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PROPOSED BELTANA NO. 1 COAL MINE

REPORT ON THE ASSESSMENT OF A DEVELOPMENT APPLICATION
(DA 114-05-01) PURSUANT TO SECTION 79C OF THE
ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979

FILE: S00/00799

1. INTRODUCTION AND BACKGROUND

1.1 The Applicant

The Applicant for the proposal is Bulga Coal Management Pty Limited (BCM). BCM operates the Bulga Complex on behalf of the Bulga Joint Venture (BJV). BJV comprises Saxonvale Coal Pty Limited (90%) and Nippon Steel (10%).

1.2 Overview of the proposal and its location

BCM is seeking development consent to develop the Beltana No. 1 underground coal mine ("the Project"). The Project is located approximately 15 kilometres south of Singleton and 5 kilometres north of Broke, in the upper Hunter Valley of New South Wales, as is illustrated in Figure 1. The proposal is estimated to have an expected capital investment of approximately $ 24 million and will provide continued employment opportunities for 130 people.

The Development Application seeks approval to extract up to 6 million tonnes per annum of coal by retreat long-wall mining methods. The proposal involves:

- The establishment of 8 longwall panels to the west of the current Bulga Open Cut mining operation, and includes an area that was previously approved for both open cut and underground mining;
- Establishment of a mine access for personnel and materials in the existing Whybrow Pit, which is part of the Bulga Open Cut mining operation;
- Construction and operation of additional surface facilities and works to service the new mine access and workings in and adjacent to the Whybrow Pit;
- Temporary haulage of ROM coal along existing Bulga Open Cut haul roads to the existing coal handling and preparation plant (CHPP);
- Construction and operation of a ROM coal stockpile and transfer conveyors to the existing CHPP including a conveyor under Broke Road;
- Use of an existing road, which intersects Broke Road, to access the proposed Beltana No. 1 surface facilities and mining area.

The proposed underground mining area occupies approximately 587 hectares.

1.3 State Significant, Integrated, Designated Development

The proposal is defined as State Significant Development under the *Environmental Planning and Assessment Act 1979* ("the Act"). As such, the Minister for Urban Affairs and Planning is the consent authority for this DA. Under Section 91 of the Act, the development proposal is also an 'integrated development', as, in addition to requiring development consent, the application requires other approvals or licences from other government agencies. These licenses or approvals include:

- A consent from Singleton Shire Council (Council) under Section 138 of the *Roads Act 1993*;
- A permit from Department of Land Water Conservation (DLWC) under Part 3A of the Rivers and Foreshores Improvements Act 1948;

- An approval from the National Parks and Wildlife Service (NPWS) under Section 90 of the *National Parks and Wildlife Act, 1974*; and
- An approval from the Mine Subsidence Board (MSB) under the Mine Subsidence Compensation Act 1961.

The Environmental Protection Authority (EPA) has advised that the proposed development may be undertaken under the existing Environmental Protection Licence and therefore is not approval body for this development application.

The approval bodies have submitted their general terms of approval, which have generally been adopted as conditions in the recommended instrument of consent. All the approval bodies have been consulted in relation to the consent conditions and are satisfied that their general terms of approval are adequately included in the conditions.

The proposal is also Designated Development under the *Environmental Planning and Assessment Regulation 2000* ("the Regulation") and an EIS has therefore been prepared in support of the application.

1.4 Lodgement of DA and exhibition

Bulga Coal lodged the DA and EIS with the Department of Urban Affairs and Planning on 23 May 2001. The DA and EIS were publicly exhibited from Friday 8 June 2001 until Wednesday 11 July 2001, in accordance with the *Environmental Planning and Assessment Act, 1979*. Submissions were received until close of the exhibition period. A detailed summary of submissions resulting from the public exhibition of the proposal is given at Appendix 1.

Public notification of the DA involved the placement of notices in the *Singleton Argus*, and the placement of site signs at various locations on and around the DA area. The Department also advised all adjoining and surrounding landowners of the proposal in accordance with legislative requirements.

The Department is satisfied that the requirements for public exhibition of the DA and EIS and public participation have been fully met.

1.5 Local Council position

Singleton Shire Council made a submission in response to the proposal requesting the Department to include certain General Terms of Approval in regard to the Council's integrated approval role under Section 138 of the Roads Act 1993. Council also recommended a range of other more general conditions, relating to construction and specification of buildings; erosion control; dust suppression; rehabilitation and the Community Consultative Committee.

1.6 Government agencies' position

A total of 8 submissions were received from government agencies, including Singleton Council. No agencies raised objections to the proposal. However, a number of issues were raised in submissions which either required the Applicant to undertake further assessment or provide clarification, including issues of subsidence induced impacts on water courses and surface hydrology, flora and fauna assessment, and the modelling of the noise impacts. The issues and points of concern raised in these submissions were forwarded to the Applicant for further consideration, and where appropriate further assessment. The Department is satisfied that all issues have been addressed adequately and are considered in detail later in this Report.

1.7 Local community position

One submission was received from the community in regard to alleged previous behaviour of Bulga Coal employees and the operation and management of Bulga Coal. This related to concerns regarding the notification of land holders for mining under land and entry onto property, and did not directly relate to the Beltana No.1 proposal. Notwithstanding, this concern was raised with the Applicant and an appropriate response was provided to the Department.

1.8 Request for Commission of Inquiry

No submissions were received requesting a Commission of Inquiry for this proposal.

2.0 THE PROPOSAL

2.1 Site details and Infrastructure

Bulga Coal Management proposes to construct and operate the Beltana No. 1 underground coal mine, located approximately 15 kilometres south of Singleton and 6 kilometres east of Bulga, in the Upper Hunter Valley within the Singleton Local Government Area (as illustrated by Figure 1). The Beltana No. 1 project will be incorporated into the existing Bulga Complex, which currently consists of the Bulga Open Cut Mine, South Bulga Underground colliery, and associated coal processing and rail transportation infrastructure. The Development Application area for this proposal is shown in Figure 2.

The mining proposal involves the establishment of eight longwall panels to extract coal from the Lower Whybrow Seam. As is illustrated in Figure 3, the proposed longwalls are located to the existing south-west of the existing Bulga Open cut mine and to the north-west of the existing South Bulga Colliery underground workings.

The Applicant proposes to establish the personnel and materials facilities to service the underground mine in and adjacent to the existing Whybrow Pit. The Whybrow Pit is located to the north-east of the proposed longwall (Figure 3). The required facilities will include an administration building, bathhouse, emergency helipad, ventilation fans and compressors; fire depot and pumps; wash down bays; substation and switch-yard; water supply tanks and dams; water sumps and workshop. The EIS describes that the majority of these facilities will be located at the base of the Whybrow Pit, adjacent to the mine access adits. However, the administration building, bathhouse, substation and switch-room will be located on a pad cut into the eastern side of the Whybrow Pit highwall. The four million-litre water supply dam, potable water tanks, helipad and switch-yard will be located at the top of the highwall. Road access to the proposed personnel and material facilities will be via an existing access road to the Whybrow Pit.

2.2 Land Ownership and Land Use

The BJV owns the majority of the surface holdings within the DA area, with the exception of three properties on the western side of Charlton Road. The private properties are owned by Turnbull, McInerney and McNamara. However, BJV is currently proceeding with the purchase of the property owned by McNamara, and this property is referred to as a mine owned property throughout the EIS. The proposed mining area is located entirely within existing coal leases (CL224, CL372 and ML 1328) held by BJV and operated by BCM.

The predominant land uses of the surrounding area include coal mining, grazing, cropping, viticulture, environmental protection, military training and rural-residential holdings. Within the Beltana No.1 project area, agricultural activity is restricted to beef cattle grazing, and the EIS advises that this activity will co-exist with mining throughout the life of the project.

The Bulga Complex is one of a number of coal mining facilities within the Singleton LGA. Mount Thorley open cut coal mine is located immediately to the north of Bulga Complex, and Warkworth Open Cut Coal mine is located immediately to the north of the Mt Thorley mine. The location of the Beltana No.1 project in relation to the other surrounding mining operations is outlined by Figure 1.

The nearest residential area to the proposed Beltana No.1 project is the town of Broke, which is located approximately five kilometres to the south of the project area. There are no residential dwellings within the project area, with the nearest residence to the proposed main surface facilities are approximately 2000 metres to the south-west. The closest residences to the underground mining area are located along Fordwich Road, about 130 metes outside the predicted subsidence zone.

2.3 Production process and stages of development

The Beltana No. 1 project proposes to mine coal in the Lower Whybrow Seam. Approximately 20.8 Mt of recoverable coal reserves has been identified within this seam in the area proposed for mining. The Lower Whybrow seam ranges from 2.6

to 3.2 metes in thickness and is suitable for thermal coal purposes. The depth of cover to the Lower Whybrow seam in the proposed longwall mining area ranges from 40 metres in the east to 220 metres in the west. The Applicant proposes to extract the full thickness of the Lower Whybrow seam and only the coal in the chain pillars between longwall panels will be sterilised in this seam. No seams below the Lower Whybrow will be sterilised by this project, and mineable reserves within these lower seams will be subject to a separate later development application.

The proposed underground mine plan consists of eight longwall panels, which will be oriented at approximately 90^{o} to the longwall panels within the northern section of the approved South Bulga Colliery mining area.

The EIS describes that it is proposed to construct nine sets of adits directly into the lower Whybrow seam from the base of the highwall in the existing Whybrow Pit. Each of these adits will form a development heading for one of the eight proposed longwall panels, with each development heading consisting of two roadways. Mining will be conducted using standard longwall techniques, with each longwall approximately 263 metres in width and with a length of between 2 and 3 kilometres.

Mining will progress from south to north with a production rate of up 6mtpa. At this maximum rate of production the calculated duration of mining is six years. However, given the potential fluctuation of mining, it is possible that mining would occur within this area over a six to ten year period.

ROM coal will extracted from the underground workings via a 4500 tonne per hour belt conveyor located in one of the development headings alongside the active long wall panel. The underground conveyor will emerge from the underground workings and be located along the access ramp into the Whybrow Pit adjacent to the personnel and materials access.

ROM coal will initially be transported by B-double trucks from the floor of the Whybrow Pit to a 15 metre high, 30000 tonne ROM coal stockpile. This stockpile is located about 600 metres directly to the north of the South Whybrow Emplacement Area, as illustrated in Figure 4.4 of the EIS. ROM coal will be reclaimed from the stockpile by front-end loader and loaded into rear dump trucks for transfer to the CHPP along existing open cut haul roads. This method of coal transportation will be employed during initial mine development whilst a 150 000 tonne ROM coal stockpile and transfer conveyor to the CHPP are constructed. These facilities are expected to be constructed over an approximate period of 12 months.

A transfer station will be located along this proposed conveyer, which will allow coal to be fed onto a 4,500 tonne per hour conveyor to the 150,000 tonne ROM coal stockpile. The proposed stockpile is to be located adjacent to the personnel and materials facilities and the South Whybrow Emplacement Area. The stockpile will be approximately 90 metres wide, 240 metres long and 25 metres high, occupying a total area of approximately 2.2 hectares.

Coarse rejects will continue to be incorporated into the Bulga pit rehabilitation works until completion of these works. Coarse rejects will also be deposited in the South Whybrow Emplacement Area approved by the 1999
Bulga Open Cut development consent. Fine rejects will continue to be deposited into the Deep Pit tailings dam.

