

MWH Ref: Z1114701

19 June 2008

ACWT  
C/- MWH  
P O Box 13 249  
**CHRISTCHURCH**

**Attention: Janan Dunning**

Dear Sir

**Re: ACWT Rakaia River Hydro Scheme Ecological Assessment.**

As part of the EA/BCI hydro scheme Resource Consenting process I undertook the terrestrial ecological surveys along the scheme footprint from the river intake to the formed Highbank tailrace and fish barrier. The field survey was conducted on 7th June 2007 and entailed a visual assessment of the dominant vegetation types and plant species occurring at specific locations along the scheme footprint as well as bird species observed during the survey. Plant samples were taken where necessary for later identification.

The ACWT scheme consists of a broadly similar footprint between the river intake and the Highbank power station with some differences in scale; i.e.

- A larger intake structure scaled to take up to 40 cumecs diverting water from the river directly into a settling pond (i.e. no sluice channel);
- Larger settling pond;
- Manual sediment disposal as opposed to the sluice channel associated with BCI;
- Sediment disposal area on the river bed.

As with the BCI scheme the vegetation cover within the study area reflects a history of human modification and invasion by naturalised or exotic woody and herbaceous species. Intensively managed pasture, willow and poplar woodlands and areas of gorse, broom and tree lupin scrub prevail within the study area and along adjacent reaches of the Rakaia River.

Indigenous vegetation tends to occur either as discrete areas in the case of the cushion plants (*Raoulia australis*, *Raoulia hookeri*) that colonise the stable areas of riverbed, while tree tutu, toetoe, bidibid and willow herb (*Epilobium* spp.) occur on a greater variety of disturbed sites. The wetland plants are generally confined to the areas of standing water in the minor braids towards the edge of the riverbed.

L\_ACWT Rakaia River Hydro Scheme Ecological Assessment 19.6.08

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There are no sites of significant natural value (as assessed from grid reference data supplied by the Department of Conservation) within the proposed footprint of the ACWT project where it coincides with the BCI scheme. There are isolated stands and individual examples of native tree species such as cabbage tree, *Coprosma propinqua*, as opposed to distinct communities, which may be affected by the fish bypass channel.

No formally protected areas that are administered under the Conservation and Reserves Act exist in the vicinity of the ACWT scheme where it coincides with the BCI scheme.

The indigenous plant and animal species that occur within the study area are considered to be abundant and widespread both in a local and regional context.

The exotic plants while not contributing to the ecological value of the area do provide roosting and feeding habitat for several species of native birds, native lizards and invertebrates.

In summary the vegetation affected by the scheme is considered to be of low ecological value and will not result in any loss in biodiversity in the local or regional context.

#### *Effects of Scheme Footprint*

The proposed works will result in the removal of mainly pasture grasses and radiata pine shelter belts along the line of the diversion channel, settling pond, drop structures, borrow area and spoil disposal area and the surrounding construction zone. The sediment disposal area on the river bed may result in the loss of some discrete turfland communities featuring cushion plants such as *Raoulia australis*, *Raoulia hookeri* and prostate plants such as the bidibid (*Acaena novae-zelandiae*) and creeping pohuehue (*Muehlenbeckia axillaris*). The fish bypass will result in the removal of mainly exotic vegetation from the terrace, riverbed and surrounding construction zone with the possible loss of small numbers of individual natives such as cabbage trees, *Coprosma propinqua*, toetoe, *Muehlenbeckia australis*, and *Polystichum richardii* (shield fern). The loss of wetland vegetation associated with the minor braids and from the turfland areas is unlikely to result in a net loss in terms of species composition in the wider area.

Widening of both the existing formed and unformed tailrace will affect exotic sward grasses and herbs that cover the race embankment. There may be loss of a small number of individual native plants such as cabbage trees and flax.

#### *Loss of Habitat Area*

The proportion of habitat that would be lost across the riverbed (due to the sediment disposal area) is greater than for BCI but in context to the wider area is considered to be minor. Construction of the scheme is therefore unlikely to adversely affect the habitat of resident native birds such as grey warblers, silvereyes and fantails that are adapted to a wide range of habitat.

Other native avifauna such as wrybill, black fronted tern, black billed gull, banded dotterel and black fronted dotterel which rely on the river bed for breeding may be adversely affected. The results and suggested mitigation measures of the avifauna surveys to be carried out as part of the ACWT consenting process will need to be given due weight.

Lizards are naturally more confined in their ranges and would generally migrate into adjoining areas during the initial stages of the works. While displacement of these species into surrounding areas is likely to lead to increased competition this would be short term in nature.

#### *Physical Damage to Remaining Vegetation and Habitat*

Due to the scale of the proposal and use of heavy construction machinery there is a high potential for vegetation to be damaged beyond the construction zone. While it is difficult to assess the extent of damage that might arise, it will be necessary to ensure that appropriate site control measures are implemented to minimise this damage through measures such as the demarcation of the construction zone on the ground and use of designated routes for the movement of machinery within the construction zone.

#### *Introduction of Noxious Weeds*

The proposed works have the potential to introduce noxious weeds that do not already exist in the area. Careful cleaning of construction machinery brought on site will be necessary to ensure such species are not introduced to the area.

#### *Avifauna*

The Rakaia River is home to some of New Zealand's most remarkable native birds. No assessment was made of the effects of the scheme on the avifauna of the area as part of the ecological studies for the BCI scheme.

I understand that an avian ecologist has been commissioned to undertake the necessary surveys for the ACWT proposal. The findings of these surveys should be given due weight when designing mitigation measures for the scheme.

#### *Conclusions*

In terms of the effects on terrestrial ecology (flora) the ACWT scheme does not significantly differ from the BCI scheme in the area between the river intake and the Highbank power station tailrace. The findings of the ecological surveys undertaken for the BCI (MWH 2007) are valid for the current ACWT proposal. *Inter alia*:

- The land affected by the scheme is considered to be of low ecological value due to the predominance of pastoral farmland, and adjacent areas covered in sward grasses and woodlands. The latter areas consist of naturalised and planted pine, willow and poplar species.
- The vegetation cover across the affected section of riverbed is dominated by naturalised woody species, herbaceous species and sward grasses, reflecting the degree of modification that has taken place across the surrounding land.
- The indigenous elements are generally limited to the discrete turfland areas that occur on the rocky parts of the riverbed and within the "wetland" zones associated with the minor braids.
- Woody indigenous species representative of the pre-European cover such as kanuka, kowhai, or matagouri were not observed in the general vicinity of the proposed scheme.

- The indigenous plant and animal species that would be affected by the scheme are considered to be abundant and widespread locally and regionally.
- The exotic plants while not contributing to the ecological value of the area do provide roosting and feeding habitat for several species of native birds, native lizards and invertebrates.
- Due consideration must be given to the findings of the avifauna surveys commissioned as part of the consenting process.

Should have any queries please feel free to contact me.

Yours faithfully

**MWH New Zealand Limited**



Gareth Ward

**Senior Environmental Manager**