ASSESSMENT REPORT

Department of
Urban Affairs and Planning

PROPOSED DARTBROOK EXTENDED UNDERGROUND COAL MINE REPORT ON THE ASSESSMENT OF THE DEVELOPMENT APPLICATION (DA 231-07-2000) PURSUANT TO SECTION 79C OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979

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1. INTRODUCTION AND BACKGROUND

1.1 The Applicant

Dartbrook Coal Pty Limited.

1.2 Overview of the proposal and its location

Dartbrook is seeking development consent to relocate the existing longwall mining operations in the Wynn Seam from the existing mining lease into adjacent areas over which the Dartbrook Joint Venture currently holds exploration leases. Mining will shift from the Wynn Seam to the stratigraphically higher Kayuga, Mt Arthur and Piercefield Seams. The Wynn seam is posing difficult mining conditions, including a high "gas make", large and unmineable dykes and the constraining presence of alluvial lands. These difficulties could see the mine close within three years with consequent loss of jobs and economic activity in the region.

The existing Dartbrook underground mine has been operating since 1994. Coal is extracted by longwall mining techniques, transported largely underground to a coal handling and processing facility (CHPP), then transported from the mine site by rail for export. The mine currently employs 192 people and around 100 contractors. The EIS states that Dartbrook Mine injects around $40 million into the local shire economies and $100 million in total annual expenditure. The EIS also states that the expansion will generate 40 to 50 short-term construction jobs and maintain the current operational workforce. The capital cost of the Dartbrook Extension is $57.5 Million.

The DA for which Dartbrook is seeking approval comprises:

- extension of longwall blocks to the west of the existing underground operations from the Wynn seam to the higher Kayuga, Mt Arthur and Piercefield seams;
- increasing coal production from 3.5 Mtpa to 6.0 Mtpa;
- expansion of the existing above ground rejects emplacement area;
- expansion of activities at the Coal Handling and Preparation Plant (CHPP) including the construction and operation of a Paste Disposal Plant adjacent to the existing coarse rejects bin, to blend both coarse and fine rejects to form a paste for disposal;
- construction of a pipeline to convey the paste to an expanded reject emplacement on the western side of Browns Mountain;

- construction of a new portal (the Kayuga Seam Access Slot) approximately 1.2km to the west of the existing western site facilities of Dartbrook Mine, which includes a temporary coal stockpile, drilling shaft, and mine entry office;
- for an initial period of up to 18 months, transportation of coal to the existing CHPP by private roads with one crossing of the New England Highway. After this period, coal will be transported from the existing Kayuga Seam to the existing Wynn Seam, and then on to the CHPP using existing underground conveyors and the 4km long Hunter Tunnel;
- construction of an access road from the Kayuga Seam Access Slot to the existing western surface facilities which passes under Blairmore Lane by way of a tunnel; and
- construction of five additional ventilation shafts over the life of the mine, which may either operate as upcast or downcast shafts.

The proposed development utilises existing mine facilities where possible. These include the existing facilities for supply and maintenance of mining equipment at the western site facilities, existing workers amenities and administration offices, existing conveyors and tunnels for the transport of coal to the CHPP in the long term and existing rail facilities.

1.3 State Significant, Integrated, Designated Development

The Dartbrook Extension is State Significant development under section 76A(7) of the *Environmental Planning and Assessment Act 1979* (the Act) and the consent authority for the proposed development is the Minister for Urban Affairs and Planning.

Under Schedule 3 of the *Environmental Planning and Assessment Regulation* (the Regulation), the proposed development is defined as 'designated development' by way of being an 'Underground Coal Mine'. Subsequently, this required the preparation of an EIS in support of the DA.

Director-General's requirements for the EIS were issued to the Applicant on 13 January 2000. The EIS was prepared by HLA Envirosciences Pty Limited, dated June 2000 and submitted with the DA. The Department was satisfied that the Director-General's requirements had generally been addressed and the EIS was adequate to be placed on exhibition.

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 agencies (referred to as Integrated Approval Bodies under the Regulation) include the Environment Protection Authority (EPA), Department of Land and Water Conservation (DLWC), Mine Subsidence Board, National Parks and Wildlife Service (NPWS), and Muswellbrook Shire Council. The integrated approvals required are:

- an environment protection licence from the Environment Protection Authority under the *Protection of the Environment Operations Act, 1999*;
- a licence from the Department of Land and Water Conservation under the *Water Act* 1912;
- an approval from the Mine Subsidence Board under the *Mine Subsidence Compensation Act 1961;*
- approvals for road works from Muswellbrook Shire Council under the *Roads Act 1993*; and

- an approval from the National Parks and Wildlife Service under the *National Parks and Wildlife Act 1974*.

General terms of approval are the general requirements an approval body requires an applicant to meet in order to be issued with their approval and / or licence. The approval bodies have submitted their general terms of approval, which have generally been adopted as conditions in the recommended instrument of consent.

1.4 Lodgement of DA and exhibition

On 20 July 2000, Dartbrook Coal Pty Limited lodged the DA and EIS for the Dartbrook Extended Underground Mine Project with the Department of Urban Affairs and Planning. The Department was satisfied that the Director-General's requirements had been addressed and the EIS was adequate to be placed on exhibition.

The DA and EIS were publicly exhibited from 25 August 2000 to 25 September 2000 in accordance with the *Environmental Planning and Assessment Act 1979.* The EIS was exhibited at the following locations:

- Department of Urban Affairs and Planning – Head Office, Sydney;
- Department of Urban Affairs and Planning - Central Coast / Newcastle Office;
- Muswellbrook Shire Council Offices;
- Scone Shire Council Offices;
- Aberdeen Public Library; and
- Nature Conservation Council in Sydney.

The public notification of the Dartbrook Extended proposal was comprehensive, with notices of the proposal placed in the local Muswellbrook Chronicle Newspaper, Scone Advocate and Newcastle Herald and on the Department's Website. Signs were also placed on the proposed DA area.

The Department also advised all adjoining and surrounding landowners of the proposal. Submissions were received until close of the exhibition period. The Department is satisfied that the statutory process for public consultation for the proposal was undertaken in accordance with the *Environmental Planning and Assessment Act 1979*.

In response to the exhibition period, the Department received a total of 51 submissions. These included 10 submissions from government agencies, 1 from a business group, 3 from special interest groups and 37 submissions from private residents. The overview of submissions received is also outlined in **Table 1**.

Table 1: Overview of Submissions Received

SUBMISSION TYPE	NUMBER	REQUEST FOR A COI	OBJECTIONS
Private Individual	37	21	32
Government Authorities	10	0	0
Businesses	1	0	0
Special Interest Groups	3	1	1

Total	***51***	***22***	***33***

Of the 51 submissions received, there were 22 requests for a Commission of Inquiry (COI) and 33 outright objections to the proposal. No government agency objected to the proposal.

1.5 Local Councils' position

The Dartbrook Extended project is located within Muswellbrook and Scone Shires. During exhibition of the EIS, both Councils liased with each other regarding the proposal. Following exhibition of the proposal, both Councils submitted draft conditions of consent. Scone Shire Council supported the draft conditions of consent proposed by Muswellbrook Shire Council with some further comments.

1.6 Government agencies' position

A total of eight submissions were received from government agencies. No agency or authority objected to the proposal as long as appropriate consent conditions are applied to the Project. The NPWS, DLWC, and EPA have provided general terms of approval for the project. All submissions received during the exhibition period were forwarded to the approval bodies as required by clause 53A of the Regulation.

1.7 Local community position

A total of 37 private submissions were received during the exhibition of the DA and EIS. The submissions objected to or raised some concerns about the proposal. Also, 21 requests for a Commission of Inquiry were made. The concerns and objections principally related to:

Groundwater and surface water resources
- Hunter River impacts
- Loss of groundwater resource
- Impacts on the Hunter River alluvium
- Seepage from the rejects emplacement area

Noise and vibration
- Sources from the CHPP and rail loop
- Sleep disturbance
- Construction noise
- Road transportation noise
- Low frequency and vibration noise

Dust and gaseous odours
- Existing dust impacts on properties
- Existing and future gaseous emissions
- Dust fallout in Aberdeen
- Health effects

Visual Impact
- poor existing performance of the mine regarding mitigation of visual impacts
- visual impact of the proposed expansion of the rejects emplacement area
- visual impact of proposed surface facilities
- night-lighting effects

Safety of West Browns Mountain Rejects Emplacement Area
- stability of the emplacement

Roads
- impacts on local users from the additional truck movements of road coal haulage
- impacts of coal falling from trucks

1.8 Request for Commission of Inquiry

There were a number of requests received from private individuals and a special interest group requesting that a Commission of Inquiry (COI) be held into the proposal. In total, there were 22 requests for a COI.

The Minister subsequently directed that a COI be held in accordance with section 119 of the *Environmental Planning and Assessment Act 1979* with respect to the environmental aspects of:

1. *(a) the expansion of the proposed reject emplacement area*
   (b) the increase in above ground activities as a result of proposed increase in coal production (with particular emphasis on noise, air quality and visual impacts); and
2. *groundwater management of the proposed underground mine and associated issues*

relating to the proposed Dartbrook Extended Underground Mine Project, Muswellbrook and Scone Shires.

Following the COI, the Commissioners reported to the Minister for Urban Affairs and Planning. This report considers the COI findings and also includes an assessment of all other relevant environmental issues not the subject of the COI's terms of reference.

2. THE PROPOSAL

2.1 Site Details and Infrastructure

The Dartbrook Extended project is located in the Upper Hunter Valley of NSW and is located between Aberdeen and Muswellbrook, adjacent to the New England Highway and Main Northern Railway. The existing surface facilities and proposed expansion to the above ground rejects emplacement area are located on the eastern side of the New England Highway, approximately 3km south of Aberdeen and 10km north of Muswellbrook. The existing major infrastructure of the study area includes the CHPP, the Main Northern Railway line located between the eastern side of the New England Highway and Browns Mountain, the access road into the Dartbrook Mine surface facilities and administration building, upper evaporation ponds, lower evaporation ponds and two ventilation shafts.

The proposed extensions to the longwall blocks are located approximately 4km west of Aberdeen and 10km north-west of Muswellbrook. The land above the proposed underground mining area is used mostly for dryland grazing of cattle. There are three major watercourses within the area including the Hunter River, Dart Brook and Sandy Creek. Also, there are numerous ephemeral drainage lines, which drain into the major watercourses.

Most of the area is cleared for agricultural activities although several vegetation remnants have remained in the area. These remnant vegetation areas are scattered across the land overlying the proposed extension to longwall mining. Also, Browns Mountain, located east of the existing surface facilities contains a woodland community.

The Dartbrook Extended Project will include extending longwall mining to the west of the existing underground operations and moving from the Wynn Seam to the higher Kayuga, Mt Arthur and Piercefield Seams. The project also includes an expansion of the existing above ground rejects emplacement area and some new surface facilities, including a Paste Plant adjacent to the CHPP, a seam access slot which comprises a drill shaft, mine entry office, coal stockpile and access road, road haulage of coal from the seam access slot to the CHPP for an initial period of up to 18 months and five additional ventilation shafts. The location of the proposed new infrastructure is outlined by **Figures 3.6, 4.3, 5.8 and 5.9 of the EIS**.

The existing mine infrastructure will be utilised by Dartbrook and include the use of the western surface site which comprises the administration building, bathhouse, workshop, store yard, sewage effluent treatment facility, western holding dam, diesel fuelling bay and wash-down area and the western drift. Existing infrastructure on the eastern site will be used and include the eastern holding dam, CHPP, office/administration building, conveyor and transfer system, raw and product stockpile facilities, train load-out facilities, balloon loop, rejects emplacement area and eastern portal.