2.4 Annual production, hours of operation and employment

As outlined above, the project proposes to mine coal in the Lower Whybrow seam. It is proposed to extract the full thickness of the lower Whybrow seam and only the coal in the chain pillars between longwall panels will be sterilised by the mine plan.

Mining will progress from south to north across the DA area, with a production rate of up to 6 Mtpa. At this maximum rate of production the calculated duration of mining in this area is six years. However, the EIS advises that taking into account the potential fluctuation in production rate from the mine, it is possible that mining could occur within this area over a six to ten year period.

The EIS advises that it is expected that the construction of a coal clearance systems will be undertaken over a 12 month period and employ approximately 40 personnel. Construction activities for the project will be conducted during daylight hours, 6 days a week.

The proposed development will employ up to approximately 130 personnel and operate 24 hours per day, 7 days per week.

2.5 Transport arrangements

As outlined above, ROM coal will extracted from the underground workings via a conveyor located in one of the development headings alongside the active long-wall panel. ROM coal will initially be transported by B-double trucks from the floor of the Whybrow Pit to a 15 metre high 30,000 tonne ROM coal stockpile. ROM coal will be reclaimed from the stockpile by front-end loader and loaded into rear dump trucks for transfer to the CHPP along existing open cut haul roads. This method of coal transportation will be employed during initial mine development and construction of the 150 000 tonne ROM coal stockpile and transfer conveyor to the CHPP, which is expected to be undertaken over an approximate period of 12 months.

A transfer station will be located along this conveyer, which will allow coal to be fed onto a conveyor to the 150 000 tonne ROM coal stockpile located adjacent to the proposed personnel and materials facilities and the South Whybrow Emplacement Area.

2.6 Justification

The Applicant provides various justifications for the proposal proceeding. Should the proposal proceed, the Beltana No.1 project will ensure that the coal production from the Bulga complex continues to make a significant contribution to coal export from the Hunter Coalfield. If the mining proposal should not proceed, coal production from Bulga Complex would be substantially reduced, and thereby significantly reducing the economic viability of the mine.

The estimated output from the Beltana No.1 project at full production will provide foreign income in the order of $160 million per year, and in turn, will provide substantial flow on effects to the local community and the wider Hunter Region. Should the project not proceed, employment opportunities for approximately 130 workers would be lost along with the flow-one economic benefits to the local community and region, and a significant coal resource may not be recovered.

The project is located within an area that is mainly owned by BCM and does not have any significant land use constraints which would preclude underground mining. The EIS describes that the project has been designed to minimise sterilisation of coal resources and will not preclude mining either in lower seams or in potential future mining areas to the north and west of the Beltana No.1 mining area.

3.0 STATUTORY PLANNING MATTERS

Various State, regional and local statutory planning provisions apply to the proposed mine. The proposal is a "designated development" under Schedule 3 of the *Environmental Planning and Assessment Regulation 2000* and an EIS has been prepared in support of the application.

3.1 Local Planning Considerations

The Project is within the Singleton Shire Local Government Area. The planning provisions for the Shire are contained within the Singleton Shire Local Environmental Plan (LEP) 1996. Under this plan, the proposed Project area is zoned 1(a) Rural Zone. The Applicant advises that the proposal is consistent with the objectives of the zone and is permissible with development consent. The Department is satisfied that the project is permissible and consistent with the zone objectives.

3.2 Regional Environmental Plans

The Hunter Regional Environmental Plan (REP) 1989 applies to the proposal. The REP provides a framework to guide and control growth and development in the region. The REP includes objectives relating to the management of coal and other mineral resources and extractive industries in the region. The Department considers that the proposal is consistent with the objectives of the REP.

3.3 State Environmental Planning Policies (SEPP)

SEPP No. 33 (Hazardous and Offensive Development)

SEPP 33 was introduced in 1992 to ensure that in considering any application to carry out potentially hazardous or offensive development, the consent authority has sufficient information to assess whether the development is hazardous or offensive and to impose conditions to reduce or minimise any adverse impact.

In the EIS, the Applicant reasoned that as SEPP 33 applies only to those proposals that are either potentially hazardous or offensive and the proposed development does not constitute a potentially hazardous or offensive industry under Clause 3 of this planning instrument, SEPP 33 does not apply to this proposal. The Department expressed dissatisfaction with the consideration of SEPP 33 provided in the EIS and submitted that the hazard issues had not been adequately addressed in the EIS. The Department considered that the proposal purports to define potentially hazardous industry but uses instead the definition for hazardous industry in SEPP 33. As a result, the test as to whether or not SEPP 33 applies was considered to have been applied inappropriately. The applicant was requested to provide evidence that the proposal could not pose a significant risk even in the absence of measures to reduce or minimise its impact (which is the test of potentially hazardous in Clause 3 of SEPP 33). The definition used by the applicant for potentially offensive development had been questioned for the same reason by the Department.

In response to the concerns raised by the Department, the Applicant provided further explanation and this information was deemed to be adequate by the Department. The Department concurred that the project is not considered to be an offensive industry.

SEPP No. 34 (Major Employment Generating industrial Development)

SEPP 34 prescribes that the Minister for Urban Affairs and Planning is the consent authority in respect of development to which the policy applies. The SEPP applies to projects which, in the opinion of the consent authority, has a capital investment of $20 million or more, or would after the construction stage employ 100 or more persons on a full time basis.

The proposal is expected to have a capital investment of approximately $24 million and will provide continued employment for approximately 130 people. The application of SEPP 34 to this project was determined by the Minister on 13 August 2001.

SEPP No. 44 (Koala Habitat Protection)

SEPP 44 applies to Singleton Shire, as it is identified in Schedule 1 of the policy as a local government area where koalas are known to occur. The Applicant advises that a detailed assessment has been conducted to determine whether the site contains core habitat and these findings are summarised in Section 2.3.4 and are presented in full in Appendix 4 of the EIS. This assessment concludes that no core Koala habitat was found to occur at the site and therefore there is no requirement to prepare a Koala Management plan for this site. The Department concurs with this assessment.

3.4 Schedule 3 of EP&A Regulation

The proposal is designated development under Schedule 3 of the EP&A Regulation 2000 and an EIS was prepared accordingly. Procedures relating to the preparation and public notification of the EIS have been followed.

3.5 Environment Protection and Biodiversity Conservation Act, 1999 (EPBC Act)

The Commonwealth EPBC Act commenced operation on 16 July 2000, with the primary objective of providing protection for the environment, particularly those aspects of the environment that are matters of "national environmental significance". The EPBC Act establishes a scheme requiring environmental assessment and approval of proposals likely to significantly impact on such matters and a determination by the Minister as to whether the proposal is a "controlled action" under the EPBC Act.

The EIS advises that as the project does not relate to any of the matters of national environmental significance prescribed by the Act, approval from the Commonwealth Minister for the Environment is not required for this proposal.

The Department concurs with this assessment, however requested further consideration of migratory species. The preliminary assessment of threatened species is provided in Appendix 4 of the EIS, and concluded that there will be no significant impact on threatened species listed in the EPBC Act. However, following the Department's review of the EIS, the Department noted that specific migratory species listed under the EPBC Act are present in the study area. The Applicant was required to provide further consideration as to whether a referral to EA was required. The Applicant assessed the matters as requested and provided written evidence of this assessment to the Department. The Department concurs with the position that there will be no significant impact on migratory species.

3.6 Threatened Species Conservation Act, 1995

The EIS addresses each of the matters set out in section 5A of the EP&A Act, and concludes that there was unlikely to be a significant impact on threatened species and therefore a species impact statement was not required (SIS). The Department's review of this assessment noted that since the section 5A assessments were undertaken, there have been additions to the listed species and additional preliminary listings to the *Threatened Species Conservation Act 1995*. The Applicant was required to undertake further assessment under the provisions of this Act, and provided written evidence of this assessment to the Department. The Department's assessment of flora and fauna is in the "Department's Consideration" section below and concurs that the proposal is unlikely to significantly impact on any threatened species.

3.7 Conclusion

The proposal is in accordance with the provisions of all the relevant environmental planning instruments.

4.0 SUBMISSIONS RECEIVED

In accordance with section 79 of the EP&A Act, the Department received a total of 9 submissions in response to the exhibition of the proposal. Seven of these submissions were received from Government agencies, one from Council and one submission was received from a member of the public.

4.1 Government agencies

Eight submissions were received from Government agencies, being Mine Subsidence Board (MSB), National Parks and Wildlife Service (NPWS), NSW Department of Mineral Resources (DMR); Department of Defence, Roads and Traffic Authority (RTA), the Environmental Protection Authority (EPA) and Department of Land and Water Conservation (DLWC) and Singleton Shire Council. None of these submissions raised any direct objections to the proposal, however several agencies did provide comment on the assessment undertaken for the project and required clarification as to certain potential impacts. The Department's consideration of the issues raised by government agencies is provided in Section 5 of this Report.

The key comments raised by these agencies included:

- NPWS

NPWS considered that the environment is largely disturbed and little vegetation cover remains apart from the isolated remnants. Notwithstanding, NPWS requested some additional clarifications to the potential of the channel works to impact on the Wollombi Redgum River Oak Woodland.

- DMR

DMR commented on the need to review the water management plan for the Bulga complex. In addition, DMR requested further consideration of the proposed methods to seal the ground surface to prevent the ingress of water into the working. Similarly, further assessment was requested of the methods used to stabilise the temporary and permanent watercourses with the subsided areas.

- EPA

The EPA raised some concerns about the noise modelling for the proposal and noted the absence of an odour impact assessment.

- DLWC

DLWC raised no direct objections to the proposal but did a make a number of comments and recommendations. These concerns related to the protection of groundwater, impacts on water courses and stream stability, revegetation, farm water supply and the water balance for the mine.

- Singleton Council

Singleton Council did not object to the proposal however submitted a range of recommended conditions. These conditions included requirements in regard to Council's approval role in respect of road works, particularly for the monitoring and maintenance of the condition o fthe roads. Other more general conditions related to construction and specification of buildings; erosion control; dust suppression; rehabilitation and the Community Consultative Committee.

4.2 Public submissions to proposal

One submission was received from the general public. This submission raised concerns about the previous practice of Bulga Coal regarding the notification of landholders for mining under land and entry onto property.

4.3 Consideration of Need for COI

In response to the exhibition period, no submissions were received requesting a COI for the Beltana project. The Department does not consider that a COI is warranted. It is considered that a COI would not add any further value to the assessment process. The key issues have been addressed to the satisfaction of the Department and other government agencies, and a number of stringent consent conditions have been recommended to ensure the predicted impacts from the mine can be adequately managed and mitigated, including environmental monitoring. The Department is satisfied that the mine's impacts have been thoroughly addressed, negating the need for a COI.

5.0 DEPARTMENT OF URBAN AFFAIRS AND PLANNING'S CONSIDERATION

Key issues

The Department has identified the key issues for the Project as being:

- Subsidence
- Surface water and groundwater
- Noise
- Air quality
- Archaeology
- Flora and fauna
- Transport and Roads
- Visual amenity
- Socio-economics
- Ecologically sustainable development

5.1. Subsidence

Applicant's position

The Applicant commissioned Waddington Kay & Associates to undertake an assessment of the impact of subsidence on all natural and artificial features on the land surface which may be potentially impacted by the Beltana project. The key findings of this assessment are included in Section 5.2 of the EIS, and the report provided by Waddington Kay & Associates is in included in full in Appendix 9 of the EIS. The subsidence prediction method used in the EIS is the Incremental Profiled Method of Waddington Kay (1998). The method was calibrated against measures of subsidence from current longwall extraction at South Bulga Colliery and verified against the more generic Newcastle Coalfield Guideline.

