



## Determination 2010/130

# The issuing of a notice to fix in respect of the injection of foam insulation into the cavity behind a brick cladding to an existing house at 88 Forfar Street, Dunedin

### 1. The matter to be determined

- 1.1 This is a Determination under Part 3 Subpart 1 of the Building Act 2004<sup>1</sup> (“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.
- 1.2 The parties to this determination are:
- the building owner, C Macaulay (“the applicant”) acting through a firm of consultants (“the applicant’s consultants”)
  - the Dunedin City Council carrying out its duties and functions as a territorial authority and a building consent authority (“the authority”).
- 1.3 I have also included Airfoam Insulators (Dunedin) Ltd (“the applicators”) and Airfoam Wall Insulation Ltd (“the franchise holder”) as persons with an interest in the determination.
- 1.4 This determination relates to the issuing by the authority of a notice to fix requiring the applicant to apply for a building consent in relation to a specific foam insulation (“the product”) that has been injected into the cavity behind the brick veneer of an existing house (“the installation”).
- 1.5 I therefore take the view that the matter for determination<sup>2</sup> is whether the authority’s decision to issue a notice to fix requiring a building consent in relation to the installation is correct.

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<sup>1</sup> The Building Act, Building Code, Compliance documents, past determinations and guidance documents issued by the Department are all available at [www.dbh.govt.nz](http://www.dbh.govt.nz) or by contacting the Department on 0800 242 243.

<sup>2</sup> In terms of sections 177(b)(iv) and 177(b)(vii); 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.

- 1.6 In making my decision, I have considered the submissions of the parties and the other evidence in this matter, including that provided at the hearing described in paragraph 4. I have also listed the legislation that is relevant to this determination in Appendix A.

## **2. The background**

- 2.1 The applicators entered into a contract with the applicant on 18 September 2009 to inject the product into the cavity behind the brick veneer of the house in question. The applicators commenced this work soon after the signing of the contract.

- 2.2 Prior to the installation being completed, the authority issued a notice to fix to the applicators, dated 16 October 2009, that stated:

[Contrary] to section 40 of the Building Act 2004, carrying out building work (foam insulation injected into the drained and ventilated brick cavity) other [than] in accordance with a Building Consent.

To remedy the contravention or non-compliance you must:

1. Stop work immediately
2. Apply for Building Consent

- 2.3 A meeting was held on 28 October 2009 attended by officers of the authority, the applicators, the franchise holder, the applicant's consultant, and representatives of the manufacturer of the product. The discussions generally related to the notice to fix and the code-compliance of the installation.

- 2.4 The application for a determination was received by the Department on 29 January 2010. However a valid application was not received until 16 March 2010 on receipt of confirmation that application could be made in the owner's name as a party as defined in section 176.

## **3. The initial submissions**

- 3.1 In a covering submission addressed to the Department and dated 25 January 2010, the applicant's consultants set out what were considered to be the relevant sections of the Act (in particular, sections 41, 49, and 112) and the relevant clauses of the Building Code (First Schedule, Building Regulations 1992), together with their application in this case.

- 3.2 The submission listed nine reasons why the installation of any retro-fitted insulation fell within the exemption of the requirement for a building consent in terms of Schedule 1 of the Act. It was also noted that such an installation did not fall within any Acceptable Solution and that the provision of a Producer Statement was a practical method to confirm compliance. The producer statement could then be included on the relevant LIM report for the information and use of future owners.

- 3.3 The consultants were also of the opinion that overseas experiences relating to 'barrier' installations in external walls provided useful comparisons. The consultants also provided a report dated December 2009, which detailed tests for moisture levels and the review of the condition of an existing house that had been subject to the installation of the product into its external walls.

- 3.4 The authority supplied copies of:
- the notice to fix
  - the minutes of the meeting of 28 October 2009
  - the December 2009 house report that was attached to the submission
  - various manufacturers' technical data relating to external wall insulation and a set of photographs showing various aspects of the house.