The main target coal seams of the Dartbrook Extended mine plan are the Kayuga and Mount Arthur Seams which are the uppermost target seams of the Dartbrook resource and lie at depths from 20m to over 300m. Mineable *in-situ* resources for the Kayuga, Mt Arthur and Piercefield Seams are 107.4 million tonnes, 110.0 million tonnes and 181.2 million tonnes respectively. Therefore, the entire resource for the Dartbrook Extended includes a resource of 398.6 million tonnes. Overall, this equates to a marketable coal reserve for Dartbrook Extended of around 100 million

tonnes. Dartbrook is proposing to increase production from 3.5 million tonnes per annum to 6 million tonnes per annum.

2.2 Proposed Mining Operation

i Mining Operations

Several tenements comprise the Dartbrook coal resources including ML386 (Dartbrook), A256 (Kayuga), EL5525 (Hanging Rock) and EL4575 **(refer to Figure 4.2 of the EIS).** The extraction method proposed for Dartbrook Extended will be retreat longwall, which is the same method that is currently employed at Dartbrook Mine. The minimum extraction height is planned to be 3.0m with a maximum of 4.5m.

The development system supports the proposed longwall operation, and includes the development of main headings and gateroads. Underground roadways will be developed by continuous miners, shuttle cars and other support equipment. The development cycle also includes a series of sub-activities including cutting and loading the coal, installing ground support, advancing face ventilation, regular application of stone dust, advancing the section conveyor, extending the section service pipelines and cables, constructing ventilation stoppings, maintaining the access road and carrying in supplies and removing rubbish.

The mine layout for Dartbrook Extended is shown in **Figure 5.9a** and **Figure 5.9b** in the EIS and shows longwall panels are firstly based on a 200m wide panel and then a 300m wide panel. The maximum longwall panel lengths is 4.0km. The extraction sequence of Dartbrook Extended includes the extraction of all southerly Kayuga Seam panels followed by the extraction of the northerly Kayuga Seam panels and then the Mt Arthur Seam panels in an easterly direction. The mining operation will then relocate to the Piercefield Seam.

Dartbrook proposes to commence mining operations in the Kayuga Seam with a 200m wide longwall face. Following initial mining operations, consideration will be given to increasing the width of the longwall face to a maximum of 300m. Both mine layouts are presented in the EIS and the use of a 300m wide longwall face will allow a production rate of 6.0 Mtpa, compared with 4.5 Mtpa for a 200m longwall face. The EIS has assessed the proposed production rate of 6.0 Mtpa.

The proposed mining schedule shows total run of mine (ROM) production will be approximately 3.9 million tonnes per annum (Mtpa) or less from years 2000 to 2003. At 2004, ROM production increases to 5.5 Mtpa and reaches a maximum rate of 6.0 Mtpa at 2007, 2013 and 2014.

The proposed Dartbrook Extended underground coal clearance system will move coal from each working face in the Kayuga Seam to a common discharge point where material will be transferred to the underlying Wynn Seam existing coal clearance system (Hunter Tunnel conveyor system) for transport to the CHPP. The Hunter Tunnel conveyor system can deliver ROM coal at a rate of approximately 4,000 tonnes per hour during peak output. The washery has a maximum throughput of approximately 1,000 tonnes per hour and the CHPP has a stockpile capacity of 485,000 tonnes. After the coal is crushed to meet sizing specifications for export markets, it is loaded onto trains via a dedicated rail loading facility on a private rail loop that branches from the Main Northern Railway line at the CHPP. The rail loading facility can load 3,000 tonnes of coal per hour and the facility has a daily capacity of 45,000 tonnes.

ii Waste Rejects Emplacement Area

The combined Dartbrook Extended and Underground mines will produce an estimated 18.7 Million tonnes of combined reject waste. Dartbrook Extended proposes to use a high density pumped co-disposal system (paste) for the disposal of rejects. The co-disposal is to be pumped into an emplacement that will be constructed on the western side of Browns Mountain, immediately east of the CHPP which will be combined with the existing Dartbrook rejects storage.

The extent of the proposed rejects emplacement area is larger in the northern and southern areas, than the footprint originally approved in 1991. However, the overall footprint of the emplacement is similar in area to the current approved emplacement for Dartbrook Mine. The rejects emplacement area proposed in the EIS had a surface contour of 15^{o} and included south, central and north emplacement areas. However, during the Inquiry process, the Applicant amended the plans proposed in the EIS and removed the central emplacement to allow the continuance of natural drainage patterns. However, to achieve the required capacities, the northern and southern emplacements were increased in size.

Therefore, the final dimensions of the emplacement include a height of RL 240m which means the emplacement area would remain below the tree line and have an overall height of up to 60 metres rising from about RL 178 metres.

2.3 Previous History of the Site

Peabody Coal undertook the initial exploration of coal of the Dartbrook area in the early 1970s. The Department of Mineral Resources commenced further drilling in the late 1970s. A major drilling program of the area was undertaken from 1980 to 1983 to conduct a feasibility study for an open cut mine which concluded that an open cut mine would not be economically feasible. In 1989, a pre-feasibility study into the viability of an underground mine was completed and followed by a feasibility study. Subsequent to the granting of ML386 in 1991, additional drilling was completed to assist with the final design of the mine plans.

In 1991, a Development Application and EIS were submitted for the Dartbrook Underground Coal Mine Project. Approval for the project was granted in 1991, following a Commission of Inquiry. The current mining operations operate under this 1991 approval.

From 1993 to 1995, drilling and associated evaluation programs have been undertaken for the Dartbrook Mine development. Also, further drilling testing and associated investigations have been undertaken from 1996 to 1998 within ML386, A256, EL5525 and EL4575, as part of ongoing Dartbrook Mine development and exploration programs.

2.4 Ownership of the Site

The proponent is Dartbrook Coal Pty Ltd, which at the time the EIS was published was a wholly owned subsidiary of Shell Coal Holdings (Australia) Ltd and Manager of the Dartbrook Joint Venture. More recently, Dartbrook Coal Pty Ltd became a subsidiary of Anglo Coal Pty Ltd which is a member of the Anglo American plc group.

Dartbrook Joint Venture (Dartbrook Coal is the manager of the Dartbrook Joint Venture) owns the land required for the development of additional surface facilities at

the existing CHPP site, the Kayuga Seam Access Slot and the extension to the above ground rejects emplacement area. Of the five new ventilation shafts proposed, one is located on land owned by the Dartbrook Joint Venture with the other four shafts located on privately owned land.

The land ownership of areas proposed for underground mining is shown in **Figure 5.9a and Figure 5.9b of the EIS**. Approximately 50 per cent of the land within the proposed underground mining area is owned by Dartbrook Joint Venture and Kayuga Pty Ltd. Coal and Allied owns a parcel in the south-western corner of the proposed mining area. All of the remaining land is freehold land, privately owned by 7 different landholders. Of the privately owned land, there is one residential dwelling which is owned by G. Casey.

2.5 Surrounding Landuses / Regional Context

Land surrounding the mine is largely owned by private landholdings as shown on **Figure 5.9a of the EIS**. Some parcels of land surrounding the proposed underground mine are owned by other mining companies, namely Coal and Allied Operations and Kayuga Pty Ltd.

Most of the Hunter River floodplain has been cleared for cultivation, grazing and settlement. Grazing on native pasture and improved pasture occurs in the area to be mined and adjacent to the existing CHPP. The foothills are lightly timbered with the ridges and creek lines more heavily wooded. The upper slopes of Browns Mountain are heavily wooded. The town and suburban areas of Muswellbrook are to the south-east and urban development spreads to the north following the New England Highway. Urban development has reached as far north as the intersection of the New England Highway with McCullys Gap Road. The township of Aberdeen is located to the north with recent subdivisions located approximately 2 kilometres from the Dartbrook CHPP.

2.6 Annual production, hours of operation and employment

Production

The existing development consent for Dartbrook Mine permits the production of Run of Mine coal up to the capacity of the infrastructure plant equipment and machinery (based on a single longwall face) as described in the 1991 EIS. Dartbrook Mine's annual coal production (ROM) for 1998 and 1999 was 3.2 million tonnes each year. Dartbrook Mine's development application seeks approval for Run of Mine coal production of 6 million tonnes per annum. The mine's predicted annualised production forecast based on a 300 metre wide longwall face is presented in **Table 5.9** of the EIS.

Hours of operation

Dartbrook Mine currently operates on a 24 hours a day, 5 day week rotating roster comprising three shifts, day afternoon and night. In addition, a weekend crew works a four day week rotating roster comprising 41 hours. The EIS states that the Dartbrook Extended proposal will not result in any need to change working hours, however the production of 6 million tonnes per annum is likely to incorporate coal production on seven days per week. It is anticipated that the construction activities will be undertaken within a six month timeframe, with the exception of the road transport of coal to the CHPP (which is for an initial period of up to 18 months).

2.7. Employment

2.7.1 Construction period

The proposal will generate 30 to 40 short-term construction jobs involved with the construction of the Kayuga Seam Access Slot, the road transport of coal to the CHPP and the construction of the paste plant at the CHPP. Most of the construction activities will be undertaken within a six month timeframe.

2.7.2. Operational period

The operational workforce for the Dartbrook Extended Mine will remain essentially unchanged. As at January 2000, Dartbrook Mine employed 192 workers and 98 contractors who were engaged in various activities for the mine. Whilst the numbers of contractors engaged for the mine may fluctuate, there are usually approximately 292 persons (permanent employees plus contractors) working at Dartbrook Mine.

2.8 Approach to Planning Approval

The existing Dartbrook Mine was approved in December 1991. This approval includes longwall mining within ML 386 until 18th December 2012, washing and loading of the mined coal and emplacement of dry rejects on the western side of Browns Mountain. Since this original consent, Dartbrook has been granted a number of modifications which include:

- Modification to wash coal earlier than originally stated in the development consent granted in 1991;
- Modification for dewatering and gas drainage facilities;
- Development consent for temporary evaporation ponds;
- Development consent for advisory signs;
- Development consent for a temporary bath house;
- Development consent for construction and operation of minewater discharge ponds;
- Development consent for the second ventilation shaft;
- Modification for the construction of a 450 Megalitre minewater storage dam; and
- Modification to the mining sequence.

The development consent conditions for the Dartbrook Extended operation includes the consolidation of one amendment and one modification to the previous development consent.

The existing Dartbrook mining operations will continue under the existing approval until the completion of underground mining under the current consent. This is proposed to occur on the 31st of July 2004 and on this date the original consent, one amendment to that development consent and one modification to the original development consent will be surrendered to the Minister under clause 97 of the Environmental Planning and Assessment Regulation 2000.

2.10 Justification

The Dartbrook Extended proposal aims to continue the operation of Dartbrook Mine so that it isn't closed following the cessation of mining in the Wynn Seam in 2003. The proposal aims to achieve this through relocating mining operations form the Wynn Seam to the stratigraphically higher Kayuga, Mt Arthur and Piercefield Seams. Dartbrook Mine is currently experiencing difficult mining conditions in the Wynn Seam and the planned relocation of mining activities to the Kayuga Seam offers the mine the following advantages:

- Reducing the predicted "gas make";
- Reducing the geotechnical forces; and
- Planning the longwall panels for optimum economic recovery of coal.

The last planned Wynn Seam Panel is scheduled for extraction by January 2003, which therefore provides the mine an 18 month period to develop the first Kayuga Seam longwall panel. If this schedule isn't met, the mine would become uneconomic and the EIS states a range of options would need to be considered including mine closure or closure on a "care and maintenance" basis for either a limited or indefinite period. These options would result in the loss of employment for the bulk of the mine's workforce.

The approval of the Dartbrook Extended proposal would allow continued employment for Dartbrook Mine's workforce and ongoing stimuli on the local and regional economy.

3. STATUTORY PLANNING MATTERS

The Department has reviewed the Dartbrook Extended proposal with regard to the various State, regional and local statutory planning provisions that apply to the proposed mine. The proposal is a "designated development" under Schedule 3 of the Environmental Planning and Assessment Regulation 1994 and an EIS has been prepared. Procedures relating to the preparation and public notification of the EIS have been followed.

