A GEOLOGICAL ASSESSMENT OF THE MOSS CREEK TRACK, KAUAERANGA VALLEY, THAMES

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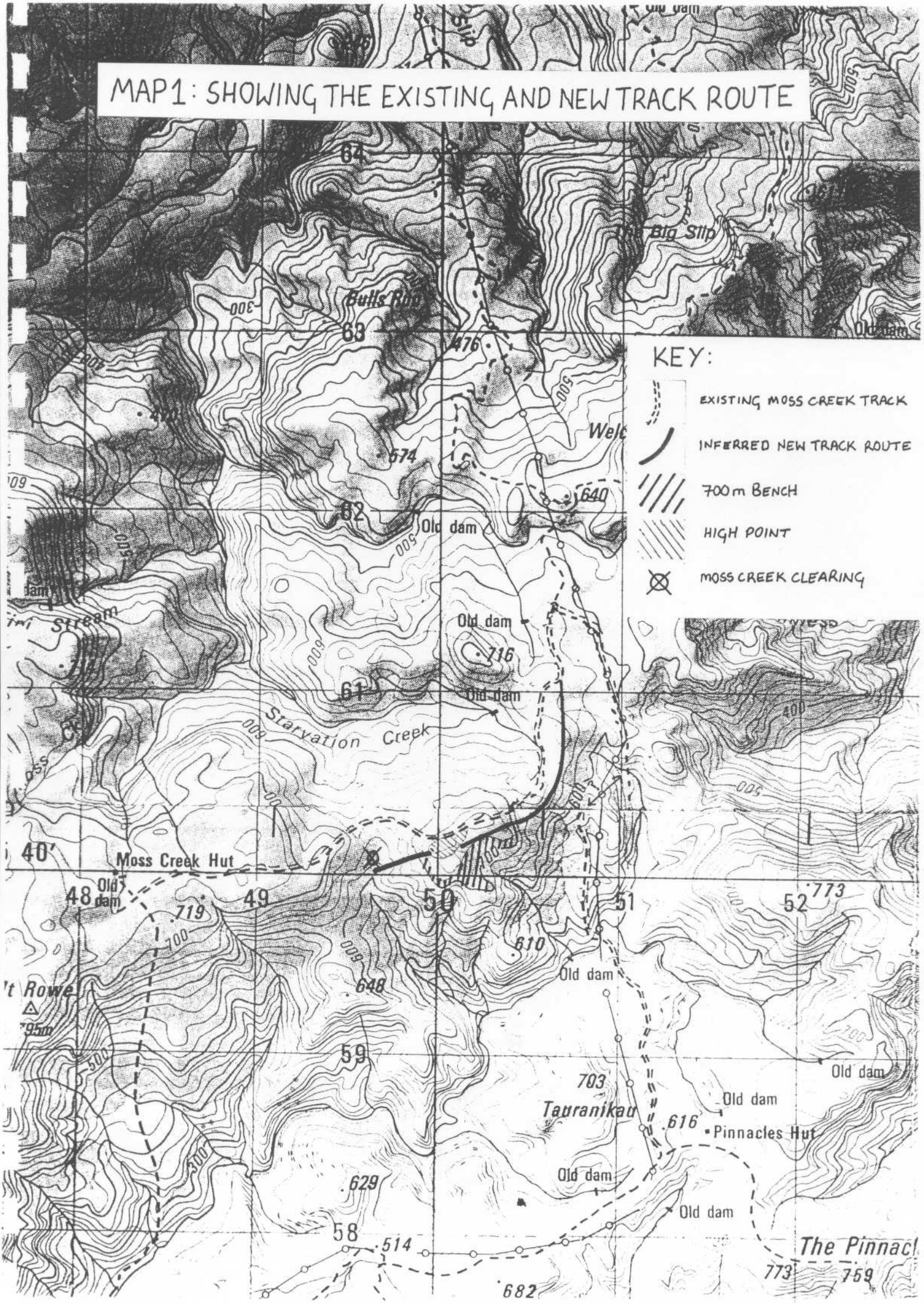
INTRODUCTION

