



## Determination 2016/018

### Regarding the issue of a notice to fix for a two-cell rammed earth building constructed at 83 Chaplin Road, Waihola, Otago



#### Summary

This determination considers whether a two-cell rammed earth building (also known as an “earthship”) constructed without consent was exempt under Schedule 1 and whether the authority was correct to issue a notice to fix. The determination discusses the remedies provided for in the notice, and discusses issues relating to an application for a certificate of acceptance.

#### 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 this determination are:
  - the owners of the property, K & A Nicol (“the applicants”)
  - Clutha District Council, carrying out its duties as a territorial authority or building consent authority (“the authority”).
- 1.3 The determination arises from a notice to fix issued by the authority for the construction of the earthship<sup>2</sup> on the applicant’s property without building consent first being obtained. While it is not disputed by the applicants that the building work was not exempt under Schedule 1 of the Act, the notice to fix included as one remedy that

<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.

<sup>2</sup> Definition of “earthship” from [www.oxforddictionaries.com](http://www.oxforddictionaries.com) “A type of house designed to have a minimal impact on the environment, characterized by extreme energy efficiency and the use of recycled and natural building materials such as used tyres packed with earth.”

a determination on compliance be obtained, and the applicants have accordingly applied for this determination.

1.4 The matter to be determined<sup>3</sup> is the exercise of the authority's power of decision in issuing the notice to fix. In this determination I have also discussed the content of the notice to fix with respect to the requirement to apply for a determination.

1.5 In making my decision, I have considered the submissions of the parties and the other evidence in this matter.

## **2. The building work and background**

2.1 The applicants purchased the property in 2011. In January 2014 they began building a single-cell earthship on the property. During construction the applicants opted to add a second cell adjacent to the first, with both cells sharing drainage and earth berms but with separate structural walls and roofs (together "the earthship"). Construction stopped in December 2015, and the applicants have stated that 'the build is not completed'.

### **2.2 The earthship**

2.2.1 The earthship consists of two closed "U" shaped cells, with the entrances facing north. The north wall to each cell is approximately 3m in width, and the internal depth of the individual cells are both less than 3.5m. The earthship has been constructed with reinforced rammed earth and tyre walls around the U, a mix of glass bottle and aluminium can walls set in concrete on the north wall, and a reinforced concrete arched roof. Each cell has a timber-framed mezzanine floor consisting of macrocarpa joists overlaid with ply.

2.2.2 Each cell has a chimney and a ventilation tube through the roof. The timber joinery in the north walls includes windows installed at mezzanine level and French doors at ground level.

2.2.3 The drainage system, known as a "French drain", is laid around the perimeter of the two cells with a shared leg at the adjacent walls, and drains to adjacent orchards.

2.2.4 Water is collected from the roofs in a cement gutter system and directed to a water tank but the water is not presently retained. The applicants have submitted that, if it is achievable, they would like to use the water as a potable supply, 'mainly for [the] orchard, cleaning etc'. I note here that the term 'potable' is used in the Building Code in respect of water intended for human consumption, food preparation, utensil washing, or oral hygiene (refer Clause G12<sup>4</sup>).

2.2.5 The applicants have described the intended use of the earthship as being a place used for storage of tools and food and to provide shelter while the applicants worked on the property. It was unclear in the application for determination whether the shelter includes sleeping accommodation; however in response to a draft of the determination the applicants advised they would like to discuss the potential for this use with the authority.

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<sup>3</sup> Under section 177(2)(b) and 177(2)(f) of the Act.

<sup>4</sup> 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.

## 2.3 The notice to fix

2.3.1 On 2 December 2015 the authority carried out a site visit, and in a letter dated 17 December the authority wrote to the applicants to confirm that the construction of the earthship did not fall within the exemption provided for in Schedule 1(3). The authority noted that the applicants needed to apply for a certificate of acceptance to regularise the building work, further stating:

... The work completed is specific design and would require a registered engineers design to assess against. As the building work is completed i.e. covered up, the buildings structure would not be possible to assess for compliance with the building code there for (*sic*) we would be unable to issue a [certificate of acceptance] ...

