Department of Building and Housing
Te Tari Kaupapa Whare

Determination 2008/101

The compliance of a foul water drain at 25 Marlowe Place, Rolleston

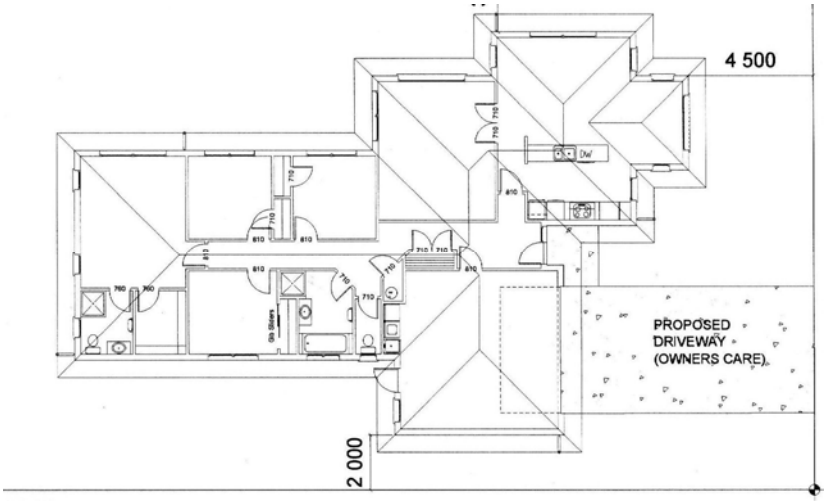


Figure 1 Part site plan showing location of house and drive (drainage not shown)

1. The matter to be determined

1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004[1] ("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 applicants are the owners, D and A Kearns, and the other party is the Selwyn District Council ("the authority") carrying out its duties and functions as a territorial authority or building consent authority. The builder, Golden Homes Ltd ("the builder") has been included as a person with an interest in the matter.

1.2 The matter for determination is whether the foul water drain as installed to a house complies with Building Code[2] Clause G13 Foul Water (Schedule 1, Building Regulations 1992).

[1] The Building Act 2004 is available from the Department's website at www.dbh.govt.nz.
[2] The Building Code is available from the Department's website at www.dbh.govt.nz.

1.3 I have not been asked to consider whether the surface water drain, which also appears to have been installed in the same trench as the foul water drain, also complies with the Building Code.

1.4 In making my decision, I have considered the submissions of the parties, the video inspection by the independent expert commissioned by the Department to advise on this matter ("the expert"), and the other evidence in this matter.

2. The building work

2.1 The building work is a foul water drain from a new single-storey detached house that is situated on a flat site. Part of the drain is beneath and beside the driveway to the house.

3. Background

3.1 The authority issued a building consent (No. 070381), dated 7 June 2007, for a 4-bedroom detached house with an attached garage on the property. It appears the house was completed during the latter half of 2007. A code compliance certificate is yet to be issued.

3.2 The consent documents show the garage and it is clear from that that the surface water and the foulwater drains running under the drive and will be subject to traffic loading. This is confirmed in the as-built drawings for the drainage services.

3.3 The specification, under a section called "Drainage" says:

> All Drainage work to comply with G13/AS1 (foul water) and E1 (Stormwater).
>
> Excavate for drains to a firm even base with correct gradients set in straight runs.
>
> Install Gully traps to NZBC acceptable solution G13/AS2, 3.2 complete with grating 50mm above ground.
>
> Lay Foulwater drains in straight lines to correct gradients, to discharge into the network utility sewer system. Set inspection fittings on a concrete base.

The building consent contained no additional conditions.

3.4 The authority completed an inspection of the drains on 27 September 2007 before the trenches for the drain were back-filled. The inspection notice noted:

> The sewer and stormwater drains have been completed and passed. OK all trenches can be backfilled. Sewer grade 1-60

3.5 According to the builder the foul water drain is located approximately 1.5 metres below the finished ground level.

3.6 Following completion of the house, the applicant engaged a driveway contractor ("the contractor") to lay an asphalt driveway to the house. The preparation work for the driveway was completed in December 2007, with the seal completed in January 2008.

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.

3.7 Shortly after completion, and following a period of heavy rain, an area beside and at the edge of the driveway surface slumped. On inspecting the area, the contractor stated that inappropriate fill must have been used around the drains at the time they were laid and the lack of properly compacted selected fill beneath the driveway had resulted in the movement.

