



Executive summary



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ES1 Introduction

ES1.1 Overview

The Cobbora Coal Project (the Project) is a coal mine that will be developed near Cobbora in the central west of New South Wales (NSW). Most of the coal will be produced for Macquarie Generation, Origin Energy and Delta Electricity to generate electricity at four of the six large coal-fired power stations operating in NSW. Some coal will also be produced for spot sales, most likely to the same electricity generators, or for export.

The centre of the mining area will be approximately 11 km south of Cobbora, 22 km south-west of Dunedoo, 60 km east of Dubbo and 58 km north-west of Mudgee (Figure ES.1). The project application area (PAA) is mainly in Warrumbungle local government area (LGA) with smaller areas in Mid-Western Regional and Wellington LGAs.

The Project will include an open cut mine; a coal handling and preparation plant (CHPP); a train loading facility and rail spur; a mine infrastructure area; access roads; water supply and storage; and electricity supply (Figure ES.2). The Project will extract about 20 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal to produce up to 12 Mtpa of product coal. The mine will operate for 21 years following construction which is planned from mid-2013 to mid-2015 (Figure ES.3). Rehabilitation will continue beyond the 21 years of mining.

This report assesses the environmental impacts of the Project in accordance with NSW and Commonwealth regulatory requirements.

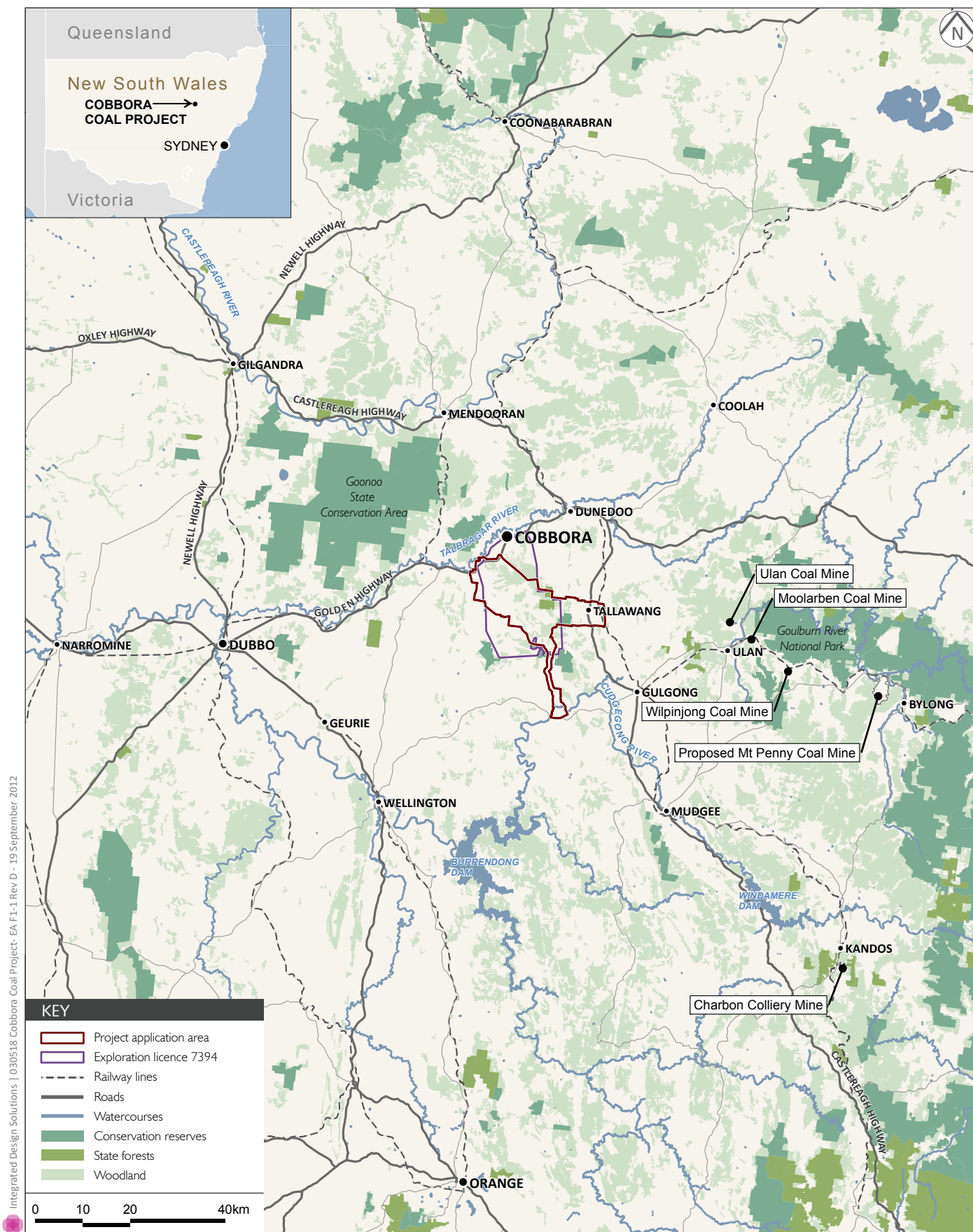
ES1.2 Project need

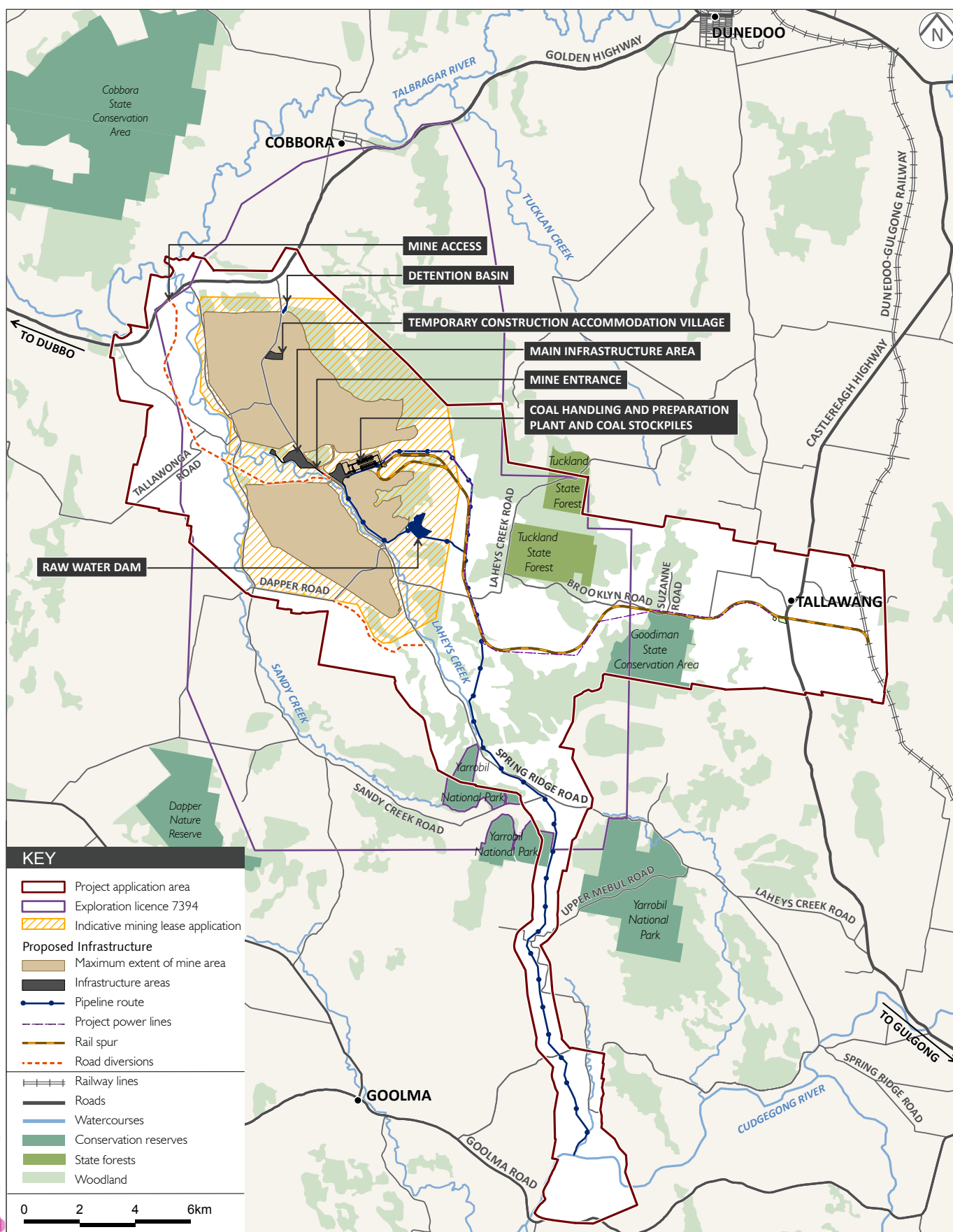
In October 2010, the NSW Government announced it would develop the Cobbora Coal Project to provide greater long-term cost and supply certainty for coal used to generate electricity. Cobbora Holding Company Pty Limited (CHC) was formed in January 2011 to develop the Project. It is owned by the State of NSW and is the proponent for the Project.

