

Title:	Te Kuha - Access Road Review
Submitted to:	Toby Wilkes on behalf of Department of Conservation
Date:	28 July 2014
Summary:	<p>Te Kuha Limited Partnership has applied for an Access Arrangement (AA) and Concession to construct a coal mine (known as "Te Kuha Coal Project") and associated infrastructure, including an access road in the lower Buller area.</p> <p>West Circle has been engaged to review the application and specifically the lower access road section which crosses public conservation land and is the subject of the concession application.</p> <p>The access road within the Ballarat conservation area is on gentle terrain and would be relatively simple to construct. There would be 3 single span bridges (or large box culverts) required - none pose any significant issues for construction.</p> <p>Due to the flat slopes and tall forest almost all the road on the public conservation land would be hidden from view. The road, as planned, would require fills up to 5m deep and cuts up to 12m high and several over 8m high in the public conservation land. Some of this earthworks in the steeper areas may be visible from offsite.</p>
Additional information	<ul style="list-style-type: none"> • Te Kuha Coal Project - AA and concession applications • Site visit notes and photos (Mark Smith) • MP 41 289
Recommendation:	Approve - subject to conditions.

Signed:



Mark Smith
West Circle Consulting

Item	Description
Background	<p>Te Kuha Partnerships Ltd has applied for an Access Arrangement (AA) and Concession to construct a coal mine (known as "Te Kuha Coal Project") and associated infrastructure, including an access road in the lower Buller area.</p> <p>West Circle has been engaged to review the application and specifically the lower access road section which crosses public conservation land.</p> <p>The lower access road is proposed to cross through the Ballarat conservation area which is stewardship land. The mine area itself is partly within the Mount Rochfort stewardship area and partly in a water conservation area which is <u>not</u> managed by the Department. Figure 1 shows an overview of the mine and public conservation land.</p>
Road dimensions	<p>The access road is planned to allow light vehicle access to and from the mine as well as road truck and trailer units bringing coal down from the mine.</p> <p>The typical cross-sections provided show a total road formation width of around 14 - 15m with a 7m wide carriageway (2 lanes). This does not take into account wider sections of cut and fill.</p> <p>The road is said to be single lane however 2 lanes of 3.5 m width are shown in the drawings and text with further 3.5m width for passing bays.</p> <p>The grade & cut/fill table (AA, Appendix F - Sheet 4) shows mostly fill is proposed through the steeper section of public conservation land. This may result in a wide footprint as the natural side slopes are around 35° in places. <i>(Note that the concession application shows the proposed road details table on Sheet 5 - so there is some version / naming issues between applications and Sheet 5 is partly unreadable.)</i></p> <p>The design drawings should show details of cut/fill footprint in plan view however these have not been provided. Sections of road with footprints up to 50m wide would not be uncommon with fill type construction in steep terrain.</p>

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Gravel sources	<p>The site base gravels and colluviums appear good as sub-base material however there are poorly drained pakahi swamp areas that may need to be excavated to some depth for road construction.</p> <p>Off - site gravel sourcing is proposed from an existing gravel pit on private farmland near where West Creek crosses Nine Mile Road.</p> <p>A substantial number of truck movements will be required to import the gravel.</p>
Bridges / culverts	<p>There are 3 main stream crossings in the Ballarat conservation area. Each of these would require a bridge or substantial box culvert.</p> <p>Allowance should be made for a temporary crossing alongside the bridge alignment to facilitate placement of abutments and approaches. The footprint required at stream crossing points may be 10-15m wide even for a single lane bridge.</p> <p>The proposed crossing sites are all relatively simple locations for construction of bridges. Box culverts may be less expensive but tend to be problematic in steeper erosive streambeds with high bed load.</p>

