



ENVIRONMENTAL

Te Kuha Mine Application Review

<b>Action</b>	<b>Name</b>	<b>Date</b>
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## 1. Introduction

Te Kuha Limited Partnership (consultants - BTW South Ltd, 2013) requires access to land administered by the Department of Conservation (DOC), for the purpose of constructing and operating an open cast coal mine and associated infrastructure. A separate application for an easement concession for construction and operation of a haul road is also required. The focus of my assessment is on aquatic ecology, water quality, aquatic habitat modification and conservation issues. I have also provided an assessment of the relevance of this application to DOC's interests under the RMA and other appropriate legislation, again focusing on freshwater issues.

An initial assessment of the consent application and associated documents was undertaken and a review (in letter form) provided (letter to Rosemary Miller, DOC, dated 2 July 2014). Following a field visit to the proposed mine site (October 2014) and consideration of further documents provided by the applicant, I have reviewed and revised (where appropriate) my original report relating to the application for Te Kuha mine. For completeness I have included the original report, with post-field trip amendments indicated in *italics*.

## 2. The Context

Te Kuha Limited Partnership (TKLP) proposes to operate an open cast coal mine (approximately 70ha) along the Papahau Ridge, southwest of Mt Rochfort and approximately 12km southeast of Westport. A mining permit was issued to TKLP's predecessor Rangitira Developments Ltd in 1995. The mining permit covers 860 ha, of which 13ha is located on land administered by the Department of Conservation (DOC) (Mt Rochfort Conservation Area or Lower Buller Gorge Scenic Reserve), with most of the remaining land being within the Buller District Council Water Conservation Reserve (administered by Buller District Council). The coal deposit sits within the Buller District Water Conservation Reserve (2.7 Mt), DOC stewardship land (1.5 Mt) and a small amount (160 Kt) in the DOC Scenic Reserve (although mining is not proposed here). The mine operation will involve a "truck and shovel" operation Monday to Friday on day shifts, with trucks transporting unprocessed coal to a processing and storage facility located on private land.

Permission is sought by TKLP to allow access to DOC land to undertake mining activities. Access agreements are required to be obtained under Sections 54(2) and 60(1) of the Crown Minerals Act 1991. My understanding is that a comprehensive application is required for the access arrangement and needs to include an assessment of environmental effects (AEE). In addition, TKLP have requested a concession to construct and operate a haul road, which will traverse the DOC land. For any mining-related activities such as access roads, buildings or processing facilities on public conservation land (but outside the minerals permit area), a concession may be required (Cavanagh et al., 2010). TKLP seek an access period of between 10 and 25 years, which will cover all stages of the operation, including rehabilitation and closure of the mine.

The area in which the mining operation is proposed is remote, with no road access. As a consequence the area has a high level of naturalness, which is highlighted in a landscape and visual assessment report presented in the access application.

The mining permit intersects three Ecological Districts – Ngakawau (in which the mine would be located), Buller (in which a haul road would be predominantly located) and Foulwind (which the Orowaiti River traverses). Several named and unnamed creeks drain the permit area, including German Gully, Ballarat, Jones, Coal and West Creeks. Coal and West Creeks (the two main water courses in the mining area) merge and drain to the Buller River, which is recognized for its wild and scenic values.. Other streams drain to the Orowaiti River. There is also a large tarn located north west of the mining site and several small tarns located within the mine site.

A draft aquatic ecology report by Golders (2013) is included in the Access Agreement Application. Sites within the mining area (mountain sites), along the access road (lower sites) and two sites which drain the proposed mine area on Coal and West Creeks were surveyed in March 2013 for fish, macroinvertebrates, macrophytes, bryophyte, instream and riparian habitat and water quality. At the time of the survey there was a significant drought in the region, so the streams were experiencing low or very low flow. As a consequence, one site within the mining area was comprised of a remnant pool. In addition, the largest tarn was dry (and covered in an introduced rush – *Juncus bulbosus*). The smaller tarns located within the mining site were not surveyed.