CHC has 17-year coal supply contracts with Macquarie Generation, Delta Electricity, Origin Energy (Table ES.1). These contracts will supply about 30% of all of the coal used for electricity production in NSW and are essential for the secure supply of electricity in the state. The remaining coal required for power generation will need to be sourced from other private mine operators.

Table ES.1 Primary project customers

Customer	Power station(s)	Location
Macquarie Generation	Bayswater and Liddell	Upper Hunter Valley
Origin Energy	Eraring	Central Coast
Delta Electricity	Vales Point	Central Coast

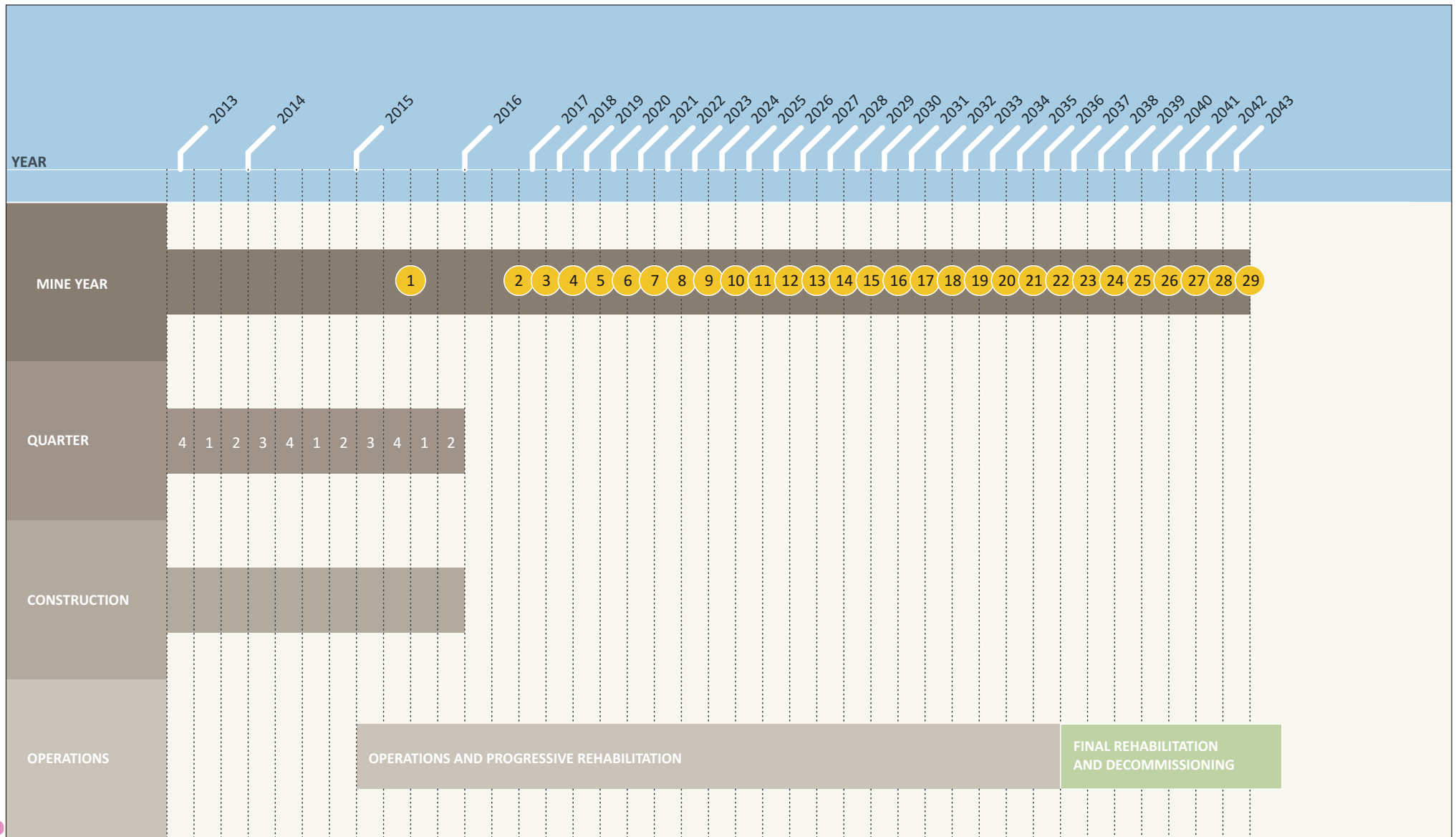




Indicative Project Layout

Cobora Coal Project - Environmental Assessment

Figure ES.2



Indicative Project Schedule

Cobbora Coal Project - Environmental Assessment

Figure ES.3

The Project will not supply coal to the Mount Piper or Wallerawang power stations which are owned by Delta Electricity. They will continue to be supplied by mines in the Western Coalfield.

The Project will be developed in Exploration Licence (EL) 7394. Exploration and testing has shown that the coal resource should meet all of the required criteria to supply coal for these long-term contracts as:

- the EL is held by an entity that is committed to supplying coal to NSW power stations — EL 7394 is the only NSW exploration licence held to supply coal to the power generators;
- the resource is sufficiently large to meet long-term contract requirements — being measured at 440 Mt but with an inferred resource of 700 Mt;
- coal can be efficiently transported to the power stations — the mining area is close to existing rail infrastructure;
- the coal can be mined economically — the Project will extract and transport the coal to power stations at a cost substantially below the current coal export price;
- coal is of the right quality for power generation — the coal will meet power generation specifications; and
- it is possible to extract the coal without unacceptable social and environmental impacts — this is the case with the safeguards proposed in this EA.

There are no other coal resources in NSW that meet all of these criteria. All other coal mines and exploration titles in NSW are being developed almost exclusively to produce export coal. If the Cobbora resource is not developed:

- the generators will be more exposed to the volatile thermal coal price on the international market;
- electricity generation in NSW will increasingly depend on interstate electricity transfers with attendant higher environmental and financial costs; and
- there will be a real risk of substantial social costs for NSW electricity consumers because electricity prices would be relatively high compared to other parts of Australia.

ES1.3 Project context

The PAA covers around 27,400 ha (274 km²). Within this 'disturbance footprint' will be about 4,300ha of which about 3,950ha will be occupied by 'mining areas'. Notwithstanding, a larger 'potential disturbance area' of about 4,700ha has been used for most impact assessments as it contains the mining areas and infrastructure and related corridors.

The landscape is characterised by undulating terrain, with broad valleys and low hills. The Talbragar River is immediately north of the PAA and the Cudgegong River is in the south of the PAA (Figure ES.2). Sandy Creek and Laheys Creek are the two main creeks in the PAA and both are ephemeral.

The sedimentary basin containing the Cobbora coal deposit is a south-western extension of the Gunnedah Basin. Of the five seams in the Cobbora coal deposit, the main mining targets are the Flyblowers Creek and the Ulan Upper and Ulan Lower seams.

