

Tarrawonga Coal Project

Environmental Assessment

SECTION 6

PLANNING FRAMEWORK AND PROJECT JUSTIFICATION

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6 PLANNING FRAMEWORK AND PROJECT JUSTIFICATION

6.1 EXISTING APPROVALS AND REGULATORY CONTROLS

A general description of the approvals history of the Tarrawonga Coal Mine is provided in Section 2.2.

Key approvals and documentation pertaining to the existing Tarrawonga Coal Mine include:

- Development Consent (DA-88-4-2005) issued under Part 4 of the EP&A Act and approved by the NSW Minister for Planning in November 2005 (as modified by the NSW Minister for Planning on 15 October 2010 [DA-88-4-2005 MOD 1] [Section 2.2]);
- EL 5967 issued under Part 3 of the *Mining Act, 1992* and approved by the NSW Minister for Mineral Resources in July 2002 (as modified by subsequent renewals);
- ML 1579 issued under Part 5 of the *Mining Act, 1992* and approved by the NSW Minister for Mineral Resources in April 2006;
- EPL 12365 issued under Chapter 3 of the *NSW Protection of the Environment Operations Act, 1997* (PoEO Act) by the EPA in January 2006 (as modified by subsequent licence variations);
- Groundwater Licence (90BL254692) for the extraction of up to 50 ML of groundwater in any 12 month period issued under Part 5 of the *Water Act, 1912* by the NSW Department of Water and Energy (now NOW) in May 2009;
- various Groundwater Licences for monitoring bores issued under Part 5 of the *Water Act, 1912*;
- various water supply works approvals for monitoring bores issued under Part 3 of Chapter 3 of the *Water Management Act, 2000*;
- MOP for the period 1 July 2010 to 31 June 2013 approved by I&I NSW (now DRE) in October 2010; and
- mining and occupational health and safety related approvals granted by the DRE and WorkCover NSW.

A register of current licences, permits and approvals is maintained on-site by TCPL and a summary of current approvals is presented annually in the AEMR:

<http://www.whitehaven.net.au/operations/documents/TarrawongaAEMR2010-11.pdf>

Existing environmental management, monitoring and mitigation measures that are implemented within the Tarrawonga Coal Mine approval framework are described in Sections 2.1.8, 4 and 7, where relevant.

A summary of the Project key interactions with the Boggabri Coal Mine and Whitehaven CHPP and the relevant regulatory approvals of the Boggabri Coal Mine and Whitehaven CHPP is provided in Attachment 3 and Section 2.5.

A detailed description of potential interactions between the Project and other major projects is also provided in Attachment 3, and where relevant potential cumulative impacts are described in Section 4.

6.2 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979

6.2.1 Application of Part 3A of the Environmental Planning and Assessment Act, 1979

This EA has been prepared to accompany the Project Application, in accordance with Part 3A of the EP&A Act (Section 1.1.1).

Part 3A of the EP&A Act was repealed by the *Environmental Planning and Assessment Amendment (Part 3A Repeal) Act, 2011*. Prior to its repeal, Part 3A of the EP&A Act provided an approval process tailored to major developments.

Part 3A has been replaced by a new planning regime for "State significant development" which is set out in Division 4.1 of Part 4 of the EP&A Act (as amended).

As EARs were issued for the Project (Section 1.2) prior to the repeal of Part 3A, it constitutes a "transitional Part 3A project" pursuant to the savings and transitional provisions in Schedule 6A of the EP&A Act.

Clause 3 of Schedule 6A provides that Part 3A continues to apply to and in respect of "transitional Part 3A projects" following its repeal. That is, Part 3A of the EP&A Act continues to apply to the Project, notwithstanding its repeal.¹

Section 75B(1) of the EP&A Act defines projects to which Part 3A applies:

This Part applies to the carrying out of development that is declared under this section to be a project to which this Part applies:

- (a) *by a State environmental planning policy, or*
- (b) *by order of the Minister published in the Gazette (including by an order that amends such a policy).*

The Project was considered to be a project to which Part 3A of the EP&A Act applied under Schedule 1, Group 2 (*Mining, petroleum production, extractive industries and related industries*) clause 5 (1)(a) and (c) of the Major Development SEPP:

5 *Mining*

- (1) *Development for the purpose of mining that:*
 - (a) *is coal ... mining, or*
..., or
 - (c) *has a capital investment value of more than \$30 million or employs 100 or more people.*

On 9 March 2011, the Director-General of the DoP, under delegation from the then NSW Minister for Planning, formed the opinion that the Project is of a kind that met the description in the Major Development SEPP (set out above). Pursuant to clause 6(1) of the Major Development SEPP, the Project was declared to be a project to which Part 3A of the EP&A Act applies.

In accordance with section 75D(1) of the EP&A Act, the NSW Minister is the approval authority for the Project.

6.2.2 Application of Other Provisions of the Environmental Planning and Assessment Act, 1979

Section 75R of the EP&A Act outlines the applicability of other provisions of the EP&A Act relevant to the assessment and approval of a project under Part 3A:

- Parts 4 and 5 of the EP&A Act do not, except as provided by Part 3A, apply to a project approved under Part 3A, including the declaration of a project as a project to which Part 3A applies, and any approval or other requirement under Part 3A for the Project.
- Part 3 of the EP&A Act and State Environmental Planning Policies (SEPPs) apply to the declaration of a project as a project to which Part 3A applies and the carrying out of a project to which Part 3A applies.
- Non-SEPP Environmental Planning Instruments (EPIs) (e.g. Local Environmental Plans [LEPs]) do not apply to a project approved under Part 3A.

Notwithstanding the above, under section 75J(3), the provisions of any EPIs that would ordinarily apply to the Project if it were not to be assessed under Part 3A, may be taken into account by the NSW Minister in deciding whether or not to approve the carrying out of the Project.

Division 6 (Contributions) (Section 6.2.5) and Division 6A (Affordable Housing Contributions) of Part 4 of the EP&A Act also apply to a project to which Part 3A applies.

6.2.3 Other Approvals and Legislation that do not Apply to Approved Projects

Section 75U(1) and (2) of the EP&A Act outline the authorisations that are not required for a project approved under Part 3A. These authorisations are those ordinarily required under the following legislative provisions:

- Part 3 of the *Coastal Protection Act, 1979*;
- sections 201, 205 and 219 of the *Fisheries Management Act, 1994*;
- Division 8 of Part 6, Part 4 and section 139 of the *Heritage Act, 1977*;
- section 90 of the *National Parks and Wildlife Act, 1974*;

¹ Part 3A of the EP&A Act (as in force immediately before its repeal) continues to apply to the Project. The description and quotations of relevant references to clauses of Part 3A in this document are as if Part 3A of the EP&A Act is still in force.

- section 12 of the *Native Vegetation Act, 2003*;
- Part 3A of the *Rivers and Foreshores Improvement Act, 1948*;
- section 100B of the *Rural Fires Act, 1997*; and
- sections 89, 90 and 91 of the *Water Management Act, 2000*.

6.2.4 Other Approvals and Legislation that must be Applied Consistently to Approved Projects

Section 75V(1) of the EP&A Act outlines the authorisations that cannot be refused if they are necessary for the carrying out of a project approved under Part 3A and provides that those authorisations must be substantially consistent with the Part 3A approval. These authorisations are of the following kind:

- permits under section 144 of the *Fisheries Management Act, 1994*;
- approvals under section 15 of the *Mine Subsidence Compensation Act, 1961*;
- mining leases under the *Mining Act, 1992*;
- production leases under the *Petroleum (Onshore) Act, 1991*;
- EPLs under Chapter 3 of the PoEO Act;
- consents under section 138 of the *Roads Act, 1993*; and
- licences under the *Pipelines Act, 1967*.

6.2.5 Section 94 and Section 94A Contributions

The Project will be assessed under Part 3A of the EP&A Act. However, due to the operation of section 75R(4) of the EP&A Act, the NSW Minister may grant approval to the Project subject to a condition requiring contributions under either section 94 or section 94A of the EP&A Act.

In addition, section 94B(2) provides that where the consent authority is not a council (as is the case for the Project), the consent authority may impose a condition under section 94 or section 94A that is not authorised by or determined in accordance with an applicable contributions plan, as long as the consent authority has regard to the contributions plan that applies to the whole or any part of the area in which the development is to be carried out.

The Project Application Area is located wholly within the Narrabri LGA. The Narrabri Shire Council has a *Draft Section 94A Development Contributions Plan* (Narrabri Shire Council, 2011) that may be potentially applicable to the Project if adopted by the Narrabri Shire Council.

In addition, the Project would involve continued road transport of sized ROM coal from the Tarrawonga Coal Mine to the Whitehaven CHPP within the Gunnedah LGA (Section 2.8).²

As a result, the Gunnedah Shire Council's *Contributions and Development Services Plan* (Gunnedah Shire Council, 2007a) and *Section 94A Contributions Plan* (Gunnedah Shire Council, 2007b) may also potentially be applicable to the Project.

Contributions under section 94 can only be required in circumstances where the development will or is likely to require the provision of, or increase the demand for, public amenities or services within the area.

TCPL and Whitehaven already implement road maintenance agreements with the Narrabri Shire Council and Gunnedah Shire Council in accordance with Condition 39 of the existing Tarrawonga Coal Mine Development Consent (DA-88-4-2005) for the maintenance of roads used for the road transport of sized ROM coal from the Tarrawonga Coal Mine to the Whitehaven CHPP.

It is expected that as with other recent coal mining projects in NSW, a planning agreement in accordance with Division 6 or Part 4 of the EP&A Act would be required by the Project Approval for the Project. The planning agreement would be negotiated between the DP&I, Narrabri Shire Council, Gunnedah Shire Council and TCPL.

6.3 ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT, 1999

The EPBC Act defines proposals that are likely to have an impact on a matter of national environmental significance as a "controlled action". Proposals that are, or may be, a controlled action are required to be referred to the Commonwealth Minister for a determination as to whether or not the action is a controlled action.

² In Project Year 1 only, or until approvals and upgrades are in place for the transfer of Project ROM coal to the Boggabri Coal Mine Infrastructure Facilities.

The proposed action to expand the Tarrawonga Coal Mine to extract additional coal through open cut mining was referred to the Commonwealth Minister on 18 April 2011.

A delegate of the Commonwealth Minister decided on 23 May 2011 that the proposed action is a “controlled action” for the purposes of the EPBC Act due to potential impacts on the following controlling provisions under Part 3 of Chapter 2 of the EPBC Act:

- listed threatened species and communities (sections 18 and 18A); and
- listed migratory species (sections 20 and 20A).

The delegate of the Commonwealth Minister also determined on 23 May 2011 that the proposed action is to be assessed by accredited assessment under the EP&A Act pursuant to section 87(4) of the EPBC Act.

The Commonwealth of Australia and the State of NSW governments have signed a bilateral agreement (Bilateral Agreement) which accredits the NSW assessment regime under Part 3A of the EP&A Act for assessment purposes under the EPBC Act. The Bilateral Agreement was signed in January 2007 and applies to actions that the Commonwealth Minister has determined are controlled actions under the EPBC Act.

As a result of the operation of the Bilateral Agreement, the Project will only be subject to the environmental assessment process under Part 3A of the EP&A Act, as opposed to the environmental assessment processes under both Part 3A of the EP&A Act and the EPBC Act.

Guideline 1 of Schedule 1 Part A of the Bilateral Agreement states:

1. *In addition to standard guidelines and directions, the New South Wales Minister, the Director-General or the consent authority must issue guidelines¹ to proponents of controlled actions to ensure that material prepared by the proponent as part of the assessment:*
 - (a) *contains an assessment of all relevant impacts that the controlled action has, will have or is likely to have;*

- (b) *contains enough information about the controlled action and its relevant impacts to allow the Commonwealth Environment Minister to make an informed decision whether or not to approve the controlled action under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999; and*
- (c) *addresses the matters outlined in Schedule 4 of the Commonwealth Environment Protection and Biodiversity Conservation Regulations 2000.*

¹ *The New South Wales Minister, the Director-General or the consent authority may issue a generic set of guidelines or may issue guidelines on a case-by-case basis.*

Appendix B of the EARs (Attachment 1) requires information about the controlled action and its relevant impacts and matters outlined in Schedule 4 of the EPBC Regulations to be addressed in this EA.

A copy of the requirements in Appendix B of the EARs (including Schedule 4 of the EPBC Regulations) is provided in Appendix G, along with a reference list where the applicable content is provided in this EA.

The Project will be assessed in accordance with the Bilateral Agreement and will require approval under both the EP&A Act and the EPBC Act.

6.4 OTHER APPLICABLE LEGISLATION

6.4.1 NSW Legislation

The following NSW Acts may be applicable to the Project:

- *Brigalow and Nandewar Community Conservation Area Act, 2005;*
- *Coal Mine Health and Safety Act, 2002;*
- *CLM Act;*
- *Crown Lands Act, 1989;*
- *Dams Safety Act, 1978;*
- *Dangerous Goods (Road and Rail Transport) Act, 2008;*
- *Fisheries Management Act, 1994;*
- *Forestry Act, 1916;*
- *Heritage Act, 1977;*
- *Mining Act, 1992;*

- *National Parks and Wildlife Act, 1974*;
- *Native Vegetation Act, 2003*;
- *Noxious Weeds Act, 1993*;
- *Roads Act, 1993*;
- *Petroleum (Onshore) Act, 1991*;
- PoEO Act;
- TSC Act;
- *Water Act, 1912*; and
- *Water Management Act, 2000*.

Relevant licences or approvals required under these Acts would be obtained for the Project as required.

For example, the Project would require additional mining leases under the *Mining Act, 1992*; a revision of EPL 12365 under the PoEO Act; and water licences under the *Water Act, 1912* and *Water Management Act, 2000* for groundwater and surface water extraction, where applicable.

Additional detail on the likely Project requirements under the NSW *Mining Act, 1992*, PoEO Act, *Water Management Act, 2000*, *Water Act, 1912*, *Forestry Act, 1916* and *Brigalow and Nandewar Community Conservation Area Act, 2005* are provided in the sub-sections below.

Mining Act, 1992

Under the *Mining Act, 1992*, environmental protection and rehabilitation are regulated by conditions included in all mining leases, including requirements for the submission of a MOP prior to the commencement of operations, and subsequent AEMRs.

All mining operations must be carried out in accordance with the MOP which has been prepared to the satisfaction of DRE. The MOP describes site activities and the progress toward environmental and rehabilitation outcomes required under mining lease conditions, Project Approval (or Development Consent) under the EP&A Act and other approvals (DoP, 2008).

The MOP, together with environmental conditions of other approvals, forms the basis for ongoing adaptive management of mining operations and their environmental impacts (DoP, 2008). The MOP must apply best available practice and technology to all aspects of mine operations and include strategies to control identified environmental risks (DoP, 2008).

AEMRs must contain a review and forecast of performance for the preceding and ensuing 12 months in relation to the following (DoP, 2008):

- compliance with the accepted MOP;
- Project Approval (or Development Consent) under the EP&A Act requirements and conditions;
- licences and approvals from the OEH and NOW;
- any other statutory environmental requirements;
- details of any variations to environmental approvals applicable to the lease area; and
- where relevant, progress towards final rehabilitation objectives.

Collectively, the MOP and AEMR constitute the MREMP (NSW Department of Primary Industries-Mineral Resources [DPI-MR], 2006) which has been developed by DRE. The MREMP is a framework that aims to facilitate the development of mining in NSW in a manner such that operations are safe, the environment is protected, the resources are efficiently extracted and rehabilitation achieves a stable, satisfactory outcome (DPI-MR, 2006).

There are provisions of the *Mining Amendment Act, 2008* which would amend the *Mining Act, 1992* to replace the MREMP with the requirement to submit a REMP. Until the commencement of REMP provisions, the structure and content of the Project MOP and AEMR would be developed in accordance with the *Guidelines to the Mining, Rehabilitation and Environmental Management Process* (DPI-MR, 2006) and through consultation with various regulatory and advisory agencies including DRE, OEH, DP&I and Narrabri Shire Council.

Mining Tenements

Whitehaven and BCPL will apply to the DRE for new mining lease(s) (MLA 1 and MLA 2) (Figure 2-1) for the mining of coal and the construction and operation of surface facilities as required.

For the portion of land associated with the Project within CL 368, Whitehaven and BCPL will lodge a MLA (MLA 3) under section 51 of the *Mining Act, 1992* or BCPL will apply to the DRE for the partial transfer of CL 368 to TCPL under section 120 of the *Mining Act, 1992*.

Protection of the Environment Operations Act, 1997

The Tarrawonga Coal Mine is currently licensed under EPL 12365 to conduct “mining for coal” and “coal works” as defined in Schedule 1 of the PoEO Act.

In addition to “mining for coal” and “coal works”, the Project also includes the use of a mobile crusher to produce up to approximately 90,000 m³ of gravel materials per annum from Project waste rock for direct sale to customers (Section 2.7.7). The Project may require a revision of EPL 12365 to include “crushing, grinding or separating” and “extractive activities” as scheduled activities licensed to occur on the premises.

Water Management Act, 2000 and Water Act, 1912

Consideration of the Project against the water management principles and access licence dealing principles under the *Water Management Act, 2000* and a discussion of the licences required for each water source associated with the Project are provided in the sub-sections below. Appropriate licences under the *Water Management Act, 2000* and *Water Act, 1912* would be sought and obtained for the Project in consultation with NOW.

Approval requirements for water use and water management works are also discussed below.

Water Management Principles

Clause 5 of the *Water Management Act, 2000* outlines the principles of water management:

- 5 *Water management principles*
- (1) *The principles set out in this section are the water management principles of this Act.*
 - (2) *Generally:*
 - (a) *water sources, floodplains and dependent ecosystems (including groundwater and wetlands) should be protected and restored and, where possible, land should not be degraded, and*
 - (b) *habitats, animals and plants that benefit from water or are potentially affected by managed activities should be protected and (in the case of habitats) restored, and*
 - (c) *the water quality of all water sources should be protected and, wherever possible, enhanced, and*

- (d) *the cumulative impacts of water management licences and approvals and other activities on water sources and their dependent ecosystems, should be considered and minimised, and*
 - (e) *geographical and other features of indigenous significance should be protected, and*
 - (f) *geographical and other features of major cultural, heritage or spiritual significance should be protected, and*
 - (g) *the social and economic benefits to the community should be maximised, and*
 - (h) *the principles of adaptive management should be applied, which should be responsive to monitoring and improvements in understanding of ecological water requirements.*
- (3) *In relation to water sharing:*
- (a) *sharing of water from a water source must protect the water source and its dependent ecosystems, and*
 - (b) *sharing of water from a water source must protect basic landholder rights, and*
 - (c) *sharing or extraction of water under any other right must not prejudice the principles set out in paragraphs (a) and (b).*

A cumulative assessment of potential impacts on groundwater and surface water has been conducted as part of this EA (Appendices A and B). Mitigation measures, management and monitoring would be implemented to minimise potential impacts on water sources, floodplains and dependent ecosystems (Sections 2.10.3, 4.4.3, 4.5.3 and 4.9.3). Dealings associated with the Project are not expected to adversely affect the ability of a person to exercise their basic landholder rights.