The assessment reveals that subsidence predictions vary considerably across the Beltana No.1 mining area depending on seam thickness, depth of cover and other geological features. In overview, the EIS finds that the shallow workings with thicker seams on the eastern side of the mining area will lead to higher levels of subsidence than experienced in the shallow workings located on the western side of the mining area. Within each longwall panel, vertical subsidence varies from 100-1768 mm in the centre of the panel, and 0-100 millimetres over the chain pillar. The maximum vertical subsidence of 1768 millimetres occurs within BJV-owned land, on the eastern side of Charlton Road, approximately 22 metres from the finishing end of the long wall.

Further discussion of the subsidence impacts are discussed where relevant to other aspects of the report including surface drainage and hydrology, aboriginal archaeology and the local road network.

Mitigation measures proposed by Applicant

The EIS describes that the occurrence of surface cracking, to the extent that surface mitigation works are likely to be required, will generally be confined to the area with relatively low depth of cover on the eastern side of Charlton Road. This includes drainage lines and adjoining areas where subsidence may result in small areas of potential ponding if appropriate mitigation measures are not implemented.

To address these potential surface impacts, the EIS outlines that where required, gypsum will be applied and the soil tilled to 'work in' the gypsum, and subsequently seeded and fertilised followed by light rolling to seal any remaining surface cracks. These works will be undertaken, where required, behind the advancing face of the longwall. Surface cracking remediation on private property will be undertaken in consultation with the landowner.

The Applicant also proposes to continue a range of monitoring and management measures during the longwall mining at Beltana No.1, which have been implemented during the course of underground activities at South Bulga Colliery. These measures are as follows:

- Assessment of surface infrastructure prior to mining to establish the baseline condition;
- Pre-establishment of monitoring lines in accordance with DMR requirements to determine surface levels;
- Regular monitoring of these assessment lines during and after mining to assess the level of subsidence caused by underground operations;
- Progressive repair of subsidence induced surface cracking and infrastructure damage; and
- Liaison with MSB to monitor and damage subsidence remediation works.

Submissions Received

DLWC raised a concern that the depth of the mining, orientation and width of the longwall panels in the Beltana No.1 mine may cause significant destabilisation of the stream systems affected by subsidence. These concerns are discussed in more detail in Section 5.2

DMR submitted that effects and remediation of subsidence caused by longwall mining of the Beltana area are comprehensively covered in the EIS. DMR assesses that the subsidence is similar to that caused by the existing South Bulga operation which is satisfactorily managed.

MSB commented that the development application area is within the Patrick Plains Mine Subsidence District and therefore the Board's prior approval is required for the construction of any improvements including those related to the mine buildings and associated works. In order to be covered under the *Mine Subsidence Compensation Act*, improvements in the subject area would need to have been constructed with the Board's approval or erected prior to 2 July 1980. Should the effects of underground mining damage such improvements, then the Board may carry out rectification works or pay compensation in lieu of repairs. Should mining result in damage to the land surface, such as holes or large cracks, then the Board will remove any public or private danger by filling where possible or other measures.

Department's Position

The Department is generally satisfied with the assessment of the mining induced subsidence and the predictions of the extent of damage such subsidence may cause. In order to minimise the subsidence-induced impacts from the proposal the Department has recommended a number of management measures in the conditions of consent. The Applicant is required to prepare Private Property Subsidence Management Plan for the Turnbull and McInerney properties, which are the only private landowners that may have land affected by the proposal. The Applicant is required to advise each landowner of any plans for future mining and the predicted impacts, within the specified time frame. The Applicant is also required to prepare a Longwall Subsidence Management Plan for each longwall panel or group of panels. This plan must include a range of factors, including details of consultation with relevant agencies, an update of geological data, the potential impacts of subsidence; and details of management and mitigation measures.

The recommended conditions also require the Applicant to undertake an ongoing monitoring program, including monitoring of groundwater levels and quality, monitoring of slips and landslides, and a comparison of predicted impact with actual impacts. These subsidence related conditions also incorporate the General terms of Approval of DLWC and have been reviewed by this agency and are considered to be adequate. The conditions have also been reviewed by MSB, and no objections to the recommended conditions were submitted.

The Department considers that the recommended conditions of consent, combined with the management and monitoring measures proposed in the EIS will adequately minimise the subsidence-induced impacts from the proposal. Additional conditions are also recommended for specific predicted impacts of the proposal, and these requirements are discussed in greater detail in the appropriate sections.

5.2. Surface and Groundwater

5.2.1. Groundwater

Applicant's position

The Applicant commissioned Mackie Environmental Research to undertake a groundwater assessment of the proposed Beltana No.1 project. The assessment is contained in full at Appendix 6 to the EIS and summarised in Section 5.6 of the EIS.

The EIS describes that the proposed development is located in an area with two general aquifer types: an alluvial aquifer associated with the Wollombi Brook, and a hard rock aquifer associated with the coal measures. The proposed development will intersect the hard rock aquifer and result in the depressurisation of the resources, but the EIS advises that there will be no mining beneath the alluvial aquifer.

The applicant describes that longwall mining leads to the collapse of rock strata above the mining operation. This process, combined with dewatering of mine workings, reduces groundwater levels and pressures within the affected coal measures. The key potential impacts associated with longwall mining are:

- seepage of groundwater into the underground workings;
- changes to the groundwater levels in the hard rock aquifer;
- changes to groundwater levels in the alluvial aquifer; and
- changes to groundwater extraction bore yields.

The EIS describes that computer based aquifer simulations of current and proposed mining were conducted in order to understand the groundwater flow process that could evolve during extraction of panels in the Lower Whybrow seam at Beltana No.1. The simulations include the cumulative effects of existing operations at Bulga Open Mine and South Bulga Colliery.

The computer simulations predict a rise in mine water make from commencement of panel extraction in 2002 to 0.6ML/day over a period of 6 years of mining. The EIS notes that this increase in mine water volumes will be directed into the existing mine water system.

The EIS also describes that panel extraction may depressurise inter-burden layers and coal seams for a distance of 0.5 to 1.5 kilometre beyond the panels. The Applicant considers that the fall in groundwater pressures may invoke a change in leakage between the alluvial aquifer systems and coal measures.

The EIS concludes that impacts of mining on the groundwater environment are expected to be low and unlikely to measurably affect the water resources of the alluvial lands situated along the Wollombi Brook. The assessment in the EIS considers that the groundwater within the coal measures is generally limited non-potable resource with beneficial use restricted to occasional stock supply. The EIS also predicts that off site impacts on the hard rock aquifer are also predicted to be minor.

Mitigation measures proposed by Applicant

The EIS advises that all groundwater extracted from the mine dewatering bores will be pumped to the Deep Pit and contained within the existing Bulga Complex water management system. The Applicant considers that the existing water management system is adequate for the predicted Beltana No. 1 water make of up to 0.6 ML/ day.

The applicant also advises of the intention to extend the Bulga Complex groundwater monitoring program to include a number of bores located to the west and north-west of the underground mining area. The Applicant notes that it is likely that an additional three monitoring bores will be required, however the number of monitoring bores and frequency of monitoring will be determined in consultation with DLWC.

Submissions Received

DLWC provided general terms of approval for works covered under Part 5 of the Water Act, ie. for bores and wells which intersect the groundwater table, including monitoring bores; and excavations which intersect the groundwater table. These GTAs have been generally incorporated into the recommended conditions of consent. However, DLWC did not raise any particular concerns about groundwater impacts.

DMR also raised some concerns about the mine water balance and recommended that the water management plan for the entire complex be reviewed to accommodate water make from Beltana No.1 mine. The Department forwarded this concern to the Applicant, for further consideration. The Applicant emphasised that the existing water management system is considered adequate for the predicted water make from the Beltana No.1 project, particularly as the contribution to the overall Bulga Complex water budget made by the South Bulga Colliery will decline once mining at the South Bulga colliery ceases. Notwithstanding, the conditions of consent require the Applicant to recalculate the mine water balance on 6-monthly and annual intervals, and provide these details in the AEMR. Both DLWC and DMR have reviewed the recommended conditions of consent in respect of the mine water balance and expressed satisfaction with the conditions.

Department's position

The Department has incorporated in the conditions of consent a requirement that the Applicant prepare, or review and update the existing Site Water Management Plan in consultation in consultation with DLWC, SSC and DMR and to the satisfaction of the Director-General and DLWC. This plan shall include measures for the management of the quality and quantity of groundwater, and management measures and project of potential groundwater changes during mining and post-mining. The conditions also incorporate DLWC's other General Terms of Approval, including the requirement that the operation shall not have an unacceptable impact on the beneficial use of the groundwater, measures for the protection of groundwater quality, quantity and groundwater dependent ecosystems, and the implementation of a monitoring program. The Applicant will also be required to recalculate the mine water balance on 6-monthly and annual intervals, and provide these details in the AEMR.

The Department considers that these management and monitoring measures required in the conditions of consent, along with those detailed by the Applicant in the EIS will ensure that the quantity and quality of the groundwater is protected.

5.2.2. Surface hydrology

Applicant's position

- Impacts from underground mining

The EIS describes that the proposed underground mining area forms part of the catchment of Wollombi Brook. The northern section of the mining area is drained by an intermittent creek that flows into Wollombi Brook approximately 2.7 kilometres to the northwest of the underground mining area. The mining area is assessed to occupy approximately 587 hectares, or 0.3 % of the catchment of the Wollombi Brook. As the project area occupies only a very minor portion of the Wollombi Brook catchment, the EIS assesses that the proposal has negligible potential to impact on the flow or flooding regimes of Wollombi Brook. In addition, the proposed development is described to be located above the estimated 1 in 10 year flood level is highly unlikely to be affected by flooding in Wollombi Brook.

In order to assess the potential impacts from subsidence on surface terrain and drainage, a three dimensional digital terrain model was constructed using current survey information and subsidence predictions. This assessment illustrates that the predicted subsidence within the mining area is not likely to significantly change the existing rolling terrain, although surface cracking will occur within the drainage lines and along the edge of subsidence troughs, particularly in the areas with shallow depth of cover. The EIS also advises that small areas of localised ponding will potentially occur, along with some minor changes to the alignment of some drainage channels.

The EIS indicates that the drainage line with the highest potential for subsidence impacts is the northerly-flowing drainage line on land owned by BJV, in the north-eastern portion of the site. This drainage line is located in an area with shallow depth of cover, has a defined channel and is currently subject to relatively extensive erosion. Subsidence will result in small 'out of channel' sections of the subsided landform not being free draining. In these areas minor drainage works will be required to prevent surface ponding to minimise the potential for tunnel erosion.

In addition, due to the shallow depth of cover along the northerly-flowing drainage line, substantial surface cracking is expected in this area. Rock outcrops occur along the bed of several sections of the creek. In these areas it is likely that surface sealing works will be required to prevent stream capture and surface flow entering underground workings. Areas of the creek channel either side of the chain pillars where rock outcrops do not occur will also crack and require surface

works. In addition, traverse cracking is predicted across the advancing face of the longwall, and as a result the entire bed of the creek in between each of the chain pillars will require monitoring and potentially require remediation works to prevent inflows to the underground workings.

