



## Determination 2015/032

# Regarding the refusal to issue a building consent for weathertightness remedial work to a house with a code compliance certificate at 3B Cedar Road, Epsom, Auckland



### 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 and Assurance, Ministry of Business, Innovation and Employment (“the Ministry”), for and on behalf of the Chief Executive of the Ministry.

1.2 The parties to the determination are:

- the owner of the house D Bow (“the applicant”), represented by an agent
  - the agent is the Moisture Detection Company which is a building consultancy firm and a member of the Step Up Group
  - the Step Up Group comprises of a number of companies that have developed technologies for building repairs and improvements. The Step Up Group (and its related companies including the Moisture Detection Company) is also a person with an interest in this determination on the grounds of being the proprietary system provider (“the PSP”)
  - I have referred to both the agent and the PSP as “the PSP” because of the nature of the dispute between the parties, the people and companies

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

involved, and the nature of the information provided by the PSP. This determination is primarily about technical issues relating to the PSP's methodology and technologies ("the PSP's methodology").

- Auckland Council ("the authority"), carrying out its duties as a territorial authority or building consent authority
- 1.3 This determination arises from a decision by the authority to refuse to grant a building consent for the PSP's methodology it has developed to slow down the rate of decay in buildings (generally untreated timber framed buildings) that have suffered or continue to suffer from weathertightness problems ("the timber treatment process"). The authority refused the consent because it considered it had insufficient information to enable it to be satisfied on reasonable grounds that compliance with the Building Code had been achieved.
- 1.4 The matters to be determined<sup>2</sup> are:
- the authority's exercise of its power of decision in refusing to grant the building consent for this house; and
  - whether there is sufficient evidence to conclude the building work in question complies with the Building Code to the extent required by the Act
- 1.5 In making my decisions, I have considered the submissions of the parties, the report of the independent expert commissioned by the Ministry to advise on this dispute ("the expert") and the other evidence in this matter.
- 1.6 I note that a previous determination, Determination 2011/117<sup>3</sup> also involved the PSP's methodology and will be referred to throughout this determination. However, I emphasise that each determination is conducted on a case by case basis.
- 1.7 I note that the PSP lodged two building consent applications for the house and this distinction is noted in the background section; for the purposes of this determination the second building consent, No. B/2013/14348 ("the building consent"), is the consent that was refused by the authority and forms the matter to be determined in paragraph 1.4.

## **2. The building work**

### **2.1 The existing building**

- 2.1.1 The existing two storey house ("the house") is built in a suburban area with a low wind zone for the purposes of NZS 3604<sup>4</sup>. The house has a concrete ground floor slab and foundations with two storeys of light timber frame above. The cladding is monolithic, and the house is complex in design and considered high risk in terms of weathertightness issues.
- 2.1.2 The roof is gable pitched and constructed of corrugated steel. There are parapets at the gable ends.
- 2.1.3 The upper parts of the south elevation and the west side have been reclad with EIFS<sup>5</sup> under a new building consent following a fire at the premises.

<sup>2</sup> Under sections 177(1)(a) and 177(1)(b) and 177(2)(a)

<sup>3</sup> Determination 2011/117 The refusal to grant a building consent for work to improve resilience of a building in terms of the impact of weathertightness issues (*Department of Building and Housing*) 23 December 2011

<sup>4</sup> New Zealand Standard NZS 3604: 1999 Timber Framed Buildings

<sup>5</sup> Exterior insulation finishing system

- 2.1.4 The house has a code compliance certificate that was issued following its construction.

## **2.2 The building work**

- 2.2.1 The building work consists of a range of works to improve the resilience of the house using the PSP's methodology pending more substantive future permanent repairs. The PSP's methodology was discussed in detail in Determination 2011/117. For the purposes of this determination I will be looking at the differences between the PSP's methodology in the previous Determination 2011/117 compared to the current determination.
- 2.2.2 The building work in question consists of the application of timber treatment into the framing of the existing house by a combination of a liquid injection system ("the liquid injection system") and a foaming system ("the foaming injection system"). The liquid injection process involves injecting a treatment in situ into the timber. The treatment is a mixture of boron, oils, multi spectrum fungicide and water. The liquid injection process also contains some foam.
- 2.2.3 The foaming injection process injects the treatment into the voids between lintels and sill trimmers and door and window frames. The foaming system is described by the PSP as similar to the liquid injection system but allows foam bubbles to form in voids between lintels and sill trimmers and door and window frames. The foaming system is used to avoid leakage that occurs if the timber is treated with liquid, as the foaming treatment is presented slower over a period of time. The foaming system is used in locations where the liquid injection cannot reach; it loads leak pathways with water soluble treatments so that during future leaks the timber treatment will be absorbed and travel with the leak. The foaming injection system wets slower and does not exceed saturation levels thus reducing leakage.
- 2.2.4 The PSP initially proposed to install additional fixings in braced panels within the areas where the foaming system has been applied, to compensate for the known loss of performance in plasterboard bracing which occurs during application. However following the second draft determination the PSP submitted the 'double nailing' is no longer necessary. I have taken 'double nailing' to mean the additional fixings in the braced panels. The further alternative testing undertaken by the PSP shows that the double nailing is not required, however the PSP noted owners have the opportunity to decide whether the brace element needs replacing, upgrading or substitution.
- 2.2.5 The building has been fitted with a moisture monitoring system which involves using permanently installed moisture probes. The moisture probes show high readings in some areas of the house. Following the second draft determination the PSP submitted a new moisture probe has been developed, "the universal moisture probe", in which 'bait' is added and the pins shortened so they remain protected from the timber treatment process but read the bait. A further 10mm hole is drilled to install the universal probe. The PSP reads the universal probe after a 4 day equalisation period, if the probe is more than 30% this is an indication either the timber treatment process has not dried or there is ongoing moisture ingress. The PSP examines the history of the probe readings to decide whether more time for drying is required or whether repair work is needed.

