

Addendum to Lake Dunstan Cycle Trail Landscape Assessment **Assessment of Cumulative Effects.**

Introduction

This addendum to the landscape assessment report assesses any cumulative effects associated with the proposed Lake Dunstan Cycle Trail on the outstanding natural landscape (“ONL”) values of the Cromwell Gorge. Cumulative effects refers to the effects from the permitted sections within the Water Surface and Margin Resource Area (WSMRA) in combination with the effects of the proposed sections within RRZ/ONL that require consent.

A second aspect when discussing cumulative effects in the Cromwell Gorge is the existing effects of hydro development and the cumulative effects in combination with the effects of the proposed Lake Dunstan Cycle Trail. The effects of hydro development are present throughout the Gorge and have now been part of it for over thirty years and can be treated as part of the existing environment. The emphasis of this Addendum is therefore to assess the cumulative effects of the Cycle Trail on both the permitted and non-permitted areas, however consideration is also given to the combined effects of the Cycle Trail in the context of the obvious and much greater, and more significant effects from hydro development.

The report uses and refers to Extra Site Photos for Cumulative Effects Assessment prepared by Southern Land Ltd dated 14/9/2018 and the Lake Dunstan Trail Earthworks Mitigation Plan dated 14/9/2018.

Definition of Cumulative Effects

Cumulative effects are defined as:

'the additional changes caused by a proposed development with other similar developments or as the combined effect of a set of development. (GLVIA3)¹

Definitions of cumulative effects also can include the concept of ‘Sequential Effects’ which is where you are moving through a landscape (as you are in the Cromwell Gorge) and is in compartments or separate visual catchments and the idea that once you get to the end it is the combined sequential effects of development.

While the Cromwell Gorge is considered a discrete landscape entity from Clyde to Cromwell there are individual visual catchments within it i.e. not all the gorge can be viewed at once from where most people view it which is from SH8.

Assessment of Cumulative effects for areas within the WSMRA in combination with the effects of the proposed sections within the RRZ/ONL (that require consent).

The areas within the WSMRA that could potentially create cumulative effects include;

¹ Guidelines for Landscape and Visual Impact Assessment, 3rd Edition, Routledge 46

1. Cornish Point to Cairnmuir Gully (8.6km -12.5km)
2. Mt Jackson Creek to Halfway Hut Creek (18.5km -20.5km)
3. Opposite Italian Creek to Weatherall Creek (24.1km to 31.4km)

The section of Cycle Trail from Bannockburn Bridge to Cornish Point is not included in the assessment of cumulative effects as is separate and outside the Cromwell Gorge landscape.

In the evaluation that follows, I have not paired the effects of particular sections of permitted trail with specific sections of trail that requires resource consent to arrive at a cumulative effects evaluation. I considered whether such an exercise was useful and decided against it. The reason for that is that the main public experience of viewing the trail within the ONL context (in a numerical sense) is from the State Highway corridor on the opposite side of Lake Dunstan. It is my experience, and no doubt the experience of other users, that one perceives the landscape character of the Gorge between the Clyde Dam and Cornish Point as a whole as one drives through it. Therefore the cumulative effects evaluation should capture that experience by evaluating the extent to which permitted sections of trail might have adverse effects on the ONL such that the sections that require consent might have adverse effects, viewed cumulatively, that do not adequately protect the qualities and natural character values of the Gorge.² In other words, will the adverse effects of the permitted sections of trail reach a tipping point for the Gorge's ONL values beyond which the rest of the trail ought not be given consented?

Cornish Point to Cairnmuir Bluff (8.6km - 9.8km to Hartley and Reilly bluffs) and 9.8km -12.5km to Cairnmuir Gully

This section of the cycle trail within the WSMRA requires formed trails on the typically toe colluvial slopes at the base of the range. In three locations at Hartley and Reilly Bluffs (9.8 and 10km) and Pick Axe Bluff (12.1km) short sections of bridge are required across the bluff sections. At Cairnmuir Gully the Trail moves above the WSMRA into the RRZ into the area that requires consent.

The entire section from Cornish Point to Cairnmuir Gully has high visibility from SH8 . This is one of the narrowest sections of Lake Dunstan within the Cromwell Gorge therefore the viewing distance is shorter.

