

ASSESSMENT REPORT

BAAL BONE COAL PROJECT

Ben Bullen Creek Rehabilitation Modification (MP 09_0178 MOD 2)

1 INTRODUCTION

1.1 Background

Baal Bone Colliery (Baal Bone) is an underground coal mine in the Western Coalfield of NSW (see Figures 1 and 2). It is located 5 kilometres (km) northeast of Cullen Bullen and 25 km northwest of Lithgow, within the Lithgow Local Government Area. The mine is owned and operated by Wallerawang Collieries Pty Limited (WCPL), which is a subsidiary of Glencore Coal Assets Australia Pty Ltd.

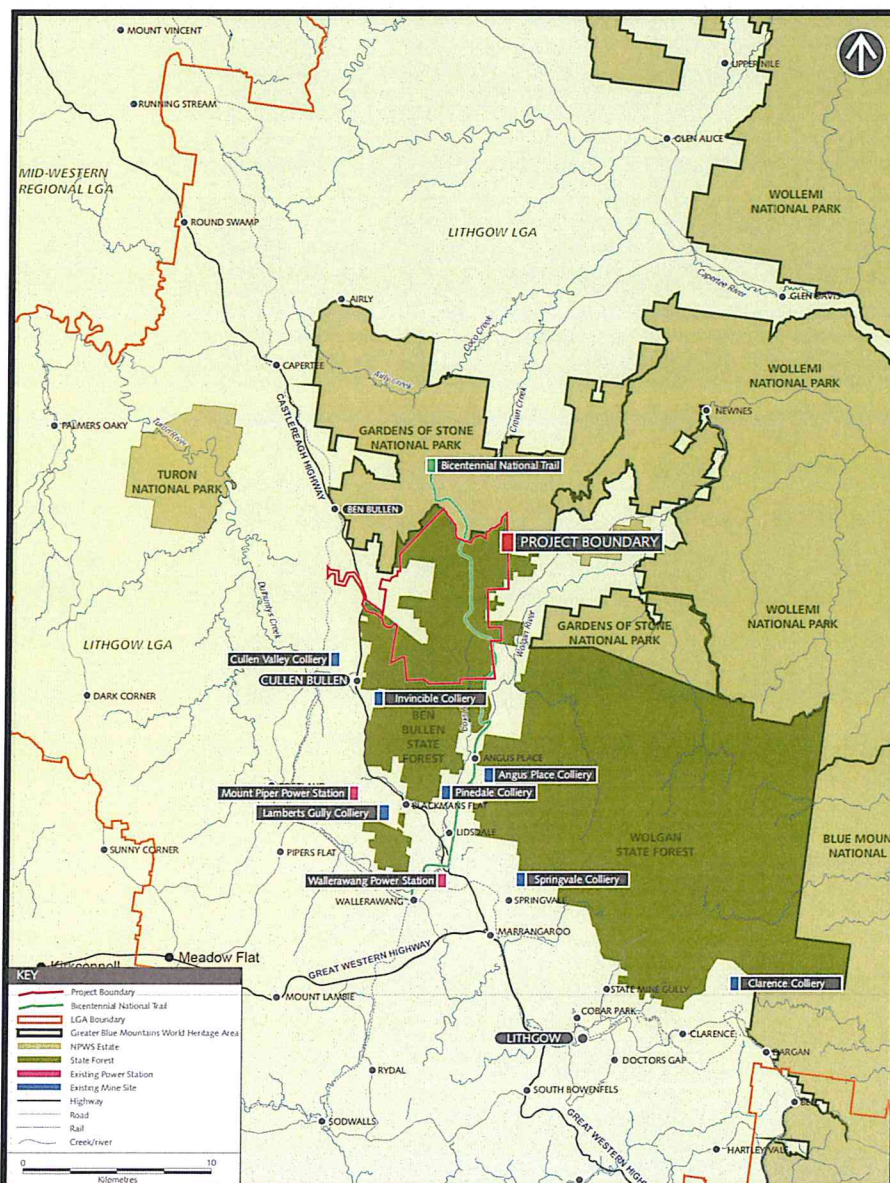
