

ASSESSMENT REPORT

APPIN GAS DRAINAGE PROJECT

Gas Drainage for Longwalls 704 and 705 and Area 9 Modification (08_0256 Mod 2)

1 BACKGROUND

BHP Billiton Illawarra Coal Holdings Pty Ltd (Illawarra Coal) owns and operates the Appin Colliery, located approximately 6 kilometres (km) northwest of the township of Appin in the Southern Coalfields of NSW (see **Figure 1**).

In October 2009, project approval (see **Appendix B**) was granted by the then Minister for Planning under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for the Appin Colliery Area 7 Goaf Gas Drainage Project (MP 08_0256). The Bulli Seam mined at Appin Colliery contains coal seam gas (CSG) which contains 95% methane and which is released during the longwall mining process. To increase safety for underground workers and reduce greenhouse gas emissions, this gas is drained from the mine through boreholes and then utilised for power generation. The approved project consists of 8 temporary boreholes to extract CSG from longwalls 703 and 704, and related pipelines. The pipelines pass through a downhole to the underground mine, from where the CSG is piped through the mine to a gas-fired power station, owned by Energy Development Limited and located at the Colliery's Appin West pit top area. A minor modification to the project approval was approved in December 2010, which allowed for the relocation of an approved medium radius drilling (MRD) borehole above longwall 704.

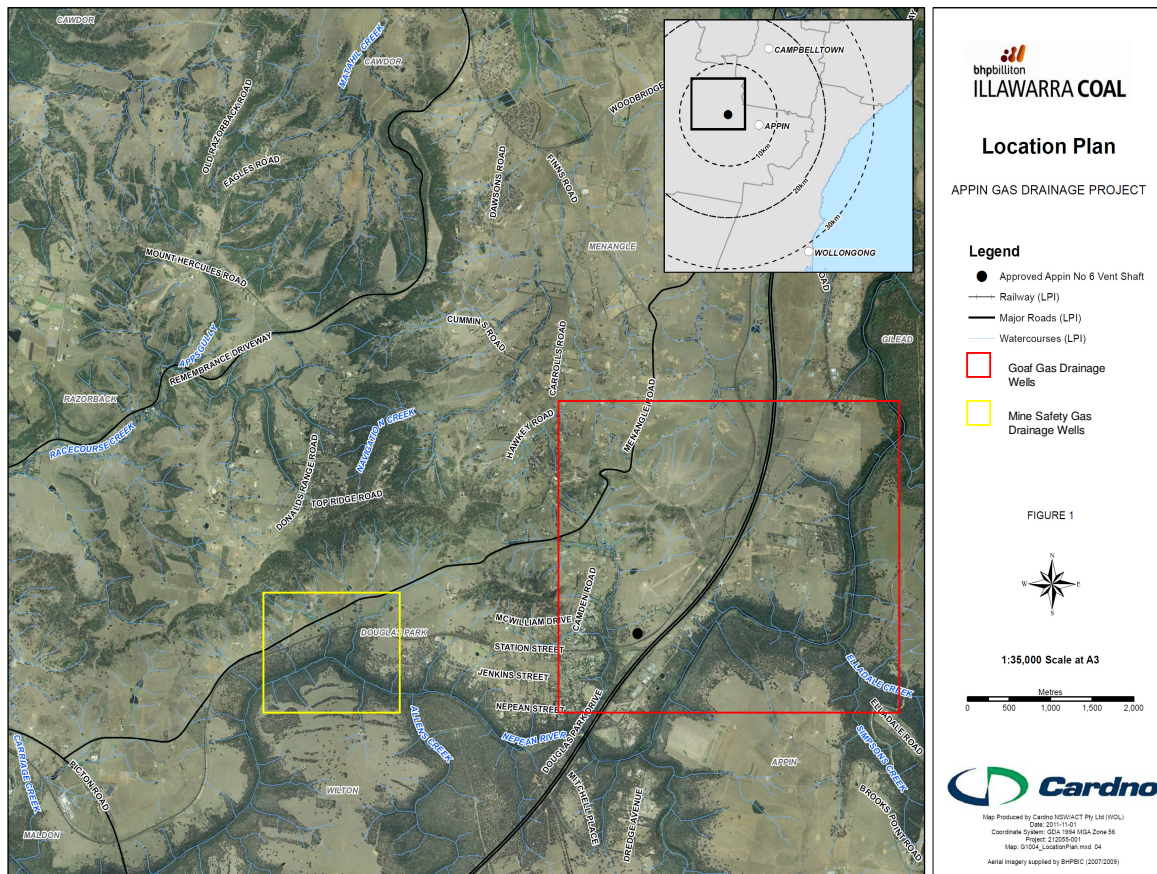


Figure 1: Project Location

In order to continue safe mining at the Appin Colliery, Illawarra Coal is now seeking a second modification to allow for the installation of additional gas drainage infrastructure above longwalls 704 and 705 and in Area 9 of the Appin Colliery.

