

Lake Lindsay Project *Initial Advice Statement*

December 2003

Anglo Coal (Capcoal Management) Pty Ltd



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PROJECT ABSTRACT:

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Contents

	Page Number
1. Purpose of this document	1
1.1 The project	1
1.2 The proponent	3
1.3 Project need	3
1.4 Environmental impact assessment process	4
1.5 Community and stakeholder consultation	5
2. Description and background of the Project	7
2.1 Regional setting	7
2.2 The resource	7
2.3 Project tenure	9
2.4 Native title	9
3. Details of the proposed development	11
3.1 Mining activity	11
3.2 Buildings and facilities	13
3.3 Coal haulage	14
3.4 Construction	14
3.5 Water management	14
3.6 Flooding and levees	15
3.7 Access	15
3.8 Waste collection and disposal	15
3.9 Rehabilitation	15
4. Previous work.....	16
5. Description of the receiving environment.....	18
5.1 Bio-physical environment	18
5.2 Socio-economic	27
5.3 Cultural heritage	27
6. Potential environmental effects of the proposed development	29
6.1 Land use	29
6.2 Flora and fauna	29
6.3 Hydrology and surface water	32
6.4 Hydrogeological environment	32
6.5 Air quality	32
6.6 Noise and vibration	33
6.7 Visual impacts	33
6.8 Socio-economic	33
7. Consultation	34
8. References.....	35

Contents (continued)
Page Number

List of Tables

Table 1.1: Initial list of key project stakeholders 6
 Table 2.1: Lake Lindsay Resources and Reserves Summary..... 9
 Table 5.1: Threatened species identified by the Wildnet database search for the study area 20
 Table 5.2: Threatened species identified in the EPBC Act on-line database search for the grid search area..... 21
 Table 5.3: Migratory/marine species identified in the EPBC Act on-line database search for the grid search area 21
 Table 5.4: Regional ecosystems mapped by the EPA within the study area..... 22
 Table 5.5: Rare and threatened fauna species occurring within or near the study area 23

List of Figures

Figure 1.1: Location Plan..... 2
 Figure 2.1 Typical stratigraphic section 8
 Figure 2.2: Tenure boundaries for Lake Lindsay project 10
 Figure 3.1: Proposed mine layout and location of site infrastructure 12
 Figure 5.1: Regional ecosystems mapped for the proposed coal-mine site (EPA, 2001) 24

List of Appendices

Appendix A Preliminary assessment of triggers for an EIS for stage 1 of the Lake Lindsay Coal project

1. Purpose of this document

The purpose of an Initial Advice Statement (IAS) is to provide information on the project to assist the administering authorities with the decision-making process regarding the Assessment Level decision for the Lake Lindsay Project. The proponent, Anglo Coal (Capcoal Management) Pty Ltd, has chosen to initiate a voluntary Environmental Impact Statement (EIS) process. This decision was based on the nature and scale of the project in relation to EIS triggers outlined in the Environmental Protection Agency (EPA) Guideline 4: Deciding the Level of impact for the Mining Industry (Appendix A).

This IAS presents background information on the project to aid in finalising the Terms of Reference for the EIS process.

1.1 The project

Capcoal proposes to develop the Lake Lindsay Project, an open cut coal mine located approximately 25 km to the south/south-east of the town of Middlemount, in the Bowen Basin (Figure 1.1).

The proposed mine will be located in proximity to existing mining operations, namely the German Creek mining complex to the north-west (operated by Capcoal) and the Foxleigh mine to the north-east (operated by CAML Resources Pty Ltd).

The proposed mine is expected to produce up to 6 Mtpa of medium to high volatile bituminous black coal suitable for both export and domestic markets. The average annual output is expected to be 4 Mtpa, with a life up to 30 years.

Key features of the project are:

- initial development of the Lake Lindsay deposit, followed by ongoing mining operations;
- construction of:
 - < flood control levees alongside Oaky Creek to prevent ingress of floodwaters to pit operations;
 - < a haulage route to the existing German Creek operations;
 - < topsoil stockpiles;
 - < water supply infrastructure;
 - < run-of-mine (ROM) coal stockpiles;
 - < overburden dumps; and
 - < basic support facilities, such as offices, cribsheds, electrical reticulation, access roads, and ablutions.
- implementation of a water management strategy including sedimentation dams and management infrastructure that minimises any impacts on receiving water courses; and
- rehabilitation of all mining disturbance as soon as practicable after mining.

Coal will be hauled to the German Creek facilities, for processing at a coal handling and preparation plant.

1.2 The proponent

The Lake Lindsay Project is owned by a joint venture whose participants are Anglo Coal (70%) and Mitsui Coal (30%).

Anglo Coal (Capcoal Management) Pty Ltd (Capcoal), a wholly owned subsidiary of Anglo Coal Holdings Australia Limited, is the operator of the Lake Lindsay Project. Anglo Coal Holdings Australia Limited in turn owns Anglo Coal Australia Pty Limited (ACA).

Anglo Coal, a wholly owned division of Anglo American plc, is one of the largest private sector coal producers in the world. They have significant coal operations in Australia, South Africa and South America.

ACA is one of the nation's largest coal producers and has extensive coal mining interests and development prospects in Queensland and New South Wales. ACA sold over 30 million tonnes of coal in 2002 to customers in more than 20 countries, including high quality coking coal used for steel production and thermal coal for power generation and industrial applications. The company has a total workforce of approximately 2600 persons, located at the mine sites and corporate office.

Capcoal is committed to complying with Anglo Coal Australia's Safety, Health, Environment and Community (SHEC) Policy and to supporting environmental programmes for controlling the environmental impacts of its mining operations. In support of the SHEC Policy, Capcoal has a certified Environmental Management System (EMS) based on the ISO 14001 International Standard. ACA is a signatory to the Australian Mineral Industry's Code for Environmental Management.

1.3 Project need

The German Creek mining complex has been in operation since 1981, and has expanded over time to comprise four mines; two open cut dragline strip mines - German Creek and German Creek East and two underground longwall mines - Central Colliery and Southern Colliery. A new underground mine, Grasstree, is under development and will eventually replace the existing underground collieries.

The Lake Lindsay Project is required to make available additional products to the market and to provide flexibility and longevity to the Capcoal operations.

By extending the life of the existing mining complex the project will ensure continued employment opportunities in Middlemount and the broader community.

1.4 Environmental impact assessment process

1.4.1 Purpose of the Initial Advice Statement

The purpose of this document is to provide a brief project introduction to selected stakeholders and administering authorities to support the lodgement of a Mining Lease application and the corresponding Environmental Authority application.

This document will provide an overview of the proposed project, a description of the existing environment and potential impacts.

The Environmental Impact Statement (EIS) and the Environmental Management Overview Study (EMOS) will provide more detailed information regarding the project, and will be submitted in due course following completion of the Terms of Reference.

1.4.2 Purpose of the Terms of Reference

The purpose of the ToR is identify the issues that need to be addressed in meeting the requirements of the EP Act and other relevant legislation administered by the Queensland EPA and, if relevant, the requirements of the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The ToR will ensure that all potential impacts of this proposal regarding environmental values are investigated including identification of hazards and assessment of risks in relation to land, water, air, waste generated, noise, economy, social and community effects, hazard and risk, cultural heritage, and nature conservation. The alternatives for the proposal will also be discussed and treated in sufficient detail where appropriate so that the reasons for selection of the preferred options can be clearly identified and enable all relevant decision-makers and the general public to be adequately informed. The ToR will also allow the EIS and EMOS to be adequately assessed by stakeholders by acting as the basis to check that all agreed outcomes have been achieved.

1.4.3 Purposes of the Environmental Impact Statement

The purposes of an EIS are stated in Section 40 of the *Environmental Protection Act 1994* (EP Act).

In summary, the EIS process ensures that all impacts, in particular the environmental, social and economic impacts, both direct and indirect, are fully examined and addressed. It also provides, for interested bodies and persons, a basis for understanding the proposal, alternatives and preferred solutions, a description of the existing environment that the project would potentially affect (both on and off site), the impacts that may occur, and the measures to be taken to mitigate those impacts.

The EIS will be accompanied by an EMOS that describes potential impacts and establishes control strategies designed to reduce risks to acceptable levels, resulting in agreed performance criteria in the form of Environmental Authority (EA) conditions. These conditions will be audited by the appropriate statutory authorities and will form the basis for determining the level of environmental compliance for the project once it becomes operational.

1.4.4 Environmental and Mining Approvals

The project is to be assessed under the EP Act as it is unlikely that assessment under the State Development and Public Works Organization Act 1971 would be required due to the proposed tonnage and absence of major infrastructure development requirements. The project was referred to the Commonwealth Department of Environment and Heritage in May 2001 for assessment under the Commonwealth Environmental Protection and Biodiversity Conservation Act, and the Minister determined that the action was not a controlled action on 6th June 2001.

Under the EP Act, there will be a requirement to obtain an assessment level decision. A preliminary assessment of the EIS guidelines for determination of whether an EIS is required indicate that an EIS is likely to be required (refer to Appendix A).

Consequently an application for a voluntary EIS will be submitted. In addition to assessment under the EP Act, the granting of the mining lease will be assessed under the Mineral Resources Act 1989.

1.5 Community and stakeholder consultation

The purpose of community and stakeholder consultation during the EIS process is to ensure that all relevant bodies are aware of the project and have the opportunity to comment on issues of relevance to them. Consultation will utilise existing processes already in place for the German Creek facilities. This includes community meeting forums, and meetings with local landholders and Councillors representing the Peak Downs Shire and Broadsound Shire.

