Determination 2007/116

Whether proposed building work at 13 McMaster Road, Dunedin, is to be carried out on land likely to be subject to slippage

1 The matter to be determined

1.1 This is a determination under Part 3 Subpart 1 of the Building Act[1] 2004 ("the Act") made under authorisation by me, John Gardiner, Determinations Manager, Department of Building and Housing, for and on behalf of the Chief Executive of that Department.

1.2 The parties are the applicant, D G and G P Morris, ("the owners") acting through a firm of solicitors, and the Dunedin City Council ("the territorial authority").

1.3 The application for determination arises out of the territorial authority's decision that, "unless the land is stabilised", a building consent for certain building work was to be subject to a condition under section 36(2) of the Building Act 1991 ("the former Act") (now section 73) requiring an entry on the certificate of title. Such an entry has been described by the Court of Appeal[2] as "a blot on the title". That decision was significantly modified in the course of the determination, see 6.3.3 below to the effect that if the house is to be founded on Abbotsford mudstone then any building consent will be subject to a section 73 condition, whereas if the house is to be founded on volcanic rock then the territorial authority will not require such a condition.

1.4 I have not been asked to determine whether a building consent should be granted but only whether, if granted, it should be subject to a section 73 condition. As to the condition, I take the view that the determination turns on whether, in terms of section 71(1)(a), "the land on which the building work is to be carried out is subject or is likely to be subject to 1 or more natural hazards", in this case slippage caused by land instability.

1.5 In making my decision I have not considered any other aspects of the Act or the former Act.

1.6 In this determination, unless otherwise stated, references to sections are to sections of the Act.

[1] The Building Act 2004 is available from the Department's website at www.dbh.govt.nz
[2] *Logan v Auckland CC* 9/3/00, CA243/99, (2000) 4 NZ ConvC 193,184.

2 The building work and the land concerned

2.1 The sequence of events

2.1.1 The owners applied for a building consent for the extension of an existing house ("the building work") in January 2001 under the former Act. The territorial authority issued a receipt for the fees involved, which was apparently attached to an annotated copy of the application. The annotations included what appears to be a notice under section 35(1A) of the former Act, in Form 4A of the Building Regulations 1992 (now a notice under section 37 required to be attached to the project information memorandum) to the effect that construction was not to commence until a resource consent had been granted under the Resource Management Act 1991. In the first draft (see 2.3.3 below) I assumed that the building consent had in fact been granted subject to that notice, but the territorial authority responded that the building consent had in fact never been granted.

2.1.2 The resource consent was duly granted under the Resource Management Act in February 2001 but was subject to the following condition:

> Section 36 of the Building Act 1991 will be invoked at the building consent stage unless the land is stabilised in terms of an engineers design, and advise building control staff accordingly.

2.1.3 The owners disputed that condition with the territorial authority, and the parties and their advisers corresponded on the matter, until the owners applied for this determination in March 2006, on the basis that a report ("the land stability report") they had obtained from a firm of geologists ("the owners' geologist") established that the land on which the building work was to be carried out was not likely to be subject to slippage due to land instability.

2.2 The building work, the land comprising the allotment, and the submissions

2.2.1 The building work consists of a 92.5 m^2 extension to a 66 m^2 existing house with a detached garage. The territorial authority provided the documentation associated with the application for building consent and information about the existing house. The submitted plans showed conventional foundations in accordance with NZS 3604 but included the following note:

> NOTE
>
> Before construction commences, the site shall be inspected and tested by a structural engineer or ground stability engineer, and all foundation details shown shall be confirmed by same as suitable for the site. All construction shall comply with NZS 3604:1999 and bear on "good ground" or as specifically designed by the engineer.

The application did not include detailed specifications of the proposed means of disposing of surface water and foul water, and the owners recognised that such details would have to be provided before a building consent could be granted. However, the owners decided not to amend the application in that respect until the matter of land stability had been resolved. Accordingly, this determination is confined to the

question of whether, if and when a building consent is granted by the territorial authority, that consent should be subject to a section 73 condition.

2.2.2 The land stability report is outlined in 2.2 3 to 2.2.6 below, and its contents are discussed in more detail in paragraph 6.2 below. Figure 1 of the land stability report is the annotated aerial photograph shown below. The photograph is overlain with property boundaries, and the owners' allotment is the one containing the existing house.

