MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HIKINA WHAKATUTUKI

Department of Conservation
Te Papa Atawbai

ACCESS ARRANGEMENT DECISION REPORT UNDER SECTION 61(1AA) OF THE CROWN MINERALS ACT 1991

Applicant/Permit Holder:	*Rangitira Developments Limited*
Mineral Permit Number:	*MP 41289*
Activity:	*Open Cast Coal Mining*
File:	PAM-00-07-41289

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List of abbreviations and acronyms

AA	Access Arrangement
AA area	The Access Arrangement application area comprising of 12 hectares of public conservation land
the Act	Crown Minerals Act 1991
AMD	Acid Mine Drainage
the Applicant	Rangitira Developments Limited
BCM	Brunner Coal Measures
BDC	Buller District Council
Conservation	Conservation Act 1987
CML	Coal mining licence
CMS	Conservation Management Strategy
DOC	Department of Conservation
DT	Direct transfer (of vegetation)
EMU	Ecological Management Unit
MBIE	Ministry of Business, Innovation and Employment
PCL	Public conservation land
Public Hearing	The public hearing held by the DOC for the Access Arrangement application
Reserves Act	Reserves Act 1977
RMA	Resource Management Act 1991
RDL	Rangitira Developments Limited (the Applicant)
Stevensons	Stevenson Group Limited
the Department	Department of Conservation
TKLP	Te Kuha Limited Partnership
VDT	Vegetation Direct Transfer
WCRC	West Coast Regional Council
WWCR	Westport Water Conservation Reserve

Executive Summary

1. This document sets out the matters that both the Minister of Conservation and the Minister of Energy and Resources must consider when determining whether to grant an access arrangement to Rangitira Developments Limited (RDL) for an opencast coal mine proposal on 12 hectares (ha) of public conservation land (PCL) near Te Kuha in the Buller District, under section 61(2) of the Crown Minerals Act 1991 (the Act). The 12 ha application area forms one part of a larger 116 ha open cast coal mine proposal.
2. The 12 hectares (ha) of PCL (held as stewardship area) under application is considered to have some very high conservation values including: unique coal measure ecosystems; threatened plants including ferns and mosses; threatened fauna including invertebrates of interest to science; and landscape and scenic values. RDL is proposing a range of safeguards and mitigation measures to help address the potential adverse effects of the proposal on these values. However, despite these measures, the proposal would lead to residual adverse effects and a permanent loss of conservation values.
3. RDL is proposing a compensation package for the project as a whole (116 ha footprint) to address the residual losses. The package includes funding a mining heritage project at Charming Creek (north Buller) and a 25-year ecosystem management project over 5000 ha of the Orikaka forest (nearby the mine site). The ecosystem management would have tangible benefits within the Orikaka forest for the 25 year term but permanent results would not be achieved without active management of the area by DOC thereafter.
4. Due to the scale and permanency of some of the effects, the application was determined to be 'significant' under s 61(1AAB) and s 61C(2) of the Crown Minerals Act 1991 (CMA) and was publicly notified. Seventy six submissions were received, 64 were in favour, and 12 opposed. A public hearing was held in Westport for the six submitters that wished to be heard. The recommendations of the Director-General of Conservation stemming from the notification process have been incorporated into the analysis of this report.
5. The review of the application by DOC officials and external experts indicates that the proposal would have significant adverse effects on high conservation values that cannot be fully mitigated or safeguarded, and that some of the adverse effects would be irreversible and permanent. As such it is considered that the proposal is inconsistent with purpose of the Conservation Act 1987, the Reserves

Act 1977, the purpose for which the land is held (as stewardship area), the Conservation General Policy and the West Coast Tai Poutini Management Strategy.

6. The project will likely bring significant economic benefits to the Buller District and the wider West Coast. These benefits would include:
    - the project's net present value of $28.8m to $36m;
    - an average of 50 jobs over 19 years in the Buller District; and additional $24.6 million of economic activity in the district;
    - an estimated added value of $68 million to operating mines on the Buller Plateau via the optimisation of coal blends; and
    - an estimated $9 million of royalties to the Crown over the life of the project.
7. These benefits are considered to be significant, particularly given the current economic downturn in the Buller District. RDL has indicated that if access to the 12 ha of PCL is declined, the project would not proceed in its entirety, as it would not be economically viable.
8. DOC and RDL have independently consulted with the appropriate iwi and hapu. During consultation Te Rünanga o Ngäti Waewae raised one matter (Te Taiao) that would require mitigation from RDL. RDL has indicated that it will work with Te Rünanga o Ngäti Waewae to address this matter.
9. Having considered the information provided in this report and weighed the relevant matters set out in the Act the decision makers are asked to either approve the application, subject to conditions satisfactory to ministers, or decline the application.

Summary of the Proposal

10. RDL have applied for an Access Arrangement (AA) to access 12 ha of PCL within Mining Permit (MP) 41289 to undertake open cast coal mining operations. The 12 ha area would form part of a larger 116 ha open cast mine proposal, the majority of which is located on land administered by the Buller District Council (BDC) as Westport Water Conservation Reserve (WWCR).
11. Te Kuha Limited Partnership (TKLP) is the owner of RDL, which is the holder of MP 41289. TKLP is a joint venture between Stevenson Group Limited and Wi Pere Holdings Limited. Stevenson Group Limited, as the project operator, has overall responsibility for obtaining all necessary project approvals for the Te Kuha Mine proposal, including land access agreements and resource consents.
12. The purpose of this report is to provide the relevant information necessary for the decision makers to weigh the matters set out in section 61(2) of the Act and to make a decision on the application.

Location and land status

13. MP 41289 covers approximately 860 ha approximately 12 kilometres (km) east of Westport and 2 km north of the Buller River, at an elevation ranging from 600 to 800 metres above sea level. The

location of the permit, mine proposal (as a whole) and 12 ha access arrangement area (AA area) are shown in Figures 1, 2 and 3 below.

14. The AA area overlays Crown land held by DOC as Mt Rochfort Conservation Area. The land is held for conservation purposes and managed under section 25 of the Conservation Act. Section 25 of the Conservation Act states that a stewardship area shall '...be so managed that its natural and historic resources are protected'.

15. The 12 ha AA area forms part of a larger open cast mine that RDL are proposing to construct and operate on the ridgeline between Mt Rochfort and the lower Buller Gorge near Westport. The total footprint of the mine would be approximately 116 ha, with an additional 9 km long access road. The access road would run from a processing plant on private land at Te Kuha near the Buller River up to the mine site located at about 600 to 650 metres above sea level. The mine is planned to produce approximately four million tonnes of coal over a 16 year period with a further 10 year period anticipated for rehabilitation and aftercare of the site.

16. The 116 ha proposal as a whole overlays three different land parcels/tenures; PCL administered by DOC as stewardship area, land managed by the Buller District Council (BDC) under the Reserves Act 1977 (the Reserves Act) as Westport Water Conservation Reserve (WWCR) and private land as shown on Figures 1-3 above.

- Public conservation land

  The 12 ha AA area lies within the Mt Rochfort Conservation Area. The AA area is located at the very top of the planned mine site along the ridgeline and lies within Mt Rochfort Conservation Area. The AA application therefore relates to approximately 10.3% of the planned mine site and open cast mine pit.

  Approximately 1.6 ha of the proposed access road is within the Ballarat Conservation Area but is outside of the mining permit. RDL has proposed a land exchange for this area with DOC, offering to exchange approximately 8 ha of their privately owned land adjacent to the Lower Buller Gorge Scenic Reserve for 1.6 ha of the Ballarat Conservation Area. DOC has agreed to the exchange in principle subject to RDL gaining all other statutory approvals.

- Westport Water Conservation Reserve (WWCR)

  Approximately 104 ha of the mine footprint and a majority of the 9km access road lies within the WWCR, vested in the BDC for the purpose of water conservation.

- Private land

  The coal processing plant and a small section of the access road would be located on private land adjacent to the railway line at Te Kuha.

17. RDL, under different ownership than TKLP, applied for an open cast coal mine at the same site within MP 41289 in the period from 1996 – 2002. The approval process included:

- Resource consent applications in 1996 – initially declined by the Councils but the decision was appealed to the Environment Court. The case was scheduled to be heard in 2002 but didn't

reach the hearing because, despite apparently reaching a set of satisfactory conditions, RDL withdrew the application due to a lack of financial resources.

- An application to the BDC for access to the WWRC. This application was turned down by the Council in 2002, in part due to opposition of the potential approval by DOC.
- An access arrangement application to DOC for approximately 13 ha of PCL. This reached draft report stage in 2002 but did not reach a decision, presumably because of withdrawal for the same reasons noted for the consent application.

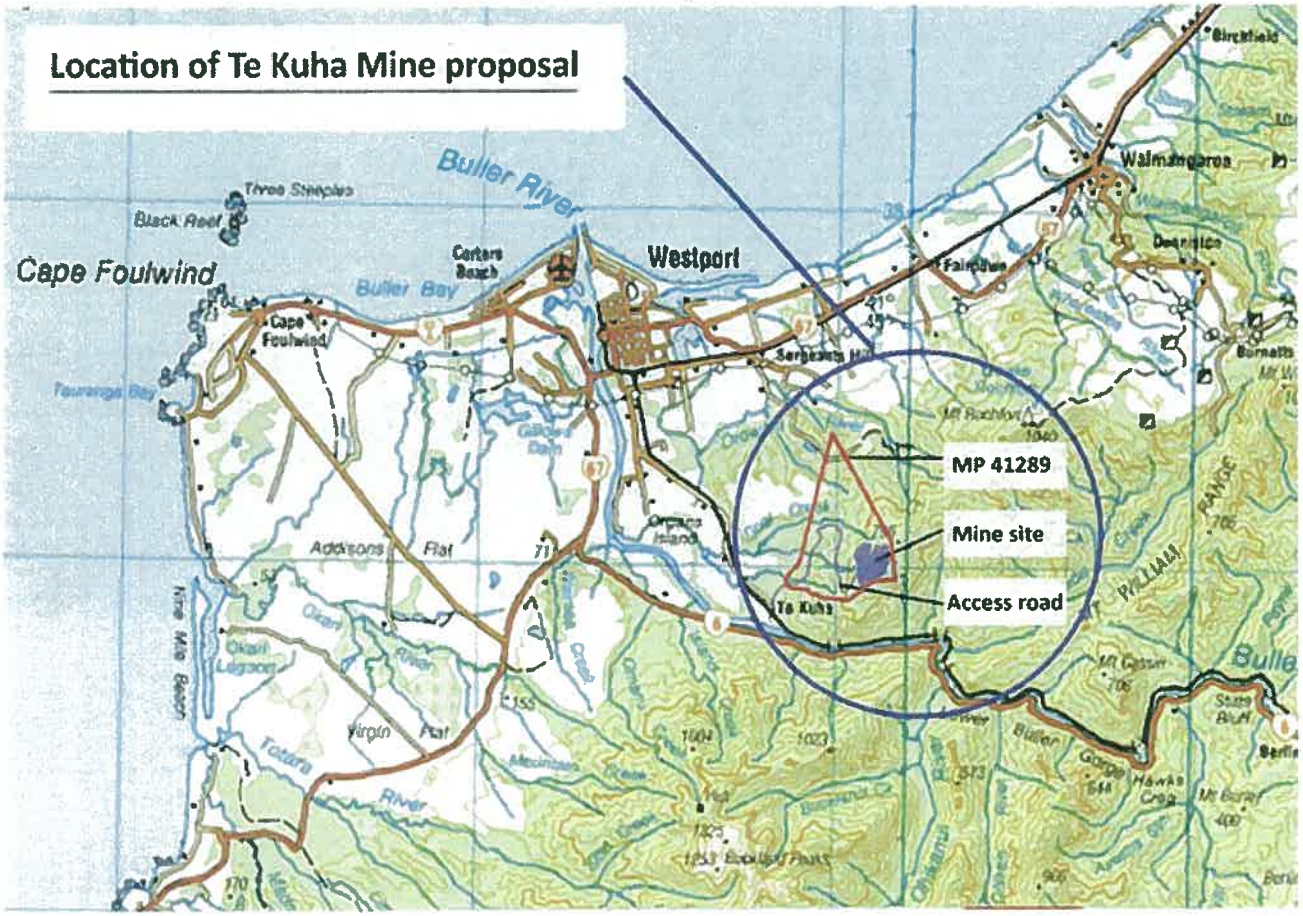

Figure 1: Location of Te Kuha Mine proposal

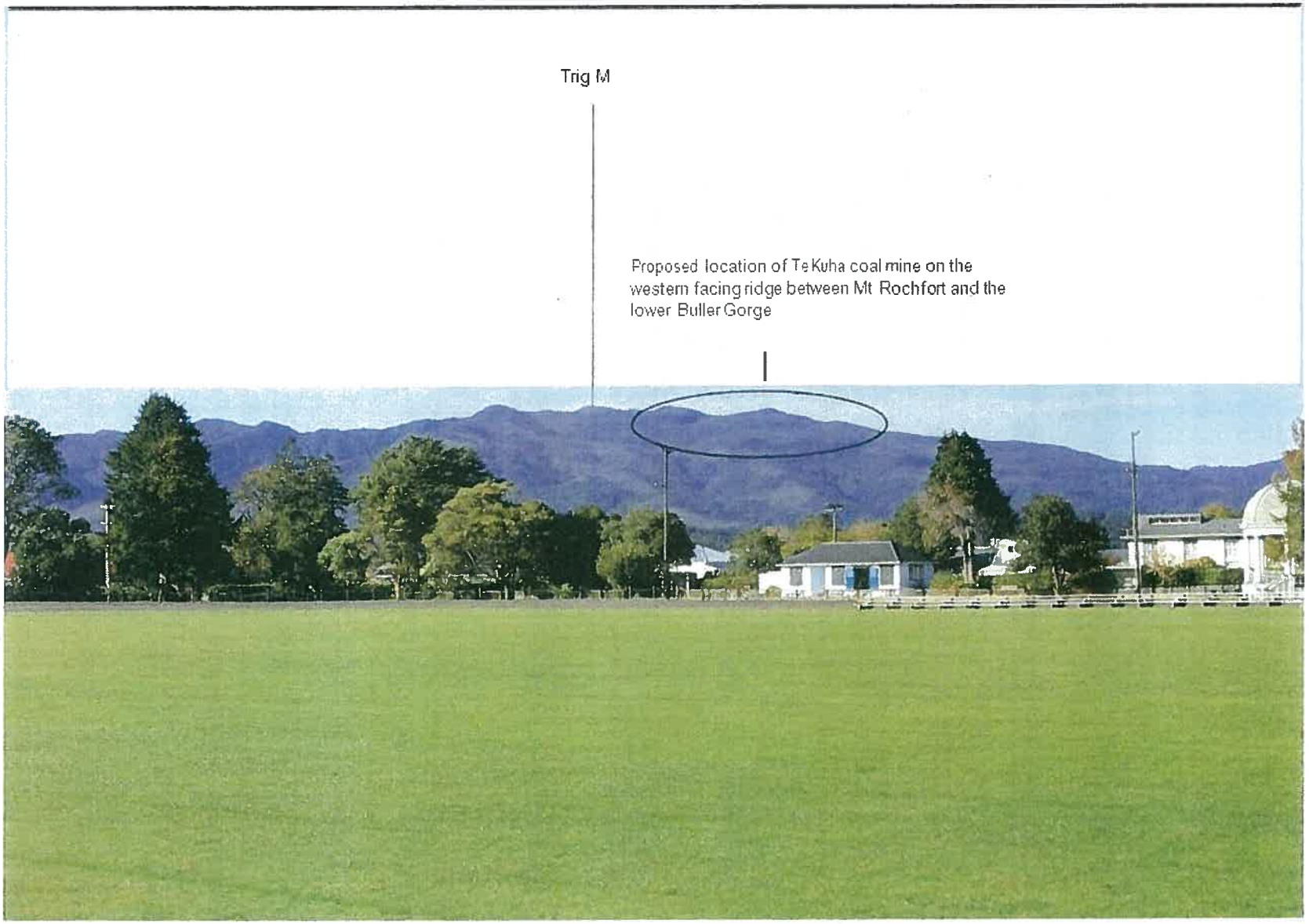

Figure 2: Location of the Te Kuha mine, as viewed from Victoria Square in Westport

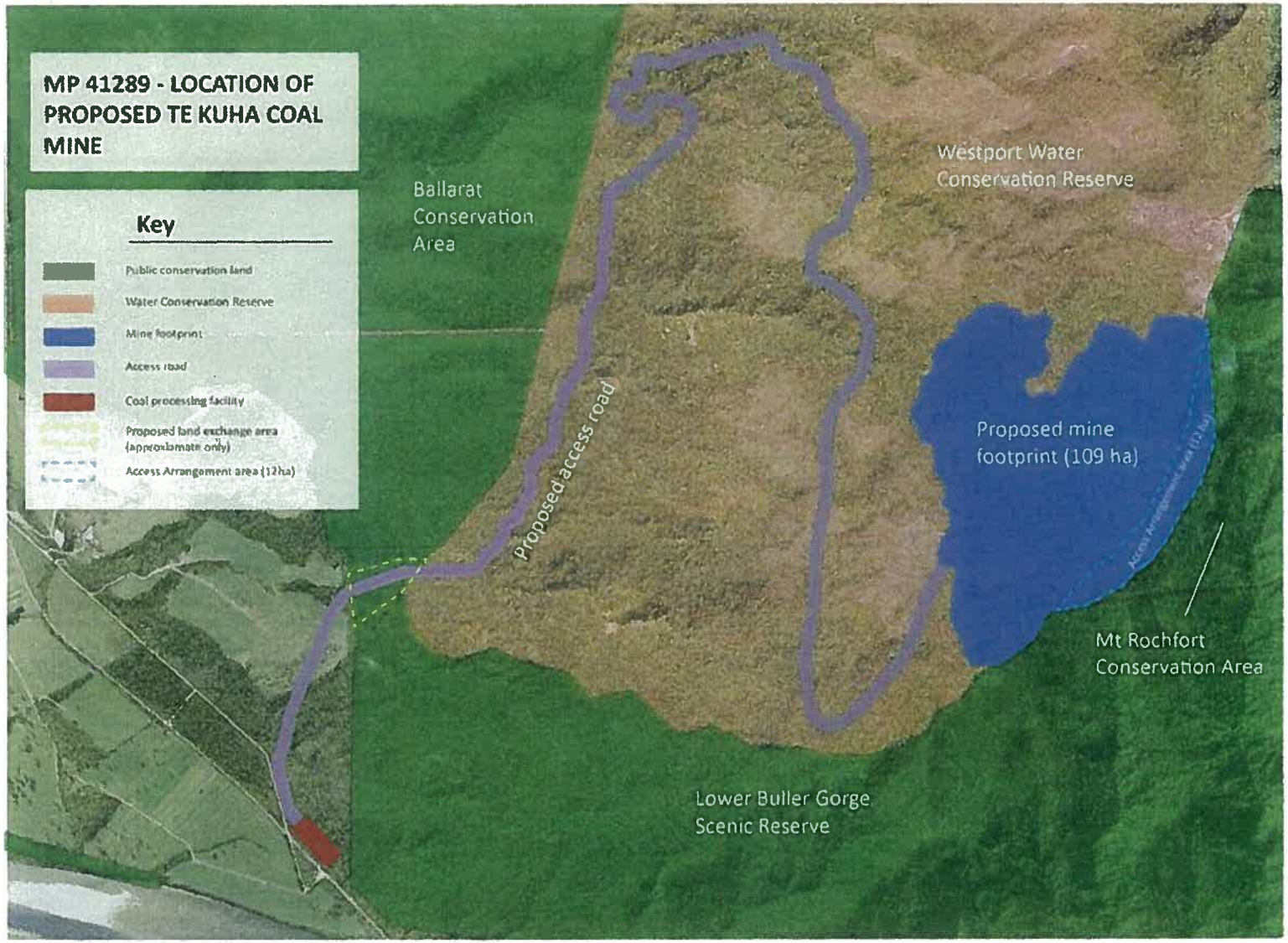

Figure 3: Location of Te Kuha Mine proposal and Access Arrangement area

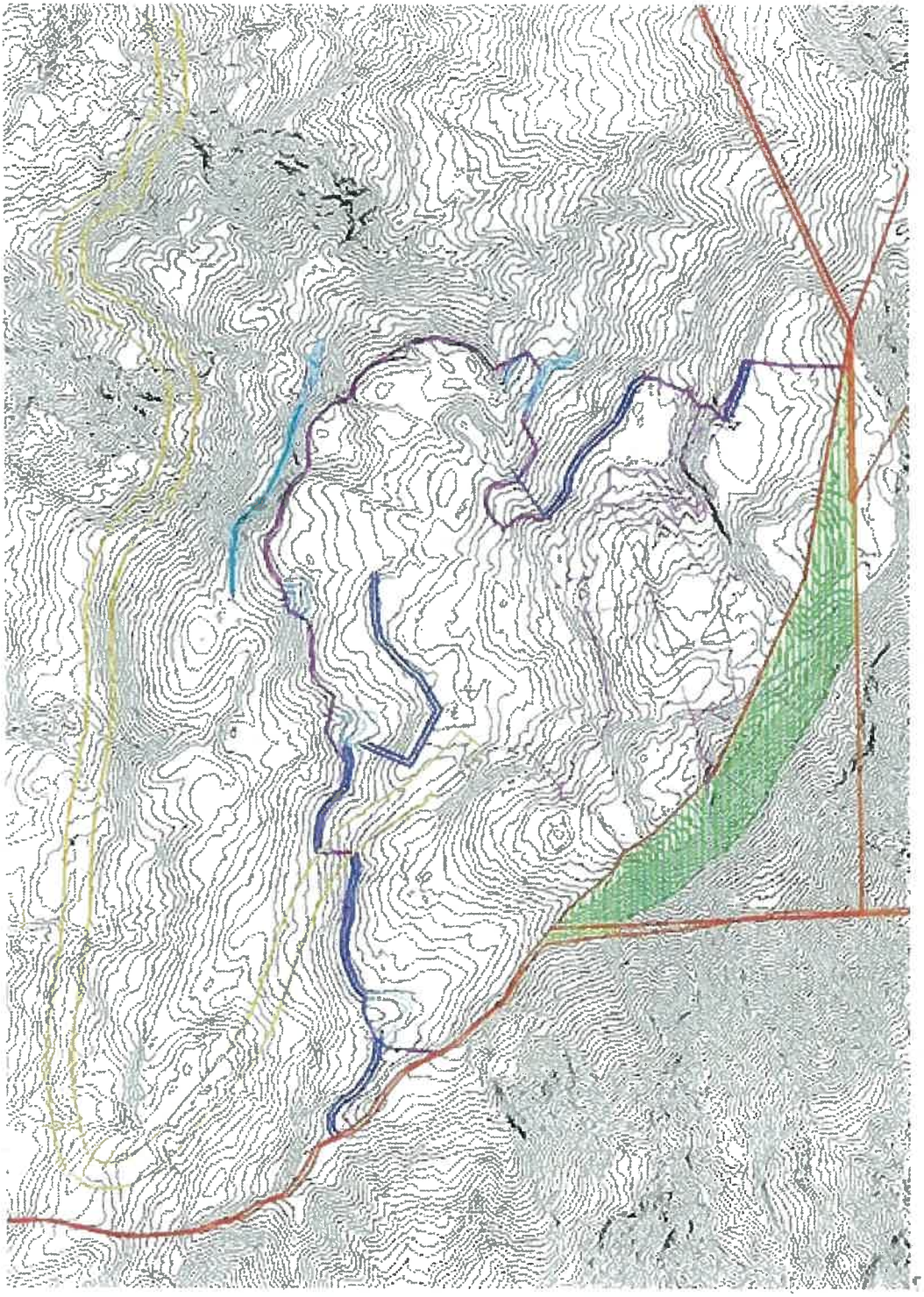

Figure 4: Topography and contours of the proposed footprint (purple) and AA area (shaded green)

Conceptual Mine Plan

18. RDL provided conceptual mine plan information within its initial application (BTW, 2014). However, more up to date and detailed information was requested by DOC to better assess the footprint, potential impacts and highlight any obvious issues with the conceptual mine plan. This information was provided in late 2014 (Avery, 2014). The latest mine plan differs from that on which the initial application document is based. The changes have resulted in an increase in the overall footprint from 86 ha to 116 ha. The changes in relation to the AA area are an increase from 10.4 ha to 12 ha. The increases are due to extensions around the periphery of the site to accommodate for more water management infrastructure (cut off drains etc). Some of the added footprint wouldn't necessarily be mined or disturbed by the pit but rather provide 'room to move' for establishing water management infrastructure.