Capcoal currently maintains a number of channels for stakeholder dialogue. These are detailed in Section 7.0.

An overview of the Lake Lindsay Project was presented at the most recent community meeting forum and discussions with affected landholders have commenced. Table 1.1 presents an initial list of potential key project stakeholders.

As part of the EIS process for a mine development it is prescribed that community consultation be conducted with the relevant impacted community and with stakeholders.

A Community Consultation Plan for the Lake Lindsay Project has been developed. The aim of this plan is to:

- provide the community with information regarding the project;
- ensure that community contact with the project team is optimised;
- identify any issues and concerns that the community may have with the project; and
- ensure feedback provided by the community can be addressed in other studies being completed during the EIS.

Table 1.1: Initial list of key project stakeholders

Key project stakeholders*

Commonwealth Department of Environment and Heritage
Environmental Protection Agency (Brisbane & Emerald)
Department of Natural Resources & Mines (Brisbane & Emerald) Broadsound
Shire Council
Peak Downs Shire Council
Agforce
Landcare
Landholders
Middlemount population
Community Groups
Indigenous Groups (including the Barada Barna Kabalbara Yetilamara People)
Federal Member of Parliament
State Member of Parliament

* List of stakeholders is not in any specific order

2. Description and background of the Project

2.1 Regional setting

The Lake Lindsay Project is located in the Bowen Basin of Central Queensland, approximately 120 km inland from the coast and 50 km north of the Tropic of Capricorn. The Lake Lindsay coal resource is located approximately 25 km south/south-east of Middlemount, 42 km by road from the town of Tieri and 60km to the north/north-west of Blackwater (refer to Figure 1.1).

The topography of the area is gently undulating, with mildly dissected plain and lowlands and occasional low rises. A deep ephemeral watercourse (Oak Creek), dissects the southern portion of the proposed lease area. The proposed mine site, and most of the surrounding area, have been extensively cleared in the past for agriculture, the planting of pasture species and grazing. The project area is currently grazed by beef cattle, as are all the surrounding properties.

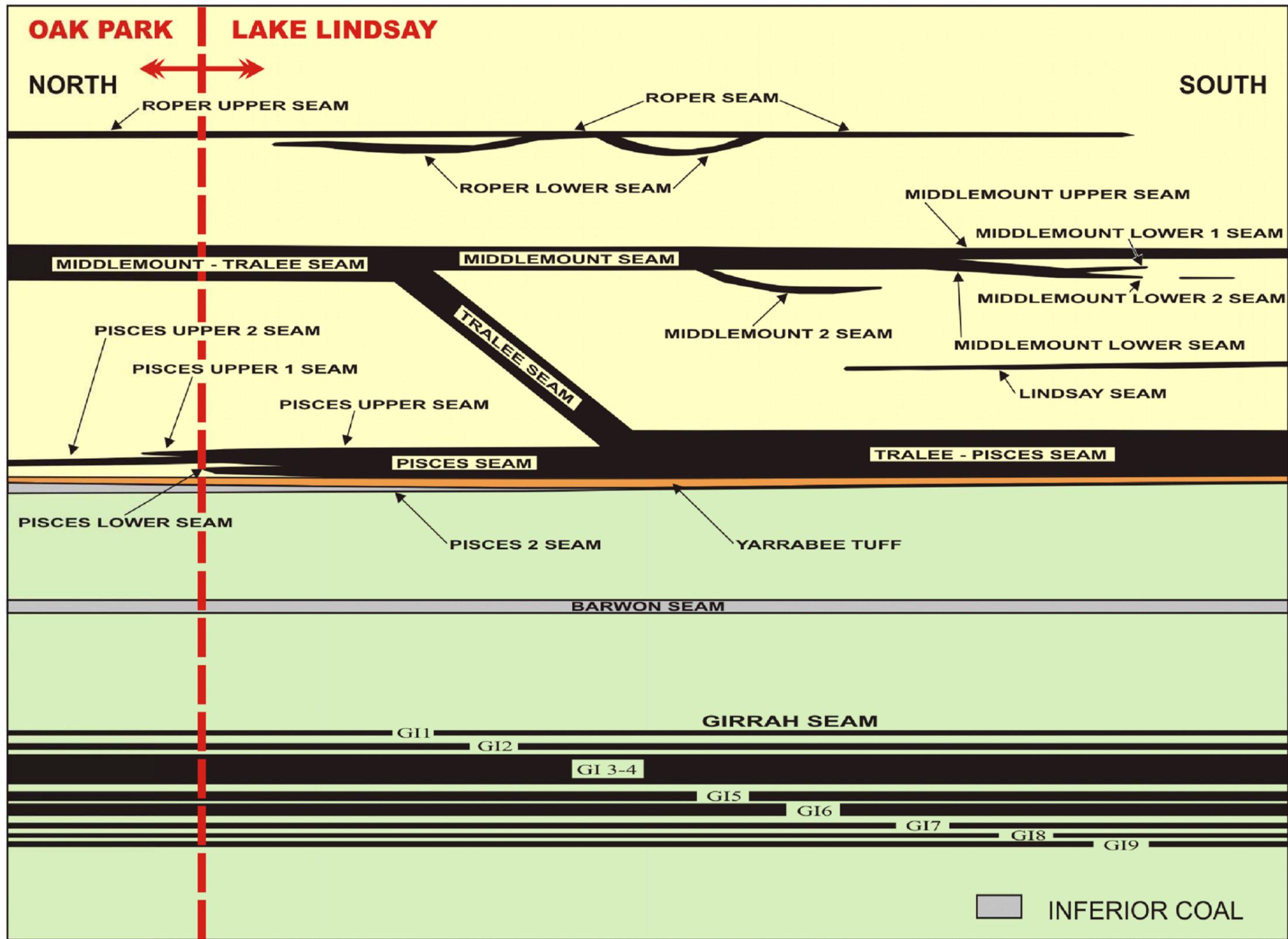
The Lake Lindsay deposit is located on the western flank of the Bowen Basin and contains coals within the Rangal Coal Measures and the Burngrove Formation.

A typical stratigraphic section of the proposed mine area comprises Quaternary and Tertiary sediments, Rewan Formation, Rangal Coal Measures and Burngrove Formation strata. The thickness of the Tertiary and Quaternary sediments is generally 15-20 metres within the potential mining area, and these are comprised by clays and fine to coarse sand and gravel. The Rewan Formation conformably overlies the Rangal Coal Measures and comprises sandstone and sandy claystone. The Rangal Coal measures are up to 180 metres thick and overlie the Burngrove Formation. They consist of sandstone, siltstone, claystone and two major coal seams (Middlemount and Tralee-Pisces) which occur in the lower 60 metres of the unit. The seams are characterised by splitting and variable thickness. The Burngrove Formation is of Permian age, being characterised by grey, lithic, often hard sandstone, siltstone and coal containing numerous tuffaceous stone bands. The most significant seam is the Girrah Seam, with several plies around 2 to 4 metres in thickness.

2.2 The resource

The proposed Lake Lindsay Project involves the development and operation of an open cut coal mine producing medium to high volatile bituminous black coal, suitable for the export metallurgical and thermal market. Coal can be technically and feasibly mined at an average rate of 4 Mt/a, up to an approximate maximum rate of 6 Mt/a.

The resources at Lake Lindsay are summarised Table 2.1, and a typical stratigraphic section is shown in Figure 2.1.



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Project: **Figure 2.1
Typical Stratigraphic Section**

Job No	2152026A
Drawing No	Figure 2.1
Cad File	
Rev	A

Table 2.1: Lake Lindsay Resources and Reserves Summary

Total Insitu Resources (Mt air dried)		Reserves (Mt air dried)	
Category	Remaining Total Insitu Resource	Category	Mineable Insitu Reserves
Measured 1	33	Proved	29
Measured 2	25	Probable 1	17
Indicated	85	Probable 2	31
Inferred	5		
Total	148	Total	77

* In order to develop a rational mine plan a minor quantity of inferred resources have been included.

2.3 Project tenure

Capcoal has secured tenure over the proposed mine area under Mineral Development Licence 170. In addition, a small area adjacent to the north western boundary of MDL 170 is the subject of an agreement with Xstrata Coal Queensland Pty Ltd to relinquish a partial sub-block of EPC 713 in favour of the joint venture partners.

The proposed mining area will be under application for a mining lease covering some 4173 hectares.

The proposed mine is north of the Mackenzie River-Capella Road, which forms the southern boundary of the lease.

Land within the Mining Lease Application area is either freehold or Grazing Homestead Perpetual Lease (GHPL). GHPL areas are currently under application for freeholding.

The tenure boundaries are shown in Figure 2.2.