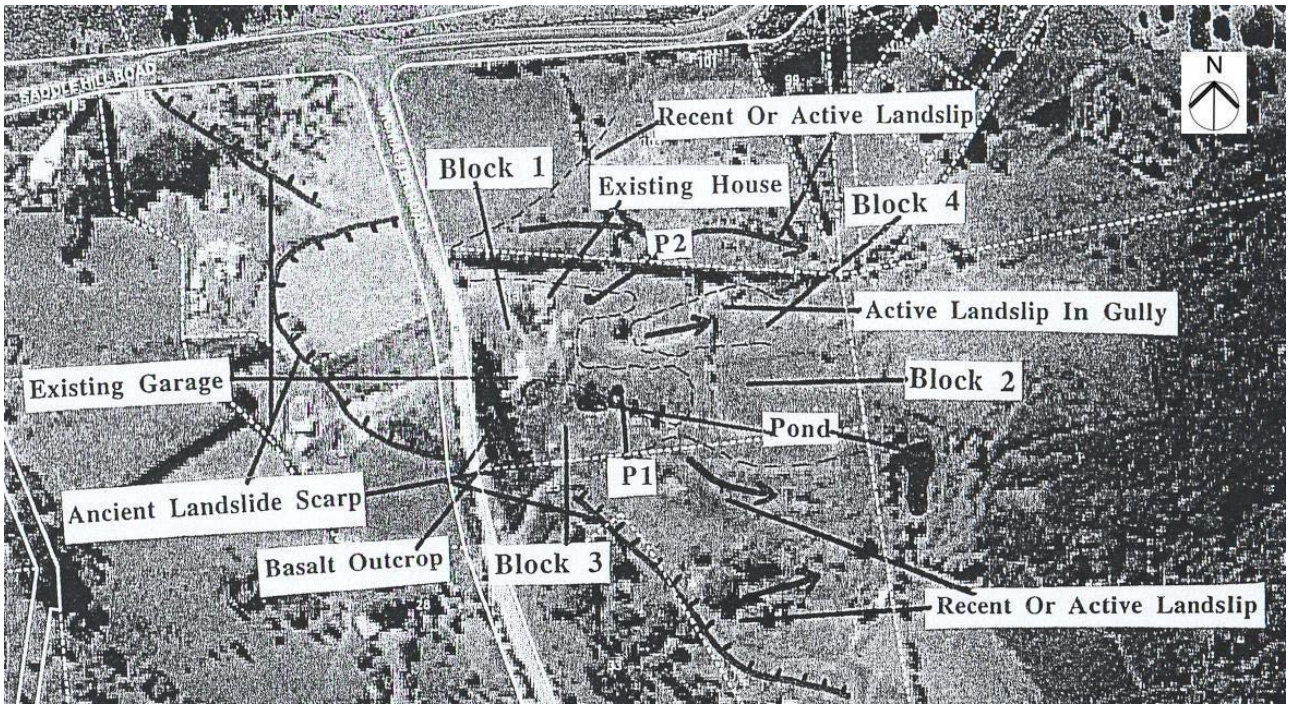

Figure 1: Aerial photograph taken from the land stability report (the ground slopes down to the right of the picture)

2.2.3 The land stability report said that the existing house and garage are on a broad ridge which extends below the buildings. In this determination I use the term "the house site" to refer to that area of land on the ridge that contains the existing house and garage, and the proposed building work, together with the immediately adjacent area. According to that report there was no sign of instability on that ridge. Subsurface investigation indicated that the ridge had been stable for thousands of years. The most likely reason for that continued stability was the generally drier surface and ground water conditions prevailing on the ridge. It was not established whether the ridge was underlain by volcanic bedrock or by the mudstone underlying lower areas.

2.2.4 That was, said the land stability report, in stark contrast to the very wet ground to the north and south, which was clearly prone to instability. The likelihood of instability in those areas could be mitigated by appropriate remedial measures such as planting and ensuring that storm water is directed to the gully containing the pond shown on Fig. 1 rather than draining on to the slopes below the house.

2.2.5 There was land instability on the neighbouring allotment that might in future encroach onto the owners' allotment. The likelihood of such extension could be mitigated by planting between the northern boundary and the house site.

2.2.6 Nevertheless, the report concluded that the possibility of shallow instability affecting the house site in future "cannot be discounted".

