

**QUEENSTOWN-LAKES DISTRICT COUNCIL  
PROPOSED DISTRICT PLAN HEARING – STREAM 13**

**IN THE MATTER**

of a hearing on submissions to the Proposed District Plan (Queenstown Mapping) pursuant to clause 8B of the First Schedule to the Resource Management Act 1991

**Ritchie Kerr Architects**

Submitter #048

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**EVIDENCE OF JEFF BRYANT  
Engineering Geology and Geotechnical Evidence  
9 June 2017**

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# 1. Introduction

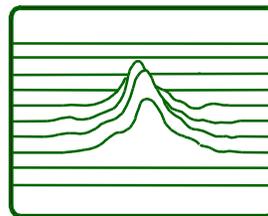
- 1.1 My name is Jeff Bryant. I am an engineering geologist/ geotechnical advisor with 29 years experience in a wide variety of development projects and in a wide variety of terrains. I currently manage my own consultancy practice in Queenstown and undertake assignments predominantly in the lower South Island (NZ) and occasionally in other parts of New Zealand and overseas.
- 1.2 A copy of my full CV is attached to the evidence.
- 1.3 I have read the Code of Conduct for Expert Witnesses contained within the Environment Court Practice Note 2014 and agree to comply with it. This evidence is within my area of expertise, except where I state that I am relying on information I have been given by another person. I confirm that I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed herein.

# 2. Submissions

- 2.1 This evidence is on behalf of KRA who have requested LDRZ over Pt Lot 3DP 2700 OT 19A/282 (owned by the KRT) and Pt Lot 4 DP 27200 OT19A/283 (owned by the SFT). Combined these land parcels are 1.0941ha of land located at the eastern end of Kelvin Heights.
- 2.2 I have advised KRA on geological and geotechnical issues associated with the subject site in a report dated 1 March 2017. I attach a copy of this report to my evidence. I am happy to answer questions from the hearing panel in relation to it.

# GEOCONSULTING Ltd

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New Zealand  
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jeffbryant@ihug.co.nz



1 March 2017

Kerr Ritchie

P.O. Box 1894

Queenstown

Attn. Pete Ritchie

Dear Pete:

Addendum report: Pt Lot 3 DP27200, Peninsula Road, Queenstown

## **Introduction**

We refer to our earlier report (KerrRitchie150728) on the above captioned property. This report provided a geotechnical assessment for a particular development proposal and included a hazard assessment in respect of the house site. However, given the lot size, there is potential for future subdivision and thus the hazard assessment needs to be revised to ensure the comments are relevant for all possible development options.

## **Work Undertaken**

Field work for the earlier report encompassed a walk-over survey of the property and environs which included a visit to the top of the hill. Most of the intervening hillside is inaccessible by foot due to thick vegetation. A further walk-over survey to the west and north (i.e. on the opposite side of Peninsula Road) has recently been carried out although thick vegetation again obscures and limits access of much of the ground. Field work was complemented by examination of aerial and satellite imagery.

## **Hazard Assessment**

The previous report noted the presence of a very old and very large landslide underlying the site. The landslide is now considered dormant with no signs of recent or historical activity which could affect any part of the property. Accordingly, there is no threat to any development proposal no matter where it is sited.

Rockfall hazard was also recognised affecting both this property and the strip of land on the northern side of Peninsula Road (legal description Section 2 S0448337). Both assessments noted the presence of large blocks scattered about the surface within a zone of concentration centred to the northeast of the site. Only two boulders from this cluster were present within the northeast corner of the subject site with the remaining land being clear. The presence of blocks is not necessarily indicative of a rockfall hazard as some, at least, have been carried down by the landslide whilst others have clearly been transported into place by rolling or bounding down the hillside. No evidence was found, either in the field or from imagery, for any recent rockfalls.

However, as a rock fall source area in the form of natural bluffs and surficial boulders on the landslide is present above the property there is still a potential for rock falls. Our earlier assessment noted the presence of a shallow gully which should play a role in guiding rock falls to the west of the site which probably accounts for the absence of rock falls over all but the northeast corner. It should be noted that rock fall movement down a slope is influenced by factors such as detailed topography, shape and size of block, slope material properties and density of vegetation. Many blocks disintegrate with downslope movement and become less of a threat as the size diminishes. A true understanding of rock fall threat is thus difficult to assess with any certainty although further study would help reduce this.

The overall assessment is that the rock fall threat for all the property is probably very low based on the absence of boulders across all but a corner of the site. Should further study indicate a higher than anticipated threat then it may be necessary to consider some form of rockfall barrier to protect any dwellings.

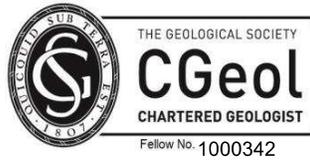
Sincerely,

**Geoconsulting Ltd**



per J.M.Bryant

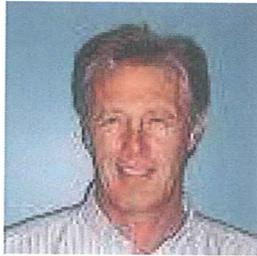
M.Sc. F.G.S.





# Jeff Bryant

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## Areas of Specialisation

Aerial photograph interpretation  
Engineering geology  
Natural Hazard Identification and  
Risk Assessment  
Roading and Hydroelectric Projects

## Qualifications

MSc (Engineering Geology)  
BSc (Geology)

## Contact

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NEW ZEALAND

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Email: jeffbryant@ihug.co.nz

## Languages

English, Cantonese

## Countries of work experience

New Zealand, Hong Kong, Malaysia

## Experience

Jeff is an engineering geologist/ geotechnical advisor with 29 years experience in a wide variety of development projects and in a wide variety of terrains.

He currently manages his own consultancy practice in Queenstown and undertakes assignments predominantly in the lower South Island (NZ) and occasionally in other parts of New Zealand and overseas. A total of five years have been spent working in Hong Kong and Malaysia.

## Track Record

- Team Leader for Design of three site formations associated with underground railway ventilation stations and portals (Tseung Kwan O extensions, Hong Kong): Investigation, analysis, design and specification of cut slopes up to 65 m high.
- Consultant for Natural hazard mapping and risk assessment for new mountain hut sites (Mount Aspiring, Mount Cook and Fiordland): Assessing existing hut sites, evaluating alternatives and ranking with the aid of a hazard/risk assessment
- Consultant for Natural hazard mapping, risk assessment and mitigation measure proposal (Hong Kong): in 64 Ha catchment above Tiu Keng Leng Housing Estate, Hong Kong
- Consultant for Rockfall risk assessment and hazard mitigation study (Malaysia): Study along 900km North South Expressway, Peninsular Malaysia
- Consultant for Condition assessment of 1500km state highway network on Sabah, East Malaysia (Sabah, East Malaysia): Assessment of cut and fill slopes, retaining structures, and pavement of existing roads. Preparation of offer of services.
- Project Engineering Geologist for Clutha Valley Development Roading and Clyde Power Project Lake Shore Stabilisation Works (Clyde Power Station): Responsible for investigating and reporting on a six kilometre stretch of reservoir shore line including four major landslides. Work included assessing impact of reservoir raising on stability.