

Determination 2008/13

Refusal of a consent for a farm implement storage shelter at 379 Heywards Road, Clarkville, Kaiapoi

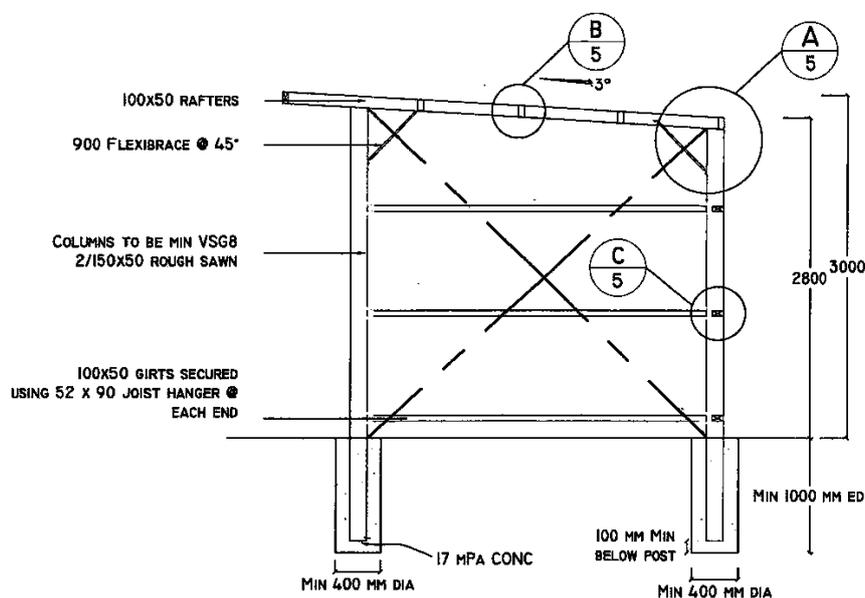


Figure 1: Section through the shed

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 MiTek Limited (“the applicant”) on behalf of the owner, J Allen, and the other party is Waimakariri District Council (“the territorial authority”) which is acting through an agent, Prime Building Compliance Ltd.
- 1.2 The matter for determination is the territorial authority’s decision to refuse to issue a building consent for a farm storage shed (“the shed”) because the territorial authority did not believe some of the timber to be used in the shed would meet the requirements of Building Code Clause B2 “Durability”.

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

- 1.3 In making my decision, I have considered the submissions of the parties and the other evidence in this matter.
- 1.4 In this determination, unless otherwise stated, references to sections are to sections of the Act and references to clauses are to clauses of the Building Code.

2 The building

- 2.1 The shed is 6.0 x 3.0 metres (nominally) in plan, made up of two 3.0 x 3.0 metre bays. The six vertical members supporting the shed are made up of either two or three sections of 150x50mm H5 treated pinus radiata fastened together to form timber columns which are set in concrete-filled holes. The balance of the framing is Douglas fir treated to H1.2.
- 2.2 The roof and cladding is of profiled steel. The shed has no floor and no windows or other openings in the walls. The shed is fully open along one 6.0 metre side that faces North East. There is a 600mm roof overhang to the open side.

3. Background

- 3.1 In August 2007 the applicant applied to the territorial authority, on behalf of the owner, for a building consent for the shed.
- 3.2 In a letter to the applicant dated 14 September 2007, the territorial authority stated that “the use of Douglas fir and H1.2 sawn timbers for the shed is not in compliance with NZS 3602:2003²”. The territorial authority referred to Table 1, part B, in NZS 3602:2003 which prescribes the level of timber treatment required in timber for use as “members exposed to exterior weather conditions and dampness but not in ground contact.”
- 3.3 I observe that compliance with NZS3602:2003 is not mandatory. NZS3602:2003 is cited in the Acceptable Solution B2/AS1 which describes one way, but not the only way, of achieving compliance with Clause B2 Durability of the Building Code. What is mandatory is compliance with Clause B2 Durability of the Building code.
- 3.4 The territorial authority declined to issue a building consent unless the plans or specification were amended.
- 3.5 The Department received the application for a determination on 24 October 2007.

4. The submissions

- 4.1 The applicant submitted that the use of H1.2 treated Douglas fir as structural members for the shed meets the requirement of Building Code Clause B2 “Durability” because:
- as the shed is unlined, if any of the members get wet there is ample ventilation to dry them out
 - the shed is not habitable and does not have the same requirements as residential dwellings
 - Douglas fir has inherent moisture resisting capabilities and has performed very well when compared with other types of timber species. The highest level of

² New Zealand Standard NZS 3602:2003 Timber and Wood-based Products for Use in Buildings

treatment achievable for Douglas fir is H1.2 and they are concerned that now Douglas fir cannot be used in these situations

- Clause 110.2(f) of NZS 3602:2003 defines the agricultural farm building category “Unlined buildings except where used for purposes involving high humidity or moisture (such as saunas, spa pools, or agricultural purposes, where there is elevated moisture content conducive to decay)”. The applicant suggests that the definition of “elevated moisture” is the presence of horticultural sprays or similar. The shed is an open, ventilated, unlined structure with general protection from the weather.
- The applicant has been designing farm buildings for well over twenty-five years and has been specifying untreated Douglas fir or H1.1 pinus radiata.

4.2 The applicant forwarded copies of:

- plans
- structural calculations
- the letter from the territorial authority.

4.3 The applicant did not provide me with documentation describing the proposed roof and wall cladding materials and installation. I observe that it is difficult for me, as it would have been for the territorial authority, to make decisions regarding the moisture exposure of the framing timbers when inadequate information about the proposed construction details has been submitted.