2 PROPOSED MODIFICATION

On 20 November 2011, Illawarra Coal submitted an application to modify its project approval for the Appin gas drainage project under section 75W of the EP&A Act. The proposed modification comprises the construction and operation of additional goaf gas drainage infrastructure above longwalls 704 and 705, and the establishment of mine safety gas drainage above Area 9. The proposal is summarised below and described in full in the Environmental Assessment (EA) for the modification (**Appendix C**).

Longwalls 704 and 705 Goaf Gas Drainage Infrastructure

As a longwall mine shearer retreats through a longwall panel, the roof strata above the extracted coal seam collapses, forming a mass of broken rock known as the “goaf”. The gases released from the fractured strata in and above the goaf have the potential to raise the methane concentration in the mine ventilation air (MVA) to unsafe levels. In order to maintain mine safety, this goaf gas must be extracted. During mining of Longwalls 704 and 705, Illawarra Coal now proposes to construct and operate:

- 7 vertical gas drainage wells above longwall 704 (in addition to the 3 vertical wells and 2 MRD wells already approved); and
- 5 vertical gas drainage wells and up to 6 MRD gas drainage wells above longwall 705 (see **Figure 2**).

These wells would be connected to the existing approved pipelines, so that extracted gas could be conveyed to the gas-fired power station at the Appin West pit top.

Area 9 Mine Safety Gas Drainage (MSGD)

Prior to undertaking first workings within Area 9, Illawarra Coal is proposing to implement pre-mining drainage of CSG for mine safety reasons. In order to reduce the high level of methane in the coal seam, Illawarra Coal is proposing to construct two horizontally-drilled in-seam MSGD wells from Site 1, with one of the MSGD wells connecting to a vertical well at Site 2 (see **Figure 3**). Gas extracted from these wells would be burnt at temporary flaring units located at both Site 1 and Site 2.

Table 1 below contains the key components of the project as proposed under this modification.

Table 1: Modification key components

Aspect	Description		
Project Summary	The modification includes: • construction and operation of up to 18 boreholes above longwalls 704 and 705 to extract gas following mining and convey the extracted gas to the gas-fired power station at Appin Colliery pit top; and • construction and operation of two steered horizontal in-seam wells and three vertical wells with flaring units at two locations (Site 1 and Site 2) above Area 9 to allow for mine safety gas drainage.		
Project Setting	The proposed works would be undertaken in a highly modified environment due to previous clearing for agricultural purposes. The site for the goaf gas drainage works is 3km south of Menangle township, 1-2km north of Douglas Park township and 2km west of the Hume Highway and Nepean River. The MSGD works would be surrounded by pastoral land.		
Operational Hours	Activity	Hours	Time Frame
	Construction - site establishment of drilling sites	Monday to Friday 7am to 6pm Saturday 8am to 6pm At no time on Sunday or public holiday	Approximately 4 weeks
	Construction - drilling vertical boreholes		Approximately 4-6 weeks per borehole
	Construction - site establishment for extraction plants and surface pipelines		Approximately 8 weeks
	Construction - under-bore of Hume Highway and Main Southern Railway Line	7am to 6pm, 7 days per week	Approximately 2-4 weeks