Item	Description
Vegetation & soil removal	<p><u>Felling</u></p> <p>The majority of the forest is relatively short stature or small meaning it can be cleared by excavator and kept within the road corridor. Some large trees (rimu and beech) are found in the upper section of the Ballarat conservation area and would require directional felling. There aren't many options but to fell the trees downhill into standing forest and aim to minimise the damage.</p> <p><u>Soil / vegetation stripping</u></p> <p>The application does not cover stockpiling of stripped soil and vegetation particularly well. There is indication that stripped soil and vegetation would be stockpiled near the passing bays. It is likely that substantial stockpiles will be required and given the long access road it is likely the applicant will wish to stockpile the material on-site. At a minimum 0.5m deep by average road width of 15m the volume of strippings would be at least 7500m³ per kilometre. It is likely to be more than this if vegetation and cut-to-waste material is included. The section of road on public conservation land is approximately 1500m long so a stockpile of around 15,000m³ is likely to be required for the stripped material.</p>
Passing bays	<p><u>Passing lanes</u></p> <p>The application has conflicting information about passing lanes. Passing lanes are intended to be located approximately every 1 km with these likely to be 80 to 100 m long with a road width up to 20 m (Fauna report, section 7.3.2, pg 75). The drawings and text for passing bays show them as 25m long and 3.5m width (complying with NZS 4404: 2004).</p> <p>Passing bays would be required for construction traffic as well as during operation of the mine.</p> <p><u>Construction turn-arounds</u></p> <p>Construction turn-arounds will also be required. These can be co-located at passing bays or on corners and would generally be required approximately every 200 m.</p>

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Erosion & sediment control	<p>Erosion control by establishment of soil & plant cover should not present any significant problems - providing it is carried out in a timely manner.</p> <p>Allowance should be made for sediment controls (decanting bunds) in the steeper sections especially to capture sediment from fill slopes near water courses. This is a high rainfall environment.</p> <p>The soil characteristics are unknown in terms of sediment settling.</p> <p>The applicant has proposed use of geo-textiles on batter slopes as a means of erosion and sediment control which is good. In combination with soil placement, planting and seeding this should provide adequate slope protection.</p>
Rehabilitation	<p>End of mine life rehabilitation of the access road is not covered in any detail in the application other than a mention of partial reduction of the carriageway width using soil/vegetation stripped from the mine.</p> <p>Direct transfer of soil and vegetation is proposed as "rehabilitation" following construction, however this will not be practical in the taller forest areas where the road is on public conservation land. Protection of cut and fill slopes will be limited to replacing any stripped soils on fill batters and seeding of cut batters.</p>
Windthrow risk	<p>Opening up a road corridor brings an increased risk of windthrow occurring. Other access roads constructed on the west coast in recent years have all suffered some windthrow. Having said that - in my observations I have not seen any substantial loss of trees and the most likely trees to topple are tall narrow regrowth kamahi and beech.</p>

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<p>Access road operation</p>	<p><u>Coal dust</u></p> <p>A potential impact of operating the access road for coal haulage is split coal or coal dust on the access road. It is considered this is a very low risk given there is 7km of road above the public conservation area where any loose coal might fall off the trucks. If coal dust is an issue in summer then road trucks can be covered or the coal wetted to prevent dust.</p> <p><u>Runoff</u></p> <p>Sediment runoff from an operational haul road can be high due to the steeper grades and high traffic volume. Roadside sediment traps will be needed to prevent dirty water entering watercourses.</p> <p><u>Maintenance</u></p> <p>Routine maintenance should not present any issues. If batter slumps occur the resulting material could be transferred to the overburden dumps at the mine or removed to private land.</p>
<p>Conclusions</p>	<p>The construction and operation of the access road within the Ballarat conservation area would not be considered technically difficult.</p> <p>Key items to be managed by approval of plans and conditions:</p> <ul style="list-style-type: none"> • road dimensions/footprint • bridge/culvert construction including temporary crossings • passing lane location and dimensions • vegetation / soil stripping stockpiles • erosion and sediment controls • weed control (especially from off site gravel sources)

Item	Description
Recommendation	Further information should be provided, at the relevant stage, as follows: <ul style="list-style-type: none"><li data-bbox="734 481 1385 548">• a detailed design plan showing the full footprint including cut/fill areas<li data-bbox="734 560 1385 694">• a construction management plan including erosion and sediment controls, soil and vegetation stockpiling, confirmation of construction method (i.e. cut/fill only)

