Addendum Report
Specialist Report – Landscape
Date: July 2022
NZ Battery Project – Lake Onslow PSS: Phase 1B Feasibility Study

Introduction

This report is an addendum to the 2021 Landscape and Visual Assessment Report by Blakely Wallace Associates (BWA). The purpose is to provide additional comment and responses to the Phase 1B Feasibility Study NZ Battery Project – Lake Onslow PSS.

The report responds to questions relevant to landscape and visual matters raised in both the specialist briefing Memo (June 2022) and the Project Description document (May 22) and other matters.

(a) Memo questions

c.(i) Identify any aspects of your earlier work and advice to MBIE that may no longer be applicable/relevant

The initial advice for the earlier work was the dam wall would be earth construction. It is understood that the dam wall construction is now a concrete structure. This is not considered a red flag item. Raw concrete is considered an appropriate material.

c.(ii) *Highlight any aspects that were not considered in your earlier work, and have now been addressed;*

1. Fluctuations in the operating level of the upper reservoir though discussed was not fully understood for the earlier work. The considerable range in operating level now envisaged is **a red flag issue** for landscape and visual values due to the visual effects associated with the level change and consequent effect on naturalness, natural character and amenity.

2. The requirement for a lower reservoir was not known or considered.

c.(iii) Update any findings that were based on the initial assumptions about the scheme to reflect the refined details on the proposed scheme; and

Note above discussion on dam wall construction. Also the large fluctuations in the operating range of the upper reservoir and the requirement for a lower reservoir (ie differ from assumptions in earlier work).

c.(iv) Identify any changes to the nature of the proposed scheme that could be made (particularly operating parameters) that could have significant environmental relevance (either positively or negatively) – are there any thresholds that have a significant bearing on the level of environmental outcomes?

The proposed operating range for Lake Onslow is a major issue for landscape (and no doubt for recreation values) and will impact on landscape and amenity values. Minimising large changes to the operating levels would have significant environmental benefits.

d. Recognising that the Project Description may reaffirm/highlight a lack of information or current understanding in terms of resultant environmental effects (given the limitations in the baseline environmental data), please provide any advice you may have about the inherent risks/possible consequences of that "incomplete" understanding.

Incomplete understanding about project footprint in terms of area of disturbance/construction zones etc. Further understanding is needed to clarify the full extent a of landscape effects.

e. Identify possible positive environmental outcomes that might arise from the scheme, or could do with some adjustment to the proposed scheme (and its operation), including mitigation measures that could/should be applied/considered.

Nothing identified here

f. *Finally, and in light of all of the above, please provide an assessment that addresses the following:*

- *i. An understanding of the likely environmental effects the scheme would (or could) give rise to (what are the probable impacts?);*
- *ii. The significance of those effects on the environment (what would those impacts mean for the state of the environment?); and*
- *iii. As far as possible, what are the inherent risks of what we might not yet know/have discovered (i.e. accepting our incomplete knowledge, what is the significance of our knowledge gaps?).*

The July 21 landscape report scopes the likely environmental effects. These effects in general remain relevant at Phase 1B stage but the following further comments can be made.

There will be considerable landscape and visual effects from the raising of Lake Onslow and associated infrastructure. The main effects are the almost total loss of naturalness within the Onslow Basin and the total inundation of the special wetlands on the basin floor. The wetlands are a unique and special landscape and ecological feature of the Onslow Basin and wider Eastern Otago upland plateau.

For the **Scale of Effects** the July 21 report rated the scale of effects for the Onslow Basin as High. From my understanding now I am inclined to lift this to the highest rating of Very High (defined as 'total loss of key attributes of the receiving environment and /or visual context amount to a complete change of landscape character').

Additionally there will be wider landscape effects for the whole of the upland plateau with the loss and change to the western edge of the plateau landscape which will effect/impact the intactness of the whole and the perception of a vast largely natural and outstanding upland plateau landscape. The effects rating for the wider plateau (including the Onslow Basin and beyond) in the July 21 report was rated as a Moderate to Low effect. This rating is upheld.

The range in operating levels will be a major impact for landscape and amenity values based on the operating ranges proposed.

(b) Comment on Project Description - Phase 1B Feasibility Study

For the purposes of the environmental assessments please assess the impact of the initial time taken to fill the reservoir being between 0.5 and 2.4 years (filling a 3TWh reservoir at a rate of 240m3/s and filling a 5TWh reservoir at a rate of 60m3/s respectively).

