Assessment Report under the

Environmental Protection Act 1994

about the

Environmental Impact Statement

for the

Ensham Central Project

proposed by

Ensham Resources Pty Ltd

December 2006

Environmental Protection Agency
www.epa.qld.gov.au ABN 87 221 158 786

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(i) Glossary, Abbreviations and Units

Term	Definition
Administering Authority	For the purposes of the EIS Process under Chapter 3 of the *Environmental Protection Act 1994* the Administering Authority is the Chief Executive of the Environmental Protection Agency
ARI	Average Recurrence Interval—a statistical estimate of the average period in years between the occurrence of a flood of a given size or larger
Bilateral Agreement	An agreement between the Australian Government and the State of Queensland under Section 45 of the Australian Government *Environment Protection and Biodiversity Conservation Act 1999*
CHMP	Cultural Heritage Management Plan
CPP	Coal processing plant—a facility where coal is scalped, screened and sized in preparation for export
dB(A)	Decibels with an adjusted weighting to account for how the human ear interprets sound energy
DEH	Commonwealth Department of Environment and Heritage
DNR&W	Department of Natural Resources and Water
EA	Environmental authority (mining lease)—an approval allowing mining activities to be carried out on land to which the mining lease/s relates
EC	Electrical conductivity—a measure of the total concentration of ionic salts in water
EIS	Environmental Impact Statement prepared under Chapter 3 of the *Environmental Protection Act 1994* and submitted to the EPA on 15 November 2005
EM plan	Environmental management plan—the purpose of which is to propose environmental protection commitments to help the administering authority prepare the draft environmental authority (mining lease) (Refer to section 203 of the EP Act for content requirements of an EM plan)
Ensham Resources	Ensham Resources Pty Ltd (The proponent for the Ensham Central Project)
EP Act	*Environmental Protection Act 1994*
EP Reg	*Environmental Protection Regulation 1998*
EPA	Queensland Environmental Protection Agency
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
GQAL	Good quality agricultural land
ha	hectare (1ha equals 10,000 square metres)
km	kilometre (1km equals 1000 metres)
m	metre (1 metre equals 100 centimetres)
MDL	Mineral Development Licence—a mining tenement allowing the licence holder to evaluate and determine the economic potential of an ore body using geological, geophysical and geochemical programs, mining feasibility studies, metallurgical testing, environmental studies, marketing studies and engineering and design studies as defined under the *Mineral Resources Act 1989*

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Term	Definition
ML	Mining Lease—a mining tenement allowing the lease holder to mine the mineral/s specified in the lease and use the area for purposes associated with the activity of mining as defined under the *Mineral Resources Act 1989*
ML/a	Million litres per annum
MLA	Mining Lease Application
Mtpa	Million tonnes per annum
NCA	*Nature Conservation Act 1994*
NES	National Environmental Significance
ou	Odour units
NES	National Environmental Significance
NRFB	Nogoa River Floodplain Board
PM_{10}	Airborne mass for particles with aerodynamic diameter less than 10μm (less than ten one-thousandths of one millimetre)
QR	Queensland Rail
Response to Submissions Report	The proponent's response to all properly made submissions on the EIS (including a summary of the submissions, a statement of the proponent's response to the submissions and any amendments of the submitted EIS because of the submissions)
ROM	Run-of-mine
Streamlined Level 1 Conditions	Standard set of conditions for an environmental authority (mining lease) used by the EPA as a starting point when drafting conditions to licence activities proposed as part of a mining project
Submitted EIS	The submitted EIS includes: (i) The EIS that was released for public comment on 3 July (until 11 August 2006). (ii) The Response to Submissions Report received by the EPA on 26 October 2006 and provided to advisory body members that commented on the EIS.
TOR	Final Terms of Reference issued to the proponent on 14 April 2005. The final TOR is a document outlining the information requirements for preparing the EIS for the project
TSF	Tailings storage facility
TSP	Total suspended particulates—total mass of particles suspended in the air typically less than 50 micrometres in diameter
VMA	*Vegetation Management Act 1999*
μg/m	Micrograms per metre
μS/cm	microSiemens per centimetre—a unit used to measure electrical conductance of ionic salts in water
/a	*Per annum*

1 Introduction

This report provides an evaluation of the Environmental Impact Statement (EIS) process pursuant to Chapter 3 of the *Environmental Protection Act 1994* (EP Act) for the Ensham Central Project proposed by Ensham Resources Pty Ltd (Ensham Resources). The EIS process was coordinated by the Environmental Protection Agency (EPA) as the administering authority of the EP Act. The EIS assessed in this report was initiated by an application submitted by Ensham Resources to prepare a Voluntary EIS under Chapter 3 of the EP Act which was approved by the EPA in November 2004. The EIS assessed in this report was required to progress an amendment application to the existing environmental authority. If granted, the amended EA will contain conditions to manage all aspects of both the current and proposed operations and will ultimately replace the existing EA for the current operation. The proposed mine expansion activities, as described in Section 3.2.2 of the EIS, will take place on ML7459 and ML7460, and new mining leases.

This assessment report has been prepared pursuant to Sections 58 and 59 of the EP Act and section 3F of the *Environmental Protection Regulation 1998* (EP Reg).

The objective of this assessment report is to:

(a) summarise key issues associated with the potential adverse and beneficial environmental, economic and social impacts of the Ensham Central Project and the management, monitoring, planning and other measures proposed to minimise any adverse environmental impacts of the project; and

(b) make recommendations on the suitability of the Ensham Central Project to proceed and where so, to make recommendations on necessary conditions for any approval required for the project. Conditions of approval stated in this report are for the environmental authority under the EP Act, unless otherwise stated.

Section 58 of the EP Act lists the criteria that the EPA must consider when preparing an EIS assessment report, while section 59 of the EP Act and section 3F of the EP Reg states what the content must be. In summary, this assessment report addresses the adequacy of the EIS in addressing the final terms of reference (TOR), the suitability of the draft environmental management plan (EM plan) and other prescribed matters.

This report provides a summary and assessment of the key issues identified through the EIS process, and discusses in greater detail those issues of particular concern that were either not resolved or required specific conditions for the project to proceed. With regard to conditions, the EPA has developed a basic set that would typically apply to a level 1, non-code compliant mining lease. Those are referred to in this report as the streamlined level 1 conditions. Those conditions will be applied to the EA for the Ensham Central Project, except where this report recommends modification of a condition in the streamlined set, or additional conditions, or where the EIS recommends modifications of a condition in the streamlined set.

Delivery of this EIS assessment report to the proponent completes the EIS process under the EP Act.

1.1 Project description

Ensham Resources Pty Ltd (Ensham Resources) is the proponent for a coal mine expansion project known as the Ensham Central Project.

The proposed Ensham Central Project will be located 40km east of Emerald and 200km west of Rockhampton, within Peak Downs and Emerald Shires, Central Queensland. Emerald township had a 2001 population of 10,093, which represented 71% of Emerald Shire's total population of 14,249. The larger centres of Rockhampton and Mackay are not expected to be significantly impacted by the Ensham Central Project.

The Ensham Central Project deposit consists of a 64 million tonne (Mt) run-of-mine (ROM) open-cut mineable coal resource and an 80Mt of ROM underground mineable coal resource within the Aries and Castor seams of the Rangal Coal Measures. The Pollux and Orion seams in the project area are thin and considered to be uneconomical. The proposed project layout is shown in the EIS (Figure 3-2). The Ensham Central Project will be located within the granted mining leases ML7459 and ML7460 and within a new ML to the west of the current Ensham ML7459, within MDL217. Existing facilities, including the

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administration buildings, accommodation camps, heavy vehicle workshops, tailings storage facility (TSF) and coal processing plant (CPP) on ML7459 will be upgraded and/or extended to cater for the Ensham Central Project operations. New underground mine infrastructure, including access roads and coal conveyers will also be constructed (Figures 3-10 to 3-12 of the EIS).

The existing open-cut mining operation has a maximum production capacity of 12Mtpa of ROM coal for about 11 years. Gaining access to the Ensham Central Project's open-cut resources will extend the life of the existing open-cut mine by about 6 years to 17 years in total. The new underground longwall mine will have a production capacity of up to 8Mtpa of product coal, resulting in a total mine production of up to 20Mtpa. The underground longwall mine has an expected life of about 11 years and is expected to commence in year 4 of the Ensham Central Project operations. Open-cut coal is currently crushed and screened at the CPP and this will continue during the Ensham Central Project. A new washplant module is proposed to be constructed to wash coal from the underground mining operation. However, depending on the timing of underground operations the washplant and associated coal handling infrastructure may be constructed independently of the underground mine and used for the open-cut operations.

Ensham Resources propose to manage the open-cut component of the Ensham Central Project as a conventional strip mining operation. Mine pit overburden will be drilled and blasted and removed by the existing truck and shovel and dragline fleet. Coal will be removed using the existing truck and shovel fleet. The backfilled pit overburden emplacement areas will be progressively rehabilitated (Figure 3-8 of the EIS). Approximately 540ha of floodplain will be backfilled to surface level and rehabilitated.

The entrance to the underground longwall mine from the surface will be at the highwall at the southern end of pit C (Figure 3-10 of the EIS). Underground mine access roadways will be constructed from the highwall to the longwall mining areas using continuous miners. ROM coal will be transported via overland conveyer to the scalping and screening station for processing. Raw coal will be transported via overland conveyer to the washplant raw coal stockpile for washing. Product coal will be transported via reclaim conveyer to the upgraded train loading facility for transport to the Port of Gladstone for export.

Underground mining will result in surface subsidence being a series of shallow trough-like depressions forming on the surface. The maximum depth of subsidence is predicted to be approximately 2.7m. The total area affected by subsidence will be approximately 1,400ha. However, there will be no subsidence within 100m from the top of the high bank of the main channel of the Nogoa River. Remediation of surface subsidence effects on drainage and erosion will be implemented (Section 7 of the EIS).