2.2.7 That conclusion was queried by a firm of consulting engineers ("the territorial authority's consultant"), which disputed that there was sufficient evidence to confirm that the ridge had been stable "for thousands of years". The territorial authority's consultant also pointed out the possibility that the existing house was situated over mudstone because, as it had previously advised the territorial authority, landslip instability "is often associated with the proximity of the mudstone/volcanic rock interface".

2.2.8 The territorial authority took the report's conclusion to mean that, for the purposes of sections 171 and 172, shallow instability was "likely" to affect the house site. The owners' geologist responded:

> It might have been clearer if [that conclusion] had read, "While the likelihood of . . . landslip activity affecting the house site in future is low, it cannot be discounted. However, if the recommended mitigating measures are carried out, this likelihood would become very remote". . . .
>
> From the investigation carried out, there is no evidence of any past land instability at the dwelling site or on the slope below (except . . . some considerable distance below the dwelling). I believe the ridge on which the dwelling is sited, would have remained stable in its natural state. The in-ground septic tank is reducing the factor of safety of the slope below the house. However, this can be reversed by replacing the in-ground field with an above-ground field. In addition, planting out the entire slope as recommended, will significantly enhance the slope stability that existed before installation of the septic tank.

2.2.9 I asked the owners' geologist whether, without any mitigating measures being taken, he would assess the probability of slippage affecting the house site as being "likely" for the purposes of the Building Act, citing the decided cases mentioned in 5.2 below and adding:

> In engineering terms, another way of looking at it is that the 450 year return period design earthquake specified in NZS 4203 must be accepted as being "likely". That earthquake has a 10% probability of occurring in any 50 year period.

2.2.10 The geologist responded by saying:

> I believe the work "likely" regarding the probability of the house site being affected by slippage, in the absence of any mitigating measures, is too strong. I believe the word that more accurately describes the situation is "possible". That is, in the absence of any mitigating measures, it is possible that the site could be affected by landslip activity.
>
> Having said that, I would be quite negligent if I did not reiterate that it would be foolhardy in the extreme, if any additional capital expenditure was incurred on the property, before the septic outfall is removed from the natural ground-forming materials, and before the slopes immediately below, and also west of the dwelling have been planted out, as recommended in my 2002 report.

2.3 The submissions and the hearing

2.3.1 The submissions included a number of geological reports on the area and the allotment dating back to 1983. None of them was as detailed as the 2002 land stability report quoted above, and I see no need to discuss them. The submissions also included building consent documentation and correspondence between the parties.

2.3.2 The owners made legal submissions as to the interpretation of sections 71 to 74 which are set out in the discussion below, and also said:

> The owner's Bank has indicted that it will not finance the improvements if [an entry is made on] the Title on the basis that any policy of insurance would be solely be related to damage by fire and no other risk.

2.3.3 I prepared a draft determination ("the first draft") to the effect that "the land on which the building work is to be carried out is not subject to and is not likely to be subject to slippage due to land instability". I sent the first draft to the parties for comment. Their responses were:

(a) The owners accepted the draft.

(b) The territorial authority did not accept the draft and made specific comments as to the status of the application for building consent, the nature of the existing house, and the fact that the territorial authority had requested, but had not received, further information as to aspects of the building work.

(c) The territorial authority also submitted comments from the territorial authority's consultant as to various technical matters.

2.3.4 As the first draft had not been accepted by both parties, it was necessary to hold a formal hearing.

2.3.5 For the purposes of the hearing, I prepared a further draft ("the second draft"), which took account of the comments on the first draft to the extent that they related to the stability of the land and not to the building work's compliance with the Building Code (see 2.2.1 above).

2.4 The hearing

2.4.1 The hearing was held before me on 19 December 2006 and included a visit to the site. The owners were represented by their solicitor, who accompanied one of the owners. The territorial authority was represented by its solicitor, who called evidence from one of the territorial authorities' building officials, and from two consultants to the territorial authority. In attendance were a Referee acting for and on behalf of the Chief Executive by delegated authority under section 187(2) of the Building Act 2004, and officers of the Department.

2.4.2 Unfortunately, the owners' geologist was overseas and unable to attend.

2.4.3 I shall not set out all of the evidence and discussion at the hearing. In outline:

(a) The territorial authority's solicitor outlined its concerns and called evidence from the territorial authority's consultant.