The PAA has been mostly cleared for agriculture. Native vegetation is generally confined to road reserves, conservation reserves and isolated patches on farms, particularly next to the creeks. There is a contiguous patch of native vegetation on the north-east side of the proposed mining area. The larger forest and woodland areas generally occur on the less fertile low hills and ridges.

There are no settlements in the PAA. The nearest towns are Cobbora, Dunedoo and Gulgong. The main towns in the region are Dubbo, Wellington, Mudgee and Gulgong. Of these, Dubbo is the largest and has the broadest range of services and facilities.

Dubbo, Wellington and Mid-Western Regional LGAs experienced recent population growth while Warrumbungle LGA's population fell. Dubbo is likely to continue to grow through to 2036. Warrumbungle and Wellington are likely to experience a decline. Mid-Western Regional is likely to remain stable.

As of 1 July 2012, over 65% of the land in the PAA is owned by CHC. There are 90 residences scattered across the PAA, with CHC owning 68. Where there are potential air quality or noise impacts or where infrastructure will be built, CHC has either bought the property, entered into an amenity or easement agreement, or is working with the landowner to do so.

ES1.4 Project description

The main elements of the Project are summarised in Table ES.2 and an indicative layout is provided in Figure ES.2.

Table ES.2 Project summary

Aspect	Description
Proponent	Cobbora Holding Company (CHC) Pty Limited. CHC's coal customers are Delta Electricity (Vales Point power station only), Macquarie Generation and Origin Energy.
Project life	The mine life is 21 years.
Project schedule	Project construction will take about 2.5 years from the last quarter of 2013 to the second quarter of 2016. Product coal delivery will begin in mid-2015 and is scheduled to continue until 2036.
Mine	Mining will occur in three areas covering some 3,950 ha and incorporating multiple mining faces that will be developed progressively.
Resource and ROM coal production	The JORC-compliant coal resource to be mined is 440 Mt (measured), 305 Mt (indicated) and 700 Mt (inferred), as at 30 April 2012. Run of mine (ROM) coal will be extracted at a rate of up to 20 Mtpa.
Waste rock	So the mining pits can be established, excavated waste rock will initially be placed in out-of-pit emplacements, which will also form environmental bunds. Once the pits are established, material will primarily be placed in open cut mine voids so as to minimise out-of-pit emplacement.
Mine waste	Maximum waste rock thickness is 75 m, minimum 0.3 m.
Coal handling and preparation plant	Saleable product will be coal that has been beneficiated (cleaned) via dense medium separation and possibly some unprocessed 'bypass' coal. ROM coal will be processed to produce up to 12 Mtpa of product coal.
Coarse rejects and tailings	Coarse rejects will be emplaced with waste rock; tailings will be pumped to rejects emplacements in the mine footprint.
Rail spur and balloon loop	Coal will be loaded onto trains at a dedicated rail spur and balloon loop. A 28 km long rail spur and balloon loop will link the coal loading facility to the Dunedoo–Gulgong Railway at Tallawang.

Table ES.2 **Project summary (Cont'd)**

Aspect	Description
Locomotive provisioning facility	A locomotive provisioning facility, owned and operated by a third party, will be built subject to ARTC requirements, along the rail spur on CHC owned land.
Water demand, supply and disposal	<p>Water demand will be up to 3,700 ML per year, largely for process water in the CHPP and dust suppression.</p> <p>The main water sources will be harvested surface water and water collected in the mine.</p> <p>Where required, the Project will use up to 3,310 ML of water per year from the Cudgegong River, as allocated under the Project's high security Water Access Licences.</p> <p>Water from the Cudgegong River will be delivered by a 26 km long pipeline from a pumping station 5 km south of Mebul to the site's raw water dam.</p> <p>Water management will focus on separating clean water, overburden water (runoff from disturbed mining areas), infrastructure water (runoff from infrastructure areas), pit water (water from the base of the pit) and process water. Clean water will be diverted around disturbed areas; overburden water will be used on site (although some may be changed from sedimentation dams into creeks if water quality criteria are met); infrastructure water will go to the process water circuit; and pit water and process water will be re-used. Pit water and process water will not be discharged off-site.</p>
Mine access	<p>The mine will be accessed via a diversion of Spring Ridge Road off the Golden Highway.</p> <p>All Project-related heavy vehicles and the majority of Project-related light vehicles will access Spring Ridge Road from the Golden Highway.</p>
Employment	The average construction workforce will be about 350 people, peaking at about 550. The operations workforce is expected to be about 300 in 2016 and 2017, increasing to about 590 people between 2027 and 2030.
Operations hours	Mining operations will occur 24 hours a day, seven days a week.
Rehabilitation	Mine rehabilitation will be progressive.
Decommissioning and closure	<p>The final landform will be developed to be consistent with the surrounding topography and land use (ie a mix of agricultural land and woodland).</p> <p>Two of the three mining areas will be back-filled to above the final water table. The third mining area will be partially back- filled to above the final water table with a void lake left at the southern end.</p> <p>Mine infrastructure generally will be removed and the areas rehabilitated at the end of mining operations, although some infrastructure (eg the water supply pipeline) may, in agreement with landholders and regulatory agencies, be left for continued use.</p>

The EA describes all Project facilities and operations and the conceptual final landuse. It also describes construction activities.

Alternatives to the Project location and design are described in the EA. As stated above, there is no alternative to locating the mine in EL 7394. This location provides the following benefits compared with sourcing coal for NSW power stations from other areas:

- most of the coal in EL 7394 cannot be economically extracted for export but it meets the requirements for NSW power stations. Therefore, the Project represents an opportunity for NSW to maximise the benefits it realises from the export of coal from other mines that would otherwise be used domestically;
- only a small area of high quality agricultural land is situated close to the mining area and it will be avoided. No Rural Land Capability Class I or II land will be disturbed;

- there are no towns in the PAA and the population is sparse;
- most impacts can be contained to land owned by CHC;
- the Golden Highway is close to the mining area, minimising the need for Project-related traffic to use local roads; and
- only a small number of local roads will need to be closed and alternative roads can be provided.

Since its inception in 2009, the Project's design has been refined to meet its customers' requirements, to minimise its environmental impacts and in response to stakeholder concerns. This included consideration of a wide range of alternatives to efficiently extract the coal while avoiding or minimising disturbance to native vegetation, habitats, creeks, high value agricultural land and cultural heritage sites. The Project is an optimised combination of all these factors.

ES1.5 Legislation and policy

A Major Project application under Part 3A of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) was submitted to the NSW Department of Planning, now the NSW Department of Planning and Infrastructure (DP&I), on 5 January 2010. A preliminary environmental assessment accompanied the application (ERM 2009). The Project was allocated Major Project application number MP 10_0001. Part 3A of the EP&A Act was repealed on 27 June 2011, however, the Project is subject to transitional arrangements and will continue to be assessed under Part 3A.

On 21 October 2011, the Project was referred to the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) to determine if approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is required. On 29 November 2011, SEWPaC determined that the Project is a 'controlled action', requiring assessment and approval under the EPBC Act.

Director-General's Requirements (DGRs) were issued on 4 March 2010. Modified DGRs were issued on 14 October 2011 in response to changes to the scale and design of the Project as described in a Project Update Report (EMM 2011a). A further update to the DGRs was issued on 23 December 2011 to incorporate the assessment requirements of SEWPaC under the EPBC Act when the NSW Part 3A assessment process was accredited by SEWPaC for assessment of the Project.

For the Project to proceed, approval is required under the EP&A Act and the EPBC Act. This EA has been prepared in accordance with the assessment requirements in the DGRs and accompanies applications for both of the aforementioned approvals.

ES2 Consultation

A stakeholder engagement strategy identified stakeholders and issues, and ensured these were considered in Project design and the EA. Commonwealth, State and local government agencies; landowners; service providers; community groups; and special interest groups have been consulted. Engagement methods have included meetings; briefings; distribution of Project fact sheets; responses to frequently asked questions; and four community information sessions. In addition, Planning Focus and Project Control Group meetings were held with government agencies. Consultation has been in accordance with the DGRs.