The new washplant will generate both course and fine reject coal material. Course rejects will be disposed of within the overburden emplacements in a similar method to the current operations. Fine reject will be disposed of in surface tailings dams located in the vicinity of the washplant (Figure 3-14 of the EIS). Supernatant tailings water released from tailings deposited in the dams will be pumped to a raw water dam for use as process water in the washplant.

A system of flood protection levees will be progressively constructed on either side of the Nogoa River to provide flood protection to active mining pits. The levees will be positioned to achieve a minimum distance of 100m from the open cut mining pits to the top of the high banks of the river and will provide flood protection for the 1-in-1,000-year Average Recurrence Interval (ARI) flood event. No creek diversions are proposed for the Ensham Central Project.

The water balance model for the project indicates that the maximum water demand over the life of the mine will occur during year 14 of project operations (Table 11-3 of the EIS). Under dry conditions the maximum predicted site water deficit during year 14 of project operations would be around 1,100 megalitres (ML). This site water deficit and the 200ML potable water supply could be met by the 1,500ML per annum (/a) high priority Nogoa River water allocation from the Nogoa River currently available to Ensham Resources.

The current workforce of the approved Ensham mine is about 700 persons. The additional full-time, permanent project operational workforce will be about 138 persons. The peak construction workforce will be about 201 persons in project year 2. A peak project workforce of an additional 240 persons occurs in project year 3 when there is an overlap of construction and operational workforces.

1.2 Project alternatives and impacts on matters of NES

There were no significant impacts on matters of NES identified in the EIS. Therefore, an assessment of project alternatives is not warranted.

1.3 Approvals

The following approvals are required for the Ensham Central Project:

Approval	Legislation (Administering Authority)
Environmental authority (mining lease)	*Environmental Protection Act 1994* (Environmental Protection Agency)
Water Licence (if necessary for any remedial works related to subsidence of Winton Creek that interfere with the creek)	*Water Act 2000* (Department of Natural Resources and Water)
Approval to undertake action that may impact on a matter of national environmental significance (Nationally listed threatened species and ecological communities)	*Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth Department of Environment and Heritage)*

1.4 Impact assessment process

1.4.1 The EIS process

The environmental impact statement (EIS) for the Ensham Central Project was conducted under Chapter 3 of the EP Act. This process is described in the EPA's guideline "*The EIS process for non-standard mining projects*" [NB: non-standard mining projects are now known as level 1 mining projects].

The assessment process was initiated by Ensham Resources by lodgement to the EPA of an application to prepare a Voluntary EIS received by the EPA on 29 October 2004. The EPA gave notice to Ensham Resources on 8 November 2004 that the Voluntary EIS application had been accepted and the EIS process under Chapter 3 of the EP Act would apply for the assessment of the project. The draft Terms of Reference (TOR) for the Ensham Central Project was received by the EPA on 8 November 2004. The EPA approved the draft TOR and issued a notice of publication of draft TOR to Ensham Resources on 25 November 2004.

On 13 October 2004, the proponent referred the Ensham Central Project to the Commonwealth Department of Environment and Heritage (DEH) under section 68 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). On 27 October 2004, DEH declared the Ensham Central Project (Referral No. EPBC 2004/1882) a controlled action under section 75 of the EPBC Act. The controlling provisions for the action are sections 18 and 18A (Listed threatened species and ecological communities) of the EPBC Act. The listed ecological community of conservation significance likely to occur on-site was *Acacia harpophylla* dominant and co-dominant (brigalow), listed as endangered under the EPBC Act. A number of listed migratory species of conservation significance were also likely to occur on-site. DEH determined on 9 November 2004 that assessment would be by accreditation of the State EIS process under the Bilateral Agreement between the Queensland and Australian governments.

The draft TOR were available for public comment from 29 November 2004 until 27 January 2005 with the EPA placing a public notice on the EPA's website and in the Central Queensland News on 26 November 2004 and in The Courier-Mail on 27 November 2004. Ensham Resources issued copies of the public notice to affected and interested persons.

Thirteen submissions on the draft TOR were received by the EPA within the public notification period. Submissions were received from DEH, eight State government departments and agencies, one local government authority, and four non-government organisations. These submissions, together with one from the EPA, were forwarded to Ensham Resources on 10 February 2005. The EPA received a response to submissions on 18 March 2005. The EPA considered all submissions received on the draft

TOR and Ensham Resources responses prior to issuing the final TOR to Ensham Resources on 14 April 2005.

Ensham Resources submitted the EIS on 17 May 2006 to the EPA for review prior to public notification. The EPA compared the EIS to the final TOR and advised Ensham Resources on 15 June 2006 that the EIS sufficiently addressed the TOR and was suitable to proceed to public notification. The public notification and submission period was set at 30 business days.

The EIS was available for public comment from 3 July until 11 August 2006. The EPA placed a public notice on the EPA's website on 30 June 2006 and Ensham Resources placed a public notice in the Central Queensland News and The Courier-Mail on 30 June and 1 July 2006 respectively. Ensham Resources also issued copies of the public notice to affected and interested persons.

Seventeen submissions were received by the EPA on the EIS within the submission period. Submissions were received from DEH, nine State government departments and agencies, one local government authority, three non-government organisations and three local landholders. These submissions, together with one from the EPA, were forwarded to Ensham Resources for consideration on 28 August 2006. Ensham Resources submitted a Response to Submissions Report (including an EIS Addendum) to the EPA on 26 October 2006.

On 27 October copies of the Response to Submissions Report were issued to members of the advisory body who had requested additional information. These advisory body members were requested to consider the response to submissions and provide comments by 15 November 2006. Four sets of comments were received from State and local government and six from non-government organisations and local landholders. Those comments were also considered by the EPA in the preparation of this EIS assessment report.

Copies of this EIS assessment report are to be forwarded to all members of the advisory body, interested and affected persons. This report will also be available on the EPA's website (www.epa.qld.gov.au) for a period of approximately one year after which it will be available on request from the public register.

1.4.2 Consultation program

Public consultation

In addition to the statutory requirements for public notification of the draft TOR and EIS, Ensham Resources conducted a community consultation program during the development of the draft TOR and EIS. This program included an issues scoping exercise involving project information sheet distributions, one-on-one interviews, small group meetings and/or telephone conversations with landowners, Commonwealth and State governments, local government, industry bodies, environmental groups and community groups. Comprehensive details of the public consultation process are contained in Section 4 of the EIS.

Advisory Body

The EPA invited the following organisations to assist in the assessment of the TOR and EIS by participating as members of the advisory body for the Ensham Central Project:

- Agforce;
- Central Highlands Regional Resources Use Planning Cooperative Ltd;
- Department of Communities;
- Department of Emergency Services;
- Department of Environment and Heritage (Commonwealth);
- Department of Housing;
- Department of Local Government, Planning, Sport and Recreation;
- Department of Main Roads;
- Department of Natural Resources, Mines and Water;
- Department of Primary Industries and Fisheries;
- Emerald Shire Council;

- Fitzroy Basin Association;
- Fitzroy Basin Food and Fibre Association;
- Lake Maraboon Landcare Group;
- Nogoa River Flood Plain Board;
- Office of the Coordinator-General;
- Peak Downs Shire Council;
- Queensland Health;
- Queensland Police Service;
- Queensland Transport; and
- Sunwater.

Advisory body briefings were held in Brisbane, Rockhampton and at the project site during the draft TOR and EIS stages of the EIS process.

Public notification

In accordance with the statutory requirements, advertisements were placed in The Courier-Mail and the Central Queensland News to notify the availability of the draft TOR and EIS for review and public comment as stated in Section 1.3.1 above. In addition, notices advising the availability of the draft TOR and the EIS for public comment were displayed on the EPA website.

The draft TOR and EIS were placed on public display at the following locations during their respective public notification/submission periods:

- EPA Website (draft TOR and IAS only);
- Naturally Queensland Information Centre, EPA Central Office, Brisbane;
- EPA District Office, Emerald;
- Ensham Resources website (EIS only); and
- copies of the EIS could also be purchased from Ensham Resources.

Site visit

A site visit was organised for the advisory body on 19 July 2006 during the public notification period for the EIS. The purpose of the site visit was for Ensham Resources to show members of the advisory body key features of the project area including the Nogoa River and floodplain areas, existing open-cut operations and coal processing facilities and rehabilitation areas. The advisory body members asked questions about the project to clarify issues of interest or concern. The site visit was attended by a number of advisory body members, including representatives from Queensland Fire and Rescue Service, Queensland Health, Queensland Police Service, Department of Natural Resources, Mines and Water and the Environmental Protection Agency.

1.4.3 Environment Protection and Biodiversity Conservation Act 1999

As noted in section 1.4.1, the Ensham Central Project is a controlled action requiring approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The State's EIS process under the EP Act has been accredited under the Bilateral Agreement for the assessment process under Part 8 of the EPBC Act. The Commonwealth retains its separate approval powers under Part 9 of the EPBC Act. This EIS assessment report will be provided to the Commonwealth as the assessment report mentioned in section 105 of the EPBC Act.

2 Matters considered in the EIS assessment report

Section 58 of the EP Act requires, when preparing this EIS assessment report, the consideration of the following matters:

(a) the final TOR for the EIS;

(b) the submitted EIS;

(c) all properly made submissions and any other submissions accepted by the chief executive;

(d) the standard criteria;
(e) another matter prescribed under a regulation.

These matters are addressed in the following subsections.