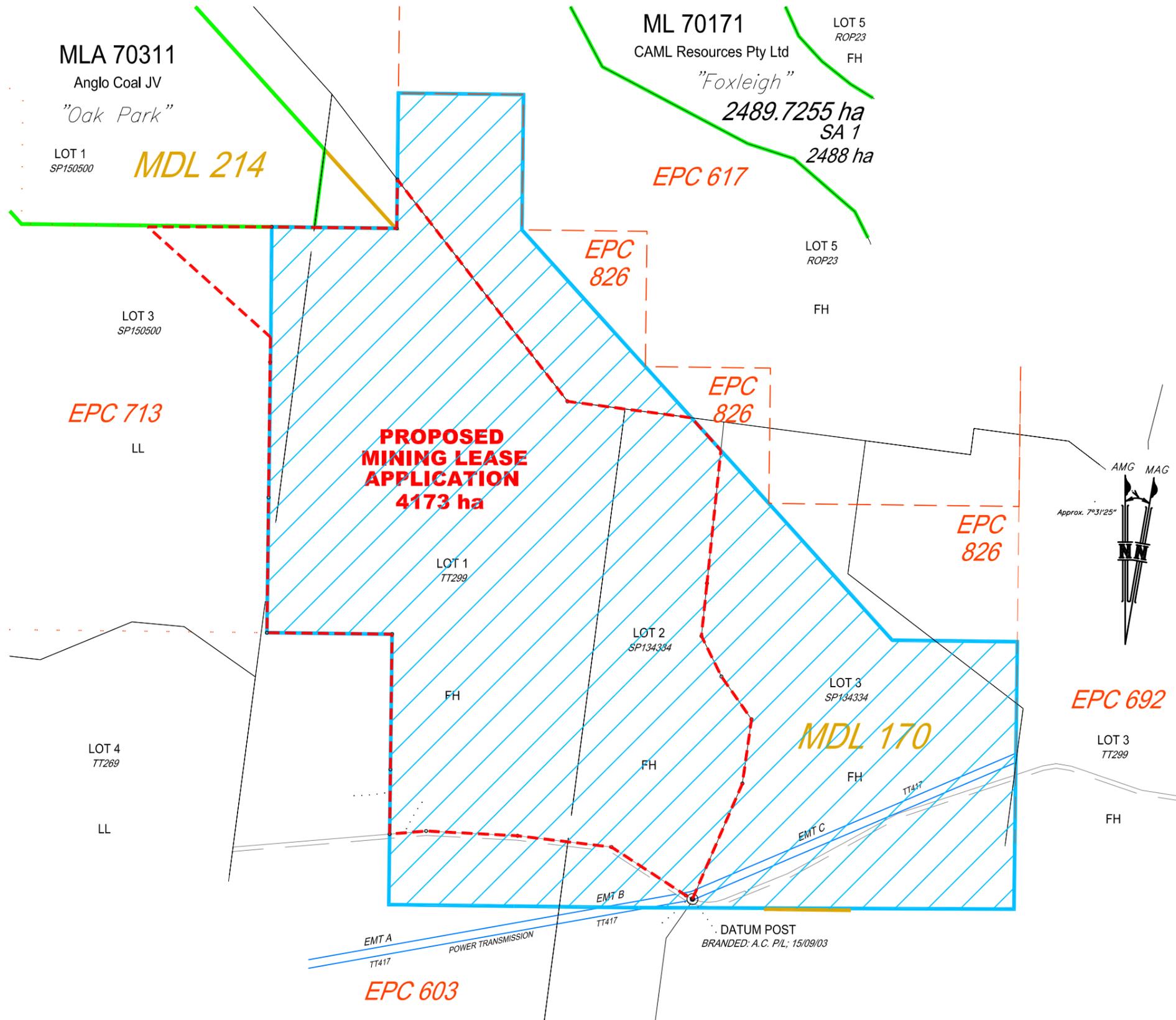
2.4 Native title

Two claims have been lodged and registered over areas incorporating MDL 170. The claimant application details are given below:

- QC98/5 by the Kangoulu People (registered on 11 May 1998); and
- QC01/25 Barada Barna, Kabalbara and Yetimarla People # 4 (registered on 5 April 2002).

A cadastral map obtained from DNRM suggests the Kangoulu People’s claim is south of the area that will be affected by the proposed mining lease (Minter Ellison, 2003).

The Gurang Land Council is the representative council for the area incorporating MDL 170. All land within the proposed ML area is designated as either freehold or GHPL (Grazing Homestead Perpetual Lease), and hence Native Title is believed to be extinguished.



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Project
**Figure 2.2
Tenure Boundaries**

Job No 2152026A
Drawing No Figure 2.2
Cad File
Rev B

3. Details of the proposed development

3.1 Mining activity

Features of the proposed development are:

- open-cut pit;
- topsoil stockpiles;
- water management structures including sedimentation dams and levees;
- ROM and product stockpiles;
- overburden dumps;
- refuelling facilities; and
- basic support facilities such as offices, cribsheds, electrical reticulation and access roads.

Figure 3.1 provides an overview of the proposed mine layout and location of site infrastructure.

3.1.1 Open-cut pit

The Lake Lindsay coal mine will initially comprise the development of an open cut pit to the north of Oaky Creek. Mining is expected to be by conventional truck and shovel techniques initially, with dragline operations becoming integrated over the ensuing years.

Raw coal will be transported to the German Creek mine, located 25km to the north-west, for processing at coal handling and preparation facilities.

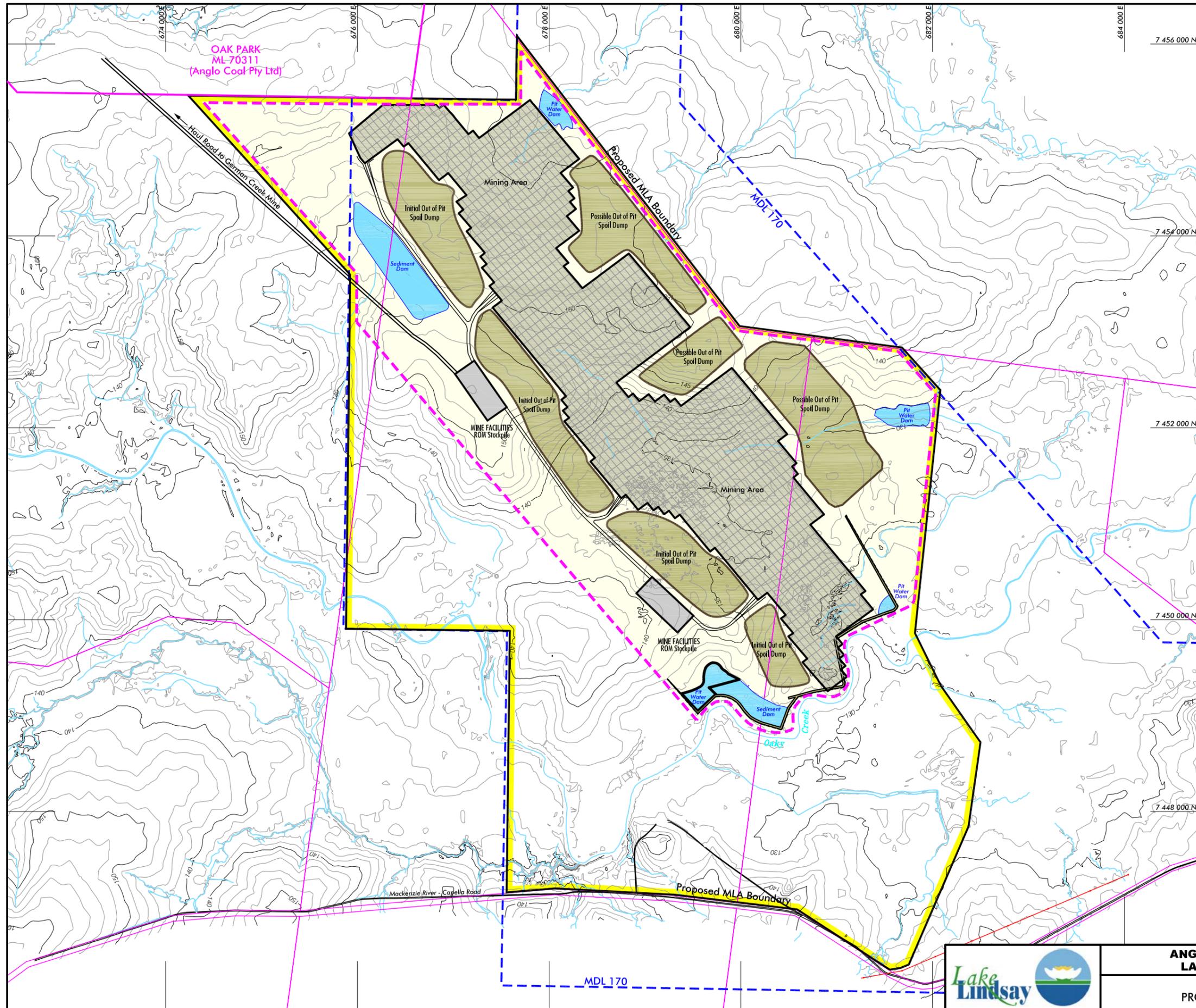
The mine is expected to produce up to 6 Mtpa of medium to high volatile bituminous black coal, with the average annual output expected to be 4 Mtpa, over a life of up to 30 years. The excavation will extend to a depth of approximately 80 metres, and will be mined and rehabilitated progressively across the lease. Mining will move generally from a westerly to easterly direction.

Blasting will be necessary ahead of excavation of both overburden and coal by mining machinery.

Between 100 and 140 employees will operate the mine.

3.1.2 Topsoil stockpiles

Topsoil removed from the mined areas will be carefully segregated in stockpiles for later use in rehabilitation of the site. Spoil will be stockpiled according to its land capability rating where practicable to allow the optimal soil profile to be developed during rehabilitation. Stockpiles will be placed to provide noise and dust buffers and possibly act as visual barriers where appropriate, and to ensure that drainage from disturbed areas is segregated from clean runoff. All reshaped spoil piles will be seeded and vegetated.