19. Mine design and planning to date is at an advanced conceptual level. The design is based on a relatively low level of exploration information and further investigation is recommended by RDL's mine planner (Avery, 2014). Likewise, further geotechnical information would be required should the project proceed to a detailed mine planning stage. However, the basic design described below should be indicative of the final pit design and footprint, key infrastructure elements and approaches to accessing the two coal seams of interest. The design information is considered appropriate for the concept stage by DOC reviewer Mark Smith (West Circle, 2014).

20. The application indicates a target coal production of up to 500,000 tonnes per annum, with a total coal production of 4 million tonnes extracted over 16 years of mining. RDL would operate the mine Monday to Friday from 6am – 7pm with a total of between 50 and 60 full time staff equivalents. Discussions with RDL have highlighted the fact that they wish for staff to be based in Westport and work on a roster that encourages growth in the local community and avoids a 'fly in/fly out' situation which they see as less beneficial. RDL has pointed out that the mine schedule and rosters are planned to provide longer lasting employment rather than just the fastest possible extraction of the coal resource.

21. The concept plan for the mine is shown in Figures 5 and 6 below. The total footprint of the mine would be 116 ha and consist of two pits, overburden dumps, topsoil and vegetation stockpiles, water management facilities and an infrastructure/ROM pad area. Mining of the two pits would occur simultaneously with a small crossover of pits in the middle of the mine. Stripping and excavation would be designed to minimise high wall heights and negate stability issues where possible.

22. As shown in Figure 5, the AA area forms the very eastern flank of the mine footprint along the top of the ridgeline. The AA area would consist of part of Brunner coal seam pit, part of the Paparoa coal seam pit, a large topsoil dump and a small part of the crossover pit (accessing both Brunner and Paparoa coal seams). The mine plan is to mine through the existing ridgeline within the AA area and by doing so reduce the height of the existing landform during the course of mining. The implications of this approach in terms of effects are discussed later in this report

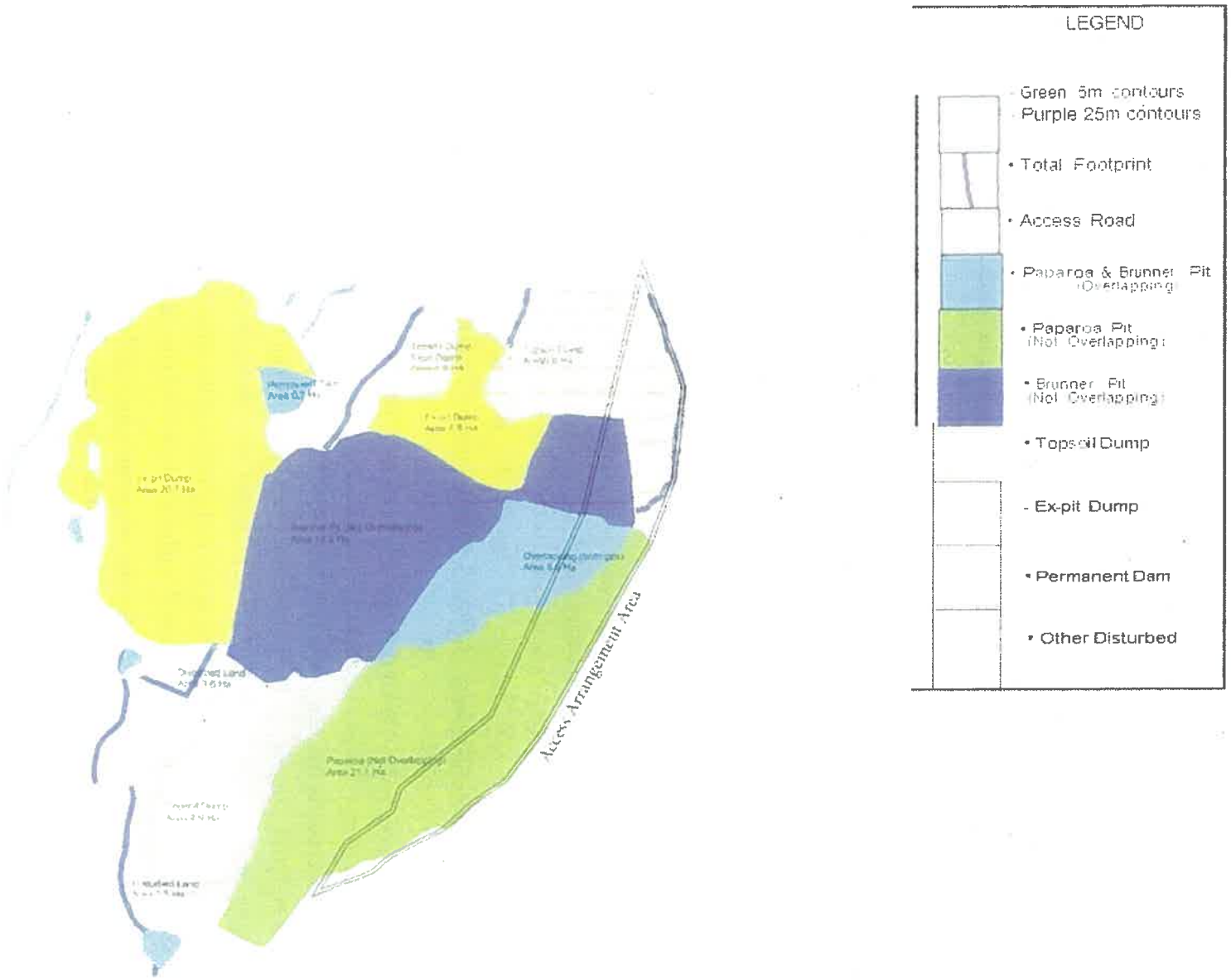

Figure 5: Te Kuha mine proposal concept mine plan

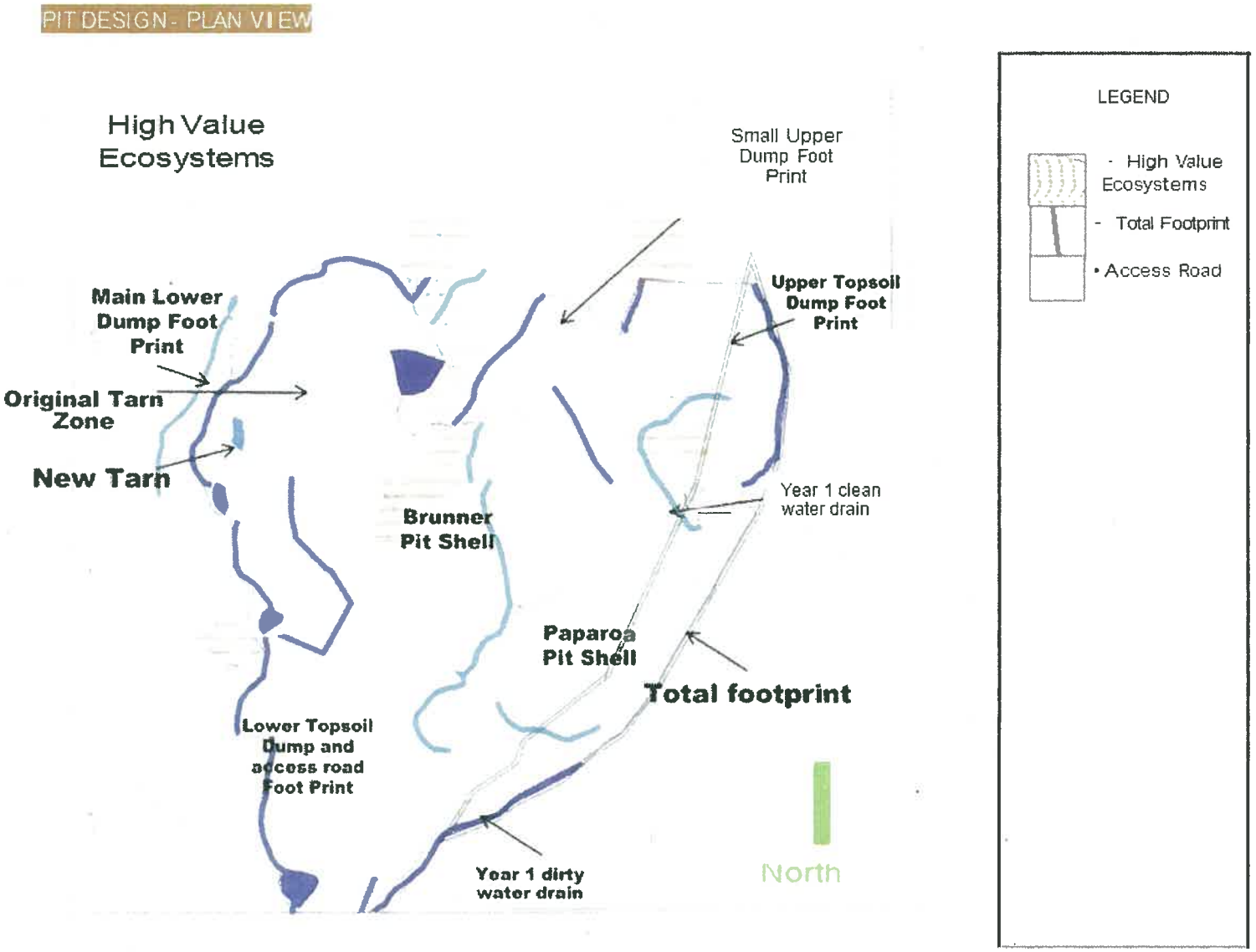

Figure 6: Te Kuha mine proposal concept mine plan

Access road

23. After considering several options RDL have decided to pursue the access road route shown in Figure 7.

24. Following this route the access road would start at a railway siding adjacent to Nine Mile Road and the Stillwater – Ngakawau Railway Line and wind its way up the hillslope above Te Kuha to the mine footprint. In total the road would be 9.2 km long and climb approximately 600 m.

25. The access road would need to be constructed prior to any site works at the mine site, including the AA area. The footprint of the access road would be approximately 28.8 ha and require a number of stream crossings and considerable cut and fill in sections where steeper grades exist. The potential effects of the road would be an integral part of the resource consent and BDC land access applications but do not form part of the AA application or relevant matters to be considered in decision making for the application.

26. It is worth noting that while none of the proposed road footprint is within AA area, a small 250 m section does cross PCL within the Ballarat Conservation Area. This section (a footprint of approximately 1.6 ha) is outside of the MP 41289. RDL has proposed a land exchange for this area with DOC. The offer is to exchange approximately 8 ha of their privately owned land adjacent to the Lower Buller Gorge Scenic Reserve for the 1.6 ha of the Ballarat Conservation Area. DOC has accepted the land swap proposal in principle, subject to RDL obtaining all other necessary approvals for the mine project.

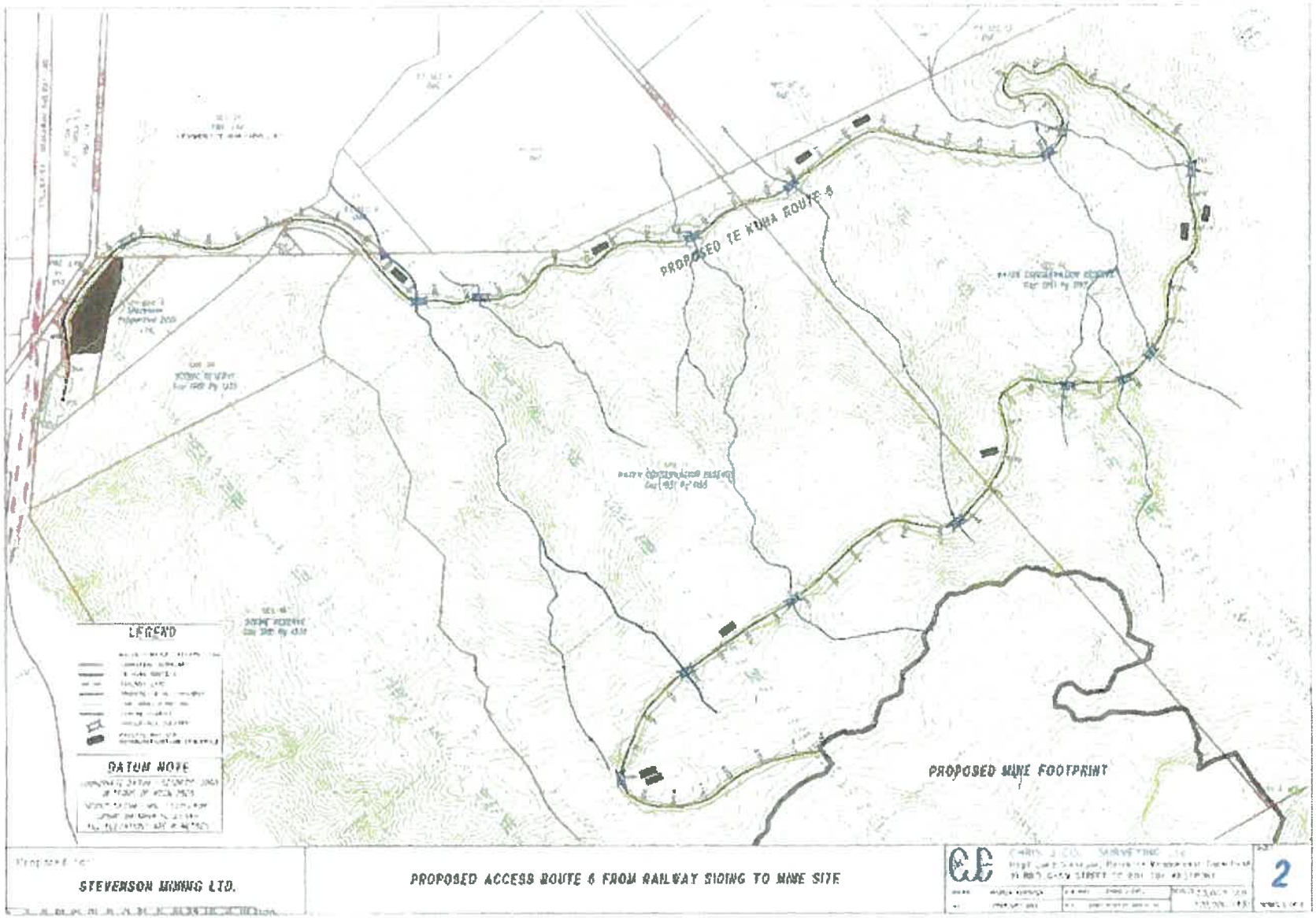

Figure 7: Te Kuha mine proposal access road

Legislation and Relevant Matters

27. MP 41289 is a Tier 1 permit, as defined in section 2B and Schedule 5 of the Act. By virtue of section 61(1AA)(a) of the Act applications for an initial AA for a Tier 1 permit in respect of Crown land are to be decided by the Minister (Minister of Energy and Resources) and the appropriate Minister.

28. The "appropriate Minister" is defined in s 2A of the Act, relevantly as the Minister charged with the administration of the land. As the application is for access to an area of PCL, the appropriate Minister is the Minister of Conservation. The decision on RDL's AA application therefore has to be made jointly by the Minister of Energy and Resources, and the Minister of Conservation.

29. Sections 61(1AAB) and 61C require the Minister of Conservation to determine whether or not the proposed mining activities are significant having regard to;

    (a) The effects the activities are likely to have on conservation values for the land concerned; and

    (b) The effects the activities are likely to have on other activities on the land; and

    (c) The activities' net impact on the land, either while the activities are taking place or after their completion; and

    (d) Any other matters that the Minister of Conservation considers relevant to achieving the purpose of this Act.

30. In December 2015 the Minister of Conservation determined that the proposed mining activities in this application were significant under section 61C(2) of the Act, triggering public notification of the application.

31. Section 61C(3)(a-c) requires that;

    (a) He or she must ensure that the application is publicly notified in accordance with section 49 of the Conservation Act 1987 as if the application were required to be publicly notified under that Act; and

    (b) Section 49 of that Act applies with the necessary modifications; and

    (c) The Director-General of Conservation must perform the duties required by that section as if the application were a proposal, including sending a recommendation and summary of the objections and comments received to the Minister of Conservation and,

if the application relates to a matter to which section 61(1AA) applies, to the Minister of Energy and Resources.

32. Notification for public submissions was given in December 2015 and a public hearing was held in Westport on 13-14 April 2016. The results of this public consultation are covered in Section 61(2)(db) below, and the summary is attached as Appendix 1.

33. In making a decision on the application the decision makers should have regard to the purpose of the Act and the matters set out in section 61(2) of the Act.

34. The purpose of the Act is set out in section 1A:

(1) "The purpose of this Act is to promote prospecting for, exploration for, and mining of Crown owned minerals for the benefit of New Zealand.

(2) To this end, this Act provides for—

(a) the efficient allocation of rights to prospect for, explore for, and mine Crown owned minerals; and

(b) the effective management and regulation of the exercise of those rights; and

(c) the carrying out, in accordance with good industry practice, of activities in respect of those rights; and

(d) a fair financial return to the Crown for its minerals."

35. Section 61(2) provides that "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;

(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."

36. In 'having regard to' a matter in section 61(2), it is not necessary to 'give effect' to it. The Oxford English dictionary (online version) defines 'regard' as 'attention to or concern for something'. The

matters listed in s 61(2) must be given genuine attention, in the decision- makers' consideration of this application.

37. The order in which the matters are presented in s 61(2), and in this report, does not denote a hierarchy of importance. The weight to be accorded to the matters, particularly where there are competing considerations which tell for or against the grant of an access arrangement, is a matter for the decision makers to consider and determine. Each of the matters described in section 61(2)(a) – (d) and (db) relate directly back to matters relevant to the Act, the Conservation Act 1987, and the Ministers' portfolios.

38. While s 61(2)(e), "such other matters as the appropriate Minister considers, or the Minister and the appropriate Minister, as the case may be, consider relevant.", appears broad and somewhat open ended, it is to be interpreted in accordance with, and consistently with, the other matters listed in s61(2)(a) – (db) and in light of the purpose statement and section 4 (Principles of the Treaty of Waitangi).

39. Accordingly, this consideration covers other matters which are properly relevant, in the decision-makers' opinion, in relation to the purpose of the Act and, where appropriate, the role and portfolios of the Ministers.

40. This report describes and assesses the proposed mining activities within the 12 ha of PCL under application, the key conservation values of the AA area, the potential impacts of the proposed activities on those values and assesses them with regard to the above matters. It also outlines any other matters that may be considered relevant by the Ministers to achieving the purpose of the Act in relation to this application.

41. Given the above context, other regulatory approvals for land access and land use would need to include the following:

    - An AA under the Crown Minerals Act for the 12 ha of PCL within the MP;
    - A completed land exchange with DOC for the area required for the section of the access road [currently] located within Ballarat Conservation Area and outside of the MP;
    - An AA from the BDC for access to the WWCR for approximately 104 ha of the open cast coal mine and majority of the access road. The WWCR is held, on trust, by the BDC and BDC

would be the decision maker on any AA application in relation to the WWCR. RDL has lodged an application for access to the WWCR with the BDC;

- Resource consents for the entire project under the Resource Management Act 1991 (RMA). Resource consent applications have been lodged and are being processed by the BDC and/or West Coast Regional Council (WCRC);
- Building consents (as required) for mine infrastructure and/or coal processing facilities;
- A Wildlife Act Authority for the disturbance/killing of wildlife under the Wildlife Act 1953 (WA); and
- A Heritage New Zealand Pouhere Taonga authority should any archaeological sites be disturbed.

42. RDL applied to BDC for access to approximately 95 ha of the WWCR in August 2016. In September 2016 BDC agreed to enter into an AA for this area, with the agreement to include appropriate conditions to ensure there are no impacts on the Westport water supply, and anything highlighted by the resource consent process. However, BDC rescinded this decision on 12 April 2017 after a judicial review into the decision was filed in the High Court by Forest & Bird.

43. Section 61(1A) of the Act states that the Minister and the Minister of Conservation "must not accept any application for an access arrangement or enter into any access arrangement relating to any Crown owned mineral in any Crown owned land or internal waters described in Schedule 4" of the Act. The public conservation land over which RDL is seeking access to is not included in Schedule 4 therefore the Ministers are able to accept and consider this application.