4.4 Copies of the applicant’s documentation were provided to the territorial authority.

4.5 The territorial authority did not make a submission.

4.6 The draft determination was sent to the parties for comment on 19 December 2007. Both parties accepted the draft without comment.

5 Discussion

5.1 The shed is required to comply with Clauses B1 and B2 of the Building Code. The design calculations submitted indicate compliance with Clause B1.

5.2 The relevant provision of Clause B2 “Durability” of the Building Code requires that, unless otherwise specified, building elements must, with only normal maintenance, continue to satisfy the performance requirements of the Building Code for certain periods (“durability periods”) “from the time of issue of the applicable code compliance certificate” (Clause B2.3.1).

5.3 These durability periods are:

- 5 years if the building elements are easy to access and replace, and failure of those elements would be easily detected during the normal use of the building
- 15 years if building elements are moderately difficult to access or replace, or failure of those elements would go undetected during normal use of the building, but would be easily detected during normal maintenance
- the life of the building, being not less than 50 years, if the building elements provide structural stability to the building, or are difficult to access or replace,

or failure of those elements would go undetected during both normal use and maintenance.

- 5.4 Section 113 of the Act provides for a building consent to be issued for a building that is to have a “specified intended life” of less than 50 years if the applicant so requests. Otherwise Clause B2 of the Building Code requires that the durability period for this farm shed must be indefinite, but not less than 50 years.
- 5.5 There are two types of timber framing proposed:
- (a) Firstly, the six timber columns which are specified as pinus radiata treated to H5. This is in accordance with NZS 3602:2003 and can be expected to achieve a 50 year durability period. Because they comply with that Standard they are automatically deemed to comply with Clause B2 Durability (refer paragraph 3.3).
 - (b) Secondly, the balance of the framing is to be Douglas fir treated to H1.2. The compliance status of the Douglas fir framing is not immediately clear because, taking account of the use to which it is being put, Douglas fir does not appear to fall within the categories prescribed in NZS3602:2003, and is therefore not automatically deemed to comply with Clause B2 Durability.
- 5.6 The applicant has referred to Clause 110.2(f) of NZS 3602:2003 (see paragraph 4.1), and consequently to Table 1E in that Standard. Table 1 specifies “The requirements for wood-based building components to achieve a 50 year durability performance.” Clause 110 refers to that part of Table 1 called Table 1E which is headed “Members not exposed to weather or ground atmosphere and in dry conditions”. Clause 110.2(f), cited by the applicant, refers to “Unlined buildings, except where used for purposes involving high humidity or moisture (such as saunas, spa pools or agricultural purposes where there is elevated moisture content conducive to decay)”.
- 5.7 In the case of this farm shed the lower girts (to be made of Douglas fir treated to H1.2) will be vulnerable to exposure to moisture. Being immediately adjacent to the open side, they will inevitably be exposed to some wind-driven rain, possibly surface water coming under the cladding and possibly moisture from the ground or any vegetation or other debris, and consequently at risk of moisture penetration. The girts affected will receive some protection from the timber columns, walls and the roof extension over the open side, for example the exposed end grain will be protected, and provided the lower girts are sufficiently clear of the ground to allow adequate drying they should not be exposed to moisture for long periods. Nonetheless they cannot as currently designed be accurately described as “Members not exposed to weather or ground atmosphere and in dry conditions”. The reference by the applicants to Clause 110.2(f) is therefore not valid.
- 5.8 In these circumstances the use of treated Douglas fir must therefore be considered as an alternative solution to meeting the durability requirements of the Building Code
- 5.9 In evaluating the design of a building and its construction, it is useful to make some comparisons with the relevant Acceptable Solutions³, which will assist in determining whether the features of these buildings are code compliant. However, in making this comparison, the following general observations are valid:

³ 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.

- 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.
 - 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.
- 5.10 In this case the durability requirement is that the building should last for not less than 50 years, subject to normal maintenance necessary to keep it compliant throughout its life. In order to compensate for the non-compliance of the Douglas fir timber framing with the Acceptable Solution for durability, it is appropriate to consider the degree of exposure of the most vulnerable framing and how to mitigate the exposure so as to achieve the durability requirement.
- 5.11 As referenced in paragraph 5.7, there is some exposure to exterior weather conditions, and, if the girts were too near the ground, there could also be exposure to ground moisture or surface water. Reducing the more chronic exposure to ground moisture, relocating the girts away from surface water and providing for more effective drying will achieve an environment more nearly akin to that described in Clause 110.2(f). Consideration can also be given to the treatment level of the Douglas fir which is a compensating factor for non compliance with the acceptable solution.
- 5.12 I therefore consider the code compliance will be achieved by modifying the design of the shed and raising the bottom girt to a suitable height above the ground. This may depend on the nature of the ground and location but I note that figure 65 of E2/AS1 indicates framing within a wall with a clearance above unpaved ground of a minimum of 225mm which may provide a guide to the territorial authority. This may result in the lower edge of the cladding being more susceptible to damage but I consider that in these applications the life of the cladding should not be significantly reduced.
- 5.13 I emphasise that determinations are made on a case by case basis. The fact that a proposed building consent application may be code compliant in one circumstance does not mean that it will automatically be code compliant in another circumstance.

6 The decision

- 6.1 In accordance with section 188 of the Building Act 2004, I determine that, subject to receiving all the necessary documentation to support the consent application (see reference to the amended girt height in paragraph 5.12), the territorial authority shall issue a building consent for the proposed farm shed.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 4 March 2008.

John Gardiner
Manager Determinations