2.3.2 The authority attached a notice to fix, dated 17 December 2015. The particulars of contravention recorded the breach of section 40 of the Act '[i]n that two earthship mud huts have been constructed without building consent. In addition, the remedy was described as follows:

To remedy the contravention or non-compliance it is recommended:

An application ... for a determination is recommended to be applied for with supporting information as to how the building complies with the NZ Building Codes. Failing this the illegal buildings may be required to be removed.

The date for the notice to be complied with was 29 March 2016.

## 2.4 The applicants' supporting information

2.4.1 In response to the notice to fix the applicants contacted the authority and subsequently engaged a firm of engineering consultants ("the consultant") to undertake a structural design review of the reinforced concrete arched roof, the timber-framed mezzanine floors, and the reinforced earth-rammed bearing/retaining walls. The consultant provided a letter dated 10 March 2016, setting out the parameters of the review and concluding that the earthship 'conform[s] to the relevant structural loading and material standards as outlined [in the consultant's letter]'. The consultant noted that the review did not include waterproofing or durability, and that the consultant did not observe or oversee the construction and had not carried out any testing of the materials used.

2.4.2 The consultant provided a PS2 – Design Review of the 'building structure only', confirming compliance by way of Verification Method B1/VM1 subject to construction on 'good bearing soil as defined in NZS 3604<sup>5</sup>'.

2.4.3 In response to the notice to fix the applicants compiled the following supporting information to lodge an application for determination:

- a letter and PS2 Design Review from a firm of engineering consultants
- the curriculum vitae of an experienced earthship builder that facilitated during construction and a statement regarding the building's durability and drainage and moisture management
- 67 colour photographs taken during and after construction
- a set of drawings dated 30 January 2016.

2.4.4 The Ministry received the application for determination on 18 March 2016.

<sup>5</sup> New Zealand Standard NZS3604:2011 Timber-framed buildings.

### 3. The submissions

- 3.1 Along with the information compiled in response to the notice to fix (refer paragraph 2.4.3) the applicants set out the background to the matter and made a submission (in summary):
- The applicants' enquiries led them to believe that they would not get approval from the authority for this method of building.
  - There is no data on how an earthship in that region would perform given the rainfall, seasonal temperatures, and soils etc. The applicants did not want to risk building 'a main dwelling' without further evidence of performance, and considered the small huts would give the applicants an insight into performance in terms of temperature, moisture levels, drainage and run-off. The applicants also consider the construction and in-service performance of their build will assist with relevant information for future builds of similar construction in New Zealand.
  - The earthship has been enclosed for almost one and a half years, and the applicants are of the view that it is performing well.
  - The timber work and window placements were completed by licensed building practitioners.
- 3.2 The applicants also advised that they intended to approach the authority for building consent to attach a greenhouse on the front of the earthship at some date in the future. The greenhouse would be constructed of wooden framed windows along the full north face, and would include a grey water system that is typical of earthship design.
- 3.3 The authority acknowledged the application by returning a completed form, but made no submission on the matter.
- 3.4 A draft determination was issued to the parties for comment on 7 April 2016.
- 3.5 The applicants provided a response on 4 May 2016, providing clarification of some details in the background to the events and expanding on some construction details. In regards to the modified wording of the notice to fix (refer paragraph 5.1) with respect to "sufficient information" being supplied, the applicants submitted that
- It is for the [authority] to assess what they are happy to sign off and as long as a breach of the [Building] code is not self-evident they should issue a [certificate of acceptance] with appropriate limitations of clauses and liability.
- 3.6 On 5 May 2016 the authority provided an email response noting it would make no comment.
- 3.7 In response to the applicants' submission, I note that the authority must have sufficient information to establish on reasonable grounds that the building work complies with the Building Code otherwise the test under section 96(2) is not met. Grounds for refusing to issue a certificate of acceptance would be that there was non-compliant building work or that the exclusions are of such an extent that the certificate would be severely limited in nature and of little or no value.