Section 61(2)(a)

44. The land under application is administered by the Crown as PCL under the Conservation Act. The Long Title to the Conservation Act states that it is an Act to promote the conservation of New Zealand's natural and historic resources. Under the Conservation Act, *"conservation"* is defined as *"... the preservation and protection of natural and historic resources for the purpose of maintaining*

their intrinsic values, providing for their appreciation and recreational enjoyment by the public, and safeguarding the options of future generations."

45. "Preservation" in relation to a resource, is defined as: *"...the maintenance, so far as is practicable, of its intrinsic values."*

46. "Protection", in relation to a resource, means its maintenance, so far as is practicable, in its current state; but includes—
    - its restoration to some former state; and
    - its augmentation, enhancement, or expansion.

47. "Natural resources" is defined as:
    - plants and animals of all kinds; and
    - the air, water, and soil in or on which any plant or animal lives or may live; and
    - landscape and landform; and
    - geological features; and
    - systems of interacting living organisms, and their environment:- and includes any interest in a natural resource.

48. The proposed mining operations would *prima facie* be inconsistent with the following objectives of the Conservation Act:
    - preserving and protecting the natural and historic resources on the land;
    - maintaining the intrinsic values of the natural and historic resources on the land;
    - providing for the appreciation and recreational enjoyment by the public with regard to the natural and historic resources on the land;
    - safeguarding the options of future generations with regard to the natural and historic resources on the land.

49. The construction of [part of] an open cast mine in the AA area would have a range of adverse effects on the natural and historic resources of the land, some of them significant (see further discussion in this report). Of these some could be safeguarded against by RDL's mitigation measures and the imposition of appropriate AA conditions including rehabilitation, environmental quality limits, bonds and insurances (see discussion later in this report). However, many of the adverse effects would be permanent, irreversible and by their nature not able to be safeguarded against, the most notable being the permanent loss of the areas of coal measure habitat and vegetation, permanent loss of geodiversity and natural character and permanent impacts on notable fauna species. Rehabilitation of the AA area would likely take many decades, and in some cases centuries for the slow growing species. After rehabilitation the environment and the final ecosystem would be different to the present one and it would have permanently altered a primarily intact and undisturbed natural ecosystem. The landscape would never be returned to the current diversity of landform and the natural vegetation would not be fully restored. Given this, it is considered that *"preserving and protecting the natural and historic*

resources on the land" and *"maintaining the intrinsic values of the natural and historic resources on the land"* cannot be achieved.

50. Providing for the appreciation and recreational enjoyment by the public cannot be safeguarded due to the permanent loss of the site's existing natural character, and landscape which is regarded as outstanding. Currently the site sits atop a ridgeline that is visible from several viewpoints around Westport and from within the lower Buller Gorge. It is primarily intact, visibly free from human disturbance, and essentially pristine. The development of the land would result in a loss of these characteristics and while a proportion of the immediate visual effects would lessen over time, the values themselves and public enjoyment of them cannot be wholly safeguarded.

51. Safeguarding the options of future generations would involve preserving the viability of the current vegetation and habitat so it can continue to support species and play an important continuing role in maintaining the biodiversity of New Zealand. As noted above the full viability of the current natural resources of the AA area would be lost and a different ecosystem would recover over many decades and probably centuries. Therefore, as stated above, this application would *prima facie* be inconsistent with the objectives of the Conservation Act.

Section 61(2)(b)Conservation Act

52. The AA area is within the Mount Rochfort Conservation Area, and is deemed to be held under the Conservation Act for conservation purposes pursuant to section 62 of that Act. It is managed as if it were a stewardship area specified under section 25 of the Conservation Act. Section 25 states "Every stewardship area shall be managed that its natural and historic resources are protected."

53. Under this application RDL seeks to cause impacts on land containing a largely intact, natural and unique environment. The wording in section 25 of the Conservation Act is mandatory in nature; it requires every stewardship area to be so managed that its natural and historic resources are protected. To allow an activity to occur which, even after best efforts to avoid and mitigate adverse effects and rehabilitate affected areas, undermines the natural resources/values of the land would therefore seem to be contrary to the intent of the section

Reserves Act

54. Almost all of the landscape effects on the lower Buller Gorge stem from the AA area that geographically straddles that part of the ridge that is visible from the gorge. These effects impact on the lower Buller Gorge Scenic Reserve. As such the purpose for the Reserves Act must be considered.

55. The Reserves Act is an Act that consolidated and amended certain enactments relating to public reserves making provision for their acquisition, control, management, maintenance, preservation, development and use. Specifically, the purpose of scenic reserves is to protect and preserve their intrinsic worth for the benefit, enjoyment and use of the public areas possessing qualities of scenic

interest, beauty, or natural features or landscape that their protection and preservation are desirable in the public interest.

56. The changed topography of the AA area that would result from the pit walls and batters will be visible from the lower Buller Gorge Scenic Reserve, impacting on the scenic interest and beauty of the reserve. This is contrary to the purpose for which the reserve is held. Over time the impacts on the reserve would lessen and would be mitigated by rehabilitation and revegetation. The final result may be limited in terms of immediate visual effect, but the natural character of the ridgeline would have been permanently altered.

Section 61(2)(c)

Conservation General Policy 2005

57. The Conservation General Policy (CGP) does not provide any specific guidance with regard to considering mining applications. However, CGP policy 4.5(b) provides that activities which reduce the intrinsic values of landscape, landform and geological features should be located and managed so that their adverse effects are avoided or otherwise minimised. The impacts of the application on these values are discussed elsewhere in this report and are also captured in the analysis of the West Coast *Te Tai o Poutini* Conservation Management Strategy. Due to the permanency of some of the effects on geological features and landform the application is considered inconsistent with the CGP.

West Coast Te Tai o Poutini Conservation Management Strategy, May 2010

58. The West Coast *Te Tai o Poutini* Conservation Management Strategy (CMS) is prepared with public consultation and it sets out the legal, policy and strategic direction for ensuring the integrated management of natural and historic resources. It establishes objectives and policies to help ensure that authorisations on public conservation lands are consistent with broader objectives for the management of natural and historic resources under the Conservation Act 1987.

59. The CMS, in addition to describing the land on the West Coast, explains how DOC proposes to manage the natural, historical and cultural heritage values and recreational opportunities within PCL on the West Coast for the term of the strategy (2010-2020).

60. Specific reference to individual 'places' in the CMS indicates their significance and provides direction for how the land should be administered for the term of the strategy (10 years, 2010 - 2020). The 'desired outcomes' effectively relate to how the land should 'appear' at the end of the strategy's life; with DOC being required, pursuant to section 17A of the Conservation Act, "to administer and manage all conservation areas and natural and historic resources in accordance with (a) statements of general policy…; and (b) conservation management strategies…".

61. Relevant sections, objectives and policies from the CMS in relation to the AA area and this application are discussed below. Comments are then made where pertinent to RDL's AA application

and its consistency with the CMS. For practical purposes, objectives and policies that are either irrelevant or that the application is wholly consistent with are for the most part not discussed.

West Coast Conservation Strategy Section 2.2.1.4 – National conservation significance

62. Section 2.2.1.4 identifies sites of national conservation significance in the CMS and includes coal plateau landscapes:

"Coal plateau landscapes"

- In the coastal hills just north of the Buller Kawatiri River are elevated coal measure plateaux windswept areas that are under snow in winter and frequently fog bound. The plateaux contain by far the largest occurrence of Brunner Coal Measures in New Zealand and have the greatest diversity of vegetation types on the coal measures. Its ecosystems are defined by the presence of extensive coal measure rocks and associated landforms and vegetation (McEwen 1987). While some of the animal and plant communities of the plateaux are found elsewhere, some Powelliphanta snail populations and the communities containing the endemic coal measure tussock Chionochloa juncea are confined to these plateaux and are internationally unique (Walker 2003). The particular combination of plant communities and associated landscapes present on these plateaux occurs nowhere else in New Zealand (Overmars et al 1998).

63. The Te Kuha site is not included in the description of the Buller Coal Plateaux and presumably forms one of the 17 other sites noted as containing Brunner coal measures.

West Coast Conservation Strategy 3.1.2 and 3.1.2.1 Treaty Partnership in Action

64. Sections 3.1.2 and 3.1.2.1 sets out how the CMS gives practical effect to section 4 of the Conservation Act 1987, that the Conservation Act "*shall so be interpreted and administered as to*

give effect to the principles of the Treaty of Waitangi." The key policy in relation to this application is 3.1.2.1 Policy 3:

"Papatipu Rūnanga and, where required, Te Rūnanga o Ngāi Tahu will be consulted on specific proposals that involve places or resources of spiritual or historical and cultural significance to them."

West Coast Conservation Strategy 3.3.1.1 Climate change

65. Section 3.3.1.1 discusses climate change:

"Climate change is one of the most significant contemporary threats to natural, historical and cultural heritage, with potential effects on biodiversity and ecosystem functioning in particular. Some generalised effects include:

- range changes for species and ecosystems, including invasive weeds and animal pests;
- increased frequency of more invasive and damaging pest plants, animals and diseases;
- changes in timing or frequency of seasonal and annual climatic events;
- changes in species abundance;
- altered habitat preferences;
- increased frequency of random events.

As the manager of a considerable area of New Zealand's land mass, DOC must manage for the impacts of climate change where necessary."

66. While section 3.3.1.1 notes that DOC must manage for the impacts of climate change it does not provide any specific guidance or policies as to how this may be implemented or achieved. Likewise, it is unclear whether the intent is to manage PCL in a way to help prevent the impacts of climate change or manage the impacts as they arise. While the former seems more logical there is a lack of clarity and direction so the section is to a degree unhelpful. There are no specific objectives or policies listed under section 3.3.1.1. The potential effects of the application on climate change are discussed further as an "other matter" under s 61(2)(e) of the Act.

West Coast Conservation Strategy 3.3.3 Ecosystem Management

67. Section 3.3.3 describes a prioritised management approach for ecosystem management. It acknowledges "the fact that the Department does not have the resources or technology to remove or prevent all threats from damaging conservation values at all places" (CMS, p.75) and that there is need to prioritise to achieve the most effective management with the resources available.

68. Section 3.3.3 also notes that: "Although management boundaries will have to be drawn around these priority sites, it must be recognised that ecological and physical processes act across management and tenure boundaries. Because the West Coast *Te Tai o Poutini* has some of the most intact natural heritage on the main islands of New Zealand, most management actions aim to maintain this high level of natural character. Many of the Conservancy's priority sites for natural heritage management include intact sequences of natural vegetation cover that extend from mountain ranges to the coast. The most intensive management will generally occur at sites where threatened species management is

also occurring. Management will also be required at some partially modified sites (which typically occur in lowland areas) in order to ensure that a full range of ecosystems is protected. Here the management focus will be on improving linkages between intact protected areas and on local restoration programmes."

West Coast Conservation Strategy

3.3.3.2 Maintenance and restoration of the indigenous natural character of ecosystems

69. The objective of section 3.3.3.2 is: "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."

70. Priority sites for biodiversity management are then listed in Policy 2. The Buller Coal Plateaux (Stockton Plateau and Denniston Plateau) are included due to the presence of unique coal measure ecosystems. Te Kuha is not listed as a priority site despite sharing many ecological similarities and being in close geographic proximity. The wider conservation management of Brunner coal measures is discussed in more detail later in this report.

71. While the Te Kuha site is not listed as a priority site, the proposed activities in the AA area would remove areas of coal measure ecosystems that are of high conservation value, have unique and distinctive values and are limited in extent. Any permanent loss of coal measures ecosystem is notable due to its limited extent and would impede DOC's ability to maintain its type on the West Coast. Therefore, the application is inconsistent with the overall intent of section 3.3.3 which is aimed at the effective management of ecosystems and the objective of 3.3.3.2, "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."

West Coast Conservation Strategy 3.3.3.5 Threatened species management

72. Section 3.3.3.5 notes the importance of the management of threatened species on the West Coast. The objectives of section 3.3.3.5 are:

    - Objective 1: To prevent further extinctions or range contractions of indigenous species found on the West Coast Te Tai o Poutini.
    - Objective 2: To ensure, where practicable, that representative populations of all indigenous species have long-term security in predominantly natural habitats within their natural range.

73. The activities proposed in the AA area would affect DOC's ability to achieve Objective (1). DOC experts have noted the presence of threatened species within the AA area, many of which would be unavoidably impacted by the proposed mining activities. Threatened species include several indigenous birds, lizards, a range of large bodied terrestrial invertebrates, several vascular plants and numerous non-vascular plants (bryophytes). For some of these species the proposal would cause a small scale medium to long term contraction in range. The proposed rehabilitation would see the eventual return of a modified form of indigenous vegetative cover, litter and soil and the return of

most of the currently resident indigenous species; albeit in different densities, distribution and species assemblages.

74. However, for the large bodied invertebrates and bryophytes in particular, the effects have the potential to be more permanent and significant. Several species are new and very poorly understood and it is possible that their range could be notably impacted by the mining of the AA area. Not enough information is available to estimate the risk of possible extinctions. The impacts on these species could not be wholly mitigated or safeguarded against and, taking a precautionary view, it is considered that the application is inconsistent with the section 3.3.3.5.

West Coast Conservation Strategy 3.3.3.6 Biosecurity and pest management

75. Section 3.3.3.6 contains several policies aimed to help reduce and control the spread of introduced and invasive pests and weeds. Rodents, hares and invasive weeds have been identified as the biggest risks should the mine go ahead. RDL would undertake pest and weed management as part of mining operations but acknowledge that, even given their best efforts, the spread of invasive weeds into the mine site and rehabilitated landform, currently a primarily weed free area, would be unavoidable. As such the proposed activities in the AA area would be inconsistent with section 3.3.3.6.

West Coast Conservation Strategy 3.3.3.7 Ecosystem services and economic benefits

76. Section 3.3.3.7 notes that: "The Conservation General Policy 2005 defines ecosystem services as "a wide range of conditions and processes through which natural ecosystems, and the species that are part of them, help sustain and fulfil life". Such services need to be preserved in order to ensure the sustainability and resilience of the natural environment, humans' use of that environment and ultimately the survival of humans and other species."

77. It notes the importance of healthy ecosystems generally and for their functions in wider risk management such as flood protection and nutrient recycling. It also notes that the potential role of public conservation land management in contributing to national strategies to reduce greenhouse gas emissions, and hence meet international obligations under the "Kyoto protocol", has been the subject of developing interest.

78. Section 3.3.3.7 also goes on to describe the value of PCL on the West Coast to the West Coast economy: "Little is known yet of the economic values that conservation management offers in enhanced delivery of ecosystem services. There have also been few attempts to specifically quantify the economic value of ecosystem services delivered by public conservation lands, though it seems certain the value will be very high. A 2005 report by the Department of Conservation on the *'Regional Economic Impacts of West Coast Conservation Land'* discusses the economic values that conservation offers. The report calculates that economic activity dependent on DOC and public conservation land on the West Coast *Te Tai o Poutini* totals $221 million a year in gross output, and supports about 1814 full time equivalent jobs in the region. The bulk of the economic activity identified in the report – 1450 jobs - is derived from tourism and outdoor recreation using

conservation land, or is dependent on the appeal of it to pull in visitors. Income being earned for households from activity dependent on public conservation land was about $62 million a year. It is therefore important that DOC and others using public conservation lands and waters recognise these values and ensure their actions do not adversely affect the quality of ecosystem services delivery."

79. There are two objectives listed for section 3.3.3.7:
    - To protect the quality of life sustaining ecosystem services.
    - To raise New Zealanders' awareness and understanding of ecosystem services and the value of conservation.

80. *Prima facie*, the undertaking of coal extraction and associated activities within the AA area, and indeed any PCL within the West Coast, would be inconsistent with both these policies.

West Coast Conservation Strategy 3.3.4.1, 3.3.4.2 & 3.3.4.3 – Geodiversity and landscapes values, threats and management

81. Section 3.3.4 describes geodiversity as encompassing minerals, rocks, soils, geothermal resources and landforms and all of the processes which have formed these geological features, and is an inherent component of natural landscapes. It goes on to note that "the West Coast is one of the few places in New Zealand where a range of relatively unmodified natural landscapes still exists. Landforms, landscapes and geologically significant sites are vulnerable to the effects of change from a variety of human activities, including excavation and mining; earthworks and roading; development of infrastructure in natural settings; wetland drainage; and native vegetation clearance. The destruction or degradation of geological features, landforms, and their underlying processes impacts on the character and function of the natural landscape and its ecosystems."

82. DOC currently does not have a system for ranking the significance of geological features, thus the New Zealand Geopreservation Inventory (NZGI); maintained by the Geological Society of New Zealand) is used to identify, protect and advocate for internationally, nationally and regionally significant sites. The Inventory lists sites that are unique, important and are the best representative examples of the country's diverse earth science heritage and assigns them a vulnerability. Vulnerability scores are assigned as follows: 1 = Highly vulnerable to complete destruction or major human modification; 2 = Moderately vulnerable to human modification; 3 = Unlikely to be damaged by humans; 4 = Could be improved by human activity; 5 = Site already destroyed.

83. Appendix 6 of the CMS lists the sites on the West Coast in the NZGI Inventory. Of the sites listed in Appendix 6, two are relevant to this AA application: the Buller Gorge and Paparoa Coal Measures. Both are listed as Sites of National Scientific, Educational or Aesthetic Importance with a vulnerability score of 3. There is a small area of Paparoa Coal Measures within the AA area and it seems reasonable to include it as part of the overall category listed in the Inventory. The Buller Gorge

is also listed as a whole. The Buller Gorge does not form part of the AA area but its notable landscape values would be affected by the mining of the AA area, hence its inclusion in this discussion.

84. Section 3.3.4.3 of the CMS states that "management of a natural landscape should ensure that the effects of change are accounted for beyond the immediate site and across time"... "Where change is proposed, landscape conservation seeks to ensure that the proposed change is integrated with appropriate regard to the effects the change would have on the landscape's broader character." Objective 1 of section 3.3.4.3 is:

85. Given these effects the application is considered inconsistent with the above objective and policy. While the visual effects of the proposal would lessen over time there would still be an unavoidable

loss of naturalness and the destruction or degradation of geological features, including Paparoa Coal Measures.

West Coast Conservation Strategy Section 3.7.5 – Crown Minerals

86. Section 3.7.5 includes several policies to help guide the processing and implementation of Access Arrangements granted under the Act over PCL. The following policies are relevant to this application;

- Policy 1: The Minister will consider each application for an access arrangement on a case-by-case basis, in accordance with the criteria set out in the relevant section (i.e. s61 or s61A and s61B) of the Crown Minerals Act 1991.
- Policy 2: When assessing an application for an access arrangement for prospecting, exploration or mining, consideration should be given to (but not limited to):
    - The significance of the conservation values present and the effect the proposal will have on those values;
    - The adequacy and achievability of the proposed site rehabilitation work (see also Policy 3 below); and
    - The adequacy or appropriateness of any compensation offered for access to the area (see also Policy 4 below).
- Policy 3: Appropriate site rehabilitation methods should be employed.
- Policy 4: Compensation should be required when damage to, or destruction of, conservation values cannot be avoided, remedied or mitigated and will be determined on a case by case basis.
- Policy 5: Where ancillary activities such as roads and infrastructure can reasonably be located off public conservation land, this will be expected.
- Policy 6: The term of any access arrangement should be limited to the period reasonably required to carry out the defined work, including site rehabilitation after mining has been completed.
- Policy 8: Evidence that a valid minerals permit has been obtained from the mineral owner will be required before the Minister of Conservation will make a final decision on an application for an access arrangement or minimum impact activity.
- Policy 9: The granting of an access arrangement for prospecting or exploration does not place any obligation on the Minister of Conservation to grant a subsequent access arrangement for mining, or to grant further variations to a pre-existing access arrangement.
- Policy 10: If monitoring reveals that the effects of mining activities on conservation values and recreational opportunities, including the desired outcomes described in Part 4 of this CMS, are

greater than expected, or new effects have been discovered, the Department should review the conditions of the access arrangement.

- Policy 11: Approval of any work plan may be subject to the permit holder obtaining all other necessary authorisations, such as a concession permit for all aircraft landings or a Wildlife Act permit.

87. This application is being processed in accordance with policies 1, 3, 4, 5, 6, and 8 of this section. In particular, Policy 2 considerations are addressed through the body and conclusions of this report. If approved, policies 9-11 would be implemented in the AA or any work plan approval.

West Coast Conservation Strategy 4.2.2 Desired Outcome for Kawatiri Place

88. Chapter 4 of the CMS sets out desired outcomes for a delineated area of the West Coast. In this way the CMS tries to provide an overall context from which the management of the PCL on the West Coast can be assessed against. They are essentially a tool to work out if particular activities or management initiatives are in line with the overall goals for certain areas. The outcomes described are for the year 2020, 10 years after the CMS was formalised.

89. The AA area falls within the '*Kawatiri* Place'. The desired outcomes for the *Kawatiri* Place are described in respect of geodiversity, landforms and landscapes, indigenous biodiversity, human history, cultural values, people's benefit and enjoyment and other use of public conservation lands. The outcomes are written as a lengthy narrative so for practicality only, excerpts from the outcomes where they relate to this application are listed in Table 1 with comments on the application alongside.

90. In summary, the application aids the achievement of human heritage outcomes but would hinder several others for geodiversity, indigenous biodiversity and cultural values. The AA area has little direct value for recreation and other uses so outcomes for these topics (as framed in 4.2.2) were considered largely irrelevant.

Summary and conclusions for the CMS

91. The above analysis suggests that the application is inconsistent with several of the objectives and policies in section 3 and the desired outcomes for *Kawatiri* place in Section 4.

92. The introduction to section 3 notes that: "In contrast to the rest of New Zealand, a large proportion of the West Coast Tai Poutini Conservancy is protected in continuous sequences of ecosystems, from mountains through lowland forests and wetlands to the sea. Furthermore, the Conservancy contains a substantial proportion of the country's protected lowland forests; one of New Zealand's most depleted ecosystem types (Ministry for the Environment, 1997). The West Coast Te Tai o Poutini thus offers the best opportunity in New Zealand to achieve a sustainable and representative network of protected areas with consistently high natural character. There is a realistic long-term prospect for the Conservancy to be a region where human presence is sustained within a matrix of protected natural

areas, rather than remnant natural areas being isolated within a matrix of human land uses (as is largely the norm elsewhere in New Zealand)."

93. And also adds that "...Although management of public conservation lands can never achieve the pristine natural character of pre-human New Zealand, the overall aim is to prevent further loss of indigenous biodiversity by removing as many human-induced disturbances as possible and using various methods to greatly reduce the impact of threats that cannot be completely removed."