- LEGEND**
- Out of Pit Spoil Dumps
 - Mining Areas
 - Sediment and Pit Water Dams
 - Limit of Disturbance
 - Proposed MLA Boundary
 - MDL 170 Boundary



**ANGLO COAL AUSTRALIA PTY LTD
LAKE LINDSAY COAL PROJECT**

PROPOSED MINE LAYOUT

FIGURE
3.1

Design: The Minserve Group	21.10.03	Cad File: LL01M002.DWG	VERSION 1
Drawn: R. Aspland (RACAD)	21.10.03	Scale: 1:30 000 (A3)	

3.1.3 Sedimentation dams

Sedimentation dams will be constructed to collect runoff from disturbed areas of the mine site. In the unlikely event that there is excess water on site, water will be slowly released from the site after the fine sediments have settled out (subject to the suitability of water quality).

3.1.4 ROM stockpiles

Run of mine (ROM) stockpiles are proposed for the mine to provide surge capacity for the mining process and for blending purposes. Two ROM stockpiles of up to approximately 50,000 tonnes are proposed.

3.1.5 Overburden dumps

Overburden will be stripped from above coal and from interseam partings and placed in overburden dumps adjacent to the pits. These dumps will progress in the direction of the pit advance as mining advances over time, refilling the created voids. Some parting material will be placed directly into pit voids.

3.2 Buildings and facilities

The buildings at the Lake Lindsay project will be limited to basic support facilities, including offices, refuelling facility, crib and ablution facilities.

3.2.1 Refuelling facility

The refuelling facility will contain diesel fuel only. The total storage volume is yet to be determined, but is expected to be between 20,000 and 60,000 litres. The storage facility will be constructed in accordance with the requirements of AS1940-1993.

3.2.2 Administration and amenities buildings

A small office building, ablutions block and crib huts will be erected on site. Buildings will probably be prefabricated off-site and trucked in 12 x 3 m modules.

3.2.3 Water supply

The proposed mine will require approximately 350 ML of water per annum for mining and haulage operations. Water will be required primarily for on-site uses such as for dust suppression, fire protection systems and domestic uses.

Re-use and recycling of all surface and ground water captured on site will be a priority. Water produced from pit dewatering will be used as a first priority due to the poor water quality.

Water supply options will be investigated during the feasibility study.

3.2.4 Power supply

Power requirements for mining machinery at Lake Lindsay will be achieved by extending the reticulation system from the Oak Park mining lease directly adjacent to the Lake Lindsay lease. Power supply means for facilities is still to be determined.

3.3 Coal haulage

The haulage route will be primarily used to move the raw product to a coal handling and preparation plant (CHPP) at the German Creek mine. It is planned to load the ROM coal into haul trucks at the Lake Lindsay mine site, for haulage 25km north-west to the German Creek Mine.

Depending on the selected roster arrangements, coal haulage is expected to be at rates of up to 20,000 tonnes per day.

There would be no requirement for movement of trucks on public roads.

An alternative option being investigated is transport of the product to a CHPP by conveyor. This option will be investigated further during the feasibility stage.

3.4 Construction

Construction of the mine and associated facilities is expected to take between six and twelve months, commencing in 2005. It is expected that the initial box cut will be dug concurrently with the construction of the surface infrastructure. Materials for road construction and concrete for footings and slabs will be sourced locally (were possible).

3.5 Water management

A preliminary water management strategy was developed for the Lake Lindsay Project, when the project was owned by ARCO Coal Australia Inc. This will be reviewed to update the models with more detailed topographic information, however it is expected that the strategies developed previously will be confirmed. The purpose of the water management strategy was to provide a system of drainage works that will minimise the impact of mining operations on flood flows in Oaky Creek, minimise the effect of the proposed mining operation on the water quality of the receiving watercourses and provide adequate water for operational purposes (PPK Environment and Infrastructure 1998).

The main objectives of the preliminary water management strategy are to provide:

- a system for separation of 'clean' runoff and 'mine' water runoff;
- flood protection of the active mining area through a series of diversion drains, bunding and levees;
- storages for the treatment of mine water prior to release from the site; and
- opportunities for harnessing surface water for re-use in the operation of the mine.

3.6 Flooding and levees

Oaky Creek lies to the south of the proposed Lake Lindsay mine. The creek is ephemeral, with significant periods of no flow being common. The proposed Lake Lindsay mining area will extend into the flood plain of Oaky Creek. Therefore some form of flood protection will be required to prevent flood waters from entering the open pit.

It is proposed that flood levee(s) will be designed to protect the mine's open cut pits and other facilities from inundation by flood events up to a 100-year Average Recurrence Interval (ARI) flood.

3.7 Access

The main access to the Lake Lindsay Coal Project will be via the proposed haulage route.

3.8 Waste collection and disposal

A contract using specialist waste management contractors will be established for waste management and disposal. The contract will provide for segregation, recycling, refurbishment, removal, transportation and correct disposal of all waste generated.

3.9 Rehabilitation

It is a requirement that all mining disturbance is rehabilitated as soon as possible after mining. Under Capcoal's rehabilitation policy, spoil areas are not rehabilitated until they are no longer required for the purposes of mining, or until they are of a sufficient size to be economic. Under the policy, all disturbed areas are rehabilitated with the exception of ramps, voids and minor areas of competent spoil.

It is expected that areas of unstable spoil will require selective placement of competent spoil and rock to prevent unacceptable rates of erosion.

The post mining landuse for ramps, voids and spoil areas is proposed as bushland, while all other areas will be suitable for grazing. Long-term stability is aimed to be achieved through a diverse vegetative cover that is dense and self-sustaining.

3.9.1 Final voids

It is proposed that all final voids will remain open. The catchment area draining to the voids will determine the water level in the final voids. As part of the EIS process a water balance model will be developed and used to determine the potential for void overflow.

4. Previous work

Since 1993 a number of studies have been undertaken in assessing the environmental impact of the proposed Lake Lindsay Coal Project. Three different companies have owned and/or managed the deposit over that time, including ARCO Coal Australia Inc (managed by Gordonstone Coal Management Pty Ltd) and Curragh Queensland Mining Pty Ltd. The deposit has previously been referred to as both “Lake Lindsay” and “Girrah”, with past investigations including a review of haul route options to the south. All studies highlighted below provide baseline information for the project. These studies will be carried through and further expanded where required for the EIS process.

Key reports released for the Lake Lindsay Coal Project have been:

- Environmental Resources Management (ERM), Girrah Flora and Fauna Assessment. Prepared for Curragh Queensland Mining Pty Ltd. April 2001.
- Girrah Environmental Management Overview Strategy. Prepared by ARCO Coal Australia Inc. June 1998.
- Initial Advice Statement — Lake Lindsay EPC 472 submitted to the Department of Mines and Energy 9 July 1993.
- Insite Geology, The Girrah Project Summary Geotechnical Report. Prepared for ARCO Coal Australia Inc. November 1997.
- Kamst & Simpson Pty Ltd, Girrah Mine Dust EMOS. Prepared for ARCO Coal Australia Inc. June 1997.
- Kamst & Simpson Pty Ltd, Girrah Mine Noise EMOS. Prepared for ARCO Coal Australia Inc. June 1997.
- Kamst & Simpson Pty Ltd, Girrah Mine Summary Baseline Noise and Air Quality Monitoring. Prepared for ARCO Coal Australia Inc. August 1997.
- Lance Grimstone and Associates Pty Ltd, Assessment of a Targeted Sandstone in Overburden at Girrah (Lake Lindsay). Report prepared for ARCO Coal Australia Inc. December 1996.
- Land Reclamation Services, Soil and Land Capability Survey of the Lake Lindsay Deposit Area. September 1993.
- Land Reclamation Services, Overburden and Interburden Characteristics of the Lake Lindsay Exploration Area. September 1993.
- Northern Archaeology Consultancies Pty Ltd, Archaeological Assessment and Consultation with Aboriginal People: Lake Lindsay Coal Mine Proposal, Central Highlands, Queensland. Report prepared for ARCO Coal Australia Inc. September 1993.
- PPK Consultants Pty Ltd, Preliminary Groundwater Investigations EPC 472 – Lake Lindsay Project. Prepared for ARCO Coal Australia Ltd. October 1993.

- PPK Environment & Infrastructure Pty Ltd, Girrah Project – Water Management and Infrastructure Feasibility Study. Prepared for ARCO Coal Australia Pty Ltd. April 1998.
- WBM Oceanics Australia. Flora and Fauna of the Lake Lindsay Exploration Prospect, Central Queensland. Prepared for ARCO Coal Australia Inc. December 1993.

Extensive consultation has been undertaken with previous owners, including affected property owners, Shire councils and indigenous groups.

5. Description of the receiving environment

5.1 Bio-physical environment

5.1.1 Existing land use

The existing land use of the project area, and all the surrounding properties, is predominantly cattle grazing on native and improved pastures, the latter being primarily buffel grass, with widely scattered rural residences.

A previous land capability survey found that the majority of the area was suitable for cattle grazing on improved pastures (Land Reclamation Service, 1993). The land is considered Class 6 agricultural land, "suitable for grazing" according to the DNRM Land Capability Classification System. More intensive uses have been ruled out due to soil limitations (low nutrition and water holding capacity). Contour banks have been installed across almost the entire site and most of the adjoining properties.