2.1 The final TOR

The final TOR document, issued on 14 April 2005, was considered when preparing this EIS assessment report. While the TOR were written to include all the major issues associated with the project that were required to be addressed in the EIS, they were not necessarily exhaustive, nor were they to be interpreted as excluding all other matters from consideration. The TOR stated that if significant matters arose during the course of preparation of the EIS that were not incorporated in the TOR (e.g. currently unforeseen issues that emerge as important or significant from environmental studies) then these issues should also be fully addressed in the EIS.

Where matters outside of those listed in the final TOR were addressed in the EIS, those matters have been considered when preparing this EIS assessment report.

2.2 The submitted EIS

The submitted EIS was considered when preparing this EIS assessment report. The submitted EIS comprised:

(i) the EIS that was publicly released on 3 July 2006 (until 11 August 2006); and
(ii) the Response to Submissions Report (Supplementary EIS) received by the EPA on 26 October 2006 that was provided to relevant advisory body members.

2.3 Properly made submissions

Seventeen submissions were received by the EPA on the submitted EIS. Nine submissions were received by the EPA on the Response to Submissions Report. All were properly made and all were considered when preparing this EIS assessment report.

2.4 The standard criteria

Section 58 of the EP Act requires that, among other matters, the standard criteria listed in Schedule 3 of the EP Act must be considered when preparing the EIS assessment report. The standard criteria are:

(a) *the principles of ecologically sustainable development as set out in the* National Strategy for Ecologically Sustainable Development*;*
(b) *any applicable environmental protection policy;*
(c) *any applicable Commonwealth, State or local government plans, standards, agreements or requirements;*
(d) *any applicable environmental impact study, assessment or report;*
(e) *the character, resilience and values of the receiving environment;*
(f) *all submissions made by the applicant and submitters;*
(g) *the best practice environmental management for activities under any relevant instrument, or proposed instrument, as follows—*
(i) an environmental authority;
(ii) an environmental management program;
(iii) an environmental protection order;
(iv) a disposal permit;
(h) *the financial implications of the requirements under an instrument, or proposed instrument, mentioned in paragraph (g) as they would relate to the type of activity or industry carried out, or proposed to be carried out, under the instrument;*

(i) *the public interest;*
(j) *any applicable site management plan;*
(k) *any relevant integrated environmental management system or proposed integrated environmental management system;*
(l) *any other matter prescribed under a regulation.*

The EPA has considered the standard criteria when assessing the project. With regard to criterion (l), there was no other matter prescribed under a regulation that required consideration.

3 Adequacy of the EIS in addressing the TOR

The submitted EIS adequately addressed the key components of the TOR. The major chapters of the EIS are summarised in this assessment report in the following sections. Furthermore, a number of submissions on the EIS raised issues that require clarification, or that are of particular importance in the assessment of the project, such as requiring modification of, or addition to, the streamlined conditions. The following sections also discuss in greater detail those issues of particular concern that were either not resolved or required specific conditions for the project to proceed.

3.1 Matters of national environmental significance

The requirements of the TOR for matters of national environmental significance have been adequately addressed by the submitted EIS. The following subsections summarise the project's relevant impacts, describe the feasible mitigation measures and state conditions that may be imposed to address impacts on matters of national environmental significance (NES).

3.1.1 Acacia harpophylla (brigalow)

Ecological field surveys were undertaken within the Ensham Central Project area in October 2004 and February/March 2005. These surveys identified the ecological community brigalow (*Acacia harpophylla* dominant and co-dominant) defined by two REs, namely RE11.3.1 (*Acacia harpophylla* and/or *Casuarina cristata* open forest on alluvial plains), listed as endangered under the EPBC Act, and RE11.4.8 (*Eucalyptus cambageana* and *Acacia harpophylla* woodland to open forest on Cainozoic clay plains), listed as threatened under the EPBC Act. RE11.3.1 occurs adjacent to the riparian vegetation along the Nogoa River anabranch (see Figure 16-3 of the EIS) as a single 13ha stand. This vegetation is in poor condition due to frequent fire, disturbance from cattle grazing and associated exotic weed invasion. Two small stands of RE11.4.8 are located beyond the proposed mining footprint on Ensham Resources' current ML7459 and will not be directly impacted by the project, and is therefore not considered further in this assessment.

Removal of the anabranch will result in the clearance of 9ha of RE11.3.1 (see Figure 16-4 of the EIS). An assessment of significance was undertaken for the brigalow community in accordance with the requirements of the *EPBC Act – Principal Significant Impact Guidelines 1.1. Matters of National Environmental Significance 2005* (DEH Guidelines 2005). Appendix I of the EIS contains assessment against each criterion. In summary, the assessment considered the mitigation measures described above and concluded that, on balance, the loss of 9ha of brigalow through clearing will be compensated by the protection and enhancement of areas of vegetation that formerly supported brigalow, but are currently in poor condition (see Vegetation Management Plan below for more details). Therefore, it was concluded that none of the significant impacts listed in the DEH guidelines would apply to the effects of the project on the brigalow vegetation.

The removal of 9ha of brigalow will be mitigated through the preservation and enhancement of 100ha of vegetation associated with the main channel of the Nogoa River (see Figure 16-5 of the EIS). These areas formerly supported brigalow vegetation, but currently do not meet the VMAs criteria for remnant vegetation because of their poor condition. A vegetation management plan will be developed to facilitate the management and enhancement of these areas, including trials to establish brigalow in rehabilitated areas, and the control of weeds, grazing, site access, erosion, sedimentation and fire (see Figure 21-7 of the EIS). The vegetation management plan will ensure the long-term protection and management of

vegetation associated with the Nogoa River to maintain habitat corridors for fauna and provide for recolonisation of rehabilitated areas by local native species.

3.1.2 Migratory species

The ecological field surveys undertaken within the Ensham Central Project area in October 2004 and February/March 2005 identified the following migratory species:

- *Nettapus coromandelianus* (cotton pygmy-goose);
- *Ardea alba* (great egret);
- *Calidris acuminate* (sharp-tailed sandpiper);
- *Haliaeetus leucogaster* (white-breasted sea-eagle);
- *Tringa stagnatilis* (marsh sandpiper);
- *Merops ornatus* (rainbow bee-eater);
- *Acrocephalus stentoreus* (Australian reedwarbler);
- *Rhipidura rufifrons* (rufous fantail); and
- *Gallinago hardwickii* (Japanese snipe).

In addition there are a number of other migratory species, including *Numenius minutes* (little whimbrel) and *Rostratula australis* (Australian painted snipe) that are known from records of the region, and based on available habitat, may occur on-site.

Removal of the anabranch and Duckponds (a series of waterholes associated with the Winton Creek overflow) and associated vegetation as part of the project will reduce the available habitat for listed migratory species.

An assessment of significance was undertaken for migratory species in accordance with the requirements of the DEH guidelines 2005. Under these guidelines an action is likely to have a significant impact on migratory species if there is a real chance or possibility that it will:

- substantially modify, destroy or isolate an area of *important habitat* of the migratory species; or
- result in invasive species that are harmful to the migratory species becoming established in an area of *important habitat* of the migratory species; or
- seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an *ecologically significant proportion* of the population of the species.

Appendix I of the EIS contains assessment against each criterion. In summary, there is no evidence to suggest that the study area provides an area of important habitat for, or supports an ecologically significant proportion of the population, of any of the recorded migratory birds. Most are wetland species and the project area is surrounded by properties with many dams for many kilometres. These dams provide a source of isolated water bodies that comprise a regional habitat resource for mobile migratory species. The wetland species recorded from the ecological field surveys will be moving throughout this larger habitat resource and are not exclusively reliant on the waterbodies in the project area. In the context of regional wetland habitat resources, the loss of the habitat associated with the anabranch and Duckponds is unlikely to be significant and no long-term impacts on local populations of the observed migratory species are expected as a result of the project.

In terms of non-wetland migratory species, an individual rufous fantail was recorded during the ecological field surveys, and the rainbow bee-eater was recorded in all vegetated areas throughout the project site. These species are not dependent solely on habitat occurring on the project site, and the project is not expected to significantly reduce from the habitat availability for these species in the region.

3.1.3 EM plan

The EM plan is considered adequate with respect to matters of national environmental significance. The implementation of a vegetation management plan will protect and enhance the existing vegetation corridor along the Nogoa River and the re-establishment and enhancement of 100ha of non-remnant brigalow vegetation will off-set the loss of 9ha of brigalow vegetation to be cleared for project operations.

The enhancement of the vegetation along the Nogoa River will also provide a movement corridor for fauna and provide for the stability and protection of the Nogoa River main channel.

Migratory species are not expected to be significantly impacted by the loss of wetland areas associated with project operations due to other available areas in the significant regional wetland habitat resource. A vegetation clearing procedure has been included in the EM plan as an environmental control strategy and includes the DEH requirements for the identification and relocation of species of national environmental significance. Therefore, the recommended control measures and conditions of approval in the EM plan will satisfactorily protect brigalow vegetation and migratory species of national environmental significance.

3.1.4 Recommended conditions

The following conditions are recommended to be included by the Commonwealth for approval under Part 9 of the EPBC Act:

1. Prior to any clearing of remnant vegetation associated with the Ensham Central Project, Ensham Resources must submit to DEH a Vegetation Management Plan for the area(s) of remnant vegetation and regrowth with a brigalow component adjacent to the Nogoa River (See Fig. 21-7 of the EM plan).
2. Clearing of remnant vegetation must be done in accordance with a vegetation clearing procedure agreed to by DEH prior to clearing.

3.2 Land Resources

3.2.1 Adequacy of the EIS in addressing the final TOR

The requirements of the TOR for land resources have been adequately addressed by the submitted EIS. The EIS identified the environmental values of the land resource on-site and included adequate information about the impacts of the project on those environmental values. Information on land resources was provided in Section 3—The Proposal, Section 6—Land Use, Section 7—Rehabilitation, Appendix B—Terrain, Soils and Land Capability and Section 21—Environmental Management Plan of the EIS. Additional information about land resources was provided in the Response to Submissions Report and EIS Addendum.