#### **4. The first draft determination and the hearing**

- 4.1 The first draft determination was forwarded to the parties, and persons with an interest in the matter, for comment on 9 April 2010. The authority accepted the draft but the applicant did not and requested a hearing.
- 4.2 Consequently, a hearing was held at Dunedin on 13 May 2010 before me. I was accompanied by a Referee engaged by the Chief Executive under section 187(2) of the Act.
- 4.3 The hearing was attended by:
- the applicant's consultant
  - the authority, represented by one of its officers
  - three representatives of the persons of interest
  - one other officer of the Department.
- 4.4 All the attendees spoke at the hearing and the evidence presented by those present enabled me to amplify or clarify various matters of fact and was of assistance to me in preparing this determination.
- 4.5 I summarise the matters raised on behalf of the applicant and the persons of interest as follows:
- Historical data supported the successful 30-year use of the product in New Zealand, and only one installation (out of some 14,000) had failed during that time.
  - Building consents have not been required for installing the product up to the present time.
  - The installation could be compared with the installation of ceiling and wall fibreglass insulation, where a building consent was not required. It was also noted that the compared elements had failed in many instances.
  - The product's insulation characteristics were described, as were details of its performance within a brick veneer cavity, where it acts as a non-absorbent barrier that does not change the water flow characteristics within the cavity.
  - The representatives were of the opinion that the installation was not building work in terms of the Act.
  - An appraisal of the product by a New Zealand research organisation was due shortly.

- The delay in settling the issues in question was affecting home owners who urgently wished to insulate their brick-veneer homes.

4.6 I summarise the authority's responses as follows:

- If a property can be shown to be code-compliant after the product has been installed, the authority would be prepared to issue a building consent for the work. However, to date, the authority had not received a request for a building consent with regard to such work.
- The authority had not yet received sufficient information to establish code-compliance and required an approved independent appraisal of the product and its installation in this respect. This was required, as the authority did not have the required expertise in its building control sector to analyse the vast amount of data provided on behalf of the applicator and the franchise holder.
- Such information would have to show the compliance of the product with all the relevant clauses of the Building Code.
- The authority was of the opinion that the installation was building work in terms of the Act.

4.7 The attendees also discussed a way forward, prior to a full independent appraisal, which might allow the authority to approve the installation on a case-by-case basis in terms of the exemption set out in paragraph (k) of Schedule 1 of the Act. This would require a basic appraisal that confirmed the compliance with the relevant clauses of the Building Code of the property in question once the installation had taken place. The authority would then consider the appraisal, and if it was acceptable, issue a form letter acknowledging a paragraph (k) exemption.

4.8 The authority indicated that if the process set out in paragraph 4.7 was accepted and adopted, the authority would not require a producer statement but would alternatively accept a completion certificate.

4.9 In a letter to the Department dated 3 June 2010, the applicant's consultants provided additional comments regarding matters raised at the hearing. I summarise these as being:

- The consultants were of the opinion that the installation of the product within a brick cavity did not fall within the section 7 definition of 'building work'. This was on the grounds that none of the five terms relating to 'alter' (re-build, re-erect, repair, enlarge, and extend) set out in that section referred to such an installation. In addition, the word 'alter' has the same base meaning as the word 'alteration'.
- The consultants believed that improving the thermal resistance of a house would not require a building consent and it was not the intention of the Act to encourage the proliferation of building consents for such non-structural improvements.
- The past history of the product demonstrates that the filling of a brick cavity does not adversely affect the cavity's weathertightness in any way and that the product complies with Clause E2. Reference was also made to an Australian survey has not found any drainage or ventilation problems with the product when installed in cavities.

- As the formulation of the product has been further developed, the dissipation rate has improved.
- The consultants were also of the opinion that the requirements of both Clause F2 and Clause H 1 are achieved when the product is installed.
- The Department was also requested to classify the installation as ‘exempt building work’ in accordance with paragraph (k) of Schedule 1.

## 5. The second draft determination

- 5.1 The first draft determination was amended to take account of the submissions made at the hearing and the second draft determination was issued to the parties, and persons with an interest in the matter, for comment on 14 June 2010.
- 5.2 The authority accepted the second draft determination.
- 5.3 The applicant’s consultants responded to the second draft in a submission to the Department dated 19 August 2010. The consultants requested that the determination ‘be shelved’ until the testing of the product had been subject to a peer review or that the determination be abandoned all together.
- 5.4 The submission also reiterated the applicant’s argument that the installation should be considered in terms of paragraph (k) of Schedule 1, which would exempt the installation from the need to obtain a building consent for its insertion. The consultants did not accept that the dictionary interpretation of the word ‘alter’ was relevant in terms of the Act. In addition, a request was made for an amendment to the first bullet point in paragraph 4.9 of the draft determination. The consultants were also of the opinion that there was no emphasis on ‘significant impact’ in the Act’s definition of ‘alter’.
- 5.5 The consultants also considered that if such elements as floor coverings and curtains did not require a building consent, then under the law of natural justice, the installation should be fall into the same category. Reference was also made to tests that are contemplated on houses that have had the product installed in them and the tests that have been carried out by an independent testing organisation.
- 5.6 Copies of two studies relating to an investigation into the performance of the product and the implications of retrofitting insulation, which were prepared by an independent testing organisation were also forwarded to the Department.
- 5.7 In an email to the Department dated 8 October 2010, the applicant’s consultants commented on an independent testing organisation’s report regarding the performance of the type of foam insulation in question. The consultants noted that, while the report appeared to be a relatively negative assessment, there were some very positive assessments that could be made from it. The consultants listed these, made further observation on the testing report, and attached photographs and commentary on defects observed in dwellings with UFFI<sup>3</sup>.