5.1.1.1 Soils

Land Reclamation Services Pty Ltd undertook a preliminary survey of the soils in the area in 1993. The survey found that the soils in the area vary widely, and are depending primarily by parent material. Oaky Creek is the dominant feature of the area and wide floodplains of Quaternary alluvium exist.

To the north of Oaky Creek, Permian sediments are almost entirely overlain by loose Tertiary materials which range from clays to almost free sands. The soils range from deep red and yellow earths in higher slope positions on loose coarse sediments, through to sandy loam and clay duplex soils supporting poplar box over the majority of the area, and to areas of heavily gilgaied cracking clays supporting brigalow on the Tertiary clays.

Additional soil surveys will be completed prior to the submission of the EIS.

5.1.2 Flora and fauna

The subject site and most of the surrounding area have been extensively cleared in the past for agriculture, the planting of pasture species and grazing. The area is now dominated by Buffel grass, with some regrowth of woody species across the site.

The Lake Lindsay Project was referred to the Commonwealth Department of Environment and Heritage in May 2001, with the action being deemed not to be a controlled action on 6 June 2001.

A detailed flora and fauna survey was undertaken of the proposed project site (Parsons Brinckerhoff, 2003). A summary of the baseline reviews and field survey results is provided in the following sections. The detailed *Lake Lindsay Flora and Fauna Survey Report* will be submitted as an appendix to the EIS.

5.1.2.1 Background review

A detailed review of the ecological values of the site has been undertaken, via a desktop review and field survey. The objectives of the review were to determine:

- potential for rare and threatened flora and fauna to occur within the mining lease boundary and their status under the Queensland Nature Conservation (Wildlife) Regulation 1994 and the Commonwealth EPBC Act;
- presence of Regional Ecosystems (REs) mapped by the Environmental Protection Agency (EPA) (2001) and the status of these REs under the Queensland Vegetation Management Regulation 2000 and the Commonwealth EPBC Act;
- potential impacts of the proposed mining activities on the identified flora and fauna values of the site; and
- current legislative requirements under the Queensland *Integrated Planning Act 1997*, *Vegetation Management Act 1999* and the Commonwealth EPBC Act regarding vegetation clearing for the proposed mining activities.

Four separate field surveys have been undertaken at the proposed project site since 1993. The most recent survey, undertaken by Parsons Brinckerhoff in September 2003, included a five day/four night comprehensive survey as per the Environment Protection Agency's survey methodology guidelines. Results of the field survey are discussed in Section 5.1.2.5.

5.1.2.2 Database searches

Prior to the commencement of the field survey, four database searches were undertaken to determine the potential flora and fauna, which may exist in the site. Each database was searched within the following grid coordinates: Latitude -22.956 to -23.1101 and Longitude: 148.6947 to 148.9528. Below is a description of the database search results. In the instance of fauna searches, the search area had to be expanded by 10 minutes in each direction, as no species were identified in the initial search.

Queensland Herbarium database search

The Queensland Herbarium (HERBRECS) database search identified 38 native and two introduced flora species which occur within the grid search area. One species, *Cerbera dumicola*, is listed as 'rare' under the Queensland Nature Conservation (Wildlife) Regulation 1994. No species from this database search are listed under the Commonwealth EPBC Act 1999. The database search results are available and will be presented in the EIS.

Queensland Herbarium records represent only the flora specimens held in the Queensland Herbarium for the nominated grid area. The absence of particular species from the available data does not imply that the species does not occur within the specified area.

Queensland Museum database search

The Queensland Museum database search revealed a total of 11 species which have been recorded within the vicinity of the study area. One of these species, the whirring tree frog (*Litoria revelata*) is listed as 'rare' under the Nature Conservation (Wildlife) Regulation 1994, although the two database records of this species occurred approximately 25 km to the south west of the study area.

Queensland Museum records represent only the fauna specimens held in the Queensland Museum for the nominated grid area. The absence of particular species from the available data does not imply that the species does not occur within the specified area.

Queensland Parks and Wildlife (Wildnet) database search

This broader search area revealed 174 fauna results, of which eight species are introduced to Australia.

Included in the results are four species listed under the Queensland Nature Conservation (Wildlife) Regulation 1994 and/or the Commonwealth EPBC Act. These species are listed in Table 5.1.

Table 5.1: Threatened species identified by the Wildnet database search for the study area

Scientific Name	Common Name	Conservation Status	
		Qld	Comm
<i>Lophoictinia isura</i>	Square-tailed kite	R	
<i>Denisonia maculata</i>	Ornamental snake	V	V
<i>Strophurus taenicauda</i>	Golden-tailed gecko	R	
<i>Egernia rugosa</i>	Yakka skink	V	V

¹ – V – Vulnerable, R – Rare as listed under the Queensland Nature Conservation (Wildlife) Regulation 1994.

² – V – Vulnerable as listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999.

Wildnet fauna records are identified and taken in the field by trained volunteers of the Queensland Parks and Wildlife Service.

The results from the Queensland Museum and Queensland Parks and Wildlife Service database search are available and will be provided in the EIS.

Department of Environment and Heritage database search

The Department of Environment and Heritage database assists in identifying protected areas, which may be relevant in determining obligations under the Commonwealth EPBC Act. The database holds mapped locations of World Heritage properties, RAMSAR wetlands, and threatened migratory species, including marine species.

A search of the area encompassing the proposed project site was undertaken. The EPBC Act On-line database search revealed the likely presence of three threatened ecological communities and nine threatened fauna species and/or their habitat as potentially occurring within the proposed project area.

No flora species of conservation significance were highlighted from the search area.

An additional nine avian species, which are listed under both the migratory and/or marine provisions of the EPBC Act 1999 were also identified from the database search as potentially occurring within the mining lease boundary. Although ideal habitat for migratory and marine species is unlikely to occur within the mine site (i.e. coastal/marine habitat), dams and creeks provide potential habitat for transitory refuge. Furthermore, some of the marine species are not necessarily ‘marine’ but fly over or visit marine areas.

Table 5.2 lists the threatened fauna species and Table 5.3 each of the nine marine and/or migratory species identified in the database search.

Table 5.2: Threatened species identified in the EPBC Act on-line database search for the grid search area

Species	Common name	Habitat*	Status
Fauna			
<i>Erythrorchis radiatus</i>	Red Goshawk	Coastal, subcoastal forest, tropical woodland.	Vulnerable
<i>Geophaps scripta</i>	Squatter Pigeon (southern)	Grassy plains, woodlands.	Vulnerable
<i>Neochmia ruficauda ruficauda</i>	Star Finch (eastern)	Tall grass by swamps and rivers.	Endangered
<i>Nyctophilus timoriensis</i> (South-eastern form)	Eastern long-eared bat	Woodland and mallee of the arid and semi-arid regions	Vulnerable
<i>Denisonia maculata</i>	Ornamental Snake		Vulnerable
<i>Egernia rugosa</i>	Yakka Skink	Species or species habitat likely to occur within area	Vulnerable
<i>Furina dunmalli</i>	Dunmall's snake	Eucalypt and Callitris woodland and brigalow scrub.	Vulnerable
<i>Paradelma orientalis</i>	Brigalow Scaly-foot	Species or species habitat likely to occur within area	Vulnerable
<i>Rheodytes leukops</i>	Fitzroy Tortoise	Species or species habitat likely to occur within area - Derived from a general distribution map > 1 degree	Vulnerable

* – Habitat taken from Simpson & Day (1984), Strahan (1995), Cogger (1994), Stanley and Ross Vol 3 (1989)

Table 5.3: Migratory/marine species identified in the EPBC Act on-line database search for the grid search area

Scientific name	Common name	Habitat*	Status
<i>Anseranas semipalmate</i>	Magpie goose	Rush and sedge-dominated swamps and flood plains.	Overfly marine areas
<i>Gallinago hardwickii</i>	Latham's snipe, Japanese snip	Wetland grasses and open, wooded swamps.	Overfly marine areas
<i>Haliaeetus leucogaster</i>	White-bellied sea-eagle	Large rivers, fresh and saline lakes, reservoirs, coastal seas.	Listed
<i>Hirundapus caudacutus</i>	White-throated needletail	Coastal and mountain regions, usually aerial.	Listed/Overfly marine areas
<i>Nattapus coromandelianus albigennis</i>	Australian cotton pygmy-goose	Deep lagoons, swamps and dams particularly with waterlilies and other floating vegetation.	Listed/Overfly marine areas
<i>Rostratula benghalensis</i>	Painted snipe	Marsh with moderate cover.	Listed/Overfly marine areas
<i>Monarcha melanopsis</i>	Black-faced Monarch	East coast forests.	Listed/Overfly marine areas
<i>Myiagra cyanoleuca</i>	Satin Flycatcher	Tall and medium open forests, often at height.	Listed/Overfly marine areas
<i>Numenius minutus</i>	Little Curlew, Little Whimbrel	Open plains, grasslands, parkland, mudflats.	Listed/Overfly marine areas

* – Habitat taken from Simpson & Day (1984)

Three nationally threatened ecological communities were also recorded as occurring within the grid search area;

- Brigalow (*Acacia harpophylla* dominant and co-dominant);
- Bluegrass (*Dichanthium* spp.) dominant grasslands of the Brigalow Belt Bioregions (North and South); and
- Semi-evergreen vine thickets of the Brigalow Belt (North and South) and the Nandewar Bioregions.

