



Determination 2013/010

The issue of a notice to fix in respect of blockwork forming the foundation for a house at 90 Lake Panorama Drive, Henderson Valley, Auckland

1. The matter to be determined

1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004¹ (“the Act”) made under due authorisation by me, John Gardiner, Manager Determinations 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 owner of house, R Chavan (“the applicant”) acting through the builder, M Aiyaz of ECCL Construction Ltd (“the builder”) as his agent
- Auckland Council², carrying out its duties and functions as a territorial authority or building consent authority (“the authority”).

1.3 The builder and the consulting engineer (“the engineer”) are also considered to be persons with an interest in this determination.

1.4 The determination arises from a decision made by the authority to issue a notice to fix in respect of the blockwork forming the foundations of the house (“the blockwork”). The authority was of the view that the building work had not been carried out in accordance with the building consent or with the Building Code (Schedule 1, Building Regulations 1992).

1.5 Therefore, the matter to be determined³ is whether the authority correctly exercised its powers in issuing the notice to fix. In considering this matter, I must establish whether there was sufficient evidence for the authority to conclude, on reasonable grounds, that the building work did not comply with the Building Code and building consent.

¹ The Building Act, Building Code, Compliance documents, past determinations and guidance documents issued by the Ministry are available at www.dbh.govt.nz or by contacting the Ministry on 0800 242 243

² The building consent was issued by Waitakere City Council which was later transitioned into the Auckland Council. The term authority is used for both.

³ Under sections 177(1)(b) and 177(2)(f) of the Act.

- 1.6 In making my decision in this matter, I have considered the submissions of the parties, the report of the expert commissioned by the Ministry (“the expert”), and other evidence in this matter
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2. The building work

- 2.1 The building work to which this determination relates is the blockwork making up the masonry subfloor walls that form the foundation of a single level dwelling that is under construction.
- 2.2 The dwelling is being constructed on a site that slopes away from the road frontage with approximately a 5m fall from the northwest to southeast corner. Due to the site falls the engineer designed masonry walls are proposed to retain up to 1.8m to allow for a concrete slab foundation.
- 2.3 Once constructed, the four bedroom home will have a concrete tile roof, timber framed walls, and have cladding comprising brick veneer, weatherboard and schist, all founded on the concrete slab.

3. The background

- 3.1 In November 2009 the authority issued building consent no. COM-2009-1146 for the construction of a dwelling under the Act. Specifications provided as part of the building consent documentation identified the masonry as Grade C, as described in NZS 4230⁴, and required that all masonry was to be carried out by competent and experienced people under the supervision of a registered mason or suitably qualified person. Where a blocklayer was to be used they were to hold a current NZ Masonry Trades Association Certificate. Furthermore, an engineer was to inspect the masonry work in order to confirm compliance with the building consent (including the required standards of construction) and to provide a Producer Statement.
- 3.2 Construction appears to have begun in April 2012 and a partial inspection of the foundation was carried out by the authority on 17 April 2012. This inspection failed, with the site notice recording that:
- 1) Foundation trench to be cut horizontal and not following the ground contour
 - 2) Detail 1a needs to be 600 below CGL, at present it is 300 below CGL
 - 3) Complete the installation of steel and complete the digging of trenches.
- 3.3 The inspection form noted that the ‘dwelling only strip footing and piles (not retaining wall)’ were inspected. Additional comments were:
- ..fit all corner steel bars; ground must be level at base of footing

⁴ New Zealand Standard NZS 4230:2004 Design of reinforced concrete masonry structures