The initial time taken to fill the reservoir is a landscape issue but possibly less so than the fluctuating operating range. The effects from a large fluctuating operating range are a permanent effect (accepting that the reservoir will be fill for periods) rather than temporary as is the case for the initial filling with consequent effects on landscape and amenity.

For the purposes of the environmental assessments please assess the impact of the dam footprint, length and height for a 5TWh scheme.

The dam and dam footprint (for a 5TWh scheme) will be a new, large dominant and clearly unnatural, human element in the landscape with far greater effects than the present Onslow dam wall. The existing wall by comparison is small, not dominant and shaped to sit comfortably within the natural landform.

There will also be major landscape disturbance to the wider footprint of the wall both in terms of earthworks and vegetation (100m construction buffer).

As stated in the July 21 report the location of the wall at the edge of upland plateau and transition area to more modified farmland of the Clutha Downlands is advantageous in landscape terms and assists with minimizing effects to wider Eastern Otago upland plateau.

The scale of the landscape is a further advantage and will assist with absorbing a massive structure such as is proposed.

<u>Mitigating the landscape effects of the Dam wall.</u>
A simple unfussy, functional structure and a location and shape/design that is responsive to the topography and landform will assist with integration to site and mitigation.

Remediation and revegetation of the construction site will be a further key strategy for mitigation and needs to be planned for as part of the overall project.

The location of the new bridge is yet to be determined, however for the purpose of the environmental assessment please provide details of any matters that should be considered when determining the location of this bridge.

The location of the bridge is best placed in a 'topographically logical' location and integrated with the natural landform as best as possible.

For the purpose of the environmental assessment please advise if there are any opportunities for improved environmental and/or cultural outcomes by providing for a different flow regime (noting that we will have to ensure downstream existing water takes are not adversely affected).

N/A

<u>Lower Offtake Options</u>

All 3 options are acceptable in landscape and visual terms however the Lake Roxburgh and Craig Flat are preferred options.

Lake Roxburgh lower offtake option

This option offers the advantage of combining and co-locating infrastructure to the Roxburgh Dam. The natural environment has already has already been severely altered by massive structures and infrastructure.

Dumbarton Rock offtake option

The context for this site is floodplain close to the river and productive farmland. There is no hydro or industrial infrastructure development at or near this site.

The design and reservoir configuration does not offer the same 'form fit' as Lake Roxburgh and Craig Flat. The high and unnatural bund and reservoir shape plus pumphouse and fish screens would be more incongruous in this location and more difficult to absorb than other options.

Additionally the reservoir and associated structures would be very visible from SH8. It would have significant effects on the receiving agricultural/horticultural landscape in this location and impact on the Outstanding Natural Feature (ONF) of the Clutha Mata-au River.

Craig Flat Offtake option

This option offers the advantage of the lower reservoir located within a natural gully enclosed by landform. The site is farmland and has no other hydro or associated infrastructure close to it. Overall it is a better landscape outcome that Dumbarton Rock. There would still be some impact on the Clutha Mata-au Outstanding Natural Landscape Feature from the infrastructure on the edge of the river. The reservoir is likely to be less visible from SH8 than Dumbarton Rock.

Surge Shafts, Powerhouse cavern, Transformer tunnel, Roadway tunnel & cable tunnel

These are all located in the Downlands landscape character unit west of Lake Onslow. The more modified agricultural landscape where these are proposed in less sensitive and more able to absorb change. The key issue will be locations for excess fill from the excavations and how this is dealt with and the locations for tunnel and cavern access.

Surface Facilities and deposition of excavated material

The location of permanent surface facilities and the locations for deposition of excavated material are very important landscape issues. Deposition sites will need to be integrated with the natural landform.

Planning Matters

The issue of whether the Onslow Basin is Outstanding Natural Landscape (ONL) needs clarification.

The Central Otago District Plan shows the basin on its maps as Landscape Management Area (LMA). However the Environment Court found the Eastern Otago upland plateau as ONL in the Project Hayes Windfarm Decision. Whether this included the Onslow Basin is uncertain. The difference between LMA and ONL is also unclear.

It is important because Outstanding Natural Landscape comes under Matters of National Importance under Section 6&7 of the RMA.

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