Section 5 presents TCPL's rehabilitation strategy for the Project. The disturbance areas associated with the Project would be progressively rehabilitated and revegetated to include a combination of native bushland and/or agricultural land. Rehabilitation would include passive management of runoff (i.e. allowing runoff to drain off site from sediment dams which are not actively dewatered between rainfall events) after rehabilitation areas have become stabilised by vegetation (Appendix B).

Sections 4.9.4, 4.10.4 and 7 summarise the Project offset and compensatory measures that would assist in maintaining the biodiversity of the region, including consideration of native vegetation and fauna species. The Project offset measures would comprise a combination of securing the long-term viability of existing woodland (i.e. the Project biodiversity offset area) and revegetation of the mine landforms and Goonbri Creek in the long-term.

The Groundwater Assessment concludes that there is expected to be negligible change in groundwater quality within the porous rock groundwater system as a result of mining in the short-term and in the long-term (Appendix A). In the long-term, the salinity in the final void would increase through evaporative concentration, but as the final void would remain a groundwater sink, no impacts to surrounding groundwater quality are expected (Appendix A).

There are not expected to be any significant changes in the quality of the alluvial groundwater system as a consequence of the Project, and there would be negligible impact on surface water quality in local creeks (i.e. Bollol/Goonbri Creeks and Nagero Creek) (Appendices A and B). Mitigation measures, management and monitoring to minimise potential impacts on water quality are described in Sections 4.4.3 and 4.5.3. The Project water management system has been designed to avoid, to the maximum extent practical, the contamination of water as a result of mining activities (Appendix B).

An Aboriginal Cultural Heritage Assessment has been conducted for the Project in consultation with the Aboriginal community (Appendix K). The Project would result in the disturbance of 38 known Aboriginal Heritage sites and the possible disturbance of an additional site (due to its proximity to the proposed Project), including seven sites of moderate archaeological significance and 32 sites of low archaeological significance (Section 4.13.2). As part of the Project, the existing Aboriginal Heritage Management Plan (Whitehaven, 2011c) would be revised in consultation with the Aboriginal community and the OEH to specify management and mitigation measures relevant to the Project area (Section 14.3.3).

The Socio-Economic Assessment (Appendix M) indicates that operation of the Project is likely to result in an average annual stimulus of approximately 300 direct and indirect jobs in the local region and some 1,770 direct and indirect jobs in NSW. The benefit cost analysis in Appendix M indicates a net production benefit of approximately \$1,138M, and a net benefit of approximately \$790M would be forgone if the Project is not implemented.

TCPL would implement an adaptive management approach through a Surface Water and Groundwater Response Plan, which would describe measures/procedures that would be implemented over the life of the Project to respond to potential exceedances of water-related criteria. It would also describe the contingent mitigation/compensation/offset options that would be enacted in the event that groundwater users are adversely affected by the Project, or the low permeability barrier does not perform to specification (e.g. reconstruction of a portion of the barrier or use of an over-excavation option as described in Appendix R).

Access Licence Dealing Principles

The *Access Licence Dealing Principles Order 2004* outlines the access licence dealing principles which prevail over the access licence dealing rules to the extent of any inconsistency.

Clause 7 of the *Access Licence Dealing Principles Order 2004* relevantly states:

- 7 *Impacts on water sources*
- (1) *Dealings should not adversely affect environmental water and water dependent ecosystems as identified in any relevant management plan.*
 - (2) *Dealings should be consistent with any strategies to maintain or enhance water quality identified in any relevant management plan.*
 - (3) *In unregulated river water sources, dealings should not increase commitments to take water from water sources or parts of water sources identified in any relevant management plan as being of high conservation value.*
 - (4) *In unregulated river water sources or a groundwater source, dealings should not increase commitments to take water from water sources above sustainable levels identified in any relevant management plan.*

...

- (6) In this clause, **commitments to take water** refers, in relation to all access licences with nominated works in that water source or part of a water source, to:
- (a) the total volume of water allocations in water allocation amounts, or
 - (b) where relevant, the sum of limits on rates of extraction in extraction components.

Dealings associated with the Project would not involve supplementary access licences and therefore would not adversely affect environmental water.

Dealings would not adversely affect high priority groundwater dependent ecosystems identified in any current or draft water sharing plan. Notwithstanding, approximately 15 ha of groundwater dependent vegetation (Bracteate Honey Myrtle low riparian forest) would be cleared during mining operations (Section 4.9.2). This vegetation community also occurs to the north and south of the Project area. In addition, an equivalent length of the stream would be recreated and revegetated with this community in the permanent Goonbri Creek alignment, and TCPL would implement a riparian enhancement program for a further 3.2 km below the re-aligned section (Section 4.9.3).

The permanent Goonbri Creek alignment and low permeability barrier (Section 2.10.3) have been designed to minimise changes/disruption to the near surface groundwater flow along the retained sections of Goonbri Creek and associated alluvium. Consequently, groundwater dependent vegetation outside the Project disturbance footprint would be protected (Section 4.9.2 and Appendix F).

The Groundwater Assessment concludes that there is expected to be negligible change in groundwater quality within the porous rock groundwater system as a result of mining in the short-term and in the long-term (Appendix A). In the long-term, the salinity in the final void would increase through evaporative concentration, but as the final void would remain a groundwater sink, no impacts to surrounding groundwater quality are expected (Appendix A).

There are not expected to be any significant changes in the quality of the alluvial groundwater system as a consequence of the Project, and there would be negligible impact on surface water quality in local creeks (i.e. Bollol/Goonbri Creeks and Nagero Creek) (Appendices A and B). Mitigation measures, management and monitoring to minimise potential impacts on water quality are described in Sections 4.4.3 and 4.5.3.

The Project would not involve extraction from water sources identified in any relevant management plan as being of high conservation value.

A cumulative assessment of potential impacts on groundwater and surface water has been conducted as part of this EA (Appendices A and B). Access licences for the Project would be obtained in accordance with relevant water sharing plans and the *Water Management Act, 2000* and therefore the Project is unlikely to increase commitments to take water from water sources above sustainable levels.

Clause 8 of the *Access Licence Dealing Principles Order 2004* states:

- 8 *Impacts on indigenous, cultural, heritage or spiritual matters*
 - (1) *Dealings should not adversely affect geographical and other features of indigenous significance.*
 - (2) *Dealings should not adversely affect geographical and other features of major cultural, heritage or spiritual significance.*

As discussed above, an Aboriginal Cultural Heritage Assessment has been conducted for the Project in consultation with the Aboriginal community (Appendix K). As part of the Project, the existing Aboriginal Heritage Management Plan (Whitehaven, 2011c) would be revised in consultation with the Aboriginal community and the OEHL to specify management and mitigation measures relevant to the Project area (Section 4.13.3).

Clause 9 of the *Access Licence Dealing Principles Order 2004* states:

- 9 *Impacts on water users*
 - (1) *Dealings should not adversely affect the ability of a person to exercise their basic landholder rights.*

- (2) *Dealings should have no more than minimal effect on the ability of a person to take water using an existing approved water supply work and any associated access licences. This should be addressed by constraints of dealings established in access licence dealing rules in relevant management plans.*

An assessment of potential impacts on groundwater and surface water users has been conducted as part of this EA (Appendices A and B). Dealings associated with the Project are not expected to adversely affect the ability of a person to exercise their basic landholder rights or have more than minimal effect on the ability of a person to take water using an existing approved water supply work.

Notwithstanding, TCPL would implement a Surface Water and Groundwater Response Plan that would describe the contingent mitigation/compensation/offset options that would be enacted in the event that groundwater users are adversely affected by the Project.

Clause 10 of the *Access Licence Dealing Principles Order 2004* states:

- 10 *Maximising social and economic benefits*
- (1) *The objective of access licence dealings is to help facilitate maximising social and economic benefits to the community of access licences as required under the objects of the Act. Dealings do this by:*
- (a) *allowing water to move between alternative uses, and*
- (b) *allowing the establishment of water markets that value the access licences, thereby encouraging investment in water efficient infrastructure, and*
- (c) *allowing greater flexibility to access licence holders.*
- (2) *Subject to other principles in this Order, access licence dealing rules should allow maximum flexibility in dealings to promote the objectives set out in subclause (1).*

The Project water management system has been designed to minimise the use of imported water and minimise changes to the flow regimes of downstream waters (Appendix B). In addition, the Project includes the installation of a low permeability barrier to maintain the value of alluvial groundwater, by minimising potential interactions with the mine final void, post-mining (Section 2.10.3).

The Project would provide for continuation of the Tarrawonga Coal Mine (for approximately 12 additional years) and direct employment of some 20 construction and 120 operational personnel. The Socio-Economic Assessment (Appendix M) indicates that operation of the Project is likely to result in an average annual stimulus of approximately 300 direct and indirect jobs in the local region and some 1,770 direct and indirect jobs in NSW.

The benefit cost analysis in Appendix M indicates a net production benefit of approximately \$1,138M, and a net benefit of approximately \$790M would be forgone if the Project is not implemented.

Alluvial Aquifer Groundwater Sources

Under the *Water Management Act, 2000*, the Upper and Lower Namoi Groundwater Water Sharing Plan commenced on 1 November 2006.

Clause 4(3) of the Upper and Lower Namoi Groundwater Water Sharing Plan provides that the plan applies to the following waters:

- (3) *The Upper and Lower Namoi Groundwater Sources include all water contained in the unconsolidated alluvial sediment aquifers associated with the Namoi River and its tributaries.*

Note. Bores drilled through the unconsolidated alluvial sediments into the underlying Great Artesian Basin (GAB) are tapping a different groundwater source. On a map, they may appear to lie within the boundaries of the Lower Namoi, however they are within the deeper GAB groundwater source and are not included as a part of this Plan.

The alluvial aquifers within the Project area fall within the Upper Namoi Zone 4, Namoi Valley (Keepit Dam to Gin's Leap) Groundwater Source (Zone 4) of the Upper and Lower Namoi Groundwater Water Sharing Plan.

Appropriate aquifer access licences and share components for any take of water from alluvial aquifers would be sought and obtained under the *Water Management Act, 2000* in consultation with NOW. These aquifer access licences would be obtained with reference to the aquifer licence dealing rules outlined in Part 11 of the Upper and Lower Namoi Groundwater Water Sharing Plan and managed in accordance with the rules outlined in Part 10 of the Upper and Lower Namoi Groundwater Water Sharing Plan as outlined in the sub-sections below.

Access Licences

Whitehaven currently holds volumetric licence allocation in Zone 4 under an aquifer access licence. An assignment of allocation of 526 ML from WAL12622 (90AL806770) to the Whitehaven held WAL12714 (90AL807001) was approved on 14 October 2011 (water assignment application number SWC 704166). Table 4-5 provides estimated groundwater licensing requirements for the Project and demonstrates that Whitehaven has sufficient allocation to meet these requirements.

TCPL and Whitehaven would apply for the assignment of appropriate allocation for the extraction of alluvial groundwater by the Project under section 71Q or nomination of additional water supply works under section 71W of the *Water Management Act, 2000*. Note that section 71W(3) relevantly states:

- (3) *For the avoidance of doubt, a water supply work or group of water supply works may be nominated under this section even though no approval is required to be held in relation to the work or works under this Act.*

Management of Access Licences

In accordance with Division 1 of Part 10 of the Upper and Lower Namoi Groundwater Water Sharing Plan, the total water in any aquifer access licence water allocation account cannot exceed 3 ML per share unit and the total water extracted under an aquifer access licence in a water year cannot exceed 2 ML per share unit (plus any allocation assignment to the account minus any allocation assignment from the account).

TCPL will manage its access licences to ensure that extraction does not exceed the water allocation account in any water year in accordance with rules outlined in Division 1 of Part 10 of the Upper and Lower Namoi Groundwater Water Sharing Plan.

Access Licence Dealing Rules

Part 11 of the Upper and Lower Namoi Groundwater Water Sharing Plan outlines the access licence dealing rules that apply to dealings under the *Water Management Act, 2000*.

Clauses 46 to 60 of the Upper and Lower Namoi Groundwater Water Sharing Plan are not applicable to any dealing for the Project as no conversion of access licence category or dealings between water sources or interstate are proposed.

Clause 45 of the Upper and Lower Namoi Groundwater Water Sharing Plan relevantly provides:

- 45 *Rules relating to constraints within a groundwater source*
- (1) *This clause applies to any relevant dealings under sections 71Q, 71S, and 71W of the Act, and section 71T of the Act with respect to allocation assignments within this groundwater source.*
- (2) *Dealings are prohibited under this clause if:*
- (a) *any of the access licences or water allocations involved are not within these groundwater sources,*
- (b) *the dealing results in the total access licence share components or credited water allocations authorised to be extracted through nominated works at a location exceeding 600 ML/yr per square kilometre,*
- (c) *the dealing would result in the total extraction under access licences through nominated works in the area, plus basic landholder rights extraction, causing an adverse local impact in accordance with Part 10 Division 2 of this Plan,*
- (d) *(Repealed)*
- (e) *the dealing involves a supplementary water access licence, or any water allocation credited to a supplementary water access licence.*

As described above, Whitehaven holds an aquifer access licence in Zone 4, therefore clauses 45(2)(a) and 45(2)(e) are not applicable to any dealing for the Project.

As presented in Table 4-5, the maximum predicted extraction from Zone 4 by the Project is 169 ML/annum. Given there is no other major extraction within one square kilometre, clause 45(2)(b) is not applicable to any dealing for the Project.

The applicability of clause 45(2)(c) (i.e. an adverse local impact under Part 10, Division 2) is described further below.

Management of Local Impact

Division 2, Part 10 of the Upper and Lower Namoi Groundwater Water Sharing Plan provides provision for the management of local impact on the groundwater resource. Relevant provisions of Division 2, Part 10 are outlined below.

Clause 36 of the Upper and Lower Namoi Groundwater Water Sharing Plan relevantly provides:

36 *Extraction interference between neighbouring bores*

(1) *With the exception of a water supply work (bore) for the supply of basic landholder rights only, applications for a new water supply work (bore) within 100 metres of any bores for the supply of basic landholder rights, will require an investigation by the proponent of the potential impact on neighbouring bores.*

...

(3) *A minimum distance of 400 metres is to be maintained between all new water supply works (bores), except for a replacement water supply work (bore) and those for the supply of basic landholder rights only.*

(4) *A new water supply work (bore) that is not a replacement water supply work (bore) shall be located no closer than 200 metres from a property boundary.*

(5) *Notwithstanding the provisions of subclauses (3) and (4), the Minister may, upon application by an access licence holder, vary the distance restrictions specified in subclauses (3) and (4) if:*

- (a) *a hydrogeological study undertaken by the licence holder, assessed as adequate by the Minister, demonstrates minimal potential for adverse impact on existing licensed extraction, including consideration of cumulative impact,*
- (b) *written consent is obtained by the applicant from adjacent landowners, and*
- (c) *there is a process for remediation in the event that an adverse impact occurs in the future, specified as conditions on the licence.*

...

(7) *A new water supply work (bore) with the exception of a replacement water supply work (bore) or a water supply work (bore) for the supply of basic landholder rights only, cannot be constructed within a minimum distance of:*

- (a) *500 metres of a bore nominated by a local water utility access licence,*
- (b) *400 metres of a Departmental monitoring bore,*
- (c) *400 metres of a bore extracting from the Great Artesian Basin,*
- (d) *500 metres of a wetland, or*
- (e) *200 metres of a river.*

Section 75U(1) of the EP&A Act provides that water supply work approvals under section 90 of the *Water Management Act, 2000* are not required for an approved Part 3A Project (Section 6.2.3). Therefore the restrictions set out in clause 36 of the Upper and Lower Namoi Groundwater Water Sharing Plan do not apply to a bore approved as part of the Project.

Notwithstanding, extraction from the alluvial aquifer would not occur within:

- 100 m of any bore for the supply of basic landholder rights;
- 400 m of a water supply work (bore) not owned by Whitehaven;
- 200 m of a property boundary with an adjoining property not owned by Whitehaven;
- 500 m of a bore nominated by a local water utility access licence;
- 400 m of a Departmental monitoring bore;
- 400 m of a bore extracting from the Great Artesian Basin; or
- 500 m of a wetland.

In addition to the above, TCPL would implement a process for remediation in the event that an adverse impact occurs on neighbouring bores as described in Section 4.4.3.

In regard to clause 36(7)(e), the *Water Management Act, 2000* defines a “river” as the following:

river includes:

- (a) any watercourse, whether perennial or intermittent and whether comprising a natural channel or a natural channel artificially improved, and
- (b) any tributary, branch or other watercourse into or from which a watercourse referred to in paragraph (a) flows, and
- (c) anything declared by the regulations to be a river,

whether or not it also forms part of a lake or estuary, but does not include anything declared by the regulations not to be a river.

Clause 3(2) of the *Water Management (General) Regulation, 2011* relevantly provides:

- (2) For the purposes of paragraph (c) of the definition of river in the Dictionary to the Act, the following are declared to be a river:
 - (a) any watercourse, whether perennial or intermittent, comprising an artificial channel that has changed the course of the watercourse,

Therefore, Goonbri Creek and the proposed permanent Goonbri Creek alignment would be defined as “rivers” under the *Water Management Act, 2000*.

As described in Section 2.10.3, in approximately Year 15 of the Project open cut mining would progress through a 3 km section of Goonbri Creek. Prior to the open cut advancing into this section of the creek, the permanent Goonbri Creek alignment would be established to the east of the open cut, low permeability barrier and permanent flood bund. However as described above, clause 36 is not applicable to a bore approved as part of the Project due to the operation of section 75U(1) of the EP&A Act.

Clause 37 of the Upper and Lower Namoi Groundwater Water Sharing Plan relevantly provides:

- 37 *Water level management*
 - (1) The Minister may declare that, in order to protect water levels within these groundwater sources, local access restrictions are to apply in a defined area known as a local impact area.

...

The Project is not located within a local impact area, therefore clause 37 is not applicable to any dealing for the Project. It is noted that the Project would involve the development of a low permeability barrier to minimise alluvial groundwater inflows to the open cut (Section 2.10.3).

Clause 38 of the Upper and Lower Namoi Groundwater Water Sharing Plan relevantly provides:

- 38 *Water quality management*
 - (1) The beneficial uses of these groundwater sources are:
 - (a) raw water for drinking, and
 - (b) agriculture use,
 based on beneficial use classes identified in the Australian and New Zealand Environment and Conservation Council Water Quality Guidelines 2001, and the National Health and Medical Research Council Raw Water for Drinking Purposes Guidelines 1996.
 - (2) Pursuant to subclause (1), water quality decline will be deemed unacceptable if extraction is likely to cause water quality to decline to a lower beneficial use class.

...

There are not expected to be any significant changes in the quality of the alluvial groundwater system as a consequence of the Project (Section 4.4.2 and Appendix A), therefore clause 38 is not applicable to any dealing for the Project. In addition, the Project includes the installation of a low permeability barrier to maintain the value of alluvial groundwater, by minimising potential interactions with the mine final void, post-mining (Section 2.10.3).