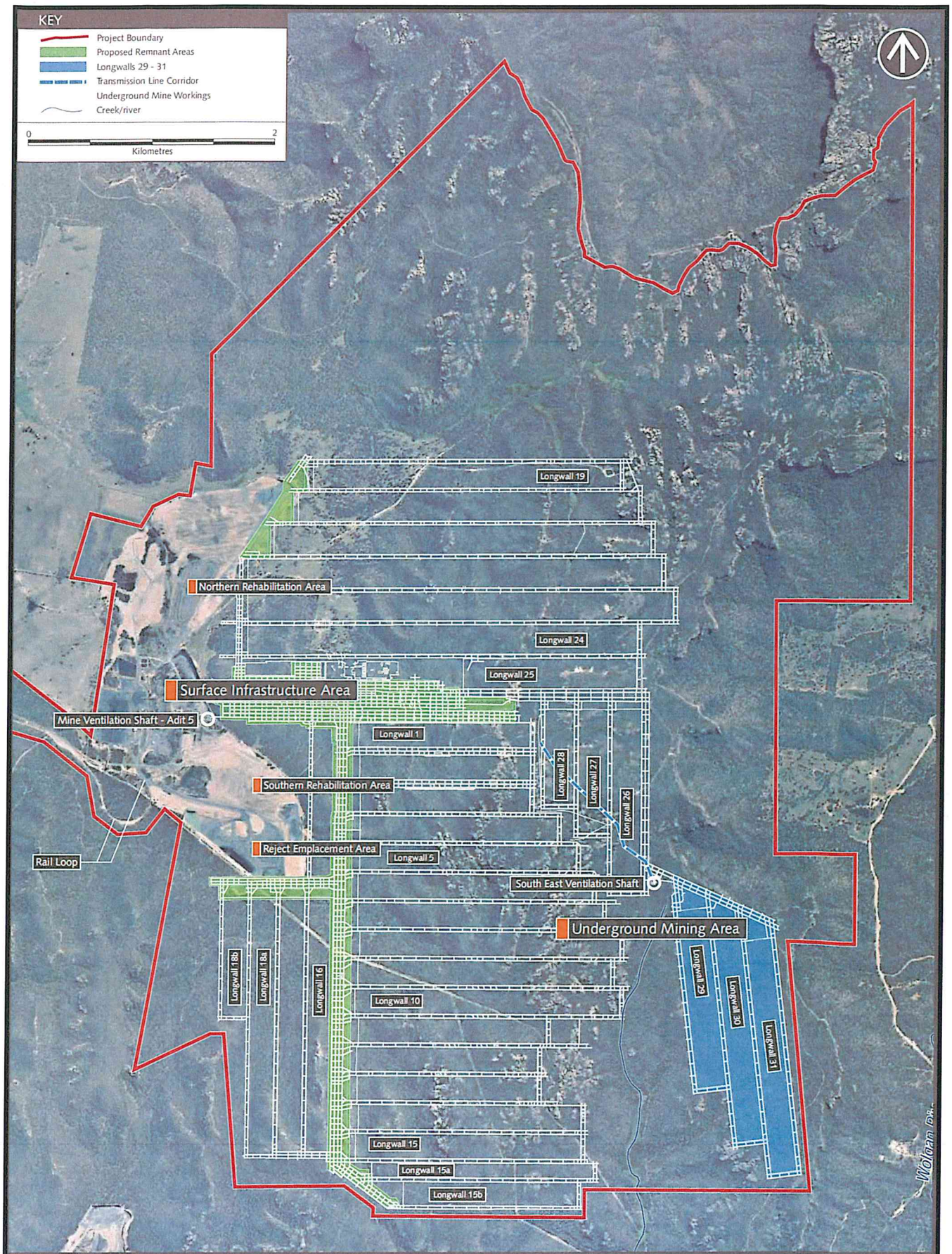


Figure 1: Regional Location



The mine is located on the escarpment of the Wolgan River Valley, and is located within the Ben Bullen State Forest and close to the Gardens of Stone National Park (see Figure 1). Mining was first undertaken at Baal Bone between the 1940s and 1950s using open cut methods. Mining ceased at the site in the early 1950s and recommenced in the early 1980s under a Ministerial development consent which allowed both open cut and underground mining operations on the site.

