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Date: 5/1/15

To: PRSG Concessions – D Clendon

From: TEU Ecology – J Marshall

Subject: **Waitaha Hydro Scheme – Terrestrial Ecology Report**

Summary

- Westpower Ltd have applied for a Concession to build the infrastructure of a moderately sized run of river hydro power scheme on the Waitaha River within Public Conservation Land
- The forest vegetation associations within the footprint are typical for the Ecological Districts and well represented within the public conservation lands in the Ecological Districts. The seral vegetation on the recent surfaces within the Harihari Ecological District, is not well represented in the public conservation lands.
- The vegetation within the proposed footprint is identified as being Significant (*sensu* RMA) most importantly as the footprint is within an area of public conservation land that is intact.
- The direct effect of the proposal on terrestrial vegetation values is the permanent vegetation removal on approx 3.5 ha of public conservation land and temporary removal of approximately 4.7 ha. This is a very small area however it will permanently reduce the level of intactness of the area.
- The report has suggested all reasonable avoidance and remedial actions that might be expected during and after the construction phase. Overall the affects of the project on terrestrial vegetation values are small in scale and commensurate compensation would prevent any loss of conservation value.

Assessment of information provided

The terrestrial ecology report (TACCRA 2010) provides adequate and appropriate information on:

- the location and size of the individual elements of the structure
- plant species and vegetation association present in each part of the structure
- the ecological significance of the proposed footprint using criteria supported by the Westland District Plan
- the effects of the proposal on the ecological values.

Assessment of terrestrial flora

The vegetation and flora are described as common and typical for the Wilberg ED, at both the intake and the outlet/power station end of the project. The power station site is within the Harihari E.D which is described by McEwan (1987) as a mix of geologies from alluvial valleys to granite outcrops, with lagoons and lakes, with various soils,

mostly leached and poor fertility on hillsides and terraces, with lower forests logged, flats cleared and farmed. The intake is within the more mountainous and less modified Wilberg E.D. however the location of both areas at the boundaries of these E.D's results in characteristics of both E.D's being represented to some extent.

Two main vegetation associations occur with the proposed footprint. The intake structure is set amongst hillslope forest of mixed hardwoods and podocarps, dominated by kamahi and southern rata with totara and miro as common elements and within a zone of riparian species including a non vascular component along the exposed boulders of the gorge. The temporary infrastructure at this end of the gorge is set on a small alluvial terrace supporting native and introduced grass and forbe species with native seral shrub vegetation. The downstream infrastructure is set entirely on recent surfaces which support both domestic agriculture and more natural seral vegetation which also contains a large component of exotic grass and forbes.

The descriptions and species lists indicate a lack of any rare species or unusual vegetation associations, there appear to be no species of particular interest such as those at their species limits or with disjunct populations.

Assessment of Ecological and Conservation Values

The ecology report assesses the amount of the vegetation associations held within the public conservation lands using the LCDB2 vegetation classification, within appropriate scales and concludes that all associations are well represented within the PCL.

Using the Land Environments of New Zealand classification (Leathwick et al 2002) has similar results for the forested areas of the footprint. The land environment O2.1 where the proposed infrastructure will be in gorge head is well represented within the PCL with about 90% of this land environment within this ED is in native vegetation in PCL. In total there is 4100ha of this in the E.D of which 3900 is in native vegetation in PCL.

The seral vegetation in the O1 land environment within the footprint at the lower power station site, is less well protected than the forest environments. There are approximately 6500 ha of seral vegetation on O1 land environments within the E.D and only 11% of this is in native seral vegetation in PCL; the bulk of this land environment falls outside of PCL. The same land environment within the footprint at Kiwi Flat is in the Wilberg E., most of which is within PCL.

The ecology report analyses the site in terms of criteria suggested by both the Regional and District Council plans and the CMS. The report concludes that the site does trigger the criteria for significance (*sensu* RMA) for what is essentially site intactness. Naturalness (the dominance of native vegetation) is another recognised criteria for assessing significance, and although not directly referred to in the ecology report, is an important consideration to address in PCL. The forest associations at the gorge entrance appeared entirely natural, and although exotic species are found at ground level at both Kiwi Flat and in the lower river terrace of the foot print, the area would still rate highly for naturalness.

Although no rare or threatened flora have been identified by the ecology report, the Waitaha River is a known site for species at their southern limits that may be expected in either the forest, or seral vegetation such as *Clematis forsterii* and *Coprosma tenuicaulis*. As there is no assessment of the bryophyte flora the relative significance of this element of the vegetation is unknown.

Assessment of the effects of the proposal on terrestrial flora and proposed rehabilitation and mitigation

The report identifies that vegetation clearance through the construction phase and permanent vegetation removal of the operation phase are the principal effects on terrestrial vegetation values. A detailed account of the vegetation removal, specifically identifying the riparian zone vegetation, identifies permanent removal of 3.69 ha of terrestrial vegetation. The vegetation removal directly affects the ecological values of intactness and naturalness.

The road into the power station is predominantly on private agricultural land but its intrusion on the PCL presents a reduction in the connectedness across the PCL from mountain top to river bed and the associated ecological gradients, which though no more in scale than a natural and likely, reasonably common scale event, and which will only affect small scale ecological processes and patterns, is a permanent break in that connectivity. All other permanent industrial structures do represent, though small in scale, a loss to the significant conservation value of intactness.

The appropriate avoidance measure during construction to retain large diameter trees is suggested, the success or otherwise of this avoidance measure is often in the hands of the digger operators and so requires good communication within the project team. The report also appropriately identifies weed control as a direct remediation action for the proposal.

The temporary component of the project, on the Kiwi Flat area can be easily remediated within a relatively short time frame after the construction hut has been removed; control of weeds will be the most useful ongoing activity required here as natural regeneration will occur quickly.

The report suggests that the small size of the overall disturbance is within the bounds of natural disturbance, and that natural disturbance is a normal part of the dynamics of this E.D. This is true however this does not account for the fact that this is disturbance over and above what would or will occur naturally in this E.D.

The ecology report states that the effects on the vegetation, of the works at the intake site are negligible. I agree with this in terms of the impact on the vegetation associations, but not in terms of the impact on what is currently an entirely intact site. I agree with the conclusion of ecology report that the project will not have a major impact on the values identified but it will result in an overall loss of conservation value if no compensation is provided.

Conclusion

The ecology report has identified the vegetation associations as common within the E.D; this is true of the forest, but less valid of seral vegetation on recent soils. . . . Appropriate and adequate avoidance and remedial actions have been proposed focusing on on-going weed control. The report identifies that the footprint (both temporary and final) is a very small proportion of the E.D. or the catchment and whilst I agree with this the impact of the project on the important quality of intactness will, without compensation, result in a loss of conservation values.

Reference

McEwan

Leathwick



Site of the temporary construction hut at kiwi Flat – seral vegetation on recent soils is less common in the E.D. than the forested environments.



Site of the weir intake, this hillslope forest is currently intact.