## 4. Discussion

- 4.1 An authority has the power to issue a notice to fix where the authority considers on reasonable grounds an owner is contravening or failing to comply with the Act or Building Code (section 164(1)(a)). A notice to fix is most commonly issued in respect of building work that does not comply with the Building Code or building work carried out without a building consent when a building consent was required.
- 4.2 The remedies required by a notice to fix would typically require the owner to undertake building work to bring building work into compliance with the Building Code (and may require the owner to apply for a building consent in order to carry out such remedial building work), and/or require the owner to apply for a certificate of acceptance in respect of building work carried out without a building consent.
- 4.3 In this case the authority included in the covering letter, rather than in the notice to fix, that the applicants would need to obtain a certificate of acceptance for the building work that had been carried out without building consent when building consent was required.
- 4.4 However, the authority also stated that ‘As the building work is completed, i.e. covered up...’ the authority would not be able to assess the building’s compliance and issue a certificate of acceptance under section 96<sup>6</sup>. I note here that an application for a certificate of acceptance is almost always in respect of work an authority has not inspected; the Building Act specifically provides for an owner to seek a certificate of acceptance where building work has been carried out without building consent when consent was required.
- 4.5 I acknowledge that as building consent was not sought the authority has not been afforded the opportunity to evaluate the compliance of the proposed building work at the consent stage and the quality assurance programme for the build, nor did it have the opportunity to carry out inspections during construction. However subsequent inspections by the authority can be carried out as part of the assessment process on receipt of an application for a certificate of acceptance. See previous determinations<sup>7</sup> regarding evidence base for certificates of acceptance.
- 4.6 In addition, section 99(2) and Form 9<sup>8</sup> both provide for a certificate of acceptance to attach a further list of building work the authority has been able to inspect for the purpose of limiting the liability of the authority to that work it has been able to inspect. This attachment listing the building work inspected will obviously be narrower than the description of work covered by the certificate of acceptance. This is because the extent to which the authority has been able to ‘inspect’ work will usually be less than the extent to which it has been able to ‘ascertain’ whether building work complies with the Building Code. In ascertaining, the authority takes into account all the relevant evidence available, including its knowledge and belief of the circumstances surrounding the building work and the builders and designers who undertook the work, and statements of opinion provided such as producer statements.<sup>9</sup>

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<sup>6</sup> I note the authority incorrectly cites section “96(e)2)” in the letter.

<sup>7</sup> For example *Determination 2011/043 The refusal to issue a certificate of acceptance for a retaining wall to a driveway at 570 Wyuna Bay Road, Coromandel*, Department of Building and Housing (13 May 2011).

<sup>8</sup> Building (Forms) Regulations 2004: Form 9 Certificate of Acceptance.

<sup>9</sup> See also Determinations 2012/076 and 2011/043.

