

Determination 2007/96

Determination regarding a code compliance certificate for house alterations at 13A Alexis Avenue, Mt Albert, Auckland



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 (“the Department”), for and on behalf of the Chief Executive of that Department. The applicant is the supplier of the deck membrane, GBS Group Ltd (“the membrane supplier”) acting on behalf of the owner and developer of the house alterations, TRI Developments Ltd (“the owner/developer”), and the other party is Auckland City Council (“the territorial authority”).

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

1.2 The matter for determination is the territorial authority's decision to decline to issue an amendment to the building consent for the substitution of a deck membrane to new alterations and additions to a house, resulting in a decision to decline to issue a code compliance certificate for the building work. The refusal arose because the product specified in the building consent drawings has not been installed, and the territorial authority considers that it has insufficient information to assess the substituted product and can therefore not be satisfied that the deck membrane complies with clauses E2 and B2 of the Building Code² (First Schedule, Building Regulations 1992).

1.3 The matters for determination are:

1.3.1 Matter 1: Compliance of the membrane product

Whether there is sufficient evidence to establish that the membrane, as an alternative solution to E2/AS1, is able to comply with the Building Code if installed in accordance with the manufacturer's instructions.

1.3.2 Matter 2: Compliance of the deck membrane as installed

Whether the deck membrane as installed on the house complies with clause E2 "External Moisture" and clause B2 "Durability" of the Building Code. By "the deck membrane as installed" I mean the components of the deck (including the underlying substrate, the membrane, the membrane joints and the upper tiled surface) as well as the way the components have been installed and work together.

1.4 I note that I have received no evidence relating to a dispute about any other matters with regard to the alteration work to this house, and this determination is therefore limited to the deck membrane.

1.5 In making my decision, 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 this information using a framework that I describe more fully in paragraph 8.1.

1.6 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 work

2.1 The deck

2.1.1 The deck is part of recent additions and alterations to a detached house situated on a flat site. The original single storey timber-framed house was built around 1930, and a large 2-storey wing has been added to the southwest. The new extension is conventional light timber frame construction, with a concrete slab and foundations, weatherboard cladding, and aluminium windows.

2.1.2 The deck has weatherboard clad balustrades and a tiled floor; and extends to the northwest from the first floor master bedroom. It is situated above the laundry area

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

of the garage below, wrapping around the west corner of the extension to connect with timber steps against the southwest wall. The northwest side of the deck oversails the wall below by about 250mm, while the southwest balustrades are in line with the lower walls. The balustrades are clad in timber bevel-backed weatherboards, with metal cappings and corner soakers.

- 2.1.3 The expert observed no evidence of timber treatment and I have received no other evidence as to timber treatment. The drawings call for the wall framing to be H1 and the deck joists to be H3; and the territorial authority's pre-line inspection record notes the "Timber treatment" as satisfactory (refer paragraph 3.2). Given the territorial authority's inspections and the date of construction of alterations in 2006, I accept that the deck framing of this house is likely to be treated to a level that will provide resistance to fungal decay.

2.2 The deck membrane

- 2.2.1 The deck membrane is a 'torch on' membrane called "Tegola Canadese". It is a multi-layer modified waterproofing bituminous membrane that is adhered to the substrate and at lapped joints using the application of heat.
- 2.2.2 The membrane is manufactured by General Membrane S.p.A ("the manufacturer"), and was imported and distributed by Perimac NZ Ltd ("the original importer" – now in liquidation). The product is now distributed by the membrane supplier.
- 2.2.3 The manufacture of the membrane has been assessed by SGS United Kingdom Ltd, and certified as meeting the requirements of Directive 89/106/EEC³ for product compliance with EN 13707⁴. The manufacturer provides detailed instructions for handling and fixing the membrane, which includes requirements for the installation to be undertaken by a "reputable specialised waterproofing contractor", with the application by "trained, competent and approved installers".
- 2.2.4 I note that SGS United Kingdom Ltd is an established and independent testing organisation of building products and that SGS has a presence in New Zealand.
- 2.2.5 The original importer provided a "Tegola Torch On Producer Statement" dated 1 March 2006 for the supply of the membrane, which confirmed that if the product was installed in accordance with the manufacturer's specifications it will meet the relevant requirements of the New Zealand Building Code.
- 2.2.6 The owner/developer has provided a "Producer Statement" dated 10 January 2007 for the membrane application, which notes:
- The product that has been used is Tegola Torch on product and has been applied by [the owner/developer] Ltd to manufacturer's specifications, which therefore meet the requirements of the New Zealand building code.
- 2.2.7 I note that the membrane applicator identified in the producer statement is also the owner/developer of the building work (refer also paragraph 7.6.3).