3.1. Local Planning Considerations

The proposed development is located within Muswellbrook and Scone Shires. The planning provisions of the Shires are contained within the Muswellbrook Local Environmental Plan (LEP) 1985 and Scone LEP 1986.

Under the Muswellbrook LEP (1985), the proposed DA area is zoned Rural 1(a) and Environmental Protection General (Alluvial Areas) 7(L1). The proposed development is permissible with development consent in both these zones and is not inconsistent with the objectives of this LEP, although the permissibility is subject to certain provisions of the LEP. However, State Environmental Planning Policy No 45 (SEPP 45) – Permissibility of Mining also applies to the development which makes mining permissible without those provisions having been satisfied.

Under the Scone LEP (1986), the proposed DA area is zoned Rural 1(a) and coal mining is a permitted use in this zone with development consent.

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. Part 6 of this Plan, Natural Resources, relates to mineral resources and extractive minerals. The objectives of the plan are to encourage mining that manages resources in a coordinated manner, minimise adverse environmental impacts and ensure that the transportation of coal and other mineral resources has minimal adverse impact on the community. The Department considers that the proposal is consistent with the objectives of the REP.

3.3. State Environmental Planning Policies

The following State Environmental Planning Policies (SEPP) are relevant to the mine proposal.

SEPP 11 - Traffic Generating Development

SEPP 11 applies to the subject development as the proposal involves mining as specified in paragraph (m) Schedule 1 of the Policy. The policy requires the DA to be referred to the Roads and Traffic Authority (RTA) to be granted the opportunity to make any representations on the proposal. The RTA was consulted and advised that it has no objections to the proposal.

SEPP 33 - Hazardous and Offensive Development

SEPP 33 was gazetted on 13 March 1992. The Policy has the primary aim of ensuring that a consent authority has sufficient information to assess whether a proposal represents hazardous and/ or offensive development and consequently

impose conditions to appropriately mitigate hazardous and/ or offensive environmental impacts. The EIS states that Dartbrook Extended does not propose any changes to its existing fuel storage or fuel handling practices. Therefore, the Department is satisfied that a Preliminary Hazard Analysis is not required.

SEPP 44 - Koala Habitat Protection

The Muswellbrook and Scone Shire Local Government Areas fall within Schedule 1 of the SEPP 44 policy. However the EIS indicates that there was no evidence of the presence of a 'residential population' as defined under the policy and therefore was considered as not constituting a potential 'core koala habitat' under SEPP 44. The Department's assessment concurs with this view.

SEPP 45 - Permissibility of Mining

The objective of SEPP 45 is to facilitate mining development within NSW. Where mining is permissible with development consent, and provisions of an environmental planning instrument require that certain conditions are met prior to the granting of consent, the Policy provides that consent may be granted without those conditions being satisfied.

The EIS indicates that SEPP 45 would apply to the Project, as part of the proposed development is within the 7(L1) zone (Environmental Protection General – Alluvial Areas) of the Muswellbrook LEP 1985. This zone permits mining with development consent if other special provisions of the 7(L1) zone are also satisfied.

The Department considers that SEPP 45 does apply to the proposal which consequently removes the need for the provisions of the 7(L1) zone to be satisfied for this proposal.

SEPP 55 – Remediation of Land

SEPP 55 aims to promote the remediation of contaminated lands for the purpose of reducing the risk of harm to human health or any other aspect of the environment. The policy is to be considered by a consent authority prior to determining a Development Application.

There has been no record of any known contamination of the site and previous landuse on the site has been limited to agriculture and grazing purposes and therefore the potential for contamination is considered to be limited. The Department considers that it is unlikely the proposal would increase any risk from contamination or that the site would require remediation work to be undertaken.

3.4 Commonwealth Legislation

- **Environment Protection and Biodiversity Conservation (EPBC Act)**

The EPBC Act commenced on 16 July 2000. One of the key functions of the EPBC Act includes the introduction of a new assessment and approvals system for actions that have a significant impact on matters of national environmental significance (NES). Should an action be determined that it is likely to significantly impact on NES matters (referred to as *Controlled actions*), an approval from the Commonwealth Minister of the Environment is required.

To determine whether a project requires an approval from the Commonwealth, an applicant should prepare and submit a Referral to Environment Australia for consideration. The Applicant has considered that a referral was unnecessary, as the proposed development would not have a significant impact on a matter of national environmental significance. Subsequently, any further consideration as to whether an approval is required from the Commonwealth would be considered by Environment Australia.

3.5 Other Legislation

- **Schedule 3 of EP&A Regulation**

The proposal is designated development under Schedule 3 of the EP&A Regulation and an EIS was prepared to support the Development Application.

- **Threatened Species Conservation Act**

An assessment of the significant effect of the proposal on threatened species, population and ecological communities and their habitats was undertaken in the EIS through an 8-part test in accordance with section 5A of the EP&A Act. The EIS concluded that no threatened species, population or ecological communities will be significantly impacted by the proposal. The Department's assessment has concluded that with the implementation of appropriate mitigation measures and monitoring as provided in the conditions of consent, the development is unlikely to have a significant impact on threatened species or their habitats. A Species Impact Statement (SIS) was therefore not required to support the DA. This issue is discussed in greater detail in the assessment section of this report.

- **Native Vegetation Conservation Act**

This Act does not apply to the mine proposal as any clearing that is designated development under the *Environmental Planning and Assessment Act 1979* is excluded from the operation of the Native Vegetation Conservation Act (section 12).

3.6 Conclusion

The proposal is in accordance with the provisions of all the relevant environmental planning instruments. The Department is satisfied that statutory obligations regarding EIS preparation, notification and public participation have been met.

4. MINE SITE AND PROCESSING FACILITY ASSESSMENT

Key Issues

In the Department's opinion, the key issues for assessment, taking into consideration the submissions received on the proposal and the contents of the EIS are the following matters:

- Stability of the rejects emplacement area
- Noise emissions
- Vibration
- Air quality - Gaseous air emissions
  - Dust
- Visual effects
- Water - Groundwater
  - Surface water
- Traffic and transport
- Subsidence effects
- Heritage - Aboriginal archaeology
  - European heritage
- Flora, fauna and aquatic habitat

4.1 Stability of the Rejects Emplacement Area

Applicant Position

The applicant assessed the stability of the proposed extension to the reject emplacement area in Section 5.19 of Volume 1 of the EIS. The Applicant determined that the stability analyses show the emplacement would be stable under both static and dynamic loading conditions if it is well drained and there are no mudstones or other rocks with weak bedding planes underlying the emplacement. The Applicant acknowledged that the layer of clay across the site presented a zone of weakness and consideration would be given to removing most of it. The Applicant proposed to undertake further, limited geotechnical investigations during the design stage to examine low strength bedding planes and if these were identified, specific design modifications would be considered. The Applicant considered that there would be a low risk of encountering such bedding planes. Also, the Applicant committed to undertaking further laboratory tests of rejects and tailings to confirm design criteria.

COI Position

During the course of the Inquiry, the Applicant redesigned the rejects emplacement area and these amendments are included in the Applicants supplementary submissions to the Inquiry.

The Commission found that the rejects emplacement area will be within the jurisdiction of the Dam Safety Committee (DSC) and the Applicant will be required under the Dams Safety Act 1978 to meet the standards set by the Committee in relation to the design, construction, operation and decommissioning of the emplacement area (considered a dam under the Dam Safety Act 1978). The DSC advised that it has no objections to the proposal proceeding in principle, however it was not possible at this stage to determine whether the dam met the requirements until a detailed design report was available.

The Commission stated that the DSC has well established and proven procedures to ensure the safety of structures such as the rejects emplacement area. The Committee will require a number of reports and a surveillance program whilst the emplacement is in service.

The Commission found that the rejects emplacement area will remain stable during operation and over the long-term based on information before the Inquiry and the DSC requirements for the design of the rejects emplacement area.

Department Position

The Department concurs with the Commissions findings regarding the stability of the rejects emplacement area. A number of recommended conditions are proposed to address this issue, as follows:

- Ensuring the Applicant will meet the standards of the Dam Safety Committee in relation to the design, construction, operation and decommissioning of the rejects emplacement area (recommended condition 5.1(a));

- Ensuring the Applicant provides details of the qualifications and experience of the designer of the rejects emplacement area to the Dam Safety Committee for endorsement (recommended condition 5.1(b)(i));

- Ensuring the Applicant prepares a failure consequence analysis in accordance with the requirements of the Dam Safety Committee which includes assessing the risks to human life and the environment (recommended condition 5.1(b)(ii));

- Ensuring the Applicant submits the design for each stage of construction to the Dam Safety Committee for approval, prior to the construction of future embankments (recommended condition 5.1(c)); and

- Following construction of each stage of the rejects emplacement area, the Applicant shall prepare a:
  - construction report (recommended condition 5.1(d)(i));
  - Operation and Maintenance Manual (recommended condition 5.1(d)(ii));
  - Dam Safety Emergency Plan (if required by the Hazard Rating) (recommended condition 5.1(d)(iii)); and
  - surveillance programme in accordance with the Australian National Committee on large Dams “Guidelines on Dam Safety Management” (recommended condition 5.1(d)(iv)).

- Ensuring the Applicant undertakes an independent review of the performance of the rejects emplacement area five years after the commencement of mining operations. The independent review shall be funded by the Applicant and undertaken in consultation with DSC, DMR and DLWC. The review shall include an evaluation of improved technology and best practice and the review shall be reported in the relevant AEMR.

4.2 Noise Emissions and Vibration

Applicant Position

The Applicant assessed potential noise impacts of the proposed extension in Sections 3.7, 6.7 and 7.9 of Volume 1 of the EIS and Appendix H of Volume 2 of the

EIS. The noise assessment was undertaken in accordance with the EPA Environmental Noise Control Manual 1994 and EPA's current noise policy, the Industrial Noise Policy 1999. The assessment indicates that the major noise sources can be grouped into mine operation noise, mine construction noise and road transportation noise (during both operation and construction). Noise issues related to the CHPP (including the train loadout facility) and construction noise was one set of the key issues raised during the community consultation undertaken for the EIS.

The assessment established noise levels for the east side receivers, west side receivers, construction activities and traffic noise. The eastern side receivers refers to the receivers of noise from the eastern infrastructure of Dartbrook Mine, that is the CHPP and associated facilities. The western side receivers refer to activities associated with the western facilities such as the mine entry drift and associated service facilities, access road, temporary coal stockpile and ventilation shafts.

The EIS noise assessment predicted that two residences (Day and Knight) will receive noise levels more that 5dB(A) higher than the project specific noise goals and therefore these residences will be significantly affected by noise emissions from the proposal.

COI Position

During the Inquiry the Applicant addressed additional matters raised in submissions by the EPA and the Department and questions and requests by the Commissioners. For example, calculations indicated that under certain prevailing and worst case conditions, intrusiveness criteria would be exceeded at the Day, Gordon, and Knight residences as well as Aberdeen, without noise mitigation.

To reduce noise levels at potentially affected receivers from the eastern site, the following recommended engineering noise controls were undertaken by the Applicant:

- enclosing the opening at the bottom of the northern wall of the coal washery; and
- reconfiguring the head geometry of the ROM bin to minimise impacts and/or apply damping or screening to the ROM head chute to reduce radiated noise.

Recent monitoring conduced after these measures showed compliance with project specific noise levels in Aberdeen. The Commission of Inquiry was satisfied that the Applicant has adequately assessed the potential noise impacts of the proposal once the Applicant addressed various additional matters.

The Commission identified that three residences are predicted to fall within the acquisition zone. The acquisition zone refers to residences where noise levels are predicted to be greater than 10dB(A) above background noise levels. Residences identified in this zone are to be purchased by the Applicant if requested by the owner. The Commission noted that noise mitigation works proposed by the Applicant for the CHPP had been completed and subsequent monitoring indicated compliance with project specific noise goals for residences in Aberdeen.