Clause 39 of the Upper and Lower Namoi Groundwater Water Sharing Plan relevantly provides:

- 39 *Protection of groundwater dependent ecosystems*
 - (1) Extraction of groundwater from a new or replacement water supply work (bore) is excluded within 100 metres of high priority groundwater dependent ecosystems, or any creek or river, or where impact may occur on Aboriginal cultural heritage values for those exercising basic landholder rights, and 200 metres for extraction authorised by all other access licences, unless the water supply work (bore):

- (a) *only draws water from an aquifer at depths as approved by the Minister, and*
- (b) *has an impermeable seal, as specified by the Minister, constructed within the bore to isolate aquifers preventing water ingress from the restricted aquifer.*

Extraction from the alluvial aquifer would not occur within 100 m of a high priority groundwater dependent ecosystem. Extraction from the alluvial aquifer would not impact on Aboriginal cultural heritage values for those exercising basic landholder rights.

As described in Section 2.10.3, in approximately Year 15 of the Project open cut mining would progress through a 3 km section of Goonbri Creek. The Project would involve the development of a low permeability barrier to minimise alluvial groundwater inflows to the open cut (Section 2.10.3).

Clause 40 of the Upper and Lower Namoi Groundwater Water Sharing Plan relevantly provides:

- 40 *Protection of aquifer integrity*
- (1) *The Minister may declare that, in order to protect the integrity of the aquifers within these groundwater sources, local access restrictions are to apply in a defined area known as a local impact area.*
 - (2) *The Minister may, on presentation of evidence of land subsidence or aquifer compaction, restrict extraction from all water supply works (bores) nominated by access licences within a local impact area declared under subclause (1), to such an extent and for such time as to stabilise that subsidence or compaction.*

The Project is not located within a local impact area and would not involve large-scale extraction or depressurisation of the alluvial aquifer. The Project open cut extent would mine through a portion of the alluvium associated with Goonbri Creek. The Project would involve the development of a low permeability barrier to minimise alluvial groundwater inflows to the open cut (Section 2.10.3).

Clause 40 is designed to prevent over extraction of the groundwater resource resulting in broad scale land subsidence or aquifer compaction. The Project is unlikely to result in land subsidence or aquifer compaction, therefore clause 40 is not applicable to any dealing for the Project.

Hard Rock Aquifer Groundwater Sources

As clause 4(3) of the Upper and Lower Namoi Groundwater Water Sharing Plan excludes aquifers other than alluvial aquifers from the Upper and Lower Namoi Groundwater Source and because no separate water sharing plan applicable to those aquifers has yet commenced, the *Water Act, 1912* remains the relevant Act for approval of groundwater extraction from aquifers other than alluvial aquifers within the Project area.

TCPL holds an existing Groundwater Licence (90BL254692) for the extraction of up to 50 ML of groundwater in any 12 month period under Part 5 of the *Water Act, 1912*.

Pursuant to section 113A of the *Water Act, 1912* an embargo on any further applications for water licences under Part 5 of the *Water Act, 1912* was declared on 22 December 2008 for all groundwater within the Murray-Darling Basin not within an alluvial aquifer or under a water sharing plan (*Inland Groundwater Shortage Zones Order No. 2*).

Schedule 2 of the *Inland Groundwater Shortage Zones Order No. 2* relevantly provides:

Applications for licences under Part 5 of the Water Act 1912 can continue to be made for the following purposes:

...

- 10. *Bores required for integrated development where general terms of approval with respect to such bores have been provided by the Department of Water and Energy prior to the commencement of this Order and for which a development consent has been granted.*

The existing Tarrawonga Coal Mine was approved as integrated development under section 91 of the EP&A Act in November 2005 (Section 6.1). The then DNR provided general terms of approval with respect to the Tarrawonga Coal Mine.

TCPL has submitted an application to NOW for a licence under Part 5 of the *Water Act, 1912* for dewatering from the open cut.

As required, additional groundwater licences for the Project would be sought and obtained under the *Water Act, 1912* in consultation with NOW. This would involve temporary or permanent transfers of existing licences in accordance with *Inland Groundwater Shortage Zones Order No. 2*.

Aquifers other than alluvial aquifers within the Project area are expected to be covered under the *Draft Water Sharing Plan for the NSW Murray-Darling Basin Porous Rock Groundwater Sources* (Draft Porous Rock Groundwater Water Sharing Plan), if commenced. The Project area is wholly located within the Gunnedah – Oxley Basin MDB (Namoi) Management Zone of the Draft Porous Rock Groundwater Water Sharing Plan.

Appropriate aquifer access licences and share components for extraction (e.g. groundwater dewatering) from aquifers other than alluvial aquifers within the Project open pit would be sought and obtained under the *Water Management Act, 2000* if the Draft Porous Rock Groundwater Water Sharing Plan is commenced. These aquifer access licences would be obtained with reference to the aquifer licence dealing rules outlined in Part 10 of the Porous Rock Groundwater Water Sharing Plan, if commenced.

Surface Water Sources

Under the *Water Management Act, 2000*, the Upper Namoi and Lower Namoi Regulated River Water Sharing Plan commenced on 1 July 2004.

Clause 4 of the Upper Namoi and Lower Namoi Regulated River Water Sharing Plan provides that the plan applies to the following waters:

- 4 *Water sources and waters to which this Plan applies*
- (1) *The water sources in respect of which this Plan is made shall be known as the Upper Namoi Regulated River Water Source and the Lower Namoi Regulated River Water Source (hereafter these water sources).*
 - (2) *The Upper Namoi Regulated River Water Source is that between the banks of all rivers, from Split Rock Dam downstream to Keepit Dam, which at the date of commencement of this Plan, have been declared by the Minister to be regulated rivers.*
 - (3) *The Lower Namoi Regulated River Water Source is that between the banks of all rivers, from Keepit Dam downstream to the junction of the Namoi River with the Barwon River, which at the date of commencement of this Plan, have been declared by the Minister to be regulated rivers.*

...

- (6) *This Plan applies to all waters contained within these water sources but does not apply to water contained within aquifer water sources underlying these water sources or to waters on land adjacent to these water sources.*

The Project would not involve extraction between the banks of any regulated rivers, therefore the Upper Namoi and Lower Namoi Regulated River Water Sharing Plan is not applicable to the Project.

Surface water within the Project area is expected to be covered under the *Draft Water Sharing Plan for the Namoi Unregulated and Alluvial Water Sources*, if commenced. The Project area is located wholly within the Maules Creek Tributaries Management Zone of the *Draft Water Sharing Plan for the Namoi Unregulated and Alluvial Water Sources*.

Appropriate unregulated river access licences and share components would be sought and obtained under the *Water Management Act, 2000* if the *Draft Water Sharing Plan for the Namoi Unregulated and Alluvial Water Sources* is commenced. These access licences would be obtained with reference to the licence dealing rules outlined in Part 10 of the *Draft Water Sharing Plan for the Namoi Unregulated and Alluvial Water Sources* if commenced.

Until the *Draft Water Sharing Plan for the Namoi Unregulated and Alluvial Water Sources* commences, the *Water Act, 1912* remains the relevant Act for licensing the take of surface water within the Project area.

Pursuant to section 22BA of the *Water Act, 1912* an embargo on any further applications for water licences for works to which Part 2 of the *Water Act, 1912* extends was declared on 16 March 2006 for the Murray-Darling Basin (*Murray-Darling Basin Shortage Zone Order*).

However, Part 2 of the *Water Act, 1912* will not apply to the Project because at all relevant times, all works to which Part 2 might otherwise apply will be located on "waterfront" land for the purposes of section 91 of the *Water Management Act, 2000*. But for section 75U(1) of the EP&A Act, the works would therefore require a controlled activity approval under section 91 which displaces any requirement to obtain a licence under Part 2 of the *Water Act, 1912*. The operation of section 75U of the EP&A Act is discussed further below.

Flood Control Works

Under Part 8 of the *Water Act, 1912* controlled works require approval, which includes:

- works that are situated or proposed to be constructed within a floodplain designated pursuant to section 166(1) the *Water Act, 1912*; and
- earthworks, embankments or levees that affect, or are reasonably likely to affect, the flow of water to or from a river or lake and are used or are to be used for, or has the effect or likely effect of, preventing land from being flooded by water.

However, the above does not include a work or bore approved under another part of the *Water Act, 1912* or *Water Management Act, 2000*.

The Project does not involve construction of works within a floodplain designated by an order pursuant to section 166(1) of the *Water Act, 1912*. Some components of the Project may however affect the flow of water to or from a river or lake and prevent land from being flooded by water, for example the permanent flood bund (Section 2.10.3).

Relevant approvals under Part 8 of the *Water Act, 1912* would be obtained for Project components prior to their construction.

Water Use and Water Management Works

Section 75U(1) of the EP&A Act provides that water use approvals under section 89, water management work approvals under section 90, or activity approvals (including controlled activity³ and aquifer interference approvals) under section 91 of the *Water Management Act, 2000* are not required for an approved Part 3A Project (Section 6.2.3).

Therefore, the approval requirements of the *Water Management Act, 2000* that would normally apply before the following Project activities occur do not apply to the Project:

- the construction and use of water management works and water supply works associated with water covered by a water sharing plan under the *Water Management Act, 2000*;
- aquifer interference activities, for example associated with groundwater dewatering from the open cut;

³ Note that controlled activity approvals apply to all of NSW in accordance with the declaration on 16 January 2008 pursuant to section 88A of the *Water Management Act, 2000*.

- re-alignment of Goonbri Creek (i.e. removal of a section of Goonbri Creek within the Project open cut and the establishment of a permanent Goonbri Creek alignment and associated flood bund to the east and south-east of the open cut); and
- enhancement works along the permanent Goonbri Creek alignment and downstream on Goonbri Creek (including minor remedial earthworks).

Notwithstanding, detailed assessments of the potential impacts of the Project on alluvial and hard rock aquifer resources and surface water resources have been conducted for this EA and are detailed in Appendices A, B and R and Sections 4.4 and 4.5. Details on the design of the permanent Goonbri Creek alignment (including details on the environmental, hydrological and geomorphic considerations) are provided in Appendices B and R and Section 4.5.

Forestry Act, 1916

The *Forestry Act, 1916* provides for the dedication, reservation, control and use of State forests, timber reserves and Crown lands for forestry and other purposes.

The Project would involve activities within Leard State Forest, which is dedicated as a State Forest pursuant to the *Forestry Act, 1916*.

Section 21 of the *Forestry Act, 1916* provides that land within a State Forest is subject to the provisions of the *Mining Act, 1992* and that the exercise of any right under the *Mining Act, 1992* within a State Forest is subject to conditions relating to forestry or the purpose of the reserve. For the portion of the Project within Leard State Forest, Whitehaven and BCPL will lodge a MLA (MLA 3) or BCPL will apply to the DRE for the partial transfer of CL 368 to TCPL. Activities within Leard State Forest would be conducted in accordance with the conditions of the relevant mining tenement.

Under section 32 of the *Forestry Act, 1916* it is an offence to occupy or use any land within a State Forest without a lawful authority. TCPL will apply for necessary occupation permits for activities that would be conducted as a component of the Project within Leard State Forest.

For disturbance within Leard State Forest associated with the Project, TCPL will consult with Forests NSW regarding harvesting of timber or forest materials pursuant to Part 3 of the *Forestry Act, 1916*.

Brigalow and Nandewar Community Conservation Area Act, 2005

Section 3 of the *Brigalow and Nandewar Community Conservation Area Act, 2005* sets out the objects of the Act, as follows:

- (a) to reserve forested land in the Brigalow and Nandewar area to create a Community Conservation Area that provides for permanent conservation of land, protection of areas of natural and cultural heritage significance to Aboriginal people and sustainable forestry, mining and other appropriate uses, and
- (b) to give local communities a strong involvement in the management of that land.

The *Brigalow and Nandewar Community Conservation Area Act, 2005* defines a Community Conservation Area (which includes part of the Project area), including four dedicated management zones:

- Zone 1 – Conservation and recreation.
- Zone 2 – Conservation and Aboriginal culture.
- Zone 3 – Conservation, recreation and mineral extraction.
- Zone 4 – Forestry, recreation and mineral extraction.

Leard State Forest is listed in Schedule 4 of the Act as land that is within Zone 4 – Forestry, recreation and mineral extraction under Part 2, Division 4 of the *Brigalow and Nandewar Community Conservation Area Act, 2005*.

The Brigalow and Nandewar Community Conservation Area Agreement was effected by the NSW Minister for Climate Change and the Environment and the NSW Minister for Primary Industries in June 2009 pursuant to section 32 of the *Brigalow and Nandewar Community Conservation Area Act, 2005*. The Brigalow and Nandewar Community Conservation Area Agreement will be in place to 10 June 2016.

The Brigalow and Nandewar Community Conservation Area Agreement outlines the principles for the management of the dedicated land zones defined under the *Brigalow and Nandewar Community Conservation Area Act, 2005*.

Land in Zone 4 (including Leard State Forest) is managed in accordance with the following strategic aims:

- (a) Provide and encourage the use of timber, products and materials in accordance with the Forestry Act 1916 and the Integrated Forestry Operations Approval for the Brigalow and Nandewar regions and, where relevant, the Plantations and Reafforestation Act 1999.
- (b) Conserve, promote the growth of and utilize timber in the zone to the best advantage of the State.
- (c) Provide for exploration, mining, petroleum production and extractive industry in accordance with the Mining Act 1992 and the Petroleum (Onshore) Act 1991 and associated Regulations and guidelines.

Forestry operations within Leard State Forest are conducted in accordance with the Integrated Forestry Approval for Brigalow-Nandewar Region as approved by the NSW Minister for Climate Change and the Environment and the NSW Minister for Primary Industries.

In accordance with clause 11.7 of the Brigalow and Nandewar Community Conservation Area Agreement, relevant land management agencies work with mineral, petroleum and extractive industries to facilitate the development of resources on land in Zone 4 (including Leard State Forest).

The Project is consistent with the *Brigalow and Nandewar Community Conservation Area Act, 2005* as mining activities that would occur in Leard State Forest as a component of the Project are in accordance with the principles for management outlined in the Brigalow and Nandewar Community Conservation Area Agreement.

6.4.2 Commonwealth Legislation

The relevance of the EPBC Act to the Project is described in Section 6.3.

In addition to the EPBC Act, the following Commonwealth Acts may be applicable to the Project:

- *Water Act, 2007*;
- *National Greenhouse and Energy Reporting Act, 2007* (NGER Act); and
- *Energy Efficiency Opportunities Act, 2006* (EEO Act).

The relevance of these Acts is described in the sub-sections below.

In addition, the *Clean Energy Bill, 2011* and the proposed *Mineral Resources Rent Tax Bill 2011* may be applicable to the Project and are also described below.

Water Act, 2007

The NSW *Water (Commonwealth Powers) Act, 2008* referred a number of powers, functions and duties in relation to the management of water within the Murray-Darling Basin to the Commonwealth, amended the NSW *Water Management Act, 2000* and repealed the NSW *Murray-Darling Basin Act, 1992*.

An object of the Commonwealth *Water Act, 2007* (among others) is to enable the Commonwealth, in conjunction with the Murray-Darling Basin States, to manage the Murray-Darling Basin water resources in the national interest. As provided in section 250B of the *Water Act, 2007*:

- (1) *The Commonwealth water legislation is not intended to exclude or limit the concurrent operation of any law of a State.*

Part 9 of the *Water Act, 2007* establishes the Murray-Darling Basin Authority. The role of the Murray-Darling Basin Authority includes (but is not limited to) (Murray-Darling Basin Authority, 2010):

- managing the water resources of the Murray-Darling Basin;
- preparing the Basin Plan for adoption by the Commonwealth Minister including setting sustainable limits on water that can be taken from surface water and groundwater systems across the Murray-Darling Basin;
- advising the NSW Minister on the accreditation of State water resource plans (including Water Sharing Plans developed under the NSW *Water Management Act, 2000*); and
- managing water sharing between the States.

Following implementation of the Basin Plan, water sharing plans under the NSW *Water Management Act, 2000* will be amended to be consistent with the Basin Plan.

In addition, the Commonwealth Minister may make water charge and water market rules pursuant to Part 4 of the Commonwealth *Water Act, 2007*.

As described in Section 6.4.1, the Project would be operated in accordance with the relevant provisions of applicable NSW water sharing plans.

National Greenhouse and Energy Reporting Act, 2007

The NGER Act introduced a single national reporting framework for the reporting and dissemination of corporations' greenhouse gas emissions and energy use. The first annual reporting period began on 1 July 2008. The NGER Act makes registration and reporting mandatory for corporations whose energy production, energy use or greenhouse gas emissions meet specified thresholds.

Section 3 of the NGER Act defines the object of the Act:

The object of this Act is to introduce a single national reporting framework for the reporting and dissemination of information related to greenhouse gas emissions, greenhouse gas projects, energy consumption and energy production of corporations to:

- (a) *underpin the introduction of an emissions trading scheme in the future; and*
- (b) *inform government policy formulation and the Australian public; and*
- (c) *meet Australia's international reporting obligations; and*
- (d) *assist Commonwealth, State and Territory government programs and activities; and*
- (e) *avoid the duplication of similar reporting requirements in the States and Territories.*

Whitehaven triggers the threshold for reporting under the NGER Act, and reports energy use and greenhouse gas emissions from its enterprises, including the Tarrawonga Coal Mine.

Energy Efficiency Opportunities Act, 2006

The EEO Act requires large energy using corporations to assess and improve their energy efficiency, and publicly report the results of their energy efficiency assessments. Corporations that exceed mandatory participation thresholds must register and prepare assessment plans that meet the requirements specified in the *Energy Efficiency Opportunities Regulations, 2006*.

Section 3 of the EEO Act defines the object of the Act:

- (1) *The object of this Act is to improve the identification and evaluation of energy efficiency opportunities by large energy using businesses and, as a result, to encourage implementation of cost effective energy efficiency opportunities.*
- (2) *In order to achieve its object, this Act requires large energy using businesses:*
 - (a) *to undertake an assessment of their energy efficiency opportunities to a minimum standard in order to improve the way in which those opportunities are identified and evaluated; and*
 - (b) *to report publicly on the outcomes of that assessment in order to demonstrate to the community that those businesses are effectively managing their energy.*

Whitehaven is a registered participant under the EEO Act. As such, Whitehaven will assess energy usage from all aspects of its operations, including the Tarrawonga Coal Mine, and publicly report the results of energy efficiency assessments.

Clean Energy Bill 2011

The Commonwealth Government introduced the *Clean Energy Bill 2011* into Parliament on 13 September 2011 as part of the Clean Energy Legislative Package (DCCEE, 2011c). The *Clean Energy Bill 2011* establishes a mechanism where corporations must purchase carbon units for their direct greenhouse gas emissions (i.e. per tonne of CO₂-e emitted).

The *Clean Energy Bill 2011* would make the purchase of carbon units mandatory for corporations controlling facilities with greenhouse gas emissions above specified thresholds. The thresholds would only apply to greenhouse gas emissions from sources covered under the *Clean Energy Bill 2011*.

