

GEOLINK LAND INVESTIGATIONS Ltd

**GEOTECHNICAL ASSESSMENT FOR PROPOSED SUBDIVISION
TE NGARU, ARAMOANA ROAD-**

A GTR 4

CONTENTS

- 1. Introduction**
- 2. Physical description**
- 3. Geology**
- 4. Mass movement**
- 5. Building platforms**
 - Lots 1-3**
 - Lot 4**
 - Lot 5**

6. Conclusions

Appendix I Location plan.

Appendix II Additional sites for Lot 5.

**PRELIMINARY GEOTECHNICAL ASSESSMENT FOR PROPOSED SUBDIVISION, TE NGARU,
ARAMOANA ROAD- A GTR 4**

1. Introduction.

Geolink has been asked to assess a proposed subdivision at Te Ngaru. This involved a walkover survey and a preliminary investigation of possible building platforms.

2. Physical description of property.

The property consists of very steep, bush clad slopes with an old sea cliff at the base. Two valleys have been truncated by marine erosion producing features similar to the hanging valleys resulting from glacial erosion. At the base of the cliff sand dunes have accumulated and these grade into a flat sand plane. Lupins cover much of the sand country.

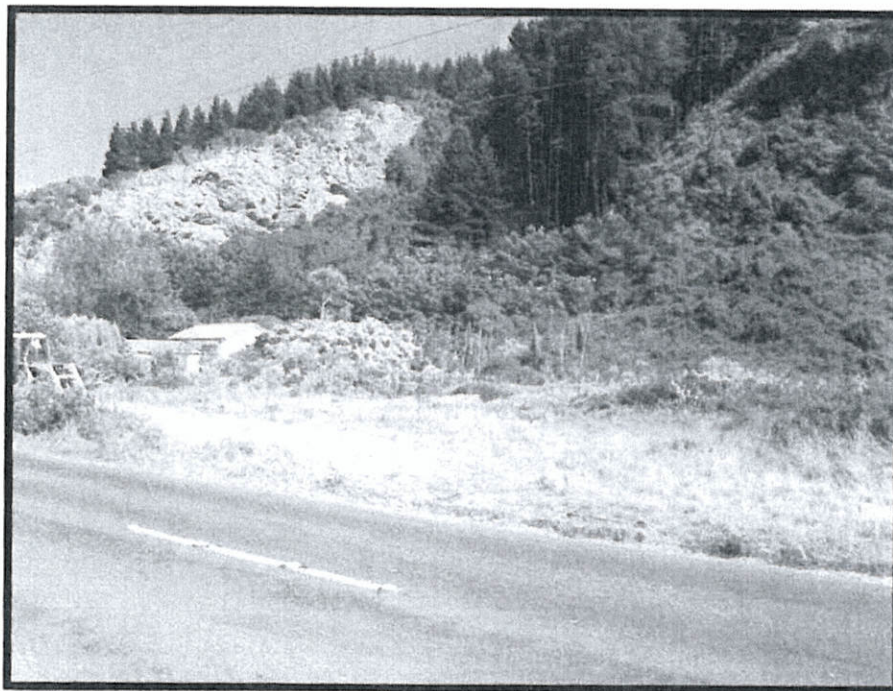


Photo 1- View of western end of property showing sand plane, dunes and steep land.

3. Geology.

The steep land above the coastal area consists of volcanic lava flows. The top of the property flattens out indicating the upper lava flow which is basalt. Several other lava flows occur below. Benson (1968) has mapped a band of flow rocks and tuffs (volcanic ash) at the base which probably accounts for the sea cliff produced by erosion of the softer rocks. A number of large volcanic boulders were evident at the base of the cliff. Dune sand has been blown up against the base of the cliff and towards the harbour grades into a flat sand plane.

4. Mass movement.

No obvious evidence of landslides was seen probably due to the extensive bush cover of the steep land. A number of old debris slides were identified on the upper slopes feeding into the two hanging valleys. There was evidence of rock fall with a number of basalt boulders at the base of the cliff and also some larger blocks. There appear to be a number of debris fans below the hanging valleys which have now been covered by the sand dunes. These would indicate inundation from above. These issues are discussed in more detail for the possible building platforms.