Of the communities, only Brigalow was found to occur on the project site.

5.1.2.3 Conservation areas

There are no conservation areas within or in close proximity to the proposed Lake Lindsay coal mine.

5.1.2.4 Regional ecosystem review

The study area is located within the Brigalow Belt Bioregion, Province 11, Isaac – Comet Downs. Regional Ecosystem (RE) mapping by the Environmental Protection Agency (2000) indicates that the study area includes three vegetation polygons comprising three vegetation matrices. A vegetation matrix may consist of several regional ecosystems at varying levels of dominance. The following RE matrices have been mapped for the study area:

- RE 11.10.12;
- RE 11.7.1 with 11.10.12; and
- RE 11.3.2 with 11.3.1, 11.3.3 and 11.3.25.

Regional Ecosystems 11.10.12, 11.7.1 and 11.3.25 are considered 'not of concern', REs 11.3.2 and 11.3.3 'of concern' and 11.3.1 'endangered' under the Vegetation Management Regulation 2000 (VMR).

These REs comprise various combinations of brigalow (*Acacia harpophylla*), poplar box (*Eucalyptus populnea*), coolabah (*Eucalyptus camaldulensis*) and Queensland blue gum (*E. tereticornis*). Each of these REs is described in Table 5.4. The table also indicates if the presence of these ecosystems was confirmed during the review.

Table 5.4: Regional ecosystems mapped by the EPA within the study area

RE code	RE description	Status (VMR)	Presence confirmed during the field survey
11.3.1	<i>Acacia harpophylla</i> and/or <i>Casuarina cristata</i> open forest on alluvial plains	Endangered	Yes
11.3.2	<i>Eucalyptus populnea</i> woodland on alluvial plains. Texture contrast and deep clay soils.	Of concern	No
11.3.3	<i>Eucalyptus coolabah</i> woodland on alluvial plains.	Of concern	No
11.3.25	<i>Eucalyptus tereticornis</i> or <i>E. camaldulensis</i> , <i>Casuarina cunninghamiana</i> fringing woodland on alluvial plains.	Not of concern	Yes
11.7.1	<i>Acacia harpophylla</i> and/or <i>Casuarina cristata</i> and <i>Eucalyptus thozetiana</i> or <i>E. microcarpa</i> woodland on lower scarp slopes on Cainozoic lateritic duricrust.	Not of concern	No
11.10.12	<i>Eucalyptus populnea</i> woodland on Cainozoic medium to coarse-grained sedimentary rocks.	Not of concern	Yes

Figure 5.1 indicates the location of EPA mapped REs within the site.

5.1.2.5 Results of field survey

The field survey confirmed the presence of regional ecosystem communities within the study area. These are listed in Table 5.4, and are described in the survey report as:

- poplar box open forest (RE 11.10.12);
- brigalow/belah scrub (RE 11.3.1);
- Queensland blue gum woodland (RE 11.3.25); and
- Queensland blue gum riparian forest (RE 11.3.25).

RE 11.3.1 is listed as ‘of concern’ under the Queensland VMR, the remaining REs are listed as ‘not of concern’ under the VMR. The field survey found that the brigalow/belah community was highly disturbed and patchy, and did not exhibit the structure or vegetative diversity of an RE.

No rare or threatened flora species were identified within the study area, or are likely to occur within the study area.

Five State and/or Commonwealth listed fauna species have been recorded within or near the study area during past and present field surveys. These species are listed in Table 5.5.

Table 5.5: Rare and threatened fauna species occurring within or near the study area

Common name	Scientific name	Conservation status		Record details
		Qld ¹	Comm ²	
Little pied bat	<i>Chalinolobus picatus</i>	R		Recorded by ERM (2001) in the study area
Ornamental snake	<i>Denisonia maculate</i>	V	V	Recorded by ERM (2001) in the study area
Freckled duck	<i>Stictonetta naevosa</i>	R	M	Recorded during PB survey in the study area
Cotton pygmy-goose	<i>Nettapus coromandelianus</i>	R	M	Recorded during PB survey in the study area
Squatter pigeon	<i>Geophaps scripta</i>	V	V	Recorded during the PB survey ~ 20 km NE of study area

¹ - V – Vulnerable, R – Rare as listed under the Queensland Nature Conservation (Wildlife) Regulation 1994

² - V – Vulnerable, M – Migratory as listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999

Sixteen bird species identified within the study area by PB (including the ‘rare’ freckled duck and cotton-pygmy goose) are listed under the migratory provisions of the *EPBC Act 1999*.

The most significant ecological features in the study area are an artificial wetland and Oaky Creek which occur in the south.

The species lists for flora and fauna identified throughout the four surveys conducted at the site are summarised in Appendices B1 and C2.

5.1.3 Hydrology and surface water

Oaky Creek traverses the southern portion of the proposed mining lease. The Oaky Creek catchment at the proposed Lake Lindsay mine site is approximately 895 km². It is characterised by a main channel approximately 70 m wide and between 8 m – 10 m deep, meandering through alluvial deposits up to 15 m in depth. The main channel comprises a sandy bed with well-vegetated banks. In the vicinity of the proposed mine site the main channel is perched above the overbanks. The overbanks form a vast broad shallow floodplain that fills when the banks of the main channel are overtopped.

Stream flow data from the Department of Natural Resources and Mines water resources gauge, located 14 km downstream from the mine site (at the confluence of Roper and Oaky Creeks), indicates that the creek is ephemeral and subject to relatively large, irregular flows. Most major flow events occur during the “wet” season between December and March.

The climate of the area is characterised by mainly summer rainfall from sub-tropical storm activity. Mean annual rainfall is around 640 mm but can be as low as 200 mm in drought years. The wettest months are usually December and January, while the driest months are June to September. Mean annual evaporation for the region is 1,918 mm. Therefore it is not unusual for Oaky Creek to have extended periods of no flow.

PPK Environment and Infrastructure Pty Ltd (now Parsons Brinckerhoff) completed a preliminary levee design for the project in 1998. The study found that a flood levee around the southern extent of the proposed mining area would provide flood protection to the mining operation for all flood flows in Oaky Creek, up to and including the 1 in 100 year ARI flow. The preliminary study found that the flood levee would result in a minor increase in flood levels relative to the 1 in 100 year flood event, however these are not expected to have a deleterious effect on adjoining properties. The study also determined that the levee would have no impact on the flooding in Oaky Creek upstream of the mine site due to a natural choke in the flood plain some 2.5 km upstream of the mine.

Additional levee design and flood modelling works are planned in early 2004 as part of the EIS technical studies.

5.1.3.1 Water quality

There are currently no baseline data available for the surface water quality in Oaky Creek. A baseline study will be undertaken as part of the EIS process to characterise the water quality.

5.1.4 Hydrogeological environment

A preliminary groundwater assessment conducted by PPK Environment and Infrastructure Pty Ltd in 1993, during an extensive drilling program, estimated average groundwater inflow to the proposed mining area would be 500 kl/day. Based on these findings the estimated average inflows resulting from surface and groundwater to the mining area would be 182.5 Ml/yr.

The study found that only the Middlemount and Tralee-Pisces Seams transmit significant groundwater, with the static water level within these aquifers approximately 20 metres below natural surface level. The seams appear to be recharged through the subcrop zones and in the region of Oaky Creek.

The preliminary survey also indicated high levels of dissolved salts in the groundwater, which ranged between 15,000 and 22,000 mg/L.

Early studies indicated that given limited operational water requirements, groundwater inflows to the area should more than satisfy the project water demands. Estimated groundwater inflows will need to be confirmed by further hydraulic testing during the exploration drilling program for the mine. However, if annual inflows are found to be greater than those estimated during the preliminary groundwater study, then water storages will be required on site as the groundwater quality is not suitable for discharge to the environment. Groundwaters may be used for dust suppression.

5.1.5 Air quality and noise

The area is predominantly rural, with principal noise sources being traffic on nearby roads, and intermittent farm equipment noise.

Sensitive receptors in the form of isolated rural residences are located at a number of points around the proposed mine site. The closest residence is the New Girrah Homestead, located 1.5 km southwest of the proposed mine. All other residences are over 10 km from the mine.

Blasting will be required for overburden and coaling operations at the mine site. The surrounding areas have relatively low relief and few other natural features to provide attenuation other than by separation.

The air quality in the area is not expected to be significantly impacted by the mining project. Land use in the area is predominantly rural, so that the only human impacts are cultivation or clearing practices that generate dust or smoke. The relatively lightly used roads are unlikely to contribute any detectable levels of pollutants in the vicinity of the subject site.

Baseline monitoring of both air quality and noise was undertaken at nearby properties during 1996 and 1997 (Kamst and Simpson, 1997).

5.1.6 Visual environment

The area is generally flat or gently undulating, with little natural vegetation cover remaining as a result of extensive clearing for agriculture. Views from many points in the area therefore tend to be uninterrupted for quite long distances, particularly where the viewing point is elevated. There is a public road (Mackenzie River – Capella Road) that runs to the south of the proposed mine site.

5.2 Socio-economic

5.2.1 Existing infrastructure

The Lake Lindsay coal mine is located in the Shire of Broadsound. Existing infrastructure around the proposed mine site is minimal. The nearest town to the proposed mine site is Middlemount, located approximately 25 kms to the north-west. Middlemount is a purpose-built mining town that houses the employees of Capcoal. In 2002 the population of Middlemount was estimated at 2,500. The capacity of the town is estimated at 3,500. It is currently proposed that all employees and contractors required for the Lake Lindsay mine would be housed at Middlemount.

