

RJ HALL MPENZ
CIVIL AND ENVIRONMENTAL CONSULTING LTD. 2/03/2001

Chris (Bauer).

attached account for your pipeline building site.

This needs to accompany any building permit sought for the dwelling. I have forwarded a copy 78 Berkeley Road Timaru

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to Mr Kerzner D.C. for their records. I trust this is all ok. Account to follow

Regards Bob Hall.

R.J. Hall MIPENZ*File Ref White / 01**Civil and Environmental Consulting Ltd.**78 Beverley Rd
Timaru**Phone : (03) 6888952
Fax : (03) 6848807*

2 March 2001

C.White
c/o B.White
314 Chelmsferd St.
Invercargill

Dear Sir

Re : Flood Risk Assessment : Lot 23 DP 75200 (Hocken Subdivision, Twizel)

I have examined Lot 23 DP 75200 for the purposes of establishing recommended floor levels for your proposed residential dwelling such that it would comply with Sec 7 (j) (ii) of the Mackenzie District Councils Proposed District Plan (September 1999). I refer you to a report prepared by R.J.Hall Civil & Environmental Consulting Ltd. (1 December 1999) that accompanied the subdivision application lodged by Milward Finlay Lobb on behalf of F.Hocken, developer. This report explains the broad nature of flood risk within the subdivision at the 1 / 500 yr flood risk level and zones the area according to varying degrees of flood related effects. The report concluded that the whole of the subdivision was likely to be exposed to flood waters and consequential flood related effects in a 1 / 500 year event.

The site that you have chosen for your proposed dwelling is located near a drainage channel (M/R : H38 786 595). In order to satisfy the requirements of Section 7 (j) (ii) of the MacKenzie District Council Proposed District Plan it will be necessary to elevate the floor level above the surrounding ground. I would recommend that this could best be accomplished by constructing an elevated compacted gravel platform on which to erect the dwelling. This will require the stripping of all topsoil and wet or otherwise unsuitable material from platform footprint and then compacting the gravel platform to the required height. Compaction of the gravel should be undertaken using conventional compaction plant (e.g. 5 Tonne or heavier, vibratory roller, 6 passes minimum, lifts of 200 mm maximum loose). Compaction relying on construction plant wheel or track pressures will not be acceptable.

The site chosen for your proposed dwelling is within the area identified in the 1 December 1999 Report as an area where high ground water levels may be present and where there is an attendant risk of an avulsion from the Twizel River. The zoning adopted in that report was used

to broadly define flooding and flood related effects risk within the subdivision area. In effect what it requires is a site specific examination of sites where residential dwellings are proposed on a case by case bases in these particular areas to ensure as far as can reasonably be ascertained that such risks can be mitigated sufficiently at the site to satisfy Section 7 (j)(ii) of the Mackenzie District Councils Proposed District Plan (1999). Having examined the preferred site at M/R H38 786 595, I am of the opinion that it is on land marginally higher than the surrounding land and as a consequence less likely to be affected by high water table effects provided the building platform is constructed in the manner set out in this assessment. Unless deliberate action is taken to prevent an avulsion of the Twizel River from its present course to a new alignment across your land the risk of such an occurrence whilst not quantifiable in probabilistic terms still exists and must be taken into account in the context of this assessment. The following recommendations are made to accommodate this risk and satisfy Section 7 (j)(ii).

Construct the compacted gravel building platform in the manner described above such that its invert (top surface level) is at a minimum 1m higher than the lowest part of the chosen building platform footprint. This should ensure that the platform invert is then raised above the crest level of the earth bund constructed along the true right bank of the drain. The landward toe of this bund in effect defines the upslope limit of the building platform. Further to this it is recommended that the bund be lowered to ground line some 30 m west and east of the proposed building platform to ensure that floodwaters when they spill towards the site from the Twizel River in flood can effectively bypass the building platform to the east and / or west at a safe distance from the platform. Reinforcing the bund with vegetation such as toi toi and flax and similarly planting ornamentals along the east and west wings of the platform will discourage erosion of the platform and re-direct overland flow in times of flood away from platform.

Further to this it is recommended that the elevated culvert crossing of the drain some 100m to the south east of the proposed dwelling site be replaced by a concrete overflow ford incorporating low flow culverts. This modification is proposed in order to lower water levels in the drain under normal conditions and avert the build up of water levels in the drain (backwater effects) under heavy rainfall conditions and floods which could extend upstream to the area adjacent to the proposed building site. Regular maintenance of the drain and in particular the management of willow and other vegetation in and alongside of this drain will be necessary in order to preserve the hydraulic capacity and efficiency of the drain under both normal service and flood conditions.

It is considered that these measures if fully implemented will satisfy the requirements of Section 7 (j) (ii) of the Mackenzie District Councils Proposed District Plan (1999) and the requirements of Section 36 (1) of the Building Act 1991.

Yours faithfully



R.J.Hall

R.J.Hall Civil & Environmental Consulting Ltd.

c.c. Mackenzie District Council.