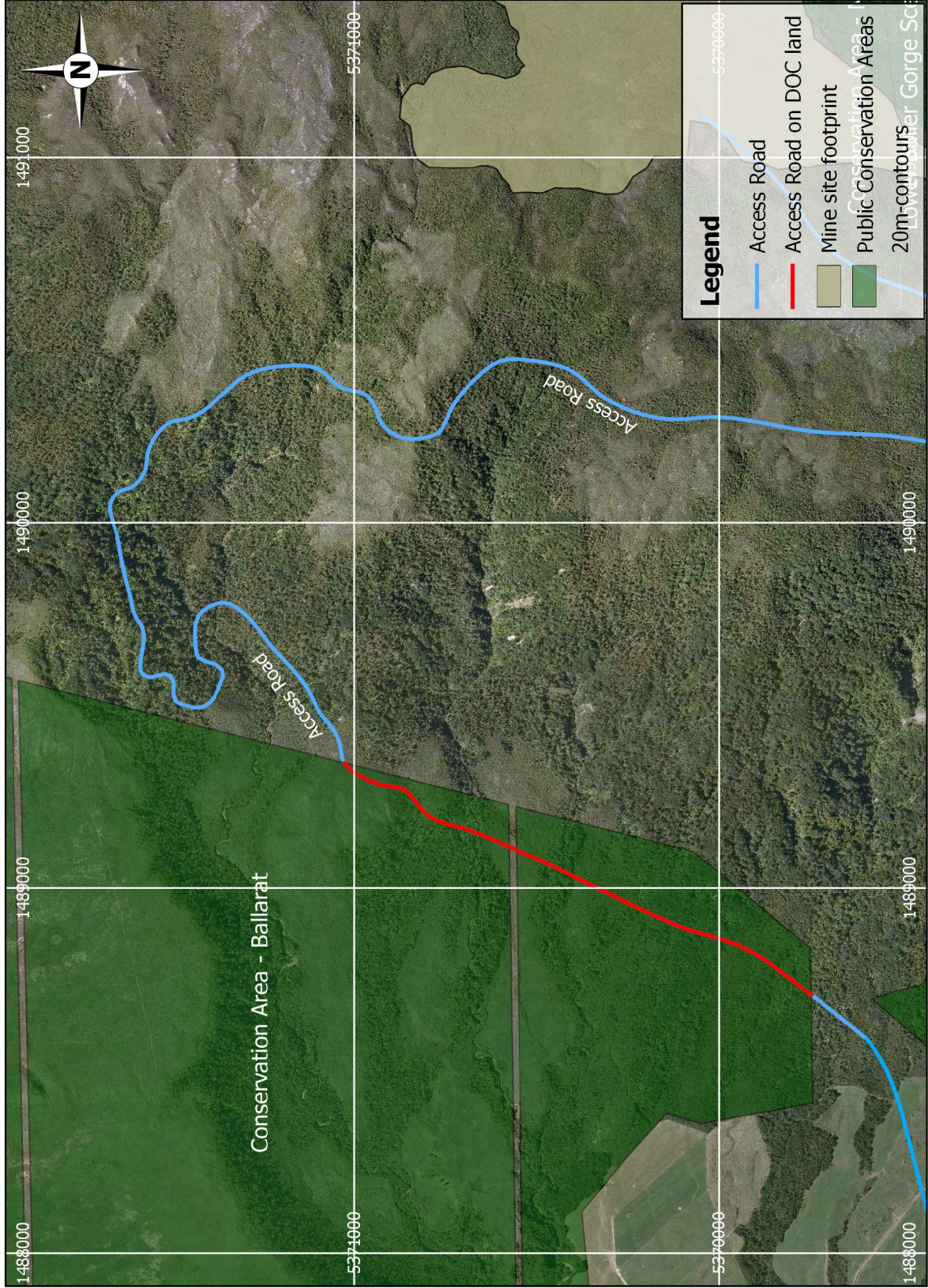


Figure 1.