The EIS describes that the alignment of the minor drainage lines is not predicted to significantly alter as a result of subsidence, however mitigation works will be required to control potential impacts on drainage lines and adjoining areas.

- Impacts from surface infrastructure

The EIS outlines the impacts of the proposed surface infrastructure on the generation of sediment and erosion, and on Whybrow pit inflows. Sedimentation may occur as a result of the construction of the dewatering bores and gas extraction plant and from other areas disturbed for construction of the Beltana No. 1 surface facilities.

In terms of inflows to the pit, the EIS advises that as the adits to the underground workings are located approximately two metres above the floor of the Whybrow Pit, there is potential for ingress of surface water into the workings if water is allowed to pond to above the adit level. The EIS describes that a detailed flooding assessment was undertaken to determine peak runoff rates and inflow to the Whybrow Pit. This in turn allowed a conceptual water management system to be designed to minimise inflow, contain flow away from critical working areas and pump run-off out of the Whybrow Pit.

The hydrological modelling indicates that under the current configuration of the open cut pit, significant volumes of surface run-off will drain to, and flood, the base of the pit. This modelling indicated that that modifications to the configuration of the water management system for the Whybrow Pit are necessary to maintain low water levels at the base of the pit to prevent flooding of the underground workings during significant storm events.

Management measures proposed by the Applicant

Northerly flowing drainage line

The EIS describes that in-channel works will be required along most of the channel systems of the northerly-flowing intermittent drainage line to prevent ponding and to minimise potential for surface water inflow to underground workings; prevent sections of the creek banks collapsing as the long wall passes under the creek system and to prevent ongoing erosion.

The Applicant proposes a number of in-channel works along the length of the northerly-flowing channel system. These are summarised as follows.

- Construction of an approximately 1.9 kilometre long diversion bank on BJV owned land along the western side of the drainage line to collect runoff from up-slope areas of Longwalls B4 to B8 (refer to Figure 5.6 of the EIS).
- Sequential in-filling of the existing drainage channel within Longwall B7 and B8 in advance of the longwall mining under the respective sections of the drainage channel. This will be undertaken once the once the diversion channel is fully constructed and operational;
- Areas of land adjacent to the existing drainage system which exhibit surface scalding and extensive erosion will be ploughed, treated with gypsum, reshaped, seeded fertilised and rolled so that a stable vegetative cover can be achieved;
- At the completion of the mining and when a stable channel has been achieved along the alignment of the current intermittent system, the 1.9 km diversion channel will be removed, disturbed areas rehabilitated and the flow regime along the drainage system re-instated.

Other minor drainage lines

To address the potential impacts of the minor drainage lines, the EIS outlines the following mitigation measures:

- Construction of an approximately 400 metre long diversion bank and drainage channel along the southern edge of Longwall B1. This bank and drainage channel will convey runoff from the adjoining area to the south to the existing drainage line which passes under Charlton Road, thereby preventing runoff from flowing into the subsidence trough of longwall B1;

- Construction of a series of short drainage channels over chain pillars at the southern edges of longwalls B1, B2 and B3 and on the northern edges of longwall B3, B4 and B5. These channels will drain areas where ponding may potentially exist as a result of subsidence will range in length of approximately 50 metres to 90 metres, and typically be less than 1.0 metres deep.

Potential ponding effects

Th EIS describes that 11 areas will not be free draining unless drainage channels are constructed. In order to minimise the potential for any ponded water in these locations to enter underground workings via vertical cracking, it is proposed to undertake intensive surface remediation of these areas. These works will involve tilling of the surface to remove any interconnected surface cracking, combining gypsum into the upper surface, seeding with pasture species and the application of fertiliser followed by light rolling to seal the surface

Charlton road culverts

The EIS describes that subsidence also the potential to impact on existing infrastructure that conveys surface water run-off under the road. The Applicant proposes a range of mitigative measures for the culverts and advises that these works will be undertaken in conjunction with rehabilitation works being undertaken as soon as practical after subsidence has occurred.

Impacts from surface facilities

- Sediment and erosion control

The Applicant describes that the existing water management system at Bulga Complex includes an extensive network of sedimentation basins. These sedimentation basis provide for the collection and reuse of runoff from disturbed areas with the Complex. No contaminated runoff from the site will directed to Wollombi Brook. Tailings leachate is collected in the Deep Pit and recycled through the CHPP. Clean water flows are diverted away from disturbed areas and directed back into natural drainage channels wherever possible to maintain riparian flows.

The EIS describes that management of disturbed areas will be undertaken in accordance with the existing Bulga Complex Land Management Plan. The following erosion and sediment control practices will be implemented in all areas disturbed during construction of the out of pit surface facilities:

- Identification of areas to be disturbed and restriction of access in areas of non-disturbance;
- Topsoil associated with the construction of transfer conveyors will be stripped and stockpile away from areas of concentrated water flows;
- Silts fences will be installed on downslope side of topsoil stockpiles and the stockpiles seeded with grass to reduce erosion and to maintain soil biological activity;
- Clean water flows will be diverted away from construction areas wherever possible;
- Temporary sediment retention basins will be constructed, and maintained on a regular basis;
- Existing bare or disturbed areas not affected by construction works or operation will be revegetated as soon as practicable;
- Areas of the site that are disturbed by construction works are to be progressively topsoiled, seeded and fertilised.

The EIS advises that containment of runoff from areas disturbed by construction of the Beltana No. 1 surface facilities with the existing Bulga Complex water management system and continued monitoring of water quality will ensure that the proposed development does not significantly contribute to further deterioration of the condition of Wollombri Brook, Loders Creek or the Hunter River.

- Whybrow Pit inflows

The EIS describes that a range of surface water management and control measures have been investigated to prevent inundation of the proposed underground mining operation. Surface run-off to the pit will be controlled by:

- Construction of a series of diversion drains within the Whybrow Pit to reduce the effective catchment area of the base of the pit;
- Construction of bunds and levee banks to form a series of temporary detention basins along the base of the pit to allow surface run-off to be safely contained;
- Use of pumps to ensure that water levels in the temporary detention basins are maintained at a level below that at which inundation of the underground workings would occur; and
- Construction of diversion drains and earthern bunds at which inundation of the underground workings would occur.

In addition to these measures, a range of contingency measures have been identified to ensure that ponded water does not enter the underground workings. These measures include the installation of additional pumps and temporarily raising of the adits through construction of a purpose built bund on the floor of the entrance to the adit.

Submissions Received

Two agencies raised concerns regarding the potential impact of the proposed underground mining on surface hydrology.

- DLWC

DLWC raised concern about the depth of mining and the orientation and widths proposed for the longwall panels in the Beltana mine may cause significant destabilisation of stream systems affected by subsidence. Firstly, DLWC raised concerns regarding the potential risk of stream capture by bed fracturing. DLWC consider that the small creek systems which overly the longwall panel layout are likely to be fractured as a result of mining under them. The capture of water into the workings may have impacts on the water management system, leading to increases in discharge requirements from the site and reduced water supply to landholders downstream of the mine site. DLWC advised that the applicant must develop a remediation strategy to ensure that any cracking which occurs can be ameliorated. Further, DLWC requires additional assessment to ensure that sealing will be sufficient to prevent significant degradation of the stream system occurring.

DLWC also submitted that the modified water balance in the EIS may be subject to increased inflows to the mine workings as a result of any unremediated cracking of the beds of the unnamed watercourses affected by subsidence. DLWC advises that the mine water balance must be recalculated at six monthly intervals to assess whether climatic conditions and inflows to the mine are having a significant impact on mine water make, storage and discharge requirements. DLWC requests that the recalculated water balance be included in the AEMR.

The second area of concern raised by DLWC related to potential stream-bed scour and degradation. To address this area of concern, DLWC requests that a stream remediation plan be developed to prevent degradation occurring along the watercourses and to address any degradation which does occur. DLWC notes that the EIS indicates that this will be developed in section 9.2.3 of the EIS.

DLWC also note that the Applicant's proposal to fill the bed of the channels of affected watercourse as a mitigation method as a mitigation method has some risk of failure if compaction and chemical stability is not achieved to prevent scour and entrainment of the fill material. DLWC required the proponent to investigate the potential for rock bars to be used to assist in stabilising soils in channel.

DLWC also emphasise that the stability of the stream system will be assured only if adequate revegetation occurs after remediation works are installed. DLWC describe that the primary tool for channel bed and bank stability is through planting of native vegetation which can withstand scour and tractive forces exerted by stream flows.

- DMR

DMR described that the methods used to seal the ground surface to prevent the ingress of water into the workings may require further study and the methods used to stabilise the temporary and permanent watercourses with the subsided areas may need to be revised

Department's position

In response to the Department's review of the EIS and following concerns of the relevant government agencies, the Department has included a number of conditions relating to the potential impacts on surface water hydrology. The Department has also included the General Terms of Approval as submitted by DLWC in the recommended conditions of consent, and has made reference to the general advice of this agency.

The Applicant will be required to prepare, or review and update the existing Site Water Management Plan in consultation with DLWC, SSC and DMR and to the satisfaction of the Director-General and DLWC. This plan shall be required to include measures for the management of surface water and measure to prevent the degradation of surface water quality. In accordance with the recommendations of the DLWC, this plan must also include details for the details of the sequential in-filling of the northerly-flowing drainage channel and details of the reinstatement of the northerly flowing drainage channel at the completion of mining. The conditions also require that the Applicant shall re-establish a post mining drainage systems which shall be comparable to the drainage density of the pre-mining land. The Applicant will also be required to extend the existing Bulga Complex surface water monitoring program to include additional monitoring programs for the Beltana project.

The Department is satisfied that the conditions of consent, which require consultation with DLWC, Council and DMR will adequately protect the quality and quantity of surface water potentially impacted by the Beltana No. 1 proposal.

5.3. Noise

Applicant's position

The Applicant undertook a noise impact assessment for the Beltana No. 1 Project surface facilities, the key features of which are summarised in Section 6.4 of the EIS, reported in full in the Appendix 8 to the EIS and in some additional information contained in the response to submissions provided by the Applicant to the Department dated (August 2001)

The EIS outlines that a number of acoustic assessments and noise surveys have been conducted for the Bulga Complex over the last 10 years. Background noise data from environmental monitoring over the period of 1996 to 2000 showed that the lowest repeated background noise levels are typically below 30dB(A). Accordingly, a background noise level of 30dB(A) was adopted by the Applicant in accordance with EPA guidelines.

Construction

The Applicant notes that prior to the introduction of the INP, industrial noise criteria guidelines were provided in the Environmental Noise Control Manual (EPA, 1994). This document is still current for amongst other aspects, noise generated during the construction period. Based on a background noise level of 30dB(A) and a construction period of 6 months or greater, the criteria for the construction period is 35dBA.

Construction noise levels were calculated for non-adverse meteorological conditions only. The Applicant reasons that there is no requirement in the ENCM for assessment of construction noise under adverse meteorological conditions and the scale of activity is acoustically insignificant given its proximity to the Bulga Open Cut mine. Three concurrent construction activities were modelled for this assessment, including a pad immediately south east of the Whybrow Pit; a 150,000 tonne stockpile and a conveyor linking to the existing overland conveyor. The major noise sources during the construction phase will be equipment such as a compactor, water truck, backhoes, dozers and front end loaders.

The results of this modelling are shown in Table 4.1 of Appendix 8 of the EIS. In overview the highest recorded constriction noise impact is 22dBA at the Dawtry residence, followed by 19dBA at the Lewis residence and 18dBA at the Myers residence. This modelling indicates that the predicted construction noise levels are well below the relevant criteria at all private residences.