The popular roadside public viewing/lookout overlooking Cromwell and the junction of the two arms of the lake and the Goldfields Monument Look Out opposite the Hartley and Reilly Bluffs both look directly across to the proposed Cycle Trail which increases its significance and sensitivity.

It is considered that the majority of this section is visually sensitive and could potentially give rise to cumulative effects.

² Policy 4.4.1 of the District Plan.

The first section from Cornish Point follows existing track and passes through old mining sluicings then on new formed trail along the toe slope of the range face.

Comment on existing effects from hydro development in this section

From Cornish Point to Hartley and Reilly Bluffs there is little or no obvious effects from hydro development (apart from the lake itself). However Hartley and Reilly Bluffs to Cairnmuir Gully section is dominated by the massive remedial work on the Cairnmuir slide. This has a significant and considerable effect on reducing naturalness and natural values on the localized section (from Hartley and Reilly Bluffs to Cairnmuir Gully).

Proposed mitigation and assessment of cumulative effects. (Refer Figs. 7-17)

To minimize any cumulative effects, mitigation measures include locating the trail as low as possible to the water edge to match the waterline and where there is also some existing riparian vegetation. Also wherever possible changes of grade will be kept to a minimum to assist with the integration of the trail. Thirdly retaining whatever topsoil and top layer material there is to dress batters particularly downhill batters to facilitate recovery is proposed.

I understand that narrowing of the trail width on this section to Hartley and Reilly Bluffs is not a feasible option due to the need to construct and service the trail from the Cromwell end which requires the full trail design width (2.0 -2.5m).

The bridge (s) attached to the bluff sections will be new features but due to their design and materials and the huge scale of the bluffs and range face as a whole will not contribute adverse visual effects or contribute to cumulative effects.

At the Hartley and Reilly Bluffs (opposite the Goldfields Monument and lookout), the trail will be narrowed to 1.5m wide between bluffs and pockets of local native shrubland species will be planted. Immediately south of the two bridge sections is a further section of trail (approximately 400m) which is also visually sensitive and opposite the Goldfields Monument Look Out. To assist with mitigation here the trail will be reduced in width to 2m and toe stone walling will be used for trail formation. The reduction in trail width will reduce the height of the cut batter by 20%. Pockets of local native shrubland species (including kanuka) will also be planting on this section. (refer Mitigation Plan).

Further south of Hartley and Reilly bluffs the trail is located on flats close to the lake with existing vegetation for screening and then again onto toe colluvial slopes upstream of Gibraltar Rock. Some cumulative effects will occur here until the trail has settled in and some vegetation is achieved on batters.

In summary for this section there will be some cumulative effects in the short to medium term but with the mitigation measures proposed and special care in forming this section any cumulative effects can be minimized to acceptable levels.

Mt Jackson Creek to Halfway Hut Creek (Refer Figures 35-36 and Figures A2-A6)

The Mount Jackson Creek to Halfway Hut Creek (approx. 1.3km) is one of the most spectacular and visually impressive sections of the Cairnmuir side of the Gorge (together with the Cairnmuir Bluffs).

The section is highly visible from SH6 although there is no viewing point or stopping area due to barriers on this section of the road. Additionally the landform separating the highway and the lake blocks views to the section when directly opposite. However the section is entirely exposed to view and therefore highly visible from views approaching from the north (travelling south) and in particular from views approaching from the south (travelling north).

Comment on existing effects from hydro development

The visual catchment which includes the section from Mt Jackson Creek to Halfway Hut Creek is not confined to the section itself but extends beyond at either end. Taken in isolation the section has no existing effects from hydro or other development. It is largely natural except for changes to vegetative cover from pastoral use and the presence of the lake. Existing tracks are visible beyond the actual section but are not obvious or a visual distraction.

Proposed Mitigation and assessment of cumulative effects

There are 4 bridge sections fixed on rock bluff within the Mt Jackson Creek to Halfway Hut Creek section.

The remainder is on formed trail on colluvial slopes low down and just above the lake edge. These have the potential to cause cumulative effects however special measures on this section will ensure that the trail effects are mitigated.