However, three McIntyre residences and the McIntyre Dairy are still predicted to be within a noise management zone unless noise mitigation works are undertaken by the Applicant at the mine access. The noise management zone is where noise levels are predicted to be between 5 and 10 dB(A) above the background noise. Where complaints regarding noise levels are received from residences within this zone, the Applicant must consult with those residences and undertake noise mitigation measures. The Commission found that provided the Applicant's proposed

control measures on its entry portal fans and conveyors are effective, no non-Company owned residence would be affected above the project specific noise goals in the western facilities area.

The Commissioners found that a small number of residents remain affected by low frequency noise which may be perceived as vibrations. The Commission recommends further investigation of this issue is warranted.

The Commissioners also found that:

- Noise from general construction activities could be adequately controlled through implementation of a construction noise management plan;
- Vehicle warning sirens would not be unduly intrusive;
- Blasting during construction of ventilation shafts could be adequately controlled;
- Noise levels on nearby properties where there are no residences, or where residences are not significantly affected would only have minor impacts; and
- Cumulative noise impacts with other approved mines would not be significant.

The Commissioners strongly support the Applicant being required to prepare and implement noise management plans for construction and operations as well as the Departments noise management zone approach to controlling and reducing the noise impacts of the development. Further, the Commissioners agree with the Department's approach for providing independent noise monitoring and dispute resolution procedures.

Department Position

The Department generally concurs with the conditions recommended by the COI, which are generally consistent with those recommended by the Department and the EPA's assessment.

However, the Commissioners recommended a condition for noise mitigation for a property identified in the acquisition zone. The condition requires the construction of a bund to reduce rail noise from the mine should the owner of the property not wish to be acquired. The Department considers that where a property is identified in the acquisition zone, the Applicant is required to take feasible and reasonable measures to minimise noise levels in the event of complaints. However, any mitigation measures are to be undertaken at the Applicant's discretion because under the requirements of the consent, the Applicant is obliged to purchase the property, if requested by the property owner. Consequently the Commissioners' recommended condition has been amended to reflect this view. It should also be noted that the condition does not preclude the arrangement of a private agreement between landowner and Applicant on this issue.

The key elements of the recommended consent conditions regarding noise emissions include:

- Definition of intrusive noise criteria for noise management and acquisition to be undertaken (refer to Tables 3 and 4 of Condition 6.4.1);

- Identification of properties in the acquisition zone for intrusive noise impacts (refer to table 5 of recommended condition 6.4.1). These properties would be subject to acquisition by the Applicant, upon request by the landowner;

- a process for the management of noise complaints, including the use of a dispute resolution process (refer particularly recommended condition 6.4.1 (g), and condition 11.1 (c)). These processes are illustrated by the flow charts titled "Process for Management of Complaints for Noise/Dust Impacts", "Independent Noise/Dust Monitoring Process", "Independent Dispute Resolution Process", and "Acquisition Process" attached to the recommended conditions tagged "A";

- provision for independent noise investigations to be undertaken at the applicant's expense;

- a requirement for the preparation of a detailed Noise Management Plan including noise monitoring requirements (draft condition 6.4.3 (a)). The Noise Management Plan will particularly detail: the methods to be used for monitoring; management measures to be undertaken in the management zone; definition and annual redefinition of management and acquisition zones based upon past monitoring results; specify procedures for a noise monitoring program for the purposes of independent noise investigations; and establishment of a protocol for handling noise complaints. Also, the Plan will specifically address the management and monitoring of low frequency noise.

- A detailed monitoring regime for the management zone and additional measures required to be undertaken by the mine company if the landowner so requests. These measures will be outlined in recommended development consent conditions but will include requirements for:

  - a detailed monitoring regime specific to the management zones;
  - introduction of additional controls, either on noise emission from individual sources on the site or on site operations or modify operations;
  - with the agreement of the landowner, undertaking of noise control at the dwelling to achieve acceptable internal noise levels; and
  - entering into an agreement with the owner of Dartbrook Mine and the landowner, or provide such other forms of benefit or amelioration as may be agreed between the parties, as providing acceptable amelioration/benefit for the noise levels experienced.

The Department also recommends that the management of low frequency noise be included specifically in the noise management plan.

The Department recommends the following conditions with respect to the management of vibration:

- preparation of a Vibration Management Plan to the satisfaction of the Director-General detailing measures to demonstrate the mine is achieving best practice in minimising vibration levels, procedures for investigating complaints from the mine and details of mitigation measures and remedial actions;

- establishment of vibration monitoring locations; and

- a requirement for the Applicant to regularly report on the results of vibration monitoring within the Annual Environmental Management Report (AEMR).

4.3 Air Quality

Applicant Position

The Applicant assessed dust and air quality issues in Sections 3.13, 6.8 and 7.5 of Volume 1 of the EIS and in Appendix O (Volume 3) of the EIS. In the EIS it was noted that air quality issues including dust fallout in Aberdeen and gas and odour issues for the entire site was one of the key issues identified throughout the EIS community consultation process. The major sources of dust emissions in the Dartbrook Extended proposal include stripping topsoil, drilling rock, blasting, loading material onto trucks, hauling material, loading coal to trucks, hauling coal, unloading coal at the CHPP, loading coal to stockpiles and trains and wind erosion from exposed land at the rejects emplacement area and stockpiles.

The assessment used computer modelling to predict dust emissions from Dartbrook Extended, during construction and during operation at the proposed maximum production of 6 Mtpa. The dust assessment included estimating the total mass of particles suspended in the air, known as Total Suspended Particulate matter (TSP). In the EIS it was noted that the potential impacts on health are determined primarily by the concentration of particles with aerodynamic diameters of less than 10μm (ten one-thousands of one millimetre), referred to as PM_{10}. The EIS therefore included estimates of the PM_{10} concentrations. The predicted dust concentration and deposition were compared with air quality standards and goals.

The EIS assessment for dust emissions during construction and at maximum production showed that no properties, not already owned by Dartbrook will be affected by dust levels that exceed the air quality standards or goals. The assessment demonstrated that dust levels will increase due to construction, however, dust levels due to the ongoing operation of the mine are not expected to increase. The assessment also shows that dust levels will not exceed the standards/goals referred to in the EIS.

The EIS also assessed the potential for emissions from underground areas to cause odours and adversely affect health. The EIS included the findings of two studies to measure the potential for odour impacts. The studies concluded that it would be highly unlikely that any detectable odours would be experienced in the area. Further, the EIS emphasised that the studies were undertaken on samples of air from the ventilation shaft, and therefore the measured concentrations and odour levels would be further diluted once the ventilation air reaches the atmosphere.

The EIS assessment also states that cumulative impacts from other mines would be negligible.

COI Position

The Commission is satisfied that the Applicant has adequately addressed air quality issues. Supplementary information on air quality matters was provided by the Applicant to the Inquiry. The Commissioners found that during construction activities dust emissions would rise from current levels and accept EPA's evidence that there is unlikely to be significant exceedances of relevant criteria during construction as the Applicant would be required by the EPA to handle materials in an appropriate manner.

The Commission also found that the ongoing operations of the mine are likely to generate dust emissions similar to the existing operations which dust monitoring has shown are well within the relevant criteria. The Commission is satisfied that effective contingency plans to control and manage impacts from episodic dust events and the

drying of the codisposal paste would manage such events if they occur and can be developed to the satisfaction of the EPA.

Department Position

The Department generally agrees with the Commissions findings and recommended consent conditions and these are included in the conditions recommended to the Minister.

The key elements of the recommended consent conditions with respect to air quality issues are:

- preparation of a Dust Management Plan (recommended condition 6.1 (a)), outlining management and mitigation measures to be implemented, including measures to manage and mitigate short term episodic dust events, identification of dust affected properties in accordance with relevant criteria in the recommended consent conditions, measures to reduce the potential for wind erosion from exposed surfaces, the establishment of a protocol for handling dust complaints where dust levels are determined to be below specified dust criteria, methods for modifying mine operations to minimise potential dust emissions and specifications of procedures for a dust monitoring program. The Plan is required to be prepared prior to the commencement of construction or Mining Operations to the satisfaction of the Director-General;

- provision for independent dust investigations for landowners which consider that dust from Dartbrook Mine is in excess of the EPA criteria and a dispute resolution process;

- establishment of dust deposition, total suspended particulate and PM_{10} monitoring locations; and

- the submission of a report, prior to the construction of each ventilation shaft, which demonstrates, to the satisfaction of the Environment Protection Authority, that the new ventilation air discharge vents are located and designed in a manner that will not cause offensive odour impacts.

4.4 Visual Impact Assessment

Applicant Position

The Applicant assessed the potential visual impacts resulting from the proposed expansion of surface facilities, rejects emplacement area and nightlighting issues. This assessment is provided in Sections 3.10, 6.5 and 7.6 of Volume 1 of the EIS Appendix K in Volume 2 of the EIS. The elements of the proposal which may cause a visual impact include the extension of the existing Rejects Emplacement Area, and the construction of five additional ventilation shafts, a mine entry drift and access road. The assessment determined that the areas that may experience different levels of visual related impacts include the New England Highway and the Main Northern Railway, the township of Aberdeen, properties to the north along Blairmore Lane and properties to the east adjacent to the New England Highway. The assessment showed that the proposal will have varying levels of visual impact on some residents. The assessment also recommended mitigation measures to reduce the visual impacts from the works on the rejects emplacement area and the construction of the additional surface facilities.

The assessment also addressed the potential impacts resulting from night-lighting. The proposed night-lighting will primarily be concentrated around the Access Road and drift access areas (Kayuga Seam Access Slot) with safety lighting on the conveyor and Site Services Area. Also, some low level security lighting will be required at every ventilation shaft. The EIS states that there will be no work on the Rejects Emplacement Area at night-time. The EIS considers that the direct views of headlights from vehicles are one of the lighting elements that are also likely to cause impacts.

COI Position

During the course of the Inquiry, the Applicant was asked to prepare additional information on the visual impacts of the proposal on surrounding residents and the local community. The Commission notes that the proposed northern and southern rejects emplacements area are approximately within the footprint of the originally approved emplacement for Dartbrook Mine. Further, due to the open area between the two emplacements, the Commission finds that the overall footprint is now reduced by about 20 per cent. The Commission supports the proposed 15^{o} emplacement slope (instead of the presently approved 10^{o} slope) and finds that the visual intrusion will be reduced provided revegetation is shown to be successful during the first five years of operation. The Commission suggested (and the Applicant accepts) undertaking early replanting/mulching and re-contouring of the surface to create a more natural profile.

The Commission finds that visual impacts are predicted to range up to high for four properties (Gordon, Day, Knight and O'Brien). The properties of Gordon, Day and Knight are subject to acquisition if the landowner requests, on the basis of noise impacts. The Commission recommends that should these landowners not seek acquisition, visual mitigation will reduce the impacts on these properties. Further, the Commission is satisfied that impacts on these four properties can be mitigated to minimise visual impact, through the use of measures such as bunding and vegetation screening. The Commission also recommends a number of measures (which the Company accepts) to mitigate visual impacts associated with the expansion of the rejects emplacement area. Such measures include:

- additional vegetation screening;
- additional bunds, particularly near the access to the site;
- early revegetation of rejects area embankments;
- early completion/revegetation of the northern emplacement (at between 12 and 17 years rather than the 21 years proposed); and
- rigorous monitoring and maintenance of bunds, revegetation and stabilisation works and active consultation with nearby residents regarding visual mitigation measures aimed at avoiding and or minimising impacts.

The Commission is also satisfied that provided the Applicant undertakes improved landscaping such as bunding and tree screening to its aboveground activities in the western area, these proposed works would minimise visual impacts of the mine access area, haul road and ventilation shafts. The Commission also stated that proposed additional bunding and screening to the CHPP and coal stockpile area is clearly needed and the Commission is satisfied that provided works set out in the Applicant's August 2000 Landscape Plan are implemented that previous deficiencies in landscaping would be rectified.