- 3.4 A further foundation inspection was carried out by the authority on 20 April 2012, which passed and recorded that the items from the previous inspection were ‘now ok’.
- 3.5 On 26 June 2012 the authority carried out a ‘concrete block or concrete reinforcing’ inspection. This inspection failed, with the inspection record noting:
- 1) Stop work and remove blockwork, relay in a tradesman-like manner under the supervision of the structural engineer. [The authority] is to inspect with the engineer’s site instruction notes prior to pouring.
- 3.6 On 28 June 2012 a site meeting was held between the builder and an authority officer following the above inspection. The meeting notes record:
- The builder was informed verbally and by a foundation check sheet that the foundation blockwork is to be removed and reinstated ...
- 3.7 On 29 June 2012 a site visit was made and a meeting held between the builder and two officers of the authority. The blockwork was re-inspected, the same conclusion reached and a notice to fix was issued to the applicant the same day. The notice identified the particulars of contravention or non-compliance as non-compliance with Building Code and NZS 4229⁵ and NZS 4210⁶ for Concrete Masonry Buildings. The notice included the requirement to ‘stop work, except for the removal of all the blockwork ...’.
- 3.8 The engineer’s inspection record, dated 30 June 2012, noted in respect of the blockwork:
- Rough therefore to be plastered before water proofing.
All blockwork will be plastered. All cells filled.
Blockwork reinforcing ok
Ready to pour (must be done before remedial work as above)
- 3.9 It appears the blockwork was filled with grout some time following the date of the engineer’s inspection.
- 3.10 A replacement notice to fix was issued on 3 July 2012 with changes to the wording identifying the particulars of contravention or non-compliance as being:
- The blockwork forming the foundations and basement ... does not meet section 40 of the Building Act 2004, as the building work is not being carried out in accordance with the building consent.
- The notice went on to cite the specifications of the building consent referring to the requirement to construct within the tolerances set out in NZS 4210 Clause 2.6.5 and to lay masonry units with bedding of consistent thickness throughout. The notice included the requirement to stop work, except for the demolition and removal of the blockwork.
- 3.11 On 4 July a meeting was held at the authority’s offices: the minutes of the meeting record the following:

⁵ New Zealand Standard NZS 4229:1999 Concrete masonry buildings not requiring specific engineering design

⁶ New Zealand Standard NZS 4210:2001 Masonry construction: Materials and workmanship

- The builder said the ‘site instruction notice’ dated 29 June (refer paragraph 3.7) had not been received and that he was ‘seeking instruction’.
 - The authority said the blockwork ‘must be taken down’ and that the builder ‘must comply with the site inspection regardless’ of the engineer’s instruction.
 - The builder tabled the engineers instruction referred to in paragraph 3.8 that he could ‘pour/fill blockwork, so has done the work’.
- 3.12 Another site meeting was held on 5 July 2012 attended by the builder, the engineer and three officers of the authority. The authority’s records of the meeting note that after an investigation of the blockwork ‘by all parties it was agreed that a majority if not all of the blockwork is to be removed as per the [notice to fix] issued prior’.
- 3.13 On 9 July 2012 the authority wrote to the engineer requesting information as to the scope of work to be carried out in removing and reinstating the reinforced blockwork. The email also stated that the authority:
- .. require that supervision of the builder / blocklayer is undertaken by yourself when ready as with council inspections of the work when required.
- 3.14 On 11 July 2012 the authority wrote to the applicant noting that no action had been taken to demolish the wall and that the builder had gone ahead with grouting despite the stop work instruction and before the authority had an opportunity to inspect the reinforcement. The authority stated that it accepted a proposal was to be presented as to how the constructed blockwork could be remedied and noted that the authority’s concerns were:
- The Masonry Block-Work does not meet the construction tolerance requirements NZS4210 and hence the building work does not comply with the Building Consent. The appalling workmanship is likely to affect the strength of the Block-Work and there is no confidence that the brick veneer, which is to be positioned on the block base, will be able to [be] constructed to the required tolerances.
- The reinforcing steel extending from the block work is in many instances to (sic) short and some of it loose. This indicates that some of the steel has insufficient embedment and/or that the grout has not been properly compacted.
- [The authority] has no confidence that the steel is appropriately spaced or that the grout has surrounded the steel within the cores of the block work. Hence there is no basis for ensuring the steels strength and durability requirement.
- 3.15 In a letter received by the authority on 12 July 2012, the builder disagreed with the authority’s view and noted that his understanding of the agreement reached at the previous meeting (4 July) was that ‘it was agreed that work be rectified in consultation with [the engineer]’. The builder assured the authority that work that had been carried out was done under the supervision of the engineer.
- 3.16 The authority responded to the builder by email on 12 July 2012. In the email the authority acknowledged it would be willing to consider a proposal setting out the demolition and reconstruction process (for the blockwork). The authority noted that any proposal would still need to be approved. The notice to fix continued to apply and only allowed for demolition to take place.
- 3.17 On 16 July 2012 the authority wrote to the applicant regarding the compliance date associated with the notice to fix (16 July). The authority advised the applicant to

apply for an extension of time for the notice to fix as no action had taken place. The applicant responded to the authority on the same day noting that the engineer's proposal for the works was in progress and the builder would not commence work until the authority had given consent to proceed. A one month extension was granted.