The Middlemount town was originally constructed in 1980. All the homes, single persons quarters and facilities were constructed and owned by the mine operator, and rented or leased to mine workers. Since the mine was sold to Anglo Coal in 2001, Capcoal has continued to operate the town in a similar way, however some of the properties have recently been sold to another mining company, CAML Resources Pty Ltd (owner of the Foxleigh Mine).

5.2.2 Employment

Employment opportunities around Middlemount and the area are generally limited to the mining and agricultural sector.

Previous surveys have estimated that Capcoal is responsible for approximately 1,100 jobs in the region, 550 employees directly and indirect employment of contractors who spend money on local goods and services

The Lake Lindsay coal mine has the potential to employ between 100 to 140 staff.

5.3 Cultural heritage

Northern Archaeology Consultancies Pty Ltd completed an archaeological survey within the proposed mining lease area in 1993. The aims of the survey were to identify items of Aboriginal and/or European cultural heritage which may exist in the study area and to consult with Aboriginal people who may have an interest in or knowledge of the area.

5.3.1 Indigenous

Two sites of possible Aboriginal origin were identified during the survey by Northern Archaeological Consultancies.

The local traditional owners for the project area are the Barada Barna Kabalbara Yetilamara (BBKY) People. Capcoal developed a Cultural Heritage Management Plan with the BBKY People in 2002. The plan includes a survey agreement for all Capcoal mining leases.

Capcoal are committed to undertaking a cultural heritage survey on any proposed new mining areas. Based on the results of any such surveys, management strategies will be developed in consultation with the BBKY People for preserving and maintaining the cultural heritage of the area.

Management strategies include recording the location of all sites of significance and entering the information into a database for management by Capcoal. For those sites identified to be within the mine impact area, isolated finds are salvaged and relocated by the Traditional Owners to an area that will not be impacted by the mine.

As a continuation of the previous work undertaken, Capcoal will consult with the traditional owners of the area, and undertake surveys of the proposed disturbance areas, in accordance with the Cultural Heritage Management Plan. The findings of these surveys, and proposed management procedures, will be documented as part of the EIS process for the Lake Lindsay Project.

Capcoal have conducted training programs in cultural heritage awareness for all personnel that may be involved with the disturbance of land. Similar training sessions will be conducted for the Lake Lindsay Project.

5.3.2 European

On the proposed mine site there was no evidence of European cultural heritage found during the 1993 survey by Northern Archaeological Consultancies. Their survey report indicates that the first Europeans to pass through the area were Leichhardt and his party. Leichhardt's diary includes a description of his expedition up the Mackenzie River, passing Mount Stewart and no doubt crossing Oaky Creek *en route* to Peak Downs.

Leichhardt appears to have passed approximately 5km from the western edge of the study area and looked over it from Mount Stewart, describing it as 'very level with only one low ridge, apparently at a great distance' (1847:113).

The earliest available reference to Girrah station was that it was taken up as a subdivision for returned soldiers after World War One, by Mr S. Lee Collins who still operated into the 1940's. At that stage, no scrub had been pulled and only limited ring barking had been carried out.

6. Potential environmental effects of the proposed development

The following section identifies potential effects of the development of the new mine. The section also describes the extent of any impacts and provides brief mitigation summaries. Where it is considered that impacts could be significant, strategies and control measures will be included in the EIS following appropriate studies.

6.1 Land use

The construction and operation of the mine will lead to temporary and permanent impacts on the local topography. Temporary impacts will occur due to extensive earthworks required to construct and operate the mine and permanent impacts will occur due to final void and elevated spoil dumps being left after mining operations.

Post-mining landuse will be achieved by progressive rehabilitation at the site. Long-term stability is achieved through a diverse vegetative cover that is dense and self-sustaining. The post mining landuse for ramps, voids and spoil areas is proposed to be bushland, while all other areas will be suitable for grazing. Reshaping will be carried out to reduce slope gradient and minimise erosion of the rehabilitated post-mining landform.

6.2 Flora and fauna

Potential environmental impacts on flora and fauna at the proposed mine site are the loss of vegetation and fauna habitat during mining; and the potential for runoff from the mine entering sensitive receptors, namely Oaky Creek.

6.2.1 Flora

As stated in Section 5.1, there are no reserves or conservation areas on the proposed mining lease.

Impacts to remnant vegetation as a result of mine construction and operation are expected to be minimal due to the already disturbed nature of the site and lack of any remnant vegetation in the proposed mine footprint. Smaller stands of poplar box and brigalow will be cleared, however, these isolated stands do not contribute substantially to the ecological integrity of the study area. These isolated remnant stands have been substantially disturbed and do not provide connectivity to other remnant vegetation. Similar vegetation is common within the study area and in the greater region. In addition, these stands do not exhibit the structure or vegetative diversity of a regional ecosystem.

The majority of the proposed mining operation will impact on grazing land, of which the majority comprises exotic pasture grasses.

A periodically flooded depression and dam are located to the south-west of the proposed mining activity. Although this area is not representative of an RE, loss of the vegetation and wetland habitat has the potential to impact on local floral diversity. Specific management strategies will be established to ensure that the mine construction does not indirectly impact the riparian vegetation and habitat of Oaky Creek, through runoff and siltation of the creek from the mine, edge effects and traffic associated with mine activities.

Construction of a haulage road will predominantly involve clearing of grazed paddocks, which is unlikely to significantly affect the ecological values of the study area or surrounding areas. However, vegetation representative of RE11.10.12 ('not of concern') in the north-west portion of the study area will be cleared for construction of the road. Indirect impacts of this loss of vegetation are likely to include fragmentation of the remnant bushland, loss of diversity in the local area, increased edge effects to adjacent fragmented remnants and potential spread of weeds.

6.2.2 Fauna

An impact associated with the development of the mine is the loss of potential fauna habitat within the mine footprint. The majority of the study area has been cleared and is now open grassland, dominated by introduced pasture grasses. This habitat type is also dominant in the wider region. It is favoured by grazing macropods such as Eastern grey-kangaroos and spectacled hair-wallabies, ground dwelling reptiles such as lizards and snakes and transitory foraging birds which are unlikely to rely on this area as core habitat. Consequently the area is not considered to be of high habitat value to a diverse range of native fauna.

Some small and isolated patches of non-remnant highly disturbed poplar box and/or Queensland blue gum occurs within the mine footprint. However, these areas are typically regrowth, contain few hollows and lack a shrub layer.

The mine footprint will not directly impact habitat of higher value associated with Oaky Creek and the artificial wetland south of the creek.

Habitat in the poplar box open forest in the north-west portion of the study area will be cleared to accommodate the proposed haulage road. This area has been highly disturbed by activities associated with grazing in the area. Impacts such as thinning for grazing and fire regimes has reduced the habitat value of this area. This habitat is well represented in the region. Clearing for the haul road will result in some reduction in habitat availability, habitat fragmentation and associated edge effects and contribute to further pressures on fauna due to other development in the area. It will create an open barrier and discourage movement between fragments by smaller ground-dwelling mammals and it may enable predatory animals, such as feral cats and dogs to prey on these mammals more easily. However, it is unlikely to cause a pronounced impact on species identified as significant under the Queensland Nature Conservation (Wildlife) Regulation 1994. This clearing is unlikely to remove any unique habitat or habitat critical for the survival of a threatened species.

Impacts to all of the threatened fauna species which have been identified in the study area, and which potentially utilise the study area, will be minimal as mining activity will not occur within 100 m of Oaky Creek. Furthermore, the grassland habitat which may be used for foraging by the reptile and avian threatened species occurs through out the region and these species are more likely to require the riparian and open forest habitat for roosting purposes and/or cover. It is unlikely that the grassland habitat supports a population of ornamental snake due its sub-optimal habitat value.

6.2.3 Management strategies

The following management strategies and control measures are proposed to limit the impacts to flora and fauna in the proposed Lake Lindsay mining area:

- minimising the width of clearing for the haul road through the vegetated areas (poplar box community) and utilising the most disturbed and direct route through the poplar box community in the north-west portion of the study area;
- undertaking hydrological modeling regarding construction and placement of the proposed levee to determine the impacts to Oaky Creek and the dam/wetland south of the creek;
- maintaining a buffer distance of at least 100 m between the edge of the riparian vegetation and the mining activities and enhancing this buffer with a revegetation program using native vegetation;
- destroying declared weed species and preventing them from spreading within and outside the study area;
- revegetating areas outside the proposed mining lease footprint to enhance the habitat value of these areas;
- developing an environmental management strategy (EMOS) for the mine lease to address issues such as:
 - < vegetation and habitat protection;
 - < stormwater management (to avoid discharge of contaminated water from the site);
 - < weed and feral animal control; and
 - < revegetation and habitat enhancement.
- rehabilitation of all mining disturbance areas (pits, stockpiles, roads) as soon as practicable after mining.

6.2.4 Legislative requirements

The process of assessment of vegetation clearing on freehold land takes place under the Queensland *Vegetation Management Act 1999* (VMA) and on non-freehold land under the Queensland *Land Act 1994*.

If required, permit applications will be sought through the Department of Natural Resources and Mines to clear native vegetation on all of the affected properties as no apparent exemptions apply under either the *Land Act 1994* or the VMA.