94. The proposed mining activities in the AA area would contribute to a loss of indigenous biodiversity with high conservation value, most notably a reduction of coal measure ecosystems and impacts on threatened and restricted populations of large bodied invertebrates and bryophytes. It would also reduce the overall natural character of the site. This package of effects would be at odds with the overall intent of the objectives and policies in Section 3 described above, particularly "*...to prevent further loss of indigenous biodiversity by removing as many human-induced disturbances as possible and using various methods to greatly reduce the impact of threats that cannot be completely removed.*"

Table 1: Key outcomes for Kawatiri Place

"The overall character of geodiversity, landforms and landscapes in Kawatiri Place is maintained in its 2010 condition."	There would be residual effects on geodiversity and the landform within the AA area that would inhibit the achievement of this outcome.
"At the Karamea Bluffs, Mokihinui, Buller Coal Plateaux, Granity Wetland Complex and Cape Foulwind priority sites (see Map 8) natural heritage values are maintained and, where practicable, protected and enhanced. Elsewhere in Kawatiri Place, natural heritage values are maintained to at least the same condition they were in as at 2010."	There would be residual effects on natural heritage values (loss of coal measures ecosystems, impacts on rare and threatened flora and fauna) within the AA area that would inhibit the achievement of this outcome.
"Weed invasion into public conservation lands from adjacent weed sources is prevented and human activities within public conservation lands do not contribute to the spread or introduction of invasive weeds or animal pests"	There would be an unavoidable ingress and spread of weeds into the AA area that would inhibit the achievement of this outcome.
"DOC works in partnership with Te Rūnanga o Ngāti Waewae to monitor and mitigate (where appropriate) threats to archaeological sites, to actively manage specific sites, to increase knowledge about the Māori history of the area, and to ensure that appropriate mechanisms are in place to protect wāhi tapu and wāhi taonga values" "Cultural values of significance to Poutini Ngāi Tahu/Ngāi Tahu are protected throughout Kawatiri Place. These values include (but are not limited to): Te Ao Turoa (the natural world); wai (water); mahinga kai (cultural materials and the places these are gathered); ana (caves); landscapes, maunga (mountains e.g. Te Kuha, Mt Rochford Paparoa) and other wāhi taonga; landforms (e.g. Three Steeples Torea, Ökari Lagoon and dunes); rakau rangatira (trees of significance); rongoā (medicinal plants); oral hīkoi; early pa and kainga (e.g at Whareatea); urupā (burial ground); wāhi tapu; and ingoa wāhi (place names)."	Ngāti Waewae have been consulted by RDL and the DOC with regard to this application. The specific mention of Te Kuha in "maunga (mountains e.g. Te Kuha, Mt Rochford Paparoa)" is notable. The effects on Te Ao Turoa (the natural world) and Ngāti Waewae's comments on the application are discussed later in this report.
"Historic places are one of the most important features of Kawatiri and also one of the major attractions of its public conservation lands. Protection of historic places is a prominent management theme in Kawatiri. All actively managed historic places in public conservation lands.are maintained in their 2010 condition or better." "People are encouraged to visit and learn about many of these sites (e.g. the Charming Creek coal mining and sawmill site....)"	As part of compensation for the application RDL are proposing to fund mining heritage work at the Charming Creek site. This work would help achieve this desired outcome for mining heritage and the Charming Creek site.

95. The same impacts on indigenous biodiversity and natural character mean the application would also inhibit several desired outcomes for *Kawatiri P*lace relating to geodiversity, indigenous biodiversity and cultural values. The application would however aid the desired outcomes for human heritage, specifically mining heritage at the Charming Creek site.

96. The intent and desired outcomes of the CMS are by design aimed to be the ideal. Realistically, however, the management of an area of PCL as large as that on the West Coast with a limited pool of funding will always struggle to meet these ideals in all cases. Moreover, the Conservation Act is only one of several pieces of legislation governing the management of the natural environment in

New Zealand, and there will at times be competing priorities and other legislation that for various purposes fosters conflicting land and resource uses. This application is an example of this situation. To a degree the CMS acts as a balance to these competing elements by seeking the ideal for conservation. In this case, DOC officials consider that the application is inconsistent with the overall intent of the CMS.

Section 61(2)(d)

97. In s 61(2)(d), the decision makers must consider whether safeguards against the likely adverse effects which may be proposed by either the Ministers or the Applicant, adequately protect the land's natural and historic resources. For example, land rehabilitation would be a necessary condition in order to safeguard as far as possible against unacceptable long-term potential adverse effects on natural values.

98. "Safeguard" is not defined in the Act. It is noted that the term "safeguard" is used in the RMA, and that both the CMA and RMA were enacted at approximately the same time. In s 5(2) of the RMA, both the phrase "safeguarding" (s 5(2)(b)) and "avoiding, remedying and mitigating" (s 5(2)(c)) are used in the same section. The use of different phrases in a common context suggests that Parliament may have intended some difference in the meaning to be attributed to the phrases.

99. The Concise Oxford Dictionary meaning of "safeguard" is *"a measure taken to protect or prevent something"*. DOC considers that while measures which avoid, remedy or mitigate potential adverse effects may also be safeguards, it does not follow that the term "safeguard" is synonymous with, or simply means, "avoid, remedy or mitigate." DOC considers that the term safeguard imports a higher standard and, in particular, measures to mitigate an adverse effect (i.e. lessen or reduce it) may, in practice, not constitute a safeguard against that adverse effect.

100. While DOC is not aware of any judicial interpretation of "safeguard" in the context of the CMA, it is noted that, in the context of the RMA, the Environment Court has observed (*Interim Report to Minister of Conservation and Orson an Inquiry into Aquaculture References to the Proposed Tasman District Council Proposed Resource Management Plan*, W42/2001, Judge Kenderdine, at para. 851). *"The TDC is required to safeguard the life supporting capacity of the ecosystem, a direction which in our view imports a precautionary approach to development."*

101. Clearly, the requirement to have regard to safeguards against potential adverse effects does not prescribe use or development in any circumstance. In this particular case, however, the concept of "safeguarding" has to be considered in the context of natural and historic resources on public conservation land administered under the Conservation Act. Where potential adverse effects are irreversible, they have not been safeguarded against. Similarly, where potential adverse effects are likely to be long term, it is not considered that they are safeguarded against in the short or medium term.

102. The safeguards proposed by RDL through operational and 'on the ground' methods include minimising the mine footprint, directly transferring high value ecosystems wherever possible, managing water and mine runoff to prevent adverse effects on downstream catchments, the prevention of acid mine drainage (AMD) issues, rehabilitating the landform via backfilling, re-spreading soils and planting indigenous vegetation cover, undertaking ongoing weed control for the

life of mine and aftercare period and funding an off-site ecosystem management programme in the Orikaka forest.

103. There are also administrative and financial safeguards that can be applied through conditions in an AA. These usually include requirements for insurances, bonds and compensation payments to help ensure that, should a permit holder leave a site and/or refrain from their obligations under an AA, the Crown can undertake required works to fulfil the safeguards put in place. Any AA for the application would include:

- A substantive bond calculated to provide enough funds to effectively "close" and fully rehabilitate the AA area. Detailed bond calculations are driven by AA (and resource consent) conditions and obligations set out in management plans required by the AA. Large coal mines typically require bonds of at least a million dollars, commonly with District and Regional authorities covered by the same bond alongside the Minister of Conservation (on behalf of the Crown).
- Insurances for Public (General) Liability - including Forest and Rural Fires Act cover; Motor Vehicle Third Party; and Statutory Liability Insurance.

104. These administrative safeguards would in effect provide a second layer of assurance for the Ministers and help ensure that the operational and 'on the ground' measures proposed and/or included as AA conditions would be delivered, even if the permit holder failed to do so themselves.

105. As discussed, the 12 ha AA area is one geographical part of a larger mining proposal. However, given the mining permit and administrative land boundaries the 12 ha area must be considered under the appropriate statutory process, in this case an AA under the Act. The current interpretation is that only those effects stemming from the proposed activities on the PCL under application, or occurring on adjacent PCL as a direct result of those activities, are to be considered in the decision making process for an AA. Therefore, for this application only the effects of the activities proposed to be undertaken within the 12 ha AA area and any effects occurring on adjacent PCL, as a direct result of these activities, are relevant. The PCL adjacent to the AA area includes that area of the Mt Rochfort Conservation Area not within the AA area and the Lower Buller Gorge Scenic Reserve.

106. The AA application includes a large body of baseline and supplementary information relating to the overall mine proposal in order to provide appropriate context and appropriate ecological baseline data and context. In order to gain an overall understanding of the project, and to be most efficient in terms of potential RMA and Conservation Act processes, DOC reviewers have looked at the project as a whole, rather than just the AA area by itself or separately between the several distinct land tenure areas.

107. It should be noted that delineating the 12 ha AA area from the overall mine footprint does pose some issues when it comes to defining or 'ring fencing' the potential effects for the activities proposed to be undertaken within the AA area itself. In terms of the conservation values of the land, and potential effects on those values, the delineation is not particularly difficult but does lead to some 'greying' of the detail. For example, exact species population numbers were not extrapolated

for the AA area as the analysis would be more problematic than the benefits of having the data. Where appropriate, however, correlations that are considered 'about right' have been included.

108. For landscape effects, DOC has taken the approach of acknowledging that the 12 ha AA area forms only part of the landscape effects from the western side (i.e. Westport side) of the ridgeline and is assessed accordingly. However, almost all of the landscape effects from the eastern side (lower Buller Gorge side) stem from the AA area that geographically straddles that part of the ridge that is visible from the lower Buller Gorge. As discussed in this report, these effects do impact on the Lower Buller Scenic Reserve and effects on the scenic reserve will need to be taken into account in the overall assessment.

109. The above issues should be noted when reading through the following sections. For the most part, it is considered that the effects are able to be adequately segregated and identified.

110. The following is a summary of conservation values and potential effects for the AA area that was used to determine whether the proposal was likely to have significant effects on conservation values. It does not necessarily reflect the values of the larger proposal as a whole. There is a large body of ecological information in the AA application and generated by DOC experts in their reviews of the proposal. It is not practical to duplicate all of the detail here. The following summary does however cover the key values, effects and issues as it relates to the 12 ha AA area and the relevant matters for decision making in s 61(2) of the Act. Where issues or effects 'cross over' administrative land boundaries, these are described as best as possible without drawing in irrelevant information for the AA area and s 61(2) of the Act.

111. It should be noted that the initial application information and DOC reviews were based on an 86 ha total mine footprint and 10.4 ha AA area. Both of these figures have since been revised and increased based on initial DOC feedback and critique. The increases are mainly related to allowing adequate space for water management infrastructure in and around the mine pits.

112. The up to date figures are a total mine footprint of 116 ha and an AA area of 12 ha. The increase in AA area from 10.4 ha to 12 ha has resulted from small increases around the periphery of the area rather than a wholesale addition of another, previously separate, area. As such, a majority of the initial assessments and reviews are adequate to define the potential effects for the purposes of the AA application. Where specific detail was required to be updated the information has been included as an Addendum to DOC reviewers' initial reports.

Flora

113. Appendix 3 contains a full description of the flora values of the wider Te Kuha site.

114. The AA area forms part of the intact sequence of vegetation that runs from the lower slopes of near Te Kuha up to the ridgeline that leads to Mt Rochfort. The site is noted for its intactness, surprising

lack of exotic weeds, and for being part of an unbroken altitudinal sequence. The vegetation associations within the AA area include:

Table 2: Vegetation associations within the AA area. Area figures from Bramley, 2016

Vegetation type	Area (in hectares)
mountain beech/yellow-silver pine - pink pine forest	9.3 ha
manuka - *Dracophyllum* rockland	0.8 ha
manuka shrubland	0.8 ha
yellow-silver pine - manuka shrubland	0.9 ha
Herbfield	490m^2
bare ground or slips	786m^2

115. RDL's experts and DOC reviewers all note that the wider Te Kuha site, including the AA area, is almost exclusively free from human disturbance and exhibits a high degree of intactness and lack of exotic plant species. Overall, the unmodified and intact nature of the area means the flora values present are of high conservation value.

116. There is one Nationally Vulnerable (threatened with extinction) and two Naturally Uncommon (at risk of extinction) vascular plant species confirmed within the mine footprint. A further four are noted as possible/likely to be present.

117. Surveys undertaken by RDL indicate that Te Kuha is also a significant site for [non-vascular] bryophytes and shows that a number of notable moss and liverwort species occur within the mining permit area, both inside and outside the proposed mine footprint. Five species are either Nationally Vulnerable (threatened with extinction) or Naturally Uncommon (at risk of extinction) and another nine species are notable for their taxonomic peculiarities. A full list of Threatened/At Risk flora is provided in Table 3. The site is also noted for the lack of any adventive bryophytes, acknowledged as an outstanding ecological feature in the application. Bramley (2016) provided the following extended information on bryophytes at the Te Kuha site:

- "Te Kuha has unmodified vegetation types that provide excellent habitat for a number of liverwort and lichen species, including some species with a very restricted distribution. Te Kuha ridge has a very high number of both "Threatened" and "At Risk" bryophytes when compared with the coal measure plateaux to the north (Denniston and Stockton). Twelve species were recorded at Te Kuha compared with 9 at Escarpment Mine and 7 at Mt Augustus. Important features of the habitat for bryophytes probably include high rainfall, poor or very poor soil fertility, high light levels and humid, protected microsites.
- "The main vegetation types sampled for bryophytes within the proposed mine site in 2015 were low-canopy forests with common pink-pine and yellow-silver pine as canopy dominants, and manuka shrublands, sometimes with rockland.
- "Three bryophyte and one lichen species that are classified as "Threatened" were collected during surveys in 2015. Pseudolophocolea denticulata is a "Nationally Critical" liverwort and the site where it occurs is the only known South Island site. Acromastigum verticale and Saccogynidium decurvum are "Nationally Vulnerable" liverworts. Austropeltum glareosum is a "Nationally Endangered" lichen.
- "In addition, there are nine liverwort species that are classified as "At Risk Naturally Uncommon" including Herzogianthus sanguineus, Lepidozia bragginsiana, Lepidolaena

novae-zelandiae, Riccardia nitida, Schistochila pseudociliata, Trichotemnoma corrugatum, Zoopsis bicruris, Z. matawaia, and Z. nitida.

- "The three bryophytes with a "Threatened" conservation status (Pseudolophocolea denticulata, Saccogynidium decurvum, and Acromastigum verticale) were found in forest. Saccogynidium decurvum was also found in manuka shrubland and manuka – Dracophyllum rockland in association with wire-rush and tangle fern. The "Threatened" lichen was on

weathered sandstone. The "Naturally Uncommon" bryophytes were widespread in the sample plots, but occurred most often in manuka shrubland and mountain beech-rata forest."

Table 3: At Risk/ Threatened flora likely present within the AA area

Species name	Vascular/Non Vascular	Threat ranking	Threat classification
Confirmed			
Euphrasia wettsteiniana	Vascular	Threatened with Extinction	Nationally Vulnerable
Dracophyllum densum	Vascular	At Risk of Extinction	In decline
Pseudolophocolea denticulate	Non-vascular	Threatened	Nationally Critical
Saccogynidium decurvum	Non-vascular	Threatened with Extinction	Nationally Vulnerable
Acromastigum verticale	Non-vascular	Threatened with Extinction	Nationally Vulnerable
Austropeltum glareosum	Non-vascular	Threatened with Extinction	Nationally Endangered
Herzogianthus sanguineus	Non-vascular	At Risk of Extinction	Naturally uncommon
Riccardia multicorpora	Non-vascular	At Risk of Extinction	Naturally uncommon
Riccardia nitea	Non-vascular	At Risk of Extinction	Naturally uncommon
Riccardia furtiva	Non-vascular	At Risk of Extinction	Naturally uncommon
Zoopsis bicruris	Non-vascular	At Risk of Extinction	Naturally uncommon
Lepidozia bragginsiana,	Non-vascular	At Risk of Extinction	Naturally uncommon
Lepidolaena novae-zelandiae	Non-vascular	At Risk of Extinction	Naturally uncommon
Zoopsis bicruris	Non-vascular	At Risk of Extinction	Naturally uncommon
Z. nitida	Non-vascular	At Risk of Extinction	Naturally uncommon
Z. matawaia,	Non-vascular	At Risk of Extinction	Naturally uncommon
Trichotemnoma corrugatum	Non-vascular	At Risk of Extinction	Naturally uncommon
Schistochila pseudociliata	Non-vascular	At Risk of Extinction	Naturally uncommon
Possible			
Peraxilla colensoi	Vascular	At Risk of Extinction	In decline
Carex carsei	Vascular	At Risk of Extinction	Naturally uncommon
Carex dallii	Vascular	At Risk of Extinction	Naturally uncommon
Calochilus paludosus	Vascular	At Risk of Extinction	Naturally uncommon

118. The information provided in the application and by DOC experts suggests that the vegetation at Te Kuha and within the AA area is ecologically significant and highly unmodified. The DOC botanist working on the application, Dr. Jane Marshall, noted that her own site visit reinforced the conclusion that the vegetation patterns reveal a complex set of influences, interactions and ecological gradients, and the resultant mosaic provides a diversity of habitats for locally, regionally and nationally important flora and fauna. Both the application and Dr. Marshall emphasize the intact nature of the vegetation. Dr. Marshall makes specific comment that the Mt. William and Mt

Te Kuha areas are distinguished from all other parts of the Brunner coal measure systems because they are the only discrete parts of the systems that are intact with no notable disruption to ecological patterns and processes.

119. ***Applicant comment:*** *RDL disagrees with Dr Marshall's interpretation and conclusion for intact areas of coal measures ecosystem and provided the following comment: "We believe the comment made by Dr Marshall about "Mt William and Te Kuha being the only discrete parts of the Brunner coal measure systems" should be clarified. There are other areas intact which are the Upper Deep Creek area of the Stockton-Denniston plateau, West of Mt Rochfort and west of Conglomerate Stream and the Mt Davy plateau. There are also seventeen sites containing BCM as identified from an assessment undertaken by the Department of Conservation, refer to Ngakawau PNAP report [Overmars et al. 1997]."*

120. The significance of the vegetation at Te Kuha is also recognized by the Protected Natural Areas Programme ("PNAP") that was completed to identify areas for protection ("RAPs") that would help protect the full range of natural heritage within the ecological district (refer Overmars *et al.* 1998). RAP 7 (of the Ngakawau Ecological District) includes the Te Kuha site and surrounds, covering 764 ha. Overmars et al. considered that RAP 7 was "of particular significance because of the absence of recent fire and the degree of intactness" as well as its location at the southern-most extreme of the coal plateau.

Coal Measure Ecosystems

121. A large proportion of the habitat within the AA area is elevated coal measure habitat recognised as nationally and internationally unique and for having very high ecological and conservation value. While the larger mine footprint contains both Paparoa and Brunner coal measures, the habitat within the AA area is primarily Brunner coal measures.

122. Brunner coal measure ecosystems are limited in extent, covering approximately 26,585 ha in total, 10,311 ha of which is located on the Stockton and Denniston Plateaux. Elevated Brunner coal measures (defined by Marshall, 2015, as those occurring above 600 m above sea level) are noted for their highly distinctive vegetation associations and habitat types and from an ecological perspective, are even more noteworthy than Brunner coal measures as a whole. Elevated Brunner coal measures are more restricted in distribution and are limited to the Ngakawau Ecological District. The Te Kuha site (including the AA area) is described as being one of two of the most intact remaining examples of this habitat type, the other area being Mt William. The AA area includes sections of

exposed sandstone pavement and several bluffs, scarps and tors which are, in DOC experts' opinions, Naturally Uncommon Ecosystems.

123. The habitat within the AA area is primarily Brunner coal measures. More specifically the AA area and is comprised of the following vegetation types[1]:

- mountain beech/yellow-silver pine - pink pine forest (c. 9.3 ha)
- yellow-silver pine - manuka shrubland (c. 0.9 ha)
- manuka - Dracophyllum rockland (c. 0.8 ha)
- manuka shrubland (c. 0.8 ha)
- herbfield (490 m2); and
- a small area of bare ground or slips (786 m2).

Effects on Flora and Coal Measure Ecosystems

124. Some of the smaller stature vegetation could be directly transferred as part of rehabilitation efforts which would reduce the impact of mining in the area. The amount that could be appropriate for Vegetation Direct Transfer (VDT) is estimated at 2.7 ha, meaning the remaining 9.3 ha would be stripped and stockpiled together with [weed free] topsoils for use in later rehabilitation. The areas of exposed sandstone pavement, bluffs, scarps and tors could not be retained or moved and would be permanently lost and/or altered despite rehabilitation efforts. The final landform in the AA area is planned to be slightly higher than the existing ridge and would exhibit a more homogenous topography, lacking the assortment of rocky bluffs and tors currently present, that would in turn result in a corresponding reduction in species and habitat diversity.

125. ***Applicant comment:*** *With regard to boulder/rock habitat on the final landform RDL provided the following comment: "It is correct that very steep bluffs and scarps are not included in rehabilitation due to geotechnical constraints of very steep backfill slopes. However, areas with boulder dominant surfaces are planned, and it is not technically difficult to create surfaces with differing coverage of boulders/rocks, or scarps 2 to 3 m height."*

126. With regard to the loss of sandstone pavement, RDL have noted that while DOC considers the permanent loss of sandstone pavement a notable adverse effect they do not feel it is a major issue because the loss would be only a small percentage of the total present within the local Te Kuha coal measures.

127. The long term outcome for habitat within the AA area would by and large be consistent with the outcomes for the larger mine site, i.e. that it would be ecologically different, likely demonstrating an altered mosaic of vegetation associations. The rehabilitated habitat would lack natural complexity and a full cover of native species for many decades. According to DOC ecologists, it would likely take many centuries to establish a similar age profile in vegetation as that present today, and the vegetation is likely to be notably different from an ecological perspective. The soils and substrate on the rehabilitated landform are expected to be freer draining and result in changes in vegetation

[1] Areas based on vegetation assessments undertaken by RDL and quoted in Bramley (2016).

composition and characteristics. The likelihood of weed incursion and an increase in invasive introduced species is essentially unavoidable. The reduction of intactness is of particular concern to DOC reviewers, especially as the site is one of the last remaining discrete areas of unmodified elevated Brunner Coal Measures.

