



Planning &
Infrastructure

MAJOR PROJECT ASSESSMENT
Coalpac Consolidation Project
(10_0176)



Director-General's
Environmental Assessment Report
Section 75I of the
Environmental Planning and Assessment Act 1979
June 2013

Cover Photo: Invincible Colliery

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EXECUTIVE SUMMARY

Coalpac Pty Ltd (Coalpac) is proposing a major expansion at the Cullen Valley Mine and the Invincible Colliery, which are located approximately 25 km north west of Lithgow. The proposal (known as the *Coalpac Consolidation Project*) involves:

- production of up to 3.5 million tonnes a year of coal using open cut and highwall mining methods for a period of up to 21 years;
- construction and operation of infrastructure, including a Coal Handling and Preparation Plant, rail siding and loading facility, and an overland conveyor to the Mount Piper Power Station;
- transportation of product coal to the Mount Piper Power Station via the overland conveyor, and to other customers by a combination of road and rail;
- 24 hours, 7 days a week operation; and
- progressive rehabilitation of the site.

The project is a 'transitional Part 3A project' under Schedule 6A of the *Environmental Planning and Assessment Act 1979*. Consequently, the Minister for Planning and Infrastructure is the approval authority for the project application. However, the project will be determined by the NSW Planning Assessment Commission (PAC) because there were more than 25 public submissions in the nature of objections.

During the exhibition of the Environmental Assessment of the project, the Department received a total of 893 submissions, including:

- 13 from public authorities;
- 30 from special interest groups; and
- 850 submissions from the general public.

None of the public authorities or government agencies formally objected to the project. However, a number of key public authorities and government agencies raised significant concerns about the potential impacts of the project, particularly in regard to biodiversity and amenity impacts.

Of the 880 submissions from the general public and special interest groups, 127 supported and 744 objected to the project. The main grounds for objection related to the impact on the Ben Bullen State Forest and the associated loss of biodiversity, potential for irreversible damage to the pagodas, loss of scenic/amenity value, and restrictions on access to the forest for recreation.

Due to the level of public interest in the project, the Minister for Planning and Infrastructure directed the PAC carry out a review of the Coalpac Consolidation Project, and hold public hearings during the carrying out of the review. In its review, the PAC concluded that when the merits of the project are considered as a whole, the benefits of the project are *substantially* outweighed by the breadth and potential magnitude of the impacts, including:

- impacts on the pagoda landform that occurs in the area which the PAC considered to be an internationally significant geological feature of *special significance* that warrants total protection from mining;
- impacts on key threatened fauna species that utilise pagodas and associated slopes;
- significant loss of biodiversity values and habitat connectivity in the region; and
- dust, noise and blasting impacts on residents in the nearby village of Cullen Bullen;

Given these impacts, the PAC recommended that the project *should not be approved*.

Coalpac submitted a Preferred Project Report in response to the PAC's review which included a number of key changes to the original project, including

- a reduction of the open cut and highwall mining footprint, particularly near major pagoda formations;
- a revised blast management system to further minimise potential blasting impacts on pagodas; and
- enhancement of the biodiversity offset strategy through a commitment to secure an additional 1,007 hectares of native woodland in the region.

Since the PAC completed its review, the Department has received 163 submissions on the project. Over 143 of these are form letters supporting the project which have been submitted mostly by people associated with Coalpac's mining operations. There have also been 16 submissions objecting to the project, including a detailed submission from the *Lithgow Environment Group*, *Blue Mountains Conservation Society* and the *Colong Foundation for Wilderness*.

The Department acknowledges that the Coalpac Consolidation Project would generate a range of economic benefits in the local area and more broadly for NSW, including supplying relatively cheap coal to the nearby Mount Piper and Wallerawang Power Stations, generating \$200 million in royalties for the NSW Government, and creating up to 120 direct jobs, and up to 400 indirect jobs in the region.

However, in regard to alternative coal supply for the power stations, the Department is satisfied that there is sufficient coal available in the area to supply the power stations for the foreseeable future. In particular, the Department notes that at least 160 million tonnes of recoverable coal has been identified in the immediate vicinity of the Mount Piper and Wallerawang Power Stations, which represents more than 25 years of supply for the power stations (assuming they continue to operate at their current maximum installed capacity).

Notwithstanding, the Department acknowledges that almost all of the alternative recoverable reserves in the short to medium term are associated with mines owned and operated by Centennial Coal. Energy Australia has advised the Department that it would cost approximately 30% more to source coal from Centennial rather than Coalpac, and independent modelling commissioned by Energy Australia indicates this would increase retail electricity prices in NSW by between 4 and 12%. The NSW Treasury has also advised that the proposed sale of the Delta West (Mount Piper and Wallerawang Power Stations) may not proceed if the Coalpac project does not go ahead.

Clearly the Coalpac Consolidation Project has a number of important economic benefits for NSW. However, the benefits of the project must also be weighed against the significant environmental costs.

In this regard, the Department believes that the changes to the project proposed by Coalpac in response to the PAC have gone some way towards reducing the environmental impacts of the project, particularly in regard to the potential dust and noise impacts on residents in Cullen Bullen. The Department is also generally satisfied that with the implementation of the blast management strategy proposed by Coalpac, both open cut and highwall mining could be managed in a manner that would not pose a significant risk to the structural stability of the major pagoda rock formations on the edges of the proposed open cut mining area.

However, the changes to the project do not fundamentally alter the environmental impacts of the project, including:

- loss of a landscape with high conservation significance, including the destruction of part of the unique biodiversity, scenic, and geological values associated with the platy pagoda landform complex on the western edge of the Great Dividing Range;
- loss of 762 ha of high quality remnant native vegetation in the Ben Bullen State Forest, including 18 ha of Endangered Ecological Community and around 15,000 individual *Eucalyptus cannonii* listed under the *Threatened Species Conservation Act 1995*; and
- loss of habitat for a large number of fauna species, including a number of threatened species listed under the *Threatened Species Conservation Act 1995* and *Environment Protection and Biodiversity Conservation Act 1999*.

In considering the impacts on the pagodas, it is important to understand that the pagoda rock formations themselves cannot be considered in isolation. Rather the pagoda landform must be considered as a landscape complex comprising 3 distinct components - the distinctive rock formations known as "pagodas"; the wet gullies between the pagodas; and the drier slopes below the pagodas. And while it may be possible to maintain the structural integrity of the pagoda rock formations on the edges of the mining footprint through appropriate management measures, the Department believes that if the project proceeds in its current form the slopes and aprons below the pagoda rock formations would be removed, and the integrity of the landform as a whole would be fundamentally compromised.

The PAC also raised concerns about the impacts of the project on any future proposal to reserve the Ben Bullen State Forest under the *National Parks and Wildlife Act 1974*. While the Department agrees with Coalpac that the NSW Government has no formal proposal to reserve Ben Bullen State Forest in the National Parks Estate, it is clear from advice to the Department from the NSW Office of Environment and Heritage, and the submissions received from the *Advisory Committee for the Greater Blue Mountains World Heritage Area*, and key environmental interest groups, that the biodiversity values of the Ben Bullen State Forest (including the project site) are suitable for inclusion in any future reservation proposal under the *National Parks and Wildlife Act 1974*.

The proposed mine plan involves open cut mining along a series of relatively narrow and elongated pits that is not typical of conventional mine plans in NSW. The perimeter of the open cut mining area is almost 48 km in length which dramatically increases the potential for edge effects on both the biodiversity and scenic values of surrounding areas. Given the nature and extent of the edge effects, the Department believes that the project would jeopardise the potential for reservation of a far greater proportion of the Ben Bullen State Forest than the 11% of the forest within the project boundary, and hence the Department agrees with the PAC that the project and the future reservation of the Ben Bullen State Forest are not compatible.

The Department believes that the merit assessment of this project is not simply a matter of choosing between the value of the coal and the environmental value of the site. Rather, from a broad public interest perspective, the merits are more accurately articulated as a choice about what is the most appropriate coal to extract. In this regard, the Department acknowledges extracting coal from the Coalpac site has a number of economic advantages when compared to extracting coal from other reserves. However, the Department is satisfied that there are a range of alternative coal reserves that could be extracted to supply the power stations for the foreseeable future, and the environmental consequences of extracting coal from these alternative reserves would be far less than proceeding with the Coalpac Consolidation Project.

Consequently, following its assessment of the merits of the project, including detailed consideration of the PAC's review, the Department is satisfied that:

- the majority of the site for the Coalpac Consolidation Project is fundamentally unsuitable for an open cut coal mining operation;
- from a land use planning perspective, the highest and best use of the site should be for conservation purposes;
- the mitigation and rehabilitation measures proposed by Coalpac do not overcome the inherent incompatibility of open cut mining with preserving the significant conservation values of the site; and
- the environmental consequences of extracting the 96 million tonnes of coal from the site are proportionally much more significant than extracting the same volume of coal from a mine with a more conventional open cut design or from an underground mine.

Notwithstanding the above, the Department acknowledges that the merits of the project are finely balanced, and it may be possible to obtain approval for a more modest extension to the west of the Castlereagh Highway as this would largely avoid the pagoda landform complex in the Ben Bullen State Forest. Such a proposal could potentially provide a cheaper source of coal to the power stations in the short to medium term.

In conclusion, when the project is taken as a whole, the Department is satisfied that environmental impacts of the project outweigh the benefits, and the project is therefore not in the public interest. Consequently, the Department recommends that the Coalpac Consolidation Project **should be not be approved in its current form**.

1. BACKGROUND

1.1 Project Setting

The Coalpac Consolidation Project is located approximately 25 km north west of Lithgow in the Lithgow Local Government Area (LGA) (see Figure 1). The proponent for the project is Coalpac Pty Ltd (Coalpac) which is majority owned by CET Resources Pty Ltd. Coalpac currently operates two coal mines in the area - Cullen Valley Mine and the Invincible Colliery.

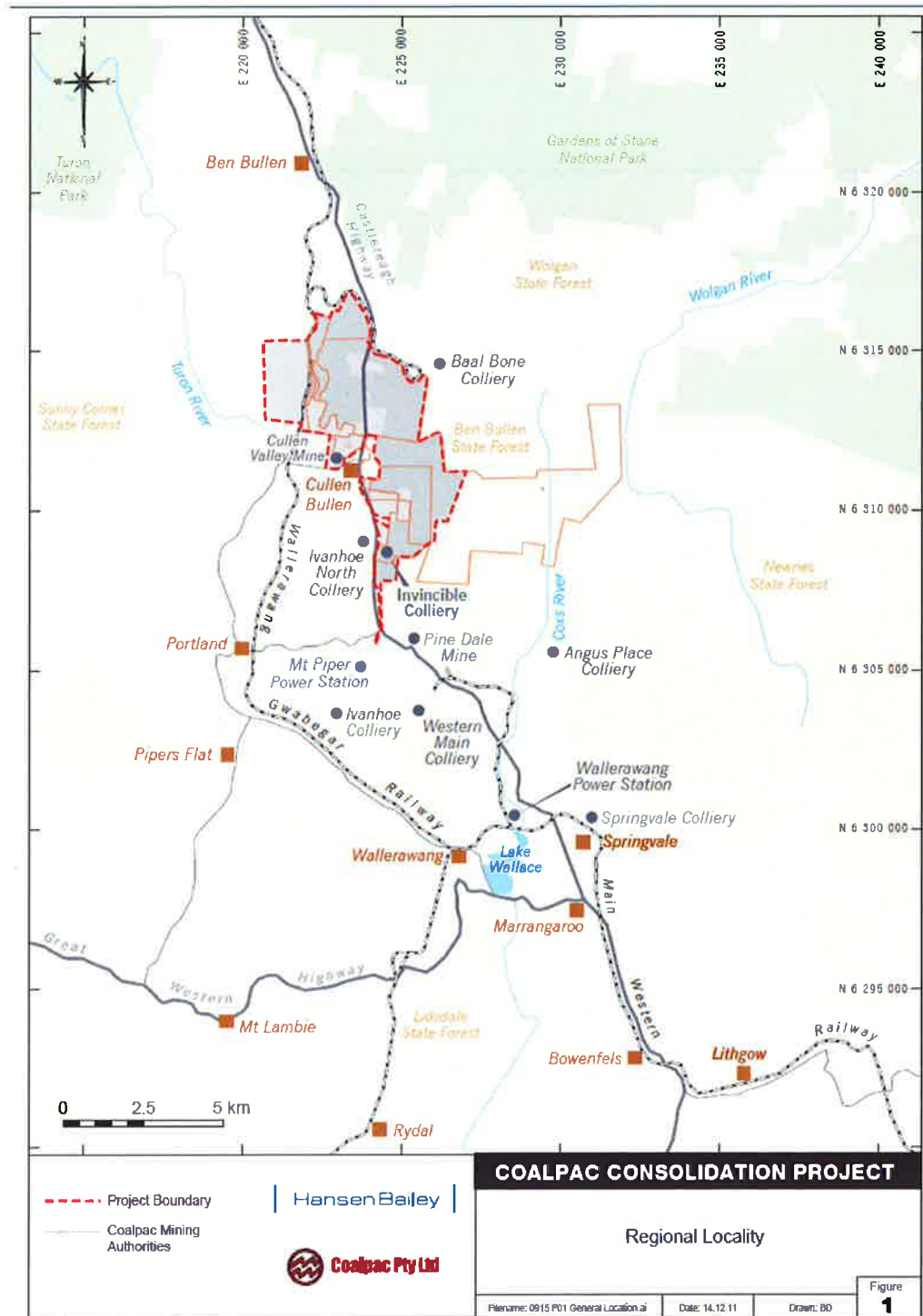


Figure 1: Project Location

The project is located predominantly within the Ben Bullen State Forest. The Ben Bullen State Forest covers 6,780 hectares (ha) and is characterised by well-established native woodland and sandstone cliff lines and pagoda formations (see Figure 2).