6.3 Hydrology and surface water

6.3.1 Water management strategy

Management of surface water is an important issue for the Lake Lindsay Project due to with the potential for site drainage to flow through the site to the creek. A potential environmental impact from the Project could be the degradation of downstream water quality in the creek and associated water catchments, as a result of the discharge of poor quality water. Poor quality water could result from stormwater runoff from disturbed areas on the mining lease.

To manage these potential impacts, Capcoal will further develop the water management strategies developed by current operations. The principle objective of the water management plan will be to separate 'clean' water (runoff from undisturbed and fully rehabilitated mine areas) from 'mine' water (runoff from disturbed areas on site and water pumped from pits).

To mitigate these potential impacts, a clean water system will be installed to ensure clean runoff water is directed to Oaky Creek and existing drainage systems. Any water that contains sediment will be directed to sedimentation ponds, for either re-use or to settle out sediment prior to discharge from site. In addition a flood levee will be constructed to protect the mine from flooding events.

During the EIS process the Lake Lindsay water management strategy will be reviewed and updated, a water balance undertaken and modelling completed to confirm the dimensions and requirements of the levee design. This review will include any impacts to surface drainage from the haulage route.

6.4 Hydrogeological environment

Additional hydrogeological studies will be undertaken during the EIS process.

The high levels of total dissolved salts within local groundwaters will require the containment of water in on-site storages. The water quality is too poor for release to the environment and therefore priority will be given for re-use of groundwater on site (i.e. dust suppression).

6.5 Air quality

There is potential for local air quality to be affected by mine operations, principally through the generation of dust from disturbed areas of the site such as operating areas, spoil and coal stockpiles, if not properly managed. Watering of the areas used by mine traffic will be undertaken to minimise dust generation as necessary. Spoil areas will be progressively rehabilitated as soon as practicable after mining.

Haulage truck movements along the proposed haul route will also increase the amount of vehicle exhaust emissions and dust. Regular servicing of haulage trucks and use of water trucks will reduce impacts.

The effect on air quality outside the mining lease areas is expected to be minimal with the above control strategies in place.

A review of the potential greenhouse gas emissions and air quality impacts will be undertaken during the EIS process.

6.6 Noise and vibration

Previous noise studies show that the mine will impact on the closest residence approximately one kilometre distant from the operations. Mitigation of blasting and noise impacts will be further addressed in the EIS.

A complaint resolution process will be in place for all potential impacts from the mining operations, including dust and noise.

6.7 Visual impacts

Although the placement of waste will cause a significant change in the topography of the area, progressive rehabilitation will be undertaken to reduce this impact.

Preliminary and detailed mine design will take in to consideration the potential visual impacts and their mitigation.

6.8 Socio-economic

6.8.1 Community concerns

The town of Middlemount is predominantly mining based. There is a strong link between the Middlemount township and the existing German Creek operations with operational issues and changes at the mine often having a profound effect on the local community. Issues such as changing workforce characteristics, shift patterns and use of contractors are examples of factors that influence community functionality.

The EIS will assess the social impacts of the Lake Lindsay Project on the local community.

6.8.2 Economic benefits

Between 100 and 140 people will be employed during the life of the mining operation. Due to the level of income of Capcoal employees, the local community is supported by expenditure by the employees.

In addition to direct employment, services required for mine operation will be utilised from the Broadsound and Peak Downs Shires where possible. Local services that could support the construction of the mine may benefit the community during this time by producing some flow-on effects.

Local businesses should also see benefits from an increase in traffic through the area.

The preliminary estimate of the capital cost to take the project to full production is approximately A\$180 million.

The project is expected to:

- provide around A\$130 – 150 million in State export earnings; and
- contribute approximately A\$30 million in rail freight and royalties.

7. Consultation

Capcoal, as part of the existing German Creek operations, already has in place a number of consultation processes. These include:

- a weekly community newsletter;
- meetings with the Broadsound and Peak Downs Shire Council;
- meetings with residents three times a year;
- annual meetings with local businesses;
- annual briefings for local, state and federal politicians; and
- employment of a community liaison officer to act as a conduit for issues the community wishes to raise with the company.

Consultation and social research during the EIS period will focus on verifying the impacts raised during all previous and current consultation, and updating the social and economic characteristics of Middlemount and surrounding area.

Residents and landholders as well as community groups and stakeholders who are impacted by the project, will be contacted again will also be involved in the consultation program. Information updates on the project will be distributed to the community and communication tools, such as a freecall number, will be established.

All consultation will acknowledge previous work undertaken to ensure that only new impacts or further information in relation to the previous issues raised, are explored further. Information provided by the community will be incorporated into other studies being completed for the EIS.

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Legislation

Commonwealth

Environment Protection & Biodiversity Conservation Act 1999.

Queensland

Environmental Protection Act 1994

Integrated Planning Act 1997.

Land Act 1994

Nature Conservation Act 1992.

Nature Conservation (Wildlife) Regulation 1994.

Vegetation Management Act 1999

Vegetation Management Regulation 2000.

Water Act 2000

Appendix A

Preliminary assessment of triggers
for an EIS for Stage 1 of the Lake
Lindsay Coal Project

Appendix A

Preliminary assessment of triggers for an EIS for Stage 1 of the Lake Lindsay Coal project

Introduction

In making a decision on whether this application (which is deemed to be non standard under the legislation) requires an EIS, an assessment of the standard criteria listed in Schedule 3 of the Environmental Protection Act is required to be undertaken by the EPA. To assist in making quick and consistent decisions on the level of assessment required, a number of quantitative EIS triggers have been identified in *Guideline 4 – Deciding the Level of Impact Assessment for the Mining Industry* (Guideline 4) to quantify the standard criteria. If any one of these EIS triggers is exceeded, an EIS is likely to be required.

Standard criteria

Guideline 4 indicates that the most relevant standard criteria for making a decision on the requirement for an EIS are the following items:

a) the principles of ecologically sustainable development as set out in the National Strategy for Ecologically Sustainable Development

The principles are assessed through the Evaluation of EIS Triggers section discussed below.

b) any applicable Commonwealth, State or local government plans, standards agreements or requirements

The land is primarily used for agricultural purposes. An issue for any development in a rural area is State Planning Policy 1/92 which relates to the development and conservation of good quality agricultural land. State agencies and local authorities are required to consider this policy in any decisions about the use of land in rural areas.

Most Commonwealth, State and local government requirements are reflected in the Evaluation of EIS Triggers section discussed below.

c) the character, resilience and values of the receiving environment

This issue is addressed under relevant items assessed in the Evaluation of EIS Triggers section discussed below.

d) the public interest

Previous community consultation has indicated that the community was generally supportive of the project.

Evaluation of EIS triggers

An assessment of the EIS triggers for non-standard mining activities identified in Guideline 4 has been carried out. An EIS is likely to be required if the proposed project meets any of the trigger criteria. An assessment against each of the triggers has been made below.

Significant impact on Category A and Category B environmentally sensitive areas.

It is understood that there are no category A environmentally sensitive areas that will be impacted by the project. A search of the Environment Protection and Biodiversity Conservation Act on-line database for the proposed mine area shows that there is the potential for three endangered ecological communities (Brigalow-*Acacia harpophylla* Dominant and co-dominant, Bluegrass (*Dichanthium* spp.) dominant grasslands of the Brigalow Belt Bioregions (North and South); and Semi-evergreen vine thickets of the Brigalow Belt (North and South) and the Nandewar Bioregions) to be present, together with a range of threatened species and migratory species. The detailed flora and fauna survey found that there would be no impact to two of these communities from the proposed mining activities, and limited impact to the Brigalow communities.

Mining in a marine area

Mining will not take place in a marine area.

Any mining less the 500 m landward from highest astronomical tide (HAT)

It is understood that no mining will occur within 500 m from the HAT.

Construction of more than 150 new dwelling units

No new dwelling units are proposed to be constructed.

An activity that would otherwise be a Level 1 ERA with an annual fee greater than \$4,000

It is not anticipated that any of the ERA's listed in Schedule 1 of the *Environmental Protection Regulation* 1998 will occur as part of the mining project.

Mining of more than 2 million tonnes of mineral or run of mine (ROM) ore per year

It is understood that the project will produce up to 6 million tonnes per annum of washed coal which is in excess of 2 million tonnes ROM per annum trigger.

The abstraction of more than 2 million m³ of water per year from natural surface and/or groundwater sources

The water supply for the project is still to be determined.

Result in more than 25 ha remaining post mining in a non-beneficial land capability where an acceptable alternative may be feasible

It is anticipated that the final landform will have greater than 25 ha of land area with no beneficial capability. It is proposed to leave these areas as final voids with appropriate safety measures in place.

Any non-standard mining activity less than 2 km from a town

The nearest town to the proposed mining operation is Middlemount, located 25km south/south-east.

A dam that requires a dam failure assessment under the Water Act 2000

A dam failure assessment is required for all referable dams. A referable dam will generally be:

- more than 8 m in height with a storage capacity of more than 500 MI; and
- more than 8 m in height with a storage capacity of more than 250 MI and a catchment area more than three times its maximum surface area at full supply level.

It is understood that there will be no referable dams constructed as part of the proposed mining project.

Mining for uranium or asbestos

The project does not propose to mine uranium or asbestos.

Conclusion

Based upon the above evaluation of the EIS triggers, it is likely that an EIS will be required by the Queensland EPA.