In summary the major impacts of the Ensham Central Project on land resources include the following:

- approximately 1400ha of surface subsidence with a maximum depth of 2.7m;
- a temporary reduction of 300m from the minimum current 1400m width of the pre-mining Nogoa River floodplain topography;
- an increase in the minimum width of the floodplain to 2.3km in the post mining phase;
- loss of 1746ha of Class A good quality agricultural land (GQAL) suitable for crops with nil to moderate levels of limitations in the Nogoa River floodplain associated with open-cut and underground mining operations;
- approximately 1,007ha of open-cut mining disturbance;
- a significant reduction in land suitability of mined areas in the Nogoa River floodplain for rainfed (dryland) cropping;
- final voids outside of floodplain areas remaining at the end-of-mine life;
- loss of 53ha of Class B agricultural land marginal for crops and suitable for pastures, and loss of 147ha of Class C agricultural land suitable only for improved or native pastures on land used for tailings disposal within tailings storage facilities (TSF); and
- potential for hydrocarbon spills from machinery, fuel storage and vehicle maintenance areas and contained contamination of surface soils.

The following mitigation measures are proposed to manage disturbance of the Ensham Central Project on land resources:

- progressive rehabilitation and recommissioning of 540ha of Nogoa River floodplain as Class B agricultural land in open-cut mining areas;

- progressive subsidence, and remediation where necessary of 1,154ha of Nogoa River floodplain as a result of underground mining, reducing the land capability to Class B land;
- mine footprint minimised to areas of necessary disturbance;
- visible delineation of areas to be cleared;
- tree surveys prior to clearing to identify the presence of bats and other mammals and nesting birds and retention of trees until appropriate action to relocate the animals is undertaken;
- trees and stags with roost/den/nest hollows flagged, and after felling, inspected for fauna prior to any identified fauna and remaining tree hollows being relocated to remnant habitat areas;
- capping the TSF with benign overburden material and topsoil and rehabilitating with pasture grasses and legumes;
- regrading ramps and bunding and/or fencing high walls and end walls of final voids to prevent access;
- storing waste hydrocarbons and chemicals in sealed and bunded areas to prevent soil contamination;
- handling waste hydrocarbons and chemicals in accordance with standard operating procedures to minimise potential spills and leaks;
- directing contaminants from workshop and washdown areas to a sump for containment and appropriate treatment and disposal; and
- project infrastructure will be decommissioned and affected land rehabilitated at the end-of-mine life.

The above mitigation measures proposed to manage the impacts of the project on land resources are generally adequate. However, the current proposal will result in the loss of 1746ha of Class A GQAL consisting of non-cracking and cracking clay soils currently used for rainfed and/or irrigated cropping. 1609ha of the Class A GQAL is proposed to be rehabilitated to Class B land. State Planning Policy 1/92 Development and Conservation of Agricultural Land provides a framework for considering GQAL in development assessment. The policy acknowledges that there will be developments that can legitimately remove GQAL, because they provide an overriding benefit to the community. The Ensham Central Project will provide the following economic and community benefits:

- utilisation of the coal resources of the State;
- substantial employment opportunities and economic benefits locally and within the region;
- the continuation and expansion of a locally significant industry that provides substantial export income to the State; and
- continued utilisation of infrastructure associated with the existing Ensham Coal Mine.

540ha of the Class A GQAL associated with open-cut mining on the northern floodplain of the Nogoa River is proposed to be rehabilitated to Class B land with a dense pasture cover by reinstating the following topsoil profile proposed in Section 7.3.4 of the EIS:

- a 0.2m thick topsoil layer of either bottle tree scrub sandy loam or brigalow dawson gum non-cracking clay soil to sustain dense pasture cover;
- a 0.3m thick subsoil layer of dark brown to black cracking clay brigalow subsoil with a high water holding capacity to provide some drought protection for pasture cover; and
- a 1m thick uncompacted benign spoil layer beneath the subsoil and above the compacted spoil layer to provide a root zone and moisture absorption layer for trees and deeper rooted grasses.

This soil profile meets the floodplain rehabilitation objectives stated in the EIS, including to maximise stability and minimise erosion of the soil profile. The main goal of these objectives is to maintain the integrity of the low permeable compacted sub-surface capping layer overlying unconsolidated spoil. Maintenance of this capping layer is critical to prevent floodwaters from infiltrating through the compacted capping into the unconsolidated spoil material. Increasing the permeability of the compacted capping layer by erosion would impact on the regulated flows in the Nogoa River and potentially create an artificial spoil groundwater aquifer. This is both undesirable with regard to impacting on the availability of downstream surface water allocations and potentially creating an artificial groundwater spoil aquifer.

DNR&W, in their submission on the EIS, requested that the rehabilitation strategy proposed for the open-cut operations on the northern floodplain of the Nogoa River be modified to reinstate a soil and subsoil

profile similar to the pre-mining floodplain, so it is suitable for sustainable rainfed and/or irrigated cropping post-mining. Their proposal involves re-instating a soil profile that consists of a cracking and/or non-cracking clay topsoil layer, as opposed to a sandy loam and non-cracking clay topsoil layer. The DNR&W soil profile would return the floodplain to Class A GQAL and give the landowner the option of establishing rainfed and/or irrigated cropping with minimal limitations. DNR&W proposes that the rehabilitated floodplain could be returned to rainfed cropping after a period of consolidation under pasture cover.

While the aim of reinstating Class A GQAL is desirable, there are factors associated with this particular site that raise the significant risk and make it impractical. Those factors are: increased flow velocities across some parts of the floodplain after mining, which could cause erosion; and a lack of sufficient water to quickly establish a stabilising cover of vegetation on the reinstated topsoil.

Cracking clay soils have a higher erosion potential than the sandy loam and non-cracking clay topsoil layer proposed by Ensham Resources. The increased flow velocities of floods during progressive rehabilitation and post-mining have been assessed by the EPA to pose the risk of eroding a cracking clay soil layer sufficiently to expose the underlying mine spoil, which is undesirable. The topsoil layer proposed by Ensham is preferred in this regard.

Furthermore, Ensham's EIS rehabilitation specialist, Mr Peter Baker, has significant experience with mine site rehabilitation at various mines in central Queensland. Mr Baker's experience with rehabilitation on cracking clay soils found that there are inherent difficulties with establishing significant vegetation cover on cracking clay soils due to moisture stress. Cracking clay soils have an inherently high water demand, and cannot make water available to plants until moisture levels are relatively high compared to the sandy loam and non-cracking clay topsoil layer proposed by Ensham Resources. In addition, cracking clay soils exhibit accelerated drying when moisture levels are low due to increased surface area caused by cracking. Ensham Resources does not have an irrigation water allocation, which would be a prerequisite for establishing pasture on cracking clay soils, nor can one be guaranteed. The primary objective for floodplain rehabilitation is to ensure sufficient vegetation cover to provide adequate erosion protection on the floodplain. Consequently, the sandy loam and non-cracking clay topsoil layer is again preferred and the floodplain rehabilitation strategy proposed in the EIS is considered adequate.

3.2.2 Adequacy of this section of the EM plan

The EM plan (Section 21.12—Land of the EIS) proposes management and mitigation measures that are suitable to manage the majority of impacts of the project on land resources and the EM plan is adequate.

3.2.3 Recommended conditions

The recommended EA conditions included in the EM plan (refer to section 21.12.5 of the EM plan) are consistent with the EPA's streamlined level 1 conditions and are suitable to manage the potential land based impacts of the project. Implementing the proposed EA conditions outlined in the EM plan will reduce the likelihood of serious environmental impacts on land arising from mining activities. No additional conditions are considered necessary.

3.3 Surface water resources

3.3.1 Adequacy of the EIS in addressing the final TOR

The requirements of the TOR for surface water resources have been adequately addressed by the submitted EIS. The submitted EIS provided information on surface water resources in Section 12—Surface Water, Section 21—Environmental Management Plan and Appendix D. Additional information about surface water resources was provided in the Response to Submissions Report and EIS Addendum.

The major impacts of the Ensham Central Project on surface water resources include the following:

- a series of progressively constructed levee banks providing flood immunity for open-cut mining operations up to the 1-in-1000-year Average Recurrence Interval (ARI) flood event, plus 1m freeboard;

- a maximum restriction of the Nogoa River floodplain from the existing 1400m to 950m within the ML area during project years 1-7;
- an increase in floodplain width of the Nogoa River from 950m to 1850m within the ML area during project years 8-16;
- a post-mining, rehabilitated minimum floodplain width of 2300m;
- potential flood afflux of up to 1.1m upstream of the project, confined largely within or near the property boundary of land owned by Ensham Resources, during the life of the project;
- moderate increases of between 0.2m/s to 0.4m/s in peak floodplain velocities, producing moderate increases in absolute floodplain velocities, typically ranging from 0.4m/s to 0.9m/s;
- moderate increases of between 0.5m/s to 0.7m/s in peak Nogoa river channel velocities, producing absolute river channel velocities between 2.4m/s and 2.9m/s, typical of channel velocities in other reaches of the river.

The following mitigation measures are proposed to manage disturbance of the Ensham Central Project on surface water resources:

- an audit of the current condition of the river channel (completed during the preparation of the EIS) to use as a baseline for comparison with future monitoring results; and
- a River Management Plan to monitor, maintain and enhance the stability of the river, including grazing control, remediation of existing localised erosion areas identified in the river audit, monitoring of the river condition every two years and following significant flow events and, if necessary, implementation of additional management measures to maintain and enhance river stability.

