

02 August 2023

Far North District Council  
C/o – Andy Finch

By Email: [Andrew.FINCH@fndc.govt.nz](mailto:Andrew.FINCH@fndc.govt.nz)

**RE: GEOTECHNICAL WALKOVER APPAISAL FOR COASTAL SLIPPAGE BELOW 7 RICHARDSON STREET, OPUA  
(TE ARAROA TRAIL)**

### INTRODUCTION

Haigh Workman Ltd (Haigh Workman) has been commissioned by Far North District Council (FNDC) to undertake a site walkover and provide preliminary geotechnical advice for slippage/erosion of the coastal cliffs along the Te Araroa Trail walkway. The assessment focuses on a section of walkway to the north and east of 7 Richardson Street, Opua.

The purpose of the investigation was to carry out a walkover and observe any visual signs of land instability within number 7 Richardson Street, assess stability risk for the walkway below the coastal cliff and provide a summary of findings. Our appraisal has been based on a visual walk over inspection only and did not involve any soil testing.



**Figure 1: Site Location**

## **SITE DESCRIPTION**

The residential property above the affected areas (7 Richardson Street) is on a small bluff, with coastal cliffs to the north and east, and steep slopes to the west. The cliffs are very steep with a vertical height of approximately 15 m and the slopes above the cliffs are gentle to moderate. There are small to medium trees and shrubs with occasional mature Pohutukawa trees dotted along the coastal cliffs.

## **SITE WALKOVER OBSERVATIONS**



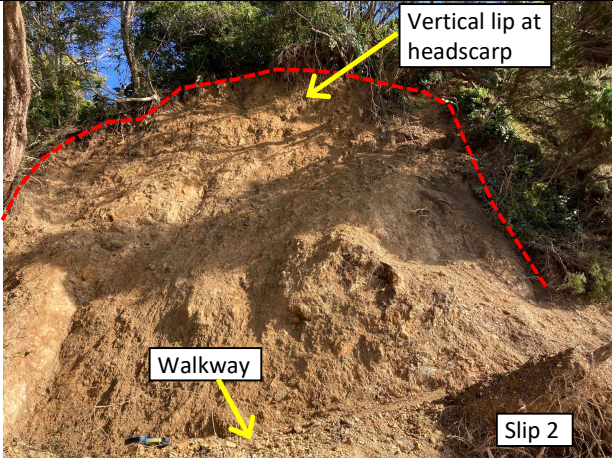
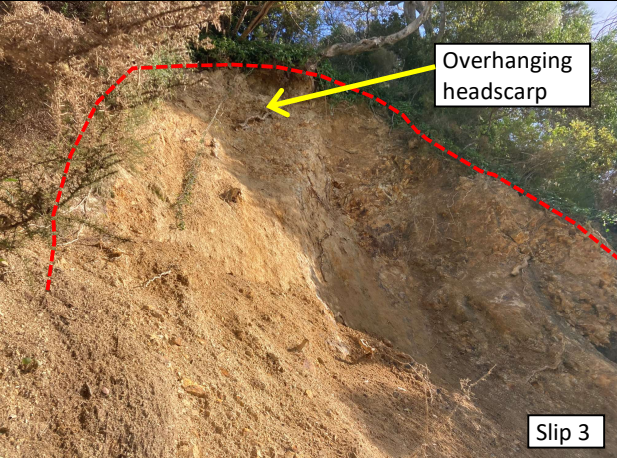
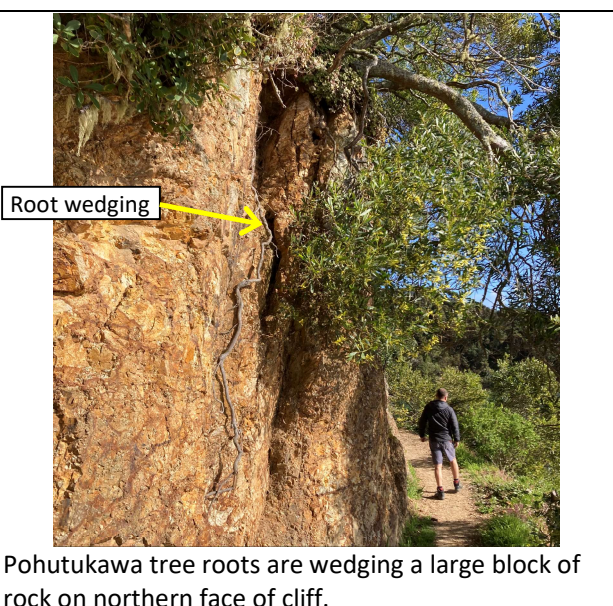

