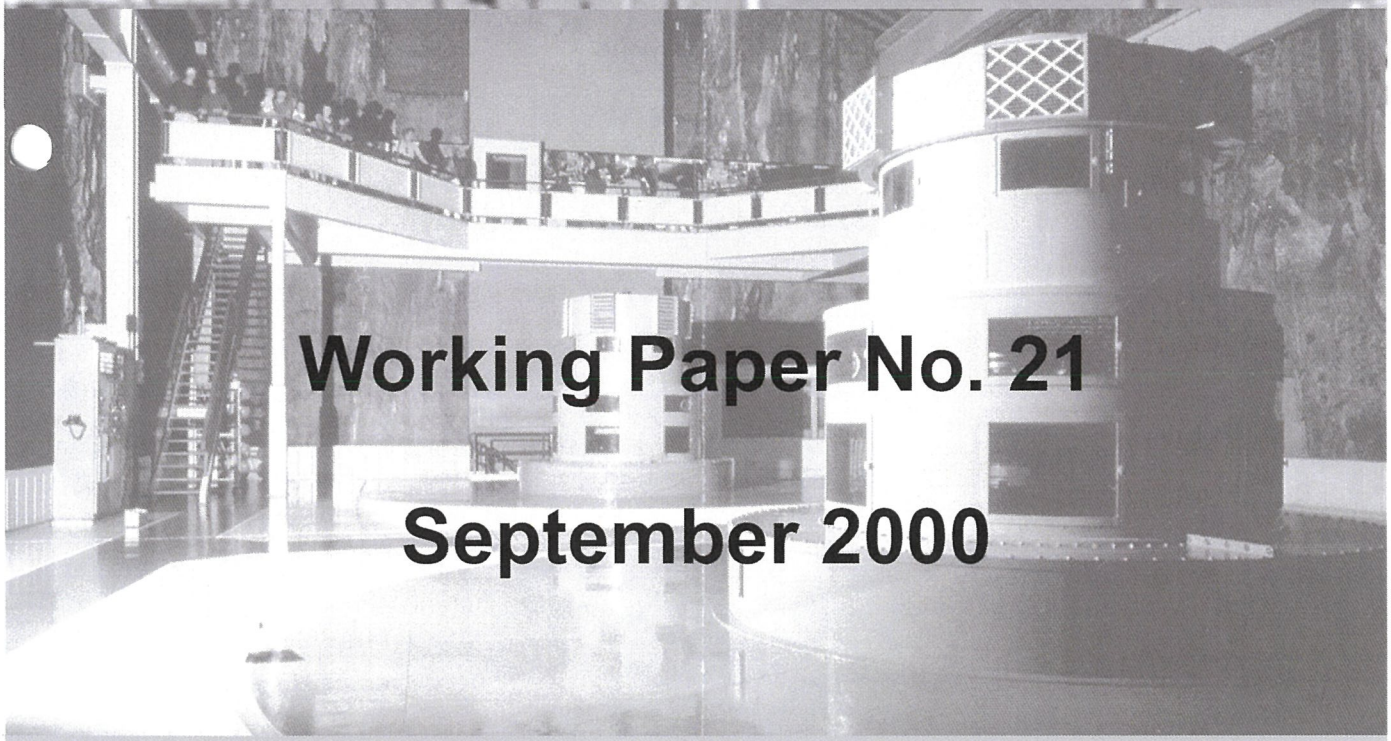
Resource Community Formation and Change

A Case Study of Manapouri

(Fitzgerald, G., 2000: 2)

Gerard Fitzgerald



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MANAPOURI

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TABLE OF CONTENTS

INTRODUCTION

This paper reports the findings of a case study of the small township of Manapouri, located in Western Southland adjacent to the Fiordland National Park. It is one of a series of three case studies of energy communities in New Zealand that are part of a project entitled "Resource Community Formation and Change" which has been funded by the Foundation for Research, Science and Technology[1]. Manapouri's history has been associated with the development of hydroelectric power generation, based on harnessing the combined water storage of Lakes Manapouri and Te Anau. The other case studies of energy communities in this series are Twizel (WP 22) and Opunake (WP 23). This study also relates closely with that of Te Anau (WP 27), one of three case studies of tourism communities in New Zealand.

A variety of research methods were used in this case study which primarily focuses on the history of Manapouri's development since over the past 30 years. These methods included an analysis of census statistics, a review of published documents and reports about the town and energy sector, and four days of interviews by two researchers in Manapouri and Te Anau during November 1999. This study was also undertaken at an interesting time in that both construction and long-established production operations were coincident at Manapouri, new automated control technologies were being introduced, and the ownership of the power station had recently changed.

The research project seeks to provide a stronger conceptual and empirical basis for social assessment and resource planning in New Zealand, especially in rural communities that depend directly on the primary production or processing of natural resources. The findings from the analysis of the three communities in the energy sector will be added to those from communities based on the forestry, mining, agriculture, fishing and tourism sectors, to develop an improved understanding of the processes of community formation and change in these types of communities.

