**FAX**

To:	Tauranga City Council	Your fax no:	07 577 7099
Attention:	s 7(2)(f)(ii)	Job no:	3071
From:	s 7(2)(a) - Privacy	Reply fax no:	07 - 579 9702
Page:	1 of 34	Date:	21 August 2006
Subject:	Landslip Repairs, Waikorere Track, Mauao		

s 7(2)(f)(ii)

As per your request we have inspected the landslip damage to the Waikorere Track on Mauao, and provide details of the proposed repairs as follows.

1 The Slip Event

A section of the Waikorere Track has suffered incipient slippage, in the area below camp bluff. Tension cracking and incipient movement extends over a length of approximately 8 - 10 metres along the outside edge of the track. The movement to date is in the order of 100 - 250 mm.

The slip is occurring on a very steep slope. There is at least one other significant scarp within the landslip mass. The material affected appears to be a combination of the natural slope-wash, sandy silt soils and the side-cast spoil from the original formation of the track.

Several small sinkholes were observed within the general area, indicating there are small cavities being formed by infiltration seepage along the soil-rock interface, washing out the very erodible silt soils.

The slip is close to the boundary of Stability Zones 1 and 2 as defined in the reports prepared by Avalon Industrial Services Ltd on the rockfall hazard at Mauao.

2 Assessment

The slip area is notable for having little vegetative cover. This is the result of the scrub fire in January 2003 and stripping by the rockfall generated by the campground bluff blasting in 2004. There are no large trees to provide root reinforcement to the shallow soils.

The soil is clearly at limiting equilibrium.

The information contained in this message is confidential and intended for the above named recipient(s) only. If you are not the intended recipient(s), you may not use any material in this message nor pass it on to others. Please notify us promptly if you have received this message in error, by telephoning the person at the number above and destroying the original message. Thank you.

Project: Tauranga City - Waikorere Track Repairs, Mauao

3 Remedial Measures

Stabilisation of the slip mass to reinstate the track to its pre-slip condition would be a significant undertaking, requiring draped mesh and significant rock anchors, and would be highly visible. It was agreed on site that stabilisation was not appropriate in this situation. Similarly, a timber walkway would be visually intrusive.

The proposed approach is to lower the track as per attached sketch details SK1 and SK2.

Other parts of the Waikorere Track where there is no gravel, shell or other imported surfacing have been severely affected by erosion. In this instance, the shape of the track would be maintained by strengthening the natural soils by adding a low percentage of cement. Other surfacing such as gravel would tend to increase infiltration rates, which would tend to lead to more sinkhole development and the risk that this could lead to larger scale instability.

Subject to trials on site for strength and colour, the cement addition rate is expected to be 3%.

Noting the following:

- (a) Stormwater will need to be carefully controlled. Outlet pipes should be as closely spaced as possible, to avoid the need for scour protection at the outlets.
- (b) The vegetation cover to the slipped area should be enhanced as a matter of priority. It should be noted that it will take several years to become fully effective.

4 Closure

The above has been prepared for Tauranga City Council with respect to the specific brief given to us, and should not be used in any other context without our prior review and agreement.

Please contact the undersigned on ph 07-579 9708 or mobile s 7(2)(a) - Privacy if there are any queries arising.