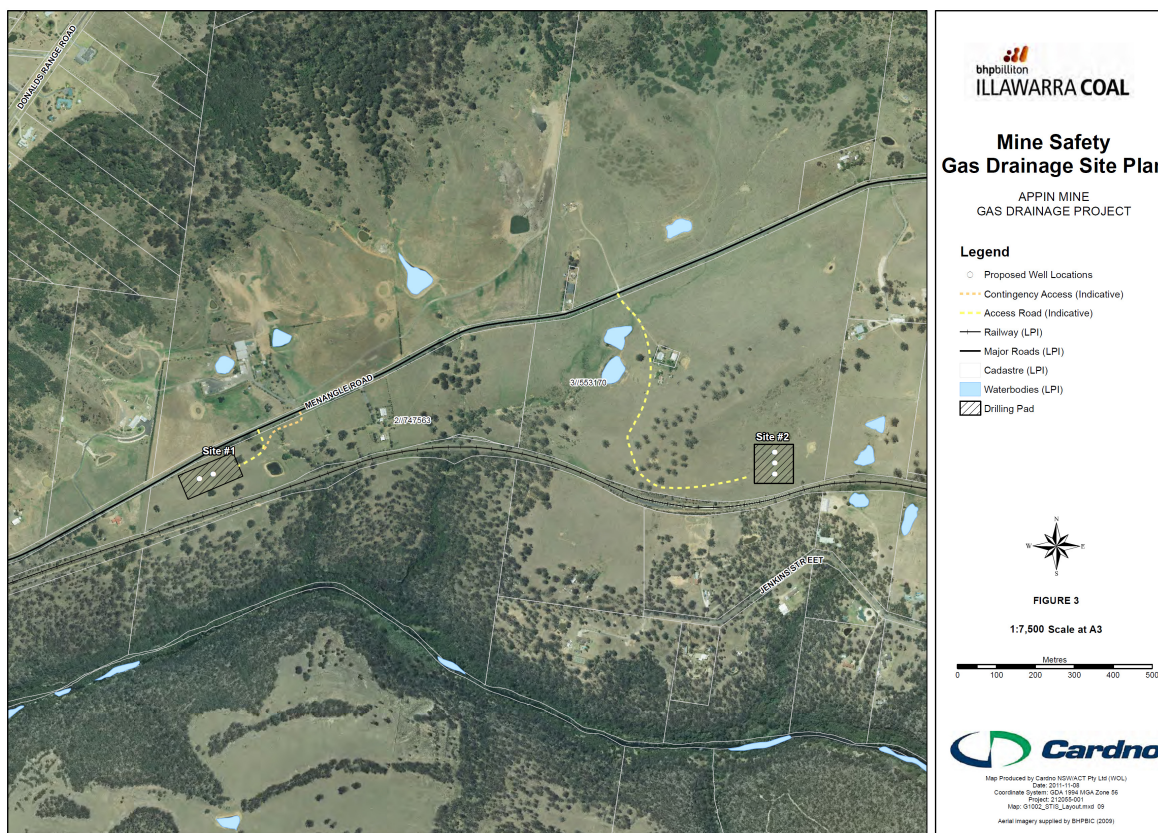


Figure 3: Proposed location of MSGD Infrastructure

3 STATUTORY CONTEXT

Section 75W

In accordance with clause 3 of Schedule 6A of the EP&A Act, section 75W of the Act, as in force immediately before its repeal on 1 October 2011, continues to apply to transitional Part 3A projects.

The proposed modification would not change the purpose of the project for which the existing project approval was granted, namely the removal of methane gas from underground mining operations at the Appin Colliery. The proposed modification involves additional gas drainage infrastructure to improve the safety of approved mining operations. The Department is satisfied that the proposed changes can be properly characterised as a modification to the existing project approval, and can be assessed and approved under section 75W of the EP&A Act.

Approval Authority

The Minister was the approval authority for the original project application. Consequently, the Minister is the approval authority for the modification application. However, the Executive Director, Major Projects Assessment may determine the application under the Ministerial delegation of 14 September 2011 as:

- no political disclosure statement has been made for this application or for any previous related application;
- there have been no public submissions by way of objections; and
- although the local Council has made a submission, this is only to recommend conditions and not an objection of the proposal.

4 CONSULTATION

The Department exhibited the EA for the proposed modification between 29 November and 22 December 2011. During the exhibition period, the Department received 8 submissions, all from public authorities. A full copy of the submissions is attached in **Appendix D**. None of the public authorities objected to the proposal, however:

- the **Office of Environment and Heritage (OEH)** recommended that the noise impacts of the related Appin Vent Shaft No. 6 project be considered and requested that more detailed community consultation procedures be included in the project's Environmental Management Plan;
- the **Division on Resources and Energy (DRE)**, within the Department of Trade and Investment, Regional Infrastructure and Services, requested further details on final rehabilitation outcomes;

- **Wollondilly Shire Council** (Council) raised concerns on several issues including visual impacts, access road intersection design and potential road damage;
- **Roads and Maritime Services** (RMS) provided recommendations in relation to the construction of temporary access from Menangle Road;
- the **NSW Office of Water** (NOW) raised concerns regarding licensing requirements and bore construction standards; and
- the **Department of Primary Industries** (DPI), **Heritage Office** of OEH and the **Mine Subsidence Board** raised no concerns with the modification.