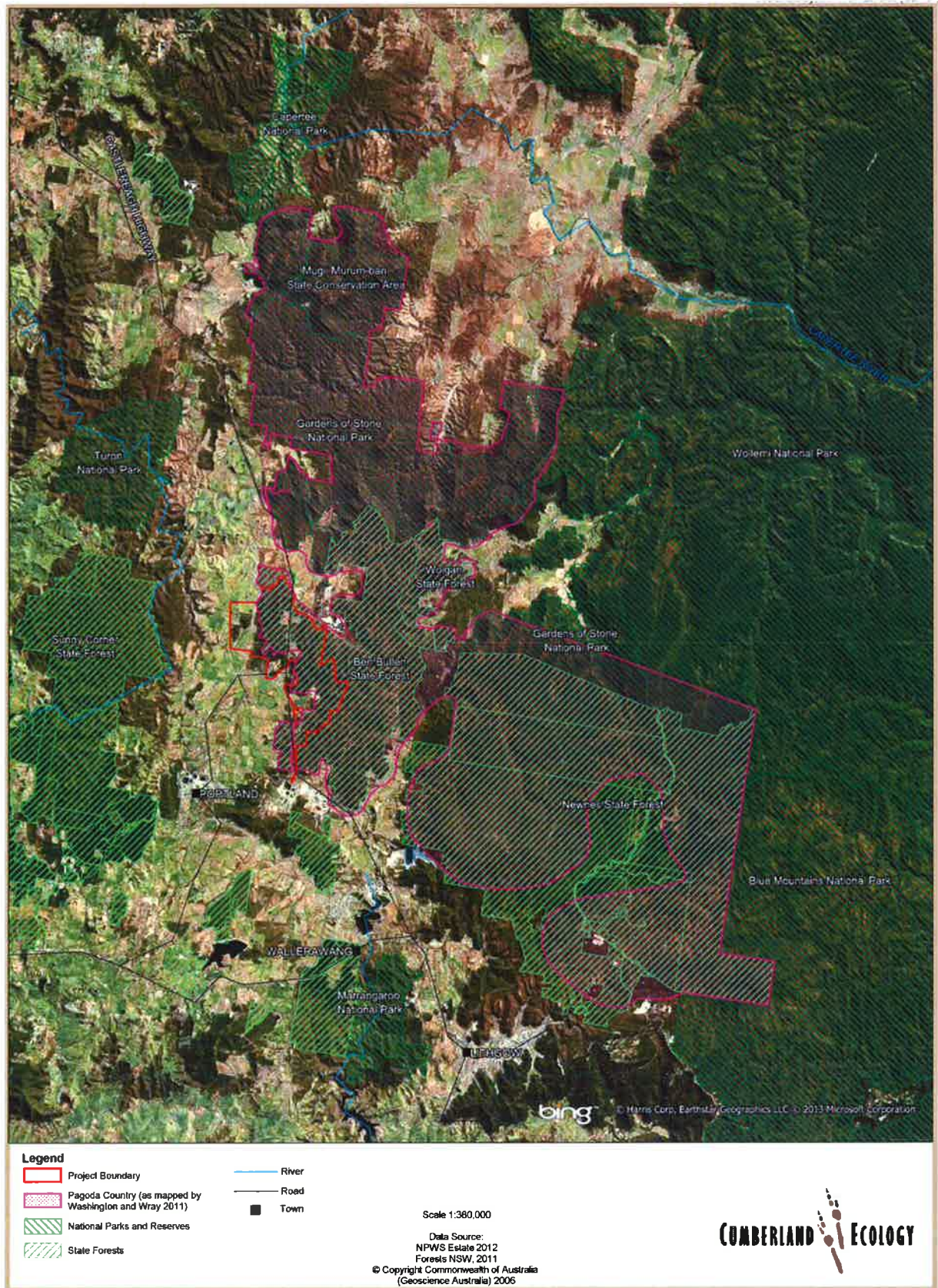


Figure 2: Regional Setting

The Ben Bullen State Forest has historically been used for forestry and mining associated with the Cullen Valley, Invincible and Baal Bone Coal Mines (note Baal Bone was predominantly an underground mine). The Gardens of Stone National Park which is part of the Blue Mountains World Heritage Area lies approximately 2 km north of the site. The nearest residential area is the village of Cullen Bullen which has a population of around 200. At its closest, the project would involve mining within 1 km of houses in Cullen Bullen.

Other major land uses in the vicinity of the project include agriculture and electricity generation. The majority of agricultural land in the area is of relatively low capability and is predominantly used for low intensity grazing. No areas of high quality agricultural land (such as Biophysical Strategic Agricultural Land) have been identified in the vicinity of the site. The nearby Mount Piper and Wallerawang Coal Fired Power Stations managed by Delta Electricity are located approximately 4 km and 10 km (respectively) south of the project site. The Lithgow region has a long history of coal mining, and there are currently 10 existing and proposed coal mines in the area, although many of these mines are either underground mines or are not operating at the present time.

1.2 Existing Mining Operations

Coalpac's current operations in the area comprise the Cullen Valley Mine and the Invincible Colliery (see Figure 3).

The Cullen Valley Mine was originally approved in 1997, but currently operates under a 2004 Ministerial consent (DA 200-5-2003). The consent allows Coalpac to:

- extract coal by open cut, highwall and underground mining methods;
- produce up to 1 million tonnes per annum (Mtpa) of coal; and
- transport this coal via public roads to Mount Piper Power Station and other domestic markets.

The consent for the Cullen Valley Mine lapses in 2025. However, the Department understands that the mine has been placed on care and maintenance by Coalpac as economically recoverable coal resources have been exhausted. Although the Department notes that there are residual coal reserves at the Cullen Valley Mine that have been approved for extraction but have not yet been extracted.

The Invincible Colliery has had a long history of both underground, and more recently, open cut mining. Various approvals have also been granted for the Colliery over recent years. However, the Colliery currently operates under a 2008 Ministerial approval (PA 07_0127). This approval allows Coalpac to:

- extract up to 1.2 Mtpa of coal using open cut and high wall mining methods; and
- transport this coal via public roads to the nearby power stations and other customers.

The project approval lapses in December 2016, although the Department understands that the accessible coal reserves at the mine have also recently been exhausted.

Overall, the two approvals allow Coalpac to extract up to 2.2 Mtpa of coal, and deliver this by road to the local power stations and up to 450,000 tonnes a year to other domestic customers, such as Shoalhaven Starches.

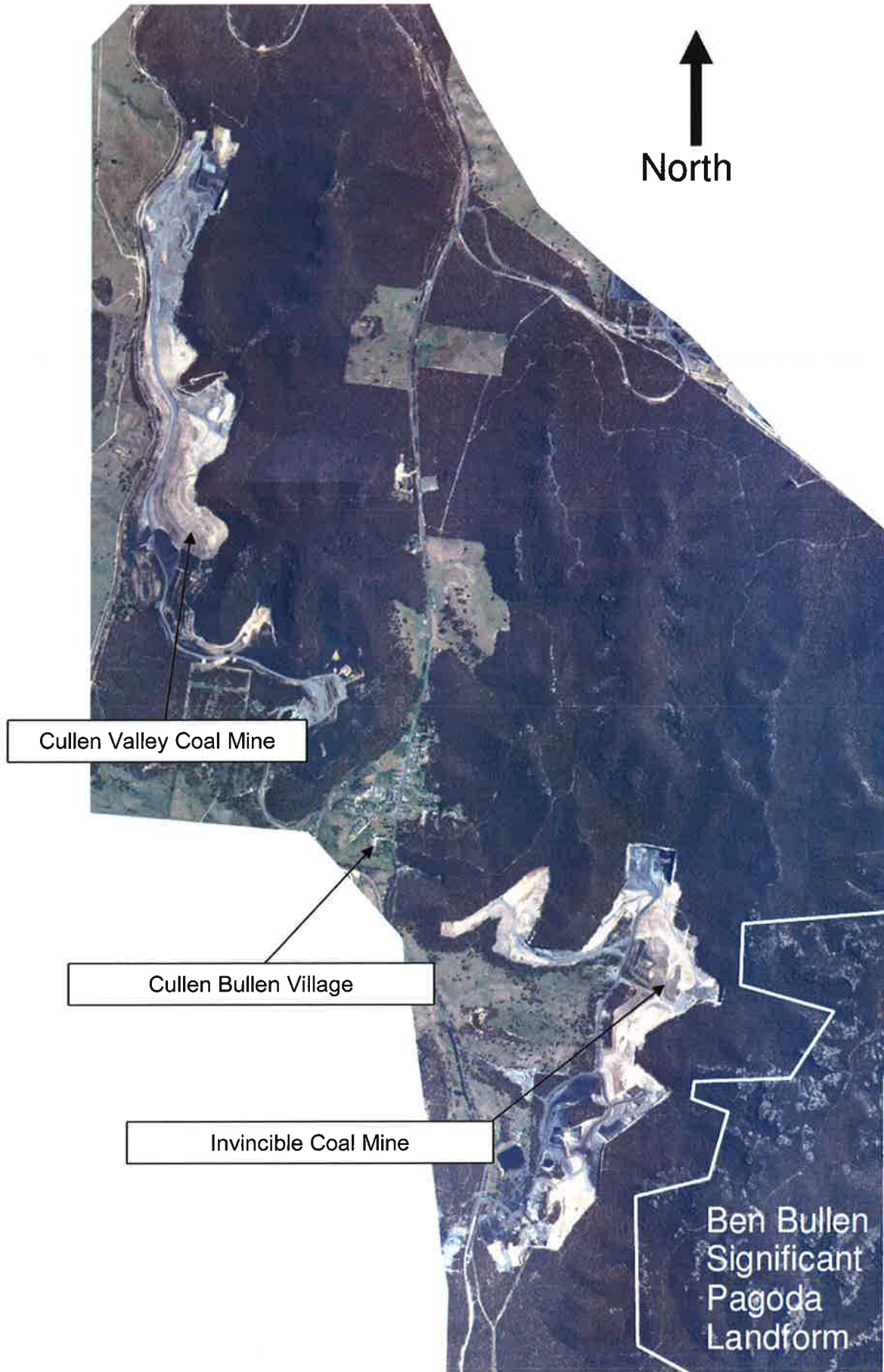


Figure 3: Invincible and Cullen Bullen Coal Mines

2. PROJECT DESCRIPTION

Coalpac is proposing a major expansion of open cut and high wall mining activities at the Cullen Valley and Invincible Coal Mines, and to consolidate existing approvals so that a single contemporary approval regulates mining across both sites. The proposal is known as the *Coalpac Consolidation Project*, and is described in detail in Coalpac's Environmental Assessment (EA) (see Appendix B).

However, as a result of the review undertaken by the PAC of the Coalpac Consolidation Project, Coalpac submitted a Preferred Project Report (PPR) in April 2013. The PPR included the following key changes to the original project:

- reduction of the open cut mining footprint in the Significant Pagoda Landform in the south eastern mining area;
- reduction of the highwall mining footprint to avoid rock formations within the Significant Pagoda Landform;
- removal of the Hillcroft Mining Area and associated infrastructure;
- removal of the sand extraction component of the project and associated infrastructure and transportation of the product sand;
- reduction of the open cut mining footprint to avoid the area of Clandulla Geebung habitat in the north western mining area;
- revised blast management system to further minimise potential blasting impacts on the Significant Pagoda Landform or other sandstone outcrops;
- enhancement of the biodiversity offset strategy by committing to an additional 1,007 ha offset area; and
- various additional commitments in regard to monitoring, management and operation of the project.

These changes have resulted in the following comparative changes to the project as originally proposed:

- *Coal Reserve* – 10% reduction in coal to be extracted from 108 Mt to 96 Mt representing around \$800 million reduction in revenue for the project;
- *Vegetation Clearing* – 20% reduction in clearing of native vegetation from 958 to 762 ha; and
- *Biodiversity Offset* – 30% increase in the quantum of proposed offsets from 2,040 to 3,047 ha.

However, Coalpac has not proposed any changes to the proposed rate of extraction of coal (i.e. 3.5 Mt of product coal a year) or the proposed 21 year life of the mine.

The key components of the Coalpac Consolidation Project (*as described in the Preferred Project report*) are summarised in Table 1 and shown in Figures 4 to 6, and a full description of the project is provided in Coalpac's Preferred Project Report (see Appendix G).

Table 1: Key Components of the Coalpac Consolidation Project

Aspect	Description
Project Summary	<ul style="list-style-type: none"> • Production of up to 3.5 Mtpa of coal using open cut and highwall mining methods for a period of up to 21 years; • Construction and operation of infrastructure, including a Coal Handling and Preparation Plant (CHPP), rail siding and loading facility, and an overland conveyor to the Mount Piper Power Station (MPPS); • Transportation of product coal to the MPPS via an overland conveyor; • Transportation of product coal to other customers by a combination of road and rail; • 24 hours/ 7 days a week operation; and • Progressive rehabilitation of the site.
Project Life	21 years
Mining and Reserves	Extraction of up to 96 million tonnes (Mt) of run-of-mine (ROM) coal over 21 years. Coal would be extracted from 7 separate coal seams with an average strip ratio of 6:1 of overburden per tonne of ROM coal.
Production Rate	Up to 3.5 Mt of product coal per year.
Coal Processing & Transport	<p>Stockpiling, processing and washing of ROM coal at the existing Invincible CHPP and the proposed East Tyldesley CHPP. Product coal would be transported as follows:</p> <ul style="list-style-type: none"> • up to 2.625 Mtpa of product coal to the MPPS via the proposed overland conveyor; • up to 1 Mtpa of product coal by rail to Port Kembla for export; and • up to 0.45 Mtpa of product coal to other customers by road.
Infrastructure	<p>On-site infrastructure would include:</p> <ul style="list-style-type: none"> • continuing use of existing infrastructure; • ROM coal and product coal stockpiling area; • coal crushing and sizing plant; • East Tyldesley CHPP; • coal reject tailings drying beds; • rails siding and load out facility; • Castlereagh Highway Overpass; • internal haul and access roads; • water management structures and systems; and • administration and workshop facilities.
Biodiversity Offsets	<ul style="list-style-type: none"> • The project would clear 762 ha of native vegetation in the Ben Bullen State Forest. This area includes 18 ha of ecologically endangered communities (EECs) and 204 ha of Eucalyptus cannonii habitat (constituting an estimated 15,428 individuals) – both of which are listed under NSW and Commonwealth threatened species legislation; • The biodiversity offset strategy proposed by Coalpac incorporates a total of 2,040 ha, including around 1,600 ha of woodland and 180 ha of derived native grasslands. This also includes a total of 220 ha of Box Gum Woodland EEC (50 ha of woodland and 170 ha of derived native grasslands); and • Coalpac has also committed to providing an additional 1,007 ha of suitable woodland to the proposed biodiversity offset strategy for the project, and progressively rehabilitate the disturbance footprint to native woodland.
Employment	120 operational staff and up to 56 construction workers.
Capital value	\$123 million capital investment value.