Operational Noise Impacts

Assessment in EIS

The EIS models two scenarios to cover the initial and long term operations of the project. The assessment for the initial mining phase includes truck transport of ROM coal, whilst the modelling for the established mining phase includes modelling of conveyor transport of ROM coal.

During operation the major generation of noise impacts will be from front-end loaders, operation of the conveyor, ventilation fans and dozer operations. The results of the modelling are contained in Table 4.2 (initial mining) and Table 4.3 (established mining) for each potentially affected residence under prevailing meteorological conditions. The adverse conditions criteria shown allow for existing noise emissions from Bulga Open Cut. On the basis of this modelling the results indicate that no exceedances are predicted during the operation phase of the project.

The Applicant also addresses cumulative impacts associated with noise impacts from the Beltana No.1 mine in Section 8.4 of the EIS. The EIS describes that as the methodology for assessment of future noise level is based on consideration of existing background levels, the noise impact has considered the cumulative impact of the Beltana No.1 project in conjunction with other existing land uses in the area. The criteria which are to be applied to noise emissions limits the allowable noise emissions from the Beltana No.1 mine so that the combined noise levels from both operations do not exceed the noise criteria set for the Bulga Open Cut. The EIS describes that the Bulga Open Cut criteria have in turn been developed with the consideration of the existing background noise emissions, including contributions from Mt Thorley and Warkworth mines.

Mitigation measures

The existing noise control applied for the Bulga Complex will be applied to all aspects of the Beltana No. 1 project. The Applicant described that the following noise mitigation measures have been included in the design of the Beltana No. 1 project include:

- Location of most plant and equipment on the floor of the Whybrow Pit;
- Covering the transfer conveyors and drive stations with profiled metal sheeting;
- Design and installation or a low noise (83dBA) conveyor between the Whybrow Pit access ramp and the ROM coal stockpile;
- Fitting of mufflers to all stationary equipment;
- Designing of blasts, if required to minimise maximum instantaneous charge; and
- Location of the coal stockpile between the acoustic barriers provided by the approved South Whybrow Emplacement Area and the proposed visual bund adjacent to Broke Road.

The applicant describes that a stockpile dozer operations protocol will be developed to incorporate the operational restrictions described above.

The EIS states that the existing Bulga Complex noise monitoring program will be utilised to determine compliance of the Beltana No. 1 project with the current EPA noise criteria and existing Bulga Open Cut environmental management strategy. Noise and vibration are reportedly monitored at 3 nearby residences on an annual basis and all results routinely forwarded to the EPA in accordance with license conditions. In addition to the EPA reporting requirements, BCM incorporates noise monitoring results as part of the regular environmental reporting.

Further, in recognition of concerns raised by some nearby residents and the need to provide further certainty of compliance with development consent limits, BCM is currently reviewing noise monitoring and management measures associated with the Bulga Open Cut activities.

Submissions received

EPA made a comprehensive submission regarding the modelling and assessment of the noise impact from the Beltana No. 1 project. The Applicant was requested to undertake this revised assessment with reference to the consent conditions of the Bulga Open Cut. The EPA submitted that whilst the development consent noise limits were developed prior to the release of the NSW Industrial Noise Policy, the EPA considers that the limits are appropriate and will adequately protect the community against adverse noise impacts.

Further assessment requested by EPA

The EPA submitted that the methodology of the noise assessment in the EIS was inappropriate, and provided two alternatives to adequately assess the noise impact from the Beltana No. 1 mine. The EPA submitted that based on the information in the EIS, the applicant should assess potential noise impacts from the entire complex including the proposed Beltana activities against the noise impacts contained in the existing development consent. This position was based on the assumption that the current operations comply with the noise limits in the current development consent. Effectively, this was the approach adopted by the original assessment in the EIS, except upper noise limits were based on INP guidelines rather than the existing development consent for the Bulga Open cut.

In order to assess potential impacts from the entire complex, including the proposed Beltana noise sources, the proponent undertook noise predictions for the new source only. The proponent then assumed that the noise emissions from the current Bulga activities are equivalent to the existing development consent noise limits. The sum of the predicted noise levels for Beltana No.1 combined with the existing noise levels for Bulga is the total noise impact for the Complex.

In summary, the Beltana No.1 project was predicted to increase LA_{10} noise emissions in the range of 0.3-1.2dBA when the Bulga Open Cut is operating at its consent limits. The Applicant advised that this increase is considered insignificant given that a change in noise levels of less than 2dB(A) is generally not detectable and the INP specifies that a development is deemed to be in non-compliance only when the monitored noise level is more than 2dB above the statutory noise-limit.

However the Applicant advises that given the conservative nature of the noise modelling approach and the conservative factors assumed in the conversion of LAeq to LA_{10} noise levels, noise emissions from the entire complex will generally comply with the consent conditions. In addition, in relation to the noise from the Bulga Open Cut, the Applicant advises that noise levels at nearest residences are highest when dragline operations are in the Whybrow Pit (as opposed to the Bulga Pit further to north-east). The applicant advises that the dragline has recently relocated to the Bulga Pit, and therefore this assessment is considered a conservative of the likely impact. The EPA concurs with this assessment of the potential noise impacts.

The applicant's assessment has determined that noise emissions from the proposed Beltana No. 1 activities will not cause any significant cumulative noise impacts at the identified noise sensitive receivers and noise emissions from the entire complex will generally comply with the consent conditions. The EPA concurs with this assessment of the potential noise impacts.

The Department's position

Following receipt of the additional information which was requested from the Applicant, the Department is satisfied that the noise impacts from the Beltana No. 1 mine have been adequately assessed and modelled. The Department concurs that that the operation of the Beltana No.1 mine proposal is unlikely to have a significant adverse impact on existing noise impacts at any private residences, particularly in the overall context of the Bulga Complex, with only minimal increases likely to occur. This position has been concurred with by EPA, which has provided its General Terms of Approval. These General Terms of Approval have been incorporated into the recommended consent conditions, including specific noise criteria and noise measurement requirements. All issues raised by the EPA in the submissions have been addressed adequately by the Applicant.

As part of the recommended development consent conditions, the Applicant will also required to revise and update the existing Noise Management Plan for the Bulga Complex to include any noise impacts potentially associated with the Beltana No. 1 mine. This plan is to include details of monitoring programs, mitigation measures and a protocol for handling noise complaints.

In order to protect the amenity of private residences, the Department has also included noise criteria, which the Applicant must strive to achieve for cumulative noise impacts from the entire Bulga complex. Should the criteria be exceeded, the conditions of consent require the Applicant, in the first instance to implement further management measures in accordance with a noise reduction plan. Should the noise limits exceed the established acquisition criteria, and the mitigation measures do not bring the noise levels within the criteria, the Applicant will be required to purchase the relevant property.

In the situation that the exceedance is the result of cumulative impacts, the Applicant will be required to formulate a Joint Acquisition Management Plan. The Department is satisfied that the recommended conditions of consent along with the management measures proposed by the Applicant shall adequately minimise noise emissions from the Beltana No.1 project and protect the amenity of all private residents.

5.4. Air quality

Applicant's position

The Applicant commissioned P. Zib & Associates to undertake an assessment of the impact of the proposal on air quantity. The results of this assessment are contained in section 6.3 of Volume 1 of the EIS and the report is included in full as Appendix 5 (Volume 2 of the EIS).

The following air quality criteria apply for this project, as detailed in Table 1 and 2.

Table 1. Health Based Air Quality Criteria for Particulate Matter Concentrations

Pollutant	Standard/Goal	Agency
Total Suspended Particulate Matter (TSP)	90μg/m^3 (annual mean)	NH&MRC
Particulate matter < 10μg (PM_{10})	150μg/m^3 (average of 99th percentile of 24 hour averages over three years)	US EPA
	50μg/m^3 (annual mean)	US EPA

Table 2. NSW EPA Amenity Based Criteria for Dust Fallout

Existing Dust Fallout Level (g/m^2/month)	Maximum Acceptable Increase Over Existing Fallout Levels (g/m^2/month)	
	Residential	Other
2	2	2
3	1	2
4	0	1

Existing environment

The EIS describes that monitoring programs conducted as part of the environmental management for the existing Bulga Complex operations have produced a substantial database on existing ambient air quality conditions. The dust monitoring program shows that dust deposition levels in the vicinity of the nearest private properties to the west of the project area have been generally less than 2g/m^2/month (annual average) since 1994. Annual average dust deposition levels at more distant locations have ranged from in the order of 1 to 1.5 g/m^2/month during the same period. Satisfactory air quality has also been recorded in areas to the south (including the village of Broke) and east of the Bulga Complex.

The EIS records that during the period from 1995 to 1997, mean annual concentrations of TSP ranged from 31.9 to 36.0 ug/m^3 for two monitoring sites located west of Charlton Road, towards Bulga. Average annual PM10 records at Mt Thorley mine (the nearest PM10 monitoring station) varied from 12.6 to 18.3 ug/m3 over the same period.

Potential Impacts

The EIS quantifies and assesses the emissions of atmospheric dust from the proposed construction and operation of the Beltana No. 1 in the context of all operations which take place at the Bulga Complex and from other surrounding mines.

Given that the existing dust deposition rate is less than the 2g/m^2/month, the relevant EPA criteria for dust deposition is the 2g/m^2/month dust deposition contour to determine the acceptability or otherwise of dust deposition impacts from the project.

- Construction phase

During the construction phase, the main sources of dust will be overburden haulage to the bund wall, overburden dumping and erosion of disturbed areas. The results of the modelling for the predicted mean annual dust deposition during the construction phase are shown in Figure 6.3 of the EIS. The results indicate that 2g/m^2/month contour is located almost entirely within land owned by Bulga Coal, only extending outside BJV-owned land to the north, into the adjacent Mt Thorley mining area, and to the east in minor areas of rural land.

The predicted annual dust concentration levels during construction activities are shown in Figure 6.4 of the EIS. These predictions indicate that contributions to the mean annual concentration of TSP in the ambient air as a result of mining at the Bulga Complex and construction of the Beltana No. 1 will be limited to 20 ug/m^3 or less for all residences which are not owned by BJV. These dust concentrations are well below the relevant EPA criteria of 90ug/ m^3.

- Operational phase

The EIS details that the dispersion modelling was also applied to obtain estimates of increments in the mean annual dust deposition rates and TSP concentrations from the Bulga Complex including an operational Beltana No. 1 project with ROM coal being transported to the CHPP by a conveyor system. This is assumed to be a worst case scenario. During operation, the main dust impacts will be generated by conveyance of material to the ROM stockpile, reclamation from the ROM stockpile and truck haulage to the Coal Preparation Plant. The results in the EIS indicate that the predicted dust contours for these operations are virtually indistinguishable from predictions by P Zibb & Associates Pty Ltd (1999) for the Bulga Complex not including the operation are Beltana No.1. The Applicant therefore considers the handling and conveying of ROM coal from Beltana No.1 following the commissioning of the stockpile and conveyor facilities will only affect dust levels near those facilities, which are located well within the mine lease. The EIS concludes that the effect of the operations at the Beltana No.1 on the dust levels outside the mine lease and at the surrounding privately owned properties will remain minimal.