The Department of Conservation (DOC) is presently undertaking a major track re-construction program within the Kauaeranga Valley; a region located east of Thames in the Coromandel range. The upgrading of tracks is seen by DOC as a key factor in helping to further promote the region as a tourist attraction, offering such historic features as Kauri dam sites, log shoots, ancient logging villages and dramatic coastal and mountain views. The first stage of track from the Kauaeranga Valley carpark to the Pinnacles Hut has been completed, following roughly existing routes and utilising exposed bedrock where possible, boulders for paving and benching into rock slopes that boarder the track. Present re-construction procedures are being carried out on the Billygoat track with work planned next year for the Moss Creek section. The existing Moss Creek track is overgrown, waterlogged in parts and erosion has exposed tree roots along large sections of it. Investigation of a particular stage of Moss Creek track from the Rangihau Road turn-off to Christmas Creek clearing has identified extensive boggy areas providing unfavourable conditions for the average tramper.

Permanent seepage zones causing excessive water logging, inadequate soil strengths for track construction and the high degree of track erosion are problems that led to the conclusion that it would be uneconomic to try and upgrade the existing section of track from the Rangihau road turn-off towards Moss Creek Hut. An alternate route was therefore decided upon that could be both better planned and constructed. The proposed alternate route follows the ridge on the 'Kauaeranga Valley' side of the old Moss Creek track before descending onto a saddle which leads onto Christmas Creek clearing (Plate 3). The new route is more or less defined with marking tape and the exact pathway should not differ more than a few metres from this. The steepest grades are at the start of the track which climbs ~10 m in elevation from the existing track onto a ridge line. From here the line follows a fairly low angle grade that dissects a number of small gullies. A 'high point' is reached at an altitude of 740 m that enables 360 degree views spanning the coast and inland across the Waikato basin. From this point the track line drops steeply and then cuts across Christmas Creek finishing at the Christmas Creek Clearing. A 40 m wide bench at 700 m elevation surrounds the high point, providing a less steep descent onto the saddle (Map 1).

MAP 1: SHOWING THE EXISTING AND NEW TRACK ROUTE



OBJECTIVES

The objectives of this study are:

1: To determine the geotechnical ability of the underlying soils on the section of tramping track from the Rangihau Road to Christmas Creek to support an upgraded track construction.

2: To identify the drainage characteristics of the Rangihau road - Christmas Creek area on which the track is aligned.

3: To determine soil boundary characteristics and their implications.

4: To identify rock outcrops in close proximity to the existing or future track routes that may provide rocks suitable for track construction.

5: To identify existing or potential slip zones within the area of the existing or future track alignments, and the influence these have on the chosen route.

6: To assess, using local materials, what are the best combination of rock type and aggregate size to maximise track durability.

OBJECTIVE 1: GEOTECHNICAL STUDY OF THE SOILS.

Introduction

An in depth investigation into the physical characteristics of soils was beyond the scope of this study because of the limitation of time. However, future work in this area using such tests as triaxial (deformability), particle size analysis (texture), neutron probe (bulk density and porosity), shear box (shear strength), and D T A (clay mineralogy) would provide invaluable information on the suitability of some soils for track construction.

Fieldwork

A total of eight exploratory soil pits were dug along the existing track and the proposed new route. The sites were marked with tape for future reference. Generally pits situated on low gradient (0-5˚) ground were characterised either by a 10 cm dark organic rich "A" horizon overlying a clay rich layer (30-40 cm) or by extremely high organic boggy conditions. Corestones ranging from 5-40 cm diameter were prevalent in all subsoils except at boggy sites. Boggy sites on average consisted of a one metre thickness of organic/volcanic tephra (ash) unstable mix overlying bedrock. Pits situated on steeper sites (10-40˚) were generally shallow (0-30 cm), less clayey, with corestones relatively near the surface (10 cm).

Discussion

Corestones are a weathering feature of jointed rock. In some areas of the track corestones could be used as base core material for tracks especially if derived from the harder andesites and rhyolites.

A number of sites also showed alteration by geothermal activity. These soils were extremely clayey (very sticky) according to field textural analysis. The strength of soils can only be determined after extensive laboratory testing. However, in general clay soils are extremely weak at high moisture levels as they rely on cohesive properties for strength. Thus in high rainfall areas such as Kauaeranga valley, especially during the winter months it can be assumed that a track with clay substrate would be extremely unstable, prone to erosion and subsequent breakup. Boggy areas are obviously totally unsuitable for tracks but can be modified.

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