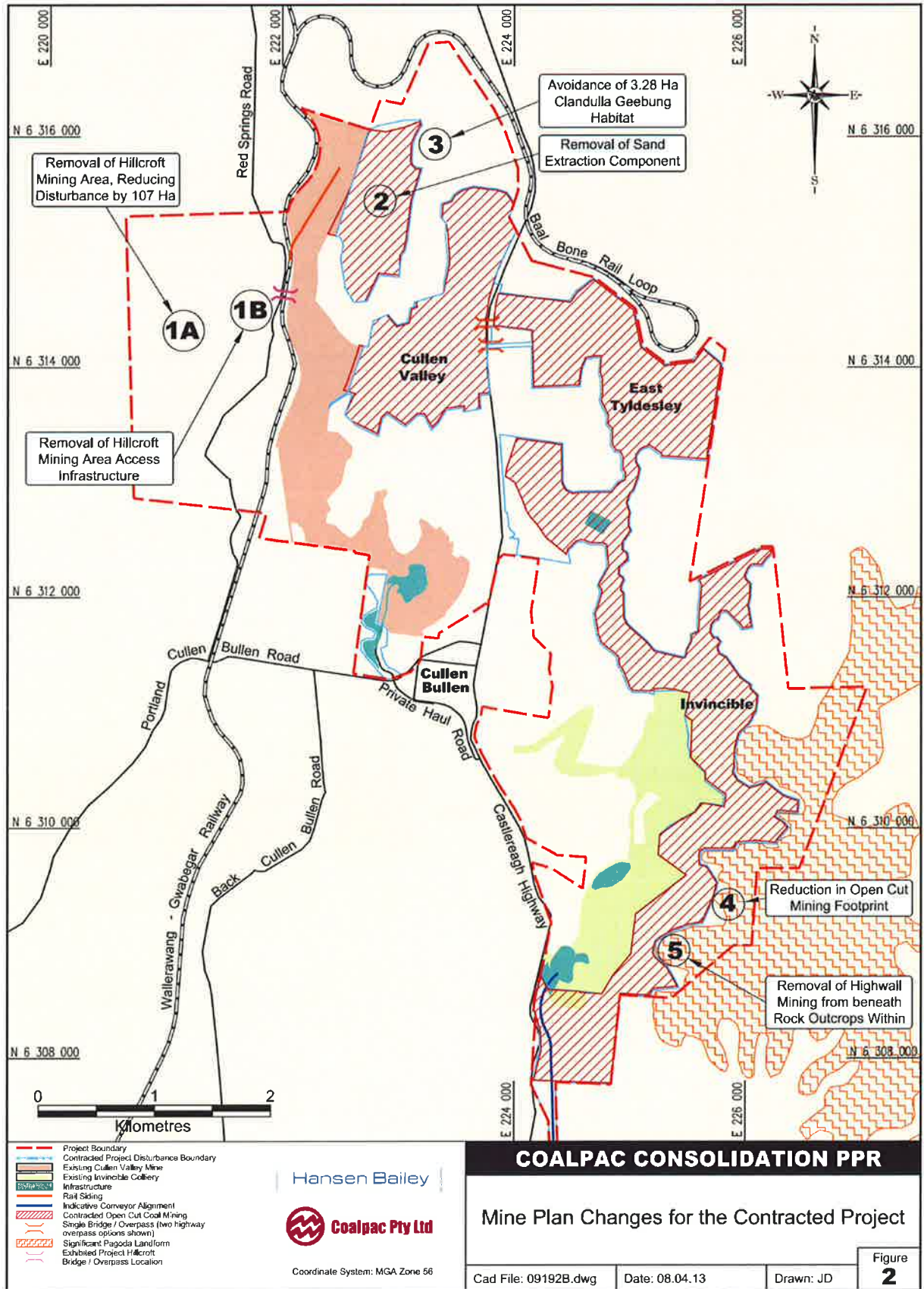


Figure 4: Key Changes to the Coalpac Consolidation Project in the PPR

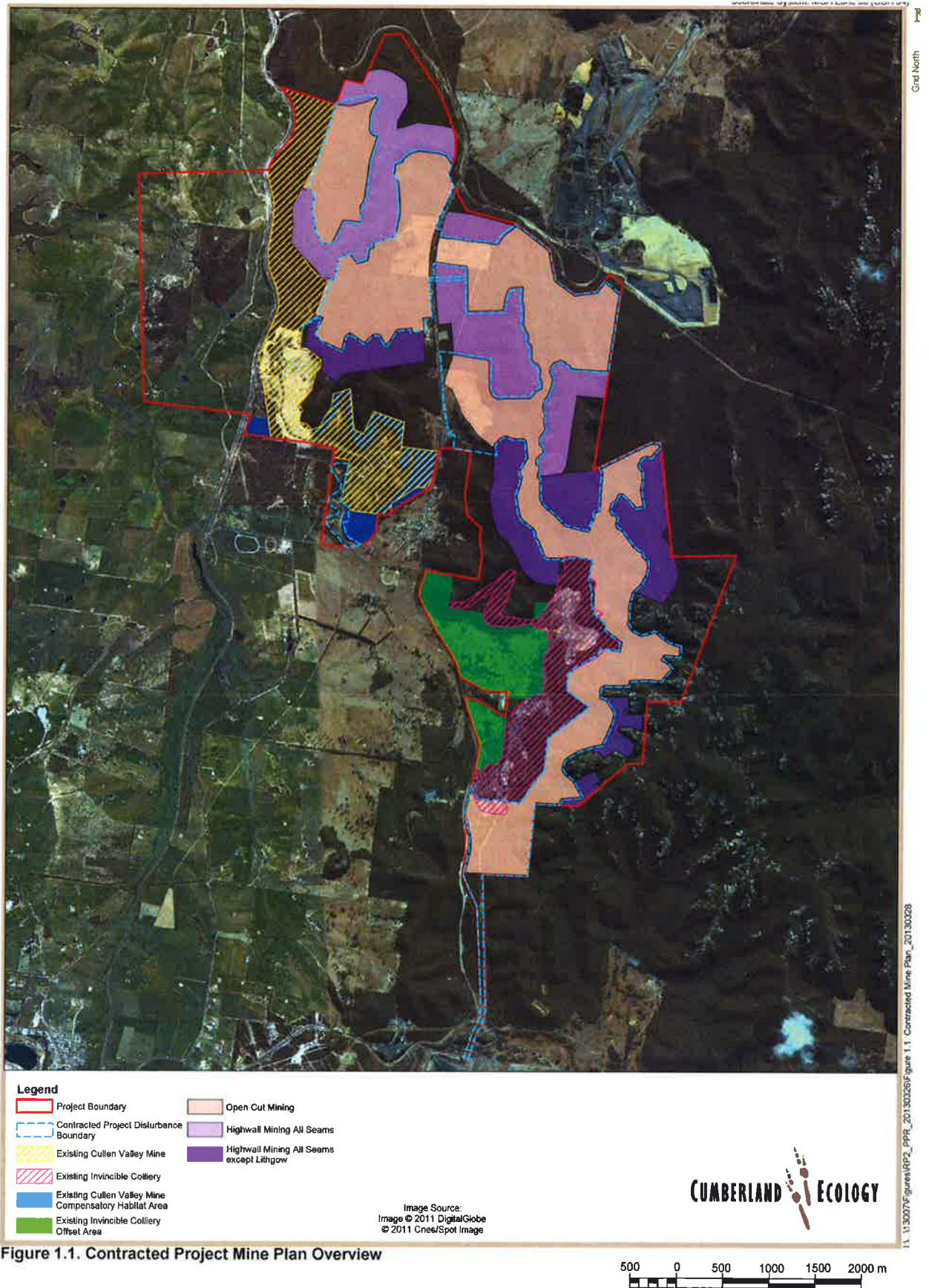


Figure 1.1. Contracted Project Mine Plan Overview

Figure 5: Layout of the "Contracted" Coalpac Consolidation Project

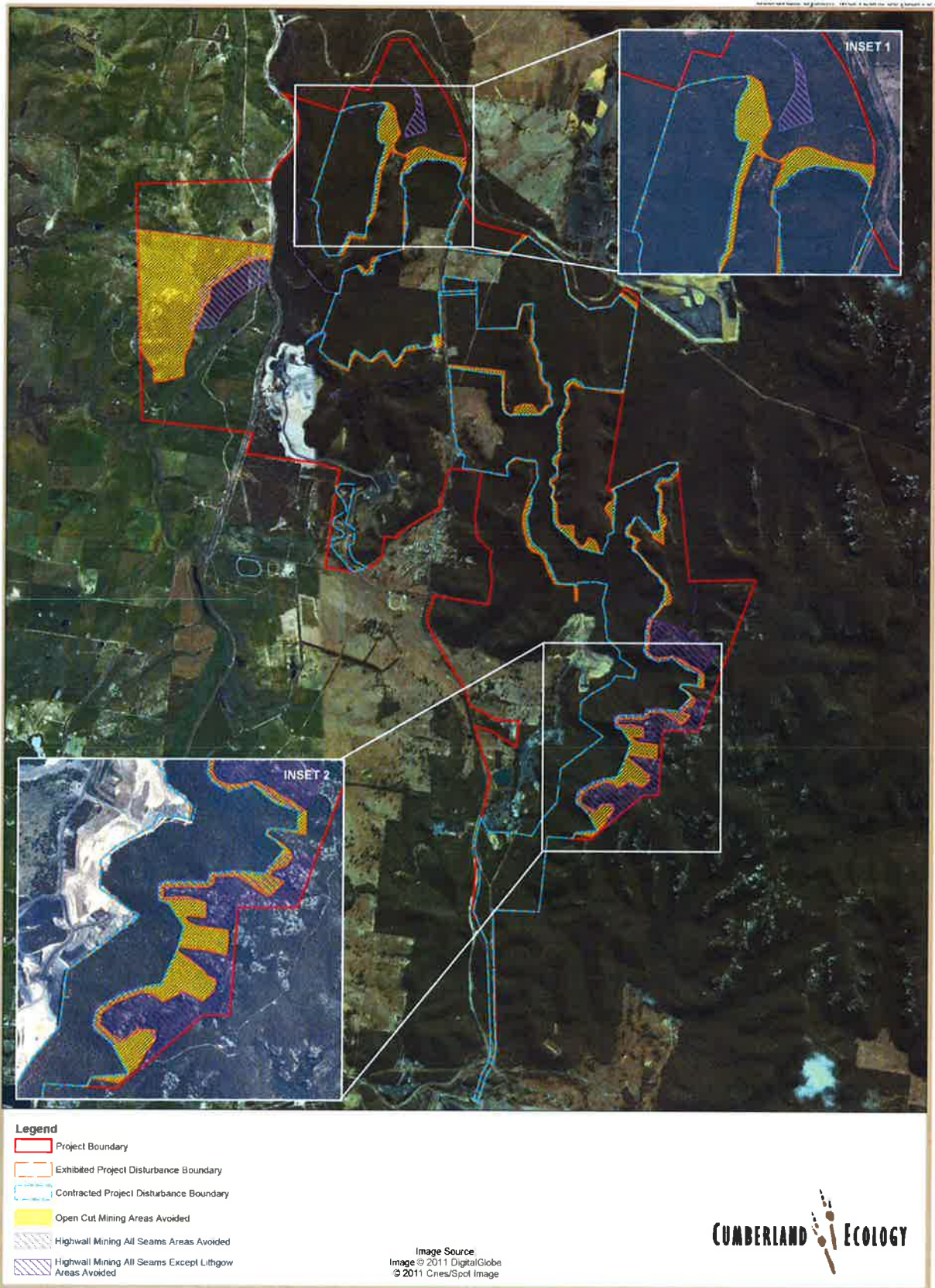


Figure 1.2. Exhibited Project Disturbance Boundary and Contracted Project Disturbance Boundary

Figure 6: Changes to Open Cut & Highwall Mining Areas

3. STATUTORY CONTEXT

3.1 Major Project

The proposal was declared to be a major project under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) because it constituted development for the purposes of coal mining, and therefore met the criteria in Clause 5 of Schedule 1 of the former *State Environmental Planning Policy (Major Development) 2005*.

Although Part 3A of the EP&A Act was repealed on 1 October 2011, the project remains a 'transitional Part 3A project' under Schedule 6A of the Act. Consequently, the Minister for Planning and Infrastructure is the approval authority for the project application. However, the project falls within the Minister's delegation to the Planning Assessment Commission (PAC) dated 14 September 2011, because there were more than 25 public submissions in the nature of objections. Consequently, the PAC must determine the application.

3.2 Permissibility

The subject land is located within the Lithgow LGA on land either zoned 1(a) – Rural (General) or 1(f) – Rural (Forestry) under the *Lithgow Local Environmental Plan 1994* (LEP). Mining is permissible with development consent in both zones. Mining is also permissible with development consent under Clause 7(1) of *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007*, because agriculture may be carried out (with or without development consent) in both of the applicable zones. Consequently, the project is permissible and the PAC may determine the project application.

3.3 Commonwealth Approvals

The Coalpac Consolidation Project has been declared a 'controlled action' under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) due to the potential for significant impacts on listed threatened species and communities and listed migratory species under the EPBC Act. Consequently, the project also requires approval from the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities (SEWPaC) under the EPBC Act before it can proceed.

SEWPaC has accredited the Part 3A approval process for the Coalpac Consolidation Project. This means that assessment of both State and Commonwealth matters has been integrated into a single assessment process. Nevertheless, the Commonwealth Minister maintains a separate and independent approval role for the project.

3.4 Environmental Planning Instruments

Under Section 75I of the EP&A Act, the Director-General's report is required to include a copy of, or reference to, the provisions of environmental planning instruments (EPIs) that substantially govern the carrying out of the project.

Section 75J of the EP&A Act allows the Minister when deciding whether or not to approve the carrying out of a project, to take into account the provisions of any EPI that would not (because of section 75R) apply to the project if approved. The Department believes there are no EPIs that substantially govern the carrying out of the project.

3.5 Statement of Compliance

Under Section 75I of the EP&A Act, the Director-General's report is required to include a statement relating to compliance with the Director-General's environmental assessment requirements for the project. The Department is satisfied that the environmental assessment requirements have been complied with.

4. CONSULTATION

Under Section 75H(3) of the EP&A Act, the Director-General is required to make the Environmental Assessment (EA) for the project publicly available for at least 30 days. After accepting the EA for the project, the Department:

- made the EA publicly available from **10 April 2012** to **1 June 2012** at the:
 - Department's Information Centre;
 - Lithgow City Council offices;
 - Lithgow Council Library Portland Branch;
 - Nature Conservation Council's office; and on the
 - Department's website;
- notified relevant State and Commonwealth government authorities and Lithgow City Council; and
- advertised the exhibition in the Lithgow Mercury and the Sydney Morning Herald newspapers.

This satisfies the requirements of Section 75H(3) of the EP&A Act.

During the assessment process, the Department also made a number of documents available for viewing or download on its website. These documents included the:

- project application;
- Director-General's environmental assessment requirements;
- Coalpac's EA;
- Coalpac's response to issues raised in submissions (the Response to Submissions);
- the Planning and Assessment Commission's Report;
- Coalpac's response to the recommendation of the PAC Report; and
- Coalpac's PPR.

The Department received a total of 893 submissions on the project during the exhibition period, including:

- 13 from public authorities;
- 30 from special interest groups; and
- 850 submissions from the general public.

In August 2012, Coalpac provided a formal Response to Submissions, and following further comments made by SEWPaC, Council and various government agencies, Coalpac submitted an additional response to the Department in October 2012. The Response to Submissions and the additional information provided by Coalpac are provided in Appendix D.

On 22 July 2012, the Minister for Planning and Infrastructure directed the Planning Assessment Commission to carry out a review of the Coalpac Consolidation Project and hold public hearings (see Section 5 below). On 14 December 2012, the PAC submitted its review to the Director-General (see Appendix E). Coalpac then submitted a response to the PAC's review in March 2013 (see Appendix F), followed by a PPR in April 2013 which described various changes to the project as outlined above in Section 2 (also see Appendix G).

Since the PAC completed its review, the Department has received 163 additional submissions on the project. Over 143 of these are form letters supporting the project, and there are 16 submissions objecting to the project. Additional submissions have been received from Lithgow City Council, Energy Australia, various businesses and individuals associated with Coalpac's mining operations, and various environmental interest groups. NSW Treasury has also written to the Director-General expressing concerns about the economic analysis undertaken by the PAC in its review of the project (see Appendix M).

On 29 May 2013, Coalpac submitted a final response to the submissions that have been received by the Department since the PAC completed its review (see Appendix N).

A summary of the issues raised in submissions is provided below, and a copy of the submissions is provided in Appendix C.

4.1 Public Authorities

None of the public authorities or government agencies formally objected to the project. However, a number of key public authorities and government agencies raised significant concerns about the potential impacts of the project.

Office of Environment and Heritage (OEH) - did not object to the project, however retains considerable reservations regarding the merits of the project as a whole. The key concerns raised by OEH include:

- **Ben Bullen State Forest** – concerns about the significant encroachment of the project on previously undisturbed areas of Ben Bullen State Forest. OEH considers the State Forest (including the project site) has high conservation value and has been identified by OEH as being suitable for future reservation under the *National Parks and Wildlife Act 1974*;
- **Biodiversity Offsets** – the biodiversity offset proposed by Coalpac does not adequately offset the biodiversity values that would be lost as a result of the project;
- **Pagoda Formations** - the project may result in irreversible damage to the elevated sandstone escarpments and unique ironstone banded sandstone rocks formations known as “pagodas”, and the measures proposed by Coalpac would not adequately protect these formations; and
- **Threatened Species** – the project would remove a large area of habitat for a number of threatened fauna species that rely on the unique habitat provided by the pagoda formations and associated slopes, and the proposed biodiversity offset does not provide sufficient habitat to adequately compensate for the direct loss of habitat as a result of the project.