(b) One of the territorial authority's consultants made specific comments on passages in the second draft. Those comments have been taken into account and the draft has been amended where appropriate.

(c) The other of the territorial authority's consultants made technical comments on issues with the site. Those comments have been taken into account and the draft has been amended where appropriate.

(d) The owners' solicitor made submissions in support of the second draft.

2.5 The expert's report and the third draft

2.5.1 After the hearing I engaged an independent firm of engineering consultants ("the expert") to undertake further geotechnical investigation. I copied the resulting report ("the expert's report") to the parties. The expert's report and the parties' responses to it are discussed in 6.5 below.

2.5.2 In the light of the report and the responses, I prepared this further draft determination ("the third draft") and sent it to the parties for comment. The territorial authority accepted the third draft. The owners did not accept it but did not propose to introduce any further evidence in opposition to the decision. The owners also requested a non-controversial amendment to the draft, which has been made.

3 The 2004 Act and the former Act

3.1 Although the application for building consent was made under the former Act, this determination must be made under the 2004 Act.

3.2 Section 432 provides that an application for building consent made under the former Act, but not granted, must be treated as if it had been made under section 45. I take that to mean that the condition of the building consent expressed in terms of section 36 of the former Act must be read as referring to sections 71 to 74 and 392.

3.3 However, I also take the view that, for the purposes of this determination, sections 71 to 74 and 392 make no substantive change to the provision of section 36 of the former Act, so that submissions expressed in terms of the former Act are equally valid in terms of the 2004 Act. The relevant provisions of the 2004 Act are:

Section 71:

(1) A building consent authority must refuse to grant a building consent for construction of a building, or major alterations to a building, if—

(a) the land on which the building work is to be carried out is subject or is likely to be subject to 1 or more natural hazards; or

(b) the building work is likely to accelerate, worsen, or result in a natural hazard on that land or any other property.

(2) Subsection (1) does not apply if the building consent authority is satisfied that adequate provision has been or will be made to—

(a) protect the land, building work, or other property referred to in that subsection from the natural hazard or hazards; or

(b) restore any damage to that land or other property as a result of the building work.

Section 72:

Despite section 71, a building consent authority must grant a building consent if the building consent authority considers that—

(a) the building work to which an application for a building consent relates will not accelerate, worsen, or result in a natural hazard on the land on which the building work is to be carried out or any other property; and

(b) the land is subject or is likely to be subject to 1 or more natural hazards; and

(c) it is reasonable to grant a waiver or modification of the building code in respect of the natural hazard concerned.

Section 73:

(1) A building consent authority that grants a building consent under section 72 must include, as a condition of the consent, that the building consent authority will [arrange for an entry on the certificate of title].

Section 392:

(2) Subsection (3) applies if—

(a) a building consent has been issued under section 72; and . . .

(d) the building to which the building consent relates suffers damage arising directly or indirectly from a natural hazard.

(3) The [building consent authority is] not liable in any civil proceedings brought by any person who has an interest in the building . . . on the grounds that the building consent authority issued a building consent for the building in the knowledge that the building for which the consent was issued, or the land on which the building was situated, was, or was likely to be, subject to damage arising, directly or indirectly, from a natural hazard.

4 The parties' understandings

4.1 It became clear at the hearing that the parties had somewhat different understandings of the basic problem.

4.2 The territorial authority knew that bedrock in the locality was generally Abbotsford mudstone but with some areas of volcanic rock. The soil-mudstone interface is notoriously prone to slippage that is generally not experienced with volcanic bedrock. The territorial authority considered that it must assume that the house site was on mudstone unless the owners established that it was on volcanic rock.

4.3 The owners, however, thought that their geologist had demonstrated that the house site had been stable for thousands of years and was suitable for construction. In fact, the land stability report did not establish whether the house site was underlain by volcanic bedrock or by the mudstone underlying lower areas, see 2.2.3 above.

4.4 The territorial authority, and its consultants, took the view that the consultants' role was "to critically review submissions prepared by other consultants, but not to instruct them how to carry out any investigations". Accordingly, when the territorial authority did not accept the geologist's conclusions, it did not tell the owners why, but simply advised them that "information from Council's consultants" was that the land on which the building work was to be carried out was subject to or likely to be subject

to a natural hazard and that therefore the owners must accept a section 73 notice on the title or "withdraw the application [for building consent]".