The EIS also addresses the cumulative impacts of air quality emissions, as outlined in Section 8.4 of the EIS. The EIS describes that the construction and operation of the Beltana No.1 project was incorporated into an existing model of dust dispersion from the Bulga Complex. This approach is described to result in predictions including not only the Beltana No.1 project but also the existing and predicted dust emissions from open cut mining, coal preparation and coal transport within other areas of the Bulga Complex.

- *Greenhouse gas emissions*

The Applicant has undertaken a greenhouse gas emission assessment for the project in the context of the Bulga Complex, the details of which are contained in Section 7.3 of the EIS. Bulga Complex has retained records of greenhouse gas emissions in order to report against the Greenhouse Challenge Program guidelines and National Greenhouse Gas Inventory since October 1997. These results indicate that the greenhouse emissions from Bulga Complex have declined over the 1995-1999 period, whilst coal production increased. The proposed rate of coal production from the entire Bulga Complex is described to similar to the predicted from Bulga Complex during operation of the Beltana No. 1 project; however fugitive dust emissions are expected to be significantly lower from Beltana No.1 than from the South Bulga Colliery. On this basis, the EIS predicts that greenhouse gas emissions will be maintained, if not further reduced by the use of current mining technology at Beltana No.1 mine.

Mitigation measures proposed by the Applicant

The Applicant describes that a range of measures will be introduced during construction of the Beltana No. 1 surface facilities to minimise air quality emissions. These measures are as follows:

- Gravelling of hardstand areas;
- Watering of unsealed trafficked areas and large disturbed areas using water carts;
- Ensuring that all construction vehicle operators are aware by signage and induction process of speed limits that apply within the Bulga Complex surface holding;

- Maintaining all equipment in good order to limit exhaust fumes;
- Regular inspection for excessive visible dust generation by BCM; and
- Provision of dust minimisation training during the environmental site induction.

During operation, the Applicant proposed to minimise air quality impacts by
- Installation of dust suppression sprays on the ROM coal stockpiles;
- Installation of sprinklers at the conveyor transfer points;
- Watering road surfaces and hardstand areas where required;
- Establishment of visual bund adjacent to Broke Road;
- Prompt rehabilitation of disturbed areas following completion of construction works; and
- Continued implementation of BCM's existing Air Quality Management Plan for the Bulga Complex, which includes the continuation of the dust monitoring system and reporting program.

Submissions received

No submissions were received in respect of the potential increase in dust deposition and dust concentration as a result of the Beltana No. 1 mine. Singleton Council's submission did however emphasise that the Applicant should prepare a dust suppression plan for the stockpile area, detailing air quality safeguards and procedures for dealing with dust emissions to the satisfaction of the Director-General.

EPA raised concern about the absence of an odour assessment in the EIS, and requested that an odour assessment be undertaken in accordance with the Draft Policy: Assessment and management of Odour from Stationary Sources in NSW (2001). In response to this comment from the EPA, the Applicant conducted a Level 1 odour assessment of potential gas emissions from the Beltana No. 1 project in accordance with this policy. The assessment considered the potential emissions associated with the relocation of the South Bulga Colliery gas drainage plant to the Beltana No. 1 site and emissions from the adits to the underground workings. Based on this assessment, the Applicant concludes that it would be highly unlikely that there would be a significant odour impact. EPA was satisfied with the odour assessment provided by the Applicant.

Department's Position

The Department is generally satisfied with the air quality impact assessment presented in the EIS. The Department acknowledges that, based on the assessment in the EIS, the Beltana No. 1 project is not likely to have any significant adverse effect on the dust levels outside the development application area, nor at any privately owned residences. The Department is satisfied that all relevant EPA air quality goals for particulate matter including dust deposition rates and concentrations of TSP and PM_{10} will be met. The EPA has reviewed the assessment in the EIS and provided no objection to the predicted air quality impacts from the proposal.

The Department has included in the recommended conditions of consent a requirement for the Applicant to manage the air emissions from the Beltana No.1 project so as to ensure the relevant air quality criteria are satisfied for the Bulga complex. The Applicant will also be required to prepare a Dust Management Plan. This plan shall detail air quality safeguards and procedures for dealing with dust emissions from the construction and operation of the mine. The Applicant will also be required to undertake monitoring and report against the relevant EPA criteria, and provide reports of the results to the Department every six months. The Department has also included in the consent a requirement that should the criteria be exceeded, a landholder may request further independent investigation and, where appropriate, additional ameliorative measures. In the situation that these management measures do not reduce the dust levels below the relevant criteria, the Applicant will be required to acquire the property. Should the monitoring indicate that the exceedance is a result of cumulative impacts, the Applicant will be required to enter into a Joint Acquisition Management Plan. The EPA did not provide any specific General Terms of Approval in regard to the air quality impacts, however EPA reviewed the recommended conditions of consent and expressed satisfaction with these provisions.

The Department considers that the proposed conditions of consent recommended in the instrument in the instrument and the management measures proposed by the Applicant will satisfactorily manage the potential air impacts from the Beltana No.1 mine

5.5. Heritage

5.5.1 Aboriginal archaeology

Applicant's position

The Applicant conducted a two-staged field survey with the assistance of the Wonnarua Tribal Council to survey the area of impact of the underground mining. This survey is contained in full in Appendix 7 of the EIS, and the results of which are discussed in Section 5.9 of the EIS. Correspondence is included in Appendix A to this report to support that Wonnnarua Tribal Council has reviewed the draft report and found it to be appropriate. The survey identified 21 Aboriginal sites, which are described in the Table 3 and the location of which are illustrated in Figure 5.9 of the EIS.

Table 3. Description of the identified Aboriginal sites.

Code	Description	Significance
BMU1	A complex of 39 axe grinding grooves on sandstone in the bed of the main stream channel in the study area	High
BMU2	An extensive artefact scatter comprising more than 200 flaked stone artefacts exposed along 1500 metres of the main steam channel in the study area	Low-Medium
BMU20	An artefact scatter comprising more than 630 flaked stone artefacts on a spur adjacent to another drainage line in the study area	Medium
Others	18 other locations with between 1 and more than 50 stone artefacts on the ground surface.	Low

The predicted subsidence at each of the 21 Aboriginal sites is presented in Table 3.3 of Appendix 9 of the EIS. The maximum subsidence parameters range between 0 and 1740 mm. The majority of the sites will be affected by subsidence, however the Applicant has revised the mine plan so that the grinding grooves will not be damaged by mining related activities. In the revised plan, BMU1 has been located over a chain pillar at the northern end of the mining area to prevent damage to this site. The Applicant advises that although other archaeological sites (BMU2-BMU21) will be subject to subsidence, the sites will remain intact unless subsidence remediation work is required. The EIS advises that subsidence remediation work will be required at sites BMU2-12, BMU17 and BMU19.

The area to be disturbed by surface facilities has been previously surveyed by ERM Mitchell McCotter in relation to the assessment for the Bulga Open Cut. The results of this survey are detailed in Section 6.8 of the EIS. This survey identified isolated finds and small scatters of artefacts on slopes and ridges on the western side of Broke Road and one extensive artefacts scatter along a tributary of Loders Creek on the eastern side of Broke Road. ERM Mitchell McCotter also surveyed an area on the eastern side of Broke Roads for the Southeastern Extension EIS (2000). This survey identified two archaeological sites in the vicinity of the proposed transfer route. Both of these sites consist of small artefact scatters of low significance.

Mitigation measures proposed by the Applicant

Sites impacted by subsidence

The Applicant proposes a range of mitigative measures to reduce the potential impact on Aboriginal items. The Applicant considers that the revised mine plan is the key management strategy to achieve conservation of the site identified as BMU1. This revised mine plan results in the site being located over a chain pillar which will not be subject to subsidence.

In order to protect the archaeological and cultural values of the site BMU1 the Applicant proposes to fence the site known as BMU1 in an enclosure of approximately 1 hectare. This enclosure will protect areas on both banks of the creek and part of the Casuarina stand along the banks, in order to exclude stock, promote natural regeneration of native vegetation and protect the visual context of the site.

An induction program will also be implemented for contractor likely to be working in the vicinity of BMU1 and its conserved context, and will include advice about the presence of the site and relevant statutory responsibilities.

The EIS also describes that the Wonnarua Tribal Council has requested that they be able to access the grinding groove site for cultural activities involving small groups of people. BCM has offered to provide a vehicular access way from Charlton Road, and a small parking area outside the proposed conservation area.

Sites BMU12, 13, 14, 15, 16, 17, 18, 20 and 21 are not expected to be disturbed by the proposed underground mining and will be managed by a range of protocols. The Applicant shall seek a Consent to Destroy with Salvage for parts of site BMU2, BMU 3, 4, 8, 9, 10, 11 and 19. A Consent to Destroy without salvage will be sought for sites BMU5, 6 and 7.

Sites impacted by surface facilities

The EIS describes that section 90 consents to destroy have been granted for the artefacts on the western side of the Broke Rode, following the grant of development consent for the Bulga open Cut continued operations in 1999. The artefacts on the eastern side of Broke Rode will be subject to a further Consent to Destroy application, if the final design of the conveyor indicates that these sites will be disturbed.

Submissions received

The only submission that was received in regard to Aboriginal archaeological issues was from NPWS. This submission outlined the GTAs for the Section 90 consents for the project. In addition to the GTAs, NPWS also submitted:

- that erosion and control works be monitored to identify new sites;
- a management committee be set up to develop a plan of management for heritage;
- the plan of management be developed by the Aboriginal community in consultation with the NPWS; and
- Aboriginal community collections are to be undertaken as required.

These recommended GTAs and conditions have generally been incorporated into the recommended conditions of consent.

Department's position

The Department is satisfied that the Aboriginal assessment provided in the EIS provides a comprehensive overview of the items and sites of Aboriginal significance that may potentially be impacted by the Beltana No.1 project. The Department commends the revision of the mine plan which places site BMU1 over a chain pillar, so as to avoid mining induced subsidence impacts on this site. The Department has included the NPWS's General Terms of Approval and other recommended conditions in the consent instrument. NPWS has reviewed the conditions and expressed satisfaction with these provisions. In addition, the Department believes that the formulation of the Archaeology and Cultural Management Plan will provide a framework for the identification and management of all sites of archaeological significance and effectively minimise the impacts on and loss of archaeological values in this area.

5.5.2. European heritage

The Applicant advises that a comprehensive assessment of European heritage values with the proposed Beltana No. 1 project area was undertaken in May 2000. The full report detailing the findings of the European heritage assessment is included in Appendix 10 of the EIS, with the key features outlined in Section 7.4 of the EIS.

The NSW Heritage Office Inventory of heritage places lists 15 sites within 15 kilometres of the project area, one of which appears on the Heritage Register. However, none of these are located with the area impacted by the proposal. A field inspection of Charlton Road within the proposed mining area showed that the road had been upgraded in recent decade and there was no evidence of structures relating to convict-built culverts or rads. A quarry was noted that might have been the source of clay for an early Blaxland built structure but is outside the area of impact of the mining proposal. Some evidence of old structures was noted within the mining proposal area, but the EIS concludes that no sites or artefacts with any heritage significance were identified.

Mitigation measures proposed by the Applicant

No mitigation measures are proposed by the Applicant, as no sites are predicted to be impacted.

Submissions

No submissions were received in regard to the impacts of the proposal on European heritage.

Department's position

The Department concurs with the assessment that no sites or artefacts with any European heritage significance will be impacted by the proposal. Notwithstanding, the recommended conditions of consent require the Applicant to prepare a Archaeology and Cultural Management Plan for the Beltana No.1 Project area. This plan will include guidance for the management of any sites that may be encountered during the course of the mining operations.