3.3.2 Assessment

3.3.2.1 Levee banks

The progressive construction of a series of flood protection levee banks in the Nagoa River floodplain for the Ensham Central Project will create additional upstream afflux on a number of neighbouring upstream properties during certain flood events. This will result in higher flood levels and flow velocities and a longer duration of flood waters in areas currently subject to flooding, as well as additional surface area of land being subject to flooding on some neighbouring properties. A number of submissions on the EIS requested that Ensham Resources be conditioned in the EA to collaboratively develop and sign flood compensation agreements with all flood affected property owners, prior to project development. However, the ability of the State to require compensation for impacts is limited by legislation (section 279 of the *Mineral Resources Act 1989* (MR Act)) to land described in the application for a mining lease as being for the mining activity or access to it. However, when a person with land outside the mining lease area believes that they will be impacted by the proposed mining activity, then that person can lodge an objection to the mining lease application during the public objection period under the MR Act, and those objections will be heard in the Land and Resources Tribunal.

Levee bank construction is a critical part of providing flood immunity for the mining operation. Therefore, the potential flooding impact on upstream neighbouring properties cannot be readily prevented. However, it is understood that Ensham Resources is working closely with potentially flood affected landowners to identify any material impacts and develop appropriate mitigation measures, where necessary, to address flooding issues beyond the ML boundary. It is understood that Ensham Resources intends to implement any necessary mitigation measures. The EPA supports this process. Consequently, the EPA considers that potential upstream flooding material impacts on neighbouring properties can be adequately mitigated by Ensham Resources, or alternatively, landholder objections can be heard by the Land and Resources Tribunal.

The Nogoa River Floodplain Board highlighted in their submission on the EIS that approval to build flood protection levee banks for the project is required in accordance with Local Law (Levee Banks) No. 1 1997. However, the local law is made under the *Local Government Act 1993* (LG Act) and consequently, any approvals granted under this local law would have no effect if inconsistent with approvals granted under a State law, such as the *Water Act 2000*, MR Act or EP Act (refer to section 31 of the LG Act). Sufficient time must be given to the NRFB to allow a complete assessment of the complex issues

associated with determining the appropriate location and construction of levee banks associated with the Ensham Central Project.

Recommendation

Ensham Resources should continue to consult with the NRFB to ensure that appropriate timeframes are allowed for the assessment of the application for the construction of any levees and/or other structures required for the Ensham Central Project in the Nogoa River Floodplain in accordance with Local Law (Levee Banks) No. 1 1997.

3.3.2.2 Waterway barrier

The upstream and downstream bunding of the Nogoa River anabranch proposed by Ensham Resources will impede the movement of fish that may inhabit this waterway and create a waterway barrier. The Department of Primary Industries and Fisheries (DPI&F) indicated in their submission on the EIS that a development approval for waterway barrier works is required for the project. Ensham Resources should liaise with DPI&F regarding the legislative requirements for such works.

3.3.2.3 Duckponds wetland area

The majority of the Duckponds wetland area associated with the overflow of Winton Creek during flood events would be drained for open-cut mining. During the time of preparing the EIS, Duckponds consisted of a single 100m long pool of stagnant water with abundant blue-green algae. No fish were observed in the pool. However, it is possible that a subsequent flow event breaking the banks of Winton Creek may flush the Duckponds wetland and native fish species may move into Duckponds and be living at the time of the proposed open-cut mine development of this area.

Recommendation

Ensham Resources should assess the condition of the Duckponds wetland prior to disturbance by mining, and depending on the status of Duckponds, consider salvage of any native fish in accordance with the DPI&F Fish Salvage Guidelines.[1]

3.3.3 Adequacy of this section of the EM plan

Generally, the EM plan (Section 21.8—Surface Water) proposes management and mitigation measures that are consistent with the streamlined level 1 conditions for surface water and are considered suitable to minimise the likelihood of serious environmental impacts of the project on surface water resources. However, a number of minor amendments are required to proposed condition C4-1, and a number of additional conditions are required to monitor the integrity of the land surface between the levee banks and open-cut mining pits.

3.3.4 Recommended Conditions

Proposed EA condition (C4-1) requires a river management plan to be submitted to the EPA, prior to project commencement. However, this condition should be amended to also require the river management plan to be submitted to DNR&W for comment.

Changes to the draft EA conditions:

Draft condition (C4-1) in Section 21.8.5 of the EM plan should be replaced with the following:

(C4-1) The holder of the environmental authority will develop a River Management Plan for the reach of the Nogoa River within Ensham land. The River Management Plan must be submitted to the administering authority for approval, and to the Department of Natural Resources and Water for comment back to the administering authority, at least (28) days prior to the commencement of the Ensham Central Project. The River Management Plan is deemed to be accepted if the administering authority has not requested the River Management Plan to be amended within (28) days of its submission. The River Management Plan should address the following matters:

[1] *Department of Primary Industries and Fisheries. Fish Salvage Guidelines. Queensland 2004*

(a) Control of grazing in the river channel;
(b) Management of woody debris in the river channel;
(c) A program to monitor and remediate identified localised erosion areas;
(d) A program to monitor the river condition following any significant flow events, and every two years.

A number of EA conditions regarding levee bank design and integrity monitoring are proposed in section 21.8.5 of the EM plan. It is recommended that these conditions be expanded to include a condition to monitor for cracks between the levee toe and the endwall crest of the open-cut pit. If cracks are identified this should trigger an environmental evaluation. Monitoring of this nature is critical to identifying potential areas of instability and undertaking active remediation to minimise the likelihood of serious environmental impacts on downstream water users from levee bank and/or pit wall failures.

Additional draft EA conditions:

The following EA conditions should be added to Section 21.8.5 - Flood Protection Levees:

(C5-6) The surface area between the non-river side of the toe of the levee and the endwall crest of the open-cut mining pit should be monitored for surface cracks by a suitably qualified and competent person at least once per year between the months of May and October inclusive (i.e. during the dry season and before the onset of the wet season), and at any time if alarming, unusual or otherwise unsatisfactory conditions are observed.

(C5-7) If any surface cracking is identified based on investigations in condition (C5-6) above, an environmental evaluation should be undertaken to determine an appropriate course of remediation.

3.4 Groundwater resources

3.4.1 Adequacy of the EIS in addressing the final TOR

The requirements of the TOR have been adequately addressed by the submitted EIS. The submitted EIS identified the environmental values of the groundwater resources on-site and included adequate information about the impacts of the project on those environmental values. Information on groundwater resources is provided in Section 10—Groundwater Resources, Section 21—Draft Environmental Management Plan and Appendix C of the EIS. Additional information about groundwater resources was provided in the Response to Submissions Report and EIS Addendum.

In summary the major impacts of the Ensham Central Project on groundwater resources include the following:

- potential for small drawdown and depressurisation effects at seven privately owned groundwater bores located in coal formations within a 15km radius of the mine site;
- decommissioning of one DNR&W groundwater monitoring bore and potential impact from mine dewatering on five other DNR&W bores; and
- minor alluvial groundwater inflows into the mining pits due to the thin saturated thickness and patchy distribution of the alluvial groundwater aquifer.

The following mitigation measures are proposed to manage disturbance of the Ensham Central Project on groundwater resources:

- monitor groundwater levels and quality at the three active privately owned bores (if agreed to by the landowner), prior to project commencement, and at four monthly intervals thereafter, to determine any impact on the private groundwater users;
- provide an equivalent, alternative water supply to affected landowners in the event that monitoring confirms adverse impacts on privately owned groundwater bores, due to mining; and

- consult with DNR&W about the scale and significance of potential impact on the DNR&W groundwater monitoring bores and develop appropriate management and mitigations measures.

Assessment

The extent of potential groundwater dewatering by the project occurs within the Rangal Coal Measures subcrop that delineates the boundary of the hydrogeological system in which the mine is located. Neighbouring groundwater bores, although constructed in the Rangal Coal Measures, draw water from different coal seams to those proposed to be mined for the Ensham Central Project and are unlikely to be impacted by the project. This is because coal seam groundwater aquifers in this area are confined in nature and show low transmissivity and recharge. Furthermore, no significant groundwater sources in the coal seams proposed to be mined were identified in the EIS and no significant groundwater dewatering is predicted to be required during open-cut and underground mining. These predictions are consistent with the limited current groundwater dewatering necessary for the existing operation. Furthermore, DNR&W have confirmed that a water licence usually required for dewatering a groundwater aquifer will not be required for the Ensham Central Project because the amount of predicted water inflows are insignificant.

A number of submissions on the EIS requested that Ensham Resources collaboratively develop and sign formal groundwater compensation agreements with all potentially affected neighbouring groundwater bore owners, prior to project development. However, the ability of the State to require compensation for impacts is limited by legislation (section 279 of the MR Act) to land described in the application for a mining lease as being for the mining activity or access to it. Therefore, compensation agreements with potentially affected groundwater users beyond the ML cannot be required.

However, because environmental harm to neighbouring groundwater bores, while unlikely, is unable to be completely quantified by predictive modelling, Ensham Resources has committed in the EM plan to include conditions in the EA to monitor the level and quality of groundwater in neighbouring bores every four months, and provide an equivalent, alternative water supply in the event of bores being demonstrated to have been adversely affected by mining operations. These monitoring and remediation measures are supported by the EPA and will be included as conditions in the draft EA for the project that will be advertised for public objection. Consequently, the EPA considers that potential impacts on neighbouring groundwater bores can be adequately remediated by the implementation of the above conditions that will be included in the EA for the project.

However, the EPA believes that the four-monthly monitoring frequency proposed by Ensham Resources is too infrequent and should be amended to three-monthly. This issue is discussed in more detail in the 'Adequacy of the EM plan for the project' section below.

The above mitigation measures proposed to manage the impacts of the project on groundwater resources are adequate because in the event that the project impacts on neighbouring groundwater bores, an equivalent, alternative water supply will be provided by Ensham Resources. Furthermore, mitigation measures will be developed in consultation with DNR&W to manage any identified impacts on DNR&W groundwater monitoring bores.