128. ***Applicant comment:*** *RDL provided the following comment on the content of paragraph 130:"...*

'the rehabilitated habitat would lack a natural complexity and full cover of native species for many decades' *The latter part of this statement is incorrect. RDL has committed to rehabilitation methods that have been demonstrated to achieve a 'full' cover of native species within about 10 years of establishment, noting that in some areas the cover of native vegetation is deliberately restricted (using rocks or boulders), to mimic natural ecosystems and underpin heterogeneity of landscape. RDL have planned for a minimum 10 year maintenance and monitoring period following revegetation and expect closure criteria for the site to include specific minimum native cover.*

'it would take many centuries to establish a similar age profile as that present today and the vegetation is likely to be notably different from an ecological perspective' *The establishment of a similar age profile of plants is defined by the current age of the plants at the site; rehabilitation necessarily establishes a younger age profile. However, there is some evidence that direct transfer can diversify the age profile for tolerant species in suitable soils to at least several decades. Further, the salvage and placement of logs and stumps in rehabilitated areas is an accepted method to reduce differences between young and old sites from an ecological perspective.*

'the soils and substrate on the rehabilitated landform are expected to be freer draining' *The rehabilitation plan has specifically included creating areas with impeded drainage and higher moisture status on gentle slopes using a combination of conventional overburden compaction, conventional surface contouring and use of intact soil sods; all have been demonstrated to establish imperfect to poor drainage at other sites over topographic scales from 1 to 100s of metres. However, the majority of the site will both hold less water in the root zone and drain more freely than existing soils, at least in the medium term, compared with baseline soils. The effect of this on plant composition depends on the initial plant species that are planted, and growth rates/longevity.*

'the likelihood of weed incursion and an increase in invasive introduced species is essentially unavoidable' *While we agree the likelihood of incursion of introduced species, including weed and non-native species is unavoidable, we disagree that this is necessarily a widespread or ecologically significant outcome given suitable weed management and rehabilitation practices, and note RDL expect weeds to be specifically considered in closure criteria."*

129. The proposed mining activities would result in a notable area of Brunner Coal Measure habitat being lost from the AA area, along with seepages, bluffs and tors located there. The Brunner Coal Measure habitat supports a range of distinctive vegetation associations and also provides habitat for lizards and invertebrates of ecological and conservation significance. While areas of coal measures

at the Te Kuha site would remain undisturbed by the proposal, the potential loss within the AA area is still considered by DOC experts to be a notable loss of conservation and ecological value.

Naturally Uncommon Ecosystems

130. There is some disagreement whether the exposed sandstone at Te Kuha is a Naturally Uncommon Ecosystem. RDL does not consider this habitat to be 'sandstone erosion pavement' (acknowledged as a Naturally Uncommon Ecosystem) due to its limited size and [too steep] slope angle. However, DOC reviewers have debated this interpretation and suggest that at least some of it would qualify as sandstone erosion pavement and therefore qualify as a Naturally Uncommon Ecosystem.

Fauna

131. Fauna values within the AA area are considered to be largely contiguous with the larger mine site, except for those species restricted to tarn or pakihi habitats which are not present in the AA area.

132. Fauna values at the wider Te Kuha site are considered high due to the presence of:

- At Risk/Threatened invertebrates and invertebrates of scientific interest
- At Risk/Threatened lizard species (particularly West Coast green gecko)
- Several species of At Risk/Threatened birds including great spotted kiwi (Nationally Vulnerable), South Island fernbird (At Risk-Declining) and New Zealand pipit (At Risk-Declining).

133. Fauna of particular conservation interest at Te Kuha are the lizards and invertebrates. The site provides habitat for several species of At Risk/Threatened lizards. Lizards within the AA area include speckled skink *Oligosoma infrapunctatum* (At Risk Declining) and forest gecko *Mokopirirakau granulatus* (At Risk-Declining), West Coast green gecko *Naultinus tuberculatus* (Nationally Vulnerable) and [likely but unconfirmed] common gecko *Woodworthia maculata* and

common skink Clade 4 *Oligosoma polychrome*. The presence of West Coast green gecko, in particular, is significant as the species is limited in extent and ranked as Nationally Vulnerable.

134. The assemblage of indigenous invertebrates found in survey work to date is of notable scientific and conservation interest. Notable species include (See Wildlands (2014) for full descriptions) :

- Forest ringlet butterfly: Dodonidia helmsi (Lepidoptera: Nymphalidae: Satyridae)
- Helm's stag beetle: Geodorcus helmsi (Coleoptera: Lucanidae)
- Large green chafer beetle: Stethaspis species probably suturalis (Coleoptera: Melolonthininae)
- Stick insect: Micrarchus new species (Phasmidea)
- Large spider: Uliodon new species (Arachnida: Zoropsidae)
- Stonefly: Omanuperla bruningi (Plecoptera: Notonemouridae)
- Land snail: Rhytida species (Mollusca)
- Zig-zag moth: Charixena iridoxa (Lepidoptera: Glyphipterigidae)
- Astelia leaf roller: Donacostola notabilis (Lepidoptera: Depressariidae).

135. Mr. Brian Patrick (Wildlands, 2014a) provides a detailed assessment of the invertebrate fauna of the site. The key conclusions are:

- The fauna assemblage clearly reflects a highly natural and remote site. The invertebrates exhibit many of the characteristics of the New Zealand fauna overall in terms of large body size (Uliodon spider), flightlessness in groups that are winged worldwide (Micrarchus stick insect), and bizarre life-histories (zig-zag moth).
- This site and its invertebrate assemblage are typical of ancient New Zealand with elements of the northwestern South Island's endemic species combined with more widespread species.

Sites like this are increasingly rare as developments modify, reduce, and eliminate such habitats.

- Many of the species found are not yet described, nor had their life histories and ecologies studied and understood.
- With so many large-bodied flightless species, the invertebrate fauna assemblage is effectively immobile and would have limited ability to recolonise and re-establish rehabilitated habitat of its own accord.
- The proposed coal mine site at Te Kuha is clearly ecologically significant in terms of its indigenous invertebrate fauna and is important from a biodiversity, biogeographic, conservation and scientific perspective for the following reasons:
    - Biodiversity: invertebrate richness over many unrelated groups exhibiting a range of different life histories and ecological preferences;
    - Biogeography: a suite of species endemic to the northwestern region of the South Island mixed with more widespread species. The mix of species is distinctive in a New Zealand context and probably typical of this region;
    - Conservation: one At Risk-Relict butterfly and a proposed At Risk declining beetle are present here in significant numbers. The site is significant for the conservation of these species being remote, sustainable and with a high degree of naturalness;
    - Scientific: given the number of undescribed species found here in all the recent surveys it is likely that Te Kuha will become the type locality for several species once they are formally described. The type locality, type populations, and type specimens (Holotype and Paratypes) are hugely important in defining a species and therefore in defining a place also. A type specimen stored in a museum, being dead and often deformed, can only provide limited information about a species. The type population at the type locality with all its individual variation, including the identity of the opposite sex, life history, and ecology, tell so much more. The ongoing conservation of the type population is vital for knowing and understanding the species. Strictly speaking, a "species name" can only be confidently associated with the population at the Type Locality, and specimens from other localities need to be compared to that from the Type Locality and an opinion passed on whether they are indeed the same species.

136. ***Applicant comment:*** *RDL does not wholly agree with Mr. Patrick's conclusion regarding the significance for scientific interest. They provided the following comment: "While we agree there is possible scientific value for some species at Te Kuha there is a degree of uncertainty about the site. It should be noted that there are comparatively large amounts of similar habitat nearby, and it is most unlikely that the mine site will be the only location where any of these species occur, even if*

they were short-range endemics (i.e. couldn't move far and were only found in a restricted area and nowhere else)."

Effects on fauna

137. The proposed mining operations in the AA area would remove around 9.3 ha of fauna habitat. The remaining 2.7 ha would be directly transferred in years 3-10 of the mine life and retain much of its ecological integrity, albeit with some short term disruption.

138. In the short term (during mining operations) most fauna within the AA area would be unavoidably and significantly affected. Lizards and less mobile invertebrates not included within areas of VDT would most likely be killed. More mobile species (most birds and winged invertebrates) would be expected to relocate out of harm's way. These migrating individuals would move into adjacent habitat and create increased competition and a decrease in overall fitness in the receiving environment.

139. The immediate loss of habitat and fitness during mining operations would continue until such time as a re-established ecosystem settled in. Birds would likely recolonise the area relatively quickly after vegetation cover re-established, but depending on the long term habitat results the species makeup and diversity may change slightly. There is less certainty around the timeframes and success for invertebrate and lizard recolonisation.

140. Wildlands (2014a) notes that a majority of the large bodied invertebrate species at the site are fundamentally immobile and would have limited ability to recolonise rehabilitated habitat.

141. ***Applicant comment:*** *RDL disagrees with the conclusions made for recolonisation of large bodied invertebrates and provided the following comment: "Wildlands comments that "a majority of the large bodied invertebrate species at the site are fundamentally immobile and would have limited ability to recolonise rehabilitated habitat". However, our proposal includes pest control around the mine site to improve survival and productivity of resident species. This (particularly rat control) could be expected to benefit large bodied invertebrates. Direct transfer of vegetation is also a strategy which protects large bodied invertebrates (within their habitat) to some degree, and pockets of DT vegetation are intended to act as inoculants to allow species to spread from there into rehabilitated areas. Whilst their mobility might be limited, an increase in the numbers surrounding the mine site is intended to compensate for any losses and the recolonisation, whilst slow, is also expected to happen to some degree."*

142. Over a long period of time habitat would re-establish but the final ecosystems and fauna within the AA area would likely be less diverse and demonstrate less complexity in species makeup and specialisation. Given the above, there would be a residual loss of fauna within the AA area that could not be mitigated through on-site rehabilitation.

143. To address these residual effects, RDL is proposing to fund ecosystem management for 4990 ha (including buffers) in the Orikaka forest for a period of 25 years. RDL considers that half of this area is mitigation for those effects that can be mitigated and half is compensation for those effects that cannot be mitigated. DOC does not consider that ecosystem management in a geographically

separate location from the mine site constitutes mitigation and therefore the full 4990 ha ecosystem management is compensation. This distinction is discussed in more detail later in this report.

144. Neither the on-site mitigation nor off-site compensation being proposed by RDL would prima facie mitigate effects for lizards or invertebrates, both of which are notable due to the high conservation value of the species affected.

145. There is little research or evidence to provide certainty that the rehabilitation being proposed would adequately mitigate the adverse effects for lizards. DOC reviewers suggest that while some lizards may return to the rehabilitated site the final result for lizard populations in these ecosystems is unclear. It therefore seems uncertain whether the populations would be of similar or equal conservation value.

146. Mr. Patrick (Wildlands, 2014a) believes that the assemblage of large bodied indigenous invertebrates at the site (and within the AA area) are unlikely to recolonise rehabilitated habitat without direct re-seeding of the population which he in turn feels is for all intents and purposes impossible: "With so many large-bodied flightless species, the invertebrate fauna assemblage is effectively immobile. It 'moves' about the habitable landscape at geological pace, with no ability to recolonise in our timeframes in what we consider to be suitable rehabilitated sites. Each species would need to be reintroduced separately once stable, mature and suitable habitat became available. At present we know very little about what constitutes "suitable habitat" for these specialised species. Prior to any reintroduction, living collections would have to be made and maintained of each species to ensure that a population was available to reintroduce at a later date. Again our understanding of life histories and ecology are far too limited to attempt this."

147. ***Applicant comment:*** *RDL disagrees with Mr. Patrick's conclusions around the potential for large bodied invertebrates to recolonise the final landform and provided the following comment: "Mr Patrick's comment ...that "he in turn feels is for all intents and purposes impossible" is an opinion only and not supported by facts. It is not impossible to relocate individuals (it has been done with Powelliphanta augusta), but it relies to a large extent on DT. We have proposed the maximum amount of DT that is achievable given the particular site constraints, and that DT combined with pest control, is the only realistic strategy. Experience with P. augusta has also shown that the species abundance is typically underestimated in surveys (there are more than you think there are), and individuals do survive the DT process."*

148. RDL's approach includes both on-site mitigation and off-site compensation that would help address the effects of the proposal on indigenous birds. However, there would be residual adverse effects on lizards and invertebrates that could not be mitigated. In the long term, lizards may recolonise the rehabilitated habitat but the timeframes for this are largely unknown and the habitat may not provide the same qualities as pre-disturbance. Expert advice provided to DOC suggests that the

adverse effects on the assemblage of large bodied indigenous invertebrates would, by virtue of the intact nature of the current habitat and specialisation of the species involved, be irreversible.

149. Despite a relatively small geographical area both of the residual effects are considered to be notable potential losses of conservation value.

Aquatic

150. There are no notable streams or headwaters within the AA area itself as it is located toward the very top of the ridge. However, there are likely to be small headwater flows that filter down into the lower catchment. None of the ephemeral ponds within the mine footprint are located within the AA area. Overall, the aquatic values in the area are fairly limited. Koura, an indigenous fauna species, are likely present in the AA area but only in low numbers due to limited aquatic habitat.

151. Due to the lack of aquatic habitat within the AA area, the effects on aquatic values within the AA area are considered relatively small. There would likely be some loss of koura individuals and loss of small headwater flows (and associated aquatic habitat) but the scale would be very small.

152. Activities within the AA area would have a small contribution to the overall dewatering of downstream catchments and associated effects. However, in light of the scale of the contribution from the AA area to these effects they are not considered a notable issue for this AA application. The overall impact on downstream catchments would however be an issue to be addressed in the resource consent application process for the mine as a whole.

153. Initial geochemistry investigations indicate that there is the potential for AMD generation and associated water quality impacts from the mine as a whole. However, the risks are not considered as high at the Te Kuha site when compared to other sites on the Buller coal plateaux such as the Stockton and Escarpment Mines. Water quality issues are discussed later in this report.

Landscape

154. RDL's landscape assessment (BTW, 2014 [Appendix E]) provides excellent visual representations of the Te Kuha proposal and detailed descriptions of the natural environment, landscape context and visual amenity values of the Te Kuha site. The AA area is prominent from a landscape perspective as it sits at the very top of the ridgeline that is part of a predominantly unbroken forest covered mountainous skyline that typifies and distinguishes the West Coast region and Buller District. The site is acknowledged as an integral component of this landscape and for having very high to pristine natural values and very high visual amenity values.

155. DOC's landscape reviewer (Isthmus, 2015) concurs with this assessment and also emphasises several noteworthy biophysical features at the site, particularly the rocky outcrops, sandstone pavement and boulder fields near the top along the ridgeline. The wider landscape is also acknowledged as an important tourist attraction and recreation asset in the Buller District Plan (section 4.9.2) (Isthmus, 2014).

156. Part of the lower Buller Gorge is also held as the Lower Buller Gorge Scenic Reserve under the Reserves Act 1979. This context and the site's ranking in terms of natural and biophysical values

and visual amenity lead to the conclusion that it is undoubtedly significant in terms of landscape values.

Effects on Landscape values

157. The potential impacts of the proposal (as a whole) on landscape values are considered to be high throughout the course of mining and for several decades afterwards until a full vegetative cover is re-established. And by virtue of its geographic location (being at the very top of the ridgeline and visible from the lower Buller Gorge) some of the most significant landscape effects of the proposal as a whole would occur within the AA area. During initial discussions with RDL on landscape issues, DOC officials asked RDL to consider options to either avoid mining the ridgeline itself, or explore methods of accessing the coal resource without disturbing the ridgeline. However, RDL did not believe either of these scenarios is viable from a mine planning perspective.

158. Both RDL's assessment and DOC's review of the information suggests that the landscape effects stemming from the western facing slopes of the mine footprint would, while obviously prominent visually, not necessarily be significant because of the values present and the wider mining context within which it sits. Both landscape reviewers do however agree that the lower Buller Gorge has significant landscape values and any effects on those values would be significant at least in the short term. It is also acknowledged by RDL that effects stemming from the AA area would affect the Lower Buller Gorge Scenic Reserve which abuts the AA area and flanks the northern slopes of the lower Buller Gorge.

159. The eastern portion of the AA area is visible from a section of the lower Buller Gorge. Effects would be created through changes to the topography of the ridgeline via pit walls cuts and batters. RDL's landscape assessment shows the view of the AA Area from a viewpoint within the gorge where the impacts would be greatest. Figures 8 - 12 show the progression of the mine from Year 0 (unmodified) through to the final landform at year 17 and then again at year 50 (visualisations taken from Rough (2016)). The lower Buller Gorge Scenic Reserve includes the forested slopes immediately beneath the mine affected area.

160. Visual impacts would be greatest during the construction and operational phases when disturbance was new and un-rehabilitated, years 1 -16. Impacts would then lessen as the site was rehabilitated and vegetation became re-established. The final landform would alter the topography of the Te Kuha ridgeline and create a more homogenous vista compared to that present today. Both RDL and DOC agree that there would be significant effects on landscape values for the life of mine and at least a decade or so afterward. There seems a slight difference in opinion however on the final long term effect.

161. In summarising the long term landscape effects within the AA area RDL's landscape expert, Rough (2016), concludes:

- "Over a period of about 35 years, as revegetation on stewardship land matures, the contrast between the revegetated and undisturbed areas will lessen and, accordingly, the localised effects of the project on landscape and visual amenity values will also lessen to negligible. In the long term the regional and district-wide values, of which the site is part, will appear

intact and, in essence, will remain as a mountainous backdrop with a contiguous cover of indigenous vegetation."

162. While in the longer term the site would retain its appearance as a mountainous backdrop with a contiguous cover of indigenous vegetation, the vegetation and topography would have been unavoidably altered and become more homogenous. The loss of its currently intact and unmodified naturalness should not be disregarded and would be an unavoidable residual effect of the construction of the mine and altering of the ridgeline and vegetative pathways following rehabilitation.

163. In summary, DOC considers that the proposed mining operations within the AA area would have significant short term landscape effects on the lower Buller Gorge and lower Buller Gorge Scenic Reserve that would reduce over a period of decades. In the long term, after full rehabilitation and revegetation of the site, the effects would diminish considerably but there would remain an unavoidable residual loss of inherent naturalness that should not be disregarded as negligible.