5.6. Flora and Fauna

Applicant's Position

The Applicant undertook a flora and fauna survey of the Beltana No.1 underground mining area. The complete flora and fauna assessment is included in full in Appendix 4, with a summary of the main findings relating to underground mining in section 5.8 of the EIS. The EIS describes that the flora and fauna of the area proposed for the Beltana No.1 surface activities was assessed in the Bulga open Cut EIS (ERM Mitchell McCotter 1999) and the Southeast extension EIS (ERM Mitchell McCotter 2000). The key features are outlines at Section 6.7 of the EIS.

Existing Environment

Flora

The survey identified four vegetation communities within the proposed mining area: Eucalyptus crebra; Eucalyptus crebra/ Eucalyptus moluccana; Pastoral grassland and aquatic vegetation. Each of the community areas is reported to have shown relatively high levels of disturbance, particularly due to cattle grazing and past and ongoing clearing activities. The majority of the study area is vegetated with pastoral grassland containing a mix of native and introduced grasses and groundcover species.

The proposed Beltana No. 1 surface facilities are located almost entirely within the disturbed/ grassland communities

Fauna

Prior to conducting field work, a search of the NPWS ATLAS data base was undertaken to identify fauna species that have previously been recorded in the Broke area. The Applicant also reviewed existing reports, enabling a list of threatened species potentially occurring in the region to be compiled.

The EIS describes that survey methods were designed to include appropriate techniques to identify any threatened species that may potentially occur in the study area. All surveys were undertaken in appropriate weather conditions during May 2000. A fauna species list for the study area is included in Appendix B of the Appendix 4 of the EIS.

The survey recorded a range of species in the survey area. A total of 48 bird species were recorded in the study area, including several water birds, however no threatened bird species were recorded. Two amphibian species were recorded in the study area, with the Common Eastern Froglet and Tyler's Toadlet recorded in all of the nocturnal herpetological surveys. One reptile species, the lace Monitor was recorded.

A total of 13 mammal species were recorded in the study area, of which three were introduced species and 7 were microchiropteran bat species. Of these species, two bat species are listed as Vulnerable in Schedule 2 of the Threatened Species Conservation Act 1995.

The Common Bent-wing Bat was confidently recorded in two transects in the study area, with both transects being located within the Eucalyptus moluccana/ Eucalytus crebra Woodland community. The Eastern Freetail Bat was 'probably' recorded in the Eucalyptus moluccana/ Eucalytus crebra.

Impacts on Flora

The Applicant advises that the main impact on flora will be from clearing in response to subsidence, in areas where remediation works are required. However the EIS suggests that the small potential area of vegetation affected by clearing associated with subsidence remediation is considered to be relatively minor in the context of the wider area. The EIS describes that there will be no net change in the area of pastoral grassland occurring within the study area and there will be no net loss of aquatic habitat as a result of the development.

Based on the flora assessments conducted in 1999 and 2000 and the location of the Beltana No.1 surface facilities, including the transfer conveyor, in a highly disturbed area, it is highly unlikely that there will be significant impact on flora.

Impacts on Fauna habitat

The EIS advises that the proposal is generally considered unlikely to have a significant impact on the fauna habitat in the region, with only a relatively small area of forested and pastoral grassland habitat potentially affected by subsidence remediation works.

In respect of the surface facilities, as outlined above for the impacts on flora, given the highly disturbed nature of the site, it is highly unlikely that there will be a significant impact on flora as a result of the project.

Impacts on Threatened Species

The EIS provides an assessment of the proposal on threatened species, including eight-part tests prepared in accordance with the Environmental Planning & Assessment Act 1979. The EIS considers a number of threatened flora species which are known to occur within approximately 20 kilometres of the project area. No threatened flora species have been recorded in or in close proximity to the project area, despite numerous studies in the vicinity, and the project is not predicted to significantly impact on any of the threatened floral species. The EIS considered that a full assessment under Section 5A of the EP&A Act was not required for any of the flora species.

The EIS describes that a number of threatened fauna species are known to occur in the vicinity of the project area. The EIS provides an assessment of each of the threatened fauna species recorded within a 20 km radius of the project area, along with some additional threatened species considered to potentially occur within the region. Following this preliminary assessment, the EIS includes that an eight-part test, in accordance with Section 5A of the EP&A Act was required for 8 threatened species (Glossy Black Cockatoo; Masked owl; Powerful Owl; Yellow-bellied Sheathtail Bat; Breater Broad-nosed Bat; Eastern Freetail Bat; Common Bent-wing Bat; and Green and Golden Bell Frog. The EIS advises that this assessment determine that there will be no significant impact on threatened species as a result of this proposal.

Mitigation measures proposed by the Applicant

The Applicant advises that a range of management strategies will be used to limit any potential impact of proposed underground mining on the flora and fauna of the study area. These strategies will include

- Use of small equipment in woodland areas to minimise tree disturbance;
- Landscaping of all areas around the out-of pit surface facilities
- Rehabilitation of areas disturbed by subsidence remediation works using endemic species
- Monitoring and maintenance of all revegetation works; and
- Vermin and noxious weed control.

Riparian and aquatic vegetation disturbed as a result of channel stabilisation woks in the northerly flowing drainage line will be re-established. The temporary channel created to divert flows away from the creek during remediation works and other minor permanent channels over channel pillars will also be stabilised with vegetation in order to control erosion and to provide temporary amphibian and reptile habitat during remediation of the creek line.

The EIS also describes that rehabilitated areas will be regularly monitored and maintained by BCM. In addition, weed and vermin control will be conducted in accordance with the existing BCM land management plans.

Submissions received

One submission was received in regard to the impacts of the proposal on flora and fauna, from NPWS. NPWS acknowledge that above ground surface environment is largely disturbed and little vegetation cover remains apart from isolated remnants. NPWS however express concern regarding the long term changes to water flows as a result of the in-channel works and other water management strategies have the potential to impact on the Wollombi Redgum River Oak Woodland. NPWS states that this community has been nominated for declaration as an Endangered Ecoligical Community under the Threatened Species Conservation Act 1995. NPWS therefore considered that further investigation of this issues was warranted, and the Department forwarded this request to the Applicant.

The Applicant responded that no prelimiary determination for Wollombi Redgum-River oak Woodland listing on the Threatended Species Conservation Act 1995 had been made as of 31 July 2001. Further the riparian community present in the study area is not considered to be representative of the potentially threatened Wollombi Redgum-River Oak Woodland. The Applicant justified this position in that the drainage line is not considered to be a major tributary of Wollombi Brook and the study area is not located on alluvium associated with Wollombi Brook. The Applicant therefore considered that riparian vegetation is a remnant of the woodland communities identified in the project area. Further, the Applicant considered that the proposed in-channel works were not considered to constitute a significant impact on riparian community.

Department's Position

The Department's ecologist noted a number of initial concerns with the assessment provided in the EIS and these issues were raised directly with the Applicant. Firstly, concern was expressed as to the absence of an aquatic assessment for the proposal, particularly the need to determine if fish passage will be impeded as a result of subsidence and if any threatened aquatic species will be affected by the proposal.

The Applicant provided a response to this comment, indicating that each of the catchments that drain into the surface area of the proposed underground mining area is relatively small and consequently only generates intermittent and short duration flows, even under substantial rainfall conditions. Accordingly, potential habitat for fin-fish is very limited in the study area due to the ephemeral nature of the drainage lines.

The Applicant also advises that it is proposed to maintain fish passage in accordance with the *Fisheries Management Act* 1994 throughout the life of the mine. This will be achieved through the construction of several temporary diversion banks and channels.

At the request of the Department, the Applicant undertook an assessment of the freshwater species listed in the *Fisheries Management Act 1994.* The assessment concluded that no significant impact would be expected for any of these freshwater species, and no further assessment was warranted.

The Department also requested the Applicant to reconsider the need for a referral under the EPBC Act, given the presence of migratory species listed on the EPBC Act in the study area. The Applicant provided further consideration of these matters and concluded that there will be no significant impact on migratory species in the study area.

In respect of the methodology for the flora and fauna survey, the Department considered that field surveys were adequate, despite the field surveys being conducted at the end of autumn, which was likely to reduce the number of fauna species recorded. However, the consultants did assess threatened fauna species that were not recorded but could occur given the presence of habitat.

However, the Department's ecologist also noted that since the Section 5A assessments were undertaken for threatened species, certain species and key threatening processes were added to the preliminary listings of the Threatened Species Conservation Act. Particular reference was made to the Grey-Headed Flying Fox, and the preliminary key threatening process of 'Loss of Biodiversity as a result of loss and/or degradation of habitat'. The Applicant was requested to undertake further assessment of this species. Following the review of the EIS, the Applicant was also asked to quantify the amount of woodland and aquatic habitat to be initially lost as a result of subsidence and in filling of the existing drainage line, and to predict the length of time that creeks would be without flow as a result of longwall mining in the area.

The Applicant provided further consideration of these issues in the response to submissions. The Department is satisfied that all outstanding matters raised by the review of the assessment undertaken in the EIS have now been clarified or investigated further.

The Department is satisfied that the mitigation and management measures outlined in the EIS and the recommended consent conditions will mitigate any potential adverse impacts on flora and fauna in the Project area, including threatened species. Notably the Applicant will be required to prepare, or review and update the existing, Flora and Fauna Management Plan. This plan shall include details of vegetation management and a protocol for identifying and managing significant impacts on any threatened fauna species that have not been identified in the EIS.

5.7. Transport and Roads

Applicant's Position and Mitigation measures

Access to the Bulga Complex facilities is from Broke Road, which intersects the Putty Road to the north and Cessnock Road at Broke to the south. Access to Broke Road from the village of Bulga to the west is via Charlton Road or Milbrodale Road. Broke, Charlton and Milbrodale roads are single-lane, two way bitumen-sealed public road with speed limits of 100kph.

Two public roads are located within the Beltana No.1 mining area and will be affected by subsidence. Charlton Road is a two way, single lane sealed road with a six metre wide bitumen pavement and a one metre wide shoulder. Cobcoft Road is a generally unsealed local access road (the first 500 metres is sealed) providing access to properties located to the west of Charlton Road.

The existing Whybrow Pit and Bulga Open Cut 'erection site' access road will be used to access the Beltana No. 1 project area The intersection of this road and Broke Road is located approximately 1.3 kilometres south of the existing Bulga Open Cut intersection and 330 metres north of the existing South Bulga Colliery access road.

The Applicant advises peak hourly traffic volume expected at this intersection of the Broke Road and Beltana No. 1 access road is likely to be 154. Accordingly, the Applicant advised the Austroads Type B intersection approved by Singleton Shire Council is adequate for the predicted traffic volumes associated with the operation of the Beltana project.

Construction of surface infrastructure will be undertaken over a period of approximately 12 months. Traffic impacts associated with the construction activity will include increased traffic volumes due to transport of labour, materials and equipment to and from the site. In addition there will be interruptions to traffic flow on Broke Road during construction of the underground conveyor. During operation, the EIS advises that there will be no increase in traffic volumes as there will be no significant change to the existing workforce. Similarly there will be no cumulative change in traffic volume associated with the operation of both the Beltana No. 1 project and the proposed Southeast Extension to South Bulga Colliery as these projects will not be operating concurrently at full production.