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<sup>3</sup> Urea-formaldehyde foam insulation

- 5.8 In a letter to the Department dated 25 November 2010, the applicant's consultants referred to comments made by an expert on brick veneer construction. In the consultants' opinion the comments confirmed that 'the conception that water leaks through a brick veneer wall has no validity'. The water can only pass through defective pointing and the cavity ultimately formed between the foam and the inner brick face would cope with this. Secondly, the installation of the foam insulation provided a barrier impermeable to water but not to water vapour. The experts were of the opinion that the historical performance of the insulation showed that it complied with the performance requirements of Clause E2.
- 5.9 In a further submission dated 8 December 2010, the applicant's consultants commented on two aspects of the second draft determination: In summary, these were:
- The consultants were of the opinion that the term 'alter relates to changes that have a significant impact on the performance of the structure and fabric of a building in terms of its code compliance'. As such, the examples described in the draft determination are not sufficiently significant and fall outside of the term. The consultants referred to dictionary definitions and gave examples of building elements that would now require building consents if the logic expressed in the determination was strictly followed.
  - The consultants did not agree that with the statement in the draft determination that the requirements of Clause E2 were affected by the installation of the foam insulation. It was considered that due to its "Hydrophobic" characteristics, the installation of this type of insulation 'enhances the external cladding's ability to prevent moisture transferring through the cavity thus reducing any condensation issues'. The consultants were of the opinion that the performance of the foam insulation over the past 30 years was sufficient evidence to show that it met the Clause E2 criteria. The franchise holder had provided the authority and the Department with adequate presentation material and background information.
- 5.10 I have carefully considered the additional comments made on behalf of the applicant since the second draft determination was issued. Again, these comments are mainly directed to the perceived performance of the product, which as set out in paragraph 6.1, I do not consider to be relevant to this determination. Therefore, I do not consider that these latest comments should persuade me to change the opinions that I have already expressed in the second draft determination.

## **6. Discussion**

### **The code-compliance of the installation**

- 6.1 I note that the applicant's consultants in its submission have discussed the code-compliance of the injected foam insulation product. However, in terms of the notice to fix, which forms the basis of this determination, the authority only raises the need for a building consent. Accordingly, I am of the opinion that, in this case, I do not have to decide whether the installation of the foam insulation complies with the Building Code.

- 6.2 In this respect, I note that a large part of the hearing described in paragraph 4 was taken up with discussions regarding the code-compliance of the installation that could prove useful to the authority in its future consideration of this matter.

### **Is the installation building work?**

- 6.3 The attendees at the hearing considered whether the installation could be described as building work. The authority maintained that it was building work requiring a consent and the representatives of the applicant and the persons of interest were of the opinion that it was not. This latter argument was further elaborated in the applicant's consultants' letter to the Department of 3 June 2010
- 6.4 The applicant's consultants have argued that the word 'alter' has the same base meaning as the word 'alteration' and I note that this definition is accepted in the interpretation Clause A2 of the Building Code.
- 6.5 The question of providing injected foam insulation in the cavity behind the brick veneer of a building was discussed in Determination 2008/35. I note in that instance, the installation was in conjunction with other elements of a building consent issued for a range of alteration work. However, while the current situation relates to the installation as an isolated building element, I am of the opinion that the observations made in Determination 2008/35 are relevant to this determination.
- 6.6 In its submission dated 25 January 2010, the applicant's consultants accepted that the installation was an alteration in terms of section 112 of the Act. This is the same conclusion that I reached regarding the installation of foam insulation in Determination 2008/35. I also decided in that determination that the installation of the foam insulation was 'building work' in terms of section 7 of the Act. I am of the opinion that this finding also applies in this case. This opinion is further supported by the inclusion of 'alteration' in the definition of 'building work' described in the section 7.
- 6.7 Section 7 of the Act defines both 'building work' and 'alter' in terms that affect the structure and fabric of a building. As the definition of 'alter' simply includes the terms set out in the Act, it therefore could be given its ordinary dictionary meaning, which includes 'changes in characteristics, position'. This interpretation could result in any change of the performance characteristics of a building being considered as an alteration. At its broadest interpretation, this could be taken to mean that the installation of such items as floor coverings and curtains would come within this definition.
- 6.8 However, in the context of the Act, I am of the opinion that as the term 'alter' relates to changes that have a significant impact on the performance of the structure and fabric of a building in terms of its code compliance. In my view the examples of 'alter' described in paragraph 6.7 are not sufficiently significant and fall outside the ambit of that term. Accordingly, I cannot accept the arguments put forward on behalf of the applicant regarding this matter.
- 6.9 However, in this case, in terms of the building's performance, both the thermal efficiency and the requirements of Clause E2 regarding the weathertightness of the brick cladding, are affected by the installation of the foam insulation. In this respect, I agree with the authority's view that insufficient direct evidence has been provided