Figure 8: Undisturbed view of the Te Kuha ridgeline from the Buller Gorge

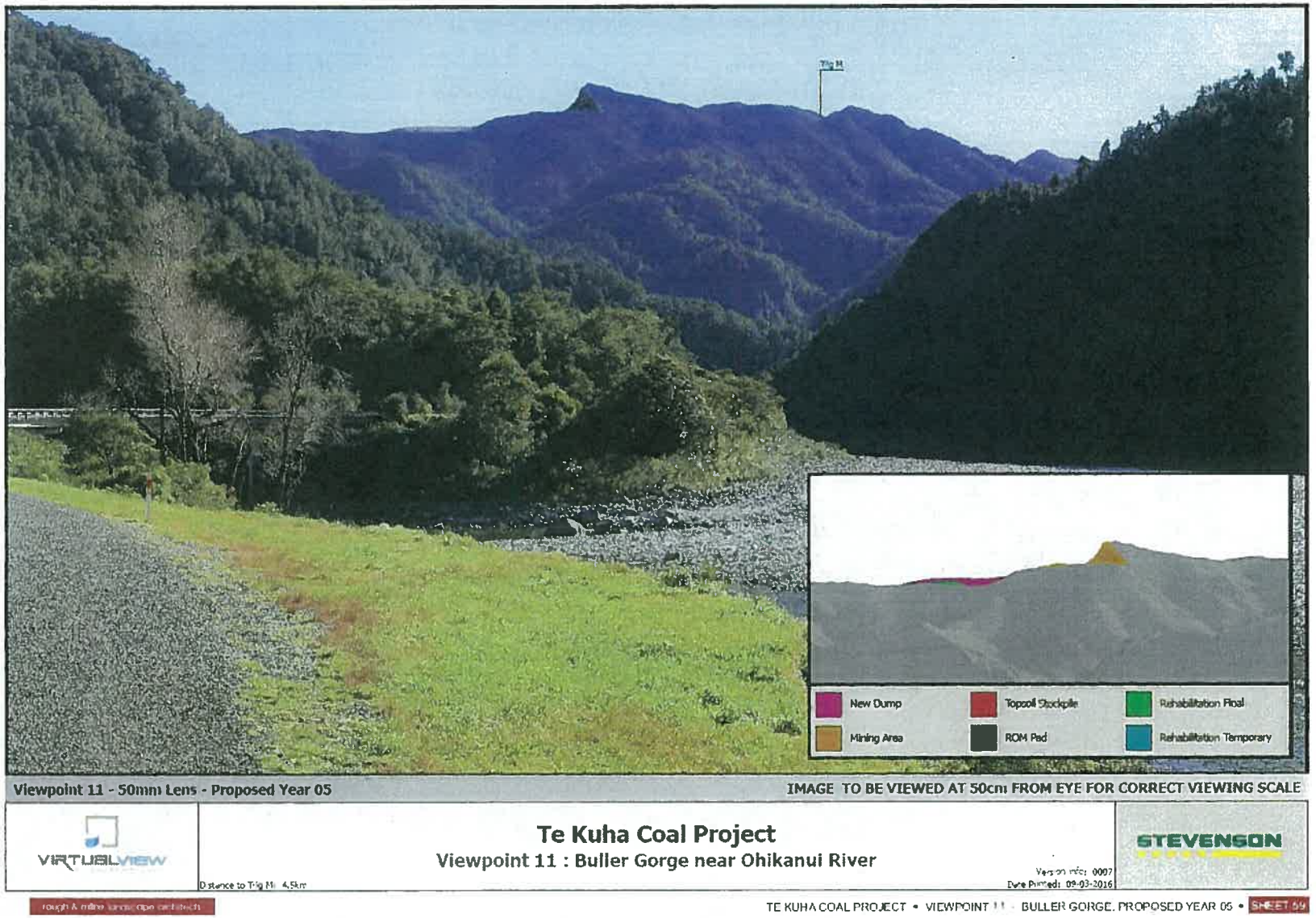

Figure 9: View of the Te Kuha ridgeline during mining

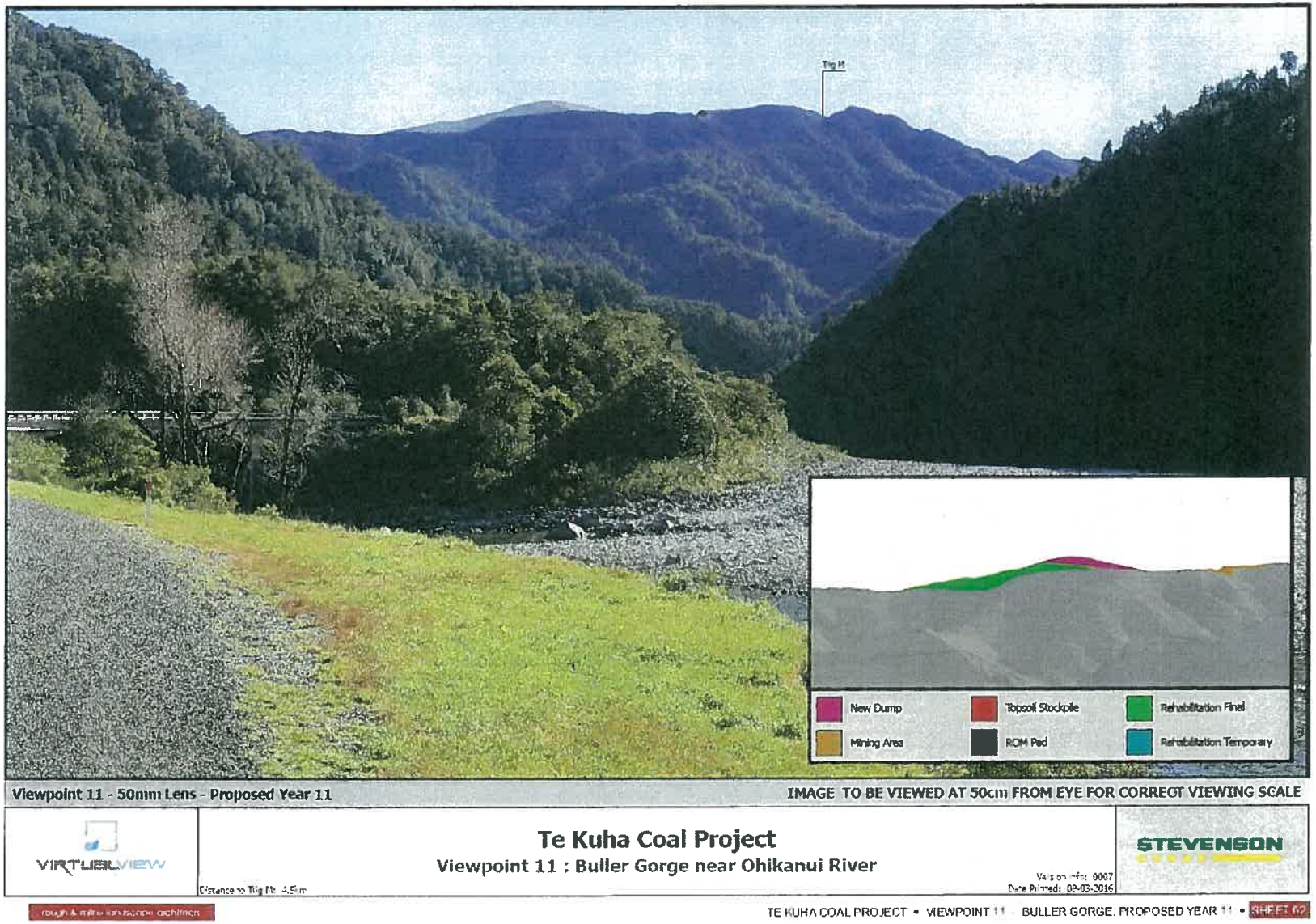

Figure 10: View of the Te Kuha ridgeline during initial backfill

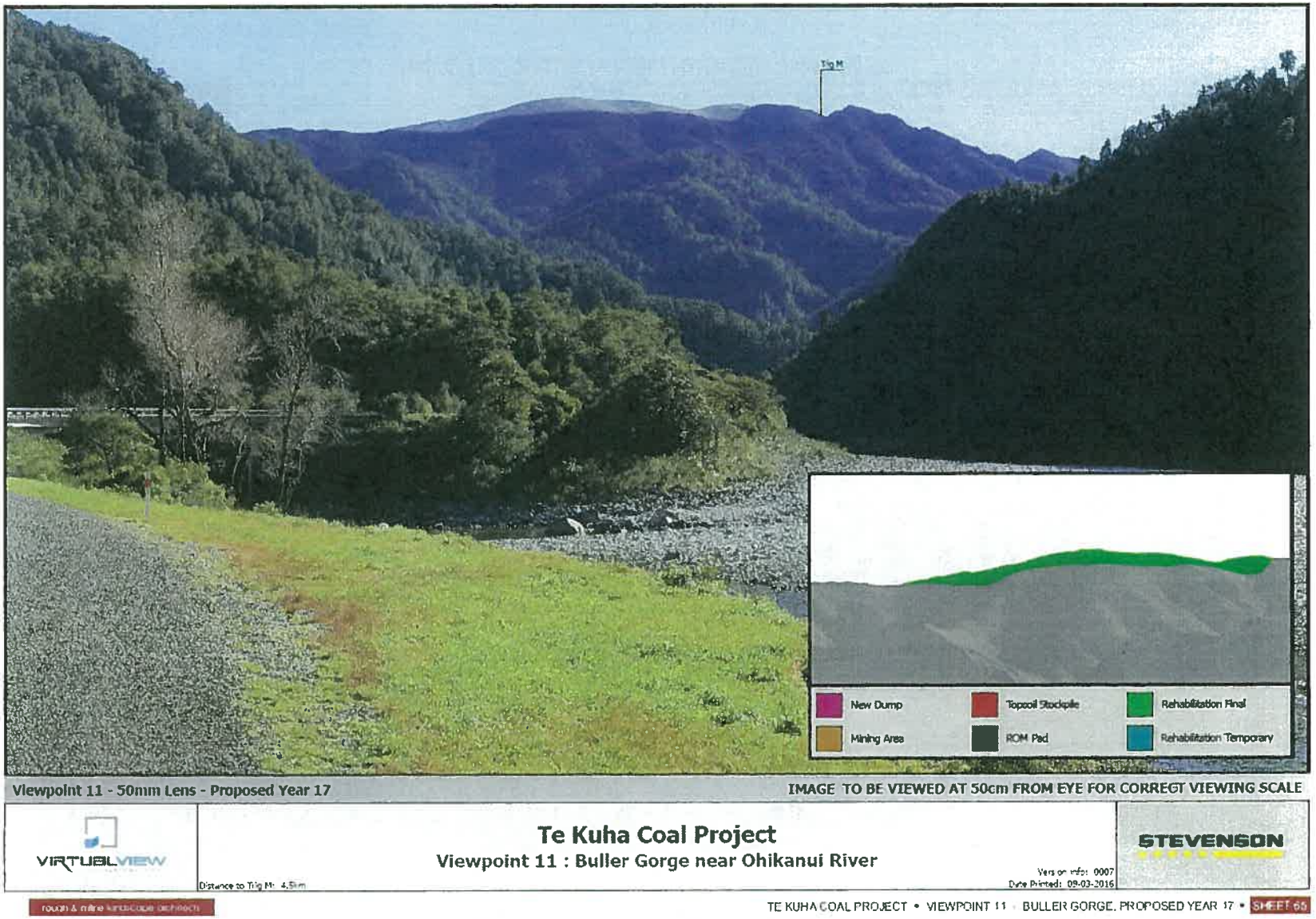

Figure 11: View of the Te Kuha ridgeline during initial rehabilitation

Figure 12: View of the Te Kuha ridgeline after rehabilitation

Historic

164. No historic sites or values were identified in the application. Likewise, local Buller DOC officials are unaware of any historic features or sites within the wider mine proposal site or AA area. Unlike the Stockton and Denniston Plateaux, the Te Kuha area has not been subject to previous mining nor any notable anthropogenic activity.

Cultural

165. The cultural values of the site are described under Treaty of Waitangi considerations.

Water Quality

166. RDL has provided a conceptual water management plan for the mine that provides indicative stormwater volumes, sediment control plans and discharge points and initial geochemical assessments to predict the potential for AMD. Mine influenced water would be managed on site and then discharged between two catchments (Camp Creek and West Creek) to help maintain headwater flows in each of the three streams affected by the mine. RDL intends to reinstate current drainage patterns where possible in the final landform.

167. Initial information indicated that several water management ponds are proposed for the mine. The ponds would have a total storage capacity of approximately 60,000 m3 with additional storage available in the mine pits. The maximum expected storm run-off that may need to be managed is 123,000 m3 so the pits are expected to handle around 63,000 m3. DOC reviewers suggest that larger dams than those proposed may be required to achieve the desired stormwater management. Since the initial application RDL have completed further minewater and stormwater management planning via Golders Associates. Golders indicate that a stormwater buffer capacity of 160,000 m3 would be sufficient for the proposed water management strategy. This capacity would be achieved via both in-pit and ex-pit sumps, which have been incorporated into the latest mine plan.

168. The water management plan identifies erosion and sediment production as issues requiring control. Total suspended solids load is seen as a critical water management issue. Stormwater retention is proposed on site using sumps within the mine pit (140 ML) and one 20 ML sump outside of the pit. This system is designed so that for 99% of the time, all stormwater receives primary and secondary treatment to remove suspended solids before discharging to receiving streams. For 99th percentile or higher rainfall events, primary treated storm water run-off is discharged to receiving streams at time when these will also have high flows. The primary treated stormwater will have settleable solids removed within the sumps and would only retain the fine colloidal fraction (material otherwise requiring secondary treatment to settle).

169. Removal of suspended sediment is proposed using settling ponds and a mechanised sediment removal system. While coal fines should be easily manageable via the use of flocculants, the system is unlikely to remove very fine sediment and a settling period would be required. Further design work and planning for stormwater and sediment control is recommended should the project progress to a detailed design phase. The AA area would contribute to the generation of sediment and mine

influenced water. However, the drainage patterns and water management methods being proposed would direct flows away (downhill) from the AA area and would be handled within the part of the mine footprint within the WWCR.

Acid Mine Drainage (AMD)

170. Geochemical investigations have been undertaken to assess the risks around AMD. Initial data indicates that there is the potential for overburden and coal to produce acid and contaminants of concern such as heavy metals and salts. However, the risks at the Te Kuha site are less than at other sites on the Buller coal plateaux such as the Stockton and Escarpment Mines. They would still need to be carefully managed.

171. Initial geochemistry investigations indicate that there is the potential for AMD generation and associated water quality impacts from the mine as a whole. However, the risks are not considered as high at the Te Kuha site when compared to other sites on the Buller coal plateaux such as the Stockton and Escarpment Mines.

172. DOC reviewer Paul Weber (O'Kane, 2016) has provided a thorough review of the geochemical information available to date. The review indicates that the overburden and extracted coal will produce AMD, heavy metals and, potentially, salts that will need to be carefully managed to ensure water quality is kept to acceptable levels. He feels that, while there are risks present, they could be adequately addressed and avoided through an adaptive management strategy, including a robust, engineered-landform design and development of an AMD management plan. To get to that point, however, he notes that further work will be needed to; firstly, better quantify likely AMD and heavy metal loads (particularly further leachate and basal flow calculations and development of an overburden block model); secondly, identify the most appropriate methods to address the AMD and heavy metals; and thirdly, work out whether a water treatment plant would be required to meet acceptable ecological/water quality limits.

173. It will be up to RDL to satisfy these information gaps and formulate a robust approach and methodology for AMD. The detailed assessments and design work required to do so will take time and the final water treatment prescriptions, if any, will be driven by water quality limits provided for downstream catchments such as Coal Creek. It is also likely that both water quality limits and water management design would be refined and adapted over time as more data and 'on the ground' results are acquired. As such, the overarching AMD and water quality approach will be wrapped up in the refinement of the wider mine proposal. It will also be adaptive and require some flexibility to achieve best results. Final conditions and parameters for water quality and AMD management may not become available until the conclusion of the resource consent processes for the mine proposal as a whole and/or the development of an AMD management plan. Any AA from DOC would ideally align with the same limits and management plan.

Rehabilitation

174. BTW (2014), the application's full ecology report (BTW, 2014, Appendix C) and information provided for the Public Hearing (Simcock, 2016 and Rough, 2016) provide detailed and

comprehensive information on proposed rehabilitation and mitigation strategies for the site and AA area.

175. Because the AA area forms part of the larger mine site as a whole, it is necessary to understand the overall rehabilitation approach being proposed for the mine so that the likely outcomes for the AA area can be best understood.

176. RDL (see Simcock, 2016) identifies three priority outcomes that would guide rehabilitation measures undertaken at the mine site:

1. Achieve a high certainty of low visual impact (i.e., high landscape naturalness). The main rehabilitation principles and methods to achieve this are as follows.

(a) Create ex-pit and backfilled landforms that abut natural ground levels, return most areas to approximately-natural overall landforms within the constraint of maximum 27 degrees slope, and generally avoid linear features.

(b) Complement land surface colours through plant species selection (i.e. olive green mānuka dominant not yellow toetoe) and strategic placement of rock mulches and weathered sandstone boulders (greys).

(c) Complement the natural mosaic of colour and height by using a variety of landform slope and growing conditions that result in uneven vegetation heights (drainage, exposure, rooting depth, fertility etc.).

(d) Rapidly create stable, erosion–resistant surfaces that have a favourable soil cover. This is needed to protect surface waterways and prevent loss of soils that underpin plant growth.

2. Deliver the following ecological objectives:

(a) Footprint minimisation, e.g. by placing mine infrastructure on backfill and maximising buffering of adjacent communities;

(b) Establishing self-sustaining native vegetation that can develop into a mosaic of vegetation associations resistant to pest plants, pest animals, drought and fire;

(c) Conserving genetic resources, particularly those of threatened or at-risk species, within the footprint (largely through direct transfer) and outside the footprint (through effective buffering).

177. The key strategies for achieving the ecological objectives are to:

- minimise the disturbance footprint;
- undertake VDT of as much of the highest value ecosystems as possible;
- establish a stable and erosion resistant surface as quickly as possible;
- progressively rehabilitate (via re-spreading of top soil/stockpiled material and planting) the remaining affected areas; and
- control invasive weeds where possible.

178. All operating mines exhibit a tension between viable extraction rates/operation costs and rehabilitation efforts/available space to place, handle and store rehabilitation material. Rehabilitation at the Te Kuha mine is planned to occur each year throughout the life of mine, essentially following the progression of pit construction. This initial effort would aid sediment and erosion control during the life of mine. However, approximately 40 percent of these progressively rehabilitated areas would need to be re-handled toward the end of mining to allow material to be recovered to fill the final pit void and create the final landform. Therefore, a significant proportion of final rehabilitation would not occur until after the backfilling of the pits is completed (i.e. in years 15-16 of the mine plan). For a majority of the life of the mine, the AA area would be open pit(s) and the final rehabilitated surfaces would not be achieved and available until nearing the end of mine life when final backfilling of the pits occurred.

179. The application includes an assessment of the vegetation at the site including an assessment of 'high value ecosystems' that would benefit from VDT, a process where pieces of habitat (including the plants and topsoil layer) are uplifted using specialised machinery and transferred (usually on the back of a truck) to a pre-prepared rehabilitation surface and re-placed. The high value ecosystems identified for VDT include: herb fields, yellow-silver pine and mānuka shrublands and some rock field areas (BTW, 2014 [Appendix C]).

180. Some of the habitat within the AA area would be appropriate for VDT, mostly low stature herbfield, mānuka shrublands and rock field areas. RDL estimates 2.7 ha of the 12 ha AA area could be appropriate for VDT. This is slightly above the 10-20 percent proportion estimated for the mine as a whole. However, it is very difficult to know exactly how much could be achieved, with the exact extent likely to be unknown with any confidence until 'on the ground' operations begin. Opportunities would be driven by variations in existing topography and vegetation and mine scheduling. In the opinion of DOC's reviewers, even 10-20 percent may be difficult to achieve due to operational factors such as suitable habitat, recovery rates and relocation scheduling. Further careful planning and investigation would be required to integrate VDT source areas with mine scheduling in order to give more confidence to these estimates. The same applies for habitat within the AA area.

181. In terms of rehabilitation outcomes, the application concludes that in the medium to long term, the vegetation that develops on the final landform is likely to be typical of existing vegetation [in the area] with better-drainage and deeper rooting zones. However, they note that overall it is likely to be somewhat different in species matter and water-holding attributes that support a majority of the 'high value ecosystems' would take a very long time to restore, potentially hundreds of years, if not subject to VDT. The application also highlights that edge effects would result in impacts on habitat at the edge of the mine and along the road corridor. All of the above can be applied to the rehabilitation of the AA area.

182. RDL has made it clear that it is open to ongoing discussion and consultation with DOC (and BDC/WCRC) on rehabilitation effort and best practice approaches for the project. It is accepted that final mitigation and rehabilitation planning would not be able to be fully developed until final 'on the

ground' mine planning was undertaken and even then would be continually refined and improved as mine operations proceed. However, the information provided by RDL to date allows a reasonable estimate of potential outcomes to be made.

183. The application indicates that a range of management plans would be produced to guide the construction and operation of the mine and formalise mitigation measures. Work toward completing these plans is also linked with the project's resource consent application and processes and is unlikely to be finalised until after those processes are completed, or near completion. Any AA developed for the proposal would require such plans to be in place and approved before the commencement of mining operations. In this way the experts would have the opportunity to review the plans and ensure best practices are being included to minimise the loss of conservation values if the AA were granted. Likewise, water quality and ecological closure conditions have not yet been developed due to the timing of resource consent processes. Any AA would need to incorporate such conditions and, ideally, align with resource consent conditions where practical to aid consistency and efficiencies with regulator monitoring and compliance.

Conclusion for potential safeguards

184. The safeguards being proposed by RDL would safeguard some of the values within the AA area but not others. Values that could be safeguarded include:

- Freshwater values, excepting a small loss of freshwater invertebrate habitat and koura individuals;
- More mobile fauna species including most indigenous birds and mobile invertebrates;
- Vegetation/habitat that was directly transferred (there would likely be some short term reduction in quality, but over time this is expected to recover);

185. Values that could not be safeguarded include:

- Geodiversity and landscape values, notably scarps, tors, areas of sandstone pavement and natural character of the ridgeline (leading to visual impacts on the lower Buller Gorge and Lower Buller Gorge Scenic Reserve) ;
- A majority of the coal measure habitat present, including its distinctive subsoils, surface geology and assemblage of indigenous plants;
- A suite of At Risk/Threatened non-vascular plants (bryophytes); and
- At Risk/Threatened and/or distinctive fauna such as a suite of large bodied flightless invertebrates and West Coast green gecko;

186. Both the above lists are for the AA area, and not for the wider mine site as a whole.

Section 61(2)(da)

187. The apportionment of economic benefits between the 12 ha AA area and remainder of the mine footprint is difficult. A direct correlation of total mine footprint vs. the AA area would conclude that the AA area would contribute an equivalent of 10.3% of the total economic benefits of the project. However, this approach is not necessarily robust or accurate. For example, the extraction of the coal resource may be hindered by more than 10.3% by excluding the AA area from the mine plan. Excluding it would disproportionately affect pit size and depth, and increase the amount of benching and stability works required, leading to a disproportionately adverse effect on coal extraction. Moreover, RDL has indicated that the project would cease to be economically viable if access to the 12 ha area be declined, in which case none of the economic benefits would be realised. It would also seem inappropriate to consider all of the economic benefits of the proposed 116 ha mine for the purposes of the AA application, just as it is not appropriate that adverse ecological effects for the whole project are not considered.

188. Section 61(2)(da) asks the decision makers to consider "the direct net economic and other benefits of the proposed activity in relation to which the access arrangement is sought." The inclusion of "and other benefits" invites a reasonably wide view on the potential benefits of the activity. The inclusion of "direct net" necessitates a weighing of both the advantages and disadvantages in order to come to a net result. Therefore a fairly broad view has been taken on the direct net economic and other benefits and it is accepted that social and community aspects should be included where appropriate and considered in the overall analysis.

189. With regard to "the proposed activity in relation to which the access arrangement is sought", the proposed activity in this case is the mining operations within the 12 ha AA area. The AA area is only 12 ha of the 116 ha mine footprint and allocating the benefits of mining to just the AA area is challenging. A direct correlation based on land area is considered too simplistic and there may not be a reliable way of apportioning benefits with accuracy. Moreover, it does not seem appropriate to suggest that all of the benefits be assigned to the AA area, just as the adverse ecological effects for the whole mine are not assigned to the AA area.

190. RDL and DOC's economic reviewer, Ian Dickson, were asked whether there was any robust way of assigning proportional benefits to the AA area and other areas separately. In both cases the economic experts felt that it would be extremely difficult to do this with any rigor or certainty.

191. It is clear, however, that the AA area is an integral part of the mine plan and for the project to deliver the potential economic benefits. A good portion of the highest value coal resource would not be accessible via open cast methods if the AA area were removed from the mine plan. RDL have indicated that without the 12 ha AA area the project as a whole would not be viable. So while not all

the benefits would be derived from the AA area, the AA area is vital for any of the economic benefits to be realised.

192. The direct net economic and other benefits discussed below therefore need to be carefully considered and the decision makers will need to make a conscious assessment of weighting and how much of the benefit should be attributed to the AA area.

Information and reviews

193. RDL provided an economic impact assessment (Copeland, 2016) based on the most up-to- date mine plan and the latest coal market prices and forecasts. This focused solely on the economic impacts of the proposed project at a regional and local level and did not present analysis of the net economic benefits of the proposed project. It did not present a business case from which the key assumptions were drawn and from which assessments of commercial viability and robustness to commercial risk would be available.

194. RDL's assessment was peer reviewed for DOC by Ian Dickson and Associates (Dickson, 2016). This review also provided a commercial feasibility assessment based on the information in Copeland (2016) and points of clarification sourced from RDL. Dickson reported that the

applicant's assessment contained enough information to discern commercial viability and net economic benefit, at least at a high level.

195. The economics information and reviews were subsequently reviewed by Ministry of Business, Innovation and Employment (MBIE) officials who have provided the following summary:

Project Economics

196. The Te Kuha mine will target a coal resource of 4.2 million tonnes to be mined over 16 years. Following the construction phase, the mine is expected to produce around 4 million tonnes of coal over its estimated 16-year mine life – i.e. an average of 250,000 tonnes per annum.

197. The mine design is at concept level only, based on limited exploration data. There are risks of resource quantity and coal quality definition. The latter affects selling price.

198. The applicant uses the coal prices in Table 2 to value the coal produced at around NZ$900m or NZ$65 million per annum FOB (freight on board) Lyttelton. Project costs are summarised by the applicant in Table 4.

199. The applicant has not supplied a project economics model, but has calculated an NPV for the project of $38m.

Table 4: Coal prices assumed by Rangitira Developments Ltd

Year	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Price US$	102	112	123	148	200	210	220	225	225	225	225	225	225	225	225	225

Table 5: Summary of project costs which include coal handling, freight and port charges.