2.2.6 The points of difference between Determination 2011/117 in relation to the timber treatment process are:

- the addition of the foaming injection system
- no use of drying skirts<sup>6</sup>
- the timber treatment process will be to targeted locations not whole walls
- the possibility of additional fixings being installed in the plasterboard bracing panels, which is for the applicant to decide
- the use of moisture probes, including the universal moisture probes, to monitor the moisture readings of the house

### 3. Background

3.1 At some stage in mid-2012 the PSP applied on behalf of the applicant for a building consent for the timber treatment process to be carried out at the house.

3.2 On 6 June 2012 the authority sent a letter to the PSP that the consent application No. B/2012/2514 was unsuccessful at lodgement as it did not have sufficient information to commence the ‘technical vetting processes carried out by the authority.’

3.3 The PSP state they did not receive a copy of this letter at the time and acknowledge receipt on 20 October 2012.

3.4 On 31 October 2012 the PSP wrote to the authority proposing testing of the effect of the timber treatment process on the bracing system (herein after referred to as the “University testing”). The testing was not for a specific house but designed to satisfy outcomes of Determination 2011/117.

3.5 On 6 November 2013 the PSP sent a letter to the authority with further information for an amended building consent. The authority request that a new building consent application be lodged as opposed to an amended consent.

3.6 On 28 November 2013, building consent application No. B/2013/14348 was received by the authority. The supporting documentation included the University testing.

3.7 On 2 December 2013 a letter was sent from the authority to the PSP stating that the building consent was lodged successfully.

3.8 On 16 December 2013 the authority requested further information from the PSP to show that the use of the timber treatment process will achieve compliance with the Building Code. The authority noted that the application was not greatly dissimilar to earlier applications, with the exception of internal wall fixings and the use of timber treatment process as foam as well as a liquid.

3.9 On 20 December 2013 the PSP responded to the authority’s request for further information. The main points from this letter are summarised below:

- in response to the authority’s statement that the current application is ‘not greatly dissimilar to earlier applications’ the PSP state the current application is for a limited application of the timber treatment process to nominated locations not complete walls, and therefore less wetting will occur reducing overall drying

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<sup>6</sup> Drying skirts are described as ‘the modification to the cladding system by the installation of drying skirts’ – see Determination 2011/117

time of buildings as a whole. The PSP also described the use of the foaming system (refer paragraph 2.2.3)

- the report from the air volatility testing (“the air volatility report”) stating that there is unlikely to be any adverse health effects from the ingredients of the timber treatment process has been released and shows compliance with Clause F2 of the Building Code
- sufficient testing has been completed following Determination 2011/117 to prove compliance with Clauses E2 and B2 without the need to include drying skirts, which are only required where claddings cannot dry out in reasonable time or where alterations would be required
- the PSP has specified procedures for owners to follow following injection of the timber treatment process in a maintenance plan to ensure ongoing compliance with the Building Code and therefore the Act.

3.10 On 17 February 2014 the authority sent a letter notifying the PSP that it was refusing the building consent. The specific reasons for refusal were:

1. As per request from [the Reclad Advisor] the above building consent has been refused under section 50 of the Building Act 2004.
2. The consent did not meet the specified requirements in order for the project to go ahead

3.11 On 26 February 2014 the PSP responded to the authority’s refusal letter, asking the authority to confirm that it had considered the documents provided in the request for further information dated 16 December 2013. The PSP also noted section 50 of the Act stating:

Item 1 states the refusal however item 2 does not adequately state the reasons for the refusal...[and] does not state what in [the authority’s] opinion was deficient in the response provided on 20 December 2013 that would/could lead to compliance not being achieved. In particular, what parts of the building code would not meet compliance and why not?

3.12 The PSP stated that a conversation took place between themselves and an officer of the authority on 13 March 2014. The result of this conversation was the PSP’s application for a determination.

3.13 The Ministry received an application for determination on 25 March 2014.

## 4. The submissions

4.1 The PSP provided a detailed written submission dated 18 March 2014 with a number of supporting documents. The main points are summarised below:

- The PSP provided details of case study (number 908) as evidence that drying skirts are not required at every injection location. The PSP stated that different claddings dry out at different rates. The timber treatment process includes monitoring to measure moisture content for proof of injection and subsequent drying. Where the walls don’t dry in the medium term the framing remains protected by the timber treatment process. The PSP also submitted that drying skirts can be fitted at any time.
- The authority requested new plans to be drawn to show the locations of the timber treatment process as the records the authority had were of inadequate quality; the PSP believes creating new plans was an unwarranted cost.

