Fulton Hogan Parkburn Quarry Subdivision Ecological Impact Assessment Review

Prepared for:	Central Otago District Council	Reviewed and approved for release by:	Justyna Giejsztowt Principal Ecologist – Biodiversity and Modelling Specialist
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1.0 Introduction

Fulton Hogan Land Development Ltd (Fulton Hogan) is preparing a Fast Track application to develop a residential subdivision on the site of the currently operating Parkburn quarry (Parkburn) at 922 Luggate-Cromwell Road, north of Cromwell township. This would involve extensive earthworks to backfill the existing quarry, and creation of two "coves" extending into the property from the shore of Lake Dunstan[1].

Central Otago District Council (CODC) engaged Wildland Consultants Ltd (Wildlands) to review the terrestrial components of the Ecological Impact Assessment (EcIA), management plans, and conditions provided by Fulton Hogan. This memo reviews the terrestrial components of the draft terrestrial EcIA prepared by Viridis Ltd (Viridis, 2026; hereafter "*the EcIA*").

1.1 Author qualifications and experience

The lead author of this review is Dr Luke Liddell. Luke is a Senior Vegetation Ecologist at Wildland Consultants Ltd (Wildlands); he holds a PhD in Biological Sciences and BSc (Hons) in Ecology and Environmental Science from the University of Auckland. Luke has 9 years' experience working as a terrestrial ecologist across the commercial and academic sectors.

Technical input related to lizard presence on-site was provided by Cameron Thorp; Cameron is a Herpetologist at Wildlands. Cameron graduated from the University of Nottingham in the UK in 2013 with a Master of Science with Honours in Environmental Science, and a Post-graduate Diploma in Endangered Species Recovery with the Durrell Wildlife Conservation Academy in Mauritius in 2014. Cameron has 12 years' professional experience working as a herpetologist, the last 8 years in New Zealand.

Oversight and technical input was provided by Dr Justyna Giejsztowt. Justyna is a Principal Ecologist – Biodiversity and Modelling Specialist at Wildlands. She holds a PhD in Ecology and Biodiversity from the Victoria University of Wellington, a MSc in Applied Ecology from the University of Poitiers (France) and Christian-Albrechts University (Germany), and a BSc in Biology and Geography from the University of Canterbury. She is an experienced terrestrial ecologist with more than 15 years' professional experience working across government, commercial and academic sectors. Justyna has particular expertise in alpine and subalpine plant communities. Justyna routinely undertakes peer reviews of EcIAs, including in the Fast Track process.

[1] We note that at the time of the site visit (5 April 2026) there was some discussion about removing one or both of the coves from the development plan. As these coves are present in the materials provided to-date, they are included in this review.

We confirm that we have read and comply with the Code of Conduct for expert witnesses contained in the Environment Court Practice Note 2023. Unless stated otherwise, this report is within our areas of expertise and we have not omitted to consider material facts known to us that might alter or detract from the opinions expressed in this report.

2.0 Project Scope

The scope of this memo is limited to the terrestrial ecology of the proposed subdivision works area. Freshwater ecology is outside the scope of this memo, however the reviewed EcIA also includes assessments of freshwater values, impacts, and effects management. All wetlands on-site are non-natural wetlands associated with freshwater habitat on the margins of Lake Dunstan, as such they are considered out of scope for this review.

Effects management actions proposed for the Parkburn subdivision are only reviewed to the extent that relevant details are included in the EcIA. Some of the effects management actions make reference to management plans that have yet to be provided by Fulton Hogan (e.g. lizard management plan; erosion and sediment control management plan). Some other effects management actions (e.g. riparian enhancement planting) are also referenced, but no further details are given about these actions.

A site visit to the Parkburn quarry was undertaken on 5 April 2026, with CODC and Fulton Hogan staff in attendance. Accordingly, this assessment is informed by that site visit in addition to the material provided in the EcIA.

3.0 General Comments

3.1 Assessment quality

The report in general is brief, and a low level of detail is provided both for the ecological values of the site, and the proposed effects management approach. The terrestrial habitat on-site is highly modified and dominated by exotic habitat, however the low level of detail in the EcIA makes it difficult to know what the ecological values for the site are. Specifically, both a previous ecological report and the site visit on 5 April found indigenous plants that were not identified in the EcIA (see section 4.1). Additional information such as a plant list, more detailed vegetation mapping, and a figure showing the location of all Gee's minnow traps (for lizards) would help to determine whether an appropriate survey effort has been undertaken. Of particular concern is the level of survey effort undertaken for indigenous dryland plants.

