N.Z. - NORTH CANTERBURY CATCHMENT BOARD - HYDRO SCHEMES

Central Canterbury Electric Power Board

PROPOSAL FOR THE CONSTRUCTION OF A SMALL HYDRO-ELECTRIC POWER STATION AT CASS

CENTRAL CANTERBURY ELECTRIC POWER BOARD

PROPOSAL FOR THE CONSTRUCTION

OF A SMALL HYDRO ELECTRIC POWER

STATION AT CASS

HYDRO-ELECTRIC DEVELOPMENT

CASS 3A

STEPS TO BE TAKEN

1. Advertise the scheme intent and circulate to all known interested individuals and organisations with a closing date for comments
2. Meet with local interests and potential consumers.
3. Prepare a draft Water Right Application.
4. Discuss the scheme with the New Zealand Electricity Department and the Commissioner for the Environment.
5. Prepare a draft Environmental Impact Assessment.
6. Complete field survey and soil sampling.
7. Complete preliminary design.
8. Prepare draft specification for electrical equipment.
9. Confirm the estimate.

10. Receive orders to proceed.
11. Apply for a Water Right.
12. Submit the Environmental Impact Assessment.
13. Call tenders for electrical equipment.
14. Complete design.

15. Call tenders for civil work.
16. Construction and installation of plant.
17. GENERATION BEGINS - OCTOBER 1980.

CENTRAL CANTERBURY ELECTRIC POWER BOARD

PROPOSAL FOR THE CONSTRUCTION OF A SMALL HYDRO ELECTRIC POWER STATION AT CASS

Scheme Intent

INTRODUCTION

The Central Canterbury Electric Power Board have investigated the possibility of constructing a small hydro electric power station in the Cass region.

This statement of intent has been prepared to inform individuals and organisations who may be interested in the development and to give them the opportunity to comment.

In line with the requirements of the Commission for the Environment, it is proposed to prepare an Environmental Impact Assessment on this development and any comments received will be considered for incorporation in this report.

OBJECTIVE

Hydro electric generating capacity is sought to supply several consumers near Cass railway station in the Waimakariri Basin.

The consumers at Cass are the Grasmere high country station three kilometres away, the Railways Department, the Ministry of Works and Development and a University field station close to the railway station.

The load for each of these consumers has been estimated at 30 kW, making a peak load of 120 kW.

PRESENT SUPPLY

Grasmere station has an old and inadequate 10 kW generator, driven by water power from Grasmere stream near Lake Sarah, which is being replaced by another similar machine at present. As well as supplying a small amount of domestic power for lighting of their own establishment at Cass, the Railways Department supply up to 1 kW to both the Ministry of Works and Development and the University of Canterbury. Both of these consumers operate their own auxiliary generating sets.

OPTIONS AVAILABLE

There are two options available to improve supply to these consumers.

1. Reticulate electricity to the area from Springfield or Coleridge which would prove very expensive and is

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not warranted by such a small demand.

2. Develop a small hydro electric scheme as close as possible to the centre of demand.

The second option appears to be the most acceptable solution and a detailed study of the area has been carried out to find the best site for development. Only one suitable site was found close to Cass where both water and head are available in quantities of the right order to meet the present and future demands of the Cass consumers.

LOCATION OF THE PROPOSED SCHEME

The proposed scheme, referred to as Cass 3A, will be situated 2.5 km from the Cass railway station in the Waimakariri River Basin. It will take advantage of the high rainfall on the eastern slopes of Mt. Misery and Mt. Horrible and the run off would be diverted and ponded in Northern swamp as shown on the attached locality plan. Photographs taken in the area are appended to this statement.

SCHEME DESCRIPTION

Water would be diverted from Misery Stream at approximately RL 637 m and carried in a race to Northern swamp picking up water from Pylon Gulley and the southeast slopes of Mt. Horrible on the way. By constructing a low earth dam at the southeast end of the swamp, water can be stored between RL 630 - 635 m in the swamp. The water would then be dropped 61 m to a power house on the Cass River flat, with the tailrace discharging to the Cass River near the state highway bridge.

GENERATION OF ELECTRICITY

The average flow from the 6.5 km^2 catchment has been estimated at about 0.2 cumecs (7 cusecs), which is sufficient to produce 95 kW of continuous power from a head of 61 m. It is proposed that a 105 kW unit be installed requiring 0.22 cumecs for maximum generation. There is ample storage in Northern swamp for the installation of two 105 kW units working at a reduced load factor should the need arise some time in the future.

BENEFITS

It has become very clear that this is a case where sufficient supply of electric power will assure or increase production from a high country station, ameliorate the living conditions of service gangs maintaining vital transport services between Canterbury and Westland, and facilitate the research and field service of a university. It will in particular assist the Ministry of Works to enlarge its service gang and

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improve maintenance work on the state highway to the West Coast. It can fairly be claimed that the supply of electrical energy at Cass to a few people will assist national production from one high country station, facilitate the servicing of road and rail to the advantage of trade, tourism, and recreation; and be of benefit to tertiary eduction, with particular reference to field biological studies and climatology.