Illawarra Coal has provided a formal response to the issues raised in submissions (**Appendix E**). These issues have been addressed in the Department's assessment in Section 5 below.

5 ASSESSMENT

The Department has assessed the merits of the proposal. During this assessment, the Department has considered the:

- modification application, EA, agency submissions and the company's response to submissions;
- existing conditions of approval;
- relevant environmental planning instruments, policies and guidelines;
- relevant elements of the EA and Director-General's report for the original development; and
- requirements in the EP&A Act, including the objectives of the Act.

The conclusions of this assessment are summarised below in **Table 2**.

Table 2: Assessment of Key Issues

Issue	Consideration and Assessment	Recommendation
Noise	• Noise impacts during construction were assessed against relevant criteria in OEH's <i>Interim Construction Noise Guidelines</i> (ICNG). The assessment found the noise impacts of drilling of wells would be: - <i>MRD Wells</i> – with the installation of the proposed noise barriers, noise impacts at all surrounding receivers would be within relevant criteria; - <i>Vertical Wells</i> – with the installation of temporary concrete noise barriers, noise impacts at all surrounding receivers are predicted to be within the relevant criteria; - <i>MSGD Steered Horizontal Wells</i> – with the installation of the specified noise barrier, noise impacts would be within the relevant criteria at all receivers, except one which would have an exceedance of 1dB during the night time period. This exceedance is considered to be negligible. • The noise assessment also considered the noise impacts related to drill pad construction and gas pipeline construction. The assessment predicted that some exceedances would occur at sites with nearby receivers. In order to mitigate these impacts, Illawarra Coal has committed to: - undertake the bulk of works during standard construction hours; and - notify any potentially impacted residences of the duration of the works, any mitigation measures to be applied, and to provide contact details for the Illawarra Coal Landholder Advisor. • Given the short term nature of the proposed construction works, and that the only hours of construction proposed for drill pads and pipelines outside of standard construction hours would be only from 1.00pm – 6.00pm on Saturdays, the Department considers that this commitment is sufficient to deal with potential noise amenity issues. Nevertheless, the Department has proposed that the project is subject to construction noise impact assessment criteria which are 5dBA lower on Saturday afternoon than during standard construction hours. • OEH recommended that noise limits included in the Appin Vent Shaft No. 6 (VS#6) approval (MP 10_0079) be incorporated into the noise conditions of the modified consent, for any receivers likely to be impacted by both projects. Receivers impacted by the VS#6 project are to the west of the proposed goaf gas drainage works. The Department has recommended noise limits for these receivers in accordance with the ICNG, which are consistent with those in the VS#6 approval. In response, Illawarra Coal has confirmed that the combined operations of both projects would be within the required criteria.	• Include new construction noise criteria. • Ensure a detailed community consultation plan is incorporated into the Noise Management Plan.