In general, most sites surveyed reported an abundance and diversity of macroinvertebrate fauna that were indicative of healthy aquatic environments. Mountain sites appeared to be of lesser quality than lower sites. However, the mountain sites were dry or had very low flow, so the results presented may not be an accurate representation of average conditions. Eleven fish species in total were identified. Fish were recorded in all sites along the proposed access road and included a number of threatened species (including longfin eel, koaro, shortjaw kokopu and redfin bully, all of which are classified as being *in decline*). Fish were absent from the mountain sites. This absence may reflect the naturally acidic and metal-enriched water quality, as well as the steepness of the terrain (although the fish recorded lower down are all good climbers, McDowall, 2000). The low flow conditions may also have been a factor contributing to their absence. Freshwater crayfish (koura), which are defined as being *in decline* nationally, were present in large numbers in the mountain sites. Burrows were also evident around the tarns. In addition, Grey Ducks (*nationally critical*) have been observed on nearby water reservoirs and it is considered that they may occupy parts of the small creeks within the mining permit in low numbers (Mitchell Partnerships, 2013). Bryophytes were evident in the mountain sites. Macrophytes were absent from all sites. Streams were assessed as being in a natural state and ‘of conservation value’.

*A more recent draft (incomplete) aquatic ecology report (Golder, September 2014) was subsequently provided. This report includes the results of a field survey in December 2013, of one site in Coal Creek and four sites in West Creek additional to those sampled in March 2013. These sites were selected primarily to investigate the presence of fish in the mountain streams. No fish*

*were recorded at these sites in December 2013. In contrast, koura were recorded at all sites during this survey. Macroinvertebrates were not surveyed at these sites. Given the effect of the drought on the macroinvertebrate communities in other mountain sites surveyed in March 2013 (and the associated poor condition assessment), macroinvertebrate surveying in December 2013 would have provided a better assessment of the condition of communities at these sites, which will be directly impacted by mining activities.*

Limited water quality measurements were also collected (pH and conductivity). pH ranged from acidic to near-neutral, with more acidic streams in the mountain sites and West Creek. Elevated conductivity was recorded at some lower sites. Water quality data were also presented in a preliminary hydrology report (Trumm, 2013). Elevated metal concentrations (especially aluminum) and low pH values were typical of most waterbodies surveyed.

*The more recent aquatic ecology report (Golder, 2014) includes a limited selection of results from a detailed water quality report prepared (Pope, 2014a). In the (Pope, 2014a) water quality report, water chemistry was found to differ between upland and lowland streams, with upland streams being characterized by lower pH and elevated dissolved metals. Water quality during mining was predicted by Pope (2014b). No assessment of the potential ecological effects of the predicted water quality was undertaken.*

### **3. Mine development and operation (Land access agreement)**

*A response to some of the issues identified below was provided by BTW South (letter to Judi Brennan/Toby Wilkes dated 20 August 2014) and has been included below, where it was provided.*

The key issues relevant to the access agreement are:

- Loss of aquatic habitat within the mining area, including destruction of headwater streams and several small tarns
- Loss of significant numbers of the nationally threatened koura from streams within the mining area
- Earthworks that lead to the addition of sediment and contaminants to watercourses, resulting in reduced water quality, modified aquatic habitat and ecological health
- Modification to downstream water quality and quantity and associated ecological and biophysical effects responses associated with destruction of stream headwaters and mine dewatering activities
- Modification of vegetation within and outside of the mining area as a consequence of modified hydrology associated with dewatering activities

- Potential generation of acid mine drainage with associated water quality and ecological impacts

Key points of relevance to these issues are:

- Within the mining permit area, the contribution of water to the area's natural character is apparent in the form of a number of streams, as well as in poorly drained areas, bogs and tarns.
- Mining activities at the Te Kuha site will result in the removal of the tributaries of Coal Creek and West Creek at their headwaters, destroying aquatic flora and fauna that inhabit these waterways.
- Large numbers of koura within these streams will be decimated by the mining activity. Koura is a threatened species (*in decline*).
- A koura rescue programme is proposed prior to any construction activity being undertaken. However, there is no indication in the documents provided that suitable alternative habitat has been identified. Nor is there any indication on how the rescue programme will be undertaken or what the likelihood of success will be.