Consultation with Aboriginal stakeholders was in accordance with *Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (DEC 2005a) and the procedures in the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010). CHC will continue to work closely with all stakeholders to ensure the Project meets community expectations to the greatest practical extent.

ES3 Environmental assessment

Studies of the existing environment were conducted between 2009 and 2012 allowing the environment to be characterised over a number of years and during all seasons. Technical assessments were prepared by leading professional specialists, in accordance with relevant guidelines and policies, and in consultation with government agencies and other stakeholders. The environmental aspects are considered in order, from the physical, to the biological, to the social environment. The EA describes the assessment objectives, methods and existing environment for each aspect. The management measures that will be implemented are presented followed by the predicted impacts based on implementation of these measures. Finally, monitoring to confirm the accuracy of impact predictions and to allow management measures to be refined is described.

ES3.1 Physical environment

ES3.1.1 Geochemistry

The acid and metalliferous drainage (AMD) assessment examined the likelihood of AMD occurring from waste rock, floor materials and CHPP wastes. Overall, the waste rock and pit floor materials are likely to be non acid-forming (NAF) and do not contain significant metal concentrations, as such should not require special handling. There are a few potentially acid-forming horizons primarily associated with coal seams and their immediate roof and floor, especially in and around the Whaka seam waste rock. The CHPP wastes are similarly likely to be NAF and are not predicted to require special handling.

Given that most of the waste rock is NAF, it can be used in the management of the small quantities of potentially acid forming materials. Mixing of waste materials will occur during normal operations and this will mitigate the formation of AMD leachate. This mixing, combined with the low leachate salinity and neutral pH of the waste rock and CHPP waste, indicates AMD will not be a concern. Further, metal concentrations in leachate are unlikely to significantly degrade water quality based on comparisons with Australian water quality criteria. A waste management plan will detail the AMD monitoring and management measures given in the EA.

ES3.1.2 Groundwater

The groundwater assessment examined levels and pressures, availability for existing users and ecosystems (including water flows to creeks) and groundwater quality. Of the six main hydrogeological units in the area, the two main aquifers are the Quaternary alluvium along the Talbragar River and the Permo-Triassic porous rock aquifers. Both units are part of the Gunnedah-Oxley Basin water source and are managed within the Water Sharing Plan for the Murray Darling Basin Porous Rock Groundwater Source.

Groundwater drawdown of more than 1 m is expected to extend up to 5 km south, nearly 4 km west, and up to 3 km north and east of the mining area. The maximum drawdown is expected to occur in the later stages of mining. A drawdown of about 20 m in the alluvium next to the mining area will increase leakage from that aquifer. This is expected to occur some 0.5 km west of mining area B in the alluvium associated with Sandy Creek, between operation years 14 and 15. The predicted maximum water losses in the alluvium will be about 300 ML. This is 0.1% of the estimated 220,000 ML of available groundwater storage in the alluvium aquifer within the model domain.

Five of the six bores where groundwater levels will be materially affected by the Project are on properties owned by CHC. One private bore will experience drawdown greater than 2.5 m. CHC is in discussions with this landowner and any significant drawdown will be rectified at CHC's cost.

Groundwater discharge to some semi-permanent pools in Laheys and Sandy Creeks will decline. However, no effects on springs and seeps, including Naran Springs, are expected.

The assessment shows the Project will cause only localised and temporary impacts to groundwater. CHC will monitor groundwater levels and quality. A groundwater management plan prepared in consultation with NSW Office of Water (NOW) will detail all the management measures given in the EA.

ES3.1.3 Surface water

The surface water impact assessment examined downstream water quality and flow, floods, the Project's water balance and all related impacts. The downstream flow impacts on the Talbragar River are predicted to be minor while annual average flows in Sandy Creek will reduce by up to 5% in average and dry years, although low flows will increase. Flows in Laheys Creek will increase slightly due to the progressive diversion of clean water around the mining area in the northern part of the catchment (which naturally flows into Sandy Creek) into Laheys Creek. However, this increase will be counteracted by the loss of catchment area to the mine, so overall changes in peak flows will be minimal. Flows in the Sandy and Lahey Creeks system do not significantly influence flows in the Talbragar River and any impacts to the Talbragar River will therefore be minor.

Semi-permanent pools along Sandy Creek are refuges for biota when there is no flow in the creek. More regular surface water flows will occur to semi-permanent pools in Sandy and Laheys Creeks. However, some semi-permanent pools will be affected by groundwater drawdown after Year 12 which will result in some loss of inflow and potential loss of persistent groundwater fed pools at one site on Sandy Creek and another on Laheys Creek. Two other sites on Sandy Creek may also be affected to a lesser degree. Groundwater levels will fully recover at these sites within 20 to 50 years after mining.

No significant change is predicted in flood levels along Sandy and Laheys Creeks upstream or downstream of the mine. Implementation of mitigation measures (eg a 70 ML dry detention basin) will avoid adverse impacts to the Golden Highway associated with peak flows in Flyblowers Creek. Waterway crossings, culverts and rail corridor longitudinal drainage will be designed so that local flooding can be managed and impacts to the local environment and rail infrastructure minimised.

Water quality impacts will generally be localised to Sandy Creek where elevated nutrients and dissolved solids concentrations are predicted in mining years 1 to 16.

The use of water from the Cudgegong River will not affect town water or domestic and stock supplies since these requirements will be fully met before any water is allocated to the mine. This will be the case even under extreme prolonged dry weather conditions. In addition, CHC is developing an extraction strategy agreement with State Water Corporation to help minimise water loss in the river after its release from Windamere Dam. If implemented this would leave more water in the dam for other uses.

The final landform will contain two rehabilitated depressions where the mining areas have been filled to above the groundwater level. The mining area in the south will be partially filled to above the groundwater level but part of it will remain as a void. A lake will form in the void with the water level rising until it reaches equilibrium that is below the top of the void walls. The salinity in the lake will increase over time and may eventually become hypersaline. The void lake will be a groundwater sink and will not flow to or impact nearby surface water bodies. The formation of this void lake is economically unavoidable.

The Project's water management system will minimise impacts on surface water quality and flow during construction and operations. A surface water management plan (including erosion and sediment control) and a flood emergency management plan will be prepared to detail all mitigation measures described in the EA. Management strategies will be refined during operations according to monitoring data.

ES3.1.4 Soils and agriculture

The agricultural impact statement and rehabilitation strategy examined soil resources, land capability, impacts on agriculture, and describes measures for progressive and final rehabilitation. Rural Land Capability Class III to VII land will be disturbed but not Rural Land Capability Class I or II land. The area available for agriculture in the disturbance footprint will gradually decline as the mining areas expand. However, some rehabilitated agricultural land may become available before mine closure and CHC will minimise disruptions to surrounding agriculture by providing opportunities for farmers to take long-term leases on land not required for mining.

The post-mining landform will be capable of accommodating cropping (Class III) and grazing (Class IV) enterprises and will contain some land that will be revegetated for erosion control (Class VI). When rehabilitation is completed, the area of the best agricultural land in the disturbance footprint (Class III) will increase by about 300 ha, with consequence reductions in the areas of Class IV and V land. Overall, the available agricultural land resources available in the PAA will be similar before and after mining. The area of land in each rural land capability class will change by less than 2%.

The Project will have a higher economic value to society than continued use of the land and water resources for agriculture.

ES3.2 Biological environment

ES3.2.1 Ecology

Terrestrial and aquatic ecological assessments characterised the biodiversity in the PAA and determined the potential occurrence and impacts to native species, populations and communities.

The PAA has been highly disturbed by agricultural land uses, including intensive grazing, firewood collection and pasture improvement. Remnant and regenerating woodland vegetation, including that in protected areas, covers about 36% of the PAA. In general, remnant vegetation is confined to roadside verges and areas of steeper topography. The remaining area (64%) is mostly agricultural pasture.