The objects of the proposed Act are outlined in clause 3 of the *Clean Energy Bill 2011* as follows:

- (a) *to give effect to Australia's obligations under:*
 - (i) *the Climate Change Convention; and*
 - (ii) *the Kyoto Protocol;*

- (b) *to support the development of an effective global response to climate change, consistent with Australia's national interest in ensuring that average global temperatures increase by not more than 2 degrees Celsius above pre-industrial levels;*
- (c) *to:*
 - (i) *take action directed towards meeting Australia's long-term target of reducing Australia's net greenhouse gas emissions to 80% below 2000 levels by 2050; and*
 - (ii) *take that action in a flexible and cost-effective way;*
- (d) *to put a price on greenhouse gas emissions in a way that:*
 - (i) *encourages investment in clean energy; and*
 - (ii) *supports jobs and competitiveness in the economy; and*
 - (iii) *supports Australia's growth while reducing pollution.*

As described in Section 4.8, it is expected that the Project would trigger the facility threshold for the pricing mechanisms detailed in the *Clean Energy Bill 2011*, and as such, Whitehaven would participate in these mechanisms if the *Clean Energy Bill 2011* is passed and commenced.

Mineral Resources Rent Tax Bill 2011 (Exposure Draft 30/06/2011)

On 2 July 2010, the Commonwealth Government announced new taxation arrangements for the resources sector (The Treasury, 2011). As part of these arrangements, it is proposed to apply a Minerals Resource Rent Tax (MRRT) to coal and iron ore projects from 1 July 2012 (The Treasury, 2011).

The Commonwealth Government introduced the *Mineral Resource Rent Tax Bill 2011* into parliament on 2 November 2011. The *Mineral Resource Rent Tax Bill 2011* provides the legislative framework for the MRRT.

TCPL would pay any MRRT liability associated with profits from the Project, if the *Mineral Resource Rent Tax Bill 2011* is passed and commenced.

6.5 ENVIRONMENTAL PLANNING INSTRUMENTS

Section 6.2.2 describes the application of EPIs to the assessment and approval of a project under Part 3A pursuant to section 75R of the EP&A Act.

Under section 75R(2)(b) of the EP&A Act, SEPPs apply to the declaration of a project as a project to which Part 3A applies and the carrying out of a project to which Part 3A applies. Given this, various SEPPs that may be of some relevance are addressed in Section 6.5.1.

In addition, under section 75J(3) of the EP&A Act, in determining a Part 3A Project Application the NSW Minister *may* take into account the provisions of any “non-SEPP” EPIs that would ordinarily apply to the Project if it were not to be assessed under Part 3A. Given this, various “non-SEPP” EPIs that may be of some relevance to the Project are addressed in Section 6.5.2.

6.5.1 State Environmental Planning Policies

The following SEPPs are potentially relevant to the Project:

- Major Development SEPP;
- SEPP 33;
- *State Environmental Planning Policy No. 44 – Koala Habitat Protection* (SEPP 44);
- *State Environmental Planning Policy No. 55 – Remediation of Land* (SEPP 55);
- *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007* (Mining SEPP); and
- *State Environmental Planning Policy (Infrastructure) 2007* (Infrastructure SEPP).

State Environmental Planning Policy (Major Development) 2005

The *State Environmental Planning Policy (State and Regional Development) 2011*, which commenced on 1 October 2011, made a number of amendments to the Major Development SEPP as a component of the repeal of Part 3A of the EP&A Act (Section 6.2.1). These amendments included the repeal and amendment of a number of clauses and schedules of the Major Development SEPP.

Prior to amendments to the Major Development SEPP on 1 October 2011, Clause 2 of the Major Development SEPP outlined a number of aims of the SEPP, the following being relevant to the Project:

- (a) *to identify development to which the development assessment and approval process under Part 3A of the Act applies,*

...

On 9 March 2011, the Director-General, as a delegate of the then NSW Minister for Planning, formed the opinion that the Project is of a kind that met the description in Schedule 1 of the Major Development SEPP, and pursuant to clause 6(1) of the Major Development SEPP, declared the Project to be a project to which Part 3A of the EP&A Act applies (Section 6.2.1).

Clause 2A of the Major Development SEPP relevantly provides the current application of the policy:

- (1) *On the repeal of Part 3A of the Act, this Policy is subject to Schedule 6A to the Act.*
- (2) *The repeal of clauses 6–6C and Schedules 1, 2 and 5 of this Policy, and the other amendments made to this Policy, by the State Environmental Planning Policy (State and Regional Development) 2011 do not affect any of the following:*
 - (a) *the declaration under this Policy of a project as a project or a critical infrastructure project under Part 3A, if that project is a transitional Part 3A project,*
 - (b) *any certificate in force under clause 6C immediately before that repeal.*

As described in Section 6.2.1, the Project constitutes a “transitional Part 3A project” pursuant to the savings and transitional provisions in Schedule 6A of the EP&A Act.

State Environmental Planning Policy No. 33 – Hazardous and Offensive Development

SEPP 33 applies to the whole of NSW.

Clause 2 of SEPP 33 sets out the aims of SEPP 33, the following being relevant to the Project:

- (a) *to amend the definitions of hazardous and offensive industries where used in environmental planning instruments, and*

...

- (d) *to ensure that in determining whether a development is a hazardous or offensive industry, any measures proposed to be employed to reduce the impact of the development are taken into account, and*
- (e) *to ensure that in considering any application to carry out potentially hazardous or offensive development, the consent authority has sufficient information to assess whether the development is hazardous or offensive and to impose conditions to reduce or minimise any adverse impact, and*

...

For the purposes of a potentially hazardous industry, clause 12 of SEPP 33 requires that a PHA must be prepared in accordance with the current circulars or guidelines published by the DoP (now DP&I).

Clause 13 of SEPP 33 requires that in determining an application to carry out development for the purposes of a potentially hazardous industry or potentially offensive industry, the consent authority (in this case the NSW Minister) must consider:

- (a) *current circulars or guidelines published by the Department of Planning relating to hazardous or offensive development, and*
- (b) *whether any public authority should be consulted concerning any environmental and land use safety requirements with which the development should comply, and*
- (c) *in the case of development for the purpose of a potentially hazardous industry—a preliminary hazard analysis prepared by or on behalf of the applicant, and*
- (d) *any feasible alternatives to the carrying out of the development and the reasons for choosing the development the subject of the application (including any feasible alternatives for the location of the development and the reasons for choosing the location the subject of the application), and*
- (e) *any likely future use of the land surrounding the development.*

In accordance with the EARs and as part of the preparation of this EA, a PHA has been conducted in accordance with SEPP 33 (Appendix P). The PHA has been prepared in accordance with the general principles of risk evaluation and assessment outlined in *Multi-Level Risk Assessment* (DP&I, 2011).

In addition, the PHA considers the qualitative criteria provided in *Hazardous Industry Planning Advisory Paper No. 4: Risk Criteria for Land Use Safety Planning* (DoP, 2011b) and has been documented in general accordance with *Hazardous Industry Planning Advisory Paper No. 6: Hazard Analysis* (DoP, 2011a).

Extensive consultation has been undertaken with public authorities during the preparation of this EA as described in Section 3.1.

Project alternatives (including the Project location) are discussed in Section 6.9.1.

The land surrounding the Project site is zoned as general rural under the Narrabri LEP (Section 6.5.2) and the Project is generally consistent with the uses that are permissible in adjoining lands.

Consideration of the potential impacts of the Project on agricultural land uses is assessed in Appendix I and described in Section 4.3. Rehabilitation of the Project is described in Section 5.

Accordingly the NSW Minister can be satisfied as to these matters.

State Environmental Planning Policy No. 44 – Koala Habitat Protection

SEPP 44 requires the council in certain LGAs (including Narrabri) to consider whether the land which is the subject of the Development Application is “potential Koala habitat” or “core Koala habitat”.

Since the Project is a project to which Part 3A applies, the NSW Minister is the approval authority.

An assessment of potential and core Koala habitat within the study area for the purposes of SEPP 44 has been undertaken. The assessment determined that some vegetation communities in the Project area meet the definition of potential Koala habitat, but the Project area does not fall within the definition of core Koala habitat (Appendices E and F).

Accordingly the NSW Minister can be satisfied as to these matters.

In addition, a range of vegetation management measures would be implemented for the Project to minimise impacts on flora, fauna, and their habitats, including land clearing strategies (Sections 4.9.3 and 4.10.3).

State Environmental Planning Policy No. 55 – Remediation of Land

SEPP 55 applies to the whole of NSW and is concerned with the remediation of contaminated land. It sets out matters relating to contaminated land that a consent authority must consider in determining an application for Development Consent.

“Contaminated land” in SEPP 55 has the same meaning as it has in Part 7A of the EP&A Act:

***contaminated land** means land in, on or under which any substance is present at a concentration above the concentration at which the substance is normally present in, on or under (respectively) land in the same locality, being a presence that presents a risk of harm to human health or any other aspect of the environment.*

Clause 7(1) of SEPP 55 provides that a consent authority must not consent to the carrying out of any development on land unless:

- (a) *it has considered whether the land is contaminated, and*
- (b) *if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and*
- (c) *if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.*

Clause 7 of SEPP 55 further provides:

- (2) *Before determining an application for consent to carry out development that would involve a change of use on any of the land specified in subclause (4), the consent authority must consider a report specifying the findings of a preliminary investigation of the land concerned carried out in accordance with the contaminated land planning guidelines.*
- (3) *The applicant for development consent must carry out the investigation required by subclause (2) and must provide a report on it to the consent authority. The consent authority may require the applicant to carry out, and provide a report on, a detailed investigation (as referred to in the contaminated land planning guidelines) if it considers that the findings of the preliminary investigation warrant such an investigation.*

(4) *The land concerned is:*

- (a) *land that is within an investigation area,*
- (b) *land on which development for a purpose referred to in Table 1 to the contaminated land planning guidelines is being, or is known to have been, carried out,*

...

Clause 7(2) provides that before a consent authority determines an application for Development Consent, a “preliminary investigation” is required where:

- the application for consent is to carry out development that would involve a “change of use”; and
- that “change of use” is to certain land specified in clause 7(4).

The certain land specified in clause 7(4) on which the “change of use” must relate is either:

- land that is an “investigation area” – defined in SEPP 55 as land declared to be an investigation area by a declaration in force under Division 2 of Part 3 of the CLM Act; or
- land on which development for a purpose referred to in Table 1 to the contaminated land planning guidelines (being *Managing Land Contamination – Planning Guidelines SEPP 55 – Remediation of Land* [DUAP and EPA, 1998]) is being, or is known to have been carried out.

The majority of the Project does not involve a “change of use” because the Project would involve the continuation and extension of mining activities within ML 1579 and CL 368 (Figure 1-1). The remainder of the Project would involve a “change of use” as the Project involves the extension of open cut mining and mine facilities into MLA 1 and MLA 2 (Figure 1-1, Section 1.1.4).

The Project lands within MLA 1 and MLA 2 are not an “investigation area” defined by a declaration in force under Division 2 of Part 3 of the CLM Act.

However, MLA 1 and MLA 2 fall within the scope of clause 7(4) as development for the purposes of “agricultural/horticultural activities” is being carried out on these lands (which is one of the purposes identified in Table 1 to the contaminated land planning guidelines).

A preliminary investigation and detailed investigation of MLA 1 and MLA 2 was undertaken as part of a Land Contamination Assessment for this EA (Appendix Q) in accordance with *Managing Land Contamination – Planning Guidelines SEPP 55 – Remediation of Land* (DUAP and EPA, 1998).

The site history review and inspections conducted for the Land Contamination Assessment identified the following potentially contaminated areas within MLA 1 and MLA 2 (Appendix Q):

- historic landfilling within an ephemeral drainage line, including old farm machinery, disused bottles, half buried car batteries, wire, wire mesh, oil drums, empty chemical and fuel storage containers and general refuse;
- other areas of abandoned farm machinery and fuel storage containers;
- surface water storage dams with elevated levels of heavy metals; and
- an unbunded engine oil storage area adjacent to storage sheds on the Bollol Creek Station.

The Land Contamination Assessment (Appendix Q) identifies remediation works required for the land to be suitable for the purpose of mining and for the ongoing protection of human health and the environment during and post-remediation. The lands requiring remediation will be remediated before the land is used for mining.

TCPL would implement other land contamination management measures where appropriate throughout the life of the Project (Section 4.3).

Accordingly the NSW Minister can be satisfied as to these matters.

State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007

The Mining SEPP applies to the whole of NSW.

• **Clause 2**

Clause 2 sets out the aims of the Mining SEPP, as follows:

- (a) *to provide for the proper management and development of mineral, petroleum and extractive material resources for the purpose of promoting the social and economic welfare of the State, and*

- (b) *to facilitate the orderly and economic use and development of land containing mineral, petroleum and extractive material resources, and*
- (c) *to establish appropriate planning controls to encourage ecologically sustainable development through the environmental assessment, and sustainable management, of development of mineral, petroleum and extractive material resources.*

• **Clause 7**

Clause 7(1) of the Mining SEPP states that development for any of the following purposes may be carried out only with Development Consent:

- ...
- (b) *mining carried out:*
- (i) *on land where development for the purposes of agriculture or industry may be carried out (with or without development consent), or*
- (ii) *on land that is, immediately before the commencement of this clause, the subject of a mining lease under the Mining Act 1992 or a mining licence under the Offshore Minerals Act 1999,*
- (c) *mining in any part of a waterway, an estuary in the coastal zone or coastal waters of the State that is not in an environmental conservation zone,*
- ...

The Project comprises open cut mining on lands where development for the purposes of agriculture is permissible (Section 6.5.2). The Project also comprises mining on land which is subject to existing mining tenements ML 1579 and CL 368 (Section 1.1.4) as well as mining within a portion of Goonbri Creek (Section 2.10.3).

Part 3 of the Mining SEPP provides matters for consideration for Development Applications. While the Project would be assessed under Part 3A and therefore does not comprise a Development Application under Part 4 of the EP&A Act, these clauses are considered below for completeness.

- **Clause 12**

Clause 12 of the Mining SEPP requires that before determining an application for consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must:

- (a) *consider:*
 - (i) *the existing uses and approved uses of land in the vicinity of the development, and*
 - (ii) *whether or not the development is likely to have a significant impact on the uses that, in the opinion of the consent authority having regard to land use trends, are likely to be the preferred uses of land in the vicinity of the development, and*
 - (iii) *any ways in which the development may be incompatible with any of those existing, approved or likely preferred uses, and*
- (b) *evaluate and compare the respective public benefits of the development and the land uses referred to in paragraph (a) (i) and (ii), and*
- (c) *evaluate any measures proposed by the applicant to avoid or minimise any incompatibility, as referred to in paragraph (a) (iii).*

As described in Section 4.3, the lands in the vicinity of the Project are used for agriculture, State owned forestry (Leard State Forest) and mining operations (Boggabri Coal Mine and the existing Tarrawonga Coal Mine).

The Project is not incompatible with existing, approved or likely adjoining land uses. As described in Sections 4 and 7, the Project would be operated in a manner as to minimise potential impacts on the environment. Consideration of the potential impacts of the Project on agricultural land uses is assessed in Appendix I and described in Section 4.3.

The development of the Project would result in significant socio-economic benefits to the regional economy and the State of NSW (Section 6.9.5 and Appendix M).

TCPL would implement a progressive rehabilitation program (Section 5) which aims to rehabilitate the site to a state that would minimise incompatibility of the Project with existing and future land uses in the area.

- **Clause 13**

Clause 13 of the Mining SEPP requires that before determining any application for consent for development in the vicinity of an existing mine, petroleum production facility or extractive industry, to which this clause applies, the consent authority must:

- (a) *consider:*
 - (i) *the existing uses and approved uses of land in the vicinity of the development, and*
 - (ii) *whether or not the development is likely to have a significant impact on current or future extraction or recovery of minerals, petroleum or extractive materials (including by limiting access to, or impeding assessment of, those resources), and*
 - (iii) *any ways in which the development may be incompatible with any of those existing or approved uses or that current or future extraction or recovery, and*
- (b) *evaluate and compare the respective public benefits of the development and the uses, extraction and recovery referred to in paragraph (a) (i) and (ii), and*
- (c) *evaluate any measures proposed by the applicant to avoid or minimise any incompatibility, as referred to in paragraph (a) (iii).*

As described in Section 3.1, TCPL has progressively presented Project description information, mine layout plans and other information to the DRE during the development of this EA. It is in the financial interest of TCPL to maximise the efficiency and long-term value of open cut mining operations and ROM coal production. Constraints to the extent of the Project open cut are described in Section 2.7.1.

In addition, TCPL has integrated the expansion of the Northern Emplacement with the Boggabri Coal Mine waste rock emplacement (Section 2.9).

- **Clause 14**

Clause 14(1) of the Mining SEPP requires that before granting consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider whether or not the consent should be issued subject to conditions aimed at ensuring that the development is undertaken in an environmentally responsible manner, including conditions to ensure the following:

- (a) *that impacts on significant water resources, including surface and groundwater resources, are avoided, or are minimised to the greatest extent practicable,*
- (b) *that impacts on threatened species and biodiversity, are avoided, or are minimised to the greatest extent practicable,*
- (c) *that greenhouse gas emissions are minimised to the greatest extent practicable.*

In addition, clause 14(2) requires that, without limiting subclause (1), in determining a Development Application for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider an assessment of the greenhouse gas emissions (including downstream emissions) of the development, and must do so having regard to any applicable State or national policies, programs or guidelines concerning greenhouse gas emissions.

The potential impacts of the Project on groundwater and surface water resources are discussed in Sections 4.4 and 4.5 and Appendices A and B, including measures to minimise potential impacts. The potential impacts of the Project on threatened species and biodiversity are described in Sections 4.9 and 4.10 and Appendices E and F, including measures to minimise potential impacts.

The Project greenhouse gas emissions assessment is provided in Section 4.8 and Appendix D. Greenhouse gas abatement measures are described in Section 4.8.2.

- **Clause 15**

Clause 15 of the Mining SEPP requires that:

- (1) *Before granting consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider the efficiency or otherwise of the development in terms of resource recovery.*

- (2) *Before granting consent for the development, the consent authority must consider whether or not the consent should be issued subject to conditions aimed at optimising the efficiency of resource recovery and the reuse or recycling of material.*
- (3) *The consent authority may refuse to grant consent to development if it is not satisfied that the development will be carried out in such a way as to optimise the efficiency of recovery of minerals, petroleum or extractive materials and to minimise the creation of waste in association with the extraction, recovery or processing of minerals, petroleum or extractive materials.*

As described above, it is in the financial interest of TCPL to maximise the efficiency and long-term value of open cut mining operations and ROM coal production.

In addition, the Project would involve the beneficial use of waste rock generated by the Project through the production of gravel materials for direct collection by customers at the mine site (Section 2.7.7).