*A requirement to develop a Koura Rescue and Relocation Plan (KRRP) is included in the response from BTW South (2014), as well as Golder (2014). It is proposed that the KRRP be submitted at least 30 working days prior to Work commencing, with the final KRRP to be submitted for certification and a copy provided to WCRC and DOC at least 15 working days prior to work commencing. The plan includes (amongst other things) a requirement to detail the process and timing for obtaining relevant permits. DOC's 'Standard Operating Procedure (SOP) for New Zealand's Indigenous Flora and Fauna (2002)', sets out guidelines for the translocation of indigenous species (and is not referenced in the Golder, 2014 report). One notable absence from the proposed KRRP that is defined in DOC's SOP is the requirement to consider the effect of the translocation on the release site. There is no mention of a requirement to monitor the recipient site pre- and post-translocation. The consequences of unsuccessful translocation are also not considered.*

*While the plan is reasonably comprehensive, there is no evidence presented to indicate whether such a plan has been successfully implemented elsewhere. As such the proposed relocation of the large numbers of koura likely to be required represents a significant risk to local populations of a species in decline nationally. Given the large numbers of koura that will be impacted directly and indirectly by the proposed mine development should the translocation be unsuccessful, it is essential that only a proven plan, implemented in a manner such that success is highly likely, should be accepted as part of any condition for approval of this application.*

- Headwater streams have important functions and have profound effects on shaping downstream water quality and quantity and associated ecosystem values (Alexander et al., 2007).

- f. The proposed rehabilitation of these areas includes reinstating stream form and function. There is no indication in the document of how this will be done (for example will it retain the current stream form or will it simply be an engineered conduit?).

*A consent condition relating to site rehabilitation is proposed (Golder, 2014); however it appears only to address riparian planting as a rehabilitation strategy. While re-instatement of riparian margins is an important part of stream rehabilitation, rehabilitation of instream habitats is also required if re-establishment of aquatic communities is to be successful.*

*BTW (2014) (paragraph 14) refer to a response by Mitchell Partnerships to my original query regarding details of instream rehabilitation (Appendix 1 and 2). However this response was not included in BTW (2014).*

- g. The rehabilitation relies on recolonization of the reinstated watercourses by adult winged insects from downstream and adjacent stream reaches. However no adult insect monitoring was undertaken as part of baseline study, so there is no evidence presented to indicate the likelihood of successful recolonization.

*BTW (2014) state that adult monitoring is not required as they are reflected in the instream communities. However, at sites where stream sampling was not possible or limited due to low flows (i.e mountain sites), adult monitoring would provide a more comprehensive assessment of the invertebrate community at a site, as well as an indication of the source pool for recolonisation. In addition, BTW South (2014) also indicate that “translocation of insects from neighbouring streams” will be undertaken to ‘seed’ the new streams, but provide no details of how this will be achieved.*

- h. Several small tarns within the mine site will be destroyed during the mining process. These tarns were not surveyed as part of the aquatic ecology investigations. A larger tarn, outside of the direct mine area, was dry at the time of sampling. Evidence of koura use of the large tarn was indicated by burrows and it was concluded (in the aquatic ecology report) that the smaller tarns would also be likely to provide koura habitat.

*This observation was confirmed on my field trip to the site. The large tarn was still relatively dry and there was evidence of recent koura activity. I was unable to visit the smaller tarns.*

- i. Tarns are listed as historically rare ecosystems (Williams et al. 2007) and may contain threatened plant species, although a plant survey of the large or smaller tarns does not appear to have been undertaken.
- j. Some Canterbury tarns contain rare cladocerans but the drought precluded sampling of aquatic biota of the tarns.
- k. While a 100m radius exclusion zone is proposed for the larger tarn (which is downstream of the mine), the absence of a water management plan means it is not possible to determine what the potential effects of mining activities would be e.g. from overland flow.