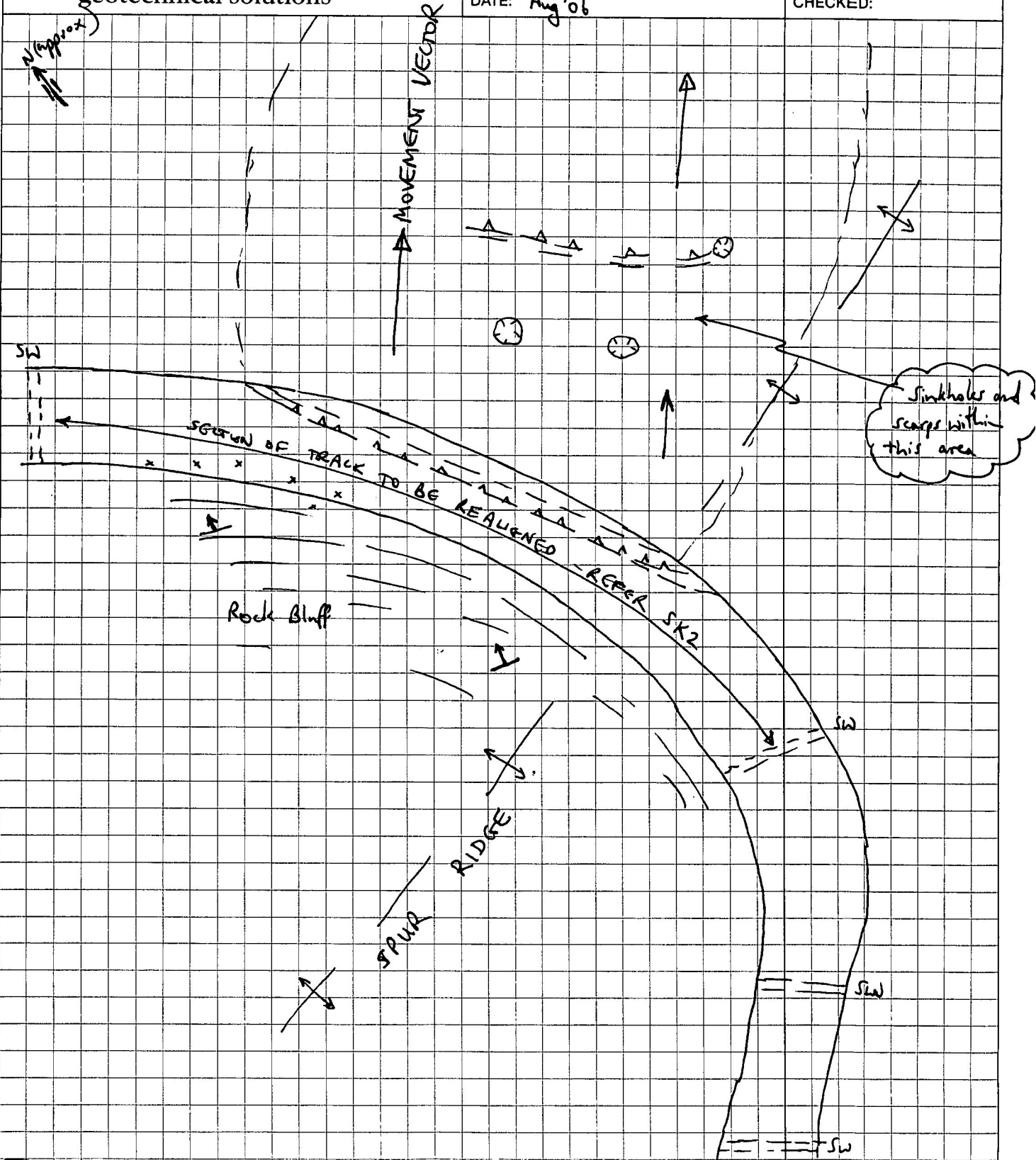
Yours faithfully




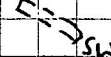
TERRANE CONSULTANTS LTD

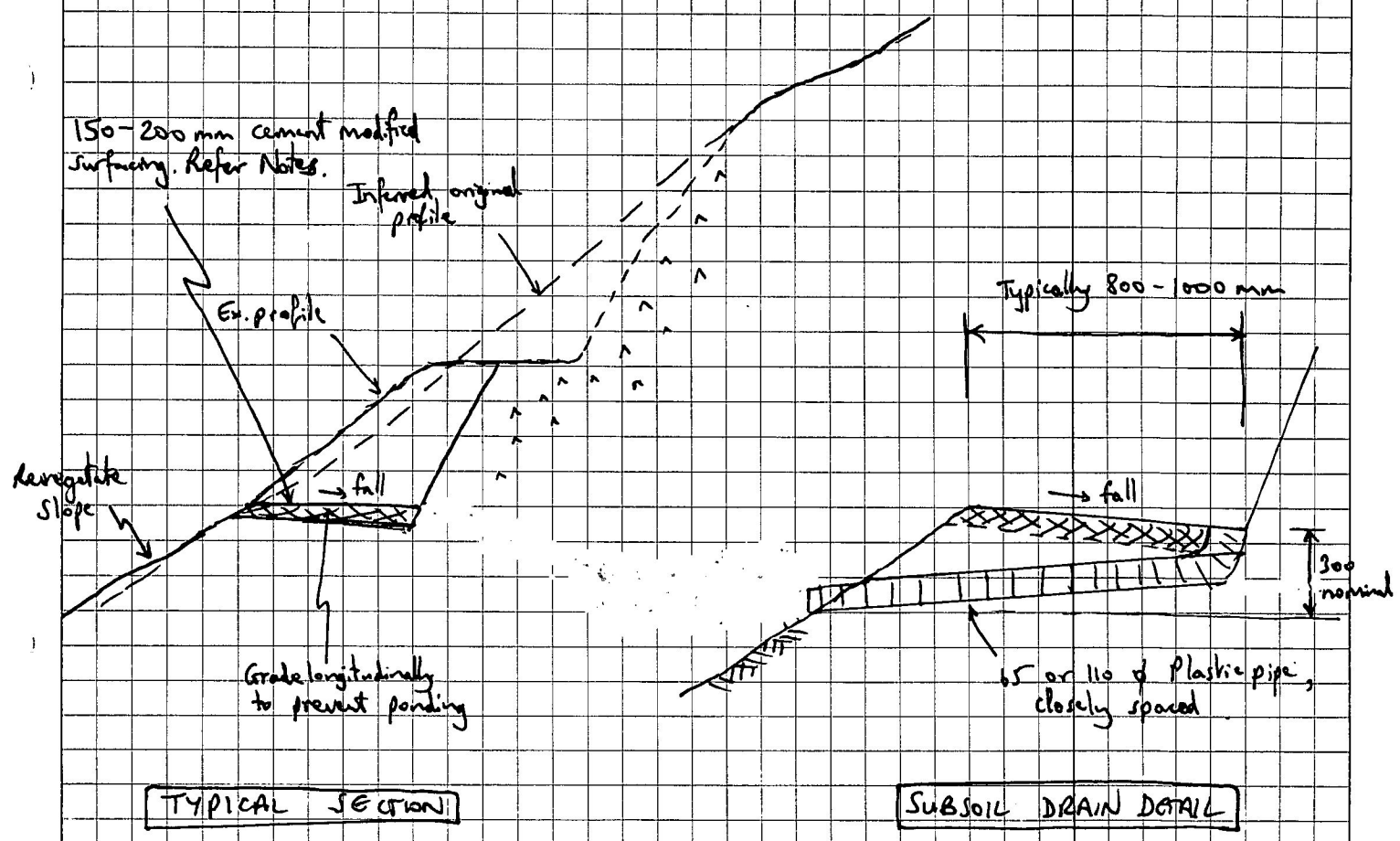
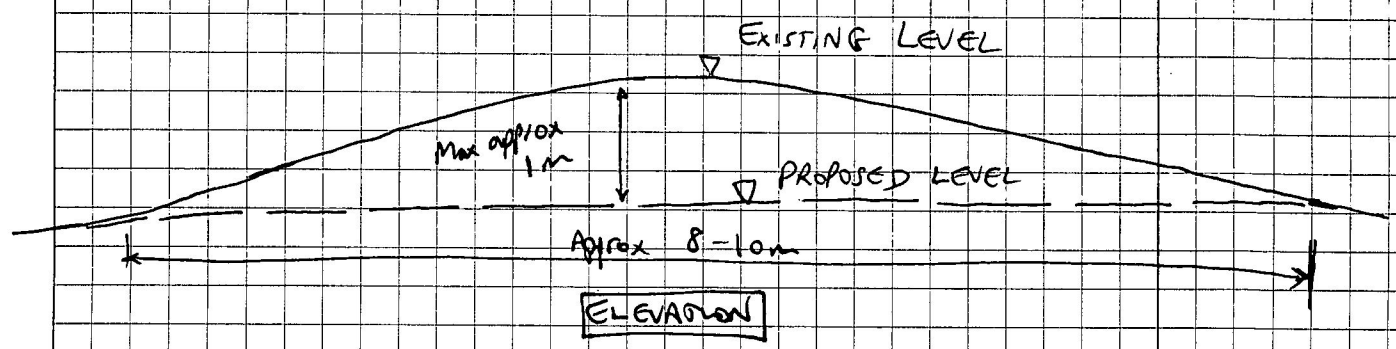
s 7(2)(a) - Privacy

Attachments: Sketch Detail

3171.Mauao_Waikslip.fax
17 Aug 2006



- KEY:**
-  Landslip scarp
 -  sinkhole
 -  Dip/dip direction of flowbanding with rhyolite rock
 -  Stormwater pipe



NOTES:

1. Design applies to slip repair on Waikorere Track only.
2. Shape track to give fall to inside edge. Stabilise top 150-200 mm with cement at maximum 3% by weight (Do not overstabilise) cement to be thoroughly mixed in and then soil firmly tamped.
- 3.