3.8 The applicant then contacted the builder who, following some correspondence and discussion, offered to share the cost of the repair work on the basis that the drainlayer may have been responsible for the fill over the drains, but the driveway contractor was also responsible for checking that the fill beneath the driveway was adequate.

3.9 The applicant declined the builder's offer on the basis that the drainlayer was responsible for ensuring that the drain was installed in accordance with the Building Code, which had not been done. The builder subsequently withdrew his offer.

3.10 The Department received an application for a determination on 20 May 2008, and sought further information on the matter from the applicant and the authority.

4. The submissions

4.1 In a letter accompanying the application, the applicants outlined the background to the matter, noting that they felt it was unacceptable for the drainlayer to rely on a later tradesman to rectify deficiencies. The applicants stated that the drains should have been installed correctly to start with, using "compacted selected fill" as required in the Acceptable Solution G13/AS2 where drains are "located below residential driveways".

4.2 The applicant forwarded copies of:

- photographs of the damaged driveway
- the drainage plan
- Figure 6 from the Acceptable Solution G13/AS2 Drainage dated July 1992. (I note this figure is referred to as Figure 7 in the version of G13/AS2 that was current at the time the building consent was issued.)

4.3 The authority forwarded copies of:

- the building consent
- some consented plans and the relevant parts of the specification
- the as-built drainage plan
- the drainage inspection record.

4.4 In an email to the Department dated 26 June 2008, the builder stated that he did not know why the driveway contractor had not compacted the fill over the drain, noting:

> Our build contract states that drives and driveways are owners care so the issue which touches upon us is that of whether the drains were installed correctly.

The builder included a report from the drainlayer, which noted that the 1.5m deep section of drain beneath the driveway was bedded and covered with drainage chip,

then inspected by the authority and passed for backfilling. As referred to in his quotation for the job, the drainlayer used excavated material to backfill the trench as hardfill is used only on jobs where it is specifically called for.

4.5 The builder forwarded copies of:

- the email from the drainlayer dated 19 June 2008
- the drainage inspection record.

4.6 Copies of the applicant's and the builder's submissions were provided to the other parties.

4.7 The applicant responded to the builder's submission in an email dated 26 June 2008, stating that the inspection record is irrelevant as the issue is the backfilling which was not inspected by the authority. The applicant noted that the contractor compacted the top layer beneath the driveway, but should not be expected to "go down and check the drainlayers work". In the applicant's opinion, the drainlayer's work should have been done "as instructed in the building code which requires a different back fill for under driveway areas." and adding a standard note to quotations should not "get someone out of following Building Code regulations."

4.8 The draft determination was issued to the parties and the builder for comment on 16 September 2008.

4.9 The applicant and the builder accepted the draft determination without comment (the owner's response was not received until 29 October 2008).

4.10 The authority did not accept the draft saying that it had not received a copy of the application and the application form, and in the authority's opinion it was not a party to the determination.

4.11 In response I consider that the authority was a party to the determination. I note that the application was forwarded to the authority on 16 June 2008 in the same form that it was received by the Department. A later email from the authority confirmed that the application had been received. The expert's inspection video, and all subsequent correspondence and submissions and were copied to the authority for its comment. Information was received from the authority on 9 September, in response to a specific request from the Department. No submission was received from the authority in response to the application, or to the submissions of the other parties.

5. The expert's report

5.1 As discussed in paragraph 1.4, I engaged an expert, being an inspection company to undertake a video inspection of the foul water drain itself to determine whether the foulwater drain itself had not slumped.

5.2 The video showed that the drain was in good condition with no damage, and was flowing freely to an even gradient.

5.3 A copy of the expert's video was provided to the parties on 30 June 2008.

6. The legislation and the Compliance Document

6.1 The relevant provisions of the Building Code Clause G13 Foulwater are:

G13.3.2 The drainage system shall:

(a) Convey *foulwater* to an appropriate *outfall*,

(f) Be constructed to avoid the likelihood of damage from superimposed loads or normal ground movement.