Environment Protection Authority (EPA) – initially indicated it could not support the project due to unacceptable noise impacts on local residents. However, following consideration of additional information from Coalpac, the EPA withdrew its objection to the project subject to the implementation of a range of mitigation and monitoring measures. Nonetheless, the EPA reiterated its concerns about the dust and noise impacts of the project, and the heavy reliance on the success of mitigation and adaptive management of mining operations to achieve acceptable outcomes. The EPA also noted that in the absence of these controls, or if the controls are not as effective as anticipated, the project may result in exceedances of relevant criteria at residential receivers.

NSW Health - did not object to the project, but raised concerns about the impacts of dust and noise generated by the project on the health of residents in Cullen Bullen. In particular, NSW Health advised that:

- there is currently no evidence of a threshold level of fine particulate concentrations (i.e. PM₁₀ and PM_{2.5}) below which health effects do not occur;
- there is a linear relationship between the increase in exposure to fine particulates and increases in health impacts;
- the predicted 30 – 100% increase in exposure of residents in Cullen Bullen to fine particulates may result in a range of respiratory health impacts; and
- increases in noise generated by the mine, and the proposed increase in the frequency of blasting, may exacerbate adverse health outcomes in Cullen Bullen, and disturb classes at the Cullen Bullen Primary School.

To address these concerns, NSW Health has recommended that Coalpac be required to undertake a detailed health risk assessment of the potential impacts of blasting on Cullen Bullen, and that all feasible measures be implemented by Coalpac to minimise exposure of local residents to dust, noise and blasting impacts, if the mine is approved.

Lithgow City Council (Council) - did not object to the project, but raised a number of concerns about the dust, noise, and blasting impacts of the project on local residents. Council was also concerned about the traffic and road safety implications of trucking sand on the Great Western Highway. Council recommended a range of conditions relating to landholder agreements, the land acquisition process, on-site effluent disposal, road safety, visual impacts, spontaneous combustion, rehabilitation, and access to the Ben Bullen State Forest. Council's submission following the PAC review indicated that it supported Coalpac's contracted proposal on the basis that it would provide a range of economic and social benefits to the Lithgow LGA, and that if the project did not proceed, it would result in significant job losses at the mine and at associated businesses in the region.

SEWPaC - raised concerns about the impacts of the project on EPBC-listed threatened species, and questioned whether the proposed biodiversity offsets would adequately compensate for the loss of habitat of listed threatened species and the box-gum woodland Critically Endangered Ecological Community (CEEC). SEWPaC was also concerned about the long timeframes and risks associated with successful revegetation of appropriate woodland communities within the biodiversity offset areas.

Other public authorities and government agencies (*Department of Primary Industries, Division of Resources and Energy, Roads and Maritime Services, Central West and Sydney Catchment Management Authorities, and the Heritage Council*) did not object to the project, and recommended a range of conditions to address matters relevant to their respective regulatory responsibilities.

4.2 Community and Interest Groups

Of the 880 submissions from the general public and special interest groups, 127 supported and 744 objected to the project (with 9 submissions neither objecting or supporting). The main grounds for objection related to the impact on the Ben Bullen State Forest and the associated loss of biodiversity, potential for irreversible damage to the pagodas, loss of scenic/amenity value, and restrictions on access to the forest for recreation.

From the nearby village of Cullen Bullen, the Department received 37 submissions – 80% objecting to the project. Of the 82 submissions from the Lithgow LGA, 52% of submissions objected to the project, and of the 222 submissions from the nearby Blue Mountains LGA, 97% of submissions objected. The remaining submissions were mainly from the Sydney region, Central West and the Northern Rivers of NSW. A significant proportion of submissions that supported the project were from individuals directly employed or contracted to work for Coalpac.

The majority of the special interest groups comprised conservation or bushwalking groups who are all strongly opposed to the project. The prominent local groups are the *Lithgow Environment Group, Blue Mountains Conservation Society* and the *Colong Foundation for Wilderness*, who along with other conservation groups have been campaigning for many years to protect and reserve the Ben Bullen State Forest as part of the proposed *Gardens of Stone Stage II National Park*.

Five special interest groups supported the project (Delta Electricity, Energy Australia, Manildra Group, Port Kembla Port Corporation Group and Siteplus). All these companies have a vested commercial interest in the project.

Of the 163 submissions on the project received by the Department since the PAC review, over 143 were form letters supporting the project. The Department notes that the majority of these submissions were from Coalpac's employees or local businesses and individuals with a commercial interest in Coalpac's mining operations. The Department notes that of the 143 form letters in support, 20 were from Cullen Bullen, and 60 were from the Lithgow LGA. This illustrates that the majority of the support for the project is coming from the local area - presumably in response to the potential loss of jobs and the implications for local businesses and the local economy if the project does not proceed. The Department also believes that the proportional shift in support for the project in the local area reflects the fact that both Cullen Valley Mine and the Invincible Colliery have been placed on care and maintenance pending the decision on the Coalpac Consolidation Project, and almost 60 people have recently lost their jobs.

Following the PAC review, Energy Australia, which has a contract with Coalpac to supply coal to the Mount Piper Power Station until 2029, submitted a detailed submission supporting the project. Energy Australia's submission included independent expert economic analysis prepared by *ACIL Tasman* and *Frontier Economics* (see Appendix L). Essentially this analysis refuted the conclusions made by the PAC about the economic benefits of the project, and emphasised the importance of the Coalpac Consolidation Project to the future coal supply of the Mount Piper and Wallerawang Power Stations and the associated flow on implications for electricity prices in NSW.

On the other hand, the Department also received a detailed submission objecting to the project prepared by the *Lithgow Environment Group, Blue Mountains Conservation Society* and the *Colong Foundation for Wilderness*. This submission was titled, "*The case for rejecting the Coalpac 'contracted project' proposal and securing a reservation outcome*", and contained detailed information about the nature, extent and significance of the biodiversity, scenic and geoheritage values of the vegetation on the site, and the pagoda rock formations in the area.

5. PLANNING ASSESSMENT COMMISSION

On 22 July 2012, the Minister for Planning and Infrastructure directed the Planning Assessment Commission to carry out a review of the Coalpac Consolidation Project, and:

- a. Consider the Environmental Assessment of the project, all issues raised in submissions on the project, and any other information provided on the project during the course of the review;
- b. Assess the merits of the project as a whole, paying particular attention to the potential:
 - local health and amenity impacts of the project, particularly dust, noise and blasting impacts noting its proximity to the village;
 - biodiversity impacts of the project;
 - water resource impacts of the project; and
- c. Recommend appropriate measures to avoid, minimise and/or offset these impacts.

Due to the level of public interest in the project, the Minister also requested that the PAC hold public hearings during the carrying out of the review.

The PAC asked for public submissions on the project and held public hearings at the Lithgow & District Workmen's Club on 19 September 2012, and at the Cullen Bullen Progress Association Hall on 20 September 2012.

Thirty-eight verbal presentations were made during the PAC's public hearings along with a number of additional written submissions. The PAC also reviewed the submissions made to the Department during the public exhibition of the EA for the project.

The PAC visited the site for the proposed mine, and held several additional meetings during the review, including meeting/s with relevant government agencies, Lithgow City Council, Energy Australia, and Coalpac.

On Friday 14 December 2012, the PAC submitted its review to the Director-General. The PAC concluded that when the merits of the project are considered as a whole, the benefits of the project are substantially outweighed by the breadth and potential magnitude of the impacts. The PAC therefore recommended that the project **should not be approved**.

The key grounds relied upon by the PAC for recommending the project should not be approved were:

1. Biodiversity Impacts -

- **Pagodas** – the rock pagodas in the vicinity of the site represent an internationally significant geological feature that warrant total protection from mining, and the minimum proposed setback proposed by Coalpac of 50 m is not sufficient to protect these areas.
- **Threatened Species** - the impacts on key threatened fauna that utilise pagodas and associated slopes would be significant (e.g. Broad-headed Snake & Brush-tailed Rock Wallaby). To adequately protect threatened species, the PAC recommended an offset of at least 300 metres from cliff lines (a distance that would sterilise a significant proportion of the coal resource).
- **Regional Biodiversity Values** - the impacts of the project would result in a significant loss of biodiversity values and habitat connectivity in the region. The PAC did not believe these impacts could be adequately compensated for by the proposed offset strategy. The PAC also expressed concerns about the ability of Coalpac to successfully revegetate and rehabilitate disturbed areas back to native woodland. Overall, the PAC considered that the project is not compatible with regional biodiversity values and any future reservation of the Gardens of Stone Stage II as a State Conservation Area or National Park.

2. **Dust** – the PAC considered that because the project would exceed short term (24 hr) PM₁₀ concentrations at up to 5 privately-owned residences (and would be close to the criteria at others) it was at the limit of acceptability in regard to air quality impacts. It also considered that the relative increase of annual average PM₁₀ concentrations above background levels as a result of the project is not appropriate from a broader public health perspective. The PAC noted that while the project could meet the relevant EPA criteria for annual average PM₁₀, it accepted advice from NSW Health that there is no safe threshold and that the relative increase above background levels is the most important determinant of public health outcomes.

3. **Noise** – the noise impacts of the project would result in a significant impact on the nearby village of Cullen Bullen. The PAC was also sceptical about the ability of Coalpac to be able to meet the predicted noise levels.
4. **Blasting** – the impacts of the increase in proposed blasting frequency from 6 large blasts per week to 40 smaller blasts per week to meet relevant blasting criteria would significantly affect the amenity of local residents.
5. **Cumulative Impacts** – the cumulative impacts of mining in the area in terms of loss of biodiversity and air quality were becoming significant, and the project (as proposed) would significantly increase these impacts at the regional level.
6. **Sand Extraction** – the proposal includes a large area of sandstone extraction. The PAC was not satisfied with the assessment of the environmental impacts of the proposed extraction, especially in regard to the traffic impacts associated with transporting this material along the Great Western Highway.
7. **Mitigation and Management** - the PAC believed that Coalpac's assessment of the potential environmental impacts of the project was far too optimistic, and questioned the ability of the company to adequately mitigate and manage the impacts of the project to achieve acceptable environmental outcomes (particularly as many of the predicted impacts would only just meet applicable criteria).

The PAC Report also includes 83 specific recommendations in accordance with the Minister's request to *recommend appropriate measures to avoid, minimise and/or offset these impacts*. However, the PAC noted that these conditions were prepared as each individual issue was considered and before the PAC determined its position on the merits of the project as a whole. Accordingly, the PAC has noted that these recommendations represent the minimum requirements or limitations that it considers necessary to address the impacts of the project, and that the provision of these recommendations should not be interpreted as modifying the PAC's conclusion and recommendation that the project as a whole should not be approved.

As mentioned, following the review of the project by the Planning Assessment Commission, Coalpac submitted a PPR. The PPR included a number of key changes to the original project which are included in Table 1 above.

The full PAC review is included as Appendix E. A summary of the Department's consideration of the findings and recommendations of the PAC having regard to the changes made by Coalpac in its PPR is incorporated in Section 6 below.

6. ASSESSMENT

In accordance with Section 75I of the EP&A Act and Clause 8B of the *Environmental Planning and Assessment Regulation 2000*, the Department has considered the following in its assessment of the project:

- the environmental impacts of the project, including Coalpac's EA and PPR;
- the findings and recommendations of the Planning Assessment Commission's review of the project;
- the suitability of the site for the project;
- submissions on the EA and PPR, including advice from public authorities;
- Coalpac's response to submissions and response to the PAC Review;
- Coalpac's response to the submissions received on the PAC Review;
- the objects of the EP&A Act; and
- the public interest.

In summary, the Department believes that the changes to the project have gone some way towards reducing the environmental impacts of the project particularly in regard to the potential dust and noise impacts on residents in Cullen Bullen. The Department also acknowledges that the Coalpac Consolidation Project would generate a range of economic benefits in the local area and more broadly for NSW, including supplying coal to the nearby Mount Piper Power Station, generating \$200 million in royalties for the NSW Government, and creating up to 120 direct jobs, and up to 400 indirect jobs in the region.

However, the Department believes that the changes proposed by Coalpac *do not fundamentally alter* the irreversible impacts of open cut mining in an area that is part of an internationally significant pagoda landform complex, important habitat for a number of threatened species, and has regionally significant biodiversity values that warrant long term protection and reservation for nature conservation purposes.

The Department acknowledges the merits of the project are finely balanced. However, following its assessment of the project, including consideration of the PAC's review, the Department is satisfied that when the project is taken as a whole, the environmental impacts of the project outweigh the benefits of the project.

Consequently, the Department considers that on balance the Coalpac Consolidation Project is not in the public interest, and **should not be approved in its current form**. The specific grounds for this recommendation are outlined below.

6.1 Unacceptable Environmental Impacts

- a) **Biodiversity - the project would result in unacceptable impacts on biodiversity values in the region.**

Original Project

The original project involved clearing 958 ha of native vegetation in the Ben Bullen State Forest. This included around 18 ha of Box Gum Woodland EEC under the Commonwealth EPBC Act and the NSW *Threatened Species Conservation Act 1995* (TSC Act), and up to 278 ha of habitat for *Eucalyptus cannonii* (constituting an estimated 19,219 individuals) which is listed as vulnerable under the TSC Act. The vegetation to be cleared is highly diverse comprising over 500 flora species and providing habitat for at least 130 fauna species, including at least 17 threatened species.

To offset the biodiversity impacts of the project, Coalpac proposed a biodiversity offset strategy comprising four properties to be conserved and/or revegetated for conservation purposes. The four proposed offset areas would provide a total of 2,040 ha of land with around 1,600 ha of remnant woodland and 180 ha of native grasslands. This would also include 50 ha of Box Gum Woodland EEC and 170 ha of associated derived native grasslands. Coalpac also proposed a range of indirect offsets including \$300,000 for ecological research.