Department Position

The Department generally concurs with the findings and the recommended consent conditions of the Commission. These conditions are also generally consistent with those proposed by the Department. The Department requires the use of off-site mitigation in circumstances where a residence will be directly affected by the proposal. Also, given the previous performance of visual mitigation measures, the Department requires the Applicant to monitor the success of visual mitigation measures and to report on these on an annual basis.

Following the COI, the Department received a further submission from Scone Shire Council, regarding the potential visual impacts on Council's residential land reserves adjoining the Dartbrook owned land, from the proposed expansion of the rejects emplacement area. The Commissioners stated that the visual appearance from the Aberdeen residential development can be satisfactorily mitigated through the application of various mitigation measures. However, Council's view is that although the measures may mitigate the impacts, the rejects emplacement area will be in close proximity to the residential land that it will reduce the potential value of the land and therefore have a serious impact on Council's potential return on its investment.

The Department has considered the issue and has specifically recommended that the landscape management plan be prepared by an independent qualified person with particular consideration of the visual impact and adequacy of associated mitigating measures on the Council land, with recommendations for any additional measures including consideration of buffer land.

In addition, the recommended conditions require the Applicant to monitor the effectiveness of its mitigation measures to ensure that the visual impacts from the rejects emplacement area are successfully mitigated. This will be achieved through the Applicant engaging an independent review (by an independent Landscape Expert) to determine whether the impacts of the reject emplacement area are greater than that predicted in the Landscape Management Plan. This independent review will be undertaken every five years after the commencement of the extension to the rejects emplacement area, unless otherwise agreed by the Director-General.

The key elements of the Departments recommended consent conditions regarding the management of visual impacts include:

- preparation of a Landscape Management Plan to the satisfaction of the Director-General and in consultation with the Department of Mineral Resources, Muswellbrook Shire Council and Scone Shire Council prior to the commencement of the expansion of the rejects emplacement area and construction of surface facilities and/or road works. The Plan will detail the vegetation screening of the site and public roads, the use of mounding or bunding to mitigate visual impacts, consideration of the Department of Mineral Resources' Synoptic Plan, and details of the use of material and design of the buildings / structures to blend with the surrounding landscape;

- the Landscape Management Plan will include a monitoring program to ensure the effectiveness of any visual mitigation measures proposed. The monitoring program will be developed in consultation with Muswellbrook and Scone Shire Councils and be developed to the satisfaction of the Department. The Applicant will be required to monitor the effectiveness of mitigation measures against the visual impacts predicted by the Applicant during the Commission of Inquiry. Also, the monitoring results will be reported annually in the AEMR;

- the Landscape Management Plan will also require an off site mitigation strategy to be prepared which will detail proposed off site mitigation measures, which will include: the identification of those properties requiring specific off site enhancement works in accordance with the predicted adverse visual impacts; details of consultation with the relevant landowner; and details of the types of enhancement works that will be undertaken;

- the Applicant will be required to review the visual impacts on Scone Council's residential land, every five years after the commencement of the extension to the rejects emplacement area, unless otherwise agreed by the Director-General. The visual impact of the rejects emplacement area shall be compared to the impact predicted by the Applicant in the Landscape Management Plan. If the impact is greater than that predicted the Applicant will be required to mitigate these effects at the request of Scone Council.

- a process for the management of visual impacts, including the use of a dispute resolution process (refer particularly to condition 3.7 (b), and (c)). This process provides landowners with the opportunity to seek off-site visual impact mitigation measures if impacts greater than those predicted by the Applicant during the COI occur. This process is illustrated by the flow chart titled "Process for Management of Complaints for Visual Impacts" attached to the recommended conditions;

- preparation of a Light Management Plan to the satisfaction of the Director-General and in consultation with Muswellbrook Shire Council and Scone Shire Council, detailing measures to screen, direct or manage all on-site lighting from mine related activities away from residences and roadways, including details of planting of vegetation screens, details of technical measures to minimise light spillage, and details of proposed process and measures to address light related complaints;

- a requirement that all work on the emplacement area will be undertaken during daylight hours (Condition 2.3(c)).

- and a requirement for rehabilitation of the site to be undertaken in accordance with the requirements of the Department of Mineral Resources and Department of Land and Water Conservation which shall also consider the latest version of the 'Synoptic Plan – Integrated Landscapes for Coal Mine Rehabilitation in the Hunter Valley of NSW'.

4.5 Groundwater and Surface Water

Applicant Position

Underground Mine

The Applicant assessed groundwater issues of the proposal in Sections 3.12, 6.2 and 7.2 of Volume 1 of the EIS and Appendix L in Volume 3 of the EIS. The assessment addressed the potential impacts which included change in regional aquifer pressures, leakage of groundwater from alluvial lands, loss of groundwater yield at existing bore locations, change in groundwater quality, change in runoff in local watersheds and change in surface water quality.

The Applicants assessment used computer modelling to predict impacts from the proposed underground mine on groundwater resources using data obtained from

existing bores and six additional groundwater single or multi-level piezometers drilled into the coal measure sequence.

The Applicants assessment predicts that longwall mining in the Kayuga Seam will initiate loss of aquifer pressures in seam and in formations overlying the seam. The loss of aquifer pressure will eventually migrate to the surface. Loss of aquifer pressure (water levels) within the coal measures may impact on existing bores and wells in the hardrock coal measures depending upon location and local recharge mechanisms. Nineteen bores and wells were identified as being at risk. Bores and wells within the alluvium are not predicted to be affected by depressurisation within the coal measure aquifers, although some loss of leakage of saline groundwaters to natural drainages may occur but significant impacts on dams, structures or habitats were identified.

The EIS predicts that the loss of pressure within the coal measures has the potential to indirectly affect groundwater within the alluvial lands. The flow regime generally leads to a generally saline environment in basal gravel and sands (in alluvium) with improved groundwater at shallow depths. Declining pressures in coal measures will reduce the rate of upward leakage to alluvial lands and could eventually reverse flows in some areas. Improved quality from recharge may then migrate to greater depths. The EIS states that the extent to which this process could occur is difficult to predict beyond a broad conceptualisation since sustained flushing would need to occur to improve the deeper saline groundwater environment within the alluvial lands.

The EIS predicts that it is unlikely that any significant change in groundwater quality will be observed in coal measures as pressure declines. Some improvement in quality may be apparent in deeper zones of the alluvium with the onset of leakage. However, the EIS predicts that the mixing process could be slow and measured change difficult to observe.

The EIS indicates that existing infrastructure will be used to dewater the mine. Surplus minewater will be directed to the recently constructed Staged Discharge Holding Dam. The dam has a capacity of 450 ML and an ability to release that quantity of water in 24 hours. The purpose of such a facility is to allow Dartbrook Mine to fully participate in the Hunter River Trading Scheme, managed by the DLWC. The EIS indicates that up to now, Dartbrook Mine has managed saline groundwaters with evaporation ponds, allowing the mine to be a nil discharge mine. This has been difficult to achieve, and alternatives have been employed to dispose of excess water.

The EIS indicates that the water management strategy has been revised. All saline and contaminated waters will be collected, and where possible, directed to the Staged Discharge Holding Dam. Where possible, waters will be re-used as process water in the CHPP or for dust suppression. During periods of drought it is anticipated that use will be made of goaf storage to store water in excess of the capacity of the Staged Discharge Holding Dam. During wetter years, water will be transferred from goaf storage to the Holding Dam for subsequent release under the provisions of the Hunter River Trading Scheme.

The EIS indicates that movement of water from goaf storages will be achieved by a submersible pump located in a borehole to be formed near Longwall Panel 9 of the Wynn Seam. Water will be transferred from the borehole to the holding dam by way of an overland pipeline.

The EIS indicates that the Mackie studies predict that the input of groundwater during the Dartbrook Extended operation will be low and confined to a steady increase over

time from the combined seams (Wynn, Kayuga/Mt Arthur and Piercefield) and is considered manageable by the combined use of the Discharge Dam and underground goaf storage.

The Department engaged Peter Dundon & Associates to undertake an independent review of the potential impacts of the proposed mine extension on local and regional groundwater resources. The consultant provided the Department with their report *"Review of Hydrogeology Aspects of Dartbrook Underground Mine Extension Project, dated March 2001*. The report and its findings are enclosed in Appendix **X**.

Proposed rejects emplacement area

The Applicant investigated the potential for groundwater impacts associated with the rejects emplacement area and included: a review of the hydrogeochemical characteristics of rejects; characterisation of groundwater in nearby coal measures and alluvial lands; and estimation of mixed groundwater quality resulting from the rejects leachate leakage.

The Applicant has predicted that leakage to underlying groundwater would occur. Calculations by the Applicant showed that the groundwater salinity in alluvial lands downgradient of the rejects emplacement area could increase, but take about 150 years before the increased salinity would be observed.

The design of the rejects emplacement area includes the diversion of clean runoff from Browns Mountain around the emplacement. Surface runoff from the paste codisposal areas and other areas would be collected and discharged to the existing 'dirty' CHPP water system.

COI Position

Underground Mine

During the Commission of Inquiry, both the Department of Land and Water Conservation (DLWC) and the Department's consultant (Peter Dundon and Associates) requested additional information from the Applicant. Information requested included: data supporting that there is not a leakage connection between the alluvial lands and the Hunter Tunnel; confirmation of the expansion of the depressurised area post mining; and further information regarding impacts within the Sandy Creek alluvium and whether subsidence would affect localised alluvial systems. Following the receipt of additional information, the Commission is satisfied that the Applicant has adequately investigated, modelled and addressed the management of groundwater and associated issues.

However, the Commission found that several issues cannot be resolved at this time, as uncertainties with modelling results can only be resolved by long term monitoring during the life of the project. Accordingly, mitigation measures or alternative options need to be developed by the Applicant should unforseen impacts occur. The Commission supports the approach adopted by DLWC and the Department in recommending conditions which require monitoring to confirm modelled predictions and the preparation of remedial plans.

Moderate to high impacts are predicted for three non-Company owned boreholes above or in close proximity to underground mining operations. Although the Applicant has a "subsidence policy", the Commission finds that the Applicant must

immediately provide an alternative water supply where there is reasonable certainty that the impacts result from the Applicant's mining activities.

DLWC's major concern was the potential for seepage to the Hunter River Tunnel to adversely affect the alluvial aquifer. The Commission recommends that the Applicant implement an ongoing monitoring program and a mitigation strategy in the event that significant alluvial leakage occurs.

Modelling by the Applicant predicts the recovery of groundwater pressures above the mined areas would take up to 100 years depending on the quantity of water stored in the Wynn seam goaf at cessation of mining. The Commission finds that monitoring and calibration of the model using monitoring results is necessary on a regular basis, to firmly establish the likely long term impacts of mining on the recovery of groundwater pressures.

The Commissioners find that the impacts on local and regional groundwater aquifers would be limited and the Applicant proposes to management measures to redress significant impacts and to replace loss of groundwater supply due to mining. The Commission finds that ongoing monitoring and model calibration is required to ensure groundwater management and that remedial actions are appropriate and effective, therefore, the Commissioners recommend conditions of consent accordingly.

Proposed Rejects Emplacement Area

Due to the proposed increase in salinity level beneath and downgradient of the rejects emplacement area, the Commission finds that monitoring of groundwater downgradient, to the west of the rejects emplacement area is required and is proposed by the Applicant.

The Commissioners also found that salinity levels are likely to be lower than previously thought and that any adverse impact of the increased salinity on beneficial uses of the groundwater would be limited. As a level of uncertainty remains, the Commission recommends the Applicant be required to develop and implement strategies to mitigate adverse impacts should they be identified through monitoring.

The Commission finds that an erosion and sediment control plan would be developed for the rejects emplacement area, which would address preparation works for the rejects emplacement area, stockpiling of topsoil and clay, construction of the embankments/retaining walls, surface water runoff diversion, embankment runoff control and site discharge management. The plan must ensure that the requirements of DLWC and DMR are integrated into the plan. Also, the Commission supports the redesign of the southern rejects emplacement area as it improves the Applicant's ability to control and manage surface water discharges from the site.