The vegetation remnants include ironbark, stringybark and Cypress pine woodlands, box woodlands, red gum woodlands, regenerating scrubland and grasslands (including native pasture). Of these, three are threatened ecological communities listed under the NSW *Threatened Species Conservation Act 1995* and/or Commonwealth EPBC Act, being:

- the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Box Gum Woodland);
- the Grey Box Grassy Woodland and Derived Native Grasslands of South Eastern Australia (Grey Box Woodland); and
- the Fuzzy Box Woodland on alluvial soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions.

Up to 1,867 ha of woodland vegetation, 976 ha of native pasture grasslands and 1,796 ha of exotic grassland will be in the potential disturbance area. The majority of vegetation to be removed is in the mining areas. Some smaller areas of vegetation will be removed from the infrastructure areas including along the road diversions, pipeline route and rail spur corridor. Not all of these losses will occur simultaneously because clearing will be progressive. The native vegetation to be removed is 20% of the vegetation within the PAA and 7% of the non-reserved native vegetation within the Talbragar Catchment Management Area sub-region.

Four threatened flora species recorded within the PAA will be affected. Impacts on one — Ausfeld's wattle — are not considered to be significant given that only 0.4% of the local population will be affected. However, significant impacts are likely on the other three — Ingram's zieria, *Homoranthus darwinioides* and *Tylophora linearis* — as 58%, 53% and 100% of the identified local populations will be removed respectively. These losses will be compensated through biodiversity offsets. The offset package will include the identification, protection and management of additional populations of these species within the offset sites and the investigation of translocation and/or propagation of plants to be introduced into offset areas.

Fauna species in the PAA include frogs, ground-dwelling and arboreal (tree-dwelling) mammals, reptiles, birds, fish and macroinvertebrates. Habitat for 39 threatened fauna species, of which 20 were recorded in the PAA, may be directly or indirectly affected by the Project. Significant impacts are likely for:

- forest owls: barking owl, masked owl and powerful owl;
- woodland birds: brown tree creeper, diamond firetail, glossy black-cockatoo, grey-crowned babbler, hooded robin, speckled warbler and varied sittella;
- freshwater catfish; and
- microbats: southern long-eared bat, yellow-bellied sheath-tail bat, large-eared pied bat and little pied bat.

Most of these species are associated with the woodland areas, which contain habitats such as hollow-bearing trees and cliff lines. Progressive rehabilitation in the disturbance area will include replanting woodland habitat, the reinstatement of habitat features such as fallen timber and rock salvaged during clearing and methods to compensate for the loss of hollow-bearing trees. This will assist bird and bat species to maintain their territories.

A range of controls have been incorporated into the design and implementation of the Projects which avoid, minimise or mitigate potential impacts on threatened species, populations and ecological communities. A detailed biodiversity management plan will be prepared detailing management measures during progressive clearing, operation and rehabilitation. Over time, the results of ongoing biodiversity monitoring will be used to refine the plan. Remaining impacts after avoidance and mitigation will be compensated through the biodiversity offset strategy.

Rehabilitation within the disturbance area will reinstate more than 2,200 ha of woodland representative of the existing vegetation types, and 1,700 ha of native pasture grasslands, meaning the area of woodland will be increased in the long term.

The proposed offset areas contain suitable habitat for the threatened species and ecological communities that will be impacted by the Project. The biodiversity offsets will provide vegetated links to existing conservation areas and large areas of retained native vegetation. A total of 7,210 ha has been identified as potential offset areas, with more than 5,667 ha included within the current proposed offset package of which 1,758 ha will be enhanced by rehabilitated or regeneration works. Further targeted surveys in the proposed and potential offset areas will be undertaken to confirm the presence of threatened species and their habitats.

Four percent (79 ha) of the remnant and regenerating woodland to be removed contains threatened ecological communities: Fuzzy Box Woodland (12 ha), Box Gum Woodland (13 ha) and Inland Grey Box Woodland (54 ha). This impact will be compensated by the protection and enhancement of these communities within the proposed offset areas. A total of 458 ha of threatened ecological communities has been identified within the offset areas, with an additional 991 ha of degraded offset areas to be rehabilitated and regenerated to become representative of these threatened ecological communities.

Offsets will be protected using formal conservation agreements or potential dedication to the reserve network. Compensation may also involve investment in threatened species management where land-based offsets cannot be identified. The specifics of the offset package will be further developed and agreed with OEH and SEWPaC.

The offset package will improve the connectivity of remnant habitat in the area. Along with rehabilitation of both the disturbance area and lower quality vegetation in the offset areas, the will result be improvement to the quality, quantity and protection of biodiversity within the region in the medium to long term.

ES3.2.2 Bushfire risks

The bushfire assessment considered bushfire hazard and protection standards. Project buildings will generally be on land classified as bushfire-prone. Asset protection zones will be provided to enable fire fighting vehicle access and to separate buildings from vegetation that is a fire hazard. Buildings will be designed to meet bushfire protection standards. Management measures to prevent a fire or explosion in the mining or infrastructure areas from initiating a bushfire, or adding to its severity will be detailed in the biodiversity management plan.

CHC will continue to liaise with the Rural Fire Service (RFS) to provide training to local RFS members, CHC staff and contractors. CHC will continue to participate in RFS bushfire risk assessments for the area surrounding the Project and assist with bushfire hazard reduction works. These measures will enhance the area's bushfire fighting capabilities.

ES3.3 Social environment

ES3.3.1 Road transport

The road transport assessment examined the network's capacity, operating efficiency and safety. It also identified required infrastructure improvements. Where roads need to be closed, they will be replaced with new roads designed to accommodate expected vehicle sizes and frequency of traffic. An 11-km long Spring Ridge Road realignment will be constructed from the Golden Highway to the mine entrance, to provide access for all heavy vehicles and the majority of light vehicles. It will have turning lanes at its intersections with major roads. Other road realignments will be provided at Brooklyn Road (to allow construction of the new rail spur) and at Dapper Road after Year 8 (to allow development of the southern section of mine).

The operations workforce will generally live within an hour's commute of the mine. The proposed road system improvements will maintain service levels on roads and intersections used by Project traffic. Construction workforce traffic impacts will be minimal as the majority of construction workers will be transported by shuttle bus between a new temporary on-site accommodation village (construction only) and the four main construction areas.

Traffic impact mitigation measures and transport infrastructure improvements described in the EA will be detailed in a traffic management plan that will be prepared in consultation with the relevant councils and NSW Roads and Maritime Services (RMS). It will include road realignments, wider sealed shoulders and additional routine road pavement maintenance. Five intersections will be provided with additional turning lanes. Traffic safety improvements will include workforce driver safety training, road safety audits and a safety audit of school bus stops.

ES3.3.2 Rail transport

The rail transport assessment examined system capacity; operating efficiency; and level crossing safety and waiting times.

At full production, the Project will supply coal to power station customers in trains with 7,800 to 8,800 tonne capacity at a typical rate of five trainloads per day (ie ten train movements). All of these trains will travel via Ulan to power stations in the Hunter Valley, and on the Central Coast or to Newcastle if the coal is to be exported. There will generally be sufficient coal train path capacity to meet the cumulative demands from Cobbora and other coal projects. However:

- on the RailCorp Central Coast line, three to four more coal train paths per day in each direction will need to be defined for the Project; and
- on the Wilpinjong to Mangoola section of the ARTC Ulan line, more passing loops and other improvements, as identified by ARTC in 2011, will be required by 2015–2016.

The assessment of future level crossing safety has shown there will be no change at the two existing level crossings in Newcastle as a result of more trains from the Project. Similar results were found for the two actively controlled crossings near Ulan. However, six of the eight passively controlled (ie stop signs only) crossings in the Ulan–Gulgong–Tallawang area and the Golden Highway level Crossing near Denham will be exposed to a significantly increased collision risk. It will be necessary for ARTC to undertake detailed safety studies when upgrade works in the area are being designed. There will be no public level crossings on the rail spur from Tallawang to the coal loading facility. The rail spur will have three grade-separated overpasses constructed at the Castlereagh Highway, Laheys Creek Road and Brooklyn Road. Generally there will be minimal increases in level crossing waiting times due to Project coal trains and these will be outside the busier parts of the day.