PAC Review

In respect of biodiversity, the PAC raised a number of significant concerns about the project including:

- **Species diversity** - the diversity and good condition of the remnant vegetation in the project area warrants protection: *"The diversity of vegetation types and the flora species present in the project area, in conjunction with the acknowledged quality of the vegetation, provides a strong case for the protection irrespective of the presence or otherwise of the listed vegetation communities and threatened species of flora and fauna."* (p96)
- **Edge effects** – the indirect impacts of the project on biodiversity would be greater than that presented in the EA: *"Edge effects also have a significant impact on retained areas of vegetation... the Proponent's information regarding direct impact of clearing is an under-estimate of the total impact on vegetation communities, including listed communities under the relevant State and Commonwealth legislation."* (p94)
- **Biodiversity offsets** - the biodiversity offsets do not adequately compensate for the loss of biodiversity values in the project area: *"The Commission is unable to support the revised biodiversity offset package as adequate...the proposed offset package, when stripped to its bare essentials, is designed to exchange a number of fragmented areas that generally require extensive rehabilitation work and are currently not considered suitable for reservation, for a single area of high quality habitat that adjoins other areas of high quality habitat and is already proposed for reservation."* (p104)
- **Rehabilitation** – rehabilitation of mining areas cannot reproduce the pre-mining biodiversity in the project area: *"The vegetation communities on the site are present because of the geological and hydrological characteristics of the site; it is not possible to reconstruct these characteristics; and it is therefore not possible to restore the existing vegetation communities post-mining."* (p99) *"The only tenable position is that rehabilitation may provide some (as yet unknown) biodiversity outcomes in place of the known biodiversity outcomes that will be destroyed."* (p101)
- **Reservation** – the proposed inclusion of Ben Bullen State Forest in the conservation reservation system in NSW and the project are incompatible: *"The project and reservation of the Gardens of Stone Stage II are incompatible if reservation is intended to include Ben Bullen State Forest, either now or in the foreseeable future."* (p3)

Preferred Project

Coalpac's PPR included a number of changes to the project to address the concerns raised by the PAC in regard to biodiversity, namely (see Figures 4 and 5 above):

- 20% reduction in the open cut mining footprint which would reduce the total area of clearing by 196 ha (from 956 to 762 ha) including:
 - removal of open cut mining footprint between some of the larger pagoda rock formations in the south east of the project area;
 - a reduction of the open cut mining footprint to avoid the area of Clandulla Geebung habitat in the north west of the project area;
 - removal of the Hillcroft mining area in the western portion of the project area which reduces the clearing of potential habitat for *Eucalyptus cannonii* by 74 ha; and
 - minor changes to the boundary of the open cut mining footprint;
- enhancing the biodiversity offset strategy through a commitment to a total offset ratio of 4:1 for the clearing associated with the contracted proposal. This would involve inclusion of another 1007 ha of suitable vegetation to augment the existing offsets package to a total of 3,047 ha. A number of potential options for this additional offset area were identified by Coalpac in its PPR.

Coalpac has also provided a revised ecological assessment to address the conclusions and recommendations made by the PAC in regard to biodiversity. Based on this assessment, Coalpac argues that:

- the contracted proposal has been designed to avoid impacts on the most extensive remnants of the Box Gum Woodland EEC;
- it is not correct to claim that the vegetation communities on the Permian sediments that occur in the project area are somehow unique;
- the impacts on key threatened fauna species (e.g. Brush-tailed Rock Wallaby, Broad Headed Snake, and various bat species) would essentially be negligible as either the habitat is not suitable or the project would not directly impact habitat for these species;
- the revised biodiversity offset strategy would achieve an offset ratio of 4:1 (without mine site rehabilitation) which is comparable to other recently approved mining projects in NSW (e.g. Ulan Coal Mine (4:1) Duralie Coal Mine (3.3:1), and Maules Creek Coal Mine (4.3:1));
- while mine rehabilitation is not a facsimile of the original landscape, it is a valid mitigation measure for mining projects, and Coalpac has demonstrated a good track record with mine rehabilitation at the Cullen Valley Mine and Invincible Colliery;
- the conclusion of the PAC that the landscape would be permanently, significantly and visibly scarred, and that the biodiversity significantly diminished in the long term, is neither justifiable nor warranted; and
- the area to be cleared in the project area only represents 11% of the Ben Bullen State Forest, and there is no specific government policy to reserve the Ben Bullen State Forest under the *National Parks and Wildlife Act 1974*.

In its most recent submission, Coalpac makes a number of additional points about biodiversity including:

- the majority of the vegetation on the site is well represented in surrounding areas, including in National Parks, and is therefore not unique;
- the vegetation on the site does not contain significant areas of EECs or other threatened species;
- the species diversity on the site is high, but there are significant areas of similar habitat that exist outside the project area; and
- woodlands adjacent to pagodas are common within the broader pagoda landform complex, and do not warrant a higher level of significance than other similar landforms.

Consideration

The Department considers that this issue essentially relates to the level of significance attributed to the biodiversity values present on the site and surrounds. Based on the information before the Department, it seems that Coalpac and the PAC have fundamentally different views about these values, and the ability to adequately compensate for the loss of these values if the project proceeds through a combination of off-site biodiversity offsets and mine site rehabilitation.

The Department acknowledges that Coalpac's contracted project (as presented in its PPR) reduces the total clearing of native vegetation by almost 200 ha (see Figure 5). This includes about 107 ha on the Hillcroft property to the west of the project area, around 3 ha to the north west of the project area, and around 9 ha in the gullies between significant pagoda formations in the south east of the project area. These changes avoid an additional 74 ha of potential habitat for *Eucalyptus cannonii*, 320 individuals of the *Clandella Geebung* (which is listed as vulnerable under the TSC Act), and some of the important habitat contained in the wet gullies between pagodas.

However, the Department believes that the reduction in the project disturbance footprint does not fundamentally change the overall biodiversity impacts of the project. The majority of the open cut mining footprint remains the same as that assessed by the PAC – consisting of a series of narrow elongated open cut mining pits that would remove 762 ha of high quality native woodland and associated habitat along the slopes and aprons associated with significant pagoda rock formations (as discussed in Section 6.1(b) below).

Biodiversity offsets have become an accepted approach to compensate for the loss of biodiversity values associated with mining projects in NSW where these impacts cannot be avoided. However, the Department notes that before biodiversity offsets are contemplated, there needs to be an evaluation of the acceptability of the loss of the biodiversity values associated with a particular site. In this regard, the Department believes that the biodiversity values associated with the site are of the highest order and agrees with the PAC that the area warrants the highest level of protection so that these values can be preserved.

In support of this conclusion, the Department notes that the Ben Bullen State Forest has been part of a larger proposal from various community groups (including the Colong Foundation) for the Gardens of Stone Stage II National Park for many years. The *Advisory Committee for the Greater Blue Mountains World Heritage Area* (which provides advice to the State and Commonwealth Environment Ministers on matters relating to the protection, conservation, presentation and management of the Greater Blue Mountains World Heritage Area) has also formally recommended to both the NSW and Commonwealth Environment Ministers that the Gardens of Stone Stage II proposal be accepted and the area protected as a matter of priority (see Appendix H).

The Office of Environment and Heritage (OEH) has advised the Department that the whole of the Ben Bullen State Forest has long been identified by OEH as being of suitably high conservation value for future reservation under the *National Parks and Wildlife Act 1974*. However, it is noted that the NSW Minister for the Environment has informed the Department that further exploration of potential reservation options for the Ben Bullen State Forest will await the final decision on the Coalpac Consolidation Project (see Appendix I).

During the exhibition period, the Department also received a formal submission from the *Advisory Committee for the Greater Blue Mountains World Heritage Area* strongly objecting to the project, and advising that because the project is located only 2 km from the western edge of the Greater Blue Mountains World Heritage Area, it would threaten the integrity of the buffer to the World Heritage Area and has the potential to detrimentally impact its values for which it was listed. It also advised that the natural values of the Ben Bullen State Forest mean that it would potentially provide a valuable addition to the World Heritage Area itself.

In line with this, the Department understands that the NSW and Commonwealth Governments are proposing to re-nominate the Greater Blue Mountains World Heritage Area to incorporate additional values. The Greater Blue Mountains World Heritage Area is currently being assessed by the Commonwealth for inclusion on the National Heritage List which is a precursor to re-nomination to the World Heritage Committee. The *Advisory Committee for the Greater Blue Mountains World Heritage Area* has recommended to the National Heritage Council that the assessment include the Gardens of Stone Stage II proposal, including the Ben Bullen State Forest, due to the indigenous, geodiversity, aesthetic, and biodiversity values found in the area.

The Department agrees with Coalpac that the NSW Government has no formal proposal to reserve Ben Bullen State Forest in the National Parks Estate. However, it is clear from advice to the Department from OEH, and the submissions received from the *Advisory Committee for the Greater Blue Mountains World Heritage Area*, and key environmental interest groups that the biodiversity values of the Ben Bullen State Forest (including the project site) are suitable for inclusion in any future reservation proposal. Furthermore, given the likelihood of significant edge effects, the project would jeopardise the potential for reservation of a far greater proportion of the Ben Bullen State Forest than the 11% of the forest within the project boundary. In essence, the Department agrees with the PAC that the project and the future reservation of the Ben Bullen State Forest are not compatible.

The Department also notes that there has never been a major open cut mine approved resulting in the removal of significant areas of native woodland adjacent to the pagoda formations that are found on the western escarpment of the Blue Mountains. Traditionally, the majority of mining that has the potential to affect native woodland and significant rock formations has been underground. While there are potential impacts associated with underground mining that have to be managed, the nature and extent of these impacts are fundamentally different to those associated with open cut mining. This has been illustrated in Coalpac's most recent submission which indicates that historical underground mining at the Baal Bone Colliery has resulted in very limited impacts on pagoda formations.

Rehabilitation of open cut mines has traditionally met with mixed success, and while the Department is confident that Coalpac can achieve a reasonable level of rehabilitation consistent with best practice in the industry in the long term, any beneficial biodiversity outcomes associated with rehabilitation would not be able to replace or replicate the known biodiversity outcomes that would be destroyed if the project proceeds.

It is a similar situation for biodiversity offsets. The Department agrees that the offsets proposed by Coalpac are generally consistent with those approved for a number of other mining projects in NSW. However, the Department considers that the proposed site for the Coalpac Consolidation Project is not like other mines in NSW. The project site comprises a rare combination of significant biodiversity values located within the broader internationally significant pagoda landform that occurs in the region (see discussion about pagodas below), is in close proximity to National Parks and a World Heritage Area, and has been nominated for inclusion in NSW's system of reserves. The Department also agrees that the biodiversity offsets proposed by Coalpac contain areas with high biodiversity value and are relatively proximate to various reserve systems, but they do not incorporate areas that contain the same Permian sediment vegetation communities set within a significant pagoda landform like that found on the site.

Finally, the Department acknowledges that the vegetation on the site is not *unique*, and similar vegetation communities and habitats can be found in the region – both outside and inside the existing National Parks reserve system. For example broadly similar vegetation complexes occur both to the north, south and east where the Permian Illawarra Coal Measures crop at the surface.

However, while the Department agrees that the vegetation on the site is not unique, the combination of soils, altitude, rainfall, and proximity to the pagoda rock formations means that this mix of species known as the Table Grassy Woodland Complex only occurs in a relatively narrow range on the western edge of the Great Dividing Range where the Permian Coal Measures are present (see Figure 6).

The Department also does not agree with the notion that clearing of vegetation that has significant biodiversity values can always be justified because similar vegetation communities exist elsewhere, particularly where it is recognised that these occurrences are relatively limited in range and extent as is the case in this situation.

Notwithstanding the above, the Department notes that existing operations at Cullen Valley and Invincible are relatively modest and have not resulted in extensive impacts within the most sensitive parts of the Ben Bullen State Forest. Furthermore, the Department notes that the Gardens of Stone Stage II proposal incorporates land to the east of the Castlereagh Highway, and that parts of the Coalpac Consolidation Project are located outside the areas proposed for reservation. The Department understands that there are also coal resources that can be extracted in the areas west of the Castlereagh Highway where biodiversity values are not as significant (such as the Hillcroft property). Consequently, it may be possible to extract limited reserves in the short to medium term without resulting in significant impacts on regional biodiversity.

Conclusion

Having considered the biodiversity impacts of the contracted project in detail, the Department believes that the mine (as proposed) would have an unacceptable and irreversible impact on biodiversity values on the site, and that rehabilitation of the site and the proposed biodiversity offset package does not adequately compensate for the loss of these biodiversity values. Consequently, the Department believes that the conclusion of the PAC in regard to the biodiversity impacts of the project remains valid.

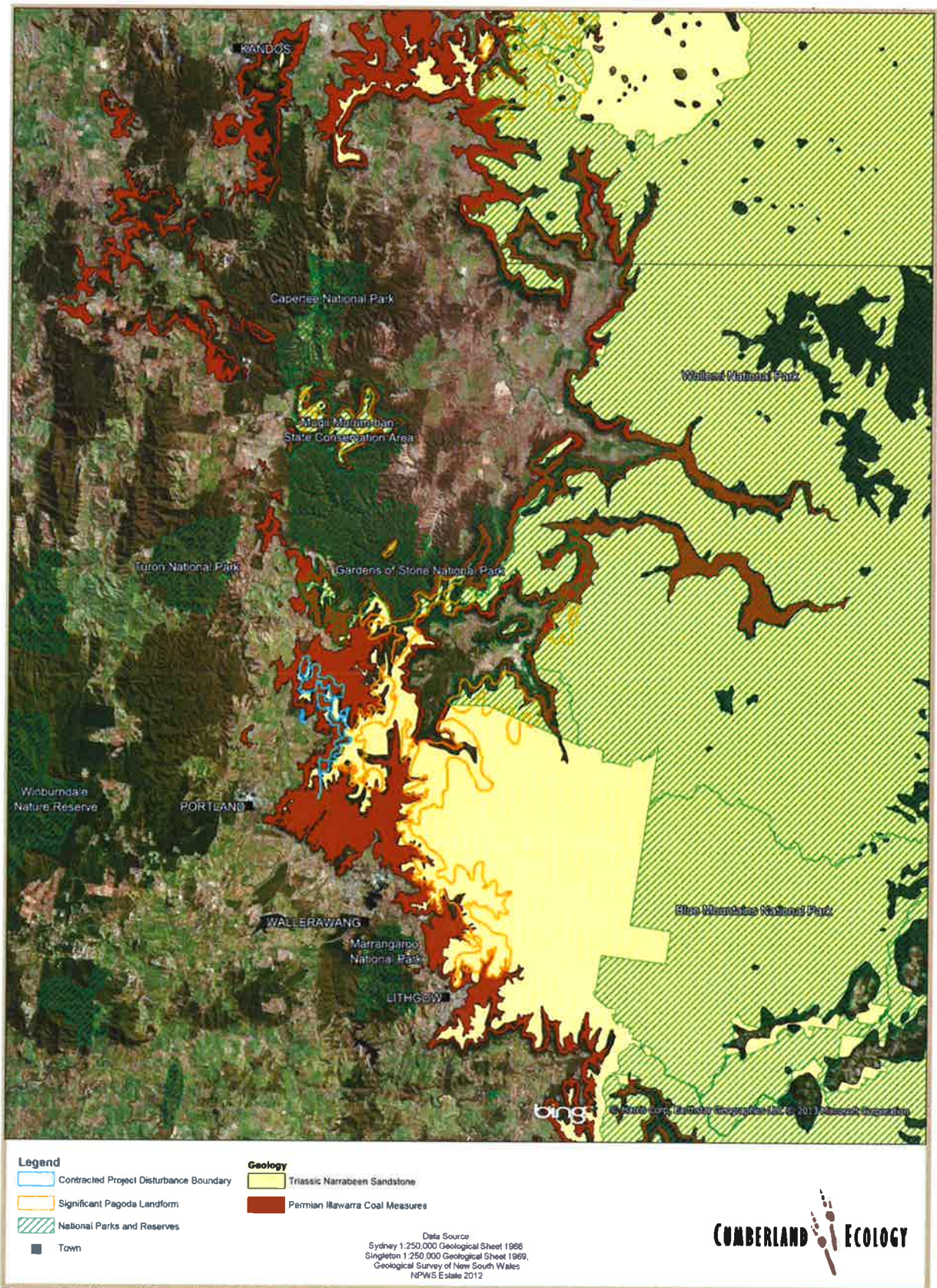


Figure 2. Adjacent Permian and Triassic Geology within the Region



Figure 6: Location of Permian Coal Measures and Triassic Sandstone

b) Natural Features – the project would result in unacceptable impacts on the pagoda landform complex in the project area and surrounds.