The Commission is satisfied that there are well proven procedures to ensure effective management of surface water issues relating to the rejects emplacement area. The Commission also recommends monitoring the ongoing physical condition of the drainage systems on a regular basis as well as following high rainfall events.

<u>Department Position</u>

The Department generally concurs with the conditions recommended by the COI. The DLWC provided its General Terms of Approval following the Inquiry and the

Department has incorporated these Terms into the recommended consent conditions regarding groundwater management.

The key elements of the recommended consent conditions for groundwater management, for both the underground mine and rejects emplacement area are:

- Preparation of a Site Water Management Plan for the DA area which addresses the management of surface water and groundwater, includes measures to determine whether any groundwater from the Hunter River alluvium is captured by the mine, contingency plans for managing adverse impacts of the development on surface and groundwater quality, and details of a groundwater and surface water monitoring program;

- Ensuring the Applicant undertakes annual assessments of the accuracy of groundwater model predictions in the EIS compared with monitored groundwater impacts. These assessments shall be reported in the AEMR and should the assessment identify significant differences between EIS model predictions and monitored impacts, the Applicant shall revise the assessment in consultation with DLWC and implement any further mitigation measures.

- In the event that the development adversely affects groundwater users, the Applicant shall in consultation with DLWC, liaise with the users to provide a replacement water supply of similar quality and quantity to that affected, until such time as the development ceases to impact on the users' water supply; and

- Preparation of a detailed monitoring program regarding groundwater and surface water quality and quantity, which shall from part of the Site Water Management Plan. The monitoring program shall have the capacity to collect data to assess impacts on groundwater levels, impact on the alluvial aquifer associated with the Hunter River and regional groundwater levels including an extension of the regional groundwater monitoring network.

- Preparation of an erosion and sediment control plan for the extension to the rejects emplacement area and surface facilities. The Plan shall include details of temporary and permanent erosion and sediment control systems, details of soil salinity management where relevant, measures that will be used to minimise soil erosion and the discharge of sediment and other pollutants during the construction and/or the expansion of the rejects emplacement area and measures to construct banks, channels and similar works to divert stormwater away from disturbed areas.

4.6 Traffic and Transport

Applicant Position

The Applicant assessed the increase in road traffic in Sections 3.8, 6.11 and 7.7 of Volume 1 of the EIS and in Appendix I of Volume 2 of the EIS. The Applicant described the existing road network and traffic flows which includes the existing operation of Dartbrook Mine. The proposed activities which will increase traffic flows include construction activities (six months) and road transport of coal from the temporary coal stockpile at the proposed mine access portal to the CHPP (18 months). The traffic assessment considers that the mine traffic associated with the existing mine has minimal impact on the road network and similarly, the Traffic Impact Assessment concludes there will be minimal traffic impacts due to the proposed mine extension.

COI Position

The Commission found that the road traffic and initial road transport of coal to the CHPP would have a low impact. During operation of the mine (after the initial period of up to 18 months of road haulage of coal) the Commission found that there would be negligible change to the current traffic volumes generated by the mine and consequently continuing minimal impact.

Department Position

The Department concurs with the Commissions assessment that there will be a low impact on road traffic for the first 18 months after which road impacts will be negligible due to the number of employees remaining at current levels.

The key elements of the recommended consent conditions as they relate to road transport are:

- Ensuring the Applicant limits the period of road haulage from the temporary coal stockpile to the CHPP to a period of up to 18 months (recommended condition 7.2(b));

- Ensuring the Applicant uses the access route from the temporary coal stockpile to the CHPP as specified in the EIS (recommended condition 7.2(f));

- Restricting road haulage of coal to the hours of 7:00 am and 6:00 pm (recommended condition 7.2(c)); and

- Ensuring the Applicant does not spill coal associated with the road haulage on the New England Highway. If coal spillage occurs the Applicant shall bear all costs and liability associated with any incident or related clean-up activities associated with the spill (recommended condition 7.2(h)).

4.7 Subsidence Effects

Applicant Position

The EIS includes a Subsidence Study which contains predictions of subsidence and its impacts for the proposal. Subsidence predictions were provided for the panels that are intended to be extracted during the life of the lease approval (i.e. 21 years). Also, two sets of predictions are provided, firstly for 200 metre wide extraction panels and secondly for 300 metre wide extraction panels. However, the EIS states that the environmental assessment was undertaken on the worst case scenario, being the 300 metre wide panels. The maximum predictions for the proposed extraction panels in Kayuga, Mt Arthur and Piercefield Seams are provided in Tables 3 to 8 of Appendix N (Volume 3 of the EIS). Also, the EIS considers the cumulative effects of mining two seams in some areas of the lease which will continue the subsidence events.

The subsidence assessment addresses impacts of subsidence on properties, bushland and watercourses, archaeology, rural land and improvements, public infrastructure and vibration impact.

Rural Land and Improvements

The lease area contains property access roads and tracks, two residences (Maryvale and Woodburn), farm improvements (including farm dams) and public utilities. Also, Dorset and Castle Rock Roads traverse the proposed mining area. There are approximately 15 properties which will be potentially affected by the proposed underground mining. The ownership of these properties are listed in Section 6, page 5 of Volume 1 of the EIS. These rural properties contain a range of outbuildings, fencing and other rural infrastructure. The amount of maximum subsidence predicted is shown in Figure 6.1 of Volume 1 of the EIS. The EIS predicts that only one rural property will have a dwelling affected by subsidence (Maryvale). At this dwelling, the EIS predicts that subsidence will be approximately 4.8 metres after two periods of settlement of 2.2 metres and 2.5 metres. Strains are estimated to be up to 15 millimetres per metre and tilts up to 47 millimetres per metre. The EIS considers that it is unlikely that the house and associated improvements could survive such movements without structural re-adjustment. The buildings associated with the residence, Woodburn is located above access roadways and will not be affected by subsidence. Details of impacts on other improvements such as fencing, sheds, dams, access roads and bores would be assessed on a property basis and were not provided in the EIS.

Public Infrastructure

The main utilities and public infrastructure throughout the area includes power lines, telephone cables, roads, drains, culverts, drop boxes, survey marks and roads. The two roads (Dorset and Coal Creek Roads) are unsealed and these roads may be expected to suffer cracking and settlement. The EIS states that these roads remain trafficable without repair work but will require additional maintenance to restore the road surface. Also, drainage works associated with the roads will be affected.

Archaeology

The EIS studies show that archaeological studies occur throughout the area and there may be some additional erosion caused by ground subsidence from a two seam extraction. However, significant ground cracking is not anticipated.

Bushland and Watercourses

The larger tributaries of Sandy Creek will not be undermined and therefore will not be impacted by significant ground cracking. However, there are numerous small watercourses across the study area which run in wet weather. The gradients of the tributaries are high and there is the potential for increases in streambed erosion as subsidence levels up to 4.8 metres impact parts of the streambeds. Ground cracking is expected and there is also the potential for surface water to enter underground mine workings. Also, localised ponding can be expected along watercourses and localised changes to near surface ground water tables that feed water to creeks and dams may occur.

Vibration

Vibration impacts due to the workings in the Wynn Seam have not been recorded, however, upper coal seams may cause some impact.

Subsidence Amelioration

The EIS states that it is impractical to detail repairs required on the basis of a conceptual mine plan.

The EIS acknowledges that subsidence predictions will need to be refined against actual measurements as mining progresses. Dartbrook Mine has a subsidence monitoring program which will continue, so that it can provide more accurate data to monitor the impact on surface development.

Dartbrook Coal Pty Ltd has a Subsidence Policy (Section 7.14 of Volume 1 of the EIS) which contains commitments and intents by Dartbrook Coal and provides a guide for dealing with subsidence issues not fully covered by legislation. The Policy addresses the issue of compensable loss, which is not covered by the Mine Subsidence Compensation Act 1961. This policy enables direct negotiation with property owners on an individual property basis to cover issues not directly specified through legislation.

The Subsidence Policy undertakes to:

- regularly communicate with landowners;
- keep landowners fully informed of the anticipated effects of subsidence;
- effect repairs to the surface of the land which are not covered by the Mine Subsidence Compensation Act 1961;
- carry out levelling and amelioration of impacts to enable the continuation of existing agricultural pursuits;
- reseed and re-establish pastures or grasses lost through surface repairs;
- carry out emergency provision of any interruption to water supplies;
- take reasonable steps to ensure the continual flow of water in natural streams servicing the properties and to reduce and minimise the sterilisation of lands through ponding; and
- negotiate to purchase those lands which are unable to be used for their existing land use due to ponding or surface disturbance.

Issues raised in Submissions

The Mine Subsidence Board (MSB) commented that surface improvements would require approval from the MSB, prior to construction.

There were also a number of private submissions received by the Department from residents concerned about the potential impacts of subsidence, particularly resultant impacts on domestic and stock water bores and impacts to the underground water supply. Also, some submissions listed concerns regarding subsidence impacts on infrastructure within the property and an objection to the proposal was received due to the effects of subsidence on the “Maryvale” homestead and property.

Department Position

The predictions in the EIS indicate that subsidence impacts will occur on natural surface features, public infrastructure such as roads and powerlines and improvements such as fences and farm dams on rural properties.

The recommended conditions require the Applicant to prepare a Mine Operations Plan. As part of this Plan, the Applicant will consult with affected service authorities and make arrangements (satisfactory to those authorities) for the protection or relocation of those services.

The recommended conditions also require the Applicant to restore and safeguard any impacts on the Crown Road system due to surface subsidence, to the extent that public access is not compromised.

A number of properties are likely to be affected by subsidence and the Department recommends conditions requiring the Applicant to prepare a Property Subsidence Management Plan for each property title that will be affected by subsidence, to the satisfaction of the Director-General of DMR. The Plan shall identify dwellings, structures and other improvements that are likely to be damaged by subsidence and investigate feasible mitigation measures. The Plan shall also identify agricultural or other business values that are likely to be affected by the proposal and also identify areas of likely compensable loss and either reach agreement with the landowner in regard to the likely compensable loss or determine suitable mitigation measures to minimise compensable loss.

Compensation matters are dealt with under the Mining Act 1992 and/or the Mine Subsidence Compensation Act 1961. To provide a level of certainty to landowners, the Department has included a provision that where compensation cannot adequately remedy the impacts, acquisition of the subsidence affected property, by the mine company is made available as a last resort to the landowner, if the landowner so requests. Any disputes relating to land acquisition shall be referred to the Director-General for resolution. In the case of where acquisition is requested by a landowner due to damage to land alone and not a dwelling, an independent expert may be appointed by the Director-General to determine the level and extent of loss or impacts, and whether acquisition is required.

One residence located above a longwall is predicted to experience significant structural damage beyond the safe, serviceable and repairable criteria. The Department requires that where dwellings are predicted to be damaged beyond this criteria, or are damaged beyond this criteria as a result of the mine, the Applicant must remedy, mitigate the damage, or compensate the landowner or acquire the property. Therefore, the Department has recommended consent conditions accordingly.

The key points in the Department's recommended consent conditions relating to subsidence matters include:

- A requirement for the Applicant to prepare a Landowner Communication and Consultation Plan relating to longwall extraction throughout the DA area;

- A requirement for the Applicant to prepare a Property Subsidence Management Plan for each property title that will be affected by subsidence, to the satisfaction of the Director-General. The Plan shall identify dwellings, structures and other improvements that are likely to be damaged by subsidence and investigate feasible mitigation measures. The Plan shall also identify agricultural or other business values that are likely to be affected by the proposal and also identify areas of likely compensable loss and either reach agreement with the landowner in regard to the likely compensable loss or determine suitable mitigation measures to minimise compensable loss;

- A requirement for the Applicant to remedy, mitigate or acquire property where a dwelling is damaged beyond the safe, serviceable criteria (as defined by Category 3 to 5 for strain and/or Category C or D for tilt in accordance with Australian Standard AS2870-1996); and

- A requirement for the Applicant to remedy, mitigate or acquire property where a landowner suffers or is likely to suffer a loss of land capability or agricultural capability as a result of the proposed development. Land capability refers to the ability of a parcel of land to accept a type and intensity of use permanently or for specified periods without permanent damage. Land capability is defined by the Rural Land Capability Classification, developed by the former NSW Soil Conservation Service, now part of the Department of Land and Water Conservation. Agricultural Productivity is defined by the Agricultural Suitability Classification System used by NSW Agriculture.