- The timber treatment process has been deemed ‘building work’ under the Act however the PSP submitted that it should be classified as exempt under Schedule 1:

Determination 2011/117 included coverage of the use of [the timber treatment process]...as if it were treated to all (every) wall of a house thus by default all bracing units would/could be affected to some degree...multiple target [timber treatment process] has even less impact

The PSP requested that the current determination consider the timber treatment process as exempt building work at least for target locations. The PSP provided some examples of other Schedule 1 exemptions and discussed the need for an affordable solution for home owners

- The PSP asked for comment on the authority’s refusal of the current and previous building consent applications. The PSP stated the authority has failed to provide valid reasons for refusal under section 50(b) of the Act. The PSP stated the reasons for refusal must be specific enough ‘so the applicant can reasonably understand and/or attempt to address’ the reasons.

4.2 The PSP provided the following documents in support of their application:

- the application forms for the two building consents
- various correspondence between the parties
- plans of the building
- computer freehold register under the Land Transfer Act 1952
- various documentation in support of the timber treatment process including a case study report
- testing report by the University testing facility
- authorisation from the owner of the house for the PSP to act on their behalf
- the air volatility report.

4.3 The authority acknowledged the determination application and provided a CD-ROM of documents from the property file. The authority made no submission and provided no further detail on its reasons for refusing to grant consent.

## 5. The first draft determination and submissions

5.1 A draft determination was issued to the parties on 26 May 2014.

5.2 The PSP asked the Ministry further questions on 3 June 2014 and 9 June 2014. The PSP did not wish for these further questions to be treated as a submission. In summary:

- The PSP objected to the comments from BRANZ<sup>7</sup> used in the draft determination and noted their comments regarding BRANZ were not included in the draft determination.
- Drying rates are measured by taking electrical resistance using industry standard meters with logarithmic calculators equated to New Zealand wood species and output into moisture content read by the moisture detection probes. The probes are read by contractors and an independent third party reading is not necessary.

<sup>7</sup> Building Research Association of New Zealand

- In relation to case study 551, comments regarding rusting, swelling and adverse effects were addressed in the previous determination.
- The PSP noted 91 homes already injected have been issued code compliance certificates on repairs to many of them and therefore inspections were carried out.
- In relation to case study 908, foam results is the timber treatment process with a foaming agent (soap), there are 26 homes with foam injections.
- The PSP sought clarification on what further information the Ministry required.

5.3 On 10 July 2014 the PSP provided a drying rate report of the same date (“the drying rate report”) on 15 homes selected from 99 with moisture readings since injection. In summary the report details:

- a number of moisture detection probes have been modified to universal probes to correct for the effect had on resistance readings of the presence of metals and oils within the timber treatment process
- the wall cladding systems injected included polystyrene, fibre-cement and stucco
- all walls dried with relatively similar drying curves, most drying occurred in summer
- several ‘leakers’ have been plotted to show how the timber treatment process does not interfere with identifying leaks
- ‘almost all graphs showed higher resistance readings post timber treatment process, this variance is due to industry meter factory calculation program to overstate moisture’.

## 6. The expert’s report

6.1 As mentioned in paragraph 1.5 I engaged in an independent expert to assist me. The expert is a member of the New Zealand Institute of Architects. The expert was engaged to provide a report commenting on the proposed timber treatment process to the building. The expert inspected the house on 14 April 2014 and provided a report dated 29 April 2014. The report was provided to the parties on 1 May 2014.

6.2 The expert made a brief site visit, concluding that there was no particular building features which would impede the installation of the timber treatment system as proposed, and noting the following:

- there were some small variations between the 2001 consent drawings and the current dwelling
- the interior of the garage (where the proposed repairs are to be carried out) was free from water stains, mould and other visual signs of leaks
- there are periodic leaks to the areas where the timber treatment is proposed.

6.3 The expert contacted the authority by phone and was advised their refusal to approve the application for building consent was due to concerns about:

- adverse effects the treatment may have on bracing
- the efficiency of the testing carried out

- the lack of evidence to support the use of the foaming system.

I note the PSP has objected to this phone conversation being held.

## 6.4 Compliance with the Building Code

6.4.1 The expert stated that compliance with the Building Code Clause B1 is not proven by the evidence provided. The PSP provided a proposal for additional fixings to be made in the braced panels treated with the timber treatment system. It was based on the University tests. These tests were not the industry standard tests referred to in NZ3604. The expert requested a review by BRANZ. In the review BRANZ considered the tests carried out were not sufficient to demonstrate that the plaster board once wetted will comply with NZBC B1 because, amongst other things, the testing did not include reverse load cyclical testing. BRANZ concluded that:

While the monotonic tests described in the [University testing] report provide an indication of the monotonic strengths of the fixings within the body of a sheet, these do not relate to the cyclic performance of a bracing element and cannot be used to confirm continued satisfaction of [the Building Code] clause B1 after wet treatment of the timber substrate

The expert concluded that the testing carried out on the plasterboard was insufficient as it did not include cyclical or reverse loading as the standard P21 test does.

6.4.2 The expert noted that the original building consent application included a bracing review by an engineering company and provides reasonable evidence of compliance with the Building Code B1; however a substitute proposal was included with the second application for building consent as detailed paragraph 6.4.1.

6.4.3 The expert submitted that there was no information provided to demonstrate the efficacy of the timber treatment process applied by the foam system as opposed to the liquid system and there was a lack of test data or verification to show compliance with clause B2 of the Building Code.