Another key issue is that the EcIA assumes that all un-quarried areas of the site will quarried over the next few years, prior to the of subdivision works. This is highly relevant to the overall assessment of effects, as the EcIA assumes in Section 4.2.1 that much of the vegetation on-site will already be removed due to normal quarrying activities, minimising the proportion of habitat loss attributable to the subdivision works. Based on discussion with Fulton Hogan staff during the site visit, this may not be correct. Instead, the earthworks and recontouring necessary for the subdivision will result in the clearance of unquarried habitat on-site. This requires clarification before a conclusive assessment of ecological impacts can be made. Ideally, the EcIA should include a map showing which areas of vegetation are planned to be removed for quarrying prior to the start of the subdivision earthworks.

In section 4.2.1 (and elsewhere throughout the EcIA), reference is made to plantings/revegetation that will occur at the site, and this is assumed to reduce the magnitude of ecological impacts. Despite this, few details are provided regarding where these plantings will occur, what species will be planted, and how these plantings will appropriately address various ecological impacts. It is impossible to assess the ecological outcomes of this project without further details.

3.2 Impacts not considered

The EcIA does not include any consideration of terrestrial invertebrate values on-site, or the potential impacts of the development on terrestrial invertebrates. This is a large knowledge gap regarding the impacts of this development, especially considering that there are critical populations of indigenous invertebrates elsewhere in the Cromwell basin (e.g. Cromwell Chafer Beetle Reserve), which may occur on-site.

3.3 Impact area

Figure 11 which should show is absent. This makes it difficult to tell where exactly there will be loss of vegetation/habitat, particularly regarding areas of the development footprint that are outside the site boundaries, e.g. where the coves will be created on public land along the lake edge. The EcIA does generally describe the ecology of these areas and consider them when discussing impacts, but the absence of a clear impact footprint in this figure (on in earlier maps such as Figures 2 and 6) makes it difficult to understand the ecological values and potential impacts within the impact footprint.

4.0 Methodology and Site Description

4.1 Vegetation and flora

4.1.1 Vegetation surveys

The vegetation descriptions for the exotic grassland and disturbed/quarried areas lack sufficient detail to accurately inform the vegetation values on-site. Notably, the current description for the exotic grassland does not describe which grass species are present, and the description for the disturbed/quarried areas does not give any of the species found in this habitat. In addition, these areas have not been mapped in Figure 2 (although this may not be practical for the quarried areas with regenerating vegetation). Given that many indigenous dryland plants favour open and/or disturbed substrates, a thorough and accurate description of the plants present in these areas is necessary to assess the vegetation values on-site, particularly given the indigenous plants that appear to have been missed on-site (see below).

During the site visit, two indigenous plants were identified in an area of quarry gravelfield at the southwestern corner of the site (*Senecio quadridentatus* and *Colobanthus strictus*; the latter has a threat status of Regionally At Risk – Naturally Uncommon). *Raoulia australis* (At Risk – Declining) cushions were also seen during the site visit just outside the site boundary, in an area that may be within the works footprint for the creation of the southern cove (approximately lat -44.966896°, lon 169.257902°); if these cushions are within the impact area then they should to be accounted for in the EcIA. Previous ecological surveys of the site (Beale, 2023) have also reported the *Raoulia australis* and the indigenous grass *Poa maniototo* (At Risk – Declining) on-site in areas of exotic-dominated grassland. The fact that these species have been missed suggests that at least the exotic grassland and disturbed/quarried areas have not been surveyed thoroughly enough. This makes it uncertain whether an appropriate value has been assigned to the vegetation on-site

Beyond these specific issues, the generally low level of detail makes it difficult to determine whether the vegetation value of this site has been determined appropriately. In particular:

- The area breakdown of the different vegetation types (in total and within the works footprint) is not given anywhere. An accurate assessment of the magnitude of vegetation loss cannot be made if the area of vegetation loss is not provided.

- No reference is made to the regional threat statuses of indigenous plants on-site (Jarvie et al., 2026), making it difficult to know whether any regionally Threatened or At Risk species are present. Because this has not been considered, it means that vegetation values on-site may have been missed or underestimated.
- A full plant list for the site and a statement of the total time spent surveying the vegetation on-site have not been provided. This information would clarify whether an appropriately detailed vegetation survey has been undertaken on-site.

A more minor issue is that second paragraph of Section 3.2.1 states that the exotic vegetation at the site is mostly limited to planted shelterbelts and large trees, seemingly omitting the large areas of exotic-dominated grassland on-site. This is presumably a mistake, but currently reads as downplaying the amount of vegetation on-site, particularly when exotic grassland is also not mapped in Figure 2.

4.1.2 Rare plants

The site sits on the same landform (a long outwash terrace north of Cromwell) as Mahaka Katia Scientific Reserve, which supports many rare dryland plants. Unlike surrounding properties, the areas of grassland on site have not been impacted by horticulture, viticulture, or subdivision, and have not been grazed since the establishment of Parkburn quarry in the 1980s. In my opinion, the presence of indigenous dryland plants within the subdivision area has not been appropriately considered or ruled out in the EcIA – even though the site is highly modified and dominated by exotic plants. A site survey by a botanist with dryland-specific experience would result in a more robust EcIA.