4.5 The owners did not appreciate that the territorial authority would have been satisfied, as it stated at the hearing, by evidence that the building work was to be constructed over volcanic bedrock not mudstone.

4.6 Neither the owner nor the territorial authority appear to have appreciated that the note as to foundations on the plans submitted with the application for building consent contemplated that such evidence would need to be obtained before construction commenced, see 2.2.1 above.

4.7 When I prepared the first and second drafts, I approached the matter (as did the parties) as turning on the weight to be given to the opinion of the owners' geologist as to whether the house site was "likely" to be subject to slippage, see 2.2.9 and 2.2.10 above. The owners in effect said that opinion was to be accepted, whereas the territorial authority said that the land stability report did not include sufficient evidence to support the opinion. The approach I took to the first and second drafts is no longer appropriate.

4.8 Accordingly, in considering whether the house site is likely to be subject to slippage I have re-evaluated the land stability report in the light of the hearing and of the expert's report, see 6.5 below. First, however, I must discuss the interpretation of sections 71, 72, and 73 and in particular the terms "the land on which the building work is to be carried out" and "likely".

5 Legal interpretations

5.1 Sections 71, 72, and 73

5.1.1 The owners said:

> For the avoidance of doubt, the [owners agree with the territorial authority's] interpretation of sections 71, 72, and 73 . . . that [an entry] on the certificate of title is required even if there is provision to protect the land and building work from "likely" "natural hazard".

5.1.2 On the view I take as to the matter for determination, that interpretation is irrelevant and I make no comment as to whether I consider it to be correct.

5.1.3 I consider that in this case an entry on the title is not required unless:

(a) The land on which the building work is to be carried out is likely to be subject to slippage in terms of section 71(1)(a); or

(b) The building work is likely to result in a natural hazard on that land in terms of section 71(1)(b).

5.2 The term "the land on which the building work is to be carried out"

5.2.1 As mentioned in 2.2.3 above, I use the term "the house site" to refer to that area of land on the ridge that contains the existing house and garage, the proposed building work, and the immediately adjacent area.

5.2.2 The term "the land on which the building work is to be carried out" in section 71(1)(a) corresponds to the term "the land on which the building work is to take place" in section 36 of the former Act. I take the view that for the purposes of this determination there is no substantive difference between the words "work is to be carried out" and "work is to take place".

5.2.3 The term "the land on which the building work is to take place" was discussed by the High Court in A*uckland CC v Logan* 1/10/99, Hammond J, HC Auckland AP77/99:

> When the statute refers, as it does, to "the land on which the building work is to take place", is it referring to the area contiguous to the building or to the land in general? Plainly, the circumstances may vary greatly. The "land" may be a 1000 acre property, on which a new house is to be built. The house may be far away from any potential inundation. Or, as here, the site may be a smallish suburban one, which is earmarked for higher density use, and it is very difficult to dissociate the building from the entire parcel of land."

5.2.4 That decision related to the natural hazard of inundation or flooding, and the High Court held that "the land on which the building work is to be carried out" was:

> the site itself [meaning the entire allotment] where . . . the building and the site are intimately connected

5.2.5 Although that decision was modified on appeal, *Logan v Auckland CC* 9/3/00, CA243/99, (2000) 4 NZ ConvC 193,184, the Court of Appeal did not discuss the phrase "the land on which the building work is to be carried out". Thus, the High Court decision appears to be authority for the proposition that "the land on which the building work is to be carried out" in section 36 of the former Act was to be interpreted as meaning "the land intimately connected with the building". I take the view that that is good law as regards the corresponding phrase in sections 71 and 72.

5.2.6 In the *Logan* case, the High Court treated the intimate connection with the entire allotment as being established by the fact that:

> Common sense suggests that in a residential building, egress and regress is essential, and having to slosh through ankle deep water could in fact be prohibitive for (particularly) elderly persons.

5.2.7 There is no such intimate connection in this case, which is concerned with a medium-sized rural property rather than "a smallish suburban one". I consider that the house site is not affected by factors related to slippage elsewhere on the property to the same extent (if at all) as the building considered in *Logan* was affected by factors related to flooding elsewhere on the property.

5.2.8 Responding to the first draft, the territorial authority's consultant said:

> The site has a number of landslide features at the edge of the building site itself. [We] agree that it is not reasonable to apply the same criteria to the whole property, but we consider it important that those areas containing vital building infrastructure

components (e.g. septic tanks) be considered part of "the land on which the building work is to be carried out".