6.4.4 The expert noted that as previously discussed in Determination 2011/117 provision for drying out of the timber treatment process following application was demonstrated in cases where a “drying skirt” is installed. In this case drying skirts will not be installed. Relevant data would be necessary to conclude that there will be no adverse effects from retained construction moisture, to show compliance with clause E2 of the Building Code

6.4.5 The expert concluded that additional information would be necessary to support the application and enable a reasonable conclusion that the timber treatment process will comply with the Building Code, including:

further testing of plasterboard comparable to a P21 test, or alternatively reversion to the proposal to construct new bracing panels in lieu of those in areas where the timber treatment process is to be injected

further data to support the proposal to apply [the timber treatment process] in a foam rather than a liquid

further data to demonstrate that water introduced as part of the [timber treatment process] will dry out adequately, where there are no “drying skirts”



## 6.5 The PSP's response to the expert's report

6.5.1 Following receipt of the expert's report and in response, the PSP sent a second submission dated 5 May 2014. In summary:

- Poly cladding systems are less absorbent than stucco and hence have less moisture to dry out. The PSP attached another case study report (551) and state the current dwelling is a more limited injection than case study 551.
- The foaming system is into wall cavities not directly into wood. The PSP provided further details of another case study (908) and states this proves the foaming system does add treatment to target areas like lintels:
 

lintels are normally constructed with pairs of timbers on edge which we have found to not treated well using the liquid injection as injectors lose pressure at the air spaces between the join in lintels creating excessive leakage. [the foaming injection system] suspends the timber treatment process like shaving cream and allows absorption over time as bubbles burst
- The PSP disputed the opinion provided by BRANZ that cyclic testing is required and the PSP considers P21 testing is not appropriate for the timber treatment process because that testing is a 'full rig test normally undertaken to support newer plasterboard products as changes are made to core and structure/materials. [the timber treatment process] does not claim to improve or become a substitute and would only affect either core or material'.
- The University testing was conclusive that core strength was not affected to a degree that the timber treatment process should be excluded.
- The expert's report failed to take into account the poly drying rates submitted. Water is used as a carrier of the timber treatment process chemicals and once mixed cannot be separated out. As drying occurs the concentration of the chemical content intensifies. The PSP maintains the view that there is adequate information to accept drying occurs without drying skirts.

6.5.2 On 14 May 2014 the PSP wrote to the Ministry regarding the phone conversation between the expert and the authority. The PSP provided a transcribed conversation alleged to have been held between the authority and the PSP on 13 March 2014.

6.5.3 I have taken account of the concerns raised by the PSP in their second submission where appropriate and have noted the occurrence of the phone conversation, however I do not consider the phone conversation provides any new information that is not already included in the PSP's application.

## 7. The hearing

7.1 I arranged a hearing to be held in Auckland on 11 September 2014. I was accompanied by a Referee engaged by the Chief Executive under section 187(2) of the Act, together with an officer of the Ministry. The applicant was present, and the PSP together with a consultant structural engineer, an architect, and a consultant as a member of the public. The authority had two representatives present.

7.2 All the attendees spoke at the hearing and evidence was presented to me by the PSP and the PSP's structural engineer to clarify various matters of fact and was of assistance to me preparing this determination. The evidence provided included:

- A report dated 4 July 2014 “Drying rates of base plate framing following the injection of [the timber treatment process] into studs”.
- Further testing evidence regarding the timber treatment process.
- A long term management policy.
- Further information regarding the liquid injection process and the foaming injection systems.
- A chronology for the building subject to this determination.

7.3 There was discussion between the parties about the following topics: bracing, drying skirts, the foaming system and building work exempt under Schedule 1. The authority maintained the position that it had insufficient information to be satisfied the building work would comply with the Building Code. The authority specified four areas of concern in relation to clauses B1, B2 and E1 of the Building Code: drying skirts, targeted timber treatment process (as opposed to previously full timber treatment process), bracing (including internal wall panels) and the foaming injection system.

7.4 The views put forward at the hearing, and evidential submissions provided at the hearing are summarised below.

#### ***The bracing***

7.5 The PSP’s structural engineer noted there needs to be some form of cyclic load testing as the University testing only tests one direction. The authority noted the P21 test is the industry adopted ‘standard’; an alternative test would need to be peer reviewed so the authority can be satisfied the building work complies with the Building Code.

#### ***The drying skirts***

7.6 The PSP submitted that drying skirts allow for inspection and alteration to an area; however previous case studies have proven that the area still dries without the use of drying skirts particularly with high levels of treatment. The use of moisture detection probes will let the PSP know where drying skirts are needed. It was agreed some level of monitoring is needed of the probes prior to applying for a code compliance certificate, to ensure the levels of moisture in the timber have reduced to an acceptable level.

#### ***The foaming system***

7.7 The PSP explained that it found the wood does not behave the same horizontally especially with lintels and the liquid injection system leaked between lintels. The PSP developed a ‘soap’ consisting of suspended air bubbles that were lowered by gravity into the required chamber. The PSP stated the foaming system is less saturated than the liquid injection system. The PSP puts a measured quantity of foam into each area in 1.5L bottles. The authority and the PSP noted that if the Ministry has previously accepted the liquid injection system and the foaming system is a much lower quantity it must also be accepted.