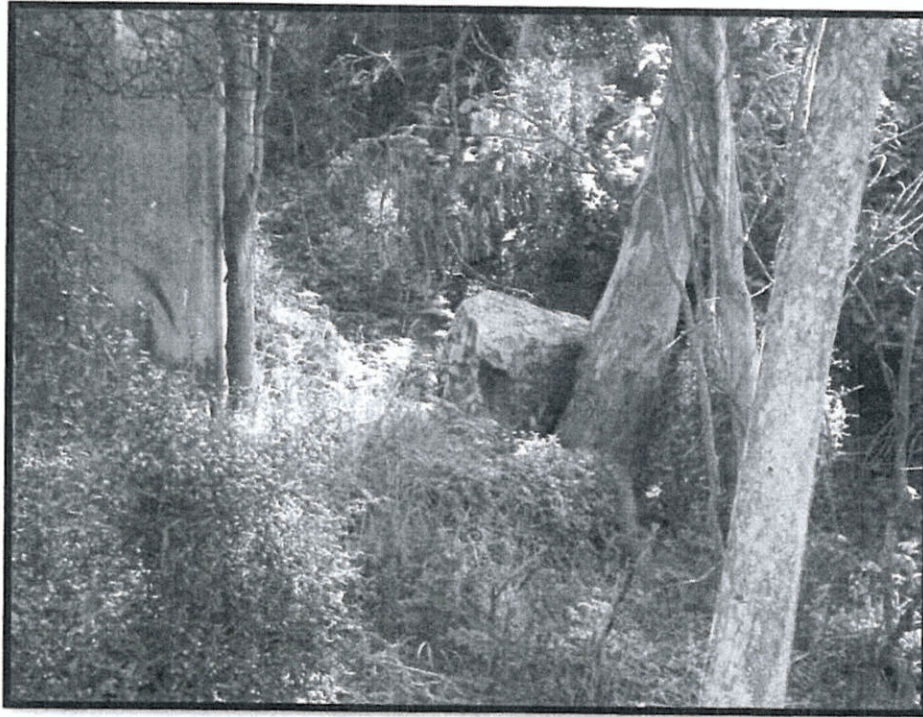


Photo 2- Large boulder which has rolled down cliff. Note bends in trees indicating ground slumping.

5. Building platforms.

Lots 1-3

These lots are situated on the sand plane abutting Aramoana Road. They are relatively flat with a few low dunes and some gravelly fill material. A typical soil profiles were-

P 1

Surface stones	
Light brown sand	20cms
Few stones	
Darker brown sand	60cms
Dark brown moist sand	

P2

Light brown sand	40cms
Gravels	

The soils are well drained with surface stones and possible gravels at 40 cms.

Site stability- The lots would provide stable sites for building platforms with good foundation conditions.

Hazards- There is a slight risk of possible inundation and rock fall from the steep slopes on the northern boundary.

Recommendations- Building platforms are not located within 20 metres of the base of the steep northern boundary.

Effluent disposal- Systems should be designed to prevent the rapid percolation of effluent into the groundwater. i.e. treated to a high standard and disposed of by irrigation into a vegetated area or construction of a soil or sand filter system.

Lot 4.

This consists of mostly steep slopes covered in bush. The possible building platform is located on a rock knob behind no. 767 Aramoana Road and would be accessed by a right of way.

Site stability- The possible building platform is located on a large volcanic block above no. 767. The block has slumped from the cliff above. The bowing of trees (see photo 2) and the tilting of the water tank indicates quite severe ground movement to the west of the site.

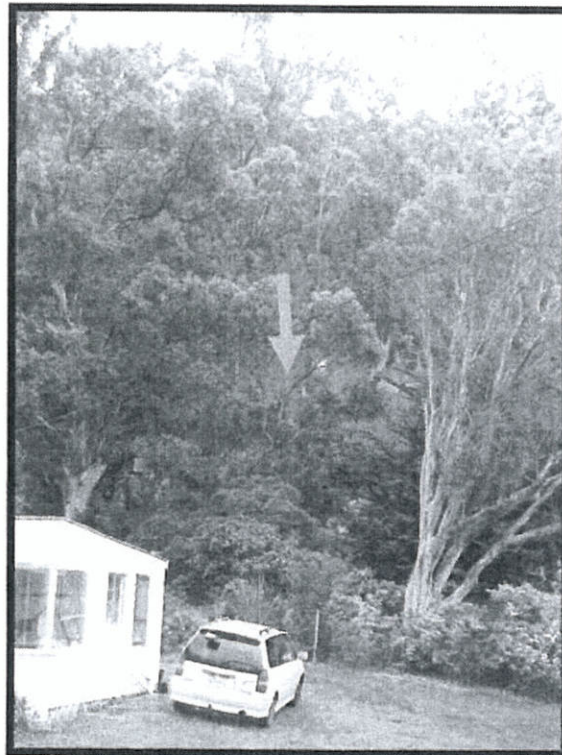


Photo 3. Site of possible building platform on volcanic block

Hazards- The proposed site is a large volcanic block that has slumped from the cliff. There is evidence of land instability and also evidence of recent rock fall from the upper slopes. (See photo 2)

Recommendations- The site is not considered suitable for locating a dwelling due to physical limitations and the risk of inundation and/or instability.

Lot 5.

This is the remainder of the property. The eastern boundary includes an area of dunes and sand plain. Two possible building sites have been located and these are situated on top of sand dunes.

1. Eastern site- This is located on a small dune underlying a hanging valley.

Site stability- The site is located on a small dune. There is no evidence of land instability on the site.

Hazards- The site is almost directly under a hanging valley which acts as a waterfall during winter months. (Local pers com.) The dune itself is very likely located on a debris fan resulting from inundation from the upper valley. A number of landslide features were identified feeding into the upper valley. The sand plain is subject to flooding and a high water table.

Recommendations- Further investigation of the site is required to assess if it is a debris fan (subsurface investigation) and monitoring of the site during winter conditions. The sand plain is subject to flooding and a high water table.



