

MEMO: PROPOSED WAITAHA HYDRO SCHEME LANDSCAPE ASSESSMENT OF SCHEME IN LIGHT OF UPDATED PORTAL DESIGN

Context

The Waitaha Hydro Scheme (the Scheme) is a run-of-river electricity generation scheme entailing a low weir that will divert part of the Waitaha River flow through a 1.5km tunnel to a small hydro-electric power station on the downstream side of a foothill range of the Southern Alps. The section of river in which the flow will be reduced includes the 1km Morgan Gorge, assessed as an outstanding natural feature. While the Scheme's project site area is partly modified (with some examples of human modifications evident, including a swing bridge, a track and a hut), it is not pristine, however the intake is in a highly natural landscape above the gorge.

Assessment

I carried out a landscape assessment¹ for the previous concession application. As part of a re-consideration application in 2022, I was asked to review my earlier report. Having reconsidered it carefully, although the updated design of the intake portals proposed by Westpower (discussed below) will be a meaningful improvement, I confirm and stand by my earlier observations.

Design Review

A visualisation of the Scheme's proposed intake area at Morgan Gorge has been updated to reflect the advancements in design of the two intake portals (which includes the access portal) since Westpower's Waitaha Hydro Scheme concession application was lodged with Department of Conservation (DOC) in 2016. The updated design reflects the ongoing work Westpower has invested in the project.

The updated visualisation (attached as **Appendix A**) illustrates the preferred and proposed option for the design of the portals and illustrates the Scheme 10 years after implementation. Specifically, this preferred option proposes a smaller access portal entry (3m by 3m) as opposed to the 5m by 7.5m portal entry previously proposed by Westpower (due to smaller digger requirements).

The preferred option respects the natural characteristics of the area, aligning the portal entrances with the striations of the surrounding rock. Weathering of the intake and access portals has been accelerated by the use of rough-hewn concrete, where plants and mosses are able to grow. Careful placement following implementation of the Scheme of rocks and boulders also assists to integrate the portals into the natural landscape. Ancillary structures, such as a canopy portal cover, to prevent rock fall, is not required, due to engineering within the portal that can be activated, when required. These design

¹ Bentley, James. Waitaha Hydro Scheme: Natural Character, Landscape and Visual Amenity Effects, 2014 (Appendix 9B of the AEE)

changes are a meaningful improvement reducing the visibility of the portal entries and represents a lighter touch.

The remaining intake and weir structure remains unaffected. Corten steel has been wrapped around these walls which sit on top of the surrounding bedrock.

Alternative options were investigated around the location and form of the two intake portals, including placing the access portal at a higher elevation in the rock, further away from the remaining structures. This would have placed the portal in the vegetation, with it being more discretely located, however the need for an access road to this option would mean a greater level of disturbance would be required, which would likely create higher landscape effects than what is presently the case. This option was discounted. A further option of combining the two intake structures together (whereby creating one portal entry) was also considered, however, due to engineering considerations, this option was also discounted.

Whilst the updated visual simulation reflects Westpower's meaningful advancements in the look and feel of the intake and access portals, despite the Scheme's small footprint, it is considered that the natural character and landscape effects at the intake site would continue to be high at a local level as I previously assessed in 2014. This is predominantly due to the introduction of a node of intensified industrialised-style modification occurring within an area retaining very little modification and holding high natural character values.

In terms of the landscape and natural character effects at the broader level, the following important contextual considerations must be taken into account:

- a. despite the project area being considered to be within an Outstanding Natural Landscape (with Morgan Gorge being considered an Outstanding Natural Feature), the extent of this potential overlay would extend through much of the West Coast's mountainous landscape. Landscapes and features are therefore not uncommon in West Coast upper river catchments and Morgan Gorge is one of many equally unique gorges on the West Coast.
- b. although the Scheme will, to a small extent, interrupt the remote-like characteristics and values of the area, the Upper Waitaha Catchment cannot be regarded as 'truly' remote, or pristine or due to existing modifications and recreational use of the tracks, huts and swingbridge. There are several land use consents and concessions for works in the bed of the river and schist extraction operations occur in Macgregor Creek. Further, helicopters frequent the Upper Waitaha Catchment.
- c. there is no active pest control is undertaken on this stewardship land.
- d. there are numerous other river catchments on the West Coast holding similar features such as gorges, hot springs and glaciers and therefore the catchment is not considered unique.
- e. 85% of the West Coast is in public conservation land – 1.912 million Ha. The Waitaha Catchment is 31, 561 Ha (0.017% of the West Coast is public conservation land). The total Scheme footprint once operational is 3.62 ha (0.000002% of the West Coast public

conservation land), with a maximum construction footprint is 4.14 ha.² The scale of the Scheme in the overall regional context demonstrates the extent of any effect.

