7. The decision

- 7.1 In accordance with section 188 of the Building Act 2004, I hereby determine that:
- the tiled deck complies with Clause E2 of the Building Code
 - the tiled deck does not comply with Clause B2 of the Building Code, insofar as it applies to Clause E2, and accordingly I confirm the authority's decision to refuse to issue a code compliance certificate
 - the authority is to modify the notice to fix, dated 22 July 2009, to take account of the findings of this determination.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 15 December 2010.

John Gardiner
Manager Determinations