- **Clause 16**

Clause 16(1) of the Mining SEPP requires that, before granting consent for development for the purposes of mining or extractive industry that involves the transport of materials, the consent authority must consider whether or not the consent should be issued subject to conditions that do any one or more of the following:

- (a) *require that some or all of the transport of materials in connection with the development is not to be by public road,*
- (b) *limit or preclude truck movements, in connection with the development, that occur on roads in residential areas or on roads near to schools,*
- (c) *require the preparation and implementation, in relation to the development, of a code of conduct relating to the transport of materials on public roads.*

As outlined in Section 2.8, the transport of sized ROM coal to the Whitehaven CHPP in the initial stage of the Project would be replaced by the transport of ROM coal to the Boggabri Coal Mine for processing and train loading. Up to 150,000 t of ROM coal and 90,000 m³ of gravel material per annum would be collected at the Project by customers (Section 2.8.4).

TCPL and Whitehaven implement road maintenance agreements with the Narrabri Shire Council and Gunnedah Shire Council in accordance with Condition 39 of the existing Tarrawonga Coal Mine Development Consent (DA-88-4-2005) for the maintenance of roads used for the road transport of sized ROM coal from the Tarrawonga Coal Mine to the Whitehaven CHPP.

The Road Transport Assessment concluded that no significant impacts on the performance and safety of the road network are expected to arise as a result of the Project (Appendix H).

The Whitehaven CHPP is located to the north-west of Gunnedah (Figure 1-1). The transport route to the Whitehaven CHPP does not pass through the centre of Gunnedah or any areas zoned as residential under the relevant LEPs.

In addition, the transport route to the Whitehaven CHPP does not pass any schools. In accordance with Condition 38(b) of the Development Consent (DA-88-4-2005), coal trucks must reduce their speed to 40 km/hr in the vicinity of school buses when they are operating on Hoad Lane (Appendix H).

The current transport of sized ROM coal to the Whitehaven CHPP from the Tarrawonga Coal Mine is conducted in accordance with the Road Noise Management Plan (Spectrum Acoustics, 2006) which includes requirements for the strict adherence to the approved hours of operation of coal dispatch, truck maintenance, truck signage and individual identification, driver education, and the necessity to comply with all commitments in a Transport Code of Conduct. The provisions in the Road Noise Management Plan would continue for the Project until the transport of ROM coal to the Boggabri Coal Mine.

Clause 16(2) of the Mining SEPP requires that if the consent authority considers that the development involves the transport of materials on a public road, the consent authority must, within seven days after receiving the Development Application, provide a copy of the application to each roads authority for the road, and the RTA (if it is not a roads authority for the road).

In addition, clause 16(3) of the Mining SEPP requires that the consent authority:

- (a) *must not determine the application until it has taken into consideration any submissions that it receives in response from any roads authority or the Roads and Traffic Authority within 21 days after they were provided with a copy of the application, and*

...

TCPL has consulted with the RTA, Narrabri Shire Council and Gunnedah Shire Council during the development of this EA and these authorities are aware of the proposed continuation of road transport of materials on the public road network (Section 2.8) and modifications to the existing road network (Section 2.6.3) as a component of the Project.

- **Clause 17**

Clause 17 of the Mining SEPP requires that before granting consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider whether or not the consent should be issued subject to conditions aimed at ensuring the rehabilitation of land that will be affected by the development. In particular, the consent authority must consider whether conditions of the consent should:

- (a) *require the preparation of a plan that identifies the proposed end use and landform of the land once rehabilitated, or*
- (b) *require waste generated by the development or the rehabilitation to be dealt with appropriately, or*
- (c) *require any soil contaminated as a result of the development to be remediated in accordance with relevant guidelines (including guidelines under section 145C of the Act and the Contaminated Land Management Act 1997), or*
- (d) *require steps to be taken to ensure that the state of the land, while being rehabilitated and at the completion of the rehabilitation, does not jeopardize public safety.*

A comprehensive program would be implemented for the progressive rehabilitation of the Project disturbance area, including the remediation of any contaminated soil, if applicable (Section 5). The proposed management of waste rock material is discussed in Section 2.9 and the management of other wastes is described in Section 2.12.

One of the key objectives of the rehabilitation plan (Section 5) would be the development of landforms which are stable in the long-term, and therefore do not jeopardise public safety.

State Environmental Planning Policy (Infrastructure) 2007

The Infrastructure SEPP applies to the whole of NSW and includes provisions for consultation with relevant public authorities about certain development during the assessment process or prior to development commencing.

Clause 45 of the Infrastructure SEPP relevantly provides:

- (1) *This clause applies to a development application (or an application for modification of a consent) for development comprising or involving any of the following:*
- (a) *the penetration of ground within 2m of an underground electricity power line or an electricity distribution pole or within 10m of any part of an electricity tower,*
 - (b) *development carried out:*
 - (i) *within or immediately adjacent to an easement for electricity purposes (whether or not the electricity infrastructure exists), or*
 - (ii) *immediately adjacent to an electricity substation, or*
 - (iii) *within 5m of an exposed overhead electricity power line,*
- ...
- (2) *Before determining a development application (or an application for modification of a consent) for development to which this clause applies, the consent authority must:*
- (a) *give written notice to the electricity supply authority for the area in which the development is to be carried out, inviting comments about potential safety risks, and*
 - (b) *take into consideration any response to the notice that is received within 21 days after the notice is given.*

The realignment of sections of an existing 11 kV electricity transmission line would be required as a result of the Project road realignments. However, the electricity transmission line relocations would be subject to separate environmental assessment and approval (Section 2.6.3).

Consultation has been conducted with Essential Energy (the relevant electricity supply authority) regarding the Project (Section 3.1).

6.5.2 Local Environmental Plans

The Project Application Area is wholly situated within the Narrabri LGA.

In addition, prior to transport of ROM coal to the Boggabri Coal Mine for processing and train loading, the Project would involve the road transport of sized ROM coal to the Whitehaven CHPP along public roads, including roads within the Gunnedah LGA (Section 2.8).

Narrabri Local Environmental Plan 1992

Objectives

Clause 2(1) of the Narrabri LEP outlines the general aims of the LEP. Those aims relevant to the Project include:

- (a) *to encourage the proper management, development and conservation of natural and man-made resources within the Shire of Narrabri by protecting, enhancing or conserving:*
 - (i) *timber, mineral, soil, water and other natural resources,*
 - (ii) *areas of ecological significance,*
 - (iii) *areas of high scenic or recreational value, and*
 - (iv) *the environmental heritage of the Shire of Narrabri, and*
 - (b) *to replace the existing planning controls for the town of Wee Waa and the rural areas of the Shire with a single local environmental plan to help facilitate growth and development of the Shire in a manner which is consistent with the aims specified in paragraph (a) and which:*
 - (i) *minimises the cost to the community of fragmented and isolated development of rural land,*
- ...
- (iii) *facilitates a range of residential and employment opportunities in accordance with demand,*
- ...

The Project is generally consistent with the aims of the Narrabri LEP as:

- The Project would be developed in a manner that would minimise and manage potential impacts on natural resources (including soil and water resources), areas of conservation value, areas of scenic and recreational value and environmental heritage (Sections 4 and 7).
- The Project includes a proposal for offset of unavoidable loss of vegetation and fauna habitat (Sections 4.9 and 7).
- Leard State Forest is listed as land that is within Zone 4 – Forestry, recreation and mineral extraction under the *Brigalow and Nandewar Community Conservation Area Act, 2005* (Section 6.4.1).
- TCPL has consulted with Forests NSW regarding Project activities within Leard State Forest, including harvesting of timber or forest materials pursuant to Part 3 of the *Forestry Act, 1916* (Section 3.1.2).
- The Project would be developed in a manner that would minimise and manage potential impacts on soil resources and the development of rural land in the vicinity of the Project (Appendix I).
- The Project would facilitate continued employment opportunities and expenditure in the region (Section 6.9.5 and Appendix M).

Accordingly the NSW Minister can be satisfied as to these matters.

Further, clause 2(2) outlines the aims and objectives of the LEP with respect to heritage. Those aims and objectives relevant to the Project include:

- (a) *to conserve the environmental heritage of the land to which this plan applies, and*
- (b) *to integrate heritage conservation into the planning and development control processes, and*
- (c) *to provide for public involvement in the matters relating to the conservation of the Shire's environmental heritage, and*
- (d) *to ensure that new development is undertaken in a manner that is sympathetic to, and does not detract from, the heritage significance of heritage items and their settings, as well as streetscapes and landscapes and the distinctive character that they impart to the land to which this plan applies.*

As described above, the Project would be developed in a manner that would minimise and manage potential impacts on environmental heritage and includes a proposal for offset of unavoidable loss of vegetation and fauna habitat (Sections 4.9, 4.10 and 7).

Potential impacts of the Project on items of heritage significance have been considered in the Aboriginal and non-Aboriginal heritage assessments (Appendices K and L, respectively).

Assessment of the Project involves public involvement and participation through the Project consultation program (Section 3.1), which would be ongoing following the public exhibition of this EA document and DP&I assessment of the Project in accordance with the requirements of the EP&A Act.

Accordingly the NSW Minister can be satisfied as to these matters.

Permissibility

Pursuant to clause 8O(1) of the EP&A Regulation, a project to which Part 3A of the EP&A Act applies (other than a critical infrastructure project) may not be given project approval if that project, or any part of that project, is not the subject of an authorisation or requirement under section 75M of the EP&A Act to apply for approval of a concept plan and would be prohibited by an EPI if Part 3A of the EP&A Act did not apply.

The Project Application Area is located wholly within an area zoned Zone No 1 (a) (General Rural) under the Narrabri LEP. Under clause 9 of the Narrabri LEP "mines" are permissible on lands zoned Zone No 1 (a) (General Rural) with Development Consent as mining is not listed as being a prohibited use in the zoning table.

Accordingly the NSW Minister can be satisfied as to these matters.

Zone Objectives

The objectives of Zone No 1 (a) (General Rural) under the Narrabri LEP are to promote the proper management and utilisation of resources by:

- (a) *protecting, enhancing and conserving:*
 - (i) *agricultural land in a manner which sustains its efficient and effective agricultural production potential,*
 - (ii) *soil stability by controlling and locating development in accordance with soil capability,*
 - (iii) *forests of existing and potential commercial value for timber production,*

- (iv) *valuable deposits of minerals, coal, petroleum and extractive materials by controlling the location of development for other purposes in order to ensure the efficient extraction of those deposits,*
 - (v) *trees and other vegetation in environmentally sensitive areas where the conservation of the vegetation is significant to scenic amenity or natural wildlife habitat or is likely to control land degradation,*
 - (vi) *water resources for use in the public interest,*
 - (vii) *areas of significance for nature conservation, including areas with rare plants, wetlands and significant habitats, and*
 - (viii) *places and buildings of archaeological or heritage significance, including the protection of Aboriginal relics and places,*
- (b) *preventing the unjustified development of agricultural land for purposes other than agriculture,*

...

The NSW Minister may, pursuant to section 75J(3) of the EP&A Act, take into account the zone objectives.

Potential impacts of the Project on agricultural production and soil stability have been considered in this EA (Section 4.3 and Appendix I). The Project would be developed in a manner that would minimise and manage potential impacts on agricultural production and soil stability (Sections 4.3 and 7).

TCPL has consulted with Forests NSW regarding Project activities within Leard State Forest, including harvesting of timber or forest materials pursuant to Part 3 of the *Forestry Act, 1916* (Section 3.1.2). As described in Section 6.4.1, Leard State Forest is listed as land that is within Zone 4 – Forestry, recreation and mineral extraction under the *Brigalow and Nandewar Community Conservation Area Act, 2005*.

As described in Section 3.1, TCPL has progressively presented Project description information, mine layout plans and other information to the DRE during the development of this EA. It is in the financial interest of TCPL to maximise the efficiency and long-term value of open cut mining operations and ROM coal production.

In addition, the Project would involve the beneficial use of waste rock generated by the Project through the production of gravel materials for direct collection by customers at the mine site (Section 2.7.7).

One threatened ecological community, the Box-Gum Woodland EEC/CEEC, has been recorded within the Project area (Section 4.9.1). There is approximately 13 ha of the Box-Gum Woodland EEC/CEEC within the Project area (Appendix F).

No threatened flora species listed under the TSC Act or EPBC Act have been recorded within the Project area and/or surrounds (Appendix F). Seven threatened bird species and two threatened mammals listed under the TSC Act have been recorded in the Project area, namely the Turquoise Parrot, Masked Owl, Brown Treecreeper (eastern subspecies), Speckled Warbler, Hooded Robin (south-eastern form), Grey-crowned Babbler (eastern subspecies), Varied Sittella, Squirrel Glider and Yellow-bellied Sheath-tail-bat (Appendix E).

The Project would be developed in a manner that would minimise and manage potential impacts on vegetation and fauna (Sections 4.9, 4.10 and 7 and Appendices E and F). The Project includes a proposal for offset of unavoidable loss of vegetation and fauna habitat (Sections 4.9.4, 4.10.4 and 7).

The potential impacts of the Project on downstream water resources has been considered in the surface water and groundwater assessments (Appendices A and B, respectively). TCPL would obtain appropriate licences under the *Water Management Act, 2000* and *Water Act, 1912* for the Project (Section 6.4.1).

The Project would be developed in a manner that would minimise and manage potential impacts on items of Aboriginal and non-Aboriginal heritage (Sections 4.13 and 4.14 and Appendices K and L).

Justification of the Project on economic, social and environmental grounds is provided in Section 6.9.

Accordingly the NSW Minister can be satisfied as to these matters.

Special Provisions

Part 3 of the Narrabri LEP provides a number of miscellaneous provisions of potential relevance to the Project as outlined below.

Clause 10 of the Narrabri LEP relates to considerations for development on rural lands:

10 General considerations for development within rural zones

- (1) *The Council shall not consent to an application to carry out development on land within Zone No 1 (a) or 1 (c) unless it has taken into consideration, if relevant, the effect of the carrying out of that development on:*
- (a) *the present use of the land, the potential use of the land for the purposes of agriculture and the potential of that land for sustained agricultural production,*
 - (b) *vegetation, timber production, land capability (including soil resources and soil stability) and water resources (including the quality and stability of water courses and ground water storage and riparian rights),*
 - (c) *the future recovery of known or prospective areas of valuable deposits of minerals, coal, petroleum, sand, gravel or other extractive materials,*
 - (d) *the protection of areas of significance for nature conservation or of high scenic or recreational value, and places and buildings of archaeological or heritage significance, including Aboriginal relics and places,*
 - (e) *the cost of providing, extending and maintaining public amenities and services to the land, and*
 - (f) *future expansion of settlements in the locality.*
- (2) *As well as the matters referred to in subclause (1), the Council shall take into consideration the relationship of the development to development on adjoining land and on other land in the locality, including the effects of potential aerial spray drift.*

As described above, the Project Application Area is located within land zoned Zone No 1 (a) (General Rural) under the Narrabri LEP.

Consideration of the potential impacts of the Project on land use, land capability (including rural land capability and agricultural suitability), agricultural production, soil resources and soil stability is provided in Section 4.3 and Appendix I. The Project would be developed in a manner that would minimise and manage potential impacts on agricultural production, soil resources and soil stability (Sections 4.3 and 7).

Potential impacts of the Project on vegetation have been assessed as a component of the Flora Assessment (Appendix F). The Project includes a proposal for offset of unavoidable loss of vegetation and fauna habitat (Sections 4.9 and 7).

Consultation has been undertaken with Forests NSW during the preparation of this EA regarding potential impacts on Leard State Forest (Section 3.1.2).

Consideration of the potential impacts of the Project on water resources is provided in Sections 4.4 and 4.5 and Appendices A and B, including potential impacts on water quality, groundwater resources and downstream riparian rights. The potential impacts of the permanent Goonbri Creek alignment are also described in Sections 4.5, 4.9 and 4.10.

Section 2.7 describes the proposed recovery of coal as a component of the Project. Constraints to the extent of the Project open cut are described in Section 2.7.1. In addition, the Project would involve the beneficial use of waste rock generated by the Project through the production of gravel materials (Section 2.7.7).

Consideration of the potential impacts of the Project on nature conservation, scenic and recreational values and Aboriginal and non-Aboriginal heritage is provided in Section 4 and Appendices E, F, J, K, L and M.

The Project is not located in close proximity to any townships. Potential socio-economic impacts, including potential impacts on public infrastructure and services are described in Sections 4.15 and 4.16 and Appendix M.

Section 4 also includes consideration of the potential impacts of the Project and surrounding projects on both adjoining land and other land in the locality (e.g. noise and air quality emissions), where relevant.

Accordingly the NSW Minister can be satisfied as to these matters.

Clause 21 of the Narrabri LEP relates to the erection of buildings more than 2 storeys:

21 Height of buildings

A person shall not, without the consent of the Council, erect a building containing more than 2 storeys above ground level.

As described in Section 6.2.1, the NSW Minister is the approval authority for the Project in accordance with section 75D(1) of the EP&A Act.

Clause 22 of the Narrabri LEP relates to considerations for development on flood liable land:

22 Development of Flood Liable Land

- (1) *This clause applies to land subject to inundation by floodwaters with an average recurrence interval of 1:100 years.*
- (2) *In this clause, landfilling means the depositing of soil or like material to a depth of more than 225 mm above natural ground level.*
- (3) *A person shall not erect a building or carry out a work for any purpose on flood liable land except with the consent of the Council.*
- (4) *In considering an application for development consent in respect of land to which this clause applies, the Council shall take into account the following matters:*
 - (a) *the floor height of any building comprised in the proposed development in relation to known flood levels,*
 - (b) *landfilling,*
 - (c) *drainage,*
 - (d) *flood proofing measures,*
 - (e) *access.*

Appendix B details flood liable land in the vicinity of the Project. Consideration of floodplain water management and drainage requirements associated with the Project are provided in Section 2.10.2.

Accordingly the NSW Minister can be satisfied as to these matters.

Clause 23 of the Narrabri LEP relates to requirements for development subject to bushfire hazard:

23 Land subject to bushfire hazards

The Council shall not grant consent to the subdivision of land or to the erection of a building on land which is, in the opinion of Council, subject to bushfire hazards by reason of the vegetation on the land or on any adjacent land unless, in the opinion of the Council:

- (a) *adequate provision is made for access of fire fighting vehicles,*
- (b) *adequate safeguards are adopted in the form of fire breaks, reserves and fire radiation zones, and*
- (c) *adequate water supplies are available for fire fighting purposes.*

Buildings and infrastructure that are proposed as part of the Project would be developed with the implementation of management and mitigation measures to minimise the potential for bushfire risk (Section 4.3).

Accordingly the NSW Minister can be satisfied as to these matters.

Clauses 25 and 27 of the Narrabri LEP relate to the assessment and management of impacts to non-Aboriginal heritage or Aboriginal heritage and are potentially relevant to the Project:

25 Heritage items

- (1) *A person shall not, in respect of a building, work, relic, tree or place that is a heritage item:*
 - (a) *demolish or alter the building or work,*
 - (b) *damage or move the relic or excavate for the purpose of exposing or removing the relic,*
 - (c) *damage or despoil the place or tree,*
 - (d) *erect a building on or subdivide land on which the building, work or relic is situated or that comprises the place, or*
 - (e) *damage any tree on land which the building, work or relic is situated or on the land which comprises the place,*

except with the consent of the Council.