	Personnel	Wages	Annual expenditure
Construction Phase	30 FTE	$2 million	$40 million
Operation Phase	58 FTE	Wages $5.8 million per annum	$28 million per annum

Regional and local economic benefits

200. Local and regional communities on the West Coast are suffering an economic downturn (employment, business profitability and survival, school roll numbers, social and community services) that is mostly driven by the downturn in the mining sector. About 1000 mining jobs have been lost on the West Coast since 2010. In 2013 there were 1160 mining jobs in the Buller District. That has since fallen by 37.9 percent, but mining still accounts for 16.7 percent of jobs in the district.

There was also a 20.8 percent fall in tourism jobs in the Buller District between 2007 and 2015. Mining currently employs twice as many people as tourism in the Buller District. Overall employment in the Buller District fell by 13.9 percent in the three years 2012-15, compared with 6 percent employment growth in New Zealand as a whole.

201. The Te Kuha project would bring direct local and regional economic benefits, as well as indirect benefits arising from the supply of goods and services to mine workers and to those engaged in supplying goods and services to the site. For example, there would be additional jobs and incomes for retail employees as a consequence of the additional expenditure by mine employees living within Buller and elsewhere on the West Coast.

202. The direct and indirect benefits for the Buller District economy over the 12-month construction period are estimated by the applicant to be:

- Increased expenditure of $24.6 million
- 56 additional jobs
- $2.9 million in additional wages and salaries. During the operational phase the direct and indirect benefits of the project for the Buller District, during its 16-year operation, are estimated by the applicant to be:
    - Increased expenditure of $7.9 million per annum
    - 108 additional FTE jobs
    - $8.9 million per annum in additional wages and salaries.

203. Prior to the mining operation commencing there would be a 12-month mine construction phase. This would involve the employment of an estimated 30 full time equivalent (FTE) employees on site and in Westport, with wages and salaries of $2 million. The construction workforce is expected to be largely domiciled within the Buller District during this 12 month construction period. Construction expenditure estimated is at $40 million. Of this, around 50 percent ($20 million) would be spent with local Buller District businesses supplying goods and services to the project and a further 33 percent ($13 million) would be spent with businesses elsewhere in New Zealand. The mining operation is expected to provide employment on site or in Westport for 58 FTE staff on a 5 day working week basis. Wages and salaries for these staff are estimated at $5.8 million per annum. Other expenditure during the project's operation is estimated at $28 million per annum, with 46 percent ($13 million per annum) spent with Buller District businesses and a further 22 percent ($6 million per annum) spent elsewhere on the West Coast.

204. Dickson reviewed the economic impacts of the project on the economies of the Buller District and the West Coast Region and summarised them in Table 6. The review concluded that the Te Kuha Mine Project would undoubtedly provide a stimulus to the Buller District and West Coast economies.

Table 6: Direct and indirect economic impacts on the Buller District and West Coast Region economies during construction

and operations.

Item	Buller District		West Coast Region	
	Construction	Operation	Construction	Operation
Increased expenditure ($ million)	$24.6	$7.9 per annum	$26.8	$11.6 per annum
Additional employment (FTE)	56	108	61	118
Additional wages & salaries ($ million)	$2.9	$8.9 per annum	$3.1	$8.9 per annum

Commercial viability and risk

Evaluation principles

205. The Dickson assessment uses a broad interpretation of 61(2)(da) of the Crown Minerals Act to apply academic economic principles to assess commercial viability and risk. Dickson states that 'Direct net economic ... benefits' and 'efficient use ... of ... resources' carries the connotation of Net Economic Benefit Analysis. This has its foundation in the academic field of analytical welfare economics and

concerns itself with whether a project is the best use of scarce resources. There are several applicable tests to determine the direct net economic benefits:

- Viability. Are the financial and technical resources available, or likely to become available, to undertake the project?
- Cost effectiveness. This test is usually applied when the benefits cannot be reliably translated into monetary terms, or when there is a clear goal for the desired level of effect.
- Net Present Value. The NPV test encompasses the money values of all benefits and costs during the project's life.

206. In the review Dickson states that the legislation requires three perspectives on economic effects to be assessed (this is an interpretation of the Crown Minerals Act, not a requirement):

- Viability and risk: The project must meet a test of commercial viability as a necessary condition for the economic effects to be delivered.
- Economic efficiency: Net economic benefit analysis is the appropriate technique to measure efficiency of resource use.
- Economic impacts: Economic impact analysis is concerned with employment, incomes or other measures of economic activity within a geographic area that is associated with, or caused by, a project. There are direct and indirect elements to an economic impact analysis.

207. In the absence of a project economic model from the applicant, Dickson constructed a "shadow financial model" to estimate the enterprise value of the project using the following assumptions:

- Costs and revenues are converted to nominal ($ of the day) using the following price level adjustments:
- General price inflation: 2% per annum.
- Labour cost inflation: 2.5% per annum.
- Construction costs: 3.8% per annum 2017-19 and thereafter at inflation plus 1 percentage point.
- Reinstatement bond of $4.4 million refundable in 2035.
- Company tax rate: 28%.
- Weighted average costs of capital (WACC): 10.2% in nominal post-tax terms.

208. Using the applicant's coal prices, Dickson calculated an enterprise value of the project as $116 million (a ±2 percentage point variation in the discount rate alters the value of the project by $15 million and -$13 million respectively).

209. Using more conservative coal prices of US $133 per tonne, Dickson calculated the enterprise value of the project of $28.8 million (a ±2 percentage point variation in the discount rate alters the value of the project by $5.6 million and -$5.2 million respectively).

210. To calculate net present value (NPV), the following adjustments are made to the shadow financial model:

- Taxation, royalties and the reinstatement bond are excluded since they all represent transfers of resources.
- Inflation is excluded.
- A "shadow price" of greenhouse gas emission is included as a resource cost. This is calculated at 0.385 tonne CO2 equivalent per tonne of coal. It is valued at NZ$24 per tonne CO2 equivalent in 2018 rising at 3 percent per annum in real terms.
- The marginal rate of social time preference used to discount future values to a present value amount is 7 percent pre-tax in real terms.

211. Using the applicant's coal prices and the "shadow model" assumptions, Dickson calculated the NPV of the project as $140 million (in present value 2016$ terms).

212. Using a more conservative coal price of US $133 per tonne and the "shadow model" assumptions, Dickson calculated the NPV of the project as $28.8 million. Dickson notes that he used domestic coal prices instead of export coal prices in his assessment, with the former significantly lower than the latter, reflecting the relative values of thermal coal and coking coal for steel-making.

213. The "shadow price" of greenhouse gas emissions used by Dickson in his review was considered too high by MBIE staff because the coal from the Te Kuha project is assumed for export and is therefore exempt from the consumption emissions costs as per Section 11 of Climate Change (Stationary Energy and Industrial Process) Regulations 2009. Therefore only fugitive emissions apply. MBIE officials therefore consider that Dickson overvalued carbon emissions costs by an undiscounted cost of $34.8 million over the life of the project. A further review by Dickson using the assumption that

the coal from Te Kuha is fully exported results in a $10 million increase in the estimated NPV of the project to $39 million.

Commercial viability

214. The project is commercially viable at either coal price assumptions. Dickson found that the project is moderately resilient to a plausible range of commercial risks.

215. Dickson considered, however, that the project is poorly placed to weather a "perfect storm" of concatenated specific risks comprising:

- A 35 percent construction costs over run.
- Coal production ramps up in years 1, 2 and 3 at 10 percent, 35 percent and 45 percent, respectively, of full production with no reduction in operating costs.
- Production costs over run by 10 percent on average.
- A 10 percent premium on superior grade coal is achieved.

216. Under this scenario the project has an estimate negative enterprise value of $48 million, equivalent to a 43 percent chance of failure. The applicant strenuously rejected this scenario as being plausible over a project life of 16 years, and stated that if such circumstances did arise it had the means to make operational changes and ride it out. MBIE officials consider that applying the corrected carbon emissions cost noted above, and corrected coal prices, would significantly reduce Dickson's "perfect storm" negative enterprise value risk.

Coal prices

217. Coal prices are critical to the viability of the project but are not predictable. The coal prices anticipated by the applicant are higher (over US$200 for most of the project life) than the US$150 currently being used for financial modelling of other Buller coal export projects, but the US$150 is for semi-soft coking coal. Te Kuha coal can be expected to fetch higher prices because of its blending properties (see explanation below).

218. No downturn in coal prices is anticipated by the applicant's financial model. Coking coal prices have been far more volatile than the applicant has assumed, but volatility is difficult to model. It is likely that coal prices at times will fall below the prices assumed by the applicant from 2021, but it is equally likely that they will be above this at times. Coal prices in early 2017 reached over US$300.

219. Dickson used an average Free On Board coal price received for the project of US$133 per tonne over the entire production period. This is conservative but not unreasonably so.

Technical and financial capability of the applicant

220. Section 61(2)(e) of the Act allows Ministers to consider any other relevant matters. The Dickson review does not consider the technical and financial resources of the applicant, which is one of the

principles of the Act and one of the viability tests applicable to determination of direct net economic benefits.

221. The project will be operated by Stevenson Mining Limited, part of the Stevenson Group which is one of New Zealand's largest privately-owned companies. MBIE note that Stevenson Mining has had almost 70 years of experience in opencast coal mining in New Zealand, including operating some of the country largest coal mines. It is assumed therefore that the company is experienced and capable of costing project proposals accurately and understand the technical risks involved. The proposed Te Kuha mine is quite small in comparison to some of the Stevenson Group's projects. The financial arrangements between Stevenson Group and its joint venture with the permit owner are unknown.

Other benefits

The importance of Te Kuha as a blending coal

222. The quality of coal within the Buller coalfield is highly variable. Key coal quality variables include ash and sulphur contents and swelling properties. These variables affect the industrial specifications of mined coal and therefore its value. Hard coking coal attracts the highest price, with the lower quality semi-hard and semi-soft coking coals attracting progressively lower prices.

223. Export coal is sold with set limits on the key coal quality variables. If these limits are exceeded, consignments may be heavily penalised (in the case of exports to China, even prevented from import). Coal quality variables are controlled by blending coals with low key variables with coals with higher key variables so that the average for the whole consignment is within the specified limits.

224. The best coal deposits have mostly been mined and the poorer-quality coals need the remaining high quality resources to blend up to export specifications. The entire Buller resource is devalued unless there is access to enough high quality coals to blend with and lift the value of the poorer quality

coals. At a certain price point, mining for export on the Buller Plateau would become uneconomic unless resource access can be optimised.

225. Te Kuha coals have properties that lift the value of lower-value coals elsewhere on the coalfield. The Te Kuha deposit was estimated by Solid Energy in 2017 to add $68m to other Buller resources by blending.

Return to the Crown from Royalties

226. On current estimates by the applicant, the project is expected to pay royalties of around $0.5 million per annum to the Crown each year during the mine's 16-year operating life. Total royalty payments over the life of the project are estimated to be about $9 million.

Other general economic benefits

- Other general economic benefits include:
- Helping sustain the financial viability of KiwiRail's Midland Line for freight and passenger services to and from the West Coast.
- Government revenue through company, employee and supplier taxation.
- New Zealand export revenue.

Community benefits

227. The applicant has stated that it recognises that it has a responsibility to the communities in which it operates, and will bring to the Buller District an additional major corporate to assist in the support of local infrastructure and activities which generate greater social, cultural, educational, environmental and economic benefits. The applicant has proposed funding for the restoration of a mining heritage site at Charming Creek. The applicant also expects to "contribute to the "social fabric" of the Buller District community via staff and their families belonging to service clubs, sports clubs and other voluntary organizations."

228. **Applicant comment:** *RDL do not agree with some of the conclusions made by DOC reviewer Ian Dickson (Dickson, 2016), and given the importance of the economic effects of the project, asked that their view is made clear: "We do not support Dickson's comments "that we are being a little optimistic in its coal price forecasts" and recent trends do not support his comments either. While there has been a downturn in recent years in the coal price, our pricing forecast does reflect this in the initial years, coal prices have increased 88% in the last 16 months (from USD$85 to USD$160). The statement that Dickson's calculations could mean "the project is borderline" if certain events happen or a "perfect storm" as referred to is not supported by facts. If in the unlikely event these "perfect storm" factors did ever eventuate a storm never lasts 16 years and we would take appropriate operational steps to ride the storm out. As a private company we would not undertake this project if it did not make financial sense and in our company and experts view this Te*

Kuha project is commercially feasible and will add significant economic benefit to the Buller and West Coast District communities."

Intangible effects, community health, the tourism industry and "Brand NZ"

229. As noted above, DOC considers that the assessment of net effects should account for both potential advantages and disadvantages. As such, the potential adverse effects of the proposal on factors usually excluded from standard economic assessments, i.e. externalities and intangibles that cannot necessarily be [accurately] quantified in monetary terms, were explored. Topics of initial interest were the potential effect of a highly visible coal mine on tourism, the potential impacts of approving a new coal mine in a largely pristine landscape on New Zealand 'clean green' brand, the wider health issues of coal mining and its cost for the health system and the impacts of coal extraction and use (i.e. carbon emissions) on climate change and its wider economic cost.

230. Initial consultation and discussion indicated that the scale of the application, being only 12 ha of habitat and relatively small volume of coal production meant that calculating the contribution to health issues and associated costs would be challenging and that the effects would be too small to be of tangible benefit in the decision making process for this individual application. Moreover, the wider cost of climate change to New Zealand's economy and communities is not appropriate to be considered because it is directly addressed under the Government's wider public policy umbrella via the Climate Change Response Act 2002 and the New Zealand Emissions Trading Scheme (NZ-ETS).

231. It was a similar issue of scale when considering the potential effects of the AA area on tourism and New Zealand's wider international brand and reputation. For the purposes of this application, it is recommended that decision-makers acknowledge that the application is unlikely to have a tangible effect on tourism of its own accord.

Section 61(2)(db)

232. RDL's application was considered to be significant by the Minister of Conservation by virtue of section 61C(2)and section (1AAB) of the Act. The application was therefore publicly notified by DOC in accordance with s49 of the Conservation Act, seeking written submissions. A public hearing was also held to provide submitters an opportunity to speak to their submission.

233. The Notification Report summarises the notification process and public submissions is attached as Appendix 1.

234. The Notification Report made several recommendations regarding which issues raised by submitters may be relevant for section 61(2) matters and where further information may be required to assess those matters. The Notification Report did not make a recommendation as to whether the application should be approved or declined. The recommendations and key issues noted in the Notification Report have been addressed and/or incorporated into this report and included in the analysis of s61(2) matters where appropriate.

Section 61(2)(e)

235. RDL is proposing to fund two projects to help address the residual adverse effects of the application; ecosystem management in the Orikaka forest and a mining heritage project at Charming Creek.

Ecosystem management

236. To help address the residual effects of the application on ecological values RDL is proposing to fund ecosystem management of approximately 4990 ha in the Orikaka forest for a period of 25 years. RDL is proposing that half of this area is mitigation for those effects that can be mitigated and half is to compensate for those effects that cannot be mitigated. DOC, however, considers that this cannot be classified as mitigation and that the total package is a form of environmental compensation that will have a positive environmental effect. The reasoning for this distinction is based on the distinction made in the High Court decision Royal Forest And Bird Protection Society Of New Zealand Incorporated V Buller District Council And West Coast Regional Council & Anor [2013] NZHC 1346 [7 June 2013], para 74 "...that offsets best operate at the ecosystem level. (This is not to say they cannot be wider.) They are not mitigating, in that they do not address effects at the point of impact, they are better viewed as a positive environmental effect to be taken into account..."

237. While directly referring to offsets, the definition of what constitutes mitigation, i.e. it needs to be "at the point of impact", is relevant to the Orikaka context. The Orikaka proposal is not at the point of impact (the AA Area) and is therefore not mitigation. It is better defined as a form of environmental compensation. This distinction does not necessarily detract from the conservation benefits of the Orikaka proposal (see description below), but merely places it in the compensation basket for the purposes of section 61(2).

238. The Orikaka Ecological Management Unit (EMU) has several notable features from an ecological/conservation perspective. It is ranked 565 of 900 EMUs nationally by DOC. However, active management of the EMU has not yet been implemented due to the limitations of DOC's overall funding pool.

239. Bramley (2016) describes the intent and size of what RDL considers the mitigation portion as follows:

- "...2,500 ha of ecosystem management [within the Orikaka River catchment] is sufficient to mitigate those effects that are able to be mitigated. The purpose of this management is to improve productivity and survival of individuals outside the mine site sufficient to replace the individuals affected by the mining activities. I arrived at this figure from considering the number of individuals of particular fauna species that would be affected during the life of the mine. This varied from a few individuals (for roroa) to perhaps a few hundred (for fernbirds). Using previously published estimates of home range size and productivity (both with and without predator control) I estimated the number of pairs, and from that the approximate area which would require management to generate sufficient replacement individuals. In addition, areas of management require sufficient scale to be effective, which can include a "buffer" area

around a core area of management. The buffer is subject to reinvasion at a higher rate than the "core" area because management in the buffer area removes pests and weeds before they reach the core area. In other words, the management area needs to be bigger than the area required to generate sufficient replacements in order to ensure that the target is met. Depending on the size and shape of the management area, a buffer width in the order of hundreds of metres is usually appropriate."

240. Bramley (2016) describes the intent and size of what RDL consider the compensation portion as follows:

- "There are some values which would be affected by the overall proposal which cannot be fully mitigated by the measures I have outlined in paragraph 4.2. This means that there would be, even after appropriate mitigation and minimisation measures are taken, an overall loss in the ecological values of ecological intactness, connectivity and coal measures vegetation.
- "As compensation for these residual effects of the project overall, I have recommended to Stevenson Mining that they propose a further 2,500 ha of ecosystem management in addition to the area I have recommended be managed for mitigation. This equates to a total of 5,000 ha of ecosystem management proposed as an overall ecological compensation and mitigation 'package' for the proposal as a whole."

241. DOC biodiversity staff provided the following summary information for the proposed compensation area:

- The proposed compensation area is focused on the Orikaka Ecological Management Unit (EMU) within the Orikaka forest. Including the 2500 ha core area and additional buffer, the total area is approximately 4990 ha.
- The area takes in the higher diversity area of Mt. Courtney ridge, as well as a section of Coal Flat and so contains un-logged and logged-over podocarp/beech forest with dense, scrubby regeneration in places. The area is crossed with a gravel road. The EMU area is ranked 565 of 900 EMUs nationally but has not yet been implemented by DOC, and so there is no management taking place at present.
- The Orikaka forest is recognised as an important birdlife area, given its relatively unmodified lowland forest. Fauna surveys (last conducted in 2001) concluded the Orikaka forest contains 26 indigenous bird species with notable populations of roroa (great spotted kiwi), South Island kaka, kea, falcon, grey duck, western weka, kakariki, kereru and fernbird; as well as robins, tomtits, and riflemen. The area has been described as Nationally Important for kiwi and kaka, and Regionally Important for kakariki. The New Creek area was surveyed in 2012 by Friends of Flora and found the area contains a moderate, but highly variable roroa population. There was an average call rate of 3 calls per hr (between 0 and 5.5 calls/hr), with a good sex ratio in the calls (48 percent male, 53 percent female), and 28 percent of the calls were duets meaning there are established pairs in the area. Although lizards have not been seen in the area, there are

likely to be forest geckos, West Coast green gecko, and speckled skink in the area. Introduced mammals including red deer pigs, possums, and feral goats have all been recorded in the area, and it is presumed the levels of stoats, rats, and mice are similar to the wider Buller area.

242. Active management of the area would include pest and predator control programmes and targeted species management where most beneficial. DOC officials consider that such an approach would have tangible benefits for the habitat and species being managed over the 25-year period. However, detailed prescription planning has not yet been undertaken and, should an AA be granted, a detailed prescription and management plan(s) would need to be developed to provide a framework for the programmes. It is likely that further baseline monitoring would be required to formulate the most effective control programmes. Likewise the AA would require a formal financial agreement to secure the delivery of funding to DOC for the 25-year period.

243. The 25-year duration of the proposal is a point worth noting and will directly affect the long term benefits of any management effort applied. Prevalent thinking around ecosystem management programmes is that they need to either eradicate all pest threats for good (including those that may re-invade) or be sustained in perpetuity to deliver long term and ongoing benefits. If neither of these is achieved there is likely to be an inevitable reinvasion of pests and re-degradation of habitat and ecosystem quality when active management ceases.

244. RDL is proposing that the 25 years of ecosystem management would generate enough benefits for species (that could be mitigated) until such time as the rehabilitated mine site began once more supporting the species affected resulting in a neutral long term result. DOC experts consider that it would take decades, and in some aspects much longer, for the rehabilitated landform to resume a full range of ecological processes. Twenty-five years of management would only extend for one decade beyond the [16-year] life of mine and most probably finish around the same time as the aftercare period for the final landform.

245. It is notoriously difficult to accurately quantify ecological impacts, benefits and trade-offs in this kind of context. DOC considers that the 25-year period would be of undoubted benefit but may not fully address the targeted adverse effects unless the ecosystem management was continued on by DOC beyond the 25-year term. This is not to detract from the benefits that would be realised during the 25 years of funded management.

246. It is a similar situation for what RDL considers the compensation portion. The benefits of the compensation portion would only be sustained in the long term if active management was continued beyond the 25-year period funded by RDL. And to guarantee ongoing benefit the cost and resources required to continue the programmes would, assuming the status quo in administrative organisation, fall to DOC.

