

**REPORT ON PROPOSED REALIGNMENT OF PAPAURA
STREAM, CITY OF MANUKAU**

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1. Introduction

Part of the natural flood plain of the Papakura Stream has been rezoned by the Town and Country Planning Appeal Board as Residential A. To accommodate a maximum number of residential sections, the owner of the land proposes to realign approximately 2 km of the Papakura Stream between the Southern Motorway and Mill Road.

This report results from a request (3 October 1974) from the City Engineer, City of Manukau, for advice on engineering geological aspects of the proposed realignment of the Papakura Stream; specifically geological and soil data and other relevant information for the catchment with particular regard to groundwater levels and possible settlement.

The catchment area has been geologically mapped at a scale of 1:250,000 (Schofield 1967) and partly at a scale of 1:25,000 (Kermode in preparation). Field inspection of recent drainage excavations was undertaken, and a brief visit was made to the upper reaches of the Papakura Stream catchment. Drillers logs of cored drill holes were provided by the developers consultants, Cocks and Lapish.

A geological map of the Papakura Stream catchment area (Fig.) was prepared utilising existing geological information, supplemented by field inspections and aerial photographic interpretation.

2. Geology of Catchment Area

The Papakura Stream catchment originates in an upthrown block of very well indurated sandstones (greywacke) and mudstones (argillite) of the Waiheke Group. The stream then flows through Waiheke Group on the downthrown side of the Waikopua Fault and on

to the aggraded alluvial plain of Papakura-Takanini. To the north of the Papakura Stream between the Southern Motorway and Fitzpatrick Road, there is a gently sloping surface of weathered Waitemata Group sandstone covered by local areas of alluvial material. The Papakura Stream is located at the boundary of Waitemata Group and alluvium; the sloping Waitemata Group surface is interpreted as continuing underneath the alluvium at a similar attitude. The sandstone exposed in drainage excavations between Morris Road and the Southern Motorway is well cemented medium to coarse sandstone with occasional layers of interbedded siltstones. Continuous, near vertical joints strike between 060° and 080° and have a spacing between 1.5 m and 2 m. The depth of lower strength weathered Waitemata Group varies between 3 m and 5 m.

Alluvium is covered by peat in the southern part of the catchment. Preliminary bridge site investigations for the Auckland Rapid Transit Project indicated the following thicknesses of peat - Walters Road 6.5 m, Taka Street 10.5 m, Manuroa Road 5 m.

3. Engineering Proposals

The cross section of the realigned Papakura Stream will consist of an unlined main channel with a 50 ft to 80 ft wide sloping berm designed to carry a maximum flood of 6,000 cusecs. If necessary the capacity of the channel could be increased to 10,000 cusecs by removal of the berm.

4. Conclusions and Recommendations

It is anticipated that sections of the realigned stream will be in unweathered Waitemata Group, probably requiring excavation by explosives. If the stream is required to be deepened at a later date, excavation will be difficult. An accurate rock profile

along the proposed stream realignment should be obtained using cored drill holes logged by competent persons, possibly supplemented by single channel seismic refraction surveys.

The catchment area to the east of the Alfriston-Ardmore Road appears to be suitable for urban development. Some areas of past landsliding were found, these should be avoided.

The southern part of the catchment area has a variable peat cover. Before development of this area is undertaken, data on peat depths and groundwater level fluctuations should be obtained. At present there is insufficient information available to predict possible settlements.

5. Reference

SCHOFIELD, J.C. 1967 : Geological Map of New Zealand 1:250,000, Sheet 3, Auckland. Department of Scientific and Industrial Research, Wellington, New Zealand