- (2) *The Council shall not grant consent to a development application required by subclause (1) unless it has taken into consideration the extent to which the carrying out of the proposed development would affect the heritage significance of the item and any stylistic or horticultural features of its setting.*

27 Development in the vicinity of heritage items

The Council shall not grant consent to an application to carry out development on land in the vicinity of a heritage item unless it has made an assessment of the effect the carrying out of that development will have on the heritage significance of the item and its setting.

An Aboriginal Cultural Heritage Assessment and a Non-Aboriginal Heritage Assessment (Appendices K and L, respectively) have been completed for the Project and are summarised in Sections 4.13 and 4.14.

The former Blair Athol schoolhouse residence (identified as of potential local significance) has been relocated to Boggabri for ongoing use as a residence in accordance with Development Consent (DA-59/2012) granted by Narrabri Shire Council (Section 4.14).

Accordingly the NSW Minister can be satisfied as to these matters.

Clause 30 of the Narrabri LEP relates to construction of roads with access to public roads:

30 Access

A person, other than the Council, shall not construct a road which has access to public road except with the consent of the Council.

As described in Section 2.6.3 and Appendix H, the Project would involve some modification to the local road network to facilitate the open cut extension.

TCPL has consulted with the Narrabri Shire Council and the RTA during the development of this EA and these authorities are aware of the proposed modifications to the existing road network as a component of the Project (Section 2.6.3).

Accordingly the NSW Minister can be satisfied as to these matters.

Gunnedah Local Environmental Plan 1998

Clause 3 of the *Gunnedah Local Environmental Plan 1998* (Gunnedah LEP) outlines the objectives of the LEP. Clause 3 includes:

...

(3) Industry

to encourage and facilitate a diverse range of industrial land use types.

...

As described above, prior to transport of ROM coal to the Boggabri Coal Mine for processing and train loading, the Project would involve the continued road transport of sized ROM coal to the Whitehaven CHPP along public roads, including roads within the Gunnedah LGA (Section 2.8). This activity is not inconsistent with the objectives of the Gunnedah LEP.

Accordingly the NSW Minister can be satisfied as to these matters.

A *Draft Gunnedah Local Environmental Plan 2011* (Draft Gunnedah LEP) is on exhibition from 19 October to 30 November 2011. The Project is not inconsistent with the aims outlined in clause 1.2 of the Draft Gunnedah LEP.

6.6 STRATEGIC PLANNING DOCUMENTS

The following strategic planning documents have been considered in the planning of the Project and the preparation of this EA:

- Namoi CAP (Namoi CMA, 2007);
- *Extractive Industries Policy* (Namoi CMA, 2009); and
- *Narrabri Shire Growth Management Strategy* (Narrabri Shire Council, 2009).

None of the strategic planning documents outlined above are legally binding instruments for the Project. Notwithstanding, these documents are considered relevant regional plans and the relevant components of each have been considered in this EA as outlined below.

6.6.1 Namoi Catchment Action Plan

The Namoi CAP sets a strategic framework for natural resource management within the Namoi River catchment (Namoi CMA, 2007). The Namoi CAP was developed by the Namoi CMA in consultation with the community and is endorsed by the NSW Government.

The Namoi CAP was developed in consideration of relevant National and State natural resource management strategies, and includes provision for implementing elements of these strategies at the catchment scale (Namoi CMA, 2007).

The Namoi CAP establishes catchment targets and management targets for four key regional resources. These resources are identified as people and their communities, the landscape, surface and groundwater ecosystems and native plants and animals.

The Namoi CMA has released a Draft Namoi CAP (Namoi CMA, 2011), which is yet to be finalised. The Draft Namoi CAP (Namoi CMA, 2011) provides revised targets for four key assets of the Namoi catchment, namely biodiversity, people, water and landscapes.

Given the Draft Namoi CMA is yet to be finalised, the following sub-sections include a description of the targets for each regional resource outlined in the Namoi CAP (Namoi CMA, 2007) and discussion of the consideration of these targets in the development of the Project.

People and their Communities

The catchment target for this regional resource is *continual improvement in the ability of the people in the catchment to implement the Namoi Catchment Action Plan (CAP)*, to be addressed through the following management targets potentially relevant to the Project (Namoi CMA, 2007):

- continually increase the level of participation in natural resource management activities and adoption of practices, which achieve the outcomes of the Namoi CAP; and
- improve the economic stability and wellbeing of people in the Namoi Catchment.

Consultation conducted with a range of stakeholders including the Namoi CMA, local communities, relevant landholders and the Aboriginal community is described in Section 3.1.

The outcome of consultation with these stakeholders has been considered and addressed in the preparation of this EA.

The Project would continue to involve ongoing public involvement and participation through the assessment process under the EP&A Act, and over the life of the Project (Section 3.1).

Assessment of the potential socio-economic impacts of the Project (including potential impacts on the regional economy and employment, population and community infrastructure) and proposed management and mitigation measures are provided in Appendix M and summarised in Sections 4.15 and 4.16.

Justification of the Project on economic, social and environmental grounds is provided in Section 6.9. The Project would facilitate continued employment opportunities and expenditure within the region (Section 6.9.5 and Appendix M).

The Landscape

The catchment target for this regional resource is *an increase in the extent of the landscape managed sustainably*, to be addressed through the following management targets potentially relevant to the Project (Namoi CMA, 2007):

- increase the area of land managed according to best management practice; and
- increase the area of land used in accordance with land capability.

Potential impacts of the Project on land resources and capability have been considered in this EA (Section 4.3 and Appendix I).

The Project would be developed in a manner that would minimise and manage potential impacts on land resources, including the reinstatement of agricultural land on rehabilitated areas (Sections 4.3 and 5) and the implementation of appropriate land management practices on Whitehaven-owned land surrounding the Project area (Sections 4.3.3 and 4.10.3 and Appendix I).

Surface Water and Groundwater Ecosystems

The catchment target for this regional resource is *an improvement in the condition of surface and ground water ecosystems*, to be addressed through the following management targets potentially relevant to the Project (Namoi CMA, 2007):

- an improvement in riverine structural stability, and the condition and extent of native riverine vegetation in priority riverine areas;
- maintain or improve surface water and groundwater quality suitable for irrigation, raw drinking water and aquatic ecosystem protection; and
- protect and assist the recovery of threatened or priority native aquatic species in identified priority areas (including groundwater dependent ecosystems).

The Project includes measures to mitigate, manage and monitor potential impacts on surface water and groundwater quality, including development of a low permeability barrier, permanent Goonbri Creek alignment and associated flood bund (Sections 4.4 and 4.5 and Appendices A, B and R).

As a component of the Project, TCPL would conduct enhancement works (including exclusion of stock and revegetation works) along the permanent Goonbri Creek alignment and downstream on Goonbri Creek (Sections 4.9 and 4.10).

No threatened aquatic biota was found during the aquatic surveys and it is considered unlikely that any would occur in the Project area (Appendix E).

Native Plants and Animals

The catchment target for this regional resource is *an improvement in the extent and condition of native plants and animals, and the environments in which they live, within each Interim Bio-Regional Assessment (IBRA) sub-region of the Namoi*, to be addressed through the following management targets potentially relevant to the Project (Namoi CMA, 2007):

- maintain or improve the extent, distribution and condition of the existing native vegetation of the catchment;
- support the recovery of priority fauna populations, and threatened species, populations and communities; and
- reduce the economic and environmental impacts of invasive plants and animals.

The Project is located within the Interim Bio-regional Assessment Liverpool Plains sub-region within the Brigalow Belt South region.

Section 5 presents TCPL's rehabilitation strategy for the Project. The disturbance areas associated with the Project would be progressively rehabilitated and revegetated to either native bushland and/or agricultural land.

Sections 4.9.4, 4.10.4 and 7 summarise the Project offset and compensatory measures that would assist in maintaining the biodiversity of the region, including consideration of native vegetation and threatened species, populations and communities. The Project offset measures would comprise a combination of securing the long-term viability of existing woodland (i.e. the Project biodiversity offset area) and revegetation of the mine landforms and Goonbri Creek in the long-term.

The Project would also involve the implementation of measures to minimise potential impacts of weeds and exotic animals (Sections 4.9 and 4.10).

6.6.2 Namoi Catchment Management Authority Extractive Industries Policy

The Namoi CMA's (2009) *Extractive Industries Policy* has been developed to sustain catchment assets consistent with the vision of the Namoi CMA. Components of the *Extractive Industries Policy* (Namoi CMA, 2009) potentially relevant to the Project include:

- *acknowledges that exploration for minerals, gas and energy resources shall continue*
- *adopts the Precautionary Principle on extractive industries in the Namoi Catchment*
- *opposes new approvals for extractive industries in the Namoi Catchment in the absence of a rigorous risk management assessment of cumulative impacts on the four key regional assets*
- *seeks to ensure that in-depth baseline natural resource management (NRM) databases are in place to ensure that adequate monitoring and evaluation of all extractive industry developments can take place*
- *seeks to identify key Catchment assets then seeks to identify the risks to those assets*
- *seeks to have the Catchment Action Plan considered during the approval process*

The precautionary principle, as a component of ESD, has been considered in the development of the Project (Section 6.9.3).

An ERA has been undertaken as a component of this EA to identify key risks arising as part of the Project, including cumulative impacts, for further assessment (Appendix O).

Possible risks to catchment assets (as defined in the Namoi CAP [Namoi CMA, 2007]), including land resources, water resources, biodiversity and the community, are addressed in Section 4. The Project includes measures to manage, mitigate and offset potential impacts on land resources, water resources, biodiversity and the community (Sections 4 and 7).

This EA includes consideration of baseline data collected by TCPL and other monitoring programs and baseline surveys (Section 4). Recommendations have also been made for ongoing monitoring programs as part of the Project (Section 4).

The Namoi CAP (Namoi CMA, 2007) has been considered in the preparation of this EA (Section 6.6.1). The Namoi CMA has been consulted in regard to the Project and issues raised by the Namoi CMA have been addressed in this EA (Section 3.1).

6.6.3 Namoi Shire Growth Management Strategy

The *Narrabri Shire Growth Management Strategy* (Narrabri Shire Council, 2009) provides a future direction for the settlements and land within rural areas of the Narrabri LGA.

The objectives of the *Narrabri Shire Growth Management Strategy* (Narrabri Shire Council, 2009) are outlined below:

- Provide for co-ordinated and effective sustainable growth of the economic, social and environmental aspects of the Narrabri LGA.
- Develop a land use framework that will give a level of certainty to the people who live in the Narrabri LGA.
- Ensure, where practical, that residents have adequate access to and equity for the provision of services and facilities.
- Provide for economic development opportunities that are in keeping with the character of Narrabri LGA.
- Provide an adequate level of infrastructure for the people who live and work in the Narrabri LGA.
- Ensure that the quality of surrounding waterways is not adversely affected by development.
- Ensure that the ecological integrity of the rural and urban lands are enhanced and maintained.
- Ensure that development has a minimal impact on the natural and modified scenic landscape of Narrabri LGA.
- Preserve and promote the heritage and culture of Narrabri LGA.
- Recognise the impact of natural hazards on future land use and settlement.

The Project is generally consistent with the aims of the *Narrabri Shire Growth Management Strategy* (Narrabri Shire Council, 2009) as:

- The Project has been developed in a manner that has considered the potential economic and social impacts on the region and would facilitate continued employment opportunities and expenditure in the region (Section 6.9.5 and Appendix M).
- Project design, planning and assessment have been carried out applying the principles of ESD (Section 6.9.3).
- The Project is consistent with the objectives and zoning in the Narrabri LEP (Section 6.5.2).
- The Project includes consideration of potential socio-economic impacts, including access to services and facilities and the distribution of impacts between stakeholders (Sections 4.15 and 4.16 and Appendix M).
- The Project would benefit current and future generations through the maintenance and expansion of employment and regional expenditure associated with the existing Tarrawonga Coal Mine (Section 6.9.5 and Appendix M).
- The Project includes measures to minimise and mitigate potential impacts on waterways (Section 4.5 and Appendix A).
- Development of the Project included consideration of the Namoi CAP (Section 6.6.1).
- The Project includes a range of impact avoidance, mitigation and offset measures to maintain or improve the biodiversity values of the surrounding region in the medium to long-term (Sections 4.9, 4.10 and 7 and Appendices E and F).

- The Project includes measures to minimise and mitigate potential impacts on the landscape values of the region (Section 4.12 and Appendix J).
- The Project includes measures to minimise and mitigate potential impacts on items of heritage significance (Sections 4.13 and 4.14 and Appendices K and L).
- The Project has been developed in consideration of flood risk, bushfire risk and erosion potential (Sections 2.10.2, 4.3, 4.5 and 4.17).

6.7 PROJECT APPROVAL PROVISIONS FOR THE PREVENTION, MINIMISATION AND MANAGEMENT OF RELEVANT IMPACTS

In accordance with the Commonwealth requirements in the EARs (Attachment 1), this section details how the NSW planning framework provides for the prevention, minimisation and management of relevant impacts.

This EA includes consideration of the consistency of the Project with the objects of the EP&A Act (Section 6.9.3) and relevant EPIs (Section 6.5).

If approval is granted by the NSW Minister for Planning and Infrastructure, the Project Approval would include conditions and requirements for the operation of the Project to prevent, minimise and manage potential impacts of the Project. TCPL would also be required to operate the Project in accordance with the environmental management and monitoring commitments outlined in this EA.

It is envisaged that the Project Approval would include conditions for the progressive development of environmental monitoring and management plans throughout the life of the Project. The development and approval of management plans would involve the review of Project operations by relevant government authorities.

It is anticipated that, consistent with contemporary Project Approvals under Part 3A of the EP&A Act, the NSW Minister for Planning and Infrastructure may include a condition in the Project Approval (under section 122C of the EP&A Act) with a requirement for regular independent environmental audits of the Project, with the results of the audit being provided to the Director-General of the DP&I.

In addition, as described in Section 6.4.1, under the *Mining Act, 1992*, environmental protection and rehabilitation are regulated by conditions included in all mining leases, including requirements for the submission of a MOP and subsequent AEMRs (or REMP following the commencement of relevant provisions of the *Mining Amendment Act, 2008*).

6.8 POST-APPROVAL MONITORING, ENFORCEMENT AND REVIEW PROCEDURES

In accordance with the Commonwealth requirements in the EARs (Attachment 1), this section provides a description of the monitoring, enforcement and review procedures that may apply to the Project.

At the time of the introduction of Part 3A of the EP&A Act, the monitoring, compliance and enforcement provisions of the EP&A Act were strengthened, including additional powers to gather evidence, to issue orders or notices to remedy or restrain breaches of Project Approvals or the EP&A Act, and to require monitoring and environmental audits and the provision of evidence of compliance (NSW Department of Infrastructure, Planning and Natural Resources, 2005).

The DP&I monitors the implementation of the conditions of Project Approvals under Part 3A of the EP&A Act, which may include the preparation of monitoring and compliance reports and undertaking of independent environmental audits (DoP, 2009). Non-compliances with conditions of approval can attract enforcement actions, which range from serving notices requiring rectification work, imposing fines or bringing legal proceedings in the NSW Land and Environment Court (DoP, 2009).

It is anticipated that the NSW Minister for Planning and Infrastructure may include a condition in the Project Approval with a requirement for regular independent environmental audits of the Project (Section 6.7).

Part 6, Division 4 of the EP&A Act outlines the enforcement procedures for offences under the EP&A Act and EP&A Regulation, including procedures where the Project is not undertaken in accordance with the requirements of the Project Approval.

TCPL would prepare AEMRs for the Project in accordance with the conditions of the mining leases (Section 6.4.1), which would be provided for review by relevant government agencies. DRE also monitors mine sites through inspections and audits to ensure compliance with title conditions and MOPs (DoP, 2008). These inspections and audits may be conducted in conjunction and co-operation with other NSW government agencies (DoP, 2008).

The conditions of Tarrawonga Coal Mine EPL 12365 require that an Annual Return be submitted to the OEH comprising a summary of any monitoring required by the EPL (including the recording of complaints) and a Statement of Compliance. Licensees are required to submit details of the nature and extent of any non-compliance with their EPL conditions under section 66(3) of the PoEO Act, including:

- what action has been, or will be, taken to mitigate any adverse effects of the non-compliance; and
- what action has been, or will be, taken to prevent a recurrence of the non-compliance.

Chapter 5 of the PoEO Act provides details of offences and penalties under the PoEO Act.

The rehabilitation and decommissioning of the Project would be completed to the satisfaction of DRE in accordance with the MREMP framework under the NSW *Mining Act, 1992* (Section 5).

Following mine closure, TCPL must continue to comply with the requirements of the EPL until such time as formal relinquishment is achieved (i.e. until such time that the relevant authorities are satisfied that without ongoing intervention the potential downstream impacts are considered acceptable).

6.9 PROJECT JUSTIFICATION

In accordance with the EARs (Attachment 1), a justification of the Project on economic, social and environmental grounds, including consideration of alternatives and consideration of the consistency of the Project with the objects of the EP&A Act is provided below.

6.9.1 Consideration of Project Alternatives

A number of alternatives to the Project assessed in this EA were considered by TCPL in the development of the Project description, including further consideration of alternatives following lodgement of the Project Application.

In accordance with the EARs (Attachment 1), a description of the alternatives considered by TCPL is provided below.

Project Location

The location for the Project is determined by the presence of coal seams able to be economically mined in the vicinity of the existing Tarrawonga Coal Mine. The Project involves the extension of the current approved open cut mining operations in the Maules Creek Formation.

The Project's location maximises the use of TCPL's existing facilities and enables the use of BCPL's coal loading and rail transport infrastructure (once approvals and upgrades are in place for the transfer of Project ROM coal to the Boggabri Coal Mine Infrastructure Facilities).

Mine Infrastructure Area

The *Project Application and Preliminary Environmental Assessment* (TCPL, 2011e) lodged for the Project included the development of mine facilities on the southern side of Goonbri Creek.

During the development of the detailed Project description, a new preferred location for the mine facilities area was identified adjacent to the Southern Emplacement (Section 2.6.1).

The revised location for the mine facilities area avoids additional fragmentation of habitat and avoids the occurrence of Box-Gum Woodland EEC/CEEC which runs north to south along the mine access road (Appendix F) and reduces potential impacts on existing agricultural land located on the southern side of Goonbri Creek.

Ancillary Infrastructure

TCPL has selected a realignment of Goonbri Road that minimises the area of disturbance by using the existing Dripping Rock Road.

Mining Method

Coal reserves are typically mined in one of two ways:

- underground methods (whereby the coal is accessed via a small surface opening leading to sub-surface excavations which expose the coal); or
- open cut methods (whereby mining occurs from the surface downwards to progressively expose the coal).

The Project would use open cut mining methods to recover approximately 50.5 Mt of ROM coal from eight coal seams in the Maules Creek Formation (Section 2.3).

In areas with sufficient seam thickness, the Jeralong, Merriown and Velyama seams within the Maules Creek Formation would be potentially amenable to underground mining methods. In addition, other seams would potentially be amenable to highwall mining methods within 500 m of the highwall of the approved Tarrawonga Coal Mine open cut.