5.2.9 As mentioned in 5.2.1 and 2.2.1 above, in this case I take the term "the house site" to contain the existing house and the proposed building work, which includes any septic tank, together with their immediate surrounds but not extending to the entire area where wastewater or surface water may be discharged to the ground.

5.3 The word "likely"

5.3.1 As the owners pointed out, the word "likely" in section 64 of the former Act (now section 121) has been judicially considered in:

(a) *Auckland CC v Weldon Properties Ltd* 7/8/96, Judge Boshier, DC Auckland NP2627/95, [1996] DCR 635 (upheld on appeal in *Weldon Properties Ltd v Auckland CC* 21/8/97, Salmon J, HC Auckland HC26/97), where it was held that "likely" does not mean "probable", as that puts the test too high. On the other hand, a mere possibility is not enough. What is required is "a reasonable consequence or [something which] could well happen".

(b) *Rotorua DC v Rua Developments Ltd* 3/3/98, Judge McGuire, DC Rotorua NP966/97, where it was held that the words "likely to cause injury or death mean that the reasonable probabilities are that the building will cause injury or death unless it gets timeous attention."

(c) *Rotorua DC v Rua Developments Ltd* 17/12/99, Judge McGuire, DC Rotorua NP1327/97, where the same judge subsequently said: "'Likely' means that there is a reasonable probability . . . or that having regard to the circumstances of the case it could well happen".

5.3.2 I take the view that those cases are good law as to the interpretation of the word "likely" in sections 71 and 72.

6 Is the land on which the building work is to be carried out likely to be subject to slippage?

6.1 Slippage mechanisms

6.1.1 At the hearing, the territorial authority submitted, and I accept, that any decision on site stability ultimately will depend on evaluation of two different slippage mechanisms:

(a) Deep seated failure along the interface between mudstone and overlaying material.

(b) Shallow instability – ie slippage within the upper soil layers.

6.1.2 I set out below my understanding of the different views that the owners' geologist and the territorial authority's consultant took of those mechanisms.

6.2 The owners' geologist

6.2.1 As to deep seated failure, the owners' geologist, in the land stability report, lists results of subsurface investigation at test pits P1 and P2 located as shown on Figure 1. Those test pits are respectively 50 m and 20 m downhill from the house site.

6.2.2 The report says, among other things, that*:*

> . . . Block 1 on the Morris property and the properties directly above, on the west side of McMaster Road [generally] have a smoother profile and are significantly drier than then the surrounding areas . . . This zone corresponds with a sustained high point on McMaster Road.
>
> Much of the area above McMaster Road, as well as the far western part of the Morris property is interpreted to be, or has been demonstrated to be underlain by volcanic rock. In the south western corner of the Morris property, there is an outcrop of very hard, fresh basaltic rock some 5 m high and of similar width The hard rock is surrounded by the more typically weathered volcanic rock [also occurring] in the cutting behind the garage. . . .
>
> Within the raised zone, there are no signs of . . . recent land instability. By contrast, outside the raised zone, there are widespread signs of land instability. It was thought that this contrast might have been due to the buttressing effect of underlying bedrock. One of the aims of the subsurface investigation was to confirm whether or not the two ridges below the house and garage are indeed underlain by volcanic rock.

6.2.3 That aim was not achieved. In fact, both test pits revealed the presence of mudstone.

6.2.4 The land stability report says:

> [The Pit P1 profile] indicates that the major landslide effect which formed the headwall and possibly also the lateral wall to the east of McMaster Road, occurred prior to or during the last glacial period, which was eighteen thousand years ago. The stability of the upper profile demonstrates that there has been no mass movement in the immediate vicinity of the pit, since the last glacial period. . . .
>
> [The Pit P2 profile] suggests that there has been no mass movement in the immediate vicinity since the last glacial period. . . .Most of the material in the pit was relatively dry. However, the mottled loess layer was wet. This indicates that the upper loess layer is the critical zone, in terms of land stability.
>
> The subsurface investigation has shown that the slopes below the Morris house are underlain by Abbotsford mudstone, not volcanic rock. The ridges have therefore been formed presumably by natural erosion processes. It is likely that the ground is drier than the surrounding country, simply because of the tendency of surface and groundwater to drain from higher to lower ground. It is possible that this area has remained stable because the volcanic rock which occurs upslope has had a protective influence.
>
> The two pits were excavated some distance downslope from the existing buildings. They have shown that in their vicinity, the bedrock is Abbotsford Mudstone. As the house and garage are sited much closer to known outcrops of volcanic rock, it is quite possible that they are underlain by volcanic bedrock. However, for logistical reasons, no pits were excavated immediately adjacent to the house or garage. It has therefore not been possible to demonstrate conclusively which (form of) bedrock underlays the actual house."