*An Integrated Water Management Plan has been prepared by CRL Energy (dated 26 August 2014) (Pope, 2014b). Water management planning is based on containment of maximum daily runoff from a one in two year flood event from disturbed areas. Larger events will freely discharge to the environment. Mine water management is proposed to include dams, toe drains, sumps, pumps and diversion drains.*

- l. There was no data presented on current groundwater quality. Given the relationship between the tarns and groundwater it is important that this data is collected.

*Data on groundwater is provided in an Information Report prepared as part of the Water Management Plan for the mine (Pope, 2014a). Two groundwater systems are present; an extensive deep system, mostly occurring below coal in all but 2 (of 17) drill holes examined; the other shallow system is rainfall fed, discontinuous in time and space, perched and feeds the highest levels in stream beds and tarns. No direct consideration of management of groundwater (in terms of potential contamination) is evident in the Water Management Plan (Pope, 2014b).*

- m. The applicant proposes to re-create the tarn habitats as part of the site rehabilitation (apparently it is technically quite feasible). However, no details are provided as to how this will be done and what the likelihood of success will be.

*BTW (2014) (paragraph 27) includes more detail on this, referring to the creation of tarn-like features in places at Stockton. However there are no specific rehabilitation plans or monitoring recommended as part of the proposed consent conditions.*

- n. Dewatering of the mine site would result in modifications to flow regimes within Coal Creek and West Creek and their tributaries. There is no Water Management Plan presented in the access document, although one is proposed.

*An Integrated Water Management Plan has been prepared by CRL Energy (dated 26 August 2014) (Pope, 2014b). Mine water management is proposed to include dams, toe drains, sumps, pumps and diversion drains and containment of the maximum daily runoff from a one in two year rainfall event on site.*

- o. While acid mine drainage is recognized as a potential issue in the document, there are limited details of how it will be managed or none of how it will be monitored.

*An assessment of the potential for generation of acid mine drainage (AMD) is included in an Information Report prepared as part of the Water Management Plan for the mine (Pope, 2014a). Leachate tests conducted with the two main rock types from the region (Brunner Coal and Paparoa Coal Measures) indicated limited potential for AMD generation. In addition, stockpiling of coal measures will involve "capping" of the relatively low acid forming Brunner Coal Measures with the non-acid forming Paparoa Coal Measures. However, quality of water resulting from leachate tests was outside the range of values recorded for upland stream sites (closest to the mine site). Therefore while there is still the potential for effects on aquatic ecosystems from discharge generated from the mine.*

## 4. Haul road construction and operation (Easement concession)

The key issues relevant to the concession are:

- Construction and operation of stream crossings (bridges and culverts) for the access haul road (West Creek, Coal Creek and three Coal Creek tributaries as well as several smaller unmarked streams)
- Earthworks that lead to the addition of sediment and contaminants to watercourses
- Contaminant runoff from access roads, vehicle movements and other infrastructure
- Upstream hydrological modifications associated with mining activities

Key points of relevance to these issues are:

- a. Reduced water quality, modified/destroyed aquatic habitat and a decline in ecological health and ecosystem function may result from physical disturbance during construction and operation of a haul road.
- b. 1.59km of the haul road will traverse DOC land. Streams within this DOC land are inhabited by four nationally threatened fish species.
- c. Migratory fish were recorded at all streams along the haul road. Therefore consideration of appropriate construction and management of instream structures such as culverts will be essential.
- d. No baseline data on the quality and quantity of instream sediment was presented. Accumulation of instream sediment may impact on fish migration (through infilling and reduced water depths), as well as reducing available habitat for macroinvertebrates.

*In Golder (2014), an Erosion and Sediment Control Management Plan is included as a consent condition, although no details of what this is to include are provided. Sediment monitoring is also included as a consent condition, although this only appears to relate to suspended sediment (as it is included as part of water quality monitoring). No monitoring of deposited sediment is recommended by the applicant, which would address my concern above.*

- e. Suspended sediment may also impact on fish and invertebrate populations; no baseline turbidity data was presented in the documentation provided.

