Mackenzie Basin (south and east of State Highway 8)
Rapid Desktop Analysis

Mike Harding (2nd July 2015)

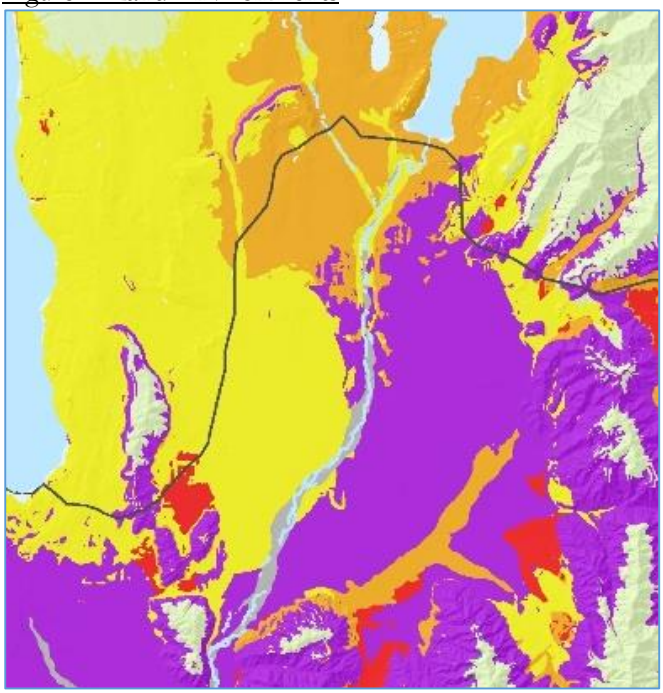
Key considerations for assessing significance (section 6c, RMA) in this area are:

1. depletion (threatened land environments)
2. ecosystems (naturally uncommon and threatened)
3. vegetation (plant species)
4. habitats of indigenous fauna

Readily available information about each of these is presented below. Assessment of significance is based on the Mackenzie District Plan and Canterbury Regional Policy Statement, as interpreted by Harding (2013) and Wildlands (2013).

1. Land Environments

Figure 1: Land Environments



Land Environments of New Zealand (LENZ) are defined by Leathwick *et al* (2003). Loss of indigenous cover (vegetation) has been assessed by Walker *et al* (2006). In Figure 1 (above):

- fawn = 10-20% indigenous cover remaining
- yellow = 20-30% indigenous cover remaining
- purple = >30% indigenous cover remaining and <10% protected

Undeveloped land at the northwest part of this area (>20% indigenous cover remaining) is likely to be significant (depending on the extent of indigenous vegetation present). Figure 2 illustrates the approximate extent of undeveloped land in this area (as determined from aerial photographs).

Figure 2: Approximate Extent of Undeveloped land

Note: the hatched area of "undeveloped land" in Figure 2 (above) has been determined by analysis of on-line aerial images (Canterbury Maps). It is an approximation that must be interpreted with caution.

2. Naturally uncommon ecosystems

The bulk of the area comprises 'naturally uncommon' ecosystems, as defined by Williams *et al* (2007) that are listed as 'threatened' (Holdaway *et al*, 2012): moraines (vulnerable); inland outwash gravels (critically endangered); and braided riverbeds (endangered). Undeveloped parts of the area (Figure 2) which support indigenous vegetation are likely to be significant, most notably the outwash terraces of Tekapo River.

3. Indigenous Vegetation

Vegetation over large parts of this area is degraded. However, survey of similar sites indicates that, despite degradation, the vegetation is likely to meet the District Plan definition of 'indigenous vegetation'. Furthermore, the plant communities present include a number of 'threatened' or 'at risk' plant species, as listed by de Lange *et al* (2012). Earlier survey of the southwest part of the area (DOC, *unpublished data*) and recent survey of northeast parts of the area (Head, *unpublished data*) identified populations of the following plant species:

Threatened Species
- *Lepidium solandri* (nationally endangered)
- *Lepidium sisymbrioides* (nationally endangered)

At Risk Species
- *Carmichaelia crassicaulis* subsp. *crassicaulis* (declining)
- *Carmichaelia kirkii* (declining)
- *Carmichaelia nana* (declining)
- *Carmichaelia vexillata* (declining)
- *Colobanthus brevisepalus* (naturally uncommon)
- *Convolvulus verecundus* (declining)
- *Coprosma intertexta* (declining)
- *Leptinella serrulata* (naturally uncommon)
- *Leucopogon nanum* (naturally uncommon)
- *Muehlenbeckia ephedroides* (declining)
- *Pimelea sericeovillosa* subsp. *pulvinaris* (declining)
- *Pterostylis tristis* (declining)
- *Raoulia monroi* (declining)

These species are present at suitable locations within the degraded plant communities of the area.

4. Habitats of Indigenous Fauna

This area provides habitat for 'threatened' and 'at risk' bird species, as listed by Robertson *et al* (2012), lizard species, as listed by Hitchmough *et al* (2013) and invertebrate species, as listed by Hitchmough (2005). Earlier survey of the southwest part of the area (DOC, *unpublished data*) and recent survey of northeast parts of the area (Lettink, *unpublished data*) identified populations of the following bird and lizard species:

Threatened Species
- black-fronted tern (nationally endangered)
- banded dotterel (nationally vulnerable)
- Mackenzie Basin spotted skink (nationally vulnerable)

At Risk Species
- New Zealand pipit (declining)
- South Island pied oystercatcher (declining)
- black shag (naturally uncommon)
- jeweled gecko (declining)
- green skink (declining)

Other species likely to be present are:
- black-billed gull (nationally critical)
- robust grasshopper, *Brachaspis robustus* (nationally endangered)

Summary

This brief analysis, based on readily available information, indicates that substantial parts of the floor of the Mackenzie Basin south and east of State Highway 8 are likely to support significant indigenous vegetation and/or significant habitats of indigenous fauna. Further clarification of the extent of significant areas would require field survey and additional research.

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