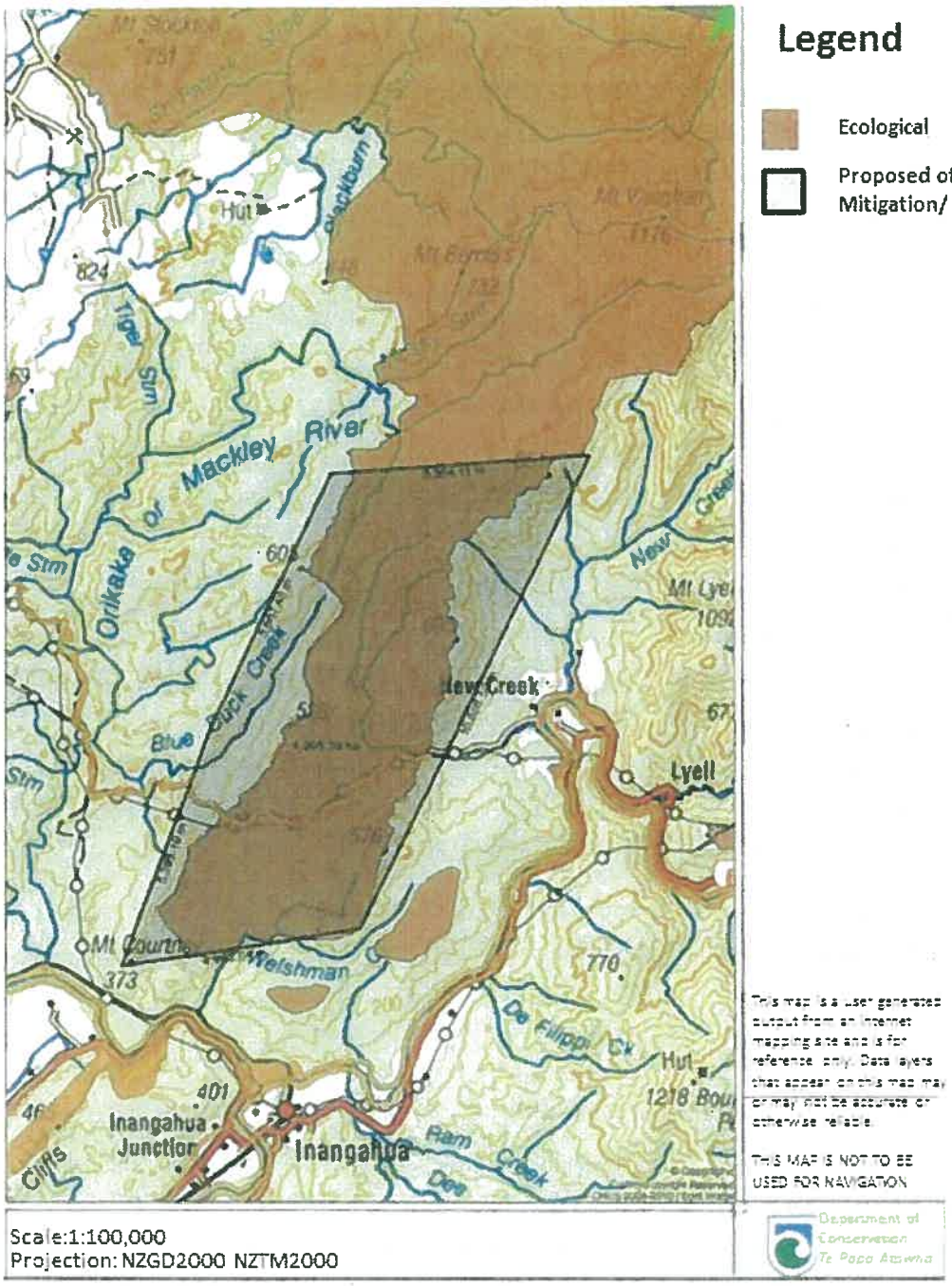

Figure 13 : Proposed off-site mitigation/ compensation area

247. In summary, DOC are of the opinion that the proposal would have clear benefits for the EMU and be of considerable benefit to conservation for the 25-year funding period (and a period after until pests reinvaded). The size of the funded area is substantial and would adequately provide for the benefits described by Bramley (2016). However, it is also noted that benefits of the Orikaka funding would be temporary while some of the residual effects of the application are permanent. Permanent, or longer term, benefits would only be achieved if active management in the Orikaka were to extend beyond the 25-year period of RDL funding. And assuming the status quo in administrative organisation, the costs of this continuation would fall to DOC. This is a key point that the decision-makers will need to consider carefully.

248. If progressed, the project would need to be accurately prescribed and costed out prior to any formal agreement being put in place to secure the funding and outline the key parameters for the project.

Mining heritage

249. RDL is offering to fund restoration and interpretation work at the historic Charming Creek coal mine, located on the Charming Creek Walkway between Ngakawau and the Mokihinui River. The Charming Creek coal mine operated from the early 1900s to about 1950. The West Coast CMS describes it as an important heritage site in *Kawatiri* place. It is currently an actively managed heritage site indicating its high heritage values.

250. The project would involve the restoration of remnant coal mining artefacts and an upgrade of existing infrastructure and interpretation. The exact prescription for the project would need to be developed and included in the AA should one be granted. The cost of the project is estimated to be between $35,000 – $40,000 in total. There are no heritage values noted in the AA Area so compensation at the Charming Creek site would be a wholesale benefit in conservation value.

251. If progressed, the project would need to be accurately prescribed and costed out prior to a formal agreement were put in place to secure the funding and outline the key parameters for the project.

Conservation Management and Strategic Planning

Systematic Conservation Planning for Buller Coal Plateaux

252. In 2012 DOC undertook a systematic conservation planning assessment of the Buller Coal Plateaux (Stockton and Denniston and surrounds) to help identify priority areas for conservation to protect a representative and long term viable sample of the full range of conservation values on the Buller Coal Plateaux, in particular coal measure ecosystems. The assessment arose from a concern over the increasing conflict between protection of conservation values on the plateaux and development proposals. While called the Buller Coal Plateaux, the study area included the Te Kuha coal measures and was defined as:

- "The study area for the project extends from Ngakawau in the north over the Stockton and Denniston Plateaux south to the Te Kuha area and includes the steep western slopes dropping

towards the coastal flats as well as Mt William and the western slopes of the Mt William Range in the east (Figure 1). This area encompasses the unique and distinctive coal measures ecosystems of the upper Buller Coal Plateau, featuring species endemic to this area as well as unique species assemblages (cf. Overmars et al. 1998). The western slopes are included in the study area as they form part of the characteristic landform of the Buller Coal Plateau."

253. Systematic Conservation Planning is an approach which aims at achieving representation and persistence of the biodiversity features present in an area, particularly when there are conflicting human interests. Systematic conservation planning takes an holistic approach looking at the distribution of biodiversity features across the entire area. It identifies which parts of the area are of highest conservation priority to achieve representation and persistence of the full range of features, while taking into account constraints such as land tenure or alternative land use.

254. A summary report of the study was drafted for the Escarpment Mine AA application process in 2012, see Gruner (2012). While not drafted for this application specifically, the report is still relevant and provides a useful context for the wider management of coal measure ecosystems.

255. Gruner (2012) describes four scenarios that identify priority areas for conservation in the study area. All scenarios are based on achieving the following minimum protection targets:

- 40% of the original extent of all vegetation types and ecosystems that are unique to the Plateau or integral components of the coal measures ecosystem;
- 50% of the original distribution of endemic species (*Powelliphanta patrickensis*);
- 100% of the remaining distribution of the nationally critically threatened land snail *Powelliphanta augusta*; and
- No specific targets for vegetation types, ecosystems or species that occur on the Plateau but are more widespread and not integral components of the coal measures ecosystem.

Scenario 1: Priority areas on Public Conservation Land

256. Scenario 1 explores which areas would best achieve the minimum representation targets when selection of areas is restricted to public conservation land. Gruner (2012b), Figure 2, shows that almost all of the remaining undisturbed, higher altitude areas on the Plateau that are on public conservation land are included in the priority area, including the Te Kuha AA area. Some biodiversity features (seepages, red tussock grassland, mountain beech-cedar forest, Plateau streams) are under-represented on public conservation land, as they are mainly held under other land tenure or have already been approved for clearance (see Gruner, 2012b, Table 1).

Scenario 2: Priority areas independent of land tenure

257. Scenario 2 explores the location of priority areas for conservation independent of current land tenure. The analysis is shown in Gruner (2012b) Figure 3). The priority area identified by this scenario achieves the highest overall conservation benefit, as the area is the least fragmented and retains the

highest average proportion of unique and typical coal measures features (see Gruner, 2012b, Table 1). Some areas on PCL, such as the upper Waimangaroa gorge, the south-eastern edge of the Denniston Plateau and the ridgeline south-west of Mt Rochfort (including the Te Kuha site and AA area), are excluded from the priority area in favour of areas outside public conservation land, e.g., along the Waimangaroa River and around Deep Stream.

Scenario 3: Priority areas based on RAPs and existing Reserves

258. Scenario 3 explores the representation levels achieved by areas previously identified as high value or representative of the Buller Coal Plateaux. The analysis is shown in Gruner (2012b) Figure 4). These are the Recommended Areas for Protection (RAPs) identified in the Ngakawau PNAP survey (Overmars et al. 1998), existing Scenic and Historic Reserves, and parts of adjacent Ecological Areas. The analysis shows that these areas alone are not sufficient to meet the minimum representation targets. Notable additional priority areas occur on the slopes of Mt Stockton, around Deep Stream and on the Denniston Plateau. The whole of the Te Kuha site and AA area is included as a priority area in this scenario.

Scenario 4: Priority areas using minimum area, independent of land tenure

259. The previous three scenarios are based on a prioritisation algorithm in Zonation that aims to include in the priority area a core area for each feature included in the analysis (Core Area Zonation). Each feature is considered independently taking regard of its relative weight and its original and remaining extent. The minimum representation targets are used as a secondary criterion when identifying priority areas. Scenario 4, see Gruner (2012b) Figure 5, uses a different algorithm (Target-based Planning) that focuses on the minimum representation targets as the primary criterion and aims to identify the minimum area required to meet these targets. Biodiversity features for which no specific targets have been set are removed early in the analysis, and no consideration is given to the relative weight of features.

260. In addition, in this analysis, the extent of coal-bearing rock was included so that, where possible, areas with coal bearing rock were avoided in the selection of conservation priorities. The extent of coal-bearing rock was mapped based on geological maps (Nathan 1978, 1996; Nathan et al. 2002, attached as Appendices 1h and 1i) and information on known off-coal areas provided by L&M Mining (email from Dave Manhire to IG, 22/10/2010). On the geological maps, Brunner coal measures, Kaiata formation and overlying quarternary deposits were interpreted as potentially coal bearing rocks. Prioritisation was allowed to occur independently of land tenure.

261. In this scenario, only 32% of the Plateaux study area is required to achieve the minimum representation targets, compared to 44% or more in the previous scenarios (Table 1). The priority area includes 37% of the extent of coal bearing rock compared to 47% or more in the other scenarios. The average proportion retained of unique and typical coal measures features is lower than those in

Scenarios 2 and 3, but higher than what could be achieved with public conservation land alone (Scenario 1). The priority area in Scenario 4 does not include the Te Kuha site or AA area.

Summary and discussion of systematic conservation planning

262. The systematic conservation planning assessment undertaken suggests that the AA area subject to this application is a priority area for conservation when trying to achieve the desired outcome for coal measure ecosystems via management on land (PCL) administered by DOC. However, if land tenure is excluded and a "no boundaries" conservation management approach was to be taken, the Te Kuha site and AA area would not be a priority.

263. It is worth discussing the broader land use context of the Buller Coal Plateaux and what the above analysis may indicate. Land use on the Buller Coal Plateaux is governed by several legislative mechanisms that together drive the land use in this nationally significant area. Much of the Plateaux is held as PCL under the Conservation Act (mostly stewardship area). Other land of the Crown is administered by Land Information New Zealand under the Land Act. The various coal mining licences (CMLs) and accessory coal mining licences on the two Plateaux were granted under the Coal Mines Act 1979. The numerous exploration and minerals permits on the Plateaux are granted by the Crown Minerals Act, and the same Act provides for access arrangements including for those parts of permits that overlap PCL. The RMA regulates the activities within these permits and to a lesser degree within the licences once consent is applied for and/or granted, as does the Wildlife Act 1953 through required permission processes with activities that disturb protected wildlife.

264. The areas of previous and future disturbance on the Buller Coal Plateaux that have resulted from the various mechanisms described above are shown in the scenario maps shown in Gruner (2012b). Note that the analysis assumes that areas within CMLs, such as the Sullivan CML on the Denniston Plateau, will result in future mining and therefore the loss of the original BCM ecosystems.

265. What the analysis in Gruner (2012) indicates is that from an ecological perspective coal measure ecosystems have reached a point where very little more disturbance could be absorbed before preserving a viable representative sample of the nationally-significant ecosystem becomes very difficult. The scenarios in Gruner (2012) suggest that [currently] the Te Kuha site (including the AA area) is a priority site for the protection of coal measures because DOC only has direct management of PCL in the area. However, should [adequate] areas of other coal measure ecosystems be placed into permanent protection, the Te Kuha site would likely drop out of the priority sites identified.

Effects on Climate Change

266. The effects of coal mining on climate change [generally], and the cost of climate change to New Zealand's economy and communities were raised by several submitters in the public notification process for this application. The relevance of these issues to decision making under s 61(2) of the Act has been carefully considered. In summary, DOC considers that the contribution of an activity to

climate change and its potential to impact ecosystems and ecosystem services is a relevant "other matter" under s61(2)(e). However, the cost of climate change to New Zealand's economy and communities is not appropriate to be considered because it is addressed elsewhere in Government's wider public policy umbrella via the Climate Change Response Act 2002 and the New Zealand Emissions Trading Scheme (NZ-ETS). The economic effects of Climate Change are directly addressed by the NZ-ETS. As a public policy tool, "the NZ- ETS is the Government's principal policy response to climate change. It supports global efforts to reduce greenhouse gas emissions while maintaining economic productivity"[2]). As such, accounting for the economic costs of climate change in s 61(2)(da) or (e) was considered inappropriate.

267. It is accepted that climate change has the potential to impact all PCL (including the AA area and adjacent PCL) via its effect on ecosystems and their services. Both the Conservation General Policy 2005 and West Coast CMS note the importance of ecosystem services. The Conservation General Policy defines ecosystem services as "a wide range of conditions and processes through which natural ecosystems, and the species that are part of them, help sustain and fulfil life." The West Coast CMS continues that: "Such services need to be preserved in order to ensure the sustainability and resilience of the natural environment, human's use of that environment and ultimately the survival of humans and other species." Therefore, any activity that has the potential to increase the effects of climate change on ecosystem services is relevant, particularly as it relates directly to the assessment of adverse effects that underpin the analysis for s 61(2)(a)-(c). This application is to mine coal which as a product will increase carbon emissions that are a key driver of climate change.

268. The scale of the application and coal volumes likely extracted from the AA area were considered too small to warrant quantifying their potential contribution to climate change. This does not negate the fact that the coal produced would have some contribution to climate change. Therefore, it is recommended that the decision makers accept that the application would contribute to the impacts of climate change on ecosystems (and ecosystem services) within PCL, but that in and of itself the effect is likely to be very small.

Treaty of Waitangi Considerations

269. All persons exercising functions and powers under the Act, including under section 61C, are required to have regard to the principles of the Treaty of Waitangi. Any sites/values relating to Māori culture, traditions, ancestral lands, water, wāhi tapu or taonga should therefore be acknowledged accordingly.

270. Both RDL and DOC have consulted with local iwi Te Rūnanga o Ngāti Waewae (Ngāti Waewae) on this application. As part of consultation, DOC provided copies of RDL's AA application and supporting information and maintained contact with regard to ongoing consultation between Ngāti

[2] http://www.mfe.govt.nz/climate-change/reducing-greenhouse-gas- emissions/new-zealand-emissions-trading-scheme

Waewae and RDL. A draft copy of this report was also forwarded to Ngāti Waewae for their review and feedback.

271. No ancestral lands, waahi tapu or taonga have been identified within the proposed mine footprint or the AA area. However, Ngāti Waewae has indicated that mitigation for the mine in regard to the Te Taiao tradition is appropriate. RDL has indicated that they will work with Ngāti Waewae to address this matter. Ngāti Waewae provided the following text in explanation of Te Taiao:

Te Taiao

Matiaha Tiramōrehu, a well-known Ngāi Tahu tohunga, explains the journey from Te Pō, the time before the world began, through to the birth of Raki in the following way:

Na Te Pō, ko Te Ao
Na Te Ao, ko Te Aomārama
Na Te Aomārama, ko Te Aotūroa
Na Te Ao Tūroa, ko Te Koretēwhiwhia
Na Te Koretēwhiwhia, ko Te Koretērawea Na Te Koretērawea, ko Te Koretētāmaua Na Te Koretētāmaua, ko Te Korematua Na Te Korematua, ko Te Mākū
Na Te Mākū, ka noho I a Mahoranuiatea, ka puta ki waho ko Raki

This kōrero recites the lineage of decent from the vast ages of darkness – Te Pō, to the first ever glimmer of light – Te Ao, to the longstanding light – Te Aotūroa, through to the emergence of moisture – Te Mākū. A void, a parentless void with the potential for life, encompassed all. In due course Te Mākū emerged and coupled with Mahoranui-a- Tea, from which came Rakinui, who coupled with Pokoharua-Te-Pō. Their first child was Aoraki, who stands as the supreme mountain of Ngāi Tahu.

Raki had a number of wives one of whom was his beloved Papatūanuku (The Earth Mother). From his unions came the mountains, plants, animals and people and a host of atua (deities) to foster the well-being of his offspring. One of these atua was Tane, who went on to beget human kind. This whakapapa linking Raki, Aoraki, Papatūānuku, Tane – earth, plants, mountains, animals, and people – illustrates the intimate connection between Ngāi Tahu and the natural world. Ngāi Tahu belong to the land, not the land belonging to them. Hence the term tangata whenua.

Aoraki, the son of Raki, and his brothers left their home in the heavens, voyaging in a canoe, Te Waka o Aoraki, to visit their stepmother Papatūānuku. They spent much time exploring the seas of the dark oceans until eventually they tired of this and wished to return to their father in the heavens.

Aoraki commenced the karakia which would lift the waka free of the seas and take them home to the sky. However, he faltered in his recitation of the karakia and caused a break in the flow of words which would spell disaster for the endeavour.

Only the bow of the waka had lifted into space, the rest of the vessel was still embedded in the dark oceans, and the separation faltered as the karakia failed causing the bow to crash back into the ocean and shatter. The canoe overturned causing Aoraki and his brothers to climb to the high side in order to save themselves. The cold storms from the south eventually froze them where they sat. The effect of the elements combined with the broken karakia was to turn all of the occupants and the canoe itself into stone. The bodies of Aoraki and his family became the mountains forming the chain we now call the Southern Alps. Aoraki is the highest mountain. The heavenly realm intervened again and Tūterakiwhānoa, the son of Aoraki, came looking for his father and uncles who had never returned from their voyage. When he found them, Tūterakiwhānoa and his helpers performed energetic feats to transform the wreck of Te Waka o Aoraki (the South Island) into a place which would be fitting for people to live in.

In this way all things are considered to have a mauri and to have a relationship with each other.

The whakapapa links Ngāi Tahu to the atua and to all the descendants of Raki - the earth, waters, forests, and animals. This binds Ngāi Tahu to the natural world and all life supported by it.

Papatūānuku is the mother of all these living things, all return to her at the time of their death, therefore Te Kuha is an example of the works undertaken by the atua. They have created an extremely beautiful and bountiful place which people can enjoy and where they can cherish the whakapapa beginnings of Ngāi Tahu and their relationship with Te Taiao - the universal.

Conclusion

Policy Statements and management plans

272. The application is inconsistent with the Conservation General Policy and the West Coast CMS.

Objectives of the Conservation Act 1987 and purpose for which the land is held

273. The application is inconsistent with the objectives of the Conservation Act 1987 and the purpose for which the land is held.

Section 4 Treaty of Waitangi

274. Local iwi Te Runanga o Ngati Waewae have indicated that the application would affect the Te Taiao tradition but did not raise any concerns with the application

Conservation Values of the AA Area

275. The AA area contains some very high conservation values including: areas of unique coal measure ecosystems; several At Risk/Threatened vascular plants and a suite of At Risk/Threatened

bryophytes; At Risk/Threatened fauna including a suite of large bodied invertebrates of particular interest for science; and very high scenic and landscape values.

Safeguards and residual effects

276. RDL is proposing a range of measures to help safeguard the conservation values of the land and reduce the overall impact of the proposal. The Ministers would also be able to require administrative and financial safeguards such as bonds and insurances in an AA, if granted. Despite these safeguards however, there would be

- a permanent and unavoidable loss of exposed sandstone pavement, seepages, bluffs, scarps and tors from within the AA area and a permanent alteration of the sequence and hydrology of soils in affected areas.
- A loss of unique coal measure ecosystems within the AA area
- Residual adverse effects on a number of rare and threatened plant species (particularly bryophytes), one Nationally Vulnerable lizard specie and a suite of large bodied invertebrates of notable scientific and conservation interest; and
- Significant short-medium term adverse effects on the landscape values of the AA area and visually impact upon the Lower Buller Gorge Scenic Reserve and Lower Buller Gorge

Economic benefits

277. The proposal as a whole, would result in a notable direct net economic and social benefit for the Buller District and West Coast Region over the planned 16-year mine life. The economic benefits are considered to be significant, particularly given the current economic downturn in the Buller District.

Other relevant matters

278. RDL have indicated that the wider project proposal would not be economically viable if access to the AA Area were to be declined.

279. The contribution of the application to the effects of Climate Change on ecosystems and ecosystem services on public conservation lands is a relevant matter to consider, however, the small scale of coal volumes from the AA area mean the contribution would be very small.

280. The proposed compensation would generate conservation gains at the Charming Creek historic coal mine site. The funding of the ecosystem management in the Orikaka forest would be of notable conservation benefit in an Ecological Management Unit ranked 565 of 900 priority sites

Decision

281. Options for the decision-makers are included below. The decision-makers may also seek further information, or clarification of particular matters, before making the decision.

MINISTER OF ENERGY AND RESOURCES

	Yes/No
a. **Agree** to grant the application for an access arrangement to Rangitira Developments Limited subject to conditions satisfactory to ministers.	
b. **Note** that the access arrangement conditions would be developed in parallel with resource consent conditions developed by the Buller District Council and West Coast Regional Council should resource consent be granted for the proposal.	
OR	
c. **Decline** to grant an access arrangement to Rangitira Developments Limited	Yes

Decision-maker comments:

Signed: _____ Date:

Honourable Dr Megan Woods
Minister of Energy and Resources

MINISTER OF CONSERVATION

	Yes/No
a. **Agree** to grant the application for an access arrangement to Rangitira Developments Limited subject to conditions satisfactory to ministers.	No
b. **Note** that the access arrangement conditions would be developed in parallel with resource consent conditions developed by the Buller District Council and West Coast Regional Council should resource consent be granted for the proposal.	
OR	
c. **Decline** to grant an access arrangement to Rangitira Developments Limited	Yes

Decision-maker comments:

Signed: E M Sage Date: 12 June 2018

Honourable Eugenie Sage
Minister of Conservation