ENVIRONMENTAL ASPECTS

Construction and maintenance of any hydro electric scheme in the back country is likely to cause some interference with soil in the building of dams, conduits, tracks, diversion channels, powerhouse, and transmission lines. It is more difficult to determine, especially in a small local scheme in a remote area, whether such a scheme raises substantial issues with respect to features of biological importance, to the safeguarding of scenic and natural features, and to wildlife habitats.

Much research work is being done in this area under the guidance of Dr. Burrows of the Botany Department, University of Canterbury and he has intimated that his department was prepared to carry out relevant parts of the Environmental Impact Investigation.

ENVIRONMENTAL IMPACT INVESTIGATIONS

Any proposal for the use of natural resources for the production of energy or having substantial effect upon the land or water resources, calls for preparation of an environmental impact report or assessment.

CONCLUSIONS

The Board invites comment from any interested parties before proceeding beyond the initial investigation stage. Due consideration will be given to all submissions before applications are made to obtain the necessary approvals for the project to proceed.

Written submission close on 31st August 1979 and should be addressed to:-

The General Manager,
Central Canterbury Electric Power Board,
Private Bag,
Hornby

Photo 1

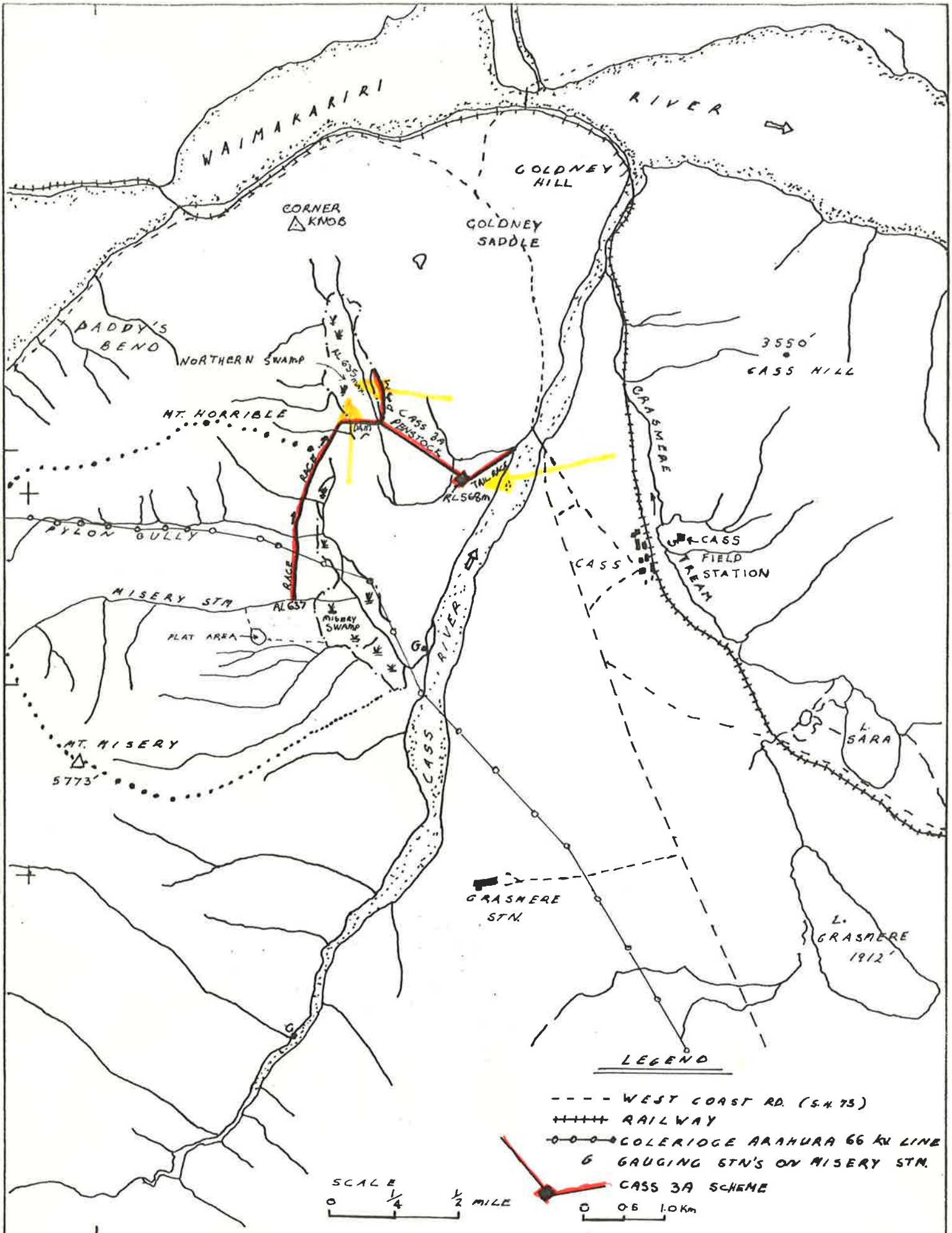
View of Northern Swamp. Line of sight shown on Locality Plan.

Photo 2

View of Northern Swamp. Line of sight shown on Locality Plan.

Photo 3

View along line of tailrace looking from Cass River Bridge to Pylon Gully (shown on Locality Plan).



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