Issue	Consideration and Assessment	Recommendation
	• OEH also requested more details on Illawarra Coal's proposed community consultation procedure. The Department has included these requirements in the existing requirements for the Noise Management Plan. • During operation of the MSGD infrastructure, potential noise sources would be the silenced gas-fuelled generators, pumps and flaring units. It is considered unlikely that these units would exceed criteria at surrounding receivers.	
<i>Air Quality</i>	• During construction, impacts on air quality would occur as a result of dust generation from activities such as access route construction, clearing and excavation, and wind erosion from exposed ground. These impacts would be staged across proposed locations and would be relatively short lived at each location. The air quality assessment concluded that impacts from dust generation would be minimal and could be easily controlled using standard dust management techniques. • During operation, impacts on air quality would result from gas flaring emissions at the MSGD sites. Dispersion modelling contained in the EA found that concentrations for all pollutants would be well below the relevant impact assessment criteria, even in addition to the existing background levels.	• No change to existing conditions.
<i>Heritage</i>	• No impact on Aboriginal cultural heritage is expected, due to the extensive disturbance associated with previous farming and grazing on the proposed sites. • Due to visual impacts, a minor impact would occur to the contribution that the existing rural vista makes to the aesthetic significance of the Morton Park: Mountbatten Group historic heritage item. However this impact would be temporary and would disappear following decommissioning of the works. • To mitigate potential impacts on cultural heritage, Illawarra Coal has committed to: - avoid and temporarily fence any Aboriginal cultural site discovered during construction; and - manage any unexpected relics discovered during construction, in accordance with section 149 of the <i>Heritage Act 1977</i>.	• No change to existing conditions.
<i>Groundwater</i>	• No groundwater would be extracted as part of the goaf gas drainage wells (since the goaf has, by its nature, already collapsed, freeing any contained groundwater to drain to the underground mine). Potential cross contamination of aquifers from the boreholes themselves would be managed through casing and grouting of boreholes. • The MSGD boreholes are expected to produce less than 3 megalitres/year of groundwater, with this amount decreasing over time. Illawarra Coal has submitted an application to NOW for a licence under Part 5 of the <i>Water Act 1912</i> to intercept groundwater as a result of operations at the Appin Mine. It is predicted that the additional water produced by the MSGD boreholes would remain within the proposed limits of this application. Consequently, NOW is satisfied that this potential increase in water make can be considered as part of the existing licence application. • In response to NOW's concerns regarding bore construction standards, Illawarra Coal has confirmed that: - drilling operations would be undertaken by a drilling contractor with a valid NSW water drilling licence; - well design and construction would be to American Petroleum Institute standards, which are consistent with or exceed the standards in <i>Minimum Construction Requirements for Water Bores (2nd Edition)</i>; - vertical wells would be cased and grouted to the top of the Bulgo Sandstone to minimise impacts to the Hawkesbury Sandstone aquifer; and - MRD and MSGD wells would be cased and grouted to below the Bulgo Sandstone, to minimise impacts to the Hawkesbury Sandstone aquifer. NOW is satisfied with these commitments.	• No change to existing conditions.
<i>Surface water</i>	• The additional surface disturbance and cutting for the construction of the borehole drill pads would have a minor impact on surface water quality through localised increase of suspended solids in water flowing across temporary access tracks into pasture paddocks. • Minor diversions of surface water flows through bunds around the drill pads would minimise potential sediment increases.	• No change to existing conditions

Issue	Consideration and Assessment	Recommendation
	• If the contingency access route for MSGD Site 1 is required, disturbance would occur as a result of a creek crossing, however, no riparian vegetation clearing would occur and impacts to fish passage is not expected given the limited upstream connectivity due to the adjacent Menangle Road. • Illawarra Coal has committed to implement mitigation measures consistent with the approved project, which would include: - updating the relevant management plans; - implementing erosion and sediment control measures; - minimising the extent of vegetation clearance and ground disturbance; and - undertaking site rehabilitation.	
Traffic and Transport	• During construction, the modification would result in minor increases in local traffic volumes on Menangle Road, Moreton Park Road and Picton Road. However these increases would be temporary and the impact would be negligible as the existing traffic levels on these roads are low. • Temporary access tracks from Menangle Road would be constructed for both Sites 1 and 2. Illawarra Coal would consult with Council on the proposed design and construction of these tracks. Illawarra Coal has confirmed that it would apply all relevant traffic controls and would apply to Council, in consultation with the RMS, for a section 138 consent under the <i>Roads Act 1993</i>. • In its submission, RMS raised concerns regarding the sight distances for the preferred access route to Site 1. Illawarra Coal has confirmed that the preferred access route is compliant with Austroads' <i>Guide to Road Design Part 3: Geometric Design (2010)</i> and has been chosen to limit the area of disturbed land. Nevertheless, Illawarra Coal has retained the option to revert to a contingency access route should the preferred access be unable to meet RMS's requirements. • During operation, infrequent increases in traffic (water tankers to remove produced water from the Appin 9 sites) would occur, however the impact would be minimal given the amount of water that this element of the modification is expected to generate. • Council raised concerns regarding the potential impact of heavy vehicle movements and requested the payment of a suitable road damage deposit. In response, Illawarra Coal committed to consult with Council regarding a pre-project inspection to determine the existing road condition and, if damage is seen to result from the project, then Illawarra Coal would meet the cost of repairs. It is also a requirement of the existing approval that Illawarra Coal pay all reasonable costs associated with repair of any damage to the pavement of any local road caused by the project.	• No changes to existing conditions.
Visual	• Visual impacts resulting from the construction and operation of the goaf gas and MSGD wells would occur at some residential receivers and for users of the Hume Highway and Menangle Road. These impacts however, are considered minor and temporary. • Shielding of light during night works at MSGD Sites 1 and 2 would prevent impacts on the Main Southern Railway line. • To mitigate visual impacts, Illawarra Coal has committed to: - the use of noise barriers (which also reduces visibility); - directing lighting away from sensitive receivers; and - enclosing the flaring units to reduce visible flaring. • Council raised concerns regarding the visibility of the MSGD drill pads from public view or adjoining land. In response, Illawarra Coal confirmed that, due to topography and the location of existing dwellings, it was not possible for the MSGD sites to be completely out of sight of the public. However, Illawarra Coal confirmed that the sites would: - be minimised in size through progressive rehabilitation and re-vegetated as promptly as possible; - have noise barriers and shade cloth installed around the perimeter of the compounds; and - be of a colour sympathetic to the surrounding environment. • Council also raised concern regarding the need for excessive cut and fill of access roads, and referred to the visual impact of a recently constructed access road for the VS#6 Project. Illawarra Coal has confirmed that the access roads required for this modification would be much less significant in scale and that any cut and fill required in their construction would be minimised.	• No change to existing conditions.
Biodiversity	• The modification would result in the disturbance of 7.8 ha of highly disturbed, previously cleared vegetation. No native vegetation clearing	• No change to existing

