

Pegram Block Hearing, Wednesday 18 April 2018

Cameron Lines – Geology/Geotechnical

Notes for closing verbal response to submissions

Clarification – Enabling Works Activities

There has been discussion around the enabling works activities.

The memo I authored for the District Council Consent Application regarding Adverse Effects on Land Stability sets out the various enabling works, which include:

- A shear key, sub-soil drainage and toe buttress as defined in my written brief of evidence.
- The matted fill to be placed behind the toe buttress as described in the land stability memo on Page 2, Section 3.2, Paragraph 4.

To construct the matted fill, selective extraction of overburden materials during enabling works is required so that unweathered Ruatangata Sandstone, free from contamination by clay soils, can be placed by track rolling in thick (1-2m) lifts as the matted fill is developed to provide a higher strength, more permeable foundation.

This material will act as an informal high permeability drainage blanket which will provide redundancy in the sub-soil drainage design in the event that the drainage network is damaged in some way during construction.

While later general filling works utilise the same materials these will be placed on an as received basis without the additional time and care taken in selective extraction and placement. The result is expected to be substantial mixing of clay soils, limestone and both weathered and unweathered Ruatangata Sandstone. This would be typical of the mixed clay fill observed in most overburden disposal areas.

Clarification – Geology Map presented by Ms Barton Boots

There was some confusion around the symbols on the excerpt of a geological map provided by Ms Barton Boots. I refer the map provided in her submission.

The saw tooth lines indicated on this map are the interpreted position of thrust faults. These separate the leading edge of the Northland Allochthon, which was emplaced as a massive sheet of oceanic crust onto continental crust (the Whangarei Limestone, Ruatangata Sandstone and underlying greywacke). The direction of emplacement was broadly from the east to the west as illustrated in cross section in Figure E5 of my written brief of evidence.

The fault indicated on her plan as a hand drawn hashed line, is actually the interpreted position of the western most of the two thrust faults shown in the published map. Our site specific investigation has provided enough data to establish this position with more certainty than the large scale published geological map, which is not uncommon.

I note that this faulting is well over 20 million years old, and key stability risks around low strength shear seams in the Northland Allochthon have been incorporated in our stability assessments.