4.8 Indigenous Heritage

Applicant Position

An assessment of Aboriginal heritage was undertaken for the EIS which included a review of previous studies undertaken in the study area and a field survey undertaken in the presence of members of the Wonnarua Tribal Council. The objectives of the field survey were to target areas of the surface facilities (such as the Kayuga Homestead and the coal rejects emplacement area), investigate areas where subsidence is likely and to record the findings in a manner compatible to the investigations for Kayuga Open Cut Coal Mine.

The survey focussed on areas of good visibility and the results of the survey are presented in Tables 3.9, 3.10 and 3.11 of Volume 1 of the EIS. Sites were identified in the vicinity of the proposed Kayuga Access Slot, the proposed rejects emplacement area, and across the proposed mining area. A total of 15 Aboriginal heritage sites were identified during the survey, however, some of these include the identification of new sites and previously recorded sites.

The proposed mine will cause disturbance to the surface directly through the construction of the new access slot and other surface facilities. Due to the poor effective visibility in the areas likely to be impacted by the construction of the slot and other facilities, the EIS recommends that further archaeological work be undertaken prior to the construction of these facilities. The EIS also states that the proposal may have indirect surface impacts though subsidence. In particular, subsidence has the potential to increase erosion across the lease area and the EIS recommends that areas of concern be regularly monitored and appropriate remedial action be taken. The EIS concludes that one site, an isolated find will require a Consent to Destroy, this is the site found on Browns Mountain.

An assessment of the Aboriginal Cultural heritage was conducted by the Wonnarua Tribal Council and is included in Appendix J of the EIS. This report provides comments on the draft report prepared by HLA Envirosciences.

Issues raised in Submissions

The National Parks and Wildlife Service has provided its General Terms of Approval for the project. These General Terms of Approval have been incorporated into the Departments recommended consent conditions.

During the exhibition period, there was a submission from the Wonnarua Tribal Council (WTC) regarding the proposal. AT that time the WTC were concerned with Aboriginal Sites associated with the construction of the Mine Water Dam in 1999. Also, the WTC wishes to further the CHIMA initiative with Anglo Coal. The WTC submission requests that the matters relating to the CHIMA and the sites associated

with the mine water dam need to be resolved prior to the WTC supporting the Dartbrook Extended proposal.

There were no other submissions received from other organisations or the public on Aboriginal issues.

Department Position

The Department supports the proposed mitigation strategies proposed by the EIS and the recommendations which have been provided by the NPWS in their General Terms of Approval.

In addition to these proposed measures required by the NPWS as part of their General Terms of Approval, the Department also requires the Applicant to undertake a number of management and monitoring measures as part of the consent conditions.

The Applicant is required to prepare a detailed Archaeological and Cultural Management Plan to address Aboriginal cultural heritage issues in consultation with the appropriate Aboriginal Groups and the NPWS, and to the satisfaction of the Director-General. The Plan includes requirements for the identification and monitoring of future salvage and excavation of sites, measures to manage and protect unaffected sites, and detail of measures to assist the Aboriginal community to maintain and manage cultural heritage in the DA area. The consent conditions also require appropriate measures be undertaken should any future sites be identified, and monitoring of the effectiveness of the Archaeology and Cultural Management Plan.

The Applicant is also required to contribute $50,000 towards the establishment of a trust fund set up by the Department through the Public Trustee. Other future coal mining proposals will also contribute to this trust which will be used for a regional study of Aboriginal sites and other cultural heritage projects agreed to by the WTC.

The Department is satisfied that the conditions of consent and protective measures in the EIS are adequate to either preserve the sites *in situ* or provide opportunity to collect any artefacts.

4.9 Non-indigenous Heritage

Applicant Position

The EIS assessed non-indigenous heritage items in the vicinity of the Kayuga Seam Access Slot and the Browns Mountain Coal Emplacement Area. The study found that there are no heritage items listed or observed in the Kayuga Seam Access Slot area. However, the entire area is included in the Kayuga Estate and adjacent to the Access Slot is the 1932 Kayuga Homestead. Further, within the general area of the Kayuga Seam Access Slot and the western facilities, the EIS states that the following items are of heritage or potential heritage interest: the McIntyre family cemetery, the Old Kayuga Homestead and the new Kayuga Homestead, Riverview Homestead and Kayuga Cemetery. There are two items in the area to be considered of regional heritage significance, as they are listed in Schedule 2 of the Hunter Regional Environmental Plan 1989. These items include Kayuga cemetery and Rosedale (Rosevale) Cottage which was demolished in 1999. Kayuga Homestead is listed in Schedule 4 of the Hunter REP and is also owned by the Dartbrook Joint Venture. Kayuga Cemetery is also listed under the provisions of Muswellbrook LEP 1985.

The EIS states that the construction of the Kayuga Seam Access Slot may require the relocation of the gateposts on the entrance to the New Kayuga Homestead. These will be relocated to a site closer to the Homestead following consultation with the family. The proposed surface development will also intrude onto the Kayuga Estate. However, no heritage items will be affected by subsidence from underground mining.

There were no heritage items listed or found in the Browns Mountain area.

Issues raised in Submissions

Muswellbrook Council in its submission proposed a draft consent condition regarding European Heritage. This included the need for the Applicant to prepare an oral history of the area and to investigate all buildings and sites (specifically Kayuga cemetery) that will be specifically affected by the proposal.

There were no other submissions made in respect of non-indigenous heritage items.

Department Position

The Department considers that the proposal has the potential to impact on the New Kayuga Homestead through vibration and reduced amenity arising from noise and dust emissions. Dartbrook Joint Venture owns the New Kayuga Homestead which is located adjacent to the proposed Access Slot.

The Archaeology and Cultural Management Plan required by the consent conditions will also address non-Indigenous heritage issues. The Plan will require details of the procedures the Applicant is required to follow should any future non-Indigenous heritage items be identified during the construction or operation of the mine. This includes the requirement to consult NPWS and the NSW Heritage Office should any relics or items be located. Other key conditions relating to non-Indigenous heritage include:

- requiring the Applicant to detail measures to fully document any non-Indigenous heritage items that will be removed as a result of the development;

- requiring the Applicant to prepare an oral history of the area and to investigate all buildings and sites (specifically Kayuga cemetery) that will be specifically affected by the proposal; and

- requiring the Applicant to detail measures to mitigate potential impacts from the mine on heritage homesteads, Kayuga Cemetery and the Kayuga Estate.

The Department is satisfied that this management plan will provide appropriate mitigation measures should further heritage items be identified over the life of the mine.

4.10 Flora, Fauna and Aquatic Habitat

Applicant Position

The Applicant assessed the existing flora and fauna and potential impacts of the proposal on these matters in Sections 3.4 and 6.3 of Volume 1 of the EIS and Appendices F and G of Volume 2 of the EIS. The EIS states that no threatened flora

and fauna species as listed by the Threatened Species Conservation Act were identified within the area to be affected by the Dartbrook Extended proposal.

Flora Assessment

The Applicant surveyed the vegetation communities and categorised these into separate precincts comprising the Browns Mountain precinct, Broader Dartbrook Area precinct and Riparian Habitats. The Browns Mountain precinct includes the ridge and west facing slopes of Browns Mountain and comprises woodland with an open canopy cover. The shrubs Shiny-leaved Canthium and the Native Olive were also recorded as a minor species and both are considered to be of local significance. The Dartbrook Broader Area Precinct is woodland and semi-cleared woodland with the most common species being Grey Box, the Peppercorn Tree and Weeping Willow. The Dart Brook and Hunter River precincts showed similar habitat characteristics whilst the vegetation of the Sandy Creek precinct is comparably different. The tree species along Sandy Creek are mostly indigenous.

The EIS assessed the impacts on flora communities and states that the proposal will result in the reduction of woodland habitat near Browns Mountain. The EIS also states that the proposed rejects emplacement area may result in the removal of some individuals of locally significant indigenous plants, namely the Shiny-leaved Canthium and the Native Olive. However, the EIS states that these two species will be retained overall at other sites on Browns Mountain and their local occurrence will not be affected by the proposal.

Fauna Assessment

The Applicant assessed the fauna assemblages based on the precincts identified for the surveying of vegetation communities (namely the Browns Mountain precinct, Broader Dartbrook Area precinct and Riparian Habitats).

The assessment found that a large unoccupied Wedge-tailed Eagle nest and a smaller semi-constructed nest in the Browns Mountain Precinct. Also, three species of macropod were identified. Birds were the most diverse class of vertebrate although the species numbers were relatively low. Also, aquatic and semi-aquatic birds were identified in the dam below Browns Mountain.

The assessment of Dart Brook and Hunter River precincts noted the presence of skinks, birds and semi-aquatic birds. A wide range of frogs were recorded within the Sandy Creek precinct however, as the EIS states, the Green and Golden Bell Frog was not identified, although the reed communities were specifically searched for this species (the Green and Golden Bell Frog is listed on the Threatened Species Conservation Act). The EIS states that Sandy Creek was infected with mosquito fish at the time of field work, which generally sterilises Green and Golden Bell Frog habitat. Also, the dense grove of River Oak along Sandy Creek represents potential roosting habitat for the Barking Owl which is a threatened species, however, this species was not located during the assessment.

The assessment also included investigating microbats using harp trapping and electronic detection. Although eight species of bats were identified, no threatened species of microbats were recorded in the study area.

The EIS states that no threatened species of fauna as listed by the Threatened Species Conservation Act 1995 were recorded during field investigations.

The EIS assessment also considered aquatic ecology to describe fish habitats and identify any critical fish habitats, species or populations. The assessment noted that there are no endangered species reported or expected from the study area or region and specifically, neither of the two endangered species from the NSW Coastal river systems (the Eastern Freshwater Cod and the Oxyleyen Pigmy Perch) are reported or expected to occur in the study area. Also, the EIS assessment noted that there are no vulnerable fish species recorded or expected in the study area or region. (The Macquarie Perch is reported from the Hawkesbury and Shoalhaven river systems but not from the Hunter).

Issues Raised in Submissions

Two submissions were received regarding flora and fauna issues, one from the National Parks and Wildlife Service and the other from NSW Fisheries.

The NPWS submission raised a number of issues seeking clarification of the information presented in the EIS. In particular, it recommended that if the proposal was to proceed, clear mitigation strategies and actions should be developed to minimise likely impacts on flora and fauna. The Applicant provided additional information to the NPWS and the NPWS indicated that they had no further comment on the proposal.

The submission from NSW Fisheries raised no objections to the proposal and did not seek further information.

One of the private submissions received by the Department objected to the proposal on several grounds including the threat to native wildlife.

Department Position

The Department considered the Applicants assessment on flora and fauna issues and also reviewed the additional information provided to the NPWS. The Department considers that the proposal is unlikely to significantly impact terrestrial or aquatic ecology, however mitigation measures need to be stipulated.

The Department recommends that the Applicant prepare a Flora and Fauna Management Plan which considers both terrestrial and aquatic ecology. The Plan will be prepared in consultation with the National parks and Wildlife Service and to the satisfaction of the Director-General prior to the commencement of proposed activities. The Plan is required to detail strategies for clearing and disturbing vegetation and fauna, as well as aiming to maximise the scope for new vegetation to be established and to therefore restore ecological integrity.

The other key elements of the recommended consent conditions include:

- Requiring the Applicant to cease work immediately if threatened species not identified in the EIS are found on site during construction or operation of the mine;

- Ensuring the Applicant restores any vegetated areas that are cleared for construction and not used in the Mining Operations, are to be restored at least to its original condition;

- Ensuring the Applicant shall not clear vegetation in advance of the immediate area required for use of the rejects emplacement area; and

- The efforts and progress of the Flora and Fauna Management Plan shall be included in the AEMR.