³ European Commission specified requirements for construction products

⁴ European Standard EN 13707:2004 Flexible sheets for waterproofing – Definitions and Characteristics

3. Background

- 3.1 The territorial authority issued a building consent (No 20031657401) to the owner/developer on 14 January 2004, followed by an amended consent (No 20031657402) on 30 May 2006, with construction carried out during 2006 based on the amended consent drawings. I note that the specification calls for the deck membrane to be “Dunlop Butynol or approved similar”.
- 3.2 The territorial authority carried out various inspections during construction including a pre-line inspection on 9 June 2006. The pre-line inspection checklist showed passes for the timber treatment, deck drainage and the deck membrane. (I note that the membrane installed to the deck was the torch on membrane, although there is no mention of the substitution from the consented documents in the territorial authority’s inspection records. No application for an amendment to the building consent was applied for at the time.)
- 3.3 The territorial authority undertook a final inspection on 4 December 2006. Following the completion of outstanding items, a re-check inspection was carried out on 8 December 2006, which noted that all of the construction work was satisfactory. It appears that a code compliance certificate was applied for on 18 December 2006.
- 3.4 On 10 January 2007, the territorial authority wrote to the owner/developer identifying documentation to be supplied. One of the two items was:
- Installers certificate for deck membrane (butynol)
- Following phone discussions, the owner/developer supplied the territorial authority with an amended plan showing the change in the type of membrane and a “Producer Statement” dated 10 January 2007 for the membrane application as outlined in paragraph 2.2.6. It appears that this information was intended to form an application for an amendment to the building consent.
- 3.5 It appears that further information about the deck membrane was required as, on 2 February 2007, the owner/developer wrote to the territorial authority noting that they were awaiting specifications from the membrane manufacturer and these would be forwarded on receipt. The owner/developer also noted:
- We are still surprised that you require all this information, as we have used the exact product on 3 previous houses without any problems or issues with the Council.
- 3.6 On 5 February 2007, the membrane supplier supplied the owner/developer with a copy of the manufacturer’s instructions.
- 3.7 On 9 February 2007, the territorial wrote to the original importer seeking further information on the membrane. The territorial authority explained that the compliance documents showed one means of complying with the building code and, if alternative methods were proposed, far more information may be required in order for it to be satisfied, on reasonable grounds, that the product will meet the performance requirements of the building code. The territorial authority therefore required evidence about the membrane in the form of one or a combination of the following:

- A current certificate of accreditation.
- An independent expert opinion of code compliance.
- A current certificate from an accredited certification body.

The territorial authority also required the following information on the membrane:

- Technical literature and installation details.
- Site installation quality assurance aspects.
- Limitations/conditions of use.

3.8 On 27 March 2007, the membrane supplier responded to the territorial authority, explaining that it now handled the distribution of Tegola Canadese products. The membrane supplier noted that it had approached the Department with a view of gaining certification of the membrane, and explained that the latter process would take too long to assist it with the issuing of a code compliance certificate for this particular project. The membrane supplier enclosed product information from the manufacturer, and requested the territorial authority, in the interim, to re-assess and approve the use of the deck membrane.

3.9 In an email to the membrane supplier dated 5 April 2007, the territorial authority said:

[It was] looking for confirmation by way of a third party [that] it complies with the NZ Building Code.

Council cant be satisfied it complies with the information provided, and are unable to enter it onto [the territorial authority's] register of products [it] will accept, even as a one off.

3.10 In a letter dated 5 April 2007, the owner/developer explained that the property sale was being delayed, and asked the territorial authority to reconsider the situation and to assess the building work individually, based on the following factors:

- A code compliance certificate was initially applied for on 18 December 2006.
- The pre-line inspection on 9 June 2006 approved the membrane installation.
- No issues were raised about the membrane during the final inspection.
- The product has been used on other projects, and passed without question.
- The membrane is backed by an international guarantee, and is equivalent to another membrane that is currently approved by BRANZ.

3.11 On 17 April 2007, the Department received an application for a determination. The Department sought further clarification in relation to the applicant and the matter to be determined, which was received on 26 April 2007.

4. The submissions

4.1 Within the application, the owner/developer noted that the matter for determination was the territorial authority's refusal to issue a code compliance certificate for the building work due to the:

Use of a torch on membrane system to an external deck area under tiles.

4.2 The applicant forwarded copies of:

- some of the territorial authority's inspection records
- a copy of SGS United Kingdom Ltd, Certificate 'Directive 89/106/EEC', the membrane manufacturer's installation specifications and other details
- correspondence between the owner/developer, the membrane supplier and the territorial authority
- various other statements and information.