<u>Charlton Road</u>

In terms of subsidence impacts on the road network, the Applicant advises that Charlton Road will be subject to strains within the range of –26 to + 32 mm/m and vertical subsidence of 400 –1740 mm over the longwall panels and 0-100 mm over the chain pillars. It is expected that the impact on Charlton Road will more significant as it is located approximately perpendicular to the longwall over the entire mining area, at depths of cover ranging from 90-115 metres. Up to 80% of the affected length of Charlton Road will be subject to vertical subsidence in excess of 200 mm and 33 per cent will be subject to strains in excess of 5 mm/m.

Charlton Road is located approximately perpendicular to the proposed long wall panel. The Applicant advises that one the current mine plan, sections of Charlton Road will be undermined at approximately nine-monthly intervals. Road works will be conducted after each longwall undermines Charlton Road and will involve a length of approximately 300 metres per longwall. Each section of repair work will be conducted at approximately nine-monthly intervals over a six year period.

The Applicant describes that road works on Charlton Road will be undertaken in three stages. Firstly, the road survey and audit prior to mining to establish existing road condition. Secondly, a preliminary road audit immediately during and after undermining the road in each longwall panel to determine extent of damage and immediate temporary repair of road sections that are not safe or serviceable for normal vehicle movements. Thirdly, a comprehensive permanent remediation of road formation, pavement and drainage to pre-existing condition, following undermining of the road in each longwall panel.

The Applicant advises that all road works on Charlton Road will be undertaken within the road reserve by the closure of one traffic lane at a time. There will be no diversion of traffic onto temporary roads, except during replacement of culverts, which will require closure of both lanes.

Cobcroft Road

Cobrcroft Road is located within longwall B3-B5, which limits the period of impact, and therefore road works, to approximately 21 months. As Cobcroft Road is primarily unsealed local traffic road located in an area of relatively deep cover above the coal seam, the subsidence impacts are predicted to be relatively minor. Therefore, road works are likely to be restricted to regular regarding during the period of longwall mining beneath this road and repair of the bitumen seal on the first 500 metres from the intersection with Charlton Road.

The EIS outlines that notification of road closure will be coordinated with Singleton Shire Council. Notification will include emergency services and posting signs on the Putty Road east and west of Broke Road in addition to the Broke Road north of the intersection with Charlton Road. These signs will be in place at lest one week prior to closure.

Broke Road

The Applicant describes that it will be necessary to temporarily divert traffic to a diversion road for approximately 2 months to allow for the construction of the underground conveyor beneath Broke road. During this period the Applicant will maintain a temporary diversion in a safe and serviceable condition in accordance with the requirements of Singleton Shire Council. In addition short duration road closures may be required in order to construct the intersections of the temporary road diversion with Broke Road. Further details of engineering specifications will be included in a traffic management plan.

Submissions received

Singleton Shire Council submitted a number of requirements in regard to the design of the proposed road works and for the monitoring and maintenance of roads affected by mining induced subsidence. Council submitted that prior to commencement of any construction works within a public road reserve the Applicant shall establish a road surveillance and maintenance programs for the affected roads and obtain the relevant approvals from Council. Council also requires that the Applicant maintain the affected roads for a period of four years from the commencement of subsidence impacts and carry out repairs and maintenance in accordance with the approved plans required by the above Condition. In the event that roads cannot be repaired to Council's reasonable requirements following the impacts of subsidence, the Applicant shall rebuild the roads (or sections of roads) to Councils standards. In addition, Council specified that the Applicant shall construct Broke Road in accordance with the established design shall ensure that the intersection of the mine's access road with Broke Road is constructed to the satisfaction of SSC. Further, Council requires that the Applicant shall notify SSC and residents using the road of the schedule of road works and disruptions to road usage, at least 24 hours prior to the scheduled road works or disruption to road usage.

Department's Position

The Department has included a number of requirements in the recommended conditions of consent to ensure that the road network is not adversely impacted by the Beltana No. 1 project, and that should any impact occur that the Applicant be required to repair this damage. Firstly, Council's recommended conditions were incorporated in the conditions of consent, to ensure that amongst other issues, the road surface is monitored and the extent of the damage can be appraised. Secondly, the Applicant is required to maintain the affected roads for a period of four (4) years from the commencement of subsidence impacts and carry out repairs and maintenance. The Department also requires the Applicant to prepare a Public Road Management Plan to the satisfaction of the Director-General, and in consultation with SSC and RTA for any

roads works which may be required for Cobcroft, Charlton and Broke Roads. The Plan shall include details of the proposed safety management measures during the period of public road works; methods for ensuring the safety of road users and the general public; strategies for informing road users and the local community of any proposed road closure; details of the procedures for permitting the passage of emergency vehicles during any road closure.

5.8. Visual impact

Applicant's position

The visual impact of the Beltana No.1 surface facilities are is assessed in Section 6.0 of the EIS. The EIS describes that the area is considered to have low scenic quality, and a high proportion of the surrounding area has extensive views of current coal mining activities. The Applicant undertook a visual impact analysis or for all potentially affected surrounding residences and viewing location.

The EIS advises that there will be no visual impact from the Beltana No. 1 surface infrastructure other than the coal stockpile, a small section of the conveyor, dewatering bores and potential gas extraction plant. The remainder of the surface infrastructure will be below ground level in the Whybrow Pit. No surface infrastructure will be visible from any surrounding residence, except for the dewatering bores and potential gas extraction plant, as views to the remainder of the above ground infrastructure will be shielded by the South Whybrow Emplacement Area and the visual bund.

Mitigation measures proposed by the Applicant

The EIS descries that potential visual impacts of the proposal will be limited thought:

- Location of the majority of the surface infrastructure below the surrounding ground level in the Whybrow Pit;
- Location of a section of the transfer conveyor to the CHPP beneath Broke Road, rather than crossing over it;
- Location of the out o pit surface facilities to the north of the approved South Whybrow Emplacement Area, which will shield these facilities from any potential viewing locations to the south, southwest and southeast;
- Design of dewatering bores and gas extraction plant to minimise visual impacts;
- Construction of a 5-15 metre high, vegetated bund adjacent to Broke Road;
- Directing all stockpile lighting downwards and away from Broke Roads;
- Use of non-reflective materials in the construction of the transfer conveyors.

Submissions

No submissions were received in respect of the visual impact of the proposal.

Department's position

The Department concurs with the assessment provided in the EIS that the proposal will not significantly impact on the visual or aesthetic value of the surrounding area or landscape. Notwithstanding, the Applicant will be required to revise and update the existing Landscape and Revegetation Management Plan to address all visual and landscaping issues associated with the Beltana No. 1 project. The Applicant will also be required to prepare, or review and update the existing Lighting Management Plan, to include any additional lighting requirements or characteristics from this project. In addition, if a landowner considers that the visual impacts from the proposal are adversely greater than predicted in the EIS, the Applicant will be required to consult further with the land-holder to attempt to alleviate these concerns. The Department is satisfied that these recommended conditions will adequately minimise the visual impact of the proposal and protect the amenity of the local community.

5.9 Socio-Economics

Applicant's Position

The Beltana No. 1 project will provide continued provision of employment opportunities for approximately 130 people which would otherwise be lost when the South Bulga Colliery operation ceases underground mining (currently scheduled for

2002-2003). The Beltana No. 1 project if approved will commence at around the same time as the decommissioning of the South Bulga Colliery. As a result this project will reduced the impact of South Bulga Colliery closing by providing continued employment opportunities.

The Applicant assesses that the Beltana project will not have a significant social impact on the local community. As there is no requirement for additional personnel in the proposed development, there will be no impact on social infrastructure such as education and recreational services and similarly there will be no housing and accommodation impacts.

There will be minimal impact from the construction workforce personnel and it is considered that existing accommodation facilities within the Singleton LGA will adequately meet demand during the construction phase.

Mitigation Measures proposed by the Applicant

No significant adverse socio-economic impacts have been predicted in the EIS, and accordingly no specific mitigation measures are proposed.

Department's position

The Department concurs that the project will provide continued employment opportunities in the local area, and will not have any detrimental impact on any existing social infrastructure. The provisions of amenity criteria to be met under the recommended conditions of consent and measures to be undertaken if they are not met are established to minimise the impact of mining operations at nearby residences. Provisions exist in the development consent for the negotiation of compensation with any landholders whose amenity is reduced to levels unacceptable under the consent. Acquisition of property by the mine company is an option for a landholder if amenity criteria are exceeded by an amount specified in the development consent.

5.10 Ecologically Sustainable Development (ESD)

Applicant's Position

The Applicant addresses the concept of ecolgically sustainable development in Section 10.3 of the EIS. The EIS states that the principles of ESD have been applied to the Project and have been incorporated in the overall development description.

Submissions received

No submissions raised concerns about ESD.

Department's Position

Schedule 2 of the *Environmental Planning and Assessment Regulation 2000* states that an EIS must include reasons justifying the carrying out of development in the manner proposed having regard to amongst other things, the principles of ESD. For the purposes of Schedule 2 the principles of ESD are:

(a) The precautionary principle – namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
(b) Inter-generational equity – namely, that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.
(c) Conservation of biological diversity and ecological integrity.
(d) Improved valuation and pricing of environmental resources.

The EIS addresses the four ESD principles and the Department believes the principles are reinforced through the recommended consent conditions.

6.0 SCOPE OF CONDITIONS OF CONSENT

The recommended conditions of consent at Attachment "A" have been prepared taking into consideration the General Terms of Approval and other issues raised by Government agencies, Council, and all other submitters including land owners, community groups and independent organisations.

The recommended conditions of consent provide for appropriate management and monitoring of noise and dust, subsidence, surface and groundwater, archaeological issues and flora and fauna. The conditions of consent also include specific provisions for land acquisition, set appropriate noise and dust criteria, require the preparation of Annual Environmental Management Plan Reports and compliance reports, a number of environmental management plans, and the expansion of the Bulga Community Consultative Committee.

The Department has undertaken extensive consultations with the Applicant concerning the content and intent of the conditions of consent.

7.0 CONCLUSION

The Department considers that there are no environmental impacts from the proposed Beltana No. 1 coal mine which could not be effectively managed through the recommended consent conditions. The proposal is consistent with State and regional planning objectives.

8.0 RECOMMENDATION

It is RECOMMENDED that the Minister approve the development application (DA 114-05-01) for the proposed Beltana No. 1 mine as submitted by Bulga Coal Management subject to the attached conditions of consent.

Endorsed

Chris Ritchie
Acting Senior Environmental Planning Officer

Sam Haddad
Executive Director

Stacy Warren
Environmental Planning Officer

ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979 NO 203

79C EVALUATION

(1) Matters for consideration - general

In determining a development application, a consent authority is to take into consideration such of the following matters as are of relevance to the development the subject of the development application:

(a) the provisions of:
  (i) any environmental planning instrument, and
  (ii) any draft environmental planning instrument that is or has been placed on public exhibition and details of which have been notified to the consent authority, and
  (iii) any development control plan, and the regulations (to the extent that they prescribe matters for the purposes of this paragraph), that apply to the land to which the development application relates,

Refer to pages 5 to 7 of this Report

(b).the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality, ***Refer to pages 5 to 32 of this Report***
(c).the suitability of the site for the development, ***Refer to pages 9 to 32 of this Report***
(d).any submissions made in accordance with this Act or the regulations, ***Refer to page 2, and 7 to 8 of this Report***
(b) the public interest. ***Refer to pages 1 to32 of this Report***

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