***Exempt building work***

- 7.8 The PSP and the authority discussed an application under Schedule 1(2) (which had not been applied for by the PSP). The PSP argued there should be an allowance made for this type of situation, and questioned whether building work is involved in this case.
- 7.9 It was noted I can direct the authority under section 183 of the Act if the authority would be willing to allow the PSP to carry out the timber treatment process.
- 7.10 In concluding the hearing, the PSP was to carry out a technical evaluation and create a framework to be provided as a further submission.

**8. The post hearing submissions**

- 8.1 On 30 September 2014 the Ministry emailed the PSP noting the further submission was awaited prior to a second draft determination being issued. The PSP responded on 30 September noting they were awaiting testing advice.
- 8.2 On 5 January 2015 the Ministry sought an update regarding the further submissions.
- 8.3 On 22 January 2015 the PSP provided ‘a simplified diagram showing the overall process, a simplified document showing compliance to respective regulations and the test results’. The PSP’s alternative laboratory (“the alternative laboratory”) peer reviewed and released cyclic and shear tests.
- 8.4 The PSP provided a detailed report evaluating the impact of the timber treatment process on the bracing capacity of standard and brace-line GIB board to demonstrate compliance with the Building Code. Two comparative tests were carried out by the alternative laboratory, a ‘staged shear test’ and a ‘cyclic shear test’. The report concluded as an observation that during the various tests there was no discernible difference between the performance of the treated timber and the untreated timber noting ‘the peak force before failure tends to be consistent across the two types of GIB board’.
- 8.5 On 23 January 2015 the PSP submitted a further response regarding exempt building work. In summary:
- The first schedule contains a number of exemptions for building work that does not require a building consent. The PSP accepts these exemptions are at the discretion of the authority but seeks guidance from the Ministry.
  - The PSP considers that under certain designs or repairs exemptions could be granted where the building work is over 15 years old, or if less than 15 years old for minor timber treatment processes. Examples include where injection is to the framing that does not form part of B1 bracing, bracing comprising ‘as part of the bracing plywood’ or less than 40% of the total bracing units made of plaster board.
  - The PSP argues the exemption is required in many circumstances like repairing a single leak like a roof/gutter or window. Requiring a building consent will require owners to pay more than the protection the timber needs.

## 9. The second draft determination and further submissions

9.1 A second draft determination was issued to the parties on 4 April 2015.

9.2 On 10 April 2015 the authority provided a written submission. The authority did not accept the findings in the second draft determination, and submitted that there was sufficient information provided in the course of the determination to conclude the building work will comply with the Building Code to the extent required by the Act. The authority holds the view neither it nor the Chief Executive are in a position to properly appraise the timber treatment process. The authority also submitted its view that

... the timber treatment data should be independently, comprehensively and satisfactorily appraised by BRANZ or a body of similar standing so as to enable building consent authorities to confidently assess the strengths and limitations of the treatment in the context of building consent applications.

9.3 On 13 April 2015 the PSP provided a written submission, in summary:

- The PSP disagreed with the determination conclusion that the authority was correct in refusing to grant the building consent. The building consent lodged with the authority included plans and specifications as required under section 45(b) of the Act and any requests for information were completed. The draft determination does not require any changes to the plans and specifications – the requirements for moisture content readings are not part of plans and specifications.
- The PSP contended where moisture content readings appear elevated, the procedure is to replace the moisture detection probe with a universal probe to determine the correction value or confirmation of a leak. The authority has existing powers in the form of a notice to fix to deal with the situation at the application for a code compliance certificate.
- In relation to double nailing, the PSP submitted the alternative laboratory tests showed no discernible loss of strength with the panels tested in both racking and shear using the same panels as the University testing, therefore double nailing is not required. The PSP is of the view the applicant can decide whether the brace element needs an upgrade involving double nailing.
- Relating to moisture probes, divergent readings can occur in a number of circumstances for example summer versus winter growth, how the oils and boron are absorbed into the wood, location of the probe, imperfections in the timber, and leaks. The PSP have invented ‘universal probes’ (refer paragraph 2.2.5).

9.4 On 21 and 23 April 2015 the PSP provided further comments on the second draft determination relating to exempt building work. In summary:

- The draft determination states the PSP did not provide detailed reasoning relating to exempt building work. The PSP noted ‘all work on buildings is building work, the timber treatment process is adding something to a building so is building work’.
- In Determination 2011/117 the application of the timber treatment process was to every stud and the PSP accepted this is a repair and upgrade and comes within the definition of ‘alter’ as building work. In comparison the current case is to inject into limited areas ‘less than 15% are targeted to be injected’ meaning it is not altering the building but just parts of the building.