3.4.2 Adequacy of this section of the EM plan

The EM plan (Section 21.7—Groundwater) proposes management and mitigation measures that are consistent with the streamlined level 1 conditions for groundwater and are considered suitable to minimise the likelihood of environmental impacts of the project on groundwater resources. However, the EM plan proposes four-monthly groundwater monitoring to quantify any impact of the project on neighbouring groundwater bores. A number of submissions on the EIS requested that the monitoring frequency be amended from four-monthly to monthly. However, the EPA believes that monthly groundwater monitoring would be onerous for Ensham Resources, without significantly increasing the usefulness of the groundwater monitoring results. This is because any impact of the project on neighbouring groundwater bores is likely to occur gradually due to the confined nature and low transmissivity and recharge of groundwater aquifers in this locality. Therefore, a compromise, that is consistent with groundwater monitoring requirements of water licences under the Water Act, would be to monitor neighbouring groundwater bores every three months.

3.4.3 Recommended conditions

Changes to the draft EA conditions:

In the EM plan (Section 21.7.5 Proposed EA Conditions Schedule C—Water), the groundwater monitoring frequency in Schedule C—Table 12 should be amended from four-monthly to three-monthly.

3.5 Ecology

3.5.1 Adequacy of the EIS in addressing the final TOR

The EIS (Section 16.4.1) identified on-site one regional ecosystem (RE) of State conservation significance that will be impacted by the project: a 13ha patch of RE 11.3.1 (Brigalow – *Acacia harpophylla* and/or *Casuarina cristata* open forest on alluvial plains), listed as endangered under the *Vegetation Management Act 1999* (VMA). RE 11.3.1 is located adjacent to the riparian vegetation associated with the Nogoa River anabranch (see Figure 16-3 of the EIS). There is also a 120ha area of non-remnant vegetation with brigalow elements associated with the Nogoa River and anabranch that would originally have supported RE 11.3.1. However, the small discrete patches of RE 11.3.1 found within this vegetation community are too small to map individually and do not meet the VMA's criteria for remnant vegetation. Therefore, these areas have been mapped as a mosaic of RE 11.3.1 and non-remnant vegetation in the ratios shown in Figure 16-3 of the EIS.

The EIS (Section 16.4.2) identified on-site three species of conservation significance under the *Nature Conservation Act 1994* (NCA). These are the black-necked stork (Jabiru) and cotton pygmy goose, both listed as rare under the NCA, and the short-beaked echidna, listed as having cultural significance under the NCA. A number of other species of conservation significance listed in records from the region, and based on available habitat, may also occur on-site. These are the little pied bat, listed as rare under the NCA, the koala, listed as having cultural significance under the NCA, and the Australian painted snipe, listed as vulnerable under the NCA.

The likely impacts of the Ensham Central Project on species and communities of conservation significance include:

- Clearing 9ha of RE 11.3.1 (brigalow), listed as endangered under the VMA.
- Loss of fauna habitat and protective cover for species of conservation significance by the removal of the Nogoa River anabranch, tree hollows, scattered timber, rocks and trees associated with clearing activities during open-cut mining and construction of mining infrastructure.

The mitigation measures proposed to manage and off-set the above impacts of the Ensham Central Project on flora communities and fauna species of conservation significance include:

- Implementing a Vegetation Management Plan covering a total area of 341ha to protect and enhance the existing vegetation corridor along the Nogoa River and re-establish and enhance 100ha of non-remnant brigalow vegetation to off-set the loss of 9ha of brigalow vegetation.
- enhancing the vegetation along the Nogoa River as part of the vegetation management plan to provide an extended movement corridor for fauna and provide for the stability and maintenance of the Nogoa River main channel.

The submitted EIS provided information about the flora and fauna present, or likely to be present on-site and included information about the likely impacts of the project on flora and fauna identified. Furthermore, the submitted EIS outlined measures for protecting and enhancing the nature conservation values of the site, including the values of listed vegetation communities and migratory species. The submitted EIS also outlined suitable commitments for maintaining and enhancing conservation values on-site. Therefore, these requirements of the TOR have been adequately addressed by the submitted EIS.

3.5.2 Adequacy of this section of the EM plan

The EM plan (Section 21.13—Nature Conservation) proposes management and mitigation measures that are suitable to protect and enhance the nature conservation values of the site and will minimise the

likelihood of serious environmental impacts of the project on the flora and fauna species and communities of conservation significance. The EM plan also proposes conditions for the EA, including a vegetation management plan, that will protect and enhance the vegetation along the Nogoa River and maintain and enhance a habitat corridor for fauna. Note the condition requiring the vegetation management plan was included in Section 3.1.4 of this Report as a recommended condition of the DEH approval required under Part 9 of the EPBC Act.

3.5.3 Recommended Conditions

The recommended EA conditions provided in Section 21.13 of the EM plan are considered suitable to manage the impacts of the project on flora and fauna. No additional conditions are considered necessary.

3.6 Air Quality

3.6.1 Adequacy of the EIS in addressing the final TOR

The requirements of the TOR have been adequately addressed by the submitted EIS. The EIS identified the environmental values (sensitive receptors) within the air environment surrounding the project site and included adequate information about the likely impacts of the project on those environmental values. Information on the air environment was provided in Section 13—Air Quality, Appendix F—Air Quality and Section 21—Environmental Management Plan of the EIS. Additional information about the air environment was provided in the Response to Submissions Report and the EIS Addendum.

The impacts of the Ensham Central Project on the air environment include minor increases in predicted 24-hour and annual average PM_{10}, annual average ground-level concentrations of total suspended particulates (TSP) and dust deposition concentrations at some sensitive receptors in close proximity to the mine. However, the predicted values are still within the air quality goals defined in the *Environmental Protection (Air) Policy 1997* (Air EPP) and the EPA's recommended guideline for dust deposition concentrations. Furthermore, the predicted dust deposition concentrations are unlikely to impact on neighbouring cotton farms.

The odour assessment for emissions from the underground mine ventilation shaft found that the EPA's guideline of 0.5 odour units (ou) for stack sources and 0.25 ou for wake affected sources will not be exceeded because the ventilation shaft is proposed to be sited more than 1,500m from the nearest residence.

The following mitigation measures are proposed to manage the potential impacts of the Ensham Central Project on the air environment:

- water down/spraying haul roads and coal handling facilities that produce excessive dust (e.g. raw coal bins) during project operations;
- define road edges clearly with marker posts or equivalent to control their location;
- restrict land disturbance within the ML area to the necessary operating areas;
- fit drilling equipment with dust control technology, as appropriate;
- implement progressive rehabilitation of overburden emplacement areas and unused roads to reduce the potential for dust generation;
- take account of weather conditions when planning blasting to manage dispersal of dust within acceptable limits; and
- continue the existing dust monitoring program to establish dust impacts and the compliance status of the mining operations in relation to the air quality limits contained in the EA.

The major sources of greenhouse gas emissions from the open-cut and underground coal mining operations are carbon dioxide and methane in coal seam gas, combustion of diesel in mining equipment (e.g. haul trucks) and blasting and electricity consumption. Over the life of the project, the Ensham Mine is estimated to emit 9.1Mt of CO_2 equivalent (CO_{2e}) due to the consumption of electrical energy and diesel and the release of coal seam gases.

The following greenhouse gas minimisation strategies are proposed:

- selection of fuel efficient motors;
- adoption of a mining method which uses large equipment and economies of scale (e.g. draglines instead of truck and shovel operations) to significantly reduce greenhouse emissions;
- recycling of refrigerants in equipment and air-conditioning;
- segregation of waste into recycling materials and general waste;
- minimising burning of vegetation;
- greenhouse awareness training at induction;
- energy conservation and greenhouse audits in accordance with the National Greenhouse Challenge Plus annual progress reports;
- Compilation of an annual National Pollutant Inventory (NPI) report.

3.6.2 Assessment

It is expected that some additional impact will result on the air environment at sensitive receptors as open-cut mining operations expand to the west. However, the predicted emission levels are within the EPA's air quality limits. Furthermore, Ensham Resources proposes to monitor the air environment at nearby sensitive receptors, and has also included an appropriate complaints investigation methodology in the proposed EA conditions that is consistent with the EPA's streamlined level 1 conditions.

3.6.3 Adequacy of this section of the EM plan

The EM plan (Section 21.6—Air) is adequate. The EM plan proposes management and mitigation measures that are suitable to adequately protect and maintain the air environment and will minimise the likelihood of serious environmental impacts of the project.

3.6.4 Recommended conditions

The recommended EA conditions included in the EM plan (refer to section 21.6.5 of the EM plan) are consistent with the EPA's streamlined level 1 conditions and are suitable to manage the potential air quality impacts of the project. Implementing the proposed EA conditions outlined in the EM plan will reduce the likelihood of serious environmental impacts on the air environment arising from mining activities. No additional conditions are considered necessary.

3.7 Noise and Blasting

3.7.1 Adequacy of the EIS in addressing the final TOR

The requirements of the TOR have been adequately addressed by the submitted EIS. The EIS identified the environmental values (sensitive receptors) within the noise environment surrounding the project site and included adequate information about the likely impacts of the project on those environmental values. Information on the noise and blasting impacts was provided in Section 14—Noise, Section 15—Blasting, Section 21—Environmental Management Plan and Appendix G and Appendix H of the EIS. Additional information about noise and blasting was provided in the Response to Submissions Report and the EIS Addendum.

3.7.2 Assessment

The Ensham Central Project is predicted to have negligible impact on the existing noise environment due largely to the distance between the noise sources within the ML boundaries and the nearest sensitive receptors. The noise levels at the nearest sensitive receptors are predicted to be up to 30dB(A). This noise level complies with the most stringent night-time noise criterion specified in the EPA Guideline—Planning for Noise Control.

