

Student 2 - High Merit

The context relates to Hydro Electric Power (HEP) development in the Waitaki Basin.

HEP development in the Waitaki has reduced the area of braided rivers which is a major part of this environment, see highlighted areas on the map. The flooded areas shown in blue have created more issue for the areas south of the ... *Two annotated maps showed the major rivers before and after dam construction* [1].

When construction of the dams and canals were finished, areas of braided river were either completely submerged or diverted, and in all cases the natural channels were changed. The dams reduced seasonal flooding which is necessary for the health of the river and creation of new braids. The seasonal/natural flow has been replaced with controlled release of water, much of which is diverted from the river into canals. This has reduced the water volume and changed the characteristics of the river. With less water in the lower reaches, weeds especially Russell Lupins, have tended to invade the channel covering the open gravel nesting habitat used by various species of birds [2]. These plants provide better cover for predators such as feral cats, stoats...and these two factors have affected the native bird populations...

Above the dams the characteristics of the braided river have also been changed to form lakes. The submerged areas resulted in the loss of river beaches and small islands that form in the river channel. Loss of these nesting areas and reduction of those downstream has seriously impacted on bird populations... [3]

The lakes that have been formed as storage for the HEP process are used for recreation and this has led to infestations of didymo which is causing major problems in the Waitaki affecting both other species using the river ecosystem and the dams.

HEP generation is a sustainable use of the Waitaki Basin environment Even though it has affected the environment a lot of people have worked to ensure that the flora, fauna and quality of the river are protected now and in the future [4]. Meridian energy works alongside DOC, Fish and Game, local iwi etc. to address environmental issues. The role of Meridian Energy is largely through funding key projects.

Project River Recovery is important to ensure sustainability of the environment as it focuses on maintaining the braided river and wetland habitat with an aim to protecting populations of native plants and animals. One action that directly responds to improving sustainability is the development of wetland habitats [5] to replace those lost after dam construction. Predator fencing will be used and this will provide a safer environment for endangered species compared to before the changes... Ecological research is also funded and is ongoing, this is important to make sure that issues are identified and acted on before they seriously affect the environment...

...Meridian could improve energy output, with minimal effect on the environment by adding a power generating station at the dam on Lake Pukaki. This could use a turbine on the spillway and this wouldn't result in any more flooding... This proposal shows that future use for power generation does not need to create any new risks to the environment, so it would have to be considered a sustainable use of the Waitaki Basin [6].