“Pagodas” is the common name given to the distinctive sandstone formations found in a limited area on the western escarpment of the Blue Mountains. There are two types of pagodas – smooth “bee-hive” pagodas and terraced “platy” pagodas. Platy pagodas are massive Triassic sandstone formations with distinctive ironstone banding and are the type that may be impacted by the proposed project (see Figure 7). The pagodas form part of a landform complex that cannot be considered as structures in isolation. The landform consists of 3 distinct components - the distinctive rock formations known as “pagodas”; the wet gullies between the pagodas; and the drier slopes below the pagodas.



Figure 7: Platy pagoda formation typical of the project area and surrounds

Original Project

The original project proposed open cut mining within approximately 50 m of significant pagoda formations and within 20 m of other significant sandstone outcrops that occur in the project area. Open cut mining was also proposed within the wet gullies between the larger pagoda rock formations in the south east of the site, and multi-seam highwall mining was proposed beneath a number of significant pagoda rock formations in areas adjacent to the open cut mining areas (see Figure 8).

PAC Review

In considering the potential impacts on pagodas, the PAC considered four key questions:

1. *What level of significance should be attributed to the pagodas themselves and to the pagoda landscape?*
2. *What level of protection should be afforded to these features?*
3. *What risks does the project pose to these features?*
4. *Given these risks, what actions might be taken to avoid, mitigate or offset them?*

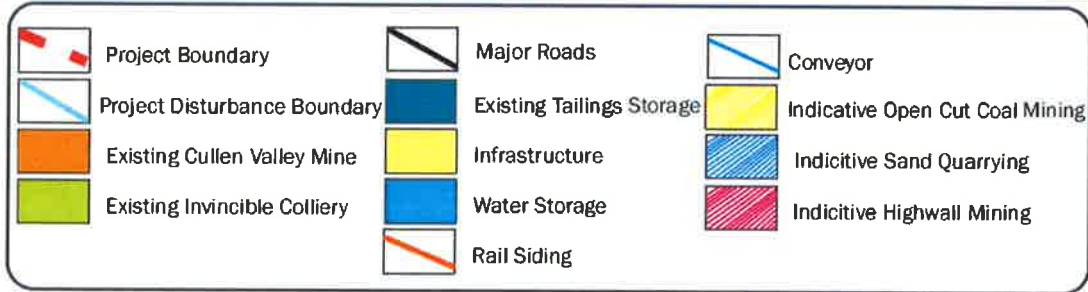
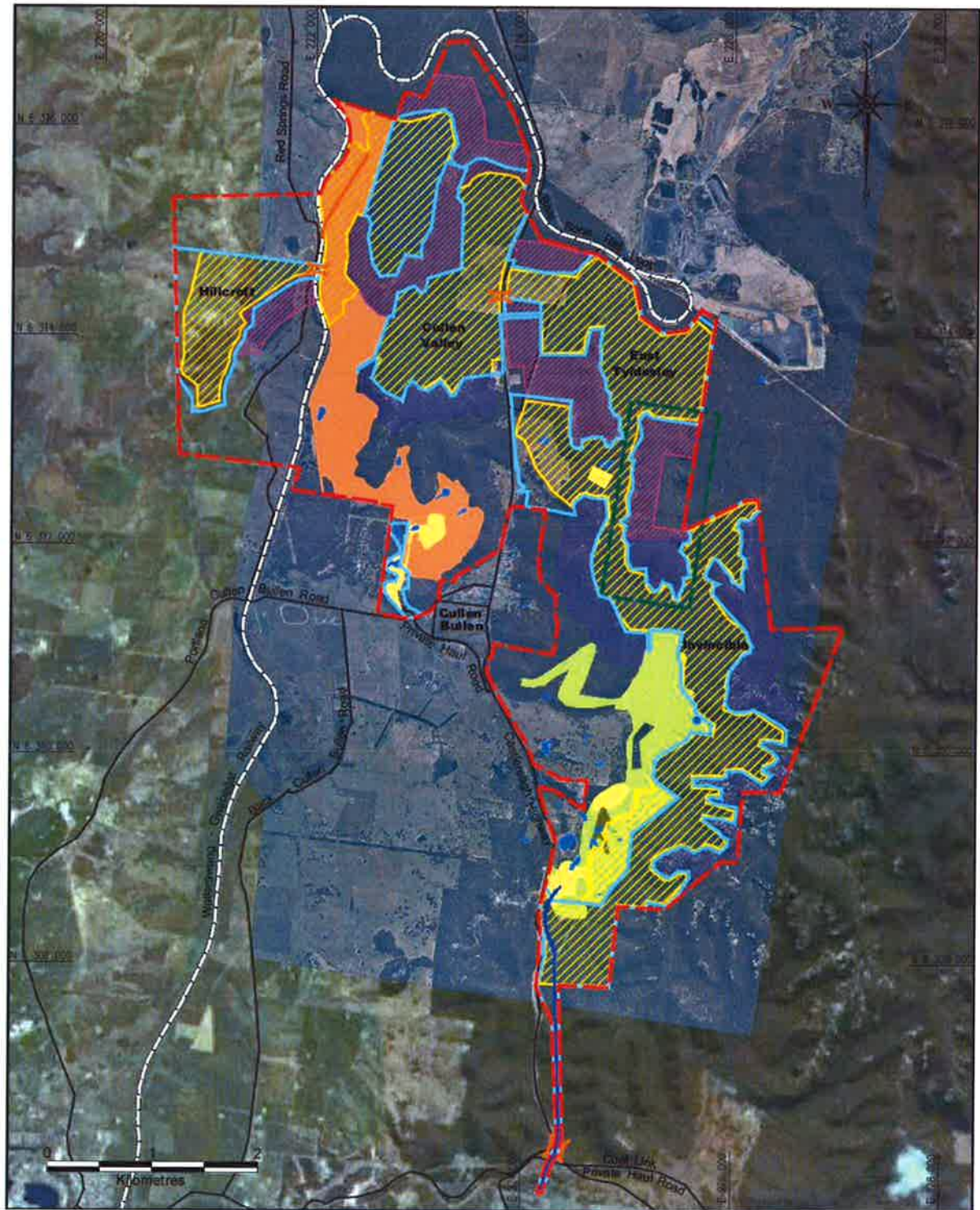


Figure 8: Original Mining Areas

Significance & Level of Protection

In response to the level of significance and protection appropriate for the pagodas, the PAC concluded:

"The pagodas are considered internationally significant geological features some 250 million years old and worthy of total protection." (p3)

"Based on the scientific literature, the international significance of the pagoda structures, the importance of the habitat, multiple submissions on the EA and at the public hearings, and the Commission's own observations during both aerial and ground inspections, the Commission concludes that the significance of the pagoda landform is at the top of the scale and thus the pagoda landform should be afforded special significance status and the highest possible level of protection." (p76)

"The Commission recommends that the pagodas and the associated escarpments be considered natural features of special significance and that they be fully protected from any mine-induced impacts." (p77)

Risks to Pagodas

The PAC considered the risks to the pagodas in three broad categories:

- a) Potential risks to the structure of the pagodas and escarpments:
 - Blasting – *"The risks associated with the proposed 50 m setback are considered unacceptable."* (p79)
 - Instability – *"There is insufficient information available on which to judge the risks posed to the pagodas and cliff lines from mining-induced instability..."* (p80)
 - Subsidence – *"On the basis of the information available to it, highwall mining under pagodas poses unacceptable risks to the structural integrity of these features...The Commission recommends that highwall mining not be permitted under the pagodas or escarpments in the project area."* (p84)
- b) Potential risks to flora and fauna - *"The pagoda landform in the project area provides essential habitat components for a number of listed threatened fauna species and is potential habitat for some non-listed species that are of public significance....The proposed 50m setback of the highwall crest from pagodas and cliff lines is manifestly inadequate for provision of the basic habitat requirements for these species...Even if there is no impact from mining on the pagoda structures themselves, the edge effects would render the pagodas uninhabitable."* (p89)
- c) Potential risks to the visual value of the pagoda landform – *"the Proponent has not been able to demonstrate to date that it can open-cut mine in the vicinity of the pagodas without leaving substantial scarring."* (p71) *"The conclusions are that the visual impacts would be significant and sustained over very long periods."* (p91)

Actions to Avoid, Mitigate or Offset

In considering the protection for threatened species and other fauna that use the pagoda landform, and based on advice from OEH, the PAC recommended a minimum setback distance of 300 m be maintained from the open cut highwall to the pagodas and the escarpments. The PAC considered that a 300 m buffer would - *"Provide a significantly improved habitat buffer for the listed threatened species that utilise the pagoda landform and are either present on the project area or could potentially use this landform within the project area. A buffer of this size will also lessen the risks to the pagodas and escarpments from blasting and slope instability and lessen the visual impact on the landform."* (p91)

Preferred Project

One of the key issues Coalpac sought to resolve in its response to the PAC and its PPR, was the definition of what constitutes a pagoda landscape in the regional context. To this end, Coalpac's ecological consultant (Cumberland Ecology) has developed a definition of "Significant Pagoda Landforms" (SPL) which is defined as (see Figure 9):

A complex that creates a continuous landform over a substantial area (typically greater than 10 hectares), comprising (as a minimum):

- *large, substantial in height (typically up to 60m but may be higher), towering pagodas (either platy or smooth), that are generally prominent rock formations with associated cliff faces and deeply dissected gullies, characterised by banded ironstone and associated rock structures containing numerous overhangs and crevices, with; and*
- *associated deeply dissected wet gullies between the pagoda formations that contain a complex of habitat types for both flora and fauna, some species of which are rarely found elsewhere (e.g. Pagoda Daisy).*

All other rock formations in the area not forming a complex of SPL are defined by Cumberland Ecology as "Sandstone Outcrops" which are defined as:

- *outcrops of sandstone that are in situ and form a discontinuous landform with individual continuous outcrop areas of less than 10 and greater than 0.1 hectares. These outcrops may exhibit geomorphological features such as cliffs, caves, rock towers and isolated pagodas that do not form an aggregate or have deeply dissected wet gullies.*

Coalpac claims that there is around 113 ha of SPL (as defined by Cumberland Ecology) within the project boundary – mostly to the south east of the project area.

Coalpac's PPR included a number of changes to the project to address the concerns raised by the PAC in regard to pagodas, namely:

- the removal of open cut mining in the west gullies between the Significant Pagoda Landform (as defined by Cumberland Ecology) (see *blue* outline in Figure 10);
- the removal of highwall mining beneath the Significant Pagoda Landform (as defined by Cumberland Ecology) (see *orange* outline in Figure 11); and
- the revised blast management measures to further minimise potential blasting impacts on any Significant Pagoda Landform or other sandstone outcrops (as defined by Cumberland Ecology).

In regard to blasting, Terrock Consulting Engineers has undertaken a review on behalf of Coalpac for the contracted project. Terrock has recommended an investigative management procedure for blasting to allow blasting to proceed with appropriate ground vibration limits for the protection of the SPL and Sandstone Outcrops. The key elements of this procedure include:

- an initial blasting exclusion zone of 200 m from SPL and Sandstone Outcrops combined with an initial blast vibration limit of 50 mm/s;
- blasting would then move closer with successive blasts until the 50 mm/s blast vibration limit is achieved at the relevant monitoring point and the rock formation is shown to remain stable; and
- once blasting at the interim blast vibration limit of 50 mm/s has proven to have a negligible impact, the limit would be increased in 25 mm/s increments to 100 mm/s while continuing the monitoring program to determine any adverse impacts on nearby pagoda formations.

Coalpac is also proposing to establish an Independent Review Committee with suitable technical and regulatory representation to monitor the performance of the blast management program for any blast within 200 m of the SPL and Sandstone Outcrops in the project area.

By implementing this iterative approach, Coalpac claims that areas may be identified where the open cut mining stand-off distance to SPL and Sandstone Outcrops could be safely reduced to 50 m in accordance with the boundary of the open cut mining area presented in the PPR.

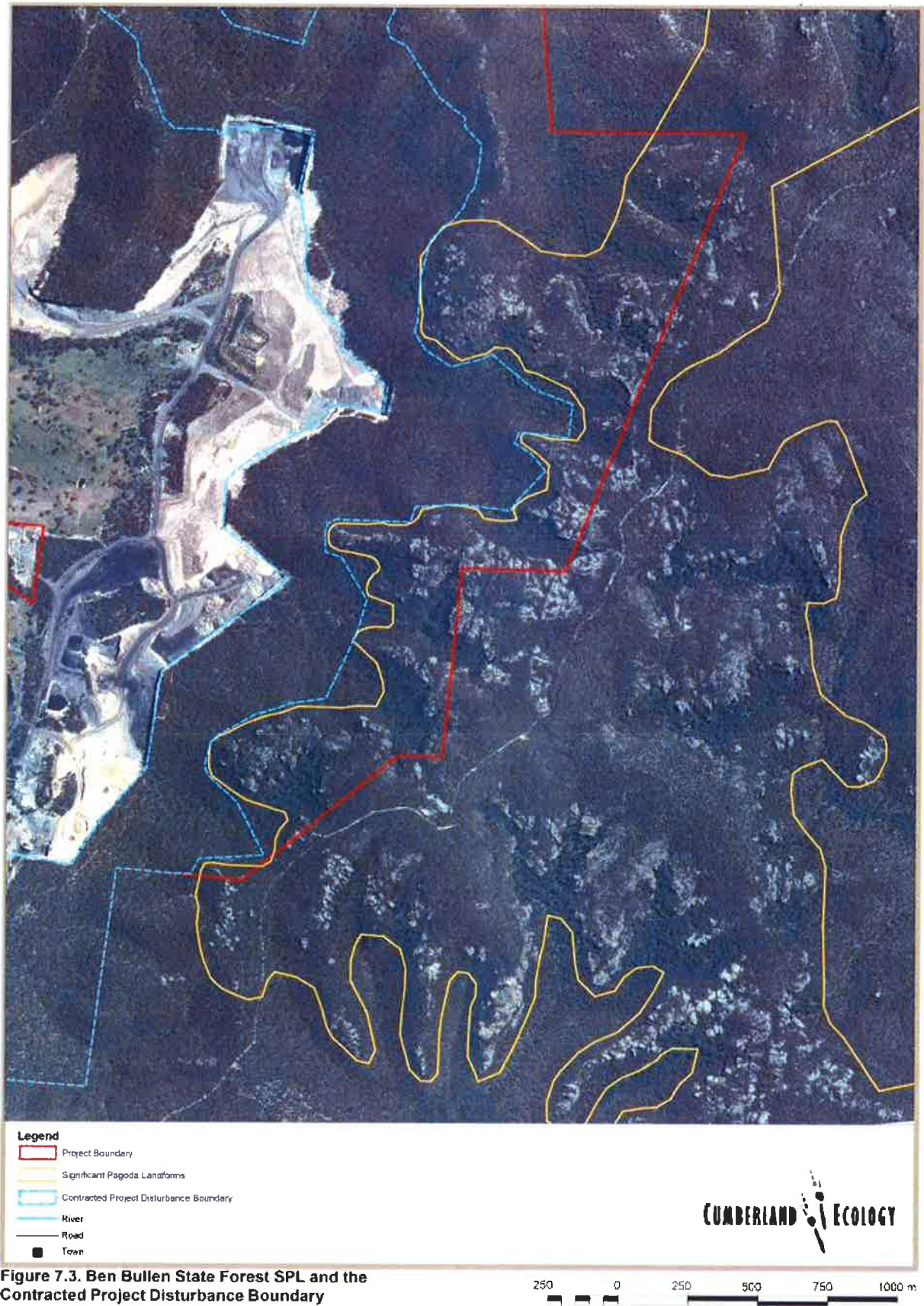


Figure 7.3. Ben Bullen State Forest SPL and the Contracted Project Disturbance Boundary