The roads that will be impacted by the project are Duckponds Road and the Capricorn Highway. Using the Calculation of Road Traffic Noise (Department of Transport, 1988), the predicted $L_{10\ (18\ hour)}$ at the

setback distances of 50m, 100m and 200m from Duckponds Road and the Capricorn Highway are all expected to comply with the 63dB(A) $L_{10\ (18\ hour)}$ criterion for public roads.

The project will continue to use the existing rail network to transport coal from the Ensham Mine to the Port of Gladstone for export. The number of trains will increase from 3 trains per day to 7 trains per day to accommodate the increased production capacity. However, the size of the trains will not increase. The overall L_{eq} (24-hour) noise level of train movements is predicted to increase to 24dB(A) at the nearest sensitive receptor. This predicted noise level is well within the EPP (Noise) 65dB(A) L_{eq} (24-hour) rail noise criterion.

Ensham Resources will continue to maintain all plant and equipment in good working order to ensure compliance with the noise criteria. Ensham Resources will maintain its existing complaints handling protocol to respond to any complaints in relation to noise and investigate these, where necessary.

Blasting will move closer to residences to the west of the mine during the Ensham Central Project open-cut operations. Ground vibration and airblast levels generated from blasting are predicted to be below the criteria in the EPA Guideline—Noise and Vibration from Blasting. The only exception is Residence No. 94 (see Figures 15-1 and 15-2 of the EIS). Residence No. 94 is predicted to be subject to ground vibration and airblast levels in excess of the criteria. However, exceedances are only predicted to occur at this residence from blasts in the north-west limit of the project for a limited period of time at the end-of-mine life. A number of changes to the blast design can be implemented to reduce ground vibration and airblast levels to below the criteria at Residence No. 94. These changes include using 229mm diameter drillholes, splitting the charge mass into two and removing the overburden in three blast passes rather than two. If monitoring at Residence No. 94, or any other residence, shows that changes to the blast design are necessary, they will be implemented to ensure that there are no exceedances of the criteria at any residence.

3.7.3 Adequacy of this section of the EM plan

The EM plan (Sections 21.9—Noise and 21.10 Ground vibration & airblast from blasting) is adequate. The EM plan proposes management and mitigation measures that are suitable to adequately protect and maintain the acoustic environment and will minimise the likelihood of serious environmental impacts of the project.

A number of submissions on the EIS raised concerns about the potential for structural damage to properties and groundwater bores associated with blasting overburden as the open-cut operations move west towards the ML boundary. However, the vibration limits proposed as conditions of the EA in the EM plan are well below the levels attributed to causing structural damage. Furthermore, Ensham Resources propose blast design strategies in Section 15.6.1 of the EIS that can be implemented as open-cut mining moves closer to neighbouring properties in the west to reduce ground vibration and airblast overpressure levels, if monitoring indicates that levels are approaching the limits proposed for the EA. Therefore, it is unlikely that structural damage to neighbouring buildings or groundwater bores will occur as a result of the project.

3.7.4 Recommended conditions

The EM plan (Sections 21.9—Noise and 21.10 Ground vibration & airblast from blasting) is consistent with the EPA's streamlined level 1 conditions for managing the noise and vibration impacts of the project on the acoustic environment and will reduce the likelihood of serious environmental impacts on the acoustic environment as a result of mining activities. No additional conditions are considered necessary.

3.8 Cultural Heritage

3.8.1 Adequacy of the EIS in addressing the final TOR

The requirements of the TOR have been adequately addressed by the submitted EIS. The submitted EIS identified the Aboriginal and European cultural heritage values of the site and surrounding areas affected by the project and included adequate information about the impacts of the project on the cultural heritage values. Information about Aboriginal and European cultural heritage values and impacts is provided in Section 17–Cultural Heritage of the EIS.

Ensham Resources has a Cultural Heritage Management Plan (CHMP) agreed with the Garingbal and Kara Kara endorsed parties, and approved by the DNR&W. Ensham Resources is currently negotiating a CHMP with the Kangoulu endorsed party, in accordance with the requirements of the *Aboriginal Cultural Heritage Act 2003*. It is anticipated that this CHMP will be agreed and approved prior to the commencement of the project.

The Duckponds homestead was the only site with some European cultural heritage significance found on the project site. The Duckponds homestead is a heavily modified 1920s style highset elite four-room bungalow with associated stockyards (also heavily modified). The Duckponds homestead and associated stockyards are within the footprint of the proposed open-cut mining operations and will need to be removed in advance of mining. Ensham Resources proposes to compile a record of the Duckponds homestead and its associated stockyards prior to its removal. This record will comprise a scaled plan of the house (floor and profile) and stockyards and a comprehensive photographic record. This record will be provided to the local historical society.

Aboriginal and European cultural heritage issues have been adequately addressed in the EIS.

3.9 Scenic values

3.9.1 Adequacy of the EIS in addressing the final TOR

The requirements of the TOR have been adequately addressed by the submitted EIS. The submitted EIS identified the visual impacts of the Ensham Central Project from the surrounding area and proposed adequate measures to mitigate these impacts. Information about visual impacts is provided in Section 18—Scenic Values of the EIS. No public submissions received about the EIS raised any concern with the visual amenity of the project.

The likely visually impacts of the Ensham Central Project from the surrounding area include:

- open-cut mining operations in areas that will be rehabilitated and reinstated to pre-mining topography (re-instated floodplain areas);
- extensions to the existing elevated overburden emplacements (beyond floodplain areas); and
- infrastructure, including underground mine surface facilities, washplant, coal handling facilities and tailings dams.

The mitigation measures proposed to manage visual impacts of the Ensham Central Project on the surrounding area include:

- pit backfilling, re-establishment of floodplain levels and reinstatement of topsoil and vegetation;
- no significant increase in height of existing overburden emplacements and progressive rehabilitation and revegetation of eastern and western faces of overburden emplacements similar to existing landscape patterns;
- constructing new mine infrastructure in locations where there is already significant infrastructure of similar vertical and much larger horizontal scale; and
- retention of as much of the existing vegetation on site as possible.

The above mitigation measures are considered adequate to manage the visual amenity impacts of the project.

3.9.2 Adequacy of this section of the EM plan

Visual and aesthetic amenity is not directly discussed in the EM plan and there are no conditions regarding visual amenity recommended to be included in the EA for the project. Based on the rural setting of the project in an existing coal mining environment, together with the lack of public concern about the visual amenity of the project raised during the EIS process, the EM plan is considered adequate.

3.9.3 Recommended conditions

Conditions regarding final landform design criteria are outlined in Section 21.12—Land of the EM plan. No additional conditions regarding the maintenance of visual amenity are considered necessary for the project.

3.10 Transport

3.10.1 Adequacy of the EIS in addressing the final TOR

The requirements of the TOR have been adequately addressed by the submitted EIS. The EIS identified the existing road and rail networks utilised as part of the current coal mining operation and included adequate information about the likely additional impacts of the Ensham Central Project on the road and rail networks. Information on road and rail infrastructure and transport was provided in Chapter 9—Transport of the EIS. Additional information about road and rail infrastructure and transport was provided in the Response to Submissions Report and the EIS Addendum.

Access to the Ensham Central Project will be via Duckponds Road. The existing Ensham Mine at maximum coal output of 12Mtpa has a projected background daily traffic volume of 350 light vehicles, 94 single unit vehicles and 27 articulated vehicles. The Ensham Central Project will be linked to the regional transport network via the Capricorn Highway. Based on the information available at the time of the traffic assessment, the Capricorn Highway projected background traffic volumes during peak combined construction and operational workforces (year 3) and peak operational workforce at peak coal output (year 5) were projected to be 3,026 and 3,276 respectively.

The potential impacts of the Ensham Central Project on road, rail and port infrastructure include:

- A peak in combined construction and operational workforce during year 3 of project operations generating approximately an additional 136 light vehicle, 9 single unit vehicle and 9 articulated vehicle movements per day on Duckponds Road, and approximately an additional 154 commercial vehicle movements per day on the Capricorn Highway.
- A peak in the operational workforce and total operations at peak coal output during year 5 of project operations generating approximately an additional 26 light vehicle, 57 single unit vehicle and 26 articulated vehicle movements per day on Duckponds Road, and approximately an additional 99 commercial vehicle movements per day on the Capricorn Highway in addition to the existing traffic volumes generated by the existing Ensham Mine.
- An increase from four trains to eight trains per day to the Port of Gladstone during maximum production capacity in year 3 of the Ensham Central Project operations.

Ensham Resources has a current contract with Central Queensland Ports Authority (CQPA) to export up to 9Mtpa of coal from the Port of Gladstone. The contracted tonnage will increase to 12.5Mtpa by July 2007 with the completion of a 4th ship loader. Discussions with CQPA indicate that additional capacity can be provided by the completion of the Wiggins Island Coal Terminal and rail infrastructure scheduled for completion by 2010, to coincide with the project reaching its scheduled maximum production of 20Mtpa.

The mitigation measures proposed to manage impacts of the Ensham Central Project on the road and rail networks include:

- Upgrading the intersection of the Capricorn Highway and Duckponds Road to improve the level of service and general safety of the intersection, including widening the road pavement on the southern side of the highway to provide a designated right turning lane for traffic entering into Duckponds Road, and a passing lane for through traffic, and widening the road pavement on the northern side of the highway to provide a deceleration lane for traffic turning left into Duckponds Road. The intersection upgrade design has been approved by the Department of Main Roads (DMR) and construction is proposed to commence in early 2007, prior to the commencement of the project.
- An agreement with QR Network Access to provide additional rolling stock to haul the additional coal tonnage by September 2008.