4.2 Fauna

4.2.1 Avifauna

The bird survey appears to be entirely focused on the lake-edge. No 5-minute bird counts or other quantitative survey methods were undertaken away from the lake edge.

Beyond this, the findings of the avifauna survey seem reasonable, with higher avifauna values associated with the lake margins compared to the rest of the site (assessed as High and Moderate respectively). The consideration of potential terrestrial habitat on-site for New Zealand pipit (*Anthus novaeseelandiae*) and New Zealand falcon/karearea (*Falco novaeseelandiae*) seems appropriate, although more thorough bird surveying away from the lake would support this.

4.2.2 Lizards

The general assessment of lizard values on-site as being Moderate in areas of lizard habitat and Low in actively quarried areas seems appropriate.

McCann's skink (*Oligosoma maccanni*; Not Threatened[2]) and southern grass skink[3] (*Oligosoma chionochloescens*; At Risk – Declining) are the two species that would be expected in exotic grassland habitat at this location. There is appropriate consideration given to the possibility of Kawarau gecko (*Woodworthia* "Cromwell"; At Risk – Declining) presence on-site, and the absence of suitable gecko habitat on-site is supported by what was seen during the site visit (i.e. no areas of complex natural rock piles or rocky outcrops). Kawarau geckos can be occasionally found under bark/in holes in dead trees, however this is most likely in areas with suitable surrounding habitat (i.e. complex rocky habitat).

[2] Threat statuses as per Hitchmough et al. (2026).

[3] Referred to as tussock skink in the EcIA report. Tussock skink has been synonymised with southern grass skink in the most recent threat classification assessment (Hitchmough et al. 2026).

It would be helpful for Figure 6 (or an additional figure) to show the location of all Gee's minnow traps on-site, as there are large gaps in where lizards were detected that could currently be attributed to either a likely absence of lizards, or insufficient sampling coverage.

It appears that a relatively high number of McCann's skinks were caught during the survey in one area of lizard habitat in the centre of the site identified as having Low value in Figure 6. Where lizards were found to be abundant, these areas should be mapped as at least Moderate value, or a reasonable explanation should be provided to justify the mapping as Low value.

While the number of traps, trap days and number of lizards recorded indicate that the survey effort is likely to be sufficient for the site, the weather conditions during the survey are not reported. The weather conditions during the survey should be included in the report to determine if the survey was undertaken during appropriate weather (i.e. warm, mild weather for Gee's minnow trapping).Section 3.2.2 notes that southern grass skinks will be limited to the riparian margins of Park Burn outside of the site boundary, however they appear to be in the vicinity of the footprint for one of the coves. If similar habitat extends into the site boundary, it may be possible that small numbers of southern grass skink could be present on site. The figure also maps lizard habitat at quite a coarse level, with many smaller areas of grassy habitat around the margins and within the quarried area that appear to potentially be able to support smaller numbers of lizards. Mapping should include all possible areas of potential lizard habitat as far as possible.

Overall, the lizard assessment appears to be reasonable and accurate, with appropriate survey effort and determined lizard values. The report is missing some finer details regarding survey effort and habitat mapping as detailed above, and some areas may have higher value than stipulated in the report.

4.3 Significance assessment

It would be helpful to include a table in either Section 3.5 or the appendices listing and assessing against all the Otago ecological significance criteria. The relevance of the possible presence of indigenous dryland plants (as discussed in Section 4.1.1 of this memo) should be considered.

For the most part, the assessment of ecological significance against the Otago Regional Policy Statement criteria appears to be correct. The exception to this is "Ecological context", which includes a criterion for areas that are important to the life cycles of indigenous fauna[4]. Whether the site is deemed "important" depends on the ability of the site to support a wider population of indigenous fauna. It is possible that the lizard habitat on-site could meet this criterion given, the relatively high numbers found and higher level of development in surrounding properties. This criterion is currently not discussed at all in Section 3.5 (which finds that does site does not meet the ecological context criteria); it would be helpful to see this criterion discussed in the EcIA.

5.0 Assessment of Ecological Effects

5.1 Vegetation

The assumption that existing quarry activities will remove most of the vegetation on-site results in a "Low" magnitude of effect from vegetation removal prior to mitigation. If larger areas of vegetation/habitat remain unquarried at the onset of subdivision works, then the magnitude of effects should be higher than they are currently predicted. The magnitude of effect is also likely to be

[4] "An area that is important for indigenous fauna during some part of their life cycle, either regularly or on an irregular basis, e.g. for feeding, nesting, breeding, or refuges from predation."

underestimated for lizard and avifauna habitat if more vegetation clearance is associated with the subdivision rather than the quarry.