Minarco-MineConsult estimated that the mineable ROM coal reserve associated with underground and highwall mining in the Project mining area is less than 20 Mt using bord and pillar mining methods and secondary extraction supplemented by augering.

Underground mining methods would result in less disturbance of vegetation and fauna habitat and generation of waste rock compared to open cut methods to be employed by the Project. However, the Project includes offset and compensatory measures that would assist in maintaining the biodiversity of the region (Section 4.9). Rehabilitation measures for the Project are described in Section 5.

Prediction of subsidence impacts associated with underground mining cannot be made without detailed mine planning and geotechnical analysis. However, subsidence associated with underground mining can result in impacts to surface features (i.e. potential surface impacts are not avoided completely).

Subsidence associated with an underground mining proposal would result in impacts on Goonbri Creek and the associated alluvium. The development of a low permeability barrier would still potentially be required to manage subsidence impacts associated with an underground mining proposal, unless the mining reserve was further reduced to avoid mining beneath or in close proximity to Goonbri Creek.

Underground mining generally results in lower noise and air quality emissions. Measures to minimise and manage noise and air quality impacts associated with the Project are described in Sections 4.6 and 4.7.

Based on TCPL's corporate objectives (refer discussion below) of operating at a 3 Mtpa ROM coal production rate, the use of underground rather than open cut mining methods would reduce the life of the Project by more than 10 years, including the loss of associated regional employment opportunities and flow-on effects.

A change to underground mining methods at the Project may also result in a discontinuation or reduction in production at the Tarrawonga Coal Mine operations, would require changeover and/or re-skilling of the workforce and typically incurs higher capital and operating costs compared to open cut methods.

The capital cost of a longwall machine would be prohibitive given the limited seams that would potentially be available for longwall mining in the Project mining area.

Development of the Project as an underground mine would, therefore, result in the sterilisation of over 30 Mt of the coal resource, including an associated loss of royalties to the State, and higher capital and operating costs for the coal that was recovered.

Conversely, open cut mining methods would maximise resource recovery within the Project mining area as it would allow mining of thinner coal seams in the Maules Creek Formation which would not be viable for underground mining, due to practical working constraints.

Based on the above, it was determined that the Project would use open cut mining methods.

Production Scale and Rate

The scale and production rate of a mining operation is determined by the optimum recovery of the resource and the optimum production rate that maximises value to the proponent and ongoing viability in consideration of mine planning constraints.

Mine planning is a structured process designed to take into account the range of variables that may influence a potential mining operation. Aspects considered in the mine planning process include mine safety, resource recovery, potential environmental impacts (e.g. noise, air quality, water), community issues, risks to the operation, mining methods and rates, equipment requirements, infrastructure capacity, development timeframes and economics (i.e. capital and operating costs).

Project Scale

The Project mining reserve comprises approximately 50.5 Mt of ROM coal (Section 2.7.2). The scale of the Project was constrained by a number of factors to the open cut extent, including the coal resource extent and strip ratios, as follows (Section 2.7.1):

- the existing/previously mined areas (i.e. Tarrawonga Coal Mine) and the target coal seams strike in the west;
- the neighbouring Boggabri Coal Mine operation (i.e. proposed mine waste rock emplacement) in the north;
- the target coal seams subcrop to the south; and
- uneconomic open cut ratio limits in the east.

Following consideration of various alternatives in consultation with BCPL, it was determined that the Project open cut would extend into CL 368 to maximise resource recovery and allow mine landform integration with the neighbouring Boggabri Coal Mine.

Production Rate

TCPL has undertaken a mine planning analysis (including consideration of the aspects described above and coal handling and transportation constraints) to determine the optimum production rate for the Project. Based on this analysis and TCPL's corporate objectives, it was determined that the Project would have a maximum production rate of up to approximately 3 Mtpa of ROM coal, with mining operations conducted 24 hours per day, seven days per week. The Project indicative mine schedule is provided in Section 2.7.2.

Coal Processing

A number of alternatives were considered for the processing of Project ROM coal, including:

- continued use of the Whitehaven CHPP;
- use of the upgraded Boggabri Coal Mine Infrastructure Facilities; and/or
- establishing a new CPP at the Tarrawonga Coal Mine.

It was determined that the Project would use the Boggabri Coal Mine Infrastructure Facilities (including CPP and rail loading infrastructure), once suitable approvals and upgrades are in place, to process ROM coal mined at the Project. Prior to this, the existing sized ROM coal haulage to the Whitehaven CHPP would continue.

In addition, up to 150,000 t ROM coal per annum would also be selectively hauled to the on-site mobile crusher for crushing and screening to produce a domestic specification sized coal product for collection at the mine by customers (Section 2.8.4). The processing of a domestic specification sized coal product at the Tarrawonga Coal Mine meets customer demands and maximises resource recovery of different coal qualities.

Establishing a CPP at the Tarrawonga Coal Mine is not a preferred option for the Project, due to:

- the capital costs associated with establishment of a new CPP;
- additional land disturbance and supporting infrastructure (e.g. electricity supply) that would be required at the Tarrawonga Coal Mine;
- increased site water demand that would be required at the Tarrawonga Coal Mine; and
- cumulative air and noise impacts associated with the duplication of infrastructure at a new Project CPP, with a CPP also being constructed at the neighbouring Boggabri Coal Mine.

ROM Coal Transport

TCPL has investigated the possible use of a conveyor to transport ROM coal to the Boggabri Coal Mine Infrastructure Facilities, rather than the use of haul trucks on unpaved roads.

TCPL has estimated the cost of installing a conveyor to the Boggabri Coal Mine Infrastructure Facilities at approximately \$10M. PAEHolmes (Appendix D) estimates that the use of a conveyor would reduce dust emissions of the Project by approximately 2% (based on emissions estimates for Year 16).

The use of haul trucks to transport ROM coal to the Boggabri Coal Mine Infrastructure Facilities is preferred as the capital cost of a conveyor is prohibitive and the modest 2% reduction of total dust emissions means that the conveyor is not a reasonable investment from an emissions reduction perspective.

Waste Rock Management

Mined material that does not constitute economic coal is termed waste rock. Waste rock is conventionally disposed of in open cut voids (in-pit waste rock emplacements) and/or out-of-pit waste rock emplacements.

TCPL has evaluated several alternative waste rock emplacement design concepts for the Project. The evaluation considered economic, agricultural and ecological factors and involved consultation with DP&I (Section 3.1) and BCPL (owner of Boggabri Coal Mine).

The selected emplacement design concept for the Project:

- maximises the waste rock directed to backfilling the open cut and in-pit waste rock emplacements to minimise the overall Project footprint;
- maximises the use of existing disturbance areas for out-of-pit waste rock emplacements;
- allows for an integrated mine landform at the cessation of the Project and Boggabri Coal Mine operations, to further minimise the overall Project footprint;
- minimises the overall Project footprint by maximising the height of the waste rock emplacements (up to 370 m AHD) while maintaining landforms comparable to surrounding landform heights (e.g. Goonbri Mountain [546 m AHD] and Leard Mountain [447 m AHD]);

- avoids encroachment on Goonbri Creek to the south-east of the Southern Emplacement;
- minimises waste haulage distances through mine scheduling and design; and
- allows for development and use of a services corridor between the in-pit waste rock emplacement and Southern Emplacement during mining operations.

Goonbri Creek

The Project open cut extent would remove a section of Goonbri Creek. The Project would involve the establishment of a permanent Goonbri Creek alignment adjacent to the eastern extent of the proposed open cut (Section 2.10.3) and riparian enhancements of downstream areas of Goonbri Creek (Section 4.9.3).

The consideration of alternatives during the mine planning process determined that avoidance of Goonbri Creek by the open cut extent would:

- sterilise approximately 4 Mt of ROM coal, including an associated loss of royalties to the State; and
- reduce the net production benefit of the Project by approximately \$79M (Appendix M).

The avoidance of mining through a portion of Goonbri Creek would still require the development of a low permeability barrier and flood bund.

The avoidance of mining through a portion of Goonbri Creek would result in a minor reduction in the water extracted from the alluvial aquifer and surface water system compared to the Project, as a result of less disturbance of the aquifer and catchment excision by the open cut. As with the Project, appropriate aquifer access licences and share components for any take of water from alluvial aquifers would still need to be obtained under the *Water Management Act, 2000* in consultation with NOW (Section 6.4.1).

Data from the aquatic field surveys determined that the condition of the stream aquatic habitat along Goonbri Creek ranged from good to degraded and generally worsened with distance downstream (Appendix E). No threatened aquatic biota was found during the aquatic surveys and it is considered unlikely that any would occur in the Project area (Appendix E).

The avoidance of mining through a portion of Goonbri Creek would not result in a reduction in the clearance of Box-Gum Woodland EEC/CEEC. However, it would result in some reduction in the disturbance of other vegetation and associated fauna habitat.

During the mine planning process, TCPL also considered an extension of the Southern Emplacement that encroached on Goonbri Creek to the south-east. The option was not considered the preferred option for the Project due to potential environmental impacts associated with further disturbance of Goonbri Creek and agricultural land. The preferred approach enables placement of waste rock as part of an integrated landform with the Boggabri Coal Mine, which reduces the need for extension of the waste rock emplacement in other areas.

Alluvial Aquifer Management

The Project open cut extent would mine through a portion of the alluvium associated with Goonbri Creek. The Project would involve the development of a low permeability barrier to minimise alluvial groundwater inflows to the open cut (Section 2.10.3). In addition, appropriate aquifer access licences and share components for any take of water from alluvial aquifers would be sought and obtained under the *Water Management Act, 2000* in consultation with NOW (Section 6.4.1).

The consideration of alternatives during the mine planning process determined that the avoidance of Goonbri Creek and the implementation of a 150 m buffer between the open cut extent and the alluvium would:

- sterilise approximately 8 Mt of ROM coal, including an associated loss of royalties to the State;
- reduce the life of the Project by approximately two and a half years, including the loss of associated employment opportunities and flow-on effects; and
- reduce the net production benefit of the Project by approximately \$156M (including consideration of cost savings associated with not installing the low permeability barrier) (Appendix M).

The avoidance of alluvium associated with Goonbri Creek would not result in a reduction in the clearance of Box-Gum Woodland EEC/CEEC. However, it would result in some reduction in the disturbance of other vegetation and associated fauna habitat.

A number of alternatives were considered during the concept engineering phase for the low permeability barrier to restrict seepage of alluvial water to the open cut during and post-mining, including (Appendix R):

- soil-bentonite barrier;
- clay core (constructed using trench excavation and engineered backfill); and
- in-pit clay batter lining.

The above options were evaluated by Allan Watson Associates (Appendix R) on the basis of effectiveness, construction constraints and capital cost. On the basis of this analysis the Project includes the construction of a soil-bentonite low permeability barrier to restrict seepage of alluvial water to the open cut during and post-mining.

The option of not installing any mechanism to restrict seepage of alluvial water to the open cut was not considered acceptable, due to the potential higher groundwater inflows to the open cut that would require management within the water management system, and potential impacts on the alluvial aquifer resource and associated beneficial uses.

Final Void

Final voids are generally left at the conclusion of open cut mining with the size of these voids dictated by the depth of the open cut, the extent of backfilling of the voids that is undertaken and the mining sequence and associated beneficial uses.

The mining sequence is guided by the open cut extent and waste rock emplacement constraints (such as drainage) and aims to achieve a workable pit layout while maintaining balanced strip ratios, maximising backfilling of the open cut.

At the cessation of mining, a final void would remain at the eastern extent of the open cut (Section 5), which has been minimised within the constraints of the mining sequence. The final void acts as a groundwater sink that minimises impacts to surrounding groundwater quality (Section 4.4.2).

TCPL evaluated a mining sequence and final landform alternative that involved a final void located at the northern extent of the open cut. This location for the final void was not preferred as it requires greater out-of-pit waste rock emplacement and eliminates opportunities for access to future resources. The increased level of out-of-pit waste rock emplacement associated with this alternative would result in more disturbance area, or higher waste rock landforms.

The surface catchment of the final void would be designed to a suitable minimum by the use of upslope diversions/bunds and contour drains around the perimeter (Section 2.7.9). The construction of a low permeability barrier (Section 2.10.3 and Appendix R) would reduce the rate of potential alluvial groundwater inflows reporting to the final void in the long-term.

No Project

In accordance with the Commonwealth requirements in the EARs (Attachment 1), an assessment of the consequences of not proceeding with the Project has been conducted. Were the Project not to proceed, the following consequences are inferred:

- approximately 86 existing direct employment opportunities would be discontinued following completion of currently approved mining at the Tarrawonga Coal Mine and the associated flow-on effects would be lost;
- a peak of up to 20 direct construction and an additional 34 (i.e. total 120) direct operational phase employment opportunities and associated flow-on effects would not be created;
- net production benefit of approximately \$1,138M, and a net benefit of approximately \$790M would be forgone (Appendix M);
- tax revenue from the Project would not be generated (Appendix M);
- royalties to the State of NSW would not be generated (Appendix M);
- the potential environmental and social impacts described in this EA for the Project would not occur; and
- the Project offset and other revegetation areas would not be established.

6.9.2 Consideration of Climate Change Projections for Australia and NSW

Climate change involves complex interactions between climatic, biophysical, social, economic, institutional and technological processes.

The weight of scientific opinion supports the proposition that the world is warming due to the release of emissions of carbon dioxide and other greenhouse gases from human activities including industrial processes, fossil fuel combustion, and changes in land use, such as deforestation (Pew Centre on Global Climate Change, undated).

Although understanding of climate change has improved markedly over the past several decades, climate change projections are still subject to uncertainties such as (Commonwealth Scientific and Industrial Research Organisation [CSIRO], 2007):

- *Socio-economic uncertainties associated with the current and future activities of humans, which affect the development of greenhouse gas and aerosol emission scenarios.*
- *Uncertainties associated with our understanding of how the Earth's major biophysical systems behave and how they are represented in climate models.*
- *Uncertainties regarding the assignment of probability distributions to regional climate change projections.*
- *Uncertainties associated with projecting climate change at small spatial scales, particularly for coastal and mountainous areas.*

Climate Change Projections for Australia

In Australia, the climate is projected to become warmer and drier. By 2030, warming (for mid-range global emission scenarios) is projected to be about 1°C over most of Australia, with slightly less warming in some coastal areas, and slightly more warming inland (CSIRO, 2007). By 2070, annual average temperatures are projected to increase by 1.8 to 3.4°C with spatial variations similar to those for 2030 (CSIRO, 2007) depending on the emission scenarios examined. Substantial increases in the frequency of days over 35°C, fewer frosts and increased evaporation are likely (CSIRO, 2007).

Sea level is projected to rise by 18 to 59 centimetres (cm) by 2100, or 2 to 7 cm per decade, as a result of global warming (CSIRO, 2007). Sea-level rise will have impacts on soft sediment shorelines and intertidal ecosystems, which will be especially vulnerable to change with additional impacts from extreme events.

The interaction of severe weather events, such as tropical cyclones, with the coastal ocean has the potential to generate severe waves and storm surge, which in turn can have significant impacts on the coast. Warmer ocean waters and sediment transport following heavy rainfall will affect fisheries and coastal ecosystems (CSIRO, 2007).

Climate change may result in changes to rainfall patterns, runoff patterns and river flow. High global emission scenario projections for annual average rainfall in Australia for around 2050 and 2070, relative to 1990 include (CSIRO, 2007):

- in southern areas (-20% to +0% by 2050 and -30% to +5% by 2070);
- in central, eastern and northern areas (-20% to +10% by 2050 and -30% to +20% by 2070);
- decreases are most pronounced in winter and spring;
- some inland and eastern coastal areas may become wetter in summer, and some inland areas may become wetter in autumn; and
- where average rainfall increases, there are predicted to be more extremely wet years and where average rainfall decreases there would be more dry spells.

Climate Change Projections for NSW

Current climate trends indicate an accelerating increase in average annual temperature in NSW, with an annual average temperature rise of approximately 0.1°C per decade during the 1950s to 1980s and an annual average temperature rise of approximately 0.5°C per decade from 1990 to 2010 (DECCW, 2010c).

Projections of climate change in NSW were undertaken by the DECCW (2010c) and are reported in the NSW Climate Impact Profile. Based on a global emissions scenario that assumes a low uptake of carbon alternative fuels, NSW is projected to experience the following changes to its climate by 2050 (DECCW, 2010c):

- NSW is expected to become hotter, with higher maximum and minimum temperatures very likely (i.e. greater than 90% probability) to be experienced across the state in all seasons.
- The greatest increases in maximum temperatures are projected to occur in the north and west of the state, with winter and spring maximum temperatures expected to rise by around 2 to 3°C across much of northern NSW.

- A slight increase in summer rainfall is projected for NSW, however, this is likely to be accompanied by a significant decrease in winter rainfall in the south-western regions.
- Many parts of the state will experience a shift from winter dominated to summer-dominated rainfall, which may have implications for the duration and severity of drought in these areas.
- Evaporation is expected to significantly increase across much of NSW, due to increased temperatures.

Projected changes to NSW's climate would have associated impacts, including to land, settlements and ecosystems (DECCW, 2010c).

The projected increases in evaporation are likely to counteract the expected increases in summer rainfall across the state, and as such, dry soil conditions would be expected to be even more prevalent in the west of the state. Erosion of soils is also expected to increase across the state, due to increased runoff associated with higher intensity rainfall events and lower rainfall comparative to evaporation, and decreased vegetation cover (DECCW, 2010c).

Projected changes in rainfall and evaporation in all regions will also likely affect the soil salinity. An increase or decrease in soil salinity in a particular area will depend on local factors for each catchment (DECCW, 2010c).

Settlements would likely be affected by increased sea levels and increased frequency and intensity of flood-producing rainfall events. Changes in rainfall, runoff and evaporation are also likely to affect NSW water supplies (DECCW, 2010c).

Potential impacts of climate change to biological diversity and ecological integrity are described in Section 6.9.3.

The potential implications of climate change on local surface water and groundwater resources are addressed in Appendices A and B.

6.9.3 Ecologically Sustainable Development Considerations

Background

The concept of sustainable development came to prominence at the World Commission on Environment and Development (1987), in the report titled *Our Common Future*, which defined sustainable development as:

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

In recognition of the importance of sustainable development, the Commonwealth Government developed a *National Strategy for Ecologically Sustainable Development (NSES)* (Commonwealth of Australia, 1992) that defines ESD as:

using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased.

The NSES was developed with the following core objectives:

- enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations;
- provide for equity within and between generations; and
- protect biological diversity and maintain essential processes and life support systems.

In addition, the NSES contains the following goal:

Development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends.

In accordance with the core objectives and a view to achieving this goal, the NSES presents private enterprise in Australia with the following role:

Private enterprise in Australia has a critical role to play in supporting the concept of ESD while taking decisions and actions which are aimed at helping to achieve the goal of this Strategy.

As described in Section 6.3, the Project will require approval under both the EP&A Act and the EPBC Act.

In deciding whether or not to approve the Project, the Commonwealth Minister must take into account the principles of ESD pursuant to section 136(2) of the EPBC Act. The relevant definition of the principles of ESD is provided in section 3A of the EPBC Act.