- The PSP submitted the timber treatment process is maintenance and therefore exempt under Schedule 1(1). Determination 2011/117 provided a definition for maintenance, however it was considering a building upgrade solution whereas the current application is focusing on a ‘targeted maintenance’ role. The PSP also submitted Determination 2011/117 determined the timber treatment process to be building work as it was being injected due to the durability affected by abnormal behaviour of the building (the leaks), and therefore the timber treatment process was adding something to prevent the effect of an abnormal event and therefore not maintenance.
- The PSP provided the ordinary dictionary definitions of ‘abnormal’ and ‘normal’. The PSP submitted leaks (being any form of wetting to building elements beyond the initial water barrier) are normal and provided a list of examples. The PSP conclude as leaks are normal, actions to fix the leak must be normal as they restore normality (unless it was building work consisting of a major renovation or reconstruction).
- Determination 2011/117 did not consider maintenance in the context of B2/AS1<sup>8</sup> or E2/AS1<sup>9</sup>. The PSP submitted maintenance can be understood as focussing on parts of the building rather than the whole. The replacement of durability to a part of assembly is maintenance. Additionally the building owner can determine their level of normal maintenance and what it includes. The timber treatment process is recoating the natural treatment that would be present.
- In the areas of expected ingress like complex junctions the timber treatment process should be considered to be normal maintenance.
- If the timber treatment process is not maintenance then it is still a matter of whether there has been a failure of durability. The PSP submitted it is wrong to apply B2 in retrospect to isolated areas when the ‘balance of the assembly’ demonstrates compliance with Clause B2. The PSP noted repairs do not have to be a restoration but may be a partial repair until a permanent repair (recladding) is considered.
- The PSP asked whether this determination can direct the authority to grant an exemption under Schedule 1(2) of the Act.

9.5 I have taken account of the further submissions where appropriate, and amended the determination accordingly.

## 10. The framework

10.1 The timber treatment process constitutes an alteration to an existing building that has a code compliance certificate, and therefore must be considered under section 112 of the Act. Under section 112(1) the building after the alteration must:

- comply as nearly as is reasonably practicable with respect to means of escape from fire, and
- comply as nearly as is reasonably practicable with respect to the provision of access and facilities for people with disabilities, and

<sup>8</sup> Acceptable Solution B2/AS1 for durability

<sup>9</sup> Acceptable Solution E2/AS1 for external moisture

- continue to comply to as at least the same extent as before the alteration for all other Building Code clauses
- 10.2 Section 112 does not override section 17, the requirement that all building work must comply with the Building Code regardless of whether a building consent is required. The circumstances when a building consent is not required are set out in section 41 of the Act, including work that is exempt from the requirements to obtain a building consent under Schedule 1 of the Act.
- 10.3 Where a building consent is required section 49 of the Act gives effect to the requirements of section 17 by specifying that a building consent will not be granted unless the authority 'is satisfied on reasonable grounds that the provisions of the Building Code would be met if the building work were properly completed in accordance with the plans and specifications that accompanied the application.
- 10.4 As noted in Determination 2011/117 it is important to distinguish between the need for new building work (the timber treatment process) to comply with the Building Code as required by section 17, and the need to ensure the building work does not reduce the extent to which the existing building complies with the Building Code, as required by section 112(1)(b) of the Act. These two requirements relate to different parts of the building, the extent of code compliance is different, and they can relate to different Building Code performance criteria.

## **11. The requirements of a building consent**

- 11.1 Under section 45 of the Act, instruction is provided on how to apply for a building consent. It states that a building consent must be accompanied by plans and specifications that are required by a building consent authority (Section 45(1)(a)(ii)) and contain or be accompanied by any other information that the building consent authority reasonably requires.
- 11.2 The PSP have noted in their first submission that the authority's requirement to ask for new plans is an 'unwarranted cost' and asked for comment in this determination. The PSP state the authority required new plans as the copied plans were of 'inadequate quality as per current standards now required e.g. word height 10 or more etc.'
- 11.3 I note that the PSP should be careful to provide information with their building consent that specifically relates to that consent and not in relation to previous building consents for a similar matter. There are circumstances where the information will overlap, however new information should be provided clearly and backed up by the required evidence to prove compliance with the Building Code and therefore the Act.
- 11.4 In relation to the specifications for plans, it would be reasonable for plans of a sufficient readability (including font style and size) in order for the authority to review them in the decision making process for the purposes of section 49 of the Act.

## 12. Building Code compliance

### 12.1 Is the timber treatment process building work?

12.1.1 In Determination 2011/117 I concluded that the liquid injection process did not come under the ambit of section 41, it is not work described by Schedule 1 of the Act and therefore it is building work that requires a building consent.

12.1.2 The PSP provided further submissions on the second draft determination relating to exempt building work (refer paragraph 9.4). The PSP submitted the building work was exempt as it was 'maintenance' under Schedule 1(1) of the Act. The PSP is of the view that the timber treatment process maintains the present condition of the building by intervening. In contrast to the previous determinations, the intervention in this case is only to targeted parts of the building not to the whole building. The PSP submitted less than 15% of selected studs are targeted to be injected.

12.1.3 There is no dispute that the timber treatment process is building work. This has been established in Determination 2010/117. The question remains as to whether the building work is work that requires a building consent or whether it is exempt under section 41 from the requirement to obtain a building consent, including the exemptions listed in Schedule 1. Exemptions under Schedule 1 recognise that minor and low-risk building work should not be subject to the requirements of the building consent process. In Determination 2010/117 I stated:

- although not defined in the Act, I consider maintenance to be work that is needed to maintain the durability of a building element, where such durability has been reduced through normal circumstances (i.e. normal use, normal degradation)
- the application of in situ treatment is not maintenance, as it is adding something that was not there before and its purpose is not to simply maintain the current/existing levels of durability performance, but rather to increase durability and provide resistance to further decay where a building element (the timber framing) is degraded by other than normal circumstances (by in fact failure of another element – the E2 failure of the external envelope system)

12.1.4 Schedule 1(1) relates to repair and maintenance. I consider my comments above in relation to Determination 2010/117 are still valid despite some changes to the timber treatment process, notably targeted injections compared to the process being applied to the whole building. The wording of Schedule 1(1) refers to any 'component or assembly incorporated in or associated with a building' I consider this applies to the whole building or parts of the building and a distinction between the two cannot be found in the wording of the legislation.