- 4.7 For a certificate of acceptance the following types of building work can be differentiated:
- building work that could be inspected and confirmed as code-compliant
  - building work that could not be inspected and for which code-compliance could not be determined (these can be excluded from the certificate of acceptance).
- 4.8 A certificate of acceptance can exclude those clauses of the Building Code for which the authority cannot be satisfied comply. The fact that compliance may not be able to be determined in respect of certain Building Code clauses does not necessarily mean that the work concerned is non-compliant.
- 4.9 Any exclusion should only relate to the building work for which compliance cannot be determined; the exclusion is not a means to address building work that is not compliant. A certificate of acceptance cannot be issued if the building work does not comply with the Building Code.
- 4.10 The notice to fix included in the remedy a recommendation that the applicants apply for a determination, and I consider that it was inappropriate for the authority to include that as a remedy in the circumstances. It was for the applicants to apply for a certificate of acceptance and for the authority to make an assessment as to compliance with the Building Code; any application for a determination, if required, should follow such an assessment not precede it.
- 4.11 I also note that the remedy referred to the possibility that the authority would require removal of the unconsented building work. I have addressed this issue in many previous determinations. The following view was held in Determination 2000/1:
- The [Ministry] recognises that if building work that was done unlawfully is not demolished then the owner would appear to benefit from its unlawful actions. Nevertheless, if that building work, although done unlawfully, complies with the Building Code, then the [Ministry] considers that it is unreasonable to require it to be demolished so that it can be constructed again. ...
- Demolition of building work which is neither dangerous nor insanitary is a drastic step which should only be taken for compelling reasons. Based on the information provided to me, I do not believe that such compelling reasons exist in this case.
- 4.12 When making a determination, under section 188 I must confirm, reverse, or modify the decision made by the authority. While I have concluded that there was building work carried out for which building consent was required, and accordingly the authority was correct to issue a notice to fix for the breach of section 40, I have also found the remedy provided for in the notice to fix was incorrect. Modification of the notice to fix is required to remove reference to an application for a determination and to provide for the application of a certificate of acceptance as a remedy.

#### 4.13 What happens after the determination?

4.13.1 It is my opinion that, subsequent to the issue of this determination, the parties should be able to resolve the outstanding matters to regularise the building work. I suggest the parties take the following steps in order to conclude this matter:

- The authority to notify the applicants of a reasonable timeframe in which it considers an application for a certificate of acceptance for the building work should be submitted.
- The authority make available to the applicants information on how to apply for a certificate of acceptance and the information that will be required from the applicants.
- The applicants prepare documentation in support of the application for a certificate of acceptance to be submitted to the authority.
- The authority to carry out an inspection of the building work with regard to compliance with the Building Code to inform its decision on the application for a certificate of acceptance.

4.13.2 I provide the following comment to assist the parties:

- Under section 17 of the Act, all building work must comply with the Building Code to the extent required by the Act, whether or not a building consent is required in respect of that building work.
- In regards to building work carried out in association with the earthship the application of the relevant clauses of the Building Code for the purpose of the certificate of acceptance will depend on the classified use of the earthship<sup>10</sup>. Some clauses that apply in respect of sleeping accommodation would not apply to outbuildings.
- The applicants have indicated they may wish to use the earthship for sleeping accommodation and potentially the water system as a supply of potable water. It is for the applicants to identify the intended use of the building and to address compliance with the relevant clauses of the Building Code in the application for a certificate of acceptance<sup>11</sup>.
- The set of New Zealand Standards for earth buildings<sup>12</sup> may assist the applicants in understanding the sort of information that would be required to support the application for a certificate of acceptance. While the scope of the standards may not cover the earthship entirely, the means of proving compliance may be able to rely in part on those standards.

4.13.3 I note that once the parties have carried out the steps suggested in 4.13.1 and the authority has made a decision regarding the application for a certificate of acceptance, if there remain any outstanding items of disagreement these can be referred to the Chief Executive for a further binding determination.

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<sup>10</sup> Classified uses are set out in Clause A1 of the Building Code.

<sup>11</sup> For further information see <http://www.building.govt.nz/building-code-compliance/how-the-building-code-works/>.

<sup>12</sup> NZS 4297:1998 Engineering design of earth buildings, NZS 4298:1998 Materials and workmanship for earth buildings, NZS 4299:1998 Earth buildings not requiring specific design.

## 5. The decision

5.1 In accordance with section 188 of the Act, I hereby determine that:

- the authority correctly exercised its powers of decision in issuing the notice to fix No: Z-FIX/2015/24 in respect of the construction of the earthship without building consent when consent was required;
- however, the notice to fix did not adequately describe the remedies, and is hereby modified as follows:

To remedy the contravention or non-compliance:

You must apply for a certificate of acceptance for the building work carried out without consent. Your application should provide sufficient information for an assessment to be made as to compliance of the building work with the New Zealand Building Code.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 30 May 2016.

John Gardiner  
**Manager Determinations and Assurance**