Between 1982 and 2011 the mine operated under a number of development consents which governed the day-to-day operations of the mine, including a project approval which allowed the construction of the southeast ventilation shaft (see Figure 2).

In 2011, the Baal Bone Coal Project (MP 09_0178) was approved by the Minister for Planning under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This approval consolidated all previous approval and contemporised the remaining mining operations at the site, allowing:

- an extension to the life of the mine by three years (ie to 2014);
- longwall mining from three additional panels (Longwalls 29-31 – shown in blue in Figure 2);
- mining of 'remnant' coal mining areas (shown in green in Figure 2);
- continued operation of existing coal handling, processing and transportation infrastructure;
- continued transport of coal to market by rail and by road; and
- rehabilitation of the site.

Longwalls 29-31 were completed in 2013, however the remnant coal areas were not mined within the time allowed under the approval. The mine was subsequently placed on 'care and maintenance' as a consequence of declining market conditions. Since placing it on care and maintenance, WCPL has used the mine as a training facility for workers at the Ulan Coal Mine.

In February 2015, the approval was modified under Section 75W of the EP&A Act to allow mining operations to continue at Baal Bone until December 2019. However, mining operations are yet to recommence at the site.

1.2 Ben Bullen Creek

Ben Bullen Creek flows in a northerly direction through the Baal Bone mining lease areas, joining Jews Creek which connects to the Macquarie River. The creek has been highly disturbed as a result of historic mining operations at Baal Bone. The original and current creek alignments are shown on Figure 3.

Three sections of the creek lie within the mine site (see Figure 4):

- Reach 1 – the area upstream (south) of the mine's surface infrastructure area;
- Reach 2 – the area that flows through the surface infrastructure area; and
- Reach 3 – the area downstream (north) of the mine's surface infrastructure area.

Rehabilitation of Reaches 1 and 3 has been substantially completed in accordance with the mine's approved rehabilitation plan. However Reach 2, which was diverted in the early 1980s to allow the current surface facilities and underground access to be developed, is yet to be substantially rehabilitated.

The restoration of Ben Bullen Creek to its original alignment has been contemplated under the mine's rehabilitation plans for many years, initially under the 1982 development consent, and more recently under the current 2011 project approval. To this end, the current project approval requires WCPL to restore Ben Bullen Creek to its "pre-disturbance flowpath", in accordance with a detailed Ben Bullen Creek Natural Channel Design Restoration Plan.

In developing this plan, in 2014 WCPL commissioned an options analysis and concept design (see Appendix A), which amongst other things analysed and compared the relative impacts and benefits of restoring Reach 2 to its original alignment against retaining this reach in the current alignment. The analysis concluded that:

- significant environmental impacts would be likely to result from the construction works required to restore the original alignment;
- the works would involve a high degree of risk in terms of successfully achieving the aim of a fully functioning watercourse;
- that the biodiversity values in the current alignment of Ben Bullen Creek could be compromised by the construction works to restore the original alignment;

- that significantly less construction and engineering works and overall disturbance would be required to be undertaken to retain the current alignment; and
- significant environmental benefits could be achieved if the current alignment was retained.

WCPL is seeking to realise these benefits, and avoid any unnecessary additional environmental impacts, by retaining Reach 2 in its current alignment.



Figure 3: The approximate original alignment of Ben Bullen Creek (dashed line) and its current alignment (bold line)