- 3.18 On 24 July 2012 the engineer emailed the authority noting that his main concern was 'structural integrity and therefore areas where there appears to be inadequate concrete'. The engineer had requested of the builder that the blockwork be broken out at the corners and lower parts of the walls. These areas would then be inspected. The email identified remedial work that could proceed in the event the inspections revealed that the work was adequate. The engineer noted that he had no concerns in regards the starters as he had inspected those before the pouring of concrete.
- 3.19 On 25 July 2012 the authority replied to the engineer accepting the 'proposal to remove sections of the blockwork so as to determine the state of the grout pour and structural steel', noting that this could go ahead as soon as possible. The authority requested that a site meeting be held once this proposed work was completed.
- 3.20 On 26 July 2012, the applicant requested and received confirmation from the authority that work could commence to rectify the problems at the site. The builder was notified by the applicant of the permission to start work on the same day.
- 3.21 On the 6 August 2012 another site meeting was held, attended by the builder and three authority officers. The meeting was held following the removal of three areas of blockwork (as per the engineer's proposal). The authority's records from the inspection note that:

reinforcing steel is missing in vital places

block work has not been adequately filled with grout which has left the steel exposed to moisture ingress

[the authority] has verbally told the builder that [it] will not [accept] the blockwork and that it must be removed as per the notice to fix

...a portion of the work to ascertain squareness, [the authority found] that the building in this area was out of square by up to 100mm.

- 3.22 On 8 August 2012 the authority subsequently advised the applicant by email that as a result of the inspection to ascertain the condition of the blockwork fill and reinforcing the authority maintained the view that all of the blockwork must be removed as per the notice to fix.
- 3.23 On 13 August 2012 the authority issued a new notice to fix, with some changes to the wording, to replace that previously issued. The wording changes were to more directly specify the relevant sections of the Act and Building Code clauses to be complied with. The compliance date was also extended.
- 3.24 On 21 August 2012 a surveying company ("the surveyor") carried out an inspection at the request of the builder to 'check the position of the construction thus far'. In a letter to the applicant dated 24 August 2012 the surveyor noted that

...

2. The overall exterior dimensions are within 0-30mm of being correct (not withstanding that the walls in most cases will need to be plastered to be made square and flush)

3. One exterior wall ... is 60mm off-line over a distance of approximately 3 metres and will require a portion to be added near the 45 degree wall ...

4. The interior walls in the main are parallel. The area around the internal stairs is so rough that any determination of squareness, level or perpendicular is impossible. However...

- The stairwell area is out of square by at least 100mm
- There is an area around bedroom 3 and the stairwell which would best be ripped out and redone as it is extremely rough and it appears some remedial work has already been started with the idea of boxing the formwork
- ... it would be better if some 4 metres of blockwork was redone.

5. Some blocks appear to be out of height and the header was placed incorrectly, this makes the squareness of the construction look worse and will need to be fixed in the course of proceeding.

The surveyor also noted that a few assumptions had to be made as the exact corner of the dwelling is not always obvious, and that the surveyor '[did] not disagree that there are portions of the construction that need repair.'

3.25 On 22 September 2012 the applicant applied to the Ministry for a determination.

3.26 On 2 October 2012, the authority received notice of the application for determination and another site meeting was held on 3 October 2012. At this meeting the authority reiterated that it was 'adamant' that the blockwork could not be used to support the concrete slab and proposed dwelling. The authority also issued an updated notice to fix which provided additional detail in the particulars of contravention or non-compliance as follows:

- a) Some of the concrete floor starter steel is poorly spaced, short and not properly embedded in the concrete grout filled block work (some starters are loose), hence this building work does not comply with performance requirements B1.3.1 and B1.3.2
- b) The concrete grout in the block work lacks compaction and does not fully surround the reinforcing steel and hence is not protected from degradation associated with corrosion and hence does not comply with the performance requirements B2.3.1 and B2.3.2 ...

3.27 The parties agreed to continue with the determination application to resolve the matter and the Ministry was provided with advice of the builder's authority to act on behalf of the applicant on 23 October 2012.