It is also not clear how the magnitude changes to Positive following mitigation, as only minor effects management actions are proposed i.e. the removal of willows along the lake margin and vague "riparian planting" measures. Whether the proposed plantings are enough to bring the magnitude of effect to Positive cannot be assessed, as no details for the plantings have been.

This section also claims that vegetation associated with residential properties will increase vegetation values on-site over time. Unless the subdivision rules require property owners to undertake ecologically appropriate plantings, this claim is unjustified. Vegetation on residential properties is just as likely to have negative impacts, including supplying propagules for weed spread.

5.2 Lizards

The ecological value and magnitude of effect before mitigation assigned to impacts on lizards (moderate value and magnitude, mitigated to low magnitude and level of effect) seems to be appropriate, with the caveat that the magnitude of lizard habitat loss may be underestimated due to the assumption that the entire site will be quarried prior to development. In terms of specific details on how impacts to lizards will be managed, the EcIA largely defers to a Lizard Management Plan (LMP) that has not yet been provided by the applicant. The general details (lizard salvage, restoration and ongoing pest control in the release zone) seem appropriate, but an overall determination of the suitability of these actions cannot be made until the LMP is provided. The EcIA notes that a Wildlife Act Authority (WAA) is being sought for the project. As the project is a Fast Track application, this should refer to a Wildlife Approval (WA) rather than a WAA.

5.3 Avifauna

The level of effect and initial magnitude of effect assessed for avifauna seem accurate, with the caveat that the magnitude of terrestrial avifauna habitat loss may be underestimated due to the assumption that the entire site will be quarried prior to development.

The acute risk of harm or disturbance to avifauna appears to have been appropriately avoided/minimised by requiring works to occur outside the breeding season, however it is not clear that the permanent loss of avifauna habitat has any appropriate effects management action. The report assumes that avifauna will recolonise the subdivision following works, however the current species that may use the grassland and exotic trees (e.g. pipit and falcon) won't necessarily do well in a future a residential subdivision setting.

5.4 Domestic animals

Section 4.2.4 mixes discussion of increased domestic animal presence with increased pest animal presence. These are two separate impacts, and should be split into separate sections. The only effects management action proposed specifically for domestic animal impacts is to install signage for dog owners. For increased pest animal presence, the only proposed effects management action is pest control within the lake margin plantings; this action specifically minimises the increased pest presence associated with these plantings, and does not deal with pest presence increase caused by the much larger area of residential development. For both pests and domestic animals, it is not clear how these actions take the magnitude of effect from Moderate down to Low.

5.5 Level of effect and recommendations

In general, the ecological effects are defined very broadly, lumping together all impacts on different taxonomic groups e.g. all impacts on avifauna are lumped into “effects on birds”. This makes it difficult to determine whether the effects management actions taken are appropriate for the specific impacts that these taxonomic groups experience.

It would be helpful if Table 7 also listed the specific management actions that are proposed in order to manage each impact.

Based on Table 7, Low levels of negative effect remain for lizards, non-riparian avifauna, and increased domestic/pest animal presence. This means that overall, even if other effects are managed to a No Net Loss level, we expect that the project will result in a Net Loss of biodiversity. This is not in line with national policy directives such as the National Policy Statement for Indigenous Biodiversity (NPS-IB), the aim of which is to ensure no further decline of biodiversity.

6.0 Appendices

All of the appendices are empty in the version of the of the EcIA that was reviewed.

7.0 Conclusions

Overall, the EcIA provides a relatively low level of detail regarding both the ecological values present at Parkburn, and the actions that will be undertaken to manage the ecological effects of the proposed development. Of particular concern are the several indigenous plants which appear to have been missed by the vegetation survey. It is unclear to what degree the vegetation survey underrepresents botanical values. Therefore, it is not possible to assess whether the levels of effects provided for vegetation and flora are accurate.

A key uncertainty for the assessment of effects is how much more of the site will be quarried prior to the start of the subdivision works. This needs to be checked, and the report should be updated with higher magnitudes of effect for all terrestrial ecological impacts if it is confirmed that areas of terrestrial habitat will not be quarried prior to subdivision works.

In general, the EcIA lacks sufficient detail, lumping together different impacts on taxonomic groups, referencing indigenous planting as an effects management action providing details on how this will be undertaken (or pointing to another document with these details), and making unjustified assumptions about positive ecological benefits arising from residential land-use after works are completed.

Due to the current EcIA being a draft, many sections are absent meaning that many specific conclusions about the project cannot be made. Overall, we believe that some values at the site are likely to underrepresented and require further information. Despite this, the site is highly modified and therefore it is likely that the ecological effects can be managed – however it is not clear whether current management actions specified by the applicant are sufficient.

References

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