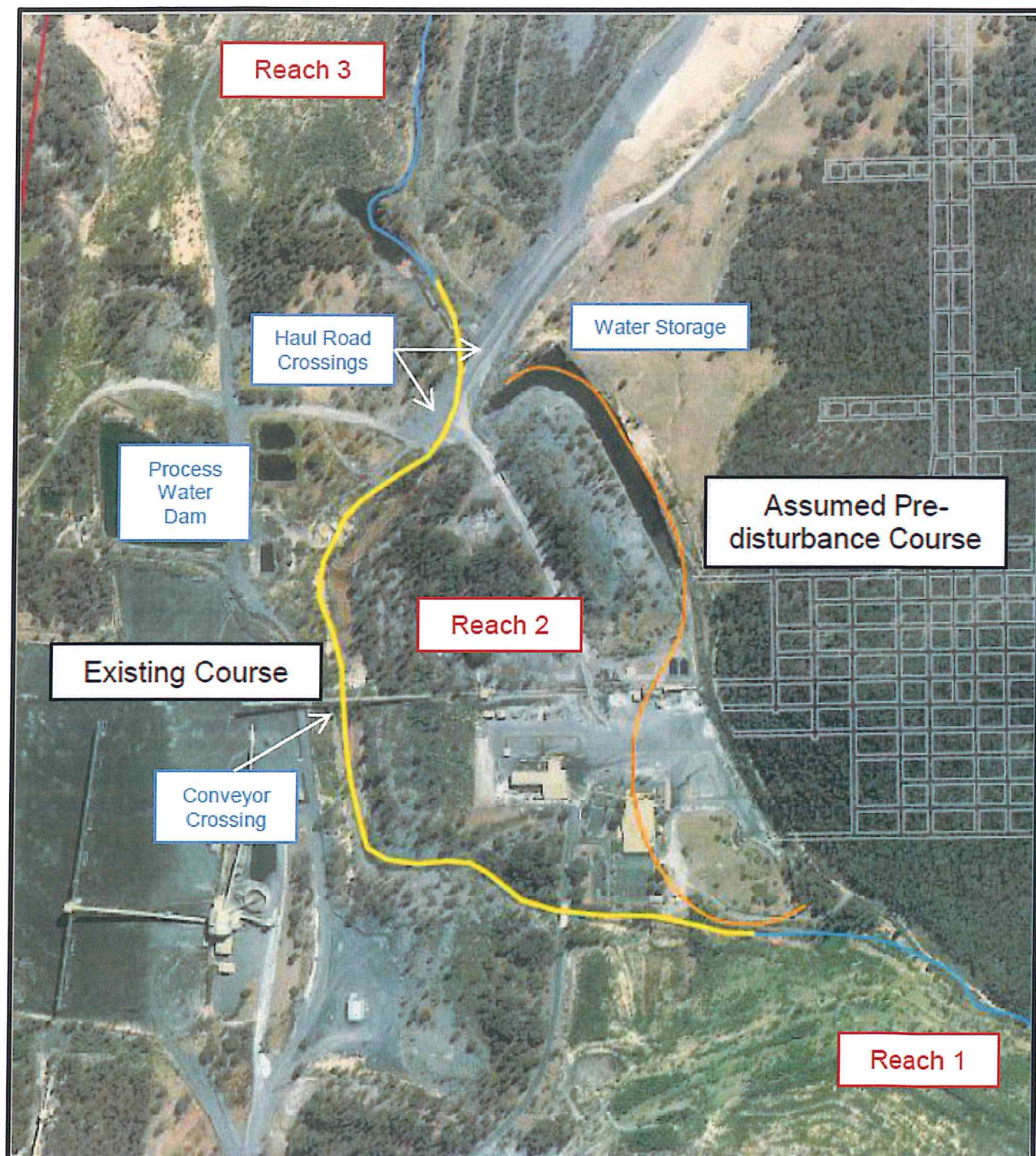


Figure 4: Reach 2 Current Alignment and Features

2. PROPOSED MODIFICATION

WCPL is proposing to modify the project approval for the Baal Bone Coal Project (09_0178 MOD2) to allow it to retain and rehabilitate Ben Bullen Creek on its current alignment, and remove the obligation to restore the creek to its pre-disturbance (original) alignment.

WCPL has identified that rehabilitating the creek on its existing alignment would include the following:

- creek bank and highwall stabilisation works in Reach 2 (as part of Reach 2 flows along a former open-cut highwall);
- riparian vegetation enhancement;
- removing a haul road crossing, the coal conveyor bridge and its embankment; and
- development of a drainage and overflow channel when the infrastructure site is rehabilitated (to provide an overland flow path for high flow events).

The proposal is fully described in WCPL's Environmental Assessment (EA) for the proposed modification (see Appendix A).