4.3 The territorial authority made no submission, but forwarded copies of:

- the consent documentation
- the original consent drawings and amended consent drawings
- the inspection records
- correspondence with the owner/developer and the membrane supplier
- various other statements and information.

4.4 Copies of the submissions and other evidence were provided to each of the parties.

5. Matter 1: Compliance of the membrane product

5.1 In order for me to form a view as to code compliance of the deck membrane product, I need to establish what evidence is available.

5.2 In the case of the membrane material, the evidence consists of:

- the manufacturer's information on the product and the detailed instructions for handling and fixing the membrane
- the compliance of the membrane material with the requirements of the European Community's specified requirements for construction products for product compliance, and with the relevant European standard for this type of product (refer paragraph 2.2.3).

5.3 I accept that the Directive 89/106/EEC confirms the product complies with specification EN 13707, and therefore, in part, serves as the third party confirmation sought by the territorial authority (refer paragraph 3.9). However, I find the link between the product data supplied and the performance requirements of the New Zealand code situation has not been sufficiently demonstrated.

5.4 The linkage may be provided by either an independent assessment, or review, verifying the applicability of EN 13707 to the New Zealand environment. The assessment, or review, should include the product's performance against the following clauses of the building code:

- B2 – Durability
- E2 – External moisture
- F2 – Hazardous building materials

The information should confirm the applicability of the product as tested, and as used in other countries, to the intended situation in New Zealand taking account such matters as the difference in climate and its intended method of installation. Reference may be made to similar products already in use in New Zealand, and the product's relevance to similar claddings included in E2/AS2.

Matter 2: Compliance of the deck membrane as installed

6. The expert's report

6.1 As discussed in paragraph 1.5, I engaged an independent expert to provide an assessment of the condition of the deck. The expert is a member of the New Zealand Institute of Building Surveyors.

6.2 The expert inspected the deck on 15 May 2007, and furnished a report that was completed on 16 May 2007. The expert noted that the deck tiles, the floor to deck clearances and the balustrade cappings generally appear satisfactory.

6.3 The expert noted that, apart from the change in membrane, the deck differed from the consent drawings as follows:

- the deck outlet position is within the deck soffit instead of above the laundry
- a metal balustrade capping has replaced the timber capping.

6.4 Moisture penetration to the deck structure

6.4.1 The expert inspected the interior of the garage/laundry area under the deck, and no evidence of moisture was noted. The expert took interior non-invasive moisture readings and no elevated readings were noted.

6.4.2 The expert took 6 invasive moisture readings into the deck framing and noted that, while readings were generally below 14%, elevated readings of 20% and more than 40% were recorded within the boundary joist at the west corner of the deck.

6.4.3 Moisture levels that vary significantly after the cladding is in place generally indicate that external moisture is entering the structure and further investigation is required.

6.4.4 The expert considered that the moisture is likely to have entered via a membrane defect in the corner, as balustrade cappings and corner soakers appear weathertight.

6.5 Commenting specifically on the deck, the expert noted that:

- the deck membrane turns down over the top riser of the stairs, with the tiles covering about 60mm leaving a margin of exposed painted membrane. There is no drip edge, with the deck draining towards the top step. Water is oozing out of the tile bedding and appears able to track behind the weatherboards.
- the membrane upstands lack a solar protective paint coating
- some of the membrane upstands appear to be poorly bonded to the substrate.

6.6 The membrane installation

6.6.1 The expert consulted the manufacturer's installation specifications and the BRANZ Membrane Good Practice Guide 1999, and noted the following general points:

- Application of the membrane should be by trained and approved applicators.
- The membrane substrate should be primed before application.
- Any exposed membrane shall be coated with paint to protect against solar radiation.
- The torch used for application should be a large burner with a broad (yellow) flame to soften the bitumen over large areas without local overheating.
- Seams should be bonded by heating inner surfaces of the overlaps then closing and rolling the seam (so that beads of soft bitumen appear at the edge).

6.6.2 The expert noted that the membrane was concealed beneath the tiles, so he asked the owner/developer for any photographs taken during the membrane installation. The neighbouring house on the subdivided part of the site was also constructed by the developer/owner using the same deck membrane, and photographs were supplied of this application. I accept that the methods shown within these photographs are likely to be typical of the installation techniques used for the application of the deck membrane to the deck of this house.

6.6.3 The expert examined the photographs in order to assess the installation methods that appeared to be used. The expert noted that the photographs show that:

- the deck membrane was installed by the builder
- the substrate appeared to be unprimed
- the torch appeared to be a small plumber's torch with a very hot (blue) flame. (From the photographic evidence, it appears that the torch used, uses a proprietary gas that burns approximately 500°C hotter than the propane gas specified in the manufacturer's installation instructions.)
- the seams appeared to be formed by heating the top of the overlaps and using a narrow tool at the joint edge
- the membrane was laid in small lengths, resulting in more seams than necessary.