Issue	Consideration and Assessment	Recommendation
	is required, with the exception of one young <i>Eucalyptus moluccana</i> along the Menangle Road corridor. The proposed area of impact does not support any important habitat for native flora and fauna. No endangered ecological community occurs, or is likely to regenerate on site.	conditions.
Rehabilitation	- Progressive rehabilitation of infrastructure and well sites during the project would be implemented, including: - removal of all construction equipment, reduction in drill pad size and temporary rehabilitation of disturbed areas following the completion of construction; and - removal of all equipment and infrastructure, decommissioning of boreholes in accordance with DRE's <i>EDG01 Borehole Sealing Requirements on Land</i>, site rehabilitation to pre-existing landforms and re-establishment of pre-existing vegetation following final decommissioning of wells. - DRE requested additional details on final rehabilitation outcomes, including a conceptual final landform plan. Consequently, the Department is proposing that Illawarra Coal prepare a Rehabilitation Management Plan for the project.	- Ensure staged, progressive rehabilitation. - Require the preparation and implementation of an appropriate Rehabilitation Management Plan.
Greenhouse Gases	The EA included an assessment of greenhouse gas emissions associated with both goaf gas extraction and mine safety gas drainage, compared to the release of this methane via mine ventilation air. The assessment estimated that goaf gas extraction and MSGD would offset (respectively) 82,000 tonnes per annum (tpa) of CO₂-e and 221,000 tpa CO₂-e that would otherwise be released without mitigation.	No changes to existing conditions.

6 RECOMMENDED CONDITIONS

The Department has drafted recommended conditions for the modification to address the recommendations in Table 2 above (see **Appendix A**). It has also used this opportunity to update several conditions of the project approval to be consistent with conditions in similar contemporary mining approvals. Illawarra Coal has reviewed and accepted these conditions.

7 CONCLUSION

The Department has assessed the proposed modification in accordance with the relevant requirements of the EP&A Act, including the objectives of the Act and the principles of ecologically sustainable development. Based on this assessment, the Department considers that the proposed gas drainage works would increase mine safety and substantially decrease greenhouse gas emissions from Appin Colliery, with minimal resulting environmental impacts.

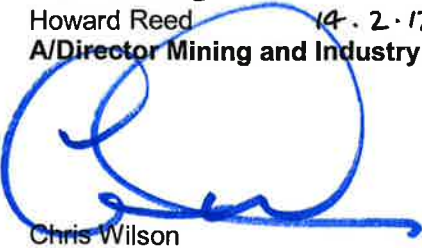
The proposed works would occur on previously-cleared grazing land which would be rehabilitated following the decommissioning of the project. Consequently, the Department is satisfied that the proposed modification is in the public interest and should be approved, subject to conditions.

8 RECOMMENDATION

It is RECOMMENDED that the Executive Director, Major Projects Assessment:

- consider the findings and recommendations of this report;
- determine that the proposed modification falls within the scope of section 75W of the EP&A Act;
- approve the application under section 75W, subject to conditions; and
- sign the notice of modification in **Appendix A**.


Howard Reed 14.2.12
A/Director Mining and Industry


Chris Wilson 15.2.12
Executive Director, Major Project Assessments

APPENDIX A – NOTICE OF MODIFICATION

APPENDIX B – EXISTING CONSOLIDATED APPROVAL

APPENDIX C – ENVIRONMENTAL ASSESSMENT

APPENDIX D - SUBMISSIONS

APPENDIX E – RESPONSE TO SUBMISSIONS