6.2 The relevant provisions of the Building Code Clause B2 Durability are:

B2.3.1 Building elements must, with only normal maintenance, continue to satisfy the performance requirements of this code for the lesser of the specified life of the building, if stated, or:

(b) 15 years if:

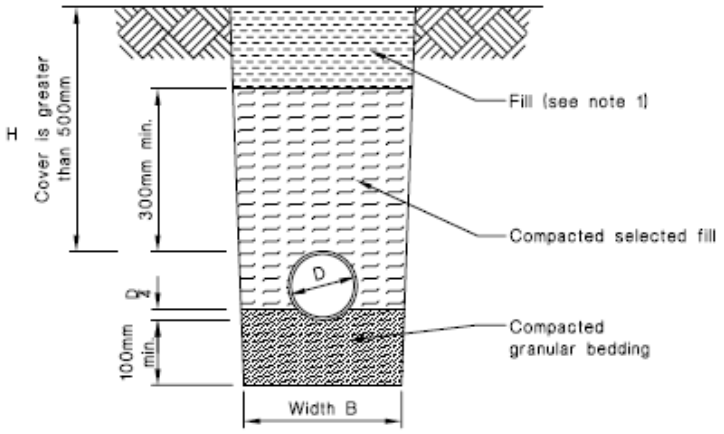
(i) Those building elements (including the building envelope, exposed plumbing in the subfloor space, and in-built chimneys and flues) are moderately difficult to access or replace, or

(ii) Failure of those building elements to comply with the building code would go undetected during normal use of the building, but would be easily detected during normal maintenance.

6.3 The relevant paragraphs of the Acceptable Solution[3] G13/AS2 Drainage are:

5.3.1 Figure 7 gives acceptable methods for the bedding and backfilling of the drainage pipes . . .

Figure 7: Bedding and backfilling
Paragraphs 5.2.1, 5.3.1 and 5.4.1



(a) Bedding type 'B' of NZS 7643
Cover greater than 500mm

NOTE:
1. Fill shall be:
-Ordinary fill where drains are located below gardens and open country.
-Compacted selected fill where the drains are located below residential driveways and similar areas subject to light traffic.

[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.

5.2.1 Drains shall be constructed to withstand the combination and frequency of loads likely to be placed upon them without collapse, undue damage or undue deflection (see Figure 7). In addition, adequate support needs to be provided to prevent gradients becoming less than those required by Table 2 as a result of:

a) Differential settlement, or

b) Deflection of an unsupported span.

7. Discussion

General

7.1 The video inspection of the foulwater drain has established that the slumping of the ground above the drain has not adversely affected either the gradient or the evenness of the falls to the drain.

7.2 However, drainage systems shall comply with Building Code Clause G13.3.2(f), which requires drains to be constructed to avoid damage from superimposed loads or normal ground movement.

7.3 I note that the authority inspected the completed drains prior to backfilling. In the absence of any submissions to the contrary, I accept that the bedding under and around the drains up to the soffit level is adequate.

7.4 The ground above the foulwater drain has slumped. It is not known what effect this ground movement has had on the drain with respect to its ability to continue to meet G13.3.2(f) as required by the Building Code's durability provisions. I consider the drain moderately difficult to access and replace and therefore consider the Building Code requires them to continue to meet the above requirements in respect of Clause G13 for a period of 15 years.

Acceptable Solution G13/AS2

7.5 The approved building consent contains no specific means of complying with Building Code Clause G13.3.2(f). In the absence of a specific means of compliance it is reasonable to compare the performance of the as-built situation with the requirements of the Acceptable Solution G13/AS2.

7.6 Figure 7 of G13/AS2 says that "compacted selected fill" shall be used when drains are located more than 500mm below the finished ground level and when "drains are located beneath residential driveways and similar areas subject to light traffic". The location of the garage was shown on the approved consent plans, and it is clear is that, as the foul water drain traverses the area immediately in front of the garage it is going to be subjected to traffic loadings.

Conclusion

7.7 I consider, in the absence of any information on the plans and specifications as to the construction of the trenches, that I can only assess their adequacy against the provisions of the Acceptable Solution G13/AS2.

7.8 The applicant has submitted that, because the foulwater drain is beneath a driveway, the builder should have backfilled the trench above the drain with "compacted

selected fill" as required by Figure 7 of G13/AS2. I concur with that view and conclude that the drain as installed does not comply with the Building Code Clause G13.3.2(f).

8. The decision

8.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the foulwater drain does not comply with Clause G13 of the Building Code.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 12 November 2008.

John Gardiner
Manager Determinations