- 6.6.4 The expert concluded that the photographs of the membrane application show a lower standard of workmanship than expected from a specialist contractor.
- 6.7 A copy of the expert's report was provided to each of the parties on 17 May 2007.
- 6.8 The owner/developer responded to the expert's report in a letter to the Department dated 28 May 2007, noting his surprise that the expert had questioned the installation of the deck membrane, as this had been inspected during construction and passed by the territorial authority. The owner/developer made the following comments on the report:
- The membrane supplier had not been given approval by the owner/developer for the invasive testing carried out by the expert.
 - The membrane supplier did not specify the need to use a solar protective paint on the membrane.
 - The membrane supplier was aware that the builder would install the membrane, and this is therefore irrelevant.
 - The membrane has been used by the owner/developer since 2003.
 - The membrane supplier did not specify the need to use a primer on the substrate.
 - The seams were sealed together with an overlap as required, with the edge also sealed as additional protection.
 - Smaller strips of membrane were required to suit the area involved.
 - No conclusion on the product itself has been made; therefore the installation is irrelevant at this time.

I have considered these comments during the preparation of this determination.

- 6.9 In a letter to the Department dated 29 May 2007, the territorial authority accepted the findings of the expert's report, but noted that "the membrane itself, as separate to its installation, is also in question".

7. Evaluation for code compliance

- 7.1 In evaluating the design of a building and its construction, it is useful to make some comparisons with the relevant Acceptable Solution⁵, in this case E2/AS1, which will assist in determining whether the deck is code compliant. However, in making this comparison, the following general observations are valid:
- Some Acceptable Solutions are written conservatively to 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.

⁵ 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.

- Usually, when there is non-compliance with one provision of an Acceptable Solution, it will be necessary to add one or more other provisions to compensate for that in order to comply with the Building Code.

7.2 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 membrane system, its installation, and the moisture tolerance of the external framing.

8. Discussion

8.1 In the case of the code compliance of the deck membrane as installed to this house, I consider it important to look for evidence that establishes whether the deck membrane is adequate to meet the performance requirements of the building code when installed in accordance with the manufacturer's instructions, and that the deck structure complies with the Building Code as outlined in paragraph 1.3.2.

8.2 In this particular case, the evidence would come from independent verification that the product is appropriate to New Zealand and from the inspection of the accessible components by the expert, which can be used to verify whether the membrane installation was properly carried out.

8.3 Taking into account the expert's report, I am satisfied that the current performance of the deck membrane is inadequate because it has not been installed either to the manufacturer's instructions or according to good trade practice, and is allowing water penetration into the deck structure. The membrane demonstrates the key application and other defects listed in the expert's report summarised in paragraphs 6.5 and 6.6.3. Consequently, I am not satisfied that the deck membrane as installed complies with either clause B2 or clause E2 of the Building Code.

8.4 Because of the extent of the faults that have been identified with the deck membrane, I am unable to make a decision about how compliance might be achieved. I consider this can only be made after a more thorough investigation of the membrane, which will require careful analysis by an appropriately qualified expert. Once that analysis is completed, the chosen repair option (whether targeted repairs or replacement of the membrane) should be submitted to the territorial authority for its consideration and approval.

9. The decision

9.1 In accordance with section 188 of the Building Act 2004, I hereby determine that there is insufficient evidence available to establish that the material used for the deck membrane is able to comply with the Building Code. Accordingly I confirm the territorial authority's decision to decline to approve an amendment to the building consent that allows the use of the product.

- 9.2 I also determine that the deck floor as installed to this house does not comply with clauses B2 and E2 of the Building Code, and accordingly confirm the territorial authority's decision to refuse to issue a code compliance certificate.
- 9.3 The territorial authority should now issue a notice to fix that requires the owners to bring the deck up to compliance with the Building Code, but not specifying how that is to be achieved. That is a matter for the applicant to propose and for the territorial authority to accept or reject. It is important to note that the Building Code allows for more than one method of achieving compliance.
- 9.4 I would suggest that the parties adopt the following process to meet the requirements of paragraph 9.3. Initially, the territorial authority should issue a notice to fix. The owner should then produce a response to this in the form of a detailed proposal, produced in conjunction with a competent and suitably qualified person. Any outstanding items of disagreement can then be referred to the Chief Executive for a further binding determination.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 24 August 2007.

John Gardiner
Manager Determinations