4. The submissions

4.1 The application for the determination was accompanied by a submission from the applicant. The submission included:

- correspondence between the authority, the builder, applicant and engineer in relation to the notices to fix
- the surveyor's report in respect of the siting of the dwelling dated 28 February 2012, and the surveyor's letter to the applicant dated 24 August 2012
- the engineer's instruction dated 30 June 2012

- inspection records that predate the issue of the notices to fix
 - some of the correspondence and documentation associated with the building consent application.
 - various notices to fix issued by the authority.
- 4.2 The authority provided a submission, received by the Ministry on 18 October 2012, in response to the application for determination. The authority stated that it held major concerns as to the non-compliance of the building work with Clauses B1 and B2 of the Building Code, and that in its view the blockwork base should not be allowed to support the balance of the building work associated with the construction of the consented dwelling.
- 4.3 The authority noted that it remained open to assessing a proposal from an engineer that avoided the need for the blockwork to be removed, but that no suggestion as to a viable solution had been received. The authority acknowledged the number of changes to the notices to fix that were issued, and provided copies of the following:
- a CD of all documents, including a full set of the building consent documents and photographs taken during site visits
 - copies of correspondence in relation to the notices to fix
 - the notices to fix
 - a summary of the background.
- 4.4 A draft determination was issued to the parties for comment on 17 December 2012.
- 4.5 The authority accepted the draft determination without comment in a response received 21 December 2012.
- 4.6 The builder did not accept the draft determination, and stated that a “detailed proposal” from the builder’s engineer would follow. The builder advised, during several phone calls to the Ministry, that the draft determination did not clearly detail whether the authority had previously advised the builder that the blockwork was not satisfactory before it was grouted. The builder was asked to make a submission to this effect.
- 4.7 A second draft determination was issued to the parties for comment on 5 February 2013. This draft expanded the background section of the determination to include the information from the builder referred to in 4.6.
- 4.8 The builder made a submission on 13 February 2013, with the following comments (in summary):
- The builder’s ‘engineer has assumed responsibility and issued [a] PS4’, confirming that work could continue.
 - After the first site visit, the engineer recommended that the ‘rough blockwork’ be remedied by plastering. After receiving advice from the engineer that the foundation wall was ‘ready to pour’, the builder initiated the grouting process.

- During the ‘first inspection’ the builder was ‘ordered to take down the whole reinforcement, out of [the] foundation’. A council officer later stated that this was not necessary, and only the corner starter bars needed to be checked before grouting⁷.
- The notice to fix was later modified by the authority, to request that the engineer submit a proposal regarding the cutting/removing portions of the blockwork, and the builder engaged a contractor to do this work. The ‘inspection was categorised as a fail’ before it was carried out.

4.9 The engineer made a submission on 15 February 2013, with the following comments (in summary):

- After reviewing the construction of the foundation wall, the engineer generally agreed with the faults outlined in the draft determination.
- The engineer considered that it was not necessary to ‘completely remove all masonry’ and listed specific remedial work.
- The engineer stated that a PS4 would not be issued until the remedial work had been carried out.

4.10 The authority responded to the engineer’s and builder’s submissions on 20 February 2013, with the following comments (in summary):

- The authority did not accept any of the assertions in the builder’s submission dated 13 February 2013 and had not received a PS4 for the blockwork from the engineer.
- The authority received a field note stating that the foundation was ‘ready to pour’, however they did not receive it until after the grouting had been completed as the builder had not requested an inspection.
- The authority’s view was that the suggested remedial works as outlined in the engineer’s report dated 15 February 2013 did not meet their expectations or those of the Ministry’s expert.

4.11 The builder responded to the authority’s submission by way of a letter to the Ministry dated 27 February 2013, reiterating some of the points raised in previous submissions, and in addition stating that:

- the ‘PS4 can only be submitted after completing the extra plaster work, which would only be done after the [blockwork] is completed ...’
- the builder disputed that any authority inspections had alerted him to any reinforcing steel being ‘missing’
- work ‘inside’ the blockwork has been inspected by the authority; and those inspections did not record any of the defects subsequently raised by the authority.