Photo 4- Possible building platform for lot 5

2. Western site

Located below steep bush clad slopes.

Site stability.

Again no evidence of land instability.

Hazards.

Similar to site 1 and may be underlain by a debris fan. A drainage channel exists at the base of steep slope to divert water. There is some evidence of rock debris in the channel.

Recommendations.

Same as site 1 requires more investigation and monitoring.



Photo 5- Possible building site.

Additional building platforms.

Possible sites are shown in appendix II. These are situated further away from the base of the cliff (at least 20m) and not located on probable debris fans. Further investigation is required for foundation conditions and groundwater issues.

6. Conclusions.

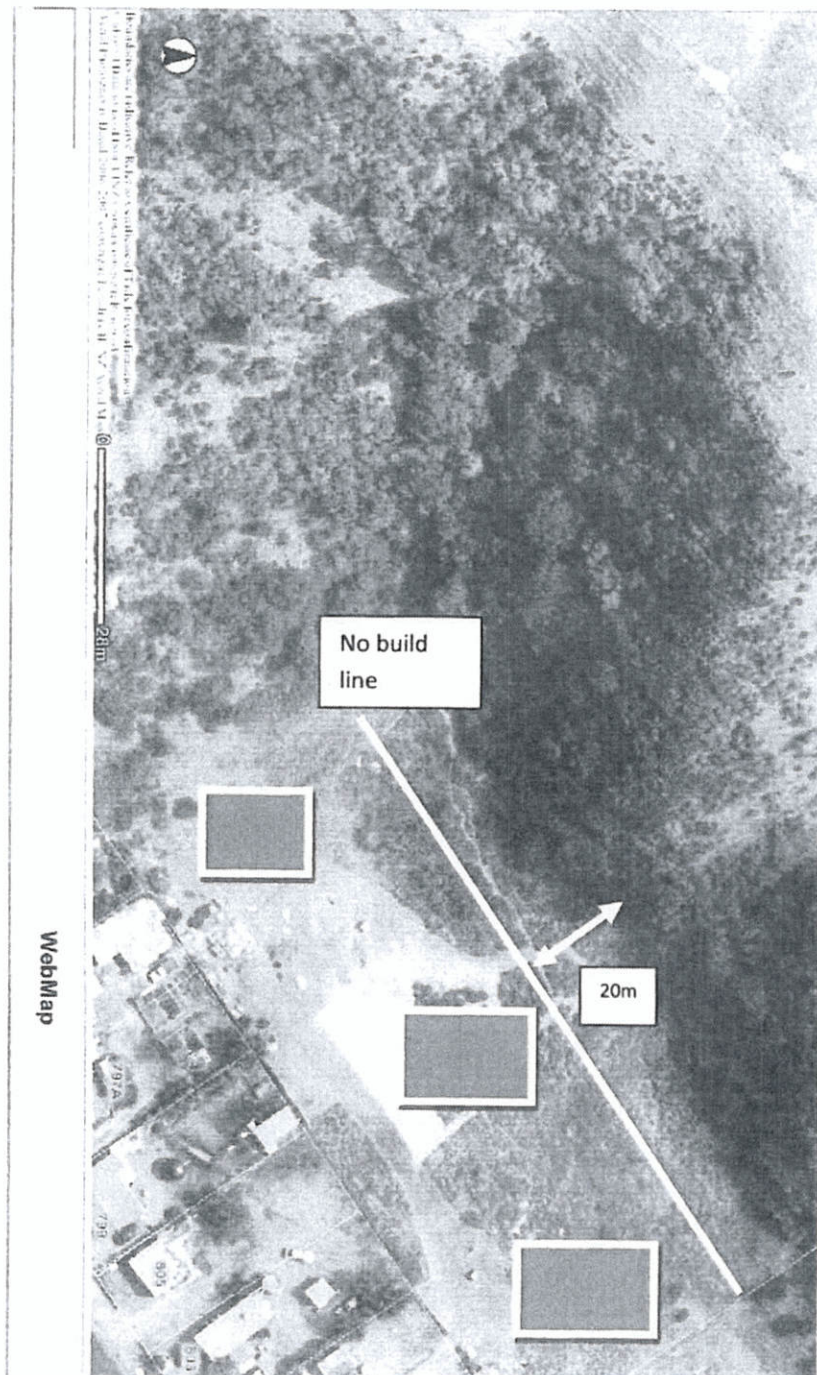
- 1. There are suitable and safe building platforms available on lots 1-3. No dwelling houses should be located within 20 metres of the cliff base.**
- 2. The proposed site for lot 4 is considered unsuitable due to severe physical limitations and the risk of rockfall and /or inundation from the slopes above.**
- 3. The sites on lot 5 require further investigation and monitoring. They may need to be located lower on the sand plain as long as flooding issues can be addressed. See appendix II for possible locations.**
- 4. Effluent disposal systems require specific design to eliminate possible contamination of ground water.**

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Appendix II- Additional building sites for Lot5.

WebMap Printout

<http://www.duncdi.govt.nz/servelet.com/esri/arcmap/EsriMap?ServiceName=WebMap1&Client...>


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