ES3.3.3 Air quality

The air quality assessment examined predicted concentrations of airborne particulates and gaseous pollutants, and dust deposition. With the implementation of mitigation measures, nearly all air pollutants will remain below the applicable air quality criteria, with the exception of the EPA 24-hour average PM₁₀ concentration criterion and the NEPC 24-hour and annual average PM_{2.5} air quality criteria. These exceedences are predicted to occur at six and three privately owned residences respectively. CHC is discussing purchase of these residences with the owners.

An air quality management plan will be prepared to detail the measures in the EA to minimise the emission of particulates and gaseous pollutants. Real-time monitoring and meteorological forecasting will ensure that adverse conditions are known in advance and will allow necessary management measures to be put in place. The risk of spontaneous combustion is shown to be low for the coal resource but, mitigation measures will still be included in a spontaneous combustion management plan.

With the implementation of the air quality mitigation and management measures described in the EA, the Project will not significantly affect surrounding air quality.

ES3.3.4 Greenhouse gases

The greenhouse assessment estimated the greenhouse gas emissions from the Project. At full production, the annual Scope 1 (direct), Scope 2 (from the consumption of electricity generated off-site) and Scope 3 (from upstream activities and the transport and combustion of the coal by customers) greenhouse gas emissions will be 0.2 Mt CO₂-e, 0.16 Mt CO₂-e and 29.09 Mt CO₂-e respectively. The greatest contributor to Scope 1 emissions will be from mobile plant and equipment using diesel fuel. However, the low overburden to coal strip ratio in the Project mining area means diesel use and associated emissions will be low compared with many open cut mines in NSW. Also, the coal seams of the resource have low methane and CO₂ content so fugitive emissions will be low.

Design, control and operational management measures to minimise the Project's energy use and greenhouse gas emissions will be detailed in the air quality management plan. The Scope 1 greenhouse gas emissions from the Project will contribute a small proportion of annual GHG emissions: up to 0.15% of NSW emissions (as of 2004), up to 0.045% of Australian emissions (as of 2009) and up to 0.0005% of current global emissions.

ES3.3.5 Noise and vibration

The noise and vibration assessment examined noise emissions from construction, operations, off-site traffic movements and off-site train movements, as well as vibration from blasting. With the implementation of mitigation measures, noise emissions from operations will remain below EPA noise criteria, except at eight private residences that are predicted to experience noise levels above the operational criterion of 35 dB(A) and three private residences that are predicted to experience noise levels above the acquisition criterion of 40 dB(A). CHC is in discussions with the owners to acquire these properties or to enter into amenity agreements. Reasonable and feasible mitigation measures will be implemented if agreements cannot be reached.

Road traffic noise generated from the Project's operations and construction is expected to comply with the applicable criteria for privately owned receptors.

Noise levels resulting from train movements on the main railway from the Cobbora spur at Tallawang to Ulan will meet the daytime L_{eq} criterion at all receptors. Similarly, the night-time L_{eq} criterion will be met at most receptors with the exception of six that are situated within 30 m of the track. The L_{max} criterion will be met at nearly all receptors with the exception of two that are within 25 m of the track. Noise mitigation strategies have been identified for these receptors.

Based on coal train movements from all mines along the Bylong–Mangoola line, the daytime L_{eq} criterion, the night-time L_{eq} criterion and the L_{max} criterion will be met at receptors 25 m, 80 m and 25 m from the track respectively. Similarly, for the Bengalla–Muswellbrook line, the daytime L_{eq} criterion, the night-time L_{eq} criterion and the L_{max} criterion will be met at receptors 40 m, 140 m and 25 m from the track respectively.

The minimum distances from blasts to privately owned residences and heritage items that are required to meet overpressure and vibration criteria have been calculated. These distances will be incorporated into mine planning.

A noise and vibration management plan will be prepared detailing the management measures given in the EA. This will include adaptive management measures with real-time noise and meteorological monitoring.

With the implementation of the noise and vibration mitigation and management measures described in the EA, the Project will not significantly affect surrounding private residences and heritage receptors.

ES3.3.6 Visual

The visual impact assessment examined likely impacts by considering representative viewpoints in and around the PAA. Without mitigation, waste rock emplacement areas, mine infrastructure, mine pits and lighting would be visible from different viewpoints to varying degrees at various stages of the mine life. However, management measures, including planting vegetation screens, will reduce visual exposure of mine elements. With the implementation of the management and mitigation measures described in the EA, the Project will not significantly impact the area's visual amenity. A lighting management plan will be prepared and contain protocols to ensure compliance with Warrumbungle Development Control Plan No.1 – Shire Lighting Control to protect Siding Spring Observatory.

ES3.3.7 Aboriginal heritage

The Aboriginal heritage assessment included consultation, desktop studies and field surveys. Aboriginal consultation was in accordance with OEH guidelines and included stakeholder identification by advertisement and government agency enquiry; registration of interested stakeholders; presentation of Project information by letter and meetings; site inspections and opportunities to provide feedback on Aboriginal heritage values, assessment methods and the results.

Eleven Registered Aboriginal Parties (RAPs) were consulted: Dubbo Local Aboriginal Land Council (DLALC), Mudgee Local Aboriginal Land Council (MLALC), Warrabinga Native Title Claimants Aboriginal Corporation (WNTCAC), North-East Wiradjuri Corporation Ltd (NEWCO), Wirrimbah Direct Descendants (WDD), Gallangabang Aboriginal Corporation (GAC), Murong Gialinga Aboriginal & Torres Strait Islander Corporation (MGATSIC), Mingaan Aboriginal Corporation (MAC), Jenny Williams (an individual person), Dorothy Stewart (trading as Binjang Wiradjuri Aboriginal Heritage Surveys) and Wellington Valley Wiradjuri Aboriginal Corporation (WVW). The NSW Department of Aboriginal Affairs - Dubbo Office and Central West Catchment Management Authority (CMA) were also consulted regarding Aboriginal heritage.

Field surveys identified 229 Aboriginal heritage sites and areas of archaeological sensitivity associated with major creeks. Aboriginal sites containing archaeological material are all of value to the Aboriginal community through the connection that they represent with pre-European Aboriginal land use. However, no specific cultural heritage values relating to the PAA were identified through archival research or community consultation.

The majority of Aboriginal heritage in the PAA will be unaffected by Project activities. The mine footprint has been reduced and modified to avoid Aboriginal sites of high significance, including removing the requirement to divert Sandy and Laheys Creeks.

An Aboriginal heritage management plan will be prepared in consultation with the RAPs. It will provide detailed procedures for the active management of Aboriginal sites and areas of archaeological sensitivity. It will include protocols such as fencing, collection and excavation to recover and preserve Aboriginal objects. Aboriginal sites that will be impacted by the Project will be subject to collection and recording and a keeping place will be established within the on-site offices. A salvage report will be compiled to preserve the information in these sites for future generations. These measures will be implemented with the participation of the RAPs.

Out of the 229 Aboriginal sites recorded in the PAA, 150 (66%) will remain undisturbed. Although 79 recorded sites will be impacted by the Project, only four are of high significance. The measures to offset these impacts through salvage, analysis and long-term curation of Aboriginal objects will result in a level of impact that will not significantly diminish the local archaeological record of Aboriginal occupation.

ES3.3.8 Historic heritage

The historic heritage assessment included desktop and field assessments to identify items of significance. The 13 items of local heritage significance that were identified, including a cemetery, houses and a church, are all outside of the potential disturbance area.

A heritage management plan will be prepared detailing management measures given in the EA and will describe how historical items will be conserved and/or managed so that their contribution to the historical record can be preserved. The proposed mitigation and management measures mean the Project will not significantly affect historic heritage.

ES3.4 Economic impacts

The economic assessment examined the Project's benefits and costs, and its effect on the local and regional economies.