12.1.5 In relation to the PSP's submission relating to 'normal' circumstances. I accept that moisture ingress can in some circumstances be considered 'normal', however I do not consider the timber treatment process to be classified as 'normal circumstances' as it is the addition of something that was not there before. I accept that the monitoring process of the timber treatment including the use of moisture detection probes can form part of a maintenance schedule<sup>10</sup>, however the introduction of the injection or foaming processes cannot be said to be normal maintenance of a building. The definition of normal maintenance in B2/AS1 refers to 'building elements' further defined as:

<sup>10</sup> See also Determination 2014/062 and Determination 2010/079

Any structural and non-structural component or assembly incorporated into or associated with a *building*. Included are *fixtures*, *services*, *drains*, permanent mechanical installations for access, glazing, partitions, ceilings and temporary supports.

- 12.1.6 I also note the PSP did not make an application under Schedule 1(2). As the authority has not had an application to consider and decide to accept or reject this cannot form part of the matter to be determined for the current application.

## 12.2 Building Code compliance for the building work in question

- 12.2.1 The building work in question must comply with the Building Code. The relevant building element is the timber treatment process, by foaming injection and liquid injection. In summary:

<p><b>Building Code obligations</b></p> <p>Clause F2 – Hazardous Building Materials</p> <p>Clause F2.3.1 states that the quantities of the gas, liquid, radiation or solid particles emitted by materials used in the construction of buildings, shall not give rise to harmful concentrations at the surface of the material where the material is exposed, or in the atmosphere of any space</p>
<p><b>Further information from PSP following previous Determinations</b></p> <p>Following Determination 2011/117 client privilege has been removed to tests conducted by independent laboratories on air volatility of the ingredients of the timber treatment process</p>
<p><b>My comment</b></p> <p>The air volatility report concludes that it is expected no negative health effects would occur as a result of the levels measured on testing day.</p> <p>In my view, the timber treatment process complies with Clause F2 provided the conditions do not change from that of the testing conditions</p>
<p><b>Building Code obligations</b></p> <p>Clause E2</p> <p>Clause B2</p>
<p><b>Further information from PSP following previous Determinations</b></p> <p>Following Determination 2011/117 monitoring of houses with timber treatment process have been shown to dry without the need to include drying skirts.</p> <p>In relation to the foaming injection process, the PSP stated the foaming injection system wets slower and does not exceed saturation levels, therefore reducing leakage.</p>
<p><b>My comment</b></p> <p>I accept that in comparison to Determination 2011/117 targeted repairs with a high level of treatment applied may not require the use of drying skirts.</p> <p>I consider the applicant should not apply for a code compliance certificate until the moisture levels fall below an acceptable level. This will be determined by the use of moisture detection probes (refer paragraph 2.2.5).</p> <p>I have accepted the liquid injection process in previous determinations; therefore it is logical to accept the foaming injection system as it is less saturated.</p>



## 12.3 Building Code compliance for the existing building

- 12.3.1 The existing building must comply to at least the same extent as before the building work in question is carried out. The relevant building element is the internal linings (bracing and normal loads). In summary:

<p><b>Building Code obligations</b></p> <p>Clause B1</p> <p>Clause B2</p>
<p><b>Further information from PSP following previous Determinations</b></p> <p>Testing of bracing fastening systems influenced by the timber treatment process at the University testing facility show an average loss of 21% faster strength can be expected three months after injection.</p> <p>Previously the PSP submitted bracing units using plasterboard linings can be improved by adding additional fasteners to bracing unit fixing locations.</p> <p>However, in a submission on the second draft determination the PSP have now submitted 'double nailing' which I take to mean the additional fasteners to the bracing, are no longer necessary following the alternative laboratory testing.</p>
<p><b>My comment</b></p> <p>The opinion from BRANZ follows that the University testing cannot be used to determine compliance with Clause B1 once the plasterboard has become wet.</p> <p>Following the hearing (refer paragraph 8.3) the PSP had further tests completed by the alternative laboratory to compare bracing system with and without the timber treatment process applied as to whether or not there had been a change in bracing capacity. I accept the observation that no discernible difference in performance was found.</p> <p>I note that 21% loss of strength is a significant loss for a three month period. However I also note that this is for a specific period of time and using the monitoring system a code compliance certificate will not be sought until the moisture levels had reached an acceptable level, indicating the loss of strength has been resolved.</p>

- 12.4 Taking account of my findings in paragraphs 12.2 and 12.3 and further to the findings already concluded upon in Determination 2011/117, in my view there is now sufficient information provided to show on reasonable grounds the building work in question will comply with Clause E2 and B2 in relation to the change to the foaming system and without the use of drying skirts. I also consider the further information supplied in relation to the bracing capacity of timber with the timber treatment process applied is sufficient grounds to establish compliance with Clauses B1 and B2 of the Code to the extent required by the Act.
- 12.5 I accept that in the process of carrying out the building work there will be non-compliance with the Building Code for periods of time. For example in carrying out significant re-cladding work and remedial renovation to an existing building takes a period of time. During this period of time it is accepted that the building does not comply with the Building Code in relation to certain code clauses. However, at the time the owner applies for a code compliance certificate for the building work, any non-compliance caused by the building work itself needs to be remedied. I consider a similar situation occurs in this case, the injection of the timber treatment process (the building work) causes non-compliance for a period of time. However with evidence of moisture at acceptable levels at the time a code compliance certificate is applied for, any non-compliance has been remedied to a satisfactory level. This will be for the authority to determine.