to verify what these effects might be. I therefore conclude that the installation of the foam in this building is building work in terms of the Act.

### **Does Schedule 1 apply to the installation?**

- 6.10 In Determination 2008/35, I referred to the installation of foam insulation in terms of Schedule 1 of the Act, which describes building work that does not require a building consent. In Determination 2008/35 I reached the conclusion that none of the specific elements described in Schedule 1 related to the installation of foam insulation.
- 6.11 However, since Determination 2008/35 was issued, paragraph (d) of Schedule 1 has been amended and now includes the 'alteration' of any wall except a retaining wall or an internal wall. While this of itself may well include the installation, paragraph (d) is restricted to walls of a height not exceeding 2 metres above the supporting ground. From the photographs provided, I have established that the external walls of the house do exceed the 2 metre limitation. Accordingly, I am of the opinion that paragraph (d) does not exempt the work from the need for a building consent.
- 6.12 I also noted in Determination 2008/35 that paragraph (k) of Schedule 1 provides that a territorial authority may allow work to proceed without the need for a building consent. However, I also stated that as this provision is subject to conditions concerning code-compliance or safety, and should also be invoked by the territorial authority (in that instance) only after careful consideration of the nature and type of building work concerned. As described in paragraph 4.7 and 4.8, the attendees at the hearing considered a process that might allow the authority to issue a consent exemption for the installation in terms of paragraph (k) of Schedule 1.
- 6.13 I note that the applicant's consultants list nine reasons why the installation fell within the ambit of Schedule 1. However, I do not accept that these reasons are relevant to the interpretation of the Schedule, rather they relate more to the inspection, compliance and the authority's role in respect of the installation.
- 6.14 Taking into account the discussions set out in paragraphs 5.8 to 5.10, I am of the opinion that the installation did require a building consent. Finally, I emphasise that my decision is based on the fact that the installation relates to a house with a brick veneer cladding. Accordingly, this determination should not be applied verbatim to other circumstances, such as to houses with weatherboard or similar claddings, which may well require alternative considerations.

## **7. The decision**

- 7.1 In accordance with section 188, I hereby determine that the authority's decision to issue a notice to fix requiring a building consent in relation to the installation of the foam insulation is confirmed.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 21 December 2010.

John Gardiner  
**Manager Determinations**



## Appendix A: The relevant legislation

A1 The relevant sections of the Building Act are:

### 7 Interpretation

**alter**, in relation to a building, includes to rebuild, re-erect, repair, enlarge, and extend the building.

#### **building work—**

(a) means work—

(i) for, or in connection with, the construction, alteration, demolition, or removal of a building...

### 112 Alterations to existing buildings

(1) A building consent authority must not grant a building consent for the alteration of an existing building, or part of an existing building, unless the building consent authority is satisfied that, after the alteration, the building will—

(a) comply, as nearly as is reasonably practicable... , with the provisions of the building code that relate to—

(i) means of escape from fire; and

(ii) access and facilities for persons with disabilities (if this is a requirement in terms of section 118); and

(b) continue to comply with the other provisions of the building code to at least the same extent as before the alteration.

A2 The relevant provisions of Schedule 1 of the Act are:

A building consent is not required for the following building work:

(d) the construction or alteration of any wall (except a retaining wall or an internal wall), fence (except a fence defined in section 2 of the Fencing of Swimming Pools Act 1987), or hoarding in each case of a height not exceeding 2 metres above the supporting ground.

(k) any other building work in respect of which the territorial authority (or, as the case requires, the regional authority) considers that a building consent is not necessary for the purposes of this Act because that building work—

(i) is unlikely to be carried out otherwise than in accordance with the building code; or

(ii) if carried out otherwise than in accordance with the building code, is unlikely to endanger people or any building, whether on the same land or on other property.

A2 The relevant provisions of Clause A2 of the Building Code are:

**Alter**, in relation to a building, includes to rebuilt, re-erect, repair, enlarge and extend; and **alteration** has a corresponding meaning.