- f. the Scheme has a small and defined footprint which avoids damming the river, forming a lake or creating large cuts for access roads. The settling basins and penstock are concealed within a tunnel, therefore the Scheme only impacts the small areas at the intake and powerhouse.
- g. the project area is in close proximity to the boundary with the lower Waitaha catchment and away from the truly wild and more remote areas further upstream beyond Waitaha Gorge.
- h. the Scheme is not occurring within a national park or one of New Zealand's highest rated conservation areas, and the Waitaha River is not subject to a WCO.
- i. the effects of the Scheme on Morgan Gorge will not affect the overall biophysical, associational and sensory values of the gorge to a significant degree and, therefore, will not reduce its 'outstandingness' as a feature. The weir will appear close to the entrance of the gorge along with the intake structure, the river will maintain its course through the gorge despite reduced flows and the natural eroding of the broader gorge by fluvial processes will continue.
- j. natural freshes and floods will continue to occur in the river. The river will essentially continue to operate as it does naturally, albeit with reduced flows during drier periods. Abiotic and biotic natural character effects would be minor for the abstraction reach.
- k. there will be no effect on the landscape values associated with Waitaha River hot springs within the Gorge.
- l. it is considered that the Scheme is consistent with the protection of necessary values of the upper Waitaha catchment under Policy C of Policy 4.8 of the Westland District Plan; and
- m. the mitigation measures proposed and the iterative design process have enabled the Scheme to sit well within its landscape and respond to its setting and to acknowledge the outstanding landscape, natural character and visual amenity values the upper Waitaha catchment holds by avoiding very high effects.
- n. overall it is considered that the scheme, in terms of natural character, landscape and visual amenity effects at a local level are assessed as being moderate to high but at a broader scale, lower than this.
- o. overall "Landscape values will largely be retained. A sense of wild and remoteness will still be evident within the Upper Catchment. The landscape will still be outstanding."³

Despite the meaningful improvements to the intake structures as proposed by Westpower, as per my 2014 assessment, when the Scheme is viewed from a broader, catchment or regional wide scale, the

² The access road comprises the biggest portion of the footprint whereas the intake structures are only a very small portion of the footprint.

³ James Bentley report to hearing panel dated 8 December 2016.

intake area as a whole will still create adverse natural character, landscape and visual amenity effects that would remain as being low or moderate to low.

The river will maintain its course through the gorge despite reduced flows. The associated cliffs and natural eroding of the broader Morgan Gorge by fluvial processes will continue.

In terms of the impact of the Scheme on river flow, the Waitaha River Hot Springs and visual amenity effects, my earlier observations remain unchanged as follows:

- a) there would be a moderate level of effect on the perceptual aspects of natural character effects through the abstraction reach. This level of effects was concluded based on the managed water flow through the abstraction reach.
- b) there would be no effect to the landscape values associated with the Waitaha River Hot Springs within the gorge.
- c) concerning visual amenity effects from the walking track (that traverses along the true left of the river) towards Kiwi Flat Hut, the Scheme would have high adverse visual effects from a number of close vantage points, including that location recently simulated. From the swingbridge, the visual effects will be similar, however the view will be of the intake structure itself, rather than the portals.

Summary

I consider that the further design measures proposed to be employed by Westpower in relation to the intake portal and the access portal are worthwhile and have resulted in a scheme that better 'fits' its natural setting. While the Scheme will have an unavoidable adverse effect on natural character and landscape considerations, Westpower's proposed improvements to the intake structures have been carefully designed and are meaningful.

APPENDIX 1: UPDATED VISUAL SIMULATION

WAITAHA HYDRO

UPDATED VISUAL SIMULATION

18 MAY 2022





This plan has been prepared by Boffa Miskell Limited on the specific instructions of our Client. It is solely for our Client's use in accordance with the agreed scope of work. Any use or reliance by a third party is at that party's own risk. Where information has been supplied by the Client or obtained from other external sources, it has been accepted that it is accurate. We accept no responsibility or liability for any errors or omissions to the extent that they arise from inaccurate information provided by the Client or any external source.

Viewpoint Details

Eastings	: 1 003 554 mE	Lens	: 28mm
Northing	: 6 012 263 mN	Horizontal Field of View	: 65°
Elevation/Eye Height	: 230.0m / 1.0m	Image Reading Distance @ A3 is	30 cm
Date of Photography	: 12:30pm 0 May NZST		

Data Sources: Survey data provided by WSP

WAITAHA HYDRO
Visual Simulation: Kiwi Flat - Existing
Date: 18 May 2022 | Revision: 2

Plan prepared for Westpower by Boffa Miskell Limited
Project Manager: James.Bentley@boffamiskell.co.nz | Drawn: CMU | Checked: JBe

Figure 2



This plan has been prepared by Boffa Miskell Limited on the specific instructions of our Client. It is solely for our Client's use in accordance with the agreed scope of work. Any use or reliance by a third party is at that party's own risk. Where information has been supplied by the Client or obtained from other external sources, it has been assumed that it is accurate. No liability or responsibility is accepted by Boffa Miskell Limited for any errors or omissions in the subject that they arise from inaccurate information provided by the Client or any external source.

Viewport Details

Easting : 1 063 554 mE
Northing : 6 012 203 mN
Elevation/Eye Height : 236.6m / 1.0m
Date of Photography : 12:30pm 5 May NZST

Data Sources: Survey data provided by WSP

Lens : 28mm
Horizontal Field of View : 85°
Image Reading Distance @ A3 is 30 cm

WAITAHA HYDRO

Visual Simulation: Kiwi Flat - Proposed view after 10 years

Date: 18 May 2022 | Revision: 2

Plan prepared for Westpower by Boffa Miskell Limited
Project Manager: James.Bentley@boffamiskell.co.nz | Drawn: CMu | Checked: JBe

Figure 3

Visual Simulation Methodology:

This Visual Simulation has been created using a combination of survey and engineering data, and site photography. A summary of this process is outlined below.

Site Visit:

Site photography is undertaken and camera tripod location surveyed. Laser scan survey undertaken.



Production:

Using the survey data, we position and align a virtual camera to the photograph taken on-site. A 3D model of the proposed elements is then incorporated



Compositing:

Proposed elements are then rendered to apply lighting and textures, and are overlaid onto the photograph for masking and further refinement and detailing.