- 12.6 Further to Determination 2011/117, and following the release of the air volatility report I conclude that compliance with Clause F2 is now likely to be achieved. The report states:

It is expected that no negative health effects would occur as a result of the levels measured on the day of testing

The expert stated that provided the proposed application involves no more leakage of chemicals to the interior than to the test site, then compliance with F2 can be expected. I agree with this conclusion.

### **13. Was the authority correct to refuse to grant the building consent?**

- 13.1 Section 49 of the Act requires an authority to grant a building consent if it is satisfied on reasonable grounds the provisions of the Building Code would be met if the building work were properly completed in accordance with the plans and specifications that accompanied the application.
- 13.2 I have concluded in paragraph 12.4 that there is sufficient evidence to demonstrate compliance with respect to the relevant Building Code obligations for the building work in question. I also note that in coming to this view, I have considered evidence that has now been presented but that wasn't part of the building consent application for the authority to consider.
- 13.3 Under section 50 of the Act, if an authority refuses to grant an application for a building consent, they must give the applicant written notice of the refusal and the reasons for the refusal. In the PSP's submission they have asked for comment on the authority's refusal of current and previous building consent applications. I note that for the purposes of this determination I can only consider the building consent for the house in question and I am unable to comment on previous building consents lodged by the PSP.
- 13.4 In my view the authority has not given adequate reasons for the refusal of the building consent application. Under section 48(2) of the Act the authority may exercise their powers to request further information in respect of the application. In relation to the two building consent applications applied for by the PSP, the authority did exercise this right but required a fresh building consent application to be lodged. The new building consent application was declined and the reasons provided are quoted in paragraph 3.10. The authority did not state the reasons why it believed the building consent application was inadequate.
- 13.5 In my view, providing a reason to an applicant which simply states that not enough information was provided will not comply with section 48(2); the authority must provide some detail about what information it requires and what aspects of the Act and Building Code it considers the application has failed to comply with.
- 13.6 In refusing the PSP's second building consent, the authority has failed in their obligations under section 48(2) to provide adequate reasons for the application to be declined.

## **14. Advice to the building owner**

- 14.1 I am conscious of the fact that once the proposed building work has been completed and complies with the consent a code compliance certificate will be issued. The dwelling also has a code compliance certificate for its original construction. These two certificates should not be taken to mean that the house does not have some existing structural decay. I urge the applicant to consider taking advice on this matter and if needed replace decayed timber, repairing if needed any source of leaks. In order that subsequent owners be made aware that the two code compliance certificates cannot be taken as assurance of compliance, this determination should be placed on the property file.

## **15. What happens next?**

- 15.1 In my view the authority needs to have regard to my conclusion that they failed to provide adequate reasons for the building consent application to be declined. For future building consent applications the authority should provide some basis for their decision and an indication of why they consider the building work does not comply with the Building Code.
- 15.2 I suggest the building consent be amended to take into account the comments at paragraph 12.5 of this determination. There needs to be a document that reflects agreed readings on the moisture probes, indicating the drying out process has been completed, and prior to the PSP or the applicant applying for a code compliance certificate. The advisory note should be discussed and agreed to between the authority and the PSP (on behalf of the applicant). I also consider the PSP should provide the relevant information provided to this determination to support the building consent application.
- 15.3 I strongly suggest that the authority record this determination on the property file and also on any LIM issued concerning this property.

## **16. The decision**

- 16.1 In accordance with section 188 of the Act, I hereby determine that the authority correctly exercised its powers of decision in refusing to grant the building consent.
- 16.2 However, I consider with the information provided in the course of this determination, that there is sufficient evidence to conclude the building work complies with the Building Code to the extent required by the Act, subject to an amended building consent (refer paragraph 15.2).

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 7 June 2015.

John Gardiner  
**Manager Determinations and Assurance**

## Appendix A

### A 1 The relevant sections of the Act

#### 17 All building work must comply with building code

All building work must comply with the building code to the extent required by this Act, whether or not a building consent is required in respect of that building work.

...

#### 45 How to apply for building consent

(1) An application for a building consent must—

- (a) be in the prescribed form; and
- (b) be accompanied by plans and specifications that are—
  - (i) required by regulations made under section 402; or
  - (ii) if the regulations do not so require, required by a building consent authority; and
- (c) contain or be accompanied by any other information that the building consent authority reasonably requires;

...

#### 48 Processing application for building consent

(2) A building consent authority may, within the period specified in subsection (1A), require further reasonable information in respect of the application, and, if it does so, the period is suspended until it receives that information.

#### 49 Grant of building consent

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

...

#### 50 Refusal of application for building consent

If a building consent authority refuses to grant an application for a building consent, the building consent authority must give the applicant written notice of—

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

...

#### 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,—

- (a) the building will 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) the building will,—

- (i) if it complied with the other provisions of the building code immediately before the building work began, continue to comply with those provisions; or
- (ii) if it did not comply with the other provisions of the building code immediately before the building work began, continue to comply at least to the same extent as it did then comply.