*Golder (2014) recommend turbidity monitoring upstream and downstream of stream crossings on West Creek and Coal Creek (or their tributaries) associated with haul road construction, at least 12 months prior to works commencing, and 6 months after construction has been completed.*

- f. The stream surveys were undertaken in drought conditions and do not necessarily reflect average stream conditions; there is therefore a need for baseline data to be collected under normal flow conditions.

*Pope (2014a) monitored water quality and flow over a 1 year period at 13 sites, 9 of which were also aquatic ecology survey sites. Aquatic ecology was surveyed once (March 2013), with a follow up survey of fish in December 2013. There is therefore a reasonable understanding of water quality under different flow conditions, but not aquatic ecology.*

- g. Upstream mining activities may exacerbate any effects that road construction and operation will have on the aquatic environment. In particular, destruction of the headwaters of major streams traversing the mining site may impact on downstream hydrology, water quality and quantity and associated ecological values.

*An assessment of predicted water quality downstream of the mine is presented in Pope (2014b), using a “poor water quality” scenario and a “good water quality” scenario, for different mining periods (Year 1, 5, 10 or 15). Based on this analysis it appears that concentrations of some metals (copper, lead, manganese, nickel, strontium and zinc), as well as values for alkalinity, carbonates and electrical conductivity, are predicted to be greater than current maximum concentrations current recorded for upland stream sites (Pope, 2014a), for most scenarios tested. In addition, at least some of these values will exceed ANZECC guidelines for protection of 95% of species.*

## 5. Comments on proposed consent conditions

*Additional to comments in the preceding sections relating to specific issues, below are further comments on the proposed consent conditions outlined in Golder (2014).*

### Monitoring

*An Erosion and Sediment Control Management Plan is included as a consent condition, although no details of what this is to include are provided. Sediment monitoring is also included as a consent condition, although this only appears to relate to suspended sediment (as it is included as part of water quality monitoring). No monitoring of deposited sediment is recommended by the applicant, which would address my concern above.*

*Water quality and aquatic ecological monitoring is only proposed at one site upstream and at three sites downstream of each stream crossing. No monitoring is proposed downstream of the mine site (and upstream of river crossings). Therefore no monitoring is proposed to specifically assess the impacts of the mining activities. This contrasts with the Water Management Plan (page 8) (Pope 2014b), which clearly states that water quality monitoring will be undertaken.*

*Specific ecological monitoring parameters are not defined – it is recommended that at least those employed in the AEE be included in any monitoring plan for the mine.*

### Koura Rescue and Relocation

*A requirement for the development of a Koura Rescue and Relocation Plan is proposed as a consent condition. However, I believe there are significant deficiencies in the proposed content of such a plan and in its ability to be successfully implemented.*

### Rehabilitation

*There are no specific rehabilitation plans for tarns and no monitoring recommended as part of the proposed consent conditions.*

*A consent condition relating to site rehabilitation is proposed (Golder, 2014); however it appears only to address riparian planting as a rehabilitation strategy. While re-instatement of riparian margins is an important part of stream rehabilitation, rehabilitation of instream habitats is also required if re-establishment of aquatic communities is to be successful.*

## **6. Conclusion: supporting evidence for access agreement and concession**

From the evidence presented it is clear that the aquatic habitats within the mining permit area have considerable value for their naturalness, a property that is also reflected in the terrestrial habitats. In addition, the presence of invertebrate and fish species of conservation significance within and/or downstream of the proposed mining area adds to this conservation value. While the area of DOC land is relatively small, the nature of the mining activities means that impacts on the streams present in the DOC area could potentially be impacted. In addition, direct impacts may occur due to the construction and operation of the haul road. The absence of a water management plan, including how acid-mine drainage will be managed, is of particular concern. I do not believe that the investigations presented provide sufficient evidence to support claims that reinstatement of destroyed habitats (tarns, stream headwaters) post-mining will be successful. The technical reports presented in the access agreement document state that further investigations were/are being undertaken and it may be that some of the deficiencies in the reporting identified in the above analysis have been addressed.