Figure 9: Significant Pagoda Landform (SPL)

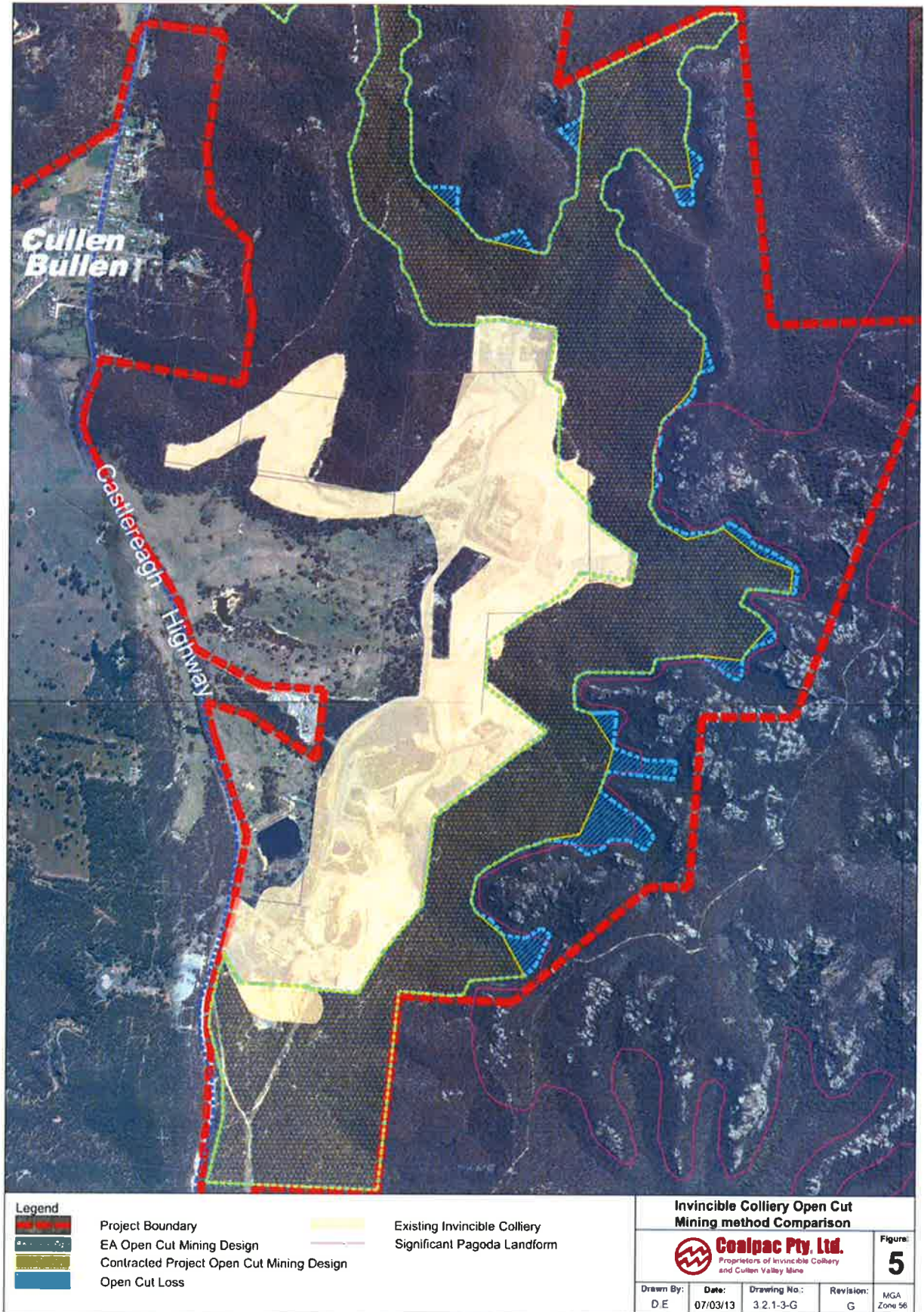


Figure 10: Contraction of Open Cut Mining Near Pagodas

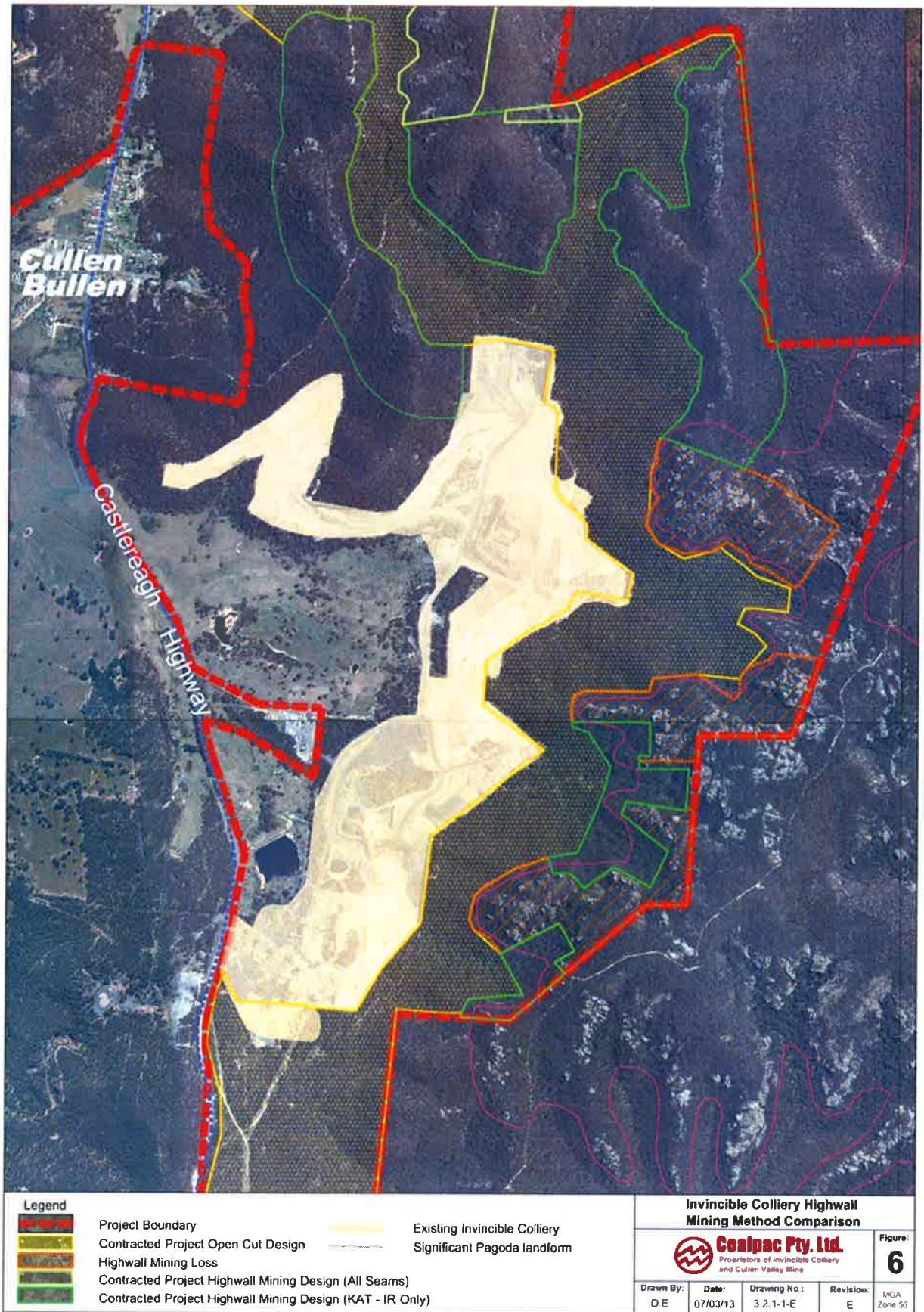


Figure 11: Contraction of Highwall Mining Near Pagodas

Consideration

Special Significance

Over recent years, attributing levels of significance to natural features that may be impacted by mining projects has been undertaken by both the Department and the PAC for various mining projects, particularly those in the Southern Coalfields. This has resulted in the development of a spectrum of significance for natural features, and appropriate levels of protection being afforded to these natural features based on their significance. These levels of significance necessarily involve a level of subjectivity, although this level of subjectivity diminishes at either end of the significance spectrum. In this context, natural features of *special significance* have been defined as follows:

Special Significance Status is based on an assessment of a natural feature that determines the feature to be so special that it warrants a level of consideration (and possibly protection) well beyond that accorded to others of its kind. It may be based on a rigorous assessment of scientific importance, archaeological and cultural importance, uniqueness, meeting a statutory threshold or some other identifiable value or combination of values.

In this case, the PAC has concluded that the pagoda landform be afforded *special significance* status, and hence that it belongs at the end of the spectrum of significance that warrants full protection from mining-induced impacts.

In this regard, the Department notes that platy pagodas occur in a limited area on the western escarpment of the Blue Mountains and are far less common than smooth pagodas which occur more broadly across NSW (e.g. in the Buddawang National Park). In the region, around 60,000 ha of "pagoda country" has been identified, although this includes both smooth and platy pagoda formations. About 50% of pagoda country is protected in nearby National Parks. The remainder occurs mainly in State Forests, such as the Ben Bullen State Forest.

The particular significance of the platy pagoda landform is supported in the scientific literature. A key paper on pagodas in the area affirmed that the platy pagodas are distinct and significant features that do not occur anywhere else in Australia or overseas (Washington & Wray 2011). The Washington & Wray research paper mapped areas of "pagoda country" in the region (see Figure 12). Within the area of pagoda country, Cumberland Ecology has mapped a smaller area which is has designated SPL based on the criteria it has adopted (see *yellow* outline in Figure 12). This has resulted in a significant contraction of the area of pagodas in the project boundary to around 113 ha.

Cumberland Ecology has indicated that there are about 25,000 ha of SPL in the region. The 113 ha in the project boundary therefore makes up approximately 0.4% of the SPL. However, it is not clear how much of this 25,000 ha comprises smooth pagodas and how much comprises platy pagodas, which the Department understands to be far less common. Coalpac's response to the PAC Review includes photos of smooth pagodas from various locations around NSW, and hence it may be that the 25,000 ha of SPL incorporates both smooth and platy pagoda landforms. If so, then the area of SPL that comprises platy pagodas may be significantly less than the 25,000 ha, and the area that may be impacted by the project may comprise a far greater proportion of the existing platy pagoda formations in the region.

A detailed submission from the key environment groups (*Lithgow Environment Group, Colong Foundation for Wilderness* and the *Blue Mountains Conservation Society*) has also sought to characterise the significance of the specific platy pagoda landform occurring in the local area (see Appendix J).

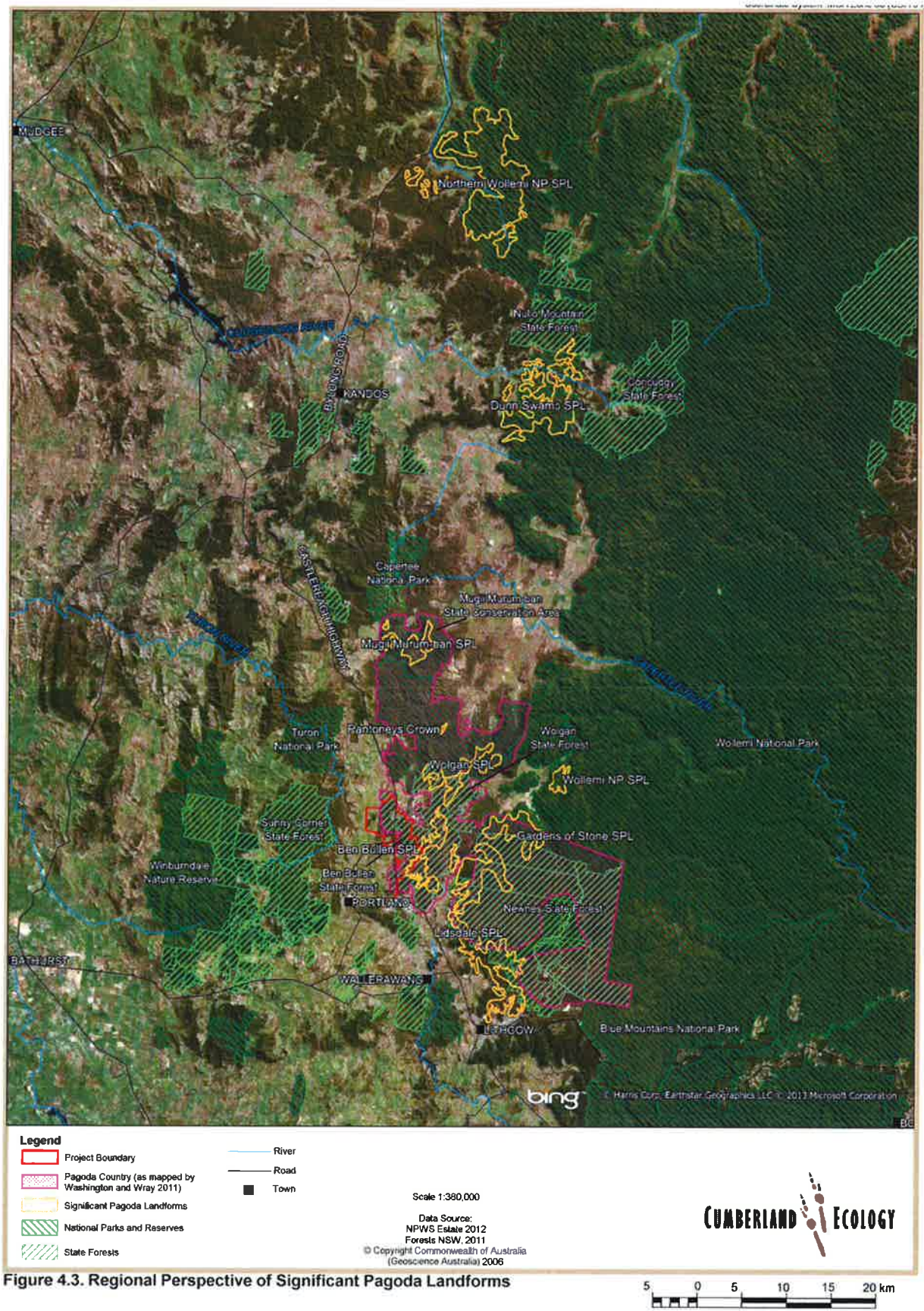


Figure 12: Significant Pagoda Landscape (SPL) within the Pagoda Country

The environment groups claim that the site and surrounds contain just one pagoda complex described as the Ben Bullen Pagoda Land System (BBPLS) which includes three land units – Cullen Plateau Unit, the Ben Bullen Range Pagoda Unit, and the Tablelands Grassy Woodland Complex Unit. In particular, the submission characterises the BBPLS as having a unique combination of attributes that contribute to its significance, including its altitude (around 1000 m), the underlying bedrock (Triassic Narrabeen Sandstone outcrops), the fertility of the soils (derived from outcropping Permian Illawarra Coal Measures), the relatively high rainfall (over 900 mm/year), and the vegetation (especially the Tablelands Grassy Woodland Complex). The submission claims that *none* of this specific land system is protected in nearby National Parks or other reserves, and hence cannot be replaced if it is destroyed.