The benefit and cost analysis determined that the Project will have net benefits of between \$1,937 m and \$2,138 m. These benefits will be distributed across a range of stakeholders, principally:

- CHC and its shareholders in the form of after-tax profits, although these are likely to be minimal given the cost recovery nature of the Project;
- the Commonwealth Government in the form of any Company Tax or Minerals Resource Rent Tax from the Project;
- the NSW Government via royalties;
- coal-fired power generators and subsequently NSW and Australian electricity consumers through the provision of lower cost electricity; and
- the local community in the form of voluntary contributions to community infrastructure and services, and an up-skilled workforce as a result of CHC training programs.

While the Project's benefits will substantially exceed its costs, some material costs will still arise after mitigation measures have been taken. They include greenhouse gas generation, some loss of Aboriginal heritage, and traffic and transportation impacts. These costs have been deducted from the Project's gross benefits figure to produce the net benefits figure given above.

ES3.5 Social impacts

The social impact assessment examined the social changes that will occur as a result of the Project. Impacts in a primary assessment area (Laheys Creek, Cobbora, Tucklan and Dapper localities) and a secondary assessment area (Dubbo, Warrumbungle, Wellington and Mid-Western Regional LGAs) were assessed.

The primary assessment area is characterised by an ageing, rural population with limited community facilities available. Since 2009, CHC has bought 68 residences in the area and may buy a small number more. Many people relocated after CHC bought their properties but the early acquisition program has provided certainty to affected residents. Further, the Project will lessen the trend of young people leaving the area by providing suitable employment.

The secondary area has a wider range of social characteristics. One LGA, Dubbo, contains a large and growing regional centre, while the others are either stable (Mid-Western), or declining (Wellington and Warrumbungle).

Overall, Project operations alone are likely to result in only minor demands on housing and community facilities in the region. This is mainly because most operation workers and their families will live in Dubbo, which is a regional centre with the capacity to cope with anticipated demands for housing and social services. Most of the balance of the operations workforce will live in Wellington and Warrumbungle LGAs, and the principal effect will be to help arrest forecast population declines. Facilities and services in these two LGAs are unlikely to experience capacity pressures from the Project and other sources because their populations will be stable rather than growing. Mid-Western LGA will experience growth pressures from cumulative development projects but only a small proportion of the Project's workforce is likely to live there and so its contribution to increased demands will be very minor. A scenario that assessed the impacts if a larger proportion of the workforce live in Mid-Western LGA found that it would cause a proportionally small increase in demand for community facilities. Even where capacity is currently stretched, this will cause no noticeable decline in service levels.

A 400-bed temporary construction accommodation village will be developed as part of the Project. It will prevent construction workers placing additional pressure on the local housing and temporary accommodation markets.

CHC has begun to implement a range of measures to minimise social impacts and these will continue during construction and operations. They include employing local people and working with service providers to develop training and other education programs for local people. CHC will regularly update councils and service providers about the Project's development schedule and planned workforce to enable them to respond to increases in demand for housing and community facilities. CHC is discussing Voluntary Planning Agreements with the affected councils to address demands for housing, and community facilities and services as a result of the Project. Overall, the principal social effects of the Project will be positive – provision of well-paid employment opportunities and worker training, and arresting forecast population decline in rural areas, particularly Wellington and Warrumbungle LGAs.

ES4 Risk assessment

An assessment was made to determine if the Project will be hazardous or offensive development based on the State Environmental Planning Policy No 33 criteria. Two risk assessments were made, a preliminary hazard assessment to determine risks from the Project to people, property and the environment, and an environmental risk assessment to re-rate the risks identified in the *Project Update Report* (EMM 2011a).

ES4.1.1 Hazardous and offensive development

The quantity of hazardous materials that will be used on site and storage locations was compared to *Hazardous and Offensive Development Application Guidelines: Applying SEPP 33* (DP&I 2011a) criteria. The conclusion was that the Project will not be a hazardous or offensive development.

ES4.1.2 Risks from the Project

Risks from the Project were identified and rated and it was found that the Project generally represents a low risk. However, 24 level 2 (medium) risks were identified for a number of activities — road transport; rail transport; unauthorised entry to mine area and mine infrastructure area; blasting; and fire and explosions. Each of these activities will be managed to achieve acceptable risk levels through the application of engineering and administrative controls. Risk assessments will be updated during the design and construction phases and management measures will be refined accordingly.

ES4.1.3 Environmental risks

The environmental risks identified in the Project Update Report (EMM 2011a) were re-rated based on the proposed controls and the impact assessment conclusions. The assessment found that improved understanding of the existing environment, the modified mine design and proposed controls and greater certainty about impacts reduced the risk rating for many issues. No environmental risks were rated as a level 1 (high) risk. Nine risks were rated as level 2 (medium) risks. These risks are generally from events that are almost certain to happen, or are likely to happen, and which will occur over the medium-term or cause moderate damage (eg clearing areas of remnant vegetation; and disturbing areas of Aboriginal cultural significance). These risks are assessed in detail in the EA and mitigation measures are proposed.

ES5 Commitments and justification

ES5.1 Statement of commitments

CHC's principal goal is to develop the Project so that it can reliably and cost-effectively supply coal to its three customers. In doing this, CHC will construct, operate and close the mine in a safe and responsible manner.

This will be achieved through implementation of an environmental management system that will ensure the commitments in this EA are met. It will include a construction environmental management plan (CEMP); an operations environmental management plan (OEMP); and contributions to partnerships with physical and social infrastructure providers.

A summary of key commitments is provided in Table ES.3.

Table ES.3 Summary of key commitments

Item	Commitment	EA Section
Ongoing		
1	CHC will continue to work closely with local, State and Commonwealth authorities, service providers, community groups and affected landowners so that the Project meets community expectations to the greatest extent practical.	5
Groundwater		
2	If water levels in a private bore potentially impacted by the Project decrease more than 2.5 m (ie more than natural variability), the reason will be investigated. CHC will take corrective action if the decrease is a result of the Project.	7.4 and 7.6
3	Groundwater licences will be bought to match the quantity of water that enters the pits over the life of the mine.	
4	Groundwater will be monitored during and after the life of the mine.	
Surface water		
5	As much water as practical will be recycled on site.	
6	Water will be managed to ensure sufficient is available for operations and that any excess water does not increase flooding or cause material downstream quality impacts.	
7	CHC will enter into an extraction strategy agreement with State Water Corporation to help minimise transmission losses in the Cudgegong River and maximise the use of excess flows in the lower reaches of the river.	8.4 and 8.6
8	Excess water access licence entitlements will be sold back into the market wherever practical.	
9	Surface water will be monitored upstream and downstream of the mine.	

Table ES.3 **Summary of key commitments (Cont'd)**

Item	Commitment	EA Section
Soils and agriculture		
10	Disturbed areas will be progressively rehabilitated and will include agricultural land to replace impacted areas.	9.4 and 9.6
11	No Rural Land Capability Class I or II land will be disturbed in the PAA.	
12	A net increase of about 300 ha of Class III land will be reinstated within the disturbance footprint following mining.	
13	Disruption to agricultural activities outside the disturbance footprint will be minimised by offering long-term leases to affected farmers.	
14	Rehabilitation will be regularly monitored and adapted as required to meet the final landform and landuse objectives.	
Ecology		
15	Impacts on terrestrial and aquatic biodiversity will be avoided or minimised as far as practical.	10.4, 10.6 and 10.7
16	Native vegetation will be progressively cleared and rehabilitated, with only a proportion removed at any one time.	
17	Progressive rehabilitation will re-establish ecological communities.	
18	A biodiversity offset package will initially maintain and ultimately improve the ecological values of the region through the permanent conservation of lands that have no potential for coal mining.	
19	The biodiversity offset package will create or enhance vegetation corridors between remnant vegetation to the north, east and south of the mining area.	
20	Ecological monitoring will allow management to be progressively refined during the life of the Project and beyond.	
Bushfire		
21	Asset protection zones will be provided around all buildings on bushfire-prone land.	11.4
22	CHC will maintain resources (water, equipment and personnel) for bushfire control.	
Road transport		
23	Road capacity improvements, traffic management controls and road safety measures will minimise impacts to the road network and ensure that road and intersection services are maintained.	12.4 and 12.6
24	Roads that need to be closed will be replaced with new roads that will accommodate the predicted vehicle sizes and traffic frequencies.	
25	The Spring Ridge Road realignment will carry all of the heavy vehicle traffic and most of the light vehicle traffic to and from the mine via the Golden Highway.	
Rail transport		
26	CHC will work with ARTC, RailCorp and affected residents to mitigate any significant impacts along relevant sections of the rail system.	13.5 and 13.7
27	The rail spur will have no public level crossings.	
Air quality		
28	CHC will offer to purchase privately owned residences where air quality criteria are predicted to be exceeded.	14.4 and 14.6
29	CHC-owned houses will not be leased if health-based criteria are likely to be exceeded.	
30	A predictive air quality management system using real-time continuous air quality monitoring and meteorological forecasts will be used to proactively manage short-term particulates emissions from the Project.	