3.10.2 Assessment

The impacts on road and rail transport generated by the Ensham Central Project will generally be able to be managed by the above mitigation measures. It is noted by the EPA that DMR has already approved the design of an upgrade of the intersection where Duckponds Road joins the Capricorn Highway. However, DMR still has a number of concerns related to the approved Capricorn Highway/Duckponds Road intersection upgrade. DMR has requested that Ensham Resources prepares a Road Use Management Plan to address the road safety aspects of the traffic generated by the Ensham Central Project, prior to the commencement of project operations. Ensham Resources indicated in the Response to Submissions Report that a Road Use Management Plan is not required based on the triggers outlined in the DMR's Guidelines for Assessment of Road Impacts for Development. DMR responded that the triggers in the Guideline are not absolute but rather are used as a general indication for determining whether a Road Use Management Plan is required, and in this case a plan is needed. DMR also mentioned this is not unprecedented and there is another coal mining project where the levels of traffic increases were below the Guideline trigger but a Road Use Management Plan was still required to be developed.

Similarly, Emerald Shire Council has jurisdiction for Duckponds Road and still has a number of concerns with management and maintenance of the road. Emerald Shire Council has requested a road safety audit and road use management plan to be prepared and has also requested Ensham Resources to upgrade Duckponds Road to cater for the additional traffic requirements of the project. Duckponds Road is a local government controlled road and is subject to the requirements of Council regarding road safety, management and maintenance.

The ability of the EPA to impose conditions on the environmental authority is limited by legislation, specifically sections 146 and 147 of the EP Act, to the mining tenement on which the mining activities will take place. Consequently, the EPA cannot require that a Road Use Management Plan be developed or that other measures related to traffic impacts off the mining tenement be implemented. However, it is recommended that Ensham Resources continue to consult with DMR and Emerald Shire Council in relation to the Capricorn Highway/Duckponds Road intersection, and Duckponds Road respectively.

Ensham Resources has in place an existing contractual agreement with Queensland Rail (QR) for hauling up to 12Mtpa of coal on the rail network from Ensham Mine to the Port of Gladstone. The proponent has commenced discussions with QR Network Access regarding an additional increase in haulage capacity to cater for maximum coal production capacity of 18Mtpa in project year 3. QR National has confirmed that additional rolling stock required to haul the additional tonnages can be available from September 2008. DMR has an interest regarding the increases in rail transport and associated affects on road traffic at the Blackwater-Rolleston and Comet River road/rail intersections. It is recommended that DMR discuss its interests related to road/rail intersections associated with coal transport with QR, who owns and operates the rail facilities.

Recommendations

Ensham Resources should continue to liaise with Main Roads in relation to the Capricorn Highway/Duckponds Road intersection.

Ensham Resources should continue to liaise with Emerald Shire Council regarding management and maintenance of Duckponds Road.

3.11 Socio-economics

3.11.1 Adequacy of the EIS in addressing the final TOR

The requirements of the TOR have been adequately addressed by the submitted EIS. The submitted EIS identified the social values of the affected communities and included adequate information about the impacts of the project on these social values. Information about social values and impacts is provided in Section 13—Social Environment of the EIS. Additional information about social values and impacts is provided in the Response to Submissions Report.

The likely impacts of the Ensham Central Project on the surrounding social environment include the following:

- Private residence housing demand in Emerald for an additional 28 person construction workforce, and an additional 42 person operations workforce with potential combined cumulative impacts with other mining projects on rental and permanent housing availability and prices, infrastructure and social services in Emerald; and
- Potential skill and labour shortages in local enterprises due to a short-term (2-year) construction workforce of 201 people, and long-term (11-year) operations workforce expansion of 138 people.

The following mitigation measures are proposed to limit the impact on the surrounding social environment:

- Provide timely workforce data and planning updates about accommodation, social infrastructure and skills requirements to forums, shire councils and agencies involved in the planning and provision of accommodation, social infrastructure and skills development, to address the cumulative impacts of the mining industry on State infrastructure, social services and the labour workforce.
- Recruitment of local, State and national people with a range of skill profiles and the provision of training and skills development initiatives, including apprenticeships, traineeships and work experience opportunities, and educational initiatives such as scholarships and school age site visits.

3.11.2 Assessment

Emerald Shire Council in their submission on the EIS questioned the workforce projections for the expanded operation quoted by Ensham Resources in the EIS. Emerald Shire Council's concern relate to the correlation between increments in coal production and workforce numbers e.g. the number of employees/Mtpa of coal produced falls as the overall production increases. The project workforce is discussed in Chapter 19 of the EIS. Further information in response to Council's concern is provided in Issue 13.7 of the Response to Submissions Report. This information demonstrates that mining efficiencies, including replacing the existing truck and shovel fleet with a new dragline and using modern underground longwall mining equipment and methods will significantly reduce workforce numbers required for the Ensham Central Project. Section 19.2.2 of the EIS does indicate that workforce numbers may be subject to minor change due to project variables. However, any minor variation in workforce numbers is not considered to significantly alter the predicted impacts of the project. Therefore, the information provided in the EIS regarding workforce numbers is considered adequate to predict the associated impacts of the project, and no further information on workforce numbers is considered necessary to write the EIS assessment report and finalise the EIS process.

The Emerald Shire Council and the Department of Local Government, Planning, Sport and Recreation requested that Ensham Resources be required to construct 40 new dwellings in the township of Emerald to cater for the additional project workforce likely to reside there. Emerald Shire Council, as the responsible authority, has requested that this recommendation be included as a condition of the EA for the project.

The ability of the EPA to impose conditions on the environmental authority is limited by legislation, specifically sections 146 and 147 of the EP Act, to the mining tenement on which the mining activities will take place. Consequently, the EPA cannot require that Ensham Resources construct additional accommodation in Emerald to accommodate the additional project workforce likely to reside there. However, given the importance of this issue it is recommended that Ensham Resources continue to liaise with Emerald Shire Council in relation to possible solutions to accommodate the Ensham Central Project workforce.

Recommendation

It is recommended that Ensham Resources continue to liaise with Emerald Shire Council regarding possible solutions to address the workforce accommodation requirements of the Ensham Central Project in Emerald.

3.12 Health and Safety

3.12.1 Adequacy of the EIS in addressing the final TOR

The requirements of the TOR have been adequately addressed by the submitted EIS. The submitted EIS identified the potential hazards and risks associated with mining activities during the construction and operational phases of the project and included adequate information about the operational health and safety measures to control the risk to the project workforce, surrounding landholders, general public and the environment. Information about hazards and risks of the project and operational health and safety measures is provided in Section 20—Health and Safety of the EIS. Additional information about hazard and risk is provided in the Response to Submissions Report and the EIS Addendum.

The major potential hazards and risks of the Ensham Central Project on the construction and operational workforce, surrounding landholders, general public and the environment include:

- handling, transport and use of explosives on-site;
- storage of flammable and combustible liquids on-site;
- construction and operating activities associated with open-cut coal mining and site rehabilitation; and
- traffic movements to and from the site.

The operational health and safety measures proposed to control hazards and risks of the project include:

- compliance with Australian Standard AS21876-1998: *Explosives – Storage, transport and use*;
- compliance with the *Dangerous Goods Safety Management Act 2001*, Australian Standard AS1940-2004: *The storage and handling of flammable and combustible liquids*, and the *Australian Dangerous Goods Code (6th Edition)*;
- implementation of Ensham's existing Health and Safety Management System, including emergency response and risk assessment procedures;
- use of material safety data sheets by all site personnel involved in the storage, handling, use and disposal of dangerous and hazardous substances and materials;
- regular maintenance and service of all vehicles and equipment and operation of vehicles by trained personnel in possession of a current licence;
- See Sections 3.5 Air Quality and 3.6 Noise and Blasting for air, noise and blasting mitigation measures applicable to the project;
- See Section 3.9 Transport for traffic related mitigation measures applicable to the project;

The above mitigation measures are consistent with existing mechanisms on-site for managing hazard and risk and meet the legislative requirements for managing the hazards and risks of the Ensham Central Project. Road safety aspects of the project are discussed in Section 3.9 above.

3.12.2 Adequacy of this section of the EM plan

Storage and handling of flammable and combustible liquids is covered in the general conditions outlined in section 21.5.1 of the EM plan and are consistent with the EPA's streamlined level 1 conditions. Other health and safety, hazard and risk issues are encompassed within Ensham's Health and Safety Management System and other legislation beyond the jurisdiction of the EM plan and EA for the project. These issues will be addressed subsequent to the EIS process through formal legislative procedures under relevant legislation. The adequacy of the sections of the EM plan containing conditions to manage the health and safety impacts of air quality, and noise and blasting are discussed in Sections 3.5 and 3.6 of this report respectively.

4 Adequacy of the EM plan for the project

A draft EM plan was included with the submitted EIS that was released for public notification. A number of submissions on the submitted EIS raised issues that required amendments to the draft EM plan and many of these amendments were agreed to by Ensham Resources in the Response to Submissions Report, and changes to the draft EM plan were included in the EIS Addendum. The EPA has reviewed the amendments to the draft EM plan provided by Ensham Resources, but considers that the

recommended changes to the draft EA conditions outlined in this EIS assessment report should also be fully integrated into the EM plan before the document would be acceptable. In its present form the EM plan is not considered to be adequate and should be revised based on the recommended changes in Section 3 of this Report. A revised EM plan must be submitted before the administering authority will make a decision under Section 207 of the EP Act.

5 Suitability of the project

Project issues and recommendations, and changes to the draft EA conditions were outlined in Section 3 above. The EPA has considered the final TOR, the submitted EIS, all submissions on the submitted EIS, and the standard criteria. The EPA has not identified impacts of sufficient magnitude to prevent the project from proceeding. However, the general recommendations and recommended changes to the draft EA conditions contained in this EIS assessment report should be fully implemented.

6 Approved by

Signature

Dean Ellwood
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7/12/2006.

Date

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