*The provision of a Water Management Plan is useful for understanding the overall effects of the mine on the water quality and quantity associated with mining activities. An analysis of predicted water quality associated with mining activities indicates substantial increases in concentrations of some metals and other analytes in the discharge water in comparison to maximum recorded upland stream sites, with the concentration of some contaminants exceeding ANZECC guidelines.*

*The revised Aquatic Ecological report provides limited additional information but does not assess the potential ecological effects of the predicted water quality associated with mining activities.*

*Additional consent conditions and appropriate response strategies need to be included to ensure that aquatic ecosystems are adequately protected.*

*There is no evidence presented to show that the proposed Koura Rescue and Relocation Plan will be effective. Further, the plan does not consider the effects of the relocations on the recipient aquatic ecosystems, a requirement under DOC's SOP.*

*Overall, while the additional information provided has addressed some of my original concerns, especially in relation to water quality, I do not believe there is sufficient evidence provided to give certainty to mitigating the impacts on aquatic ecosystems, and especially koura.*

## 7. RMA and DOC interests

### 7.1 RMA

The purpose of the RMA (Section 5) is to **promote the sustainable management of natural and physical resources**. Sustainable management is defined in the Act as managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while—

- (a) sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and
- (b) safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and
- (c) avoiding, remedying, or mitigating any adverse effects of activities on the environment.

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall recognise and provide for the following **matters of national importance** (Section 6):

- (a) the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development:
- (b) the protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development:
- (c) the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna.

Many of the activities undertaken as part of the mining operation, including construction and operation of the haul road, will be subject to the resource consent process (discharges to land,

water and air). Of particular relevance to the freshwater environments will be a need for consideration of (as a minimum) those issues listed in the table below.

<b>Issue</b>	<b>Consideration</b>	<b>Addressed in consent conditions? (Golder, 2014)</b>
<b>Fish passage</b>	Appropriate culvert and bridge design, construction and operation	Generic design approach presented
<b>Threatened species</b>	Development and implementation of a koura rescue plan prior to mine construction and operation	Yes, but limitations (see previous discussion)
<b>Rehabilitation</b>	Development of rehabilitation plans for headwater streams and tarns	Limited to riparian revegetation; none specifically developed for tarns
<b>Biosecurity</b>	Weed management plan, especially of tarns	Not specifically identified for tarns
<b>Water quality/quantity</b>	Development of site-specific targets to account for naturally high metal concentrations and low pH waters	Accommodated within consent but numbers not presented; only relates to stream crossings (i.e. not mining)
	Development of an acid mine drainage plan	To some extent as part of water management plan – low acid generating potential
	Development of a sediment management plan	Yes for suspended sediment only
	Development of a water management plan for the entire permitted area, including surface and groundwaters	Yes, for surface waters; no for groundwaters
<b>Monitoring</b>	Completion of baseline monitoring, including adult insects to assess potential re-colonisation success, as well as a repeat of the aquatic ecology monitoring report under	Limited repeat monitoring; inadequate baseline data on invertebrates and habitat for average flow conditions

Issue	Consideration	Addressed in consent conditions? (Golder, 2014)
	average flow conditions	
	Development and implementation of an annual monitoring programme (surface and ground water quality and quantity, sediment deposition, ecology), plus annual independent review	Monitoring proposed does not address effects on mining activities (only haul road), groundwater, sediment deposition.
<b>Consent</b>	Review period should be linked with monitoring outcomes	Consent conditions need to state response strategies to the detection of negative effects on water quality and ecology

## 7.2 Other DOC interests

There are several aspects of the access and concession applications that have specific relevance to how DOC performs their role in accordance with the Conservation Act (2007).

### Access arrangements - Crown Minerals Act 1991, Section 61

In considering whether to agree to an access arrangement, or variation to an access arrangement, in respect of Crown land, the appropriate Minister, or the Minister and the appropriate Minister, as the case may be, shall have regard to—

- (a) the objectives of any Act under which the land is administered; and
- (b) any purpose for which the land is held by the Crown; and
- (c) any policy statement or management plan of the Crown in relation to the land; and
- (d) the safeguards against any potential adverse effects of carrying out the proposed programme of work; and
- (da) the direct net economic and other benefits of the proposed activity in relation to which the access arrangement is sought; and
- (db) if section 61C(3) applies, the recommendation of the Director-General of Conservation and summary referred to in that subsection; and



(e) such other matters as the appropriate Minister considers, or the Minister and the appropriate Minister, as the case may be, consider relevant.