The modification application relates only to the retention of Ben Bullen Creek in its current alignment. It does not seek to alter any of the other approved operations of the mine, including any of the coal extraction, processing and transportation operations.

3. STATUTORY CONTEXT

3.1 Section 75W

The project is classified as a 'transitional Part 3A project' under Schedule 6A of the EP&A Act. The proposed modification must therefore be assessed under Section 75W of the EP&A Act.

The Department has considered the nature of the proposed modification, and is satisfied that it can be characterised as a modification to the approved project. The proposed modification would not alter any of the approved mining operations, other than to rehabilitate Ben Bullen Creek, and any resulting environmental impacts would be substantially the same as those of the approved project. Consequently, the Department is satisfied that the proposed modification is within the scope of Section 75W of the EP&A Act, and may be determined accordingly.

3.2 Approval Authority

The Minister for Planning is the approval authority for the application. However, under the Minister's delegation dated 16 February 2015, the Director Resource Assessments may determine the application, as Lithgow City Council (Council) does not object to the proposal, there were no public submissions by way of objection, and a political disclosure statement has not been made.

4. CONSULTATION

The Department made the application and EA publically available on its website on 14 August 2015 and sought comment from relevant Government agencies.

The Department received submissions from the Environment Protection Authority (EPA), the Office of Environment and Heritage (OEH), the Division of Resources and Energy within the Department of Industry (DRE) and the Water Division within the Department of Primary Industries (DPI Water). All agencies showed support for the proposal, and:

- **OEH** considers that the current alignment is stable and has existing biodiversity values;
- **EPA** acknowledged that the proposal has benefits in terms of water quality;
- **DPI Water** asked about the potential effect of the proposed modification on the existing L-shaped water storage (see Figure 4), and recommended works to increase creek functionality and habitat diversity, with rehabilitation objectives informed by hydrological modelling; and
- **DRE** supports the proposal.

A copy of the agency submissions is provided at Appendix B.

5. ASSESSMENT

The EA includes geomorphic, geotechnical, hydrological and biodiversity assessments which generally indicate that rehabilitating Reach 2 in its current alignment would result in less environmental impacts than restoring Reach 2 to its pre-mining flowpath as approved. The Department's assessment of these matters is summarised in Table 1.

Table 1: Assessment of Issues

Geotechnical/ Geomorphic Assessment	<p>The current Reach 2 made use of a former open cut highwall, and was designed to divert run-off away from the infrastructure area rather than act as a functioning creek system. Therefore it currently lacks the features which would support an ecologically and hydrologically functioning creek.</p> <p>The 2014 options analysis and concept design report found that the current alignment of Reach 2 is generally geotechnically and geomorphologically stable. This is largely due to the stability of the former highwall, and the fact that the creek does not carry permanent flows which may cause bank scouring and significant erosion impacts.</p> <p>The current alignment shows no evidence of short-term flood flows, and characteristically exhibits low flow, even after heavy rainfall. These conditions are beneficial in assisting the high flood flow management regime and its ability to reduce flood flow velocities. The assumed pre-disturbance path also passes close to the underground access adits, which could pose a potential risk of flood waters entering the underground workings.</p> <p>Given these conditions, the current alignment represents a lower risk option in terms of managing flood impacts, and it is reasonable to expect that riparian ecosystem diversity could be established relatively quickly.</p> <p>The 2014 report also highlights the significant geotechnical works that would be required to restore the original Reach 2 alignment, including:</p> <ul style="list-style-type: none"> • decommissioning the mine infrastructure site; • soil contamination investigation and remediation works; • excavation of an engineered channel and stabilisation works for the channel and its banks; • significant geotechnical and revegetation works to incorporate the existing water storage into the creek alignment; • revegetation of the re-created riparian zones; and • backfilling the current Reach 2, and creating a flood overflow channel in its place. <p>In comparison, retaining the current alignment would require significantly less geotechnical works to achieve the approved rehabilitation objectives, and any necessary slope engineering works, or additional riparian vegetation enhancement activities, would be able to be undertaken without waiting for mine infrastructure to be decommissioned.</p> <p>The EA also highlights that works to restore the original flowpath would be undertaken at significant risk of success, particularly given the long-term industrial land-use of the infrastructure area, and that there would likely be a legacy of soil contamination at the infrastructure site that would require management.</p> <p>The Department is satisfied that the proposed modification would enable the current alignment to build on the current geotechnical and geomorphic attributes.</p> <p>The company has committed to further geomorphic and geotechnical assessments of the Reach 2 alignment as part of its proposed rehabilitation program. This commitment is reflected in the Department's recommendation for a stand-alone Ben Bullen Creek Rehabilitation Plan (see Rehabilitation Program below).</p>
Biodiversity	<p>The preliminary biodiversity assessment for the proposed modification found that retaining the existing Reach 2 alignment would be likely to result in greater biodiversity outcomes. The ponds in Reach 2 have well-established vegetation, and exhibit a mixture of young and mature canopy vegetation and reeded areas, which operate as a natural sediment trap and buffer and offer foraging and roosting habitat for bats and birds.</p> <p>WCPL would undertake a program of riparian enhancement works within the current alignment which would aim to establish a functioning creek system and enhance the overall biodiversity values of the site. These works would also allow Reach 2 to be integrated with other rehabilitated areas, particularly with Reach 1 which has the potential to link with the habitat corridors proposed under the final landform plan.</p> <p>The Department considers that the current biodiversity values could be compromised if the pre-mining alignment was restored, particularly as restoring the original alignment would require the existing alignment to be backfilled to a drainage channel. Further, the infrastructure area has little to no biodiversity value due to its sustained industrial use. Therefore significant revegetation works would also be required in addition to the required engineering works to replicate the biodiversity values of the current alignment.</p>