The EARs (Section 1.2) require consideration of the consistency of the Project with the objects of the EP&A Act, which also includes encouragement of ESD. Clause 7(4) of Schedule 2 of the EP&A Regulation provides a definition of ESD relevant to the preparation of environmental impact statements. Section 6(2) of the PoEA Act also provides the same definition.

The principles of ESD as outlined in section 3A of the EPBC Act and clause 7(4) of Schedule 2 of the EP&A Regulation are presented and compared in Table 6-1.

Project design, planning and assessment have been carried out applying the principles of ESD, through:

- incorporation of risk assessment and analysis at various stages in the Project design and environmental assessment and within decision-making processes;
- adoption of high standards for environmental and occupational health and safety performance;
- consultation with regulatory and community stakeholders;
- assessment of potential greenhouse gas emissions associated with the Project; and
- optimisation of the economic benefits to the community arising from the development of the Project.

The Project design takes into account biophysical considerations, including the principles of ESD as defined in section 3A of the EPBC Act and clause 7(4) of Schedule 2 of the EP&A Regulation.

In addition, it can be demonstrated that the Project can be operated in accordance with ESD principles through the application of mitigation and management measures to minimise environmental impacts of the Project.

The following sub-sections describe the consideration and application of the principles of ESD to the Project.

Table 6-1
Principles of Ecologically Sustainable Development

Section 3A of the EPBC Act	Clause 7(4) of Schedule 2 of the EP&A Regulation
(a) <i>decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations;</i>	
(b) <i>if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;</i>	(a) <i>the precautionary principle, namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:</i> (i) <i>careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and</i> (ii) <i>an assessment of the risk-weighted consequences of various options,</i>
(c) <i>the principle of inter-generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations;</i>	(b) <i>inter-generational equity, namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations,</i>
(d) <i>the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making;</i>	(c) <i>conservation of biological diversity and ecological integrity, namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration,</i>
(e) <i>improved valuation, pricing and incentive mechanisms should be promoted.</i>	(d) <i>improved valuation, pricing and incentive mechanisms, namely, that environmental factors should be included in the valuation of assets and services, such as:</i> (i) <i>polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,</i> (ii) <i>the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,</i> (iii) <i>environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.</i>

Precautionary Principle

Environmental assessment involves predicting what the environmental outcomes of a development are likely to be. The precautionary principle reinforces the need to take risk and uncertainty into account, especially in relation to threats of irreversible environmental damage.

A PHA (Appendix P) and ERA (Appendix O) were conducted to identify Project related risks and develop appropriate mitigation measures and strategies.

The PHA (Appendix P) considers off-site risks to people, property and the environment (in the presence of controls) arising from atypical and abnormal hazardous events and conditions (i.e. equipment failure, operator error and external events) from fixed installations. The PHA does not consider those risks that are not atypical or abnormal (e.g. long-term effects of dust emissions on adjacent vegetation) or risks associated with transportation by pipeline, road, rail or sea.

The ERA (Appendix O) addressed potential environmental impacts associated with the Project, including long-term effects. In addition, long-term risks are considered by the specialist studies conducted in support of this EA (Section 1.3).

Findings of these specialist assessments are presented in Sections 4.1 to 4.17 and relevant appendices. Measures designed to mitigate potential environmental impacts arising from the Project are also described in Sections 4.1 to 4.17.

The specialist assessments, PHA and ERA have evaluated the potential for harm to the environment associated with development of the Project. Assessment of potential short, medium and long-term impacts of the Project have been carried out during the preparation of this EA on aspects of surface water and groundwater, transport movements, air quality emissions (including greenhouse gas emissions), noise and blasting, visual character, aquatic and terrestrial ecology, heritage, agricultural land uses and socio-economics.

A range of mitigation measures have been adopted as components of the Project design to minimise the potential for serious and/or irreversible damage to the environment, including physical controls (e.g. low permeability barrier), the development of environmental management and monitoring programs, contingency measures and compensatory measures and ecological initiatives (Sections 4.1 to 4.17). Where residual risks are identified, contingency controls have also been considered (Sections 4.1 to 4.17).

In addition, for key Project environmental assessment studies (e.g. Groundwater Assessment [Appendix A]), peer review by recognised experts was undertaken (Attachment 4).

Social Equity

Social equity is defined by inter-generational and intra-generational equity. Inter-generational equity is the concept that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations, while intra-generational equity is applied within the same generation.

The principles of social equity are addressed through:

- assessment of the socio-economic impacts of the Project, including the distribution of impacts between stakeholders and consideration of the potential socio-economic costs of climate change (Appendix M);
- management measures to be implemented in relation to the potential impacts of the Project on water resources, heritage, land resources, agriculture, noise and blasting, air quality, ecology, transport, hazards and risks, greenhouse gas emissions, visual character and socio-economics (Section 4);
- implementation of environmental management and monitoring programs (Section 4) to minimise potential environmental impacts (which include environmental management and monitoring programs covering the Project life); and
- implementation of compensatory measures and ecological initiatives during the life of the Project to compensate for potential localised impacts that have been identified for the development (Sections 4 and 7).

In particular, the Project would benefit current and future generations through the maintenance and expansion of employment and regional expenditure. Flow-on employment and production effects in the region would also continue to be significant (Appendix M).

Based on experience during the development of the Tarrawonga Coal Mine, the Project would continue to provide a significant stimulus to local and regional economies and provide NSW export earnings and royalties, thus contributing to future generations through social welfare, amenity and infrastructure.

The Project incorporates a range of physical controls (e.g. low permeability barrier) and environmental management and mitigation measures (e.g. purchase of water access licences, biodiversity offsets, land acquisition) to minimise potential impacts on the environment and the costs of these measures would be met by TCPL.

These costs have been included in the economic assessment, therefore the potential benefits to current and future generations have been calculated in the context of the mitigated Project.

Conservation of Biological Diversity and Ecological Integrity

Biological diversity or 'biodiversity' is considered to be the number, relative abundance, and genetic diversity of organisms from all habitats (including terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are a part) and includes diversity within species and between species as well as diversity of ecosystems (Lindenmayer and Burgman, 2005).

For the purposes of this EA, ecological integrity has been considered in terms of ecological health and ecological values.

The Project area is located in a largely agricultural landscape. The majority of the vegetation has been extensively cleared for cereal/fodder cropping and cattle grazing. Large areas of vegetation within the landscape persist within reserved areas and state forests. The north of the Project area is located within Leard State Forest. The majority of the vegetation within Leard State Forest comprises of White Cypress Pine and Narrow-leaved Ironbark forest and woodland communities. Logging has occurred periodically throughout Leard State Forest.

A total of 269 native flora species and 175 native fauna species have been located within the Project area and surrounds (Appendices E and F).

One threatened ecological community, the Box-Gum Woodland EEC/CEEC, has been recorded within the Project area (Section 4.9.1). There is approximately 13 ha of the Box-Gum Woodland EEC/CEEC within the Project area (Appendix F).

No threatened flora species listed under the TSC Act or EPBC Act have been recorded within the Project area and/or surrounds (Appendix F). Seven threatened bird species and two threatened mammals listed under the TSC Act have been recorded in the Project area, namely the Turquoise Parrot, Masked Owl, Brown Treecreeper (eastern subspecies), Speckled Warbler, Hooded Robin (south-eastern form), Grey-crowned Babbler (eastern subspecies), Varied Sittella, Squirrel Glider and Yellow-bellied Sheathtail-bat (Appendix E).

Data from the aquatic field surveys determined that the condition of the stream aquatic habitat along Goonbri Creek ranged from good to degraded and generally worsened with distance downstream (Appendix E). No threatened aquatic biota was found during the aquatic surveys and it is considered unlikely that any would occur in the Project area (Appendix E).

The environmental assessments in Sections 4.9 and 4.10 (and Appendices E and F) describe the potential impacts of the Project on the biological and ecological environment.

In accordance with ESD principles, the Project addresses the conservation of biodiversity and ecological integrity by proposing an environmental management framework designed to conserve ecological values where practicable after consideration of potential Project impacts as described in the sub-sections below.

Greenhouse Gas Emissions and Biological Diversity and Ecological Integrity

Natural ecosystems are considered to be vulnerable to climate change. Patterns of temperature and precipitation are key factors affecting the distribution and abundance of species (Preston and Jones, 2005). Projected changes in climate will have diverse ecological implications. Habitat for some species will expand, contract and/or shift with the changing climate, resulting in habitat losses or gains, which could prove challenging, particularly for species that are threatened.

Human-caused Climate Change is listed as a key threatening process under the TSC Act and Loss of Climatic Habitat Caused by Anthropogenic Emissions of Greenhouse Gases is listed as a key threatening process under the EPBC Act.

In making its final determination to list anthropogenic climate change as a key threatening process, the NSW Scientific Committee (2000) found that:

1. The distribution of most species, populations and communities is determined, at least at some spatial scale, by climate.
2. Climate change has occurred throughout geological history and has been a major driving force for evolution.
3. There is evidence that modification of the environment by humans may result in future climate change. Such anthropogenic change to climate may occur at a faster rate than has previously occurred naturally. Climate change may involve both changes in average conditions and changes to the frequency of occurrence of extreme events.
4. Response of organisms to future climate change (however caused) is likely to differ from that in the past because it will occur in a highly modified landscape in which the distribution of natural communities is highly modified. This may limit the ability of organisms to survive climate change through dispersal (Brasher and Pittock, 1998; Australian Greenhouse Office, 1998). Species at risk include those with long generations, poor mobility, narrow ranges, specific host relationships, isolated and specialised species and those with large home ranges (Hughes and Westoby, 1994). Pest species may also be advantaged by climate change.

A greenhouse gas assessment was undertaken by PAE Holmes for the Project (Appendix D). Section 4.8 provides a description of the potential greenhouse gas emissions of the Project in accordance with the EARs (Attachment 1). Valuation of potential impacts of greenhouse gas emissions has been incorporated in the Socio-Economic Assessment (Appendix M) for the Project.

The potential implications of climate change on local surface water and groundwater resources are addressed in Appendices A and B.

Measures to Maintain or Improve the Biodiversity Values of the Surrounding Region

A range of impact avoidance, mitigation and offset measures would be implemented for the Project to maintain or improve the biodiversity values of the surrounding region in the medium to long-term, as described below.

A range of vegetation management measures would be implemented for the Project to minimise impacts on flora, fauna, and their habitats (Sections 4.9.3 and 4.10.3).

High frequency fire has the potential to impact on biodiversity by reducing vegetation structure and resulting in a corresponding loss of animal species. High frequency fire is listed as a key threatening process under the TSC Act. A range of management measures would be implemented for the Project to minimise the risk of bushfire and in doing so, would maintain or improve the biodiversity values of the surrounding region. These measures are described in Section 4.3.

Section 5 presents TCPL's rehabilitation strategy for the Project. The disturbance areas associated with the Project would be progressively rehabilitated and revegetated to either native bushland and/or agricultural land.

Sections 4.9 and 7 summarises a number of Project offset and compensatory measures that would assist in maintaining the biodiversity of the region. The Project offset measures would comprise a combination of securing the long-term viability of existing woodland (i.e. the Project biodiversity offset area), revegetation of mine landforms and riparian enhancements of downstream areas of Goonbri Creek (Sections 4.9.3 and 4.9.4).

The Project biodiversity offset area would secure the long-term viability of a substantial area of approximately 232 ha of existing Box-Gum Woodland EEC/CEEC of which 195 ha is derived native grassland and 37 ha is relatively undisturbed (Section 4.9.4). The Project revegetation program would provide for a combination of native woodland/forest (752 ha) and agricultural (210 ha) post-mining land uses (Section 5). Revegetation of woodland/forest areas would include the planting of species characteristic of the local vegetation communities, including species characteristic of the Box-Gum Woodland EEC/CEEC (e.g. White Box overstorey as well as appropriate understorey) (Section 4.9.3).

Terrestrial flora, fauna and aquatic ecology management measures including the offset management measures are described in Sections 4.9.3, 4.9.4, 4.10.3 and 4.10.4.

Valuation

One of the common broad underlying goals or concepts of sustainability is economic efficiency, including improved valuation of the environment. Resources should be carefully managed to maximise the welfare of society, both now and for future generations.

In the past, some natural resources have been misconstrued as being free or underpriced, leading to their wasteful use and consequent degradation. Consideration of economic efficiency, with improved valuation of the environment, aims to overcome the underpricing of natural resources and has the effect of integrating economic and environment considerations in decision making, as required by ESD.

While historically, environmental costs have been considered to be external to Project development costs, improved valuation and pricing methods attempt to internalise environmental costs and include them within Project costing.

The Socio-Economic Assessment (Appendix M) undertakes an analysis of the Project and incorporates environmental values via direct valuation where practicable (e.g. greenhouse gas emissions of the Project and impacts on agricultural values). Furthermore, wherever possible, direct environmental effects of the Project are internalised through the adoption and funding of mitigation measures by TCPL to mitigate potential environmental impacts (e.g. development of low permeability barrier, purchase of water access licences, biodiversity offsets, land acquisition).

The benefit cost analysis in Appendix M indicates a net production benefit of approximately \$1,138M, and a net benefit of approximately \$790M would be forgone if the Project is not implemented.

6.9.4 Consideration of the Project Against the Objects of the EP&A Act

The EARs (Section 1.2) require consideration of the consistency of the Project with the objects of the EP&A Act. Section 5 of the EP&A Act describes the objects of the EP&A Act as follows:

- (a) *to encourage:*
 - (i) *the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,*
 - (ii) *the promotion and co-ordination of the orderly and economic use and development of land,*
 - (iii) *the protection, provision and co-ordination of communication and utility services,*
 - (iv) *the provision of land for public purposes,*
 - (v) *the provision and co-ordination of community services and facilities, and*
 - (vi) *the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and*
 - (vii) *ecologically sustainable development, and*
 - (viii) *the provision and maintenance of affordable housing, and*
- (b) *to promote the sharing of the responsibility for environmental planning between the different levels of government in the State, and*
- (c) *to provide increased opportunity for public involvement and participation in environmental planning and assessment.*

The Project is considered to be generally consistent with the objects of the EP&A Act, because it is a Project which:

- incorporates:
 - measures for the management and conservation of resources including water, agricultural land, forests and natural areas (Section 4);

- development of the State's mineral resources (i.e. coal resources) (Sections 2.3 and 2.7);
- measures to minimise potential amenity impacts associated with blasting, noise, air quality and visual impacts on surrounding land uses (Sections 4.6, 4.7 and 4.12);
- significant continued employment and other socio-economic benefits to the community (Section 4.15);
- would extend the life of the Tarrawonga Coal Mine and includes the economic use and development of land, while maintaining key existing land uses including agricultural uses on surrounding Whitehaven-owned lands (Appendix I);
- includes measures to minimise potential impacts on Leard State Forest (public land), including harvesting of timber or forest materials (Section 6.4.1);
- would support the ongoing provision of community services and facilities through significant contributions to State royalties, State taxes, Commonwealth tax revenue and any applicable contributions to local councils (Sections 4.15 and 6.2.5);
- incorporates a range of measures for the protection of the environment, including the protection of native plants and animals, threatened species, and their habitats (Sections 4.9, 4.10 and 7);
- incorporates relevant ESD considerations (Section 6.9.3);
- is a Major Project that would be determined by the NSW Minister (Section 6.2.1), however consultation with other levels of government and a range of stakeholders has been undertaken and issues raised have been considered and addressed where relevant (Section 3.1); and
- involves public involvement and participation throughout the Project EA consultation program (Section 3.1), which would be ongoing following the public exhibition of the EA document and DP&I assessment of the Project in accordance with the requirements of the EP&A Act.

6.9.5 Summary Consideration of the Potential Impacts and Benefits of the Proposal

The EARs for the Project (Section 1.2) require a conclusion, justifying the Project on economic, social and environmental grounds. An assessment of the potential impacts and benefits of the proposal has been conducted in this EA and associated supporting studies. The following sub-section provides a brief overview of the findings of this EA.

Consideration of Potential Environmental Impacts, Mitigation Measures and Environmental Management

The EARs for the Project outline key environmental issues which the DP&I has specified must be addressed by this EA. Table 1-2 provides a summary of the EARs and a reference to the relevant section of this EA where the issues are addressed.

In accordance with the requirements of the EARs, an ERA has been conducted for the Project (Section 4.1 and Appendix O). The key potential environmental issues identified by the ERA and the section of this EA where the issues are addressed are provided in Table 4-1.

A summary of environmental issues raised during consultation with government and non-government stakeholders and the sections of this EA where they are addressed is provided in Section 3.1.

As described in Section 6.9.3, the Project would be developed and operated in accordance with ESD principles. In addition, as described in Section 6.9.1, TCPL has made a number of alterations to the Project to minimise potential environmental impacts, including:

- integration of the Northern Emplacement landform with the waste rock emplacement of the neighbouring Boggabri Coal Mine;
- avoiding encroachment of the Southern Emplacement on Goonbri Creek to the south-east;
- relocating the proposed location of the mine facilities area adjacent to the Southern Emplacement to avoid additional fragmentation of habitat and the occurrence of Box-Gum Woodland EEC/CEEC which runs north to south along the mine access road (Appendix F) and reduces potential impacts on agricultural land located on the southern side of Goonbri Creek; and

- development of a long-term low permeability barrier to minimise alluvial groundwater inflows to the open cut (Appendix R).

The benefit cost analysis in Appendix M indicates a net production benefit of approximately \$1,138M, and a net benefit of approximately \$790M would be forgone if the Project is not implemented.

Section 4 of this EA provides comprehensive consideration of the potential environmental impacts and environmental mitigation and management measures for the potential impacts of the Project. Section 5 provides a description of the rehabilitation measures that would be employed.

A summary of the proposed Project environmental management, monitoring and reporting as well as specific environmental commitments made in relation to the Project are provided in Section 7 (Statement of Commitments).

Need for the Project

The Project would provide for continuation of the Tarrawonga Coal Mine (for approximately 12 additional years) and direct employment of some 20 construction and 120 operational personnel.

The Project would involve the production of up to 3 Mtpa of ROM coal (Section 2.7.2) over a mine life of 17 years. The Project would produce a combination of thermal and semi-soft coking coal that would be sold domestically or exported for electricity generation and steel production overseas.

Project coal production would contribute to NSW export income, State royalties and State and Commonwealth tax revenue, as well as contributing to manufacturing and electricity supply in countries that purchase Project coal. The Project would also provide a reliable supply of coal for a number of manufacturing and other commercial industries in Australia.

In addition, the Project would involve the production of gravel materials for direct collection by customers at the mine site (Section 2.7.7). Gravel production is a beneficial use of waste rock generated by the Project and may be used for construction material by local councils and private industry.

The Socio-Economic Assessment (Appendix M) indicates that operation of the Project is likely to result in an average annual stimulus of approximately 300 direct and indirect jobs in the local region and some 1,770 direct and indirect jobs in NSW. The Project would also make significant contributions to regional and NSW output or business turnover and household income (Section 4.15).