6.2.5 As to shallow instability, the report comments:

> In the vicinity of the Morris property, there is evidence of widespread currently, or recently active land instability. This instability is quite shallow compared with deep-seated slides [elsewhere in the East Otago region]. It appears to affect only the superficial materials. There is no evidence that the underlying Abbotsford mudstone is involved. The fact that the instability usually occurs on ground underlain by Abbotsford mudstone probably reflects the type of soil that forms on the mudstone, and the groundwater regime which results. . . .
>
> . . . The most important factor in maintaining ground stability in such areas, is control of surface and ground water.
>
> . . . the house and garage . . . are sited on a broad ridge, which extends below the buildings [and[there is no sign of any recent or current instability on this ridge. . . . The most likely reason for this continued stability, is the generally drier surface water and ground water conditions prevailing on the ridge. . . .
>
> The subsurface investigation showed that the superficial material under the bouldery ridge is dry. The middle and lower parts of the profile in P2, were relatively dry. However, the upper loess layer in P2 was wet and consequently soft. Because of the contrast between dry firm lower loess layer and the wet soft upper layer, there is a potential for the upper loess layer to fail, during an extreme rain event. Indeed, the factor of safety for this slope may well be close to unity

6.2.6 Thus the owners' geologist concluded that deep seated failure was unlikely at the house site, unless that site was on mudstone, and that shallow instability is "possible" but not "likely", see 2.2.9 and 2.2.10 above.

6.3 The territorial authority's consultant

6.3.1 The territorial authority's consultant considered the land stability report to be insufficiently rigorous in that:

(a) A downslope section was required to identify the relative location of volcanic/mudstone, groundwater levels etc, water springs, so that the factors of safety against a blockslide failure (which is the normal mechanism on this type of land) can be calculated

(b) A geotechnically-informed view (as opposed to engineering geologist's informed view) is required to assess the stability of the house site itself: specifically, is the house site underlain by volcanic rock and/or mudstone?

(c) What effect will increases in groundwater levels from, for example, wastewater disposal fields have on stability of slopes downhill of the house site?

(d) Where are the "water springs" and will their ongoing flow affect the house site?

(e) What mitigation measures are proposed to ensure that the situation is not made worse by the proposed building work?

I bear in mind that the owner's geologist was not present at the hearing to answer those criticisms of the land stability report.

6.3.2 The territorial authority's consultant concluded that the house site cannot be confirmed as "good ground" for the purposes of NZS 3604 designs with the information so far available.

6.3.3 I agree with that conclusion, which was also accepted in the owners' application for building consent, see 2.2.1 above, but the real dispute now seems to be whether or not the house site is founded on mudstone and therefore likely to be subject to deep-seated slippage so that any building consent must be subject to a section 73 condition, see 3.3 above.

6.4 Differences in view

6.4.1 As mentioned in 4.2 above, I understood the territorial authority to say at the hearing that it would not require a section 73 condition if it could be assured that the house site was on volcanic rock and not on mudstone. That relates to deep-seated slippage as described in 6.1.1(a) above, not to shallow instability.

6.4.2 I therefore take it that the territorial authority has decided, in terms of section 71, that if the building's foundations and provisions for disposing of surface water and foul water comply with the Building Code then that will amount to "adequate provision" to protect against shallow instability and there will be no need for a section 73 condition on that account. The same applies if the territorial authority grants a reasonable waiver or modification of the Building Code under section 67. Such "adequate provision" is something that the territorial authority will have to consider when it is given the necessary details of the proposed building work.

6.4.3 Accordingly, in respect of a section 73 condition, the only difference between the parties is whether the house site is on volcanic rock, when such a condition will not be required, or on mudstone, when it will. That is a significant advance on the original position where the first and second drafts had to take account of numerous differences between the parties.