The special measures include:

1. The rideable trail surface between distance 19km and 20.5km will not exceed 1.5m in width (refer photo of Roxburgh Gorge narrow trail (1.5m width))
2. No cut or fill batter in colluvium (soils) will exceed 1.2m in height. Cuts in rock may be up to 2.2m in height
3. Any batter slope exceeding 600mm in height will be either hydro seeded within the first growing season of construction and/or surplus rock from the cut will be placed/stacked back on the batter slope to prevent erosion and promote reinstatement
4. Any safety railing/structures will be constructed using pre-oxidised (rusty) steel and timber or other non-reflective materials.

a) Bridge sections

The bridge sections across rock bluffs will be physically attached to the rock bluffs and will not alter the integrity or visually compromise the bluffs. The structures will appear very small in scale in relation to the bluffs and the design, materials and colours will ensure high

visual integration and absorption. No adverse cumulative effects will occur from the bridge structures.

b) Formed trail sections

With the special measures discussed over this section, adverse visual and cumulative effects will be minimised and maintained at an acceptable level. As can be demonstrated in the Roxburgh Gorge photo of a 1.5m width trail formation this reduction in trail width and consequent batter height makes a considerable difference to effects. The most difficult and sensitive part will be from approximately 19.9 to 20.5km where the trail rises above the lake level to gain height to Halfway Hut Creek.

In summary with the special measures outlined above the Cycle Trail can be located on this section with minimal and acceptable cumulative effects.

Opposite Italian Creek to Weatherall Creek (24.1km to 31.4km – Refer Figs 48-56)

On this section the Cycle Trail is on both existing access track and new areas of trail close to the lake. Apart from two very small areas all new trail within this section is within the permitted area (ie within WSMRA).

Generally terrain over this section is less steep with vegetation consisting of pasture and native grey shrubland with poplars in some gullies. Rock outcrops are also present.

Comment on existing effects from hydro development

This part of the Gorge is the most modified within the Gorge. There are numerous existing tracks on the Cairnmuir side resulting from hydro development and or pastoral use. Visual effects resulting from some of these are high especially the more recent high impact access tracks more recently constructed by the power company which have not recovered, and are unlikely to due to over steepened cut batter slopes. Fill batters are very slowly starting to support sparse vegetation. Effects from existing tracks combined with the new cycle trail sections will contribute to cumulative effects.

Proposed Mitigation and assessment of cumulative effects

Where the trail utilises existing formed track no additional landscape or visual effects will occur.

New trail sections will be constructed to standard trail specifications and width. Proposed mitigation includes retention of topsoil from the trail formation to dress batters to facilitate revegetation and hydro seeding of selected sites south of Byford Creek (26.6km) of approximately 300m of trail.

A rocky point just south of Byford Creek is a local feature on this section. Stacked rock walling will be used here yielded from the trail formation which will soften visual effects.

Earthworks using diggers to form the trail is likely to rehabilitate faster at this end of the Gorge compared to the rocky and steeper sections further north.

There will be degrees of cumulative effects resulting from the combined effects of new trail within the permitted portion and the very small area outside of the WSMRA that requires consent plus the effects of historical earthworks and tracks. These cumulative effects from the proposed Cycle Trail will primarily be short to medium term until vegetative cover establishes on formed batters.

Sequential Effects

The sequential effects of the Cycle Trail combining the WSMRA areas and the RRZ/ONL moving through the landscape from one end to the other will be insignificant after a period of settling in of the trail and especially when revegetation is achieved. The scale of the works in relation to the scale of the Gorge is small and with time will be entirely absorbed within the Gorge landscape. The bridge structures will not dominate the landscape and will be seen as valued man-made additions to the natural landscape. The effects of hydro development will continue to dominate the sequential effects of moving through the Cromwell Gorge.

Conclusion

The adverse effects of the trail within the WSMRA are permitted. I am conscious that District Plan policy 4.4.1 does not apply in that zone, and instead the policy priority is the enhancement of public access along the Lake margin. Nevertheless the presence of the trail within the WSMRA will be viewed in the context of the Gorge ONL and has effects that may be experienced cumulatively with the sections of trail that do require consent. For the reason I explained in my introduction, I consider that the cumulative effects on the ONL character and values are experienced as a whole as one travels through the Gorge. I do not identify particular sections that are cumulatively acceptable or unacceptable.

With the mitigation measures proposed, and given a reasonable period of time for the Cycle Trail to settle in and disturbed ground to revegetate, cumulative effects resulting from the permitted areas (WSMRA) and non-permitted areas requiring consent will be low.

By far the greatest cumulative effects result from the scars of hydro development, for which effects continue to dominate the Gorge. Any effects from the proposed Cycle Trail will be minor or inconsequential by comparison.

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