Table ES.3 Summary of key commitments (Cont'd)

Item	Commitment	EA Section
Greenhouse gases		
31	Most mining equipment will be new and designed to meet the latest emission standards.	15.4 and 45.6
32	Buildings will be designed to achieve high energy efficiencies.	
33	Greenhouse gas emissions will be monitored to ensure that emissions per tonne of product coal are minimised.	
Noise and vibration		
34	Equipment will be fitted with contemporary noise suppression measures.	16.4 and 16.6
35	CHC will offer to purchase privately owned residences in the PAA where noise criteria are predicted to be exceeded.	
36	Where EPA noise criteria are predicted to be exceeded and owners do not want to sell or enter into amenity agreements, noise levels will be mitigated with acoustic barriers (eg along the rail spur) or acoustic treatments at the residence.	
37	Regular attended and unattended noise monitoring, including permanent real-time noise monitoring, will be undertaken.	
Visual		
38	CHC will reach amenity agreements with private landholders and will use targeted planting or bunds to screen views of mine operations and train movements.	17.4 and 17.6
39	Views of the mine from public roads will be screened, generally by planted vegetation.	
40	Lighting will be installed mine that minimises spillage.	
41	Lighting will be designed in accordance with Australian Standards and Warrumbungle Development Control Plan No. 1 – Shire Lighting Control to Protect Siding Spring Observatory.	
42	Bunding will be used to minimise light spillage from mobile plant operating on emplacement areas.	
Aboriginal heritage		
43	All known Aboriginal objects in the disturbance area will be managed in accordance with the Aboriginal heritage management plan to be developed in consultation with the RAPs and OEH.	18.4 and 18.6
Historic heritage		
44	Potentially impacted historic items will be conserved and/or managed appropriately so that their contribution to the historical record is preserved.	19.4 and 19.6
Social		
45	Local industries and suppliers will be used where cost-effective.	21.4 and 21.6
46	Recruitment strategies will foster a local labour force.	
47	CHC will work closely with the Aboriginal community to promote ongoing employment.	
48	A temporary construction accommodation village will be built to minimise impacts to the local housing market.	
49	CHC will continue to work with agencies, councils, education providers and businesses to provide training and education places to create self-sustainable employment without compromising the labour pool available to existing local businesses.	
50	CHC will negotiate Voluntary Planning Agreements with the four councils (Warrumbungle, Mid-Western Regional, Wellington and Dubbo) to provide in kind and monetary contributions to mitigate potential social effects of the Project.	
51	CHC will be accountable for implementing these commitments and will regularly report its performance against them.	

ES6 Project justification and conclusion

ES6.1 Economic stimulus

The Project's net economic benefits are estimated to be between \$1,937 m and \$2,136 m. In addition, the Project will provide economic stimulus, regionally and to NSW. The estimated annual stimulus is as follows:

- \$714 m in extra total output regionally and \$1,308 m for NSW;
- \$184 m in extra value added regionally and \$473 m for NSW;
- \$102 m extra to household income regionally and \$267 m for NSW; and
- 1,170 extra jobs created regionally and 3,150 for NSW.

The Project is justified economically as its economic benefits to society far outweigh its costs and it will provide substantial economic stimulus, particularly in the region to the north, west and south of the Project where there are no known alternative economic opportunities of this scale.

ES6.2 Social benefits

The Project will provide a reliable source of predictably priced coal to NSW generators. It will supply about 30% of the coal required for electricity production and will act to moderate coal prices that would otherwise follow the international market. Affordable energy is a prerequisite for any developed economy. The Project will also minimise the need for NSW to import electricity from inter-state sources which is economically and environmentally inefficient. Substantial social costs would occur if NSW experiences disproportionate increases in electricity prices compared with other parts of Australia or its peer economies internationally.

The Project will diversify and strengthen the region's relatively narrow economic base, which has a high dependence on agriculture. It will:

- substantially increase the size (output and value added) of a number of industry sectors;
- increase the skills base of the local workforce;
- benefit businesses in the region through direct mine expenditure and the extra money injected into the area through mine employment and services catering to the Project; and
- upgrade local infrastructure in and around the PAA.

These will make the economy of the Central West region more resilient in the short and long term.

All four LGAs are projected to have slower growth than NSW as a whole and two (Wellington and Warrumbungle) are forecast to have falling populations. Jobs created through the Project will provide the opportunity for more young people to remain in the region. The Project will substantially reduce the likelihood of decline by providing economic stimulus, jobs, training and investment.

CHC is committed to employing local people and supporting them with appropriate training, while protecting the labour pool available to existing local businesses. CHC is already working with service providers in the region to develop training and other education programs for local people, including specific apprentice and Aboriginal employment initiatives.

The Project is justified on social grounds as it will help provide affordable electricity in NSW, enhance the capacity of the local and regional economies, and help to arrest population decline and diminishing availability of services and facilities in the locality.

ES6.3 Net environmental affect

Electricity imported from inter-state causes higher greenhouse gas emissions than those from local generators. The Project's coal resource has both a low methane content and overburden to coal ratio, which means low methane emissions and energy efficient mining will minimise Scope 1 greenhouse gas emissions. In combination, those factors mean the Project will reduce greenhouse gas emission rates compared to continuation of current electricity supply arrangements.

The Project will clear about 1,867 ha of woodland and regenerating native vegetation, but progressive rehabilitation will reinstate more than 2,200 ha of woodland representative of the existing vegetation types, and 1,700 ha of pasture grasslands. An offset package will compensate for the remaining significant impacts to threatened ecological communities, flora and fauna habitat, and will include improving the connectivity of remnant habitat. The Project will result in a net improvement to the quality, quantity and protection of biodiversity values in the region in the medium to long term.

Environmental management and monitoring of land uses in and around the PAA were not coordinated prior to the CHC property acquisition program. Under the Project, an environmental management system will be introduced with clear accountability applying to CHC.

The Project is justified environmentally as disturbance will be temporary and there will be a number of environmental benefits — reduced greenhouse gas emissions, enhanced biodiversity conservation and improved local environmental management.

ES6.4 Justification summary

The Project is justified on economic, social and environmental grounds, and was found to be consistent with the objects of the EP&A Act.

ES7 Conclusion

There is a sound and broadly based justification for the Cobbora Coal Project. It will help to provide a secure supply of competitively priced electricity to the NSW community. It will provide substantial stimulus to a region in need and with few equivalent economic opportunities.

At the same time, the Project will displace some agricultural activities and residents until 2036 and will result in local environmental impacts. However, these impacts will be temporary and the land will be rehabilitated to enable future use for agriculture and conservation. In the long term, the biodiversity offset package will increase overall biodiversity values in the region.

Commitments are proposed in this EA to meet regulatory environmental standards during construction and operations. The proposed measures will be further detailed in a comprehensive series of management plans. Through these commitments, the management plans and operational practices, the Project will recover the coal efficiently, while minimising potential environmental and social impacts.

The clearest indication of the Project's overall worth to society is shown by the results of the comparison of costs and benefits. This includes all positive and negative impacts using a common measure — dollar values. The result shows after-cost benefits of between \$1,937 m and \$2,138 m, meaning there is a compelling case for the Project to proceed.