4.12 In an email dated 28 February 2013, the authority initially advised that it did not wish to make any further submission. However, in a later email of the same date, the

⁷ This statement is not supported by written information presented by the parties

authority acknowledged the builder's position that no PS4 had been issued, and the said that the builder had not called for an inspection prior to filling the blockwork.

5. The expert's report

5.1 As mentioned in paragraph 1.6, I engaged an independent expert to assist me. The expert is a chartered professional engineer and a member of IPENZ. The expert inspected the blockwork on 1 November 2012 and provided a report dated 30 November 2012. A copy of this report was sent to the builder and authority on 5 December 2012 and to the engineer on 5 December 2012.

5.2 Compliance with the Building Code

5.2.1 The expert's inspection was limited to a visual walkover survey of the landing and building work, at which the expert observed the following:

- sections of the foundations appear not to have been poured level and cut masonry infill pieces have been used to bring the construction back to level
- the block laying does not satisfy the tolerance requirements of Table 2.2 NZS 4210
- many masonry joints both vertical and horizontal are not mortared
- grouting is inadequate with some cells empty or not fully grouted
- horizontal reinforcing appears to be missing (HD12@600mm c/c were specified)
- some of the starter bars evident in the broken out section of the wall appear to have inadequate lap available, although these bars may have been cut in the breaking out process
- the rebate for the brick veneer appears to have been cut out post wall construction
- workmanship is generally very poor.

5.2.2 In light of the observations on site the expert concluded that the building work did not meet the requirements of either Clause B1 or Clause B2.

5.2.3 The expert also commented on the remediation proposed by the builder, noting that plastering the outside of the walls would be cosmetic only and would not solve the structural and durability issues. The expert was of the view that sections of the lower height retaining walls could be remedied and there was also the possibility of eliminating the need for the walls to be retaining, thus reducing the structural implications of the defects.

5.3 Compliance with the Building Consent

5.3.1 The expert noted contradictory and insufficient information in the consent drawings and specifications, in particular around the masonry grade and the propping of the retaining walls during backfill. The expert also noted the standards and verification method cited in the consent documents.

- 5.3.2 Compliance with Clause B1 of the Building Code can be established via B1/VM1, and if the verification method is to be used as the basis of compliance then NZS 4230 needs to be met. NZS 4230 calls for compliance with NZS 4210 in respect of materials and workmanship requirements for masonry construction.
- 5.3.3 The expert noted a considerable number of areas where the requirements of NZS 4210 were not met (refer paragraph 5.2) and that it was clear the construction of the walls was not supervised by a registered mason or suitably qualified person.

6. Discussion

- 6.1 Taking account of the expert's report and the other evidence provided, I accept that the items listed in paragraph 5.2.1 require remediation and that the building work does not comply with either the building consent or with Clauses B1 and B2 of the Building Code.
- 6.2 The authority's view of the compliance of the blockwork was communicated to the builder during the inspection carried out on 26 June 2012, at site meetings held on 28 and 29 June 2012, and by way of the notice to fix issued to the builder on 29 June 2012 that also included a 'stop work' instruction. In my view the engineer's inspection record of 30 June 2012, as stated in paragraph 3.8, does not fully address the matters brought to the builder's notice by the authority, and the authority was not given the opportunity to inspect the blockwork prior to pouring the grout as requested in the site inspection record of 26 June 2012.
- 6.3 I am satisfied that the authority was correct in its decision to issue the notices to fix and the stop work instruction included in the notices. I acknowledge that the notice to fix of 3 October 2012 also appropriately provided the applicant with the option of preparing a scope of work to rectify the matters of non-compliance.

7. What is to be done?

- 7.1 The notice to fix of 3 October 2012 provides the applicant with the option of demolishing and then reinstating the blockwork or 'any other construction in compliance with the Building Act 2004'. If the applicant chooses to remediate the building work a detailed proposal, produced in conjunction with a competent and suitably qualified person, should be provided to the authority for its approval.
- 7.2 Any outstanding items of disagreement can be referred to the Chief Executive for a further binding determination.

8. Decision

- 8.1 In accordance with section 188 of the Act, I hereby determine that the blockwork does not comply with Clauses B1 and B2 of the Building Code and that the authority correctly exercised its powers in issuing a notice to fix; accordingly I confirm the authority's decision.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 1 March 2013.

John Gardiner
Manager Determinations and Assurance