*1. Objectives of any Act under which the land is administered*

The DOC land is administered under the Conservation Act 2007. The purpose of this act is to establish the Department of Conservation and to enable this department to carry out its functions, as defined in Section 6. Of specific relevance to freshwater water is:

Section 6ab) to preserve so far as is practicable all indigenous freshwater fisheries, and protect recreational freshwater fisheries and freshwater fish habitats.

Four fish and one invertebrate species of conservation significance are potentially impacted by the proposed mining and associated activities.

*2. Purpose for which the land is held by the Crown*

i. Ecological Districts

The mining permit intersects three Ecological Districts, Ngakawau, Buller and Foulwind. An ecological district is a land area where topographic, climatic, soil and biological features, and the broad cultural patterns, produce a characteristic landscape and range of biological communities (Norton and Overmars, 2011). Sections 18, 21 and 63 of the Conservation Act 2007 define the purpose of ecological areas, which is to ensure that *“Every ecological area shall so be managed as to protect the value for which it is held”*.

ii. Stewardship land

The DOC land potentially subject to mining activities is under DOC Stewardship. Stewardship Areas (Conservation Act 2007, Part V Section 25) are managed to protect the natural and historic values of the areas.

*3. Any policy statement or management plan of the Crown in relation to the land*

a) The **West Coast Conservation Management Strategy** (2010-2020) (Volume 1) (DOC, 2010) describes the objectives and policies related to the management of freshwaters in this region. Objectives specifically relevant to the access and concession applications include:

- i. To legally protect a comprehensive, representative range of terrestrial and freshwater ecosystems within the West Coast Te Tai Poutini Conservancy (Section 3.3.3.1)
- ii. To maintain, and restore where practicable, the indigenous natural character of the full range of West Coast Te Tai o Poutini terrestrial, freshwater and marine ecosystems (Section 3.3.3.2)

- iii. To prevent further extinctions of indigenous freshwater fish species and declines in species abundance and range (Section 3.3.3.3)
  - iv. To protect natural heritage values from the adverse effects of unwanted organisms, invasive weeds and animal pests (Section 3.3.3.6)
  - v. To protect the quality of life sustaining ecosystem services (Section 3.3.3.7).
- b) The **West Coast Regional Land and Water Plan (Operative)** (May 2014) provides a framework for the integrated and sustainable management of the West Coast's natural and physical resources as they apply in the context of land and water. These resources include the region's lakes, rivers, groundwater, coastal marine area, wetlands, geothermal water, and land including river and lake beds. The Plan covers activities undertaken on land, the beds of lakes and rivers, and the takes, uses, diversion, and damming of water. Discharges to water and land are also included. The Plan contains permitted activity rules for activities that have no more than minor adverse effects on the environment.
- c) Schedule 2 of the Water Conservation (Buller River) Order 2001 defines as protected waters the region of the Buller River between Iron Bridge and Te Kuha. Restrictions on damming of waters (section 7), alterations of river flows and form (section 8), maintaining fish passage (section 10) and alteration of water quality (section 11) are defined specifically for Schedule 2 rivers. While the mining activities will not directly impact on this section of the Buller River, modification to several streams associated directly or indirectly with the permitted area may result in downstream effects.

## 8. Conclusion: RMA and DOC interests

While the extent of DOC land directly affected by the proposed mine activities would be relatively small (13ha), there are other considerations of direct relevance to DOC's interests that I believe justify further involvement by DOC in any subsequent RMA process. I do not believe that there is sufficient evidence presented in the supporting documents to the access agreement to provide certainty that impacts or mitigation and management strategies will result in effects that are no more than minor.

## 9. References

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