During our site investigation, the following observations were noted:

- There are 3 main slips along the eastern side and 1 minor slip along the northern side (refer to attached mark-up plan)
- The first slip (numbered slip 1 on the attached plan) is a small slump, approx. 2.0 m wide with the bulk of the slip material remaining in place, including large block of rock.
- The second slip (slip 2) is approx. 5.0 m wide. The slip material has completely evacuated and exposed the weathered rock surface. The slipped material appears to have comprised a 500 mm thick layer of soil and vegetation. This slip has left a near vertical lip at the headscarp with several trees overhanging.
- The third slip (slip 3), approx. 3.0 to 4.0 m wide, has mostly evacuated with a small amount of debris at the toe. This slip has regressed further than Slip 1 (approx. 1.5 m into cliff) and the slipped material is mostly weathered rock. This slip has also left an overhanging lip at the headscarp with several trees above.
- The minor slip on the northern face (slip 4) has left an overhanging lip at the headscarp with vegetation above.
- On the northern face there is an area where Pohutukawa tree roots are wedging a large block of rock and the tree is overhanging the walkway. The cliff is vertical in this area.
- Another mature Pohutukawa tree on the northern cliff has been undermined (by cliff erosion) and is overhanging the edge of the cliff.
- There are numerous visual signs of historic shallow seated soil movement within the landscaped area on the eastern side of 7 Richardson Street, above the coastal cliff (i.e. terracing, cracks, over-turned landscape walls) however, these are older features and unrelated to the recent slippage along the cliffs.

The above mention features are outlined on the attached mark-up plan.



**Table 1: Site observation photos**

 <p>Slips on eastern face</p>	 <p>Block of slip material remaining</p> <p>Slip 1</p> <p>Walkway</p>
<p>Photograph taken from vehicle ferry</p>	<p>Slip 1 along eastern face of cliff. Block of slip material remaining needs to be removed/descaled.</p>
 <p>Vertical lip at headscarp</p> <p>Walkway</p> <p>Slip 2</p>	 <p>Overhanging headscarp</p> <p>Slip 3</p>
<p>Slip 2 along eastern face of cliff.</p>	<p>Slip 3 along eastern face of cliff. Headscarp has overhanging lip.</p>
 <p>Root wedging</p> <p>Pohutukawa tree roots are wedging a large block of rock on northern face of cliff.</p>	 <p>Pohutukawa tree undermined</p> <p>Pohutukawa has been undermined and overhanging the edge of the cliff on northern face.</p>



## SUMMARY

Based on our visual walkover assessment and desktop study, the slippage that has occurred along the coastal cliffs below 7 Richardson Street are likely to have occurred due to the natural process of coastal erosion and cliff regression. This process may have been exacerbated by recent heavy prolonged rainfall saturating the overburden soils, however follows the typical cliff erosion process for this geological unit (Waipapa Group greywacke) in this region.

The landscaped garden area to the east of the dwelling at 7 Richardson Street (above the coastal cliff) has numerous visual signs of historic instability, i.e. terracing, cracks, over-turned landscape walls and footpaths moving. These are considered to be older features, unrelated to the recent slippage along the cliffs. We have not carried out a stability assessment of the dwelling platform at 7 Richardson Street, however, the recent coastal/cliff slips are not considered to have any impact on the global stability of the dwelling platform.

The observed slippage on the cliffs has resulted in vertical/overhanging head scarps, undermined overhanging trees, and loose slip debris that are unstable which poses a risk to public using the walkway below.

It is our recommendation that public access to this section of the walkway be prohibited until such time that the following works are carried out:

- Removal of any trees that are overhanging the walkway, have been undermined by erosion, or are situated above the recent head scarps.
- Descaling / removal of any loose rocks and slip debris.
- Re-grading of the vertical and overhanging lips below the head scarps to the typical cliff slopes.
- Removal of the rock and Pohutukawa tree root wedging on the northern cliff face.
- Removal of the undermined Pohutukawa tree (and any loose soil/rock) on the northern cliff face.

## LIMITATIONS

This letter report has been prepared for the use of Far North District Council with respect to the particular brief outlined to us. This letter report is to be used by our Client and their Consultants only. The information and opinions contained within this report shall not be used in other context for any other purpose without prior review and agreement by Haigh Workman Ltd.

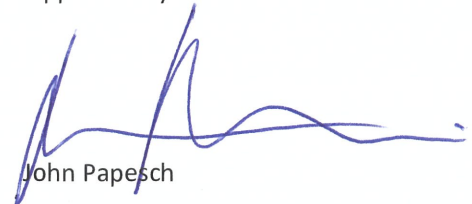
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