	<p>The riparian enhancement works would be programmed to occur as soon as possible, and in conjunction with the slope and batter works, to ensure the best chance of success for vegetation establishment. The works would be fully detailed in the recommended Ben Bullen Creek Rehabilitation Plan (see Rehabilitation Program below).</p> <p>The Department is satisfied that the revegetation works would be suitably undertaken to result in beneficial biodiversity outcomes for Ben Bullen Creek and for the entire site.</p>
Water Quality	<p>The EA states that in terms of water quality impacts, rehabilitating the current alignment of Reach 2 would result in beneficial outcomes. This is particularly due to less earthmoving activities being required during the proposed rehabilitation works. The restoration of the original flowpath would require significantly greater earthworks to achieve and would be likely to disturb contaminated soils, particularly in the infrastructure area, which could mobilise these contaminants into the Ben Bullen Creek catchment and surrounding areas.</p> <p>The current culvert overflow at the L-shaped water storage would be developed into an open channel reach that would allow free drainage of the storage if necessary. This means that the spoil on which the infrastructure area was constructed would not need to be significantly disturbed and could be easily revegetated following the decommissioning of infrastructure.</p> <p>The current alignment contains ponding with established reeds, which would be expected to control sediment-laden flows during the rehabilitation works.</p> <p>DPI Water supports the proposed rehabilitation works, and determined that a controlled activity approval would not be required. It recommended rehabilitation works be carried out consistently with DPI Water's <i>Guidelines for Controlled Activities on Waterfront Land</i>.</p> <p>The Department is satisfied that water quality impacts, and ongoing water monitoring arrangements for Ben Bullen Creek during and following the rehabilitation works would continue to be effectively managed under the mine's site-wide Water Management Plan, which would be updated as necessary in consultation with DPI Water, to incorporate any additional measures required to manage the water impacts of the proposed modification.</p>
Rehabilitation Program	<p>The Department notes that Reach 2 is mostly formed from unconsolidated spoil, with some steep batters and highwalls. Reach 2 is therefore unlikely to require major engineering works to reshape these slopes. The company considers that with the application of suitable capping material following the reshaping works, additional revegetation works would be able to be undertaken quickly, and that this would be able to be undertaken without significant disturbance to the existing riparian vegetation.</p> <p>The mine has an approved Rehabilitation Management Plan, which generally guides the return of the site to a condition where its landforms, soils, hydrology and biodiversity are self-sustaining, and are compatible with the surrounding land-uses. Rehabilitating Reach 2 in its current alignment would therefore be consistent with these general site rehabilitation objectives.</p> <p>As it did for the original project, the Department considers that the company should pay special attention to the rehabilitation of Ben Bullen Creek, to ensure best practice rehabilitation is implemented at the site, and to achieve the rehabilitation objective of a stable and non-polluting landform.</p> <p>The proposed modification has significant merit in terms of the timing of rehabilitation works, with rehabilitation works on the current alignment being able to be undertaken immediately, instead of the company waiting until at least 5 years to commence the restoration of the pre-mining flowpath, as WCPL states that the above works would not be able to commence until at least 2020.</p> <p>The removal of the haul road crossing and the coal conveyor and bridge would be staged to occur during the decommissioning stage of the project, which would allow Reach 2 to be further integrated with Reach 3.</p> <p>The Department has recommended that WCPL prepares and implements a stand-alone Ben Bullen Creek Rehabilitation Management Plan, in consultation with government agencies. This plan would focus the Reach 2 rehabilitation works, and would complement the Rehabilitation Management Plan for the site.</p> <p>Specifically, the plan would include:</p> <ul style="list-style-type: none"> • hydrologic, hydraulic, geomorphic and geotechnical assessments of Ben Bullen Creek and the effect of any proposed bank slope regrading and highwall stabilisation works; • flood hydraulic assessment, including how the design of final landforms would manage high flow events; • a description of the staging and timing of rehabilitation works, and how these works would be integrated into the overall rehabilitation of the site;