The Department is satisfied that the potential impacts on flora and fauna can be adequately managed by the measures outlined in the consent conditions.

Other Issues

4.11 Economic and Social Impacts

The EIS indicates that the proposed Dartbrook Extended Underground Mine will provide continuing employment for the existing employees of Dartbrook Mine. Dartbrook Mine currently employs 192 personnel and an additional 100 contractors at any given time. If the proposed extension proceeds, the numbers of employees at the mine will remain consistent. Almost 60 per cent of the existing workforce live in or around Muswellbrook, Scone and Aberdeen.

The EIS states that there will be employment opportunities during the construction period, which is expected to be six months. During this time, a peak of around 40-50 jobs will be created and other opportunities such as for coal transport contractors may be created for up to a period of 18 months.

The EIS also calculated an average multiplier (2.5) to apply to the Dartbrook workforce. When the multiplier of 2.5 is applied, this means that 730 people could be indirectly or directly employed through the ongoing operation of Dartbrook Mine. (This figure comprises 192 employees of Dartbrook Mine, 100 contract employees plus 438 other direct, indirect and induced employment positions).

The EIS indicates that continuing mine operations will inject around $40 million annually into the economies of the local shires and approximately $100 million in total annual expenditures. Also, the EIS predicts that total expenditures and flow on effects over the life of the mine will be approximately $3,500 million.

Other potential social impacts that may occur as a result of the proposal includes potential noise, dust visual and groundwater related impacts. These issues formed the focus of the COI and a number of recommendations by the Commissioners and the Department is proposed to address the potential impacts. In response to the other issues that were not part of the COI which may also result in a level of social impact such as issues relating to water and heritage, a number of other recommended consent conditions are also proposed by the Department to address there potential impacts.

Conclusion

The proposal will have a socio-economic benefit at a local, regional and state level through the provision of direct and indirect employment and economic output. Maintaining existing employment levels at Dartbrook Mine and the creation of construction jobs, and the economic contributions to the State, would not be generated if the proposal does not proceed.

The Department considers that the requirements of the consent conditions will adequately manage potential social impacts and will ensure that those properties that will be significantly impacted and therefore suffer the greatest potential impact such as decreases in value, are suitably mitigated or purchased at the market price. The

Department is satisfied that the potential adverse social impacts from the mine will be adequately mitigated through the requirements of the recommended consent conditions.

4.12 Community Consultation, Complaint Management and Dispute Resolution

A number of submissions raised the issue of community consultation and how the Applicant will deal with complaints. The Department considers these issues are very important and there is a need to ensure appropriate measures are in place for adequate on-going community consultation and management of complaints. To this end the Department is recommending a number of consent conditions in this regard. The Department's approach to these issues is discussed in the following sections.

Community Consultation

Dartbrook Mine has an existing Community Consultative Committee. The Department's consent conditions require that the existing Community Consultative Committee be continued for the Dartbrook Extended proposal. The Committee shall comprise of the existing representatives with the addition of one representative from Scone Shire Council. The Committee shall continue to be chaired by Muswellbrook Shire Council and will have regard to Muswellbrook Shire Council's Code of Conduct for Community Consultative Committees.

The Committee may make comments and recommendations about the preparation and implementation of the environmental management plans, monitor compliance with the consent conditions and other matters relevant to the operation of the mine. The Applicant is to consider the recommendations and comment of the committee and provide a response to the Committee and Director-General of DUAP.

Community consultation is also required in the handling of complaints, as outlined below.

Management of complaints

The consent conditions provide mechanisms which require the applicant to adequately establish and maintain a system for managing complaints received from the community. The applicant is required to undertake various actions if complaints are received. Also, the Applicant will provide a report of complaints every six months throughout the life of the project, to the Director-General.

The conditions also require the Applicant to put in place complaint handling procedures requiring the establishment and maintenance of a system for recording complaints on a dedicated publicly advertised telephone line, 24 hours per day, 7 days a week, and ensuring that an initial response is provided to the complainant within 24 hours. The complaints protocol shall be prepared and implemented to the satisfaction of the Director-General.

In relation to complaints regarding noise and/or dust in particular, the applicant has to undertake investigations to ascertain the level of impacts from Dartbrook Mine. Where impacts from the mine are identified, the Applicant has to undertake mitigation measures to reduce noise/dust to a level agreed to by the landowner. If these mitigation measures cannot be agreed to, the matter is to be referred to the independent dispute resolution process as outlined below.

4.15 Independent Dispute Resolution Process

The Independent Resolution Process contained in the consent conditions is to be used where mitigation measures for noise, dust and visual impacts cannot be agreed between the landowner and applicant. The process is outlined by a flow chart attached to the consent conditions at Schedule D. Essentially, where a dispute arises the matter is referred to DUAP/Council for consideration and if the matter cannot be resolved within 21 days of referral, the matter is referred to an Independent Dispute Facilitator appointed by DUAP in consultation with Council. The Facilitator would meet with the parties concerned and where necessary consult relevant independent experts for advice on technical issues with a view to resolving the matter. Where the Facilitator cannot resolve the dispute the matter would be referred back to DUAP for a final decision.

4.16 Reporting and Independent Auditing

The Department considers that reporting of the performance of the mine operations and a level of independent auditing are also important issues that need to be incorporated into the consent conditions as outlined below.

The recommended conditions require the Applicant to provide an Annual Environmental Management Report to the Department which is to review performance of the mine against the consent conditions, and other licences and approvals relating to the mine. In addition, an Independent Environmental Audit is to be undertaken at the expense of the Applicant to essentially assess compliance with the consent conditions and other approvals, and assess the development against predictions made in the EIS. The Audit is to be undertaken by a duly qualified independent person approved by the Director-General, every three years until completion of mining.

4.17 Section 94 contributions and community enhancement provisions

The recommended conditions require the Applicant to negotiate an agreed outcome with Muswellbrook Council for an appropriate level of contribution (financial or in-kind) towards mitigating any cumulative social and/or community impacts as a result of the proposed development. The conditions also provide for an independent investigation to establish community enhancement need as the result of the cumulative impact of the development, if agreement cannot be reached. The independent investigation would be based on the principles of nexus and reasonableness.

In relation to Scone Council, any section 94 contributions will be based on the outcome of an independent evaluation to whether the proposed development will result in the need for any community or related infrastructure requirements as per the provisions of s 94 of the EP&A Act, with an emphasis on establishing a nexus as to impacts.

4.18 Building Assessment

The Department considers that the mine will require a Construction Certificate for the erection of the following buildings / structures:

- Administration Building - Class 5
- Past plant/Coal Preparation Plant Building - Class 8

- Seam Access Slot, Ventilation Shafts - Class 10(a)

Conditions pertaining to building matters are included in the recommended instrument of consent. Condition 12.1 (c and d) deal with structural adequacy and verification of construction. In addition, section 80A(11) of the Act refers to clause 133 of the Environmental Planning and Assessment Regulation (2000) which contains prescribed building conditions that are part of development consent.

4.19 Ecologically Sustainable Development

Ecologically Sustainable Development (ESD) is specifically addressed in section 9.3 of the EIS with reference to the Environmental Planning and Assessment Regulation 1994 and the Protection of the Environment Operations Act 1997. The EIS states that the principles of ESD have been applied to all aspects of the project and have been incorporated in the overall development description.

Schedule 2 of the EP&A Act 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 Department is satisfied that the EIS and subsequent information have addressed the four ESD principles, and that the principles can be reinforced through appropriate conditions of consent.

The Department considers that overall appropriate information is available to justify consistency with the ESD principles. However, to ensure the environmental impacts of the proposal are properly managed consistent with the ESD principles, the Department recommends the establishment of a special high level and comprehensive environmental management regime which includes special provisions for independent auditing and monitoring of the project.

4.20 Greenhouse

A greenhouse gas assessment is presented in Section 5.32 of the EIS. Coal mining activities contribute to the emission of greenhouse gases through the release of carbon dioxide from the combustion of diesel fuel in certain equipment, blasting activities, use of electricity to power mining equipment, and the addition of carbon dioxide via the burning of coal material purchased by customers of the mine. Also, the EIS indicates that spontaneous combustion of washery rejects material is another possible source of greenhouse gas emissions.

The EIS states that the amount of greenhouse gases produced during mining is a function of coal quality, rank, depth, moisture, gas content and mining methods.

Also, the amount of inherent methane in the seam is largely due to pressure and temperature of the seam, with deeper seams containing more methane content.

The EIS indicates that the relocation of mining operations from the deeper Wynn seam to the Kayuga/Mt Arthur and Piercefield seams should reduce the production of methane from mining activities. Overall, through moving mining operations from the Wynn seam, greenhouse gas emissions are reduced by a factor of three. Also, the EIS further indicates that this reduction in greenhouse gases occurs at a time when coal production is planned to rise from 3.5 Million tonnes per annum to 6 Million tonnes per annum. Overall, the EIS concludes that for each tonne of coal mined from the Dartbrook Extended proposal, there will be a four fold reduction on greenhouse gas emissions compared to current mining operations in the Wynn Seam. Also, the proposal will reduce greenhouse gas emissions by approximately 600,000 Carbon Dioxide equivalent tonnes for each year of operation.

The Department considers the emissions from combustion can only be resolved by a reduction in the use of coal as an energy source. Until a viable alternative energy source is used, emissions from combustion will be difficult to reduce. Coal sold overseas and resulting combustion will be for those individual countries to consider in meeting their energy and environmental goals. In relation to the energy used for mining and release of methane, the Department considers that the proposed reduction in greenhouse gas emissions resulting from moving the mining operations away from the Wynn Seam, will reduce the overall greenhouse gas emissions from the mine and therefore reasonably compensate for greenhouse emissions.

SCOPE OF CONDITIONS OF CONSENT

The recommended conditions of consent tagged “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 vibration, dust and odours, visual impacts, surface and groundwater management, rejects emplacement area and waste management, flora and fauna, and archaeological issues.

The conditions of consent also include specific provisions for land acquisition regarding impact arising from noise, air quality or subsidence impacts, sets appropriate noise criteria, procedures for independent dispute resolution, compliance management, requirements for the preparation of Annual Environmental Management Plan Reports and compliance reports, a number of environmental management plans, and the continuation of the Community Consultative Committee. A summary outlining key consent conditions is attached at Appendix 5.

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

CONCLUSION

The Department acknowledges that certain privately owned residences are likely to experience noise impacts above acquisition criteria. However, the consent conditions provide these residences, or any other residence that is demonstrated to receive noise and/or dust levels above the recommended criteria, the option for the

landowner to have their property acquired. The process for a landowner seeking acquisition is triggered at the request of the landowner. The process by which an acquisition of a property is undertaken is also outlined in the consent conditions.

Provisions also exist for noise mitigation measures to be undertaken by the applicant where noise management criteria are being exceeded. A dispute resolution mechanism is included if agreement on the mitigation measures cannot be reached. The Department believes that through the application of the consent conditions, which incorporate the General Terms of Approval of the EPA, DLWC, NPWS, Mine Subsidence Board and Muswellbrook Shire Council, and the environmental impacts can be adequately managed. The proposal is also consistent with State and regional planning objectives, and with the local planning instruments.

RECOMMENDATION

It is RECOMMENDED that the Minister approve the development application as submitted by Dartbrook Coal Pty Limited subject to the attached conditions of consent.

Endorsed

Richard Lloyd
Senior Environmental Planning Officer

Sam Haddad
Executive Director

ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

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 Sections 3 - 3.6 (inclusive) 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 Sections 4 – 4.20 (inclusive) of this Report

(c) the suitability of the site for the development,

Refer to Sections 2, 3, 4 (inclusive) of this Report

(d) any submissions made in accordance with this Act or the regulations,

Refer to Sections 1.4 – 1.8 (inclusive) of this Report

(e) the public interest.

Refer to the entire Report

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