BROAD HISTORY OF HYDRO ELECTRICITY DEVELOPMENT

Lake Manapouri was named by the pioneer survey James McKerrow in 1862. It is described in the AA Guide to New Zealand as "New Zealand's most scenic lake" (1981: 273). "Manapouri" is actually a corruption of Manawapore or Manawapouri, interpreted as lake of "sorrowful or anxious heart" (Peat, 1994; Ministry of Works, 1968). The name of the adjacent 352 sq km Lake Te Anau is believed to be a variation on Te Ana-au ("cave of swirling water") - possibly a reference to the caves which occur on the shores of the lake. In terms of area, Te Anau is New Zealand's second largest lake, and Manapouri is the fifth largest. The comparative dimensions of these two deep glacial lakes are presented in Table 1. Water from Lake Te Anau flows into Lake Manapouri via the 18 kilometre Upper Waiau River. Prior to the development of the Manapouri hydro scheme the Waiau River carried all of the natural outflow of Lake Manapouri south through Western Southland to the coast, and in terms of flow (approximately 400 cumecs), was New Zealand largest river. Today the river's flow is considerably reduced since most of the discharge from Lake Manapouri flows through a man-made outlet at Lake Manapouri's West Arm, through the Manapouri power station and tail race tunnel, and into the sea at Doubtful Sound, some 178 metres below the lake's level.

Both lakes are bordered on the west and northwest by the rugged and forested mountains of the Fiordland National Park, and mark the western boundary of the Te Anau Basin, which today is largely farmland. The town of Manapouri lies on the shores of the lake adjacent to the Waiau River outlet, while the larger town of Te Anau lies some 21 kilometres north on the southern shore of Lake Te Anau.

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[1] Contract TBA 801. For further information on the research project contact Taylor Baines & Associates (PO Box 8620, Christchurch or by email: n_taylor@tba.co.nz).

1956

(Fitzgerald, 2000)

Table 1: Dimensions of Lakes Manapouri and Te A

Dimension	Manapouri	
Area	142 sq km	352 sq km
Shoreline length	170 km	517 km
Catchment	1,388 sq km	2,095 sq km
Maximum depth	444 m	417 m
Long axis	28 km	60 km
Natural mean height above sea level	177.8 m	202.2 m
Natural variation in levels	4.8 m	3.5 m

Source: Peat, 1994: 4-5

The Manapouri Power Scheme

Various opportunities for utilising the "head" (178 metre height difference) between Lake Manapouri and Doubtful Sound for hydroelectricity production were recognised by the Public Works Department engineer, P.S. Hay, in 1904. (Martin, 1998). However it was over 50 years before a project design was developed which could overcome the challenges of the difficult terrain and climate. Several unrealised ideas for development were floated in the intervening years: one in the 1920's proposed establishing a hydropower plant to generate energy for the manufacture of fertiliser from atmospheric nitrogen, and went as far as acquiring water rights under the name of New Zealand Sounds Hydro-electric Concessions Ltd. (Martin, 1998). Others in the 1940's proposed commercial power production, primarily for aluminium smelting. In the early 1950's the Ministry of Works (MOW) started investigating the feasibility of a power scheme, and their preliminary ideas for the Manapouri hydroelectric development which would generate electricity for an industrial development were aired publicly to the Southland Progress League in 1956 (Peat, 1994). The MOW's concept involved putting a control structure on the outlet to Lake Manapouri, building an underground power station at West Arm through which the outflow of the lake would be diverted, and digging a tail race tunnel which would discharge the water from the power station into Deep Cove in Doubtful Sound (Martin, 1998).

In the same year (1956) Consolidated Zinc Pty. Ltd. of Australia, a subsidiary of the multinational mining corporation RTZ Corporation, expressed interest to government in using Manapouri hydro power for smelting of alumina produced at its Gladstone refinery using bauxite mined at Weipa in Northern Queensland (Moody, 1991). In January 1960, the government of the day agreed to give Consolidated Zinc, through its assignee Comalco Industries Pty. Ltd., an exclusive 99 year right to develop the power resources of Lakes Te Anau and Manapouri and the Waiau and Mararoa Rivers with the power station developed along the lines suggested earlier by the MOW, including the raising of Lake Manapouri.

When Comalco indicated it could not raise the necessary project finance in 1963, government undertook to carry out and pay for the construction of the power project while guaranteeing power supply to the smelter. In return the company agreed to sell its engineering feasibility studies and designs, and to surrender its water rights to the Crown. This allowed government to enlarge the scheme's proposed generating capacity to supply electricity to the national grid, while retaining Comalco as a guaranteed customer for most of Manapouri's power.

The government's decision to build the power station was based on the belief that the electricity produced would be cheap enough "to support a metallurgical industry" and that New Zealand could miss the opportunity of having such a large-scale enterprise established here (Shand, 1967: 4). It agreed to give Comalco guaranteed 500 MW of electricity supply for 99 years to the company's proposed Tiwai Point aluminium smelter at Bluff, while taking 200 megawatts for the nation's use.

3rd