	<ul style="list-style-type: none"> • details of the proposed native riparian and aquatic species to be used in rehabilitation works, and how these species would complement local and regional biodiversity and contribute to self-sustaining biodiversity habitats; and • completion criteria and a monitoring program to assess and report on the efficacy of the rehabilitation works. <p>This plan would be developed in consultation with Government agencies, and would replace the current requirement to develop a <i>Ben Bullen Creek Natural Channel Restoration Plan</i>.</p> <p>The Department believes that the implementation of this comprehensive plan would effectively guide the rehabilitation works and ensure that best practice rehabilitation of the creek can occur at the earliest opportunity.</p>
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6. RECOMMENDED CONDITIONS

The Department has prepared a Notification of Modification for the proposal (see Appendix C), as well as a consolidated project approval (see Appendix D). The conditions allow the retention and rehabilitation of Reach 2 of Ben Bullen Creek in its current alignment, and require the preparation and implementation of a stand-alone Ben Bullen Creek Rehabilitation Plan. The Department has also taken the opportunity to make minor administrative corrections to the conditions. WCPL has reviewed and accepted the recommended conditions.

7. CONCLUSION

The Department has assessed the modification application in accordance with the relevant statutory requirements, having regard to the EA, submissions, as well as documentation relating to the original project.

The Department and other relevant government agencies are generally satisfied that the retention of Reach 2 in its current alignment would result in beneficial environmental outcomes compared to those which would result if the creek was diverted back to its original flowpath, as approved. Further, the Department is satisfied that and that these additional environmental benefits can be realised far earlier than under the current approval.

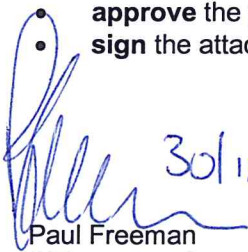
The proposal would also increase certainty of rehabilitation outcomes at the site, reduced the risks involved in re-engineering the former alignment, and build on the environmental attributes and geomorphic integrity already present within Reach 2, and ensure the timely rehabilitation of the overall site.

Consequently, the Department is satisfied that the proposed modification is in the public interest and should be approved, subject to conditions (see Appendix C).

8. RECOMMENDATION

It is RECOMMENDED that the Director, Resource Assessments:

- **consider** the findings and recommendations of this report;
- **determine** that the proposed modification is within the scope of Section 75W of the EP&A Act;
- **approve** the proposed modification under Section 75W of the EP&A Act; and
- **sign** the attached Notice of Modification (Appendix C).

 30/11/15
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Resource Assessments

 1.12.15.
Mike Young
Director
Resource Assessments