6.5 The expert's report

6.5.1 The expert undertook site investigations that included a single test pit immediately adjacent to the proposed extension. The owners did not consent to any other test pits. The expert also studied aerial photographs and previous geotechnical investigations.

6.5.2 The expert's report concluded that:

- The site of the proposed extension . . . is underlain by fill, buried topsoil, landslide debris and Abbotsford Formation at 3.1 m.
- No in-situ volcanic rock exists at shallow depth beneath the proposed building platform.
- Piezometric monitoring indicates that water is currently perched on the upper surface of the Abbotsford Formation or there may even be a confined aquifer present beneath the slide base after sustained rainfall. Groundwater levels are likely to be influenced by recent low rainfall and are likely to rise as rainfall increases. . . .

- The structure is located on a large active landslide, but creep rates will be minimal, with long dormant periods. Some long term deformation should be expected, but the existing building shows minimal damage and the proposed extension will not exacerbate the current situation.

6.5.3 The expert's report also discussed the design of the foundations for the extension and possible mitigation measures, including plantings and a land management plan, which the expert suggested could mean that a section 73 condition on the building consent was not required. I have not taken any account of those suggestions because:

(a) Design matters are irrelevant to the question of whether the land on which the building work is to be carried out is likely to be subject to instability.

(b) The Act contains no provision for the on-going monitoring and enforcement of the suggested mitigation measures.

6.5.4 The owners responded to the report by requesting that the expert provide an opinion, on the same basis as the geologist had done (see 2.2.10 above) as to whether the site is likely to be subject to slippage.

6.5.5 I copied the owners' request to the expert who responded by saying:

> . . . it is my professional opinion that the site of the proposed extension to the existing house is likely to be subject to slippage in terms of Sections 71 and 72 of the Building Act. This opinion has been peer reviewed by others, also very familiar with these clauses of the Act. I am using likely in this context to mean an event which is a reasonable consequence, i.e. which could well happen in the life of the building. [Emphasis as in the original.]

6.5.6 The territorial authority responded at some length to the expert's report. That response can be summarised as saying:

(a) As to the need for a section 73 condition: That the report confirmed the territorial authority's views.

(b) As to mitigation measures:

> While [the expert] would consider that a dispensation be granted in the event that adequate mitigation measures, monitoring and slope stability assessments were all completed, the [territorial authority] would remain reluctant to grant the consent without the appropriate section 73 notation unless a covenant or other appropriate "alert" were imposed to ensure that future owners of the property are aware of the need to Maintain the mitigation measures put in place in order to in turn ensure long term geotechnical stability.

6.5.7 I record the territorial authority's comments on mitigation measures only to mention that:

(a) In my view, the territorial authority has no power to grant a "dispensation" from section 73. The question would be whether mitigation measures meant that either the land was no longer likely to be subject to a natural hazard or whether adequate provision had been made to protect the land (and also the building work and other property) from natural hazards.

(b) I offer no comment on whether a territorial authority has the power to accept such measures if satisfied that effective provisions for monitoring and enforcement can be achieved under other legislation or the general law. I also offer no comment on whether I have the jurisdiction to determine any such proposals.

7 Compliance with the Building Code

7.1 As mentioned in 2.2.1 above, I am unable to comment on whether the building work will comply with the Building Code because I have not seen any plans and specifications for the proposed systems for disposing of surface water and foul water in compliance with clauses E1 and G13 of the Building Code.

7.2 As regards the foundations, I understand that under the former Act it was not uncommon for territorial authorities to grant building consents subject to on-site verification of design assumptions as contemplated by the note mentioned in 2.2.1 above. In such cases, I took the view that the owner could not commence construction under the consent unless and until the owner had submitted and the territorial authority has approved such verification, or the owner had proposed and the territorial authority has approved an appropriate amendment to the consent.

7.3 However, it is not clear whether the Act authorises territorial authorities or building consent authorities to impose such a condition on a building consent. Accordingly, I take the view that, under section 50, a territorial authority or building consent authority should refuse an application for building consent unless and until it has reasonable grounds for being satisfied that all design assumptions have been verified.

8 Decision

8.1 In accordance with section 188 of the Act, I hereby determine that the land on which the building work is proposed to be carried out is likely to be subject to slippage.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 17 October 2007.

John Gardiner
Determinations Manager