As discussed above, Coalpac strongly objects to the assertion that the landscape within the project boundary is somehow unique. It also questions the derivation of the localised application of landscape units proposed by the environment groups. In particular, it is the considered opinion of Cumberland Ecology (Coalpac's ecological consultant) that the pagoda landscapes that occur within the project boundary are part of a much larger pagoda landscape complex or land system that occurs far more broadly along the western escarpment of the Blue Mountains (see Figure 13).

The Department generally accepts the arguments made by Cumberland Ecology, and agrees that the combination of attributes that exist on the site are not unique and can be found elsewhere as illustrated in Figure 13. The Department also acknowledges that there is currently no formal statutory recognition of the scenic, biodiversity and geoheritage values of the pagoda landform.

Notwithstanding, it is clear from the PAC's consideration of the significance of the pagodas that it understood similar landforms existed beyond the project boundary (p 75 and 76). Consequently, the Department believes that the PAC's classification of the pagoda landform as a natural feature of *special significance* is appropriate and agrees that these features warrant the highest level of protection.

Definition

Assuming that the pagoda landform holds *special significance*, it is necessary to define what constitutes the pagoda landform to determine the nature and extent of the risks posed by the mine.

As described above, Cumberland Ecology proposed a definition for Significant Pagoda Landforms and Sandstone Outcrops in Coalpac's response to the PAC Review and PPR. However, the Department has some fundamental concerns about this definition. In particular, it questions the definition of SPL as it attributes a level of significance based on an arbitrary threshold of height and area of the rock formations found in the area.

The Department has received a detailed submission from Dr Haydn Washington who co-authored the peer-reviewed paper mentioned above that mapped pagoda landforms in the region (Washington & Wray 2011). Dr Washington's submission strongly objected to the definition developed by Cumberland Ecology. In particular, Dr Washington states that pagoda formations of significance do incorporate rock formations that are less than 10 m in height and less than 10 ha in area.

It is also important to recognise that the pagodas form part of a landform complex that cannot be considered as structures in isolation. This landform comprises a complex arrangement of habitats characterised by a convoluted line of towering rock faces that give way to rocky steep slopes (known as talus slopes). At the bottom of these slopes there are deeply dissected wet gullies between the pagoda formations and these in turn give way to forested slopes and valley floors dominated by various eucalypt vegetation communities. All components contribute to the overall significance of the pagoda landform complex, and any impacts to components of the landform complex have the potential to compromise the significance of the landform complex as a whole.

In its most recent submission, Coalpac acknowledges the components of the pagoda landform complex, albeit slightly differently to the PAC's definition. Cumberland Ecology considers that the most appropriate definition of the pagoda landform complex or land system incorporates (see Figure 13):

- Sandstone Plateaus (in *pink* in Figure 13);
- Pagodas (in *yellow* in Figure 13); and
- Undulating woodlands beneath (in *green* in Figure 13).

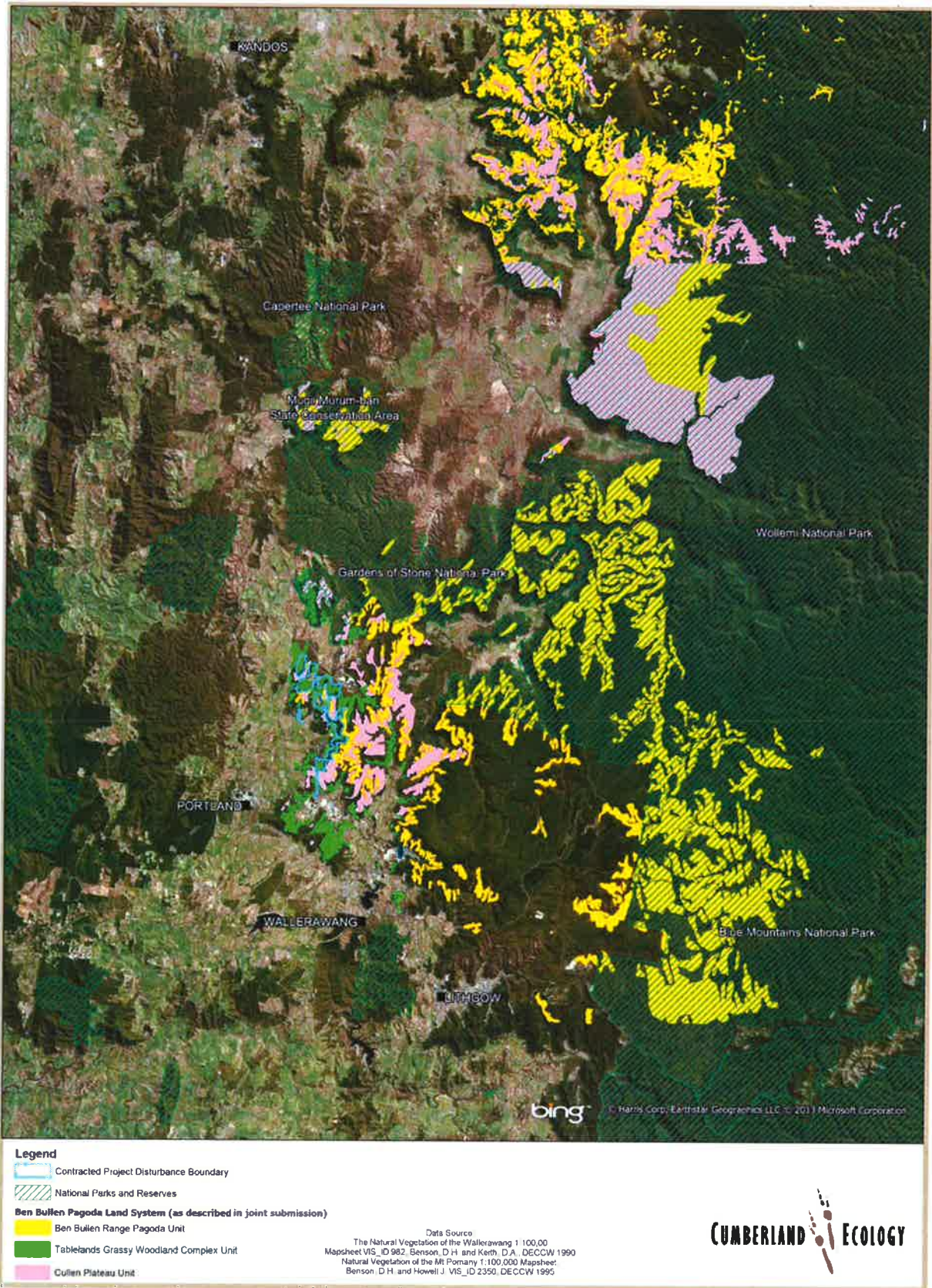


Figure 3. Cumberland Ecology Mapping of the Ben Bullen Pagoda Land System in the Region

Figure 13: Pagoda Land System in the Region

The only key difference with the PAC's definition of the pagoda landform complex, is that the PAC emphasised the wet gullies that provide a distinctive habitat between the pagoda rock formations. Presumably, the PAC considered the plateau areas to be part of the pagoda rock formations given this is predominantly where the Triassic Sandstone rock outcrops occur.

It is also important to note that the mapping prepared by Cumberland Ecology for the Pagoda Land System appears to indicate that the extent of the Tablelands Grassy Woodland Complex is predominantly confined to the project area and immediate surrounds. If this is the case, it undermines the argument that the vegetation in the mining areas is well represented in the region. However, this would need to be confirmed by suitable experts.

In the end, the Department is satisfied that the only reasonable way to define the pagoda landform complex must include the pagoda rock formations on the plateaus, the wet gullies, and the wooded slopes below the pagodas. In other words, the pagodas cannot be considered in isolation. Consequently, the Department does not accept the definitions used by Coalpac for SPLs and Sandstone Outcrops. Instead, the Department believes that the definition of the pagoda landform should be generally consistent with the areas mapped as "pagoda country" by Washington & Wray which includes the various components that make up the pagoda landform complex (i.e. pagodas, gullies, and slopes). If this definition is accepted, the majority of the proposed mining footprint would be located within the pagoda landform complex (see area mapped as pagoda country in Figure 12).

Impacts

The contracted project proposed by Coalpac reduces the area of open cut mining in the gullies between the SPL formations in the south east of the project site to minimise the impacts on some of the larger pagoda formations. However, the contracted proposal still incorporates open cut mining within 50 m of the SPL rock formations, and highwall mining in the gullies between the SPL rock formations. It also incorporates a significant area of open cut and highwall mining in areas mapped as pagoda country as described above. Consequently, the Department believes that the project would result in impacts on the pagoda landform complex that are far more significant than claimed by Coalpac in its PPR.

As described above, the PAC considered a range of risks that the proposed mining poses to the pagodas associated with blasting, subsidence, and instability. However, the Department notes that Coalpac has now proposed a comprehensive adaptive management regime to reduce the risks posed by these aspects of its mining operation.

In general, the Department is satisfied with these measures, and accepts that Coalpac could manage its mining operations in a manner that would not pose a significant risk to the *structural stability* of the major pagoda rock formations on the edges of the proposed open cut mining area. The Department also accepts that highwall mining beneath pagodas could be designed in a manner that would not result in any measurable subsidence (see Figure 14), and hence no discernible impacts on the stability of the pagodas themselves.

Naturally this would need to be carefully managed, and progressive buffer distances would need to be adhered to unless and until Coalpac could satisfy the Department (and any relevant experts or the review committee proposed by Coalpac) that there would be no risks to the stability of the pagodas. However, it may be that this iterative process results in a greater setback from pagodas than the 50 m proposed by Coalpac in many areas of the proposed mine plan. Given the elongated and narrow nature of the open cut mining areas, any significant increase to the setback distance would rapidly affect the economic viability of the mine.

Nonetheless, in principle and subject to suitable controls, the Department *does not* object to the open cut and highwall mining proposed by Coalpac in regard to the structural integrity of the pagodas that exist outside the open cut mining footprint. However, the Department *does* object to the nature and extent of the impacts that the project would have on the pagoda landform complex as a whole – both within the open cut mining area and in the surrounding areas.

As described above, the pagoda landform complex consists of 3 distinct components - the significant rock formations known as “pagodas”; the wet gullies between the pagodas; and the drier slopes below the pagodas. In the Department’s view, the contracted mine design would:

- *firstly* - remove a significant proportion of the native vegetation and habitat on the slopes and aprons associated with the pagoda landscape complex in the project area;
- *secondly* – destroy the aesthetic and visual values of the pagoda landform in the area; and
- *thirdly* - remove rock formations that may be classified as pagodas within the open cut mining pit itself.

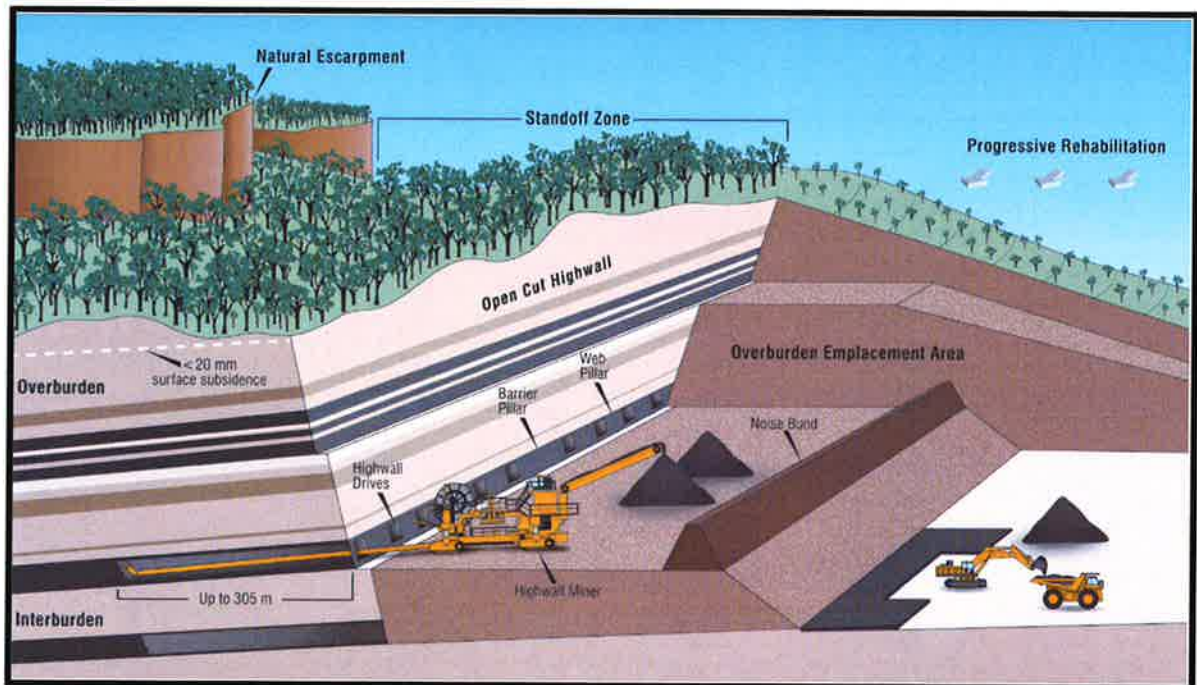


Figure 14: Illustration of Highwall Mining

1. Biodiversity

The biodiversity impacts of the proposal have been discussed in detail in Section 6.1(a) above. However, an additional consideration reviewed by the PAC was whether an appropriate buffer could be put in place to provide an adequate level of protection to the pagodas themselves, but also to retain sufficient habitat on the aprons and slopes beneath the pagodas that are used by various fauna species, including a number of threatened species.

To this end, OEH's submission on the original project recommended that a buffer of 500 m from the pagodas was necessary to provide sufficient habitat for key threatened species such as the Broad-headed Snake and the Brush-tailed Rock Wallaby. In order to provide adequate protection for threatened species and other fauna that use the pagoda landform complex, the PAC recommended a minimum setback distance of 300 m be maintained from the open cut highwall to the pagodas and escarpments (see Figure 15). In contrast, Coalpac is proposing a 50 m setback from the pagodas for the open cut components of the mine.

Coalpac has strongly criticised the PAC's recommendation for a 300 m setback. It argues that the project would have no significant impact on the distribution and survival of key threatened fauna species (i.e. Brush-tailed Rock Wallaby, Broad Headed Snake, and Cave Roosting Bats) because the species:

- are not present in the project area;
- can find other suitable habitat in nearby areas; and/or
- critical habitat used by these species would not be directly impacted by the project.

However, Coalpac's assessment does acknowledge that there are a number of other threatened species that would be impacted by the project, but argues that the contracted project would reduce the overall impact on these species, and therefore the impacts are acceptable.

The Department notes that because of the narrow and convoluted nature of the open cut mining area, any setback significantly greater than 50 m has the potential to rapidly affect the economic viability of the project. Consequently, even if the Department agrees that a 300 m setback is warranted, it would be tantamount to a refusal of the project.

As noted above, the Department believes that the project would result in unacceptable biodiversity impacts, but this conclusion is not based solely on the foraging requirements for a number of threatened species which utilise pagodas. In other words, even if the Department was to accept Coalpac's arguments about the lack of impacts on these particular species, it would not change the Department's objections to the removal of large areas of vegetation that forms an essential component of the overall pagoda landform complex and provides good quality habitat for a range of native flora and fauna species, some of which are rare and of conservation concern. Consequently, the Department believes it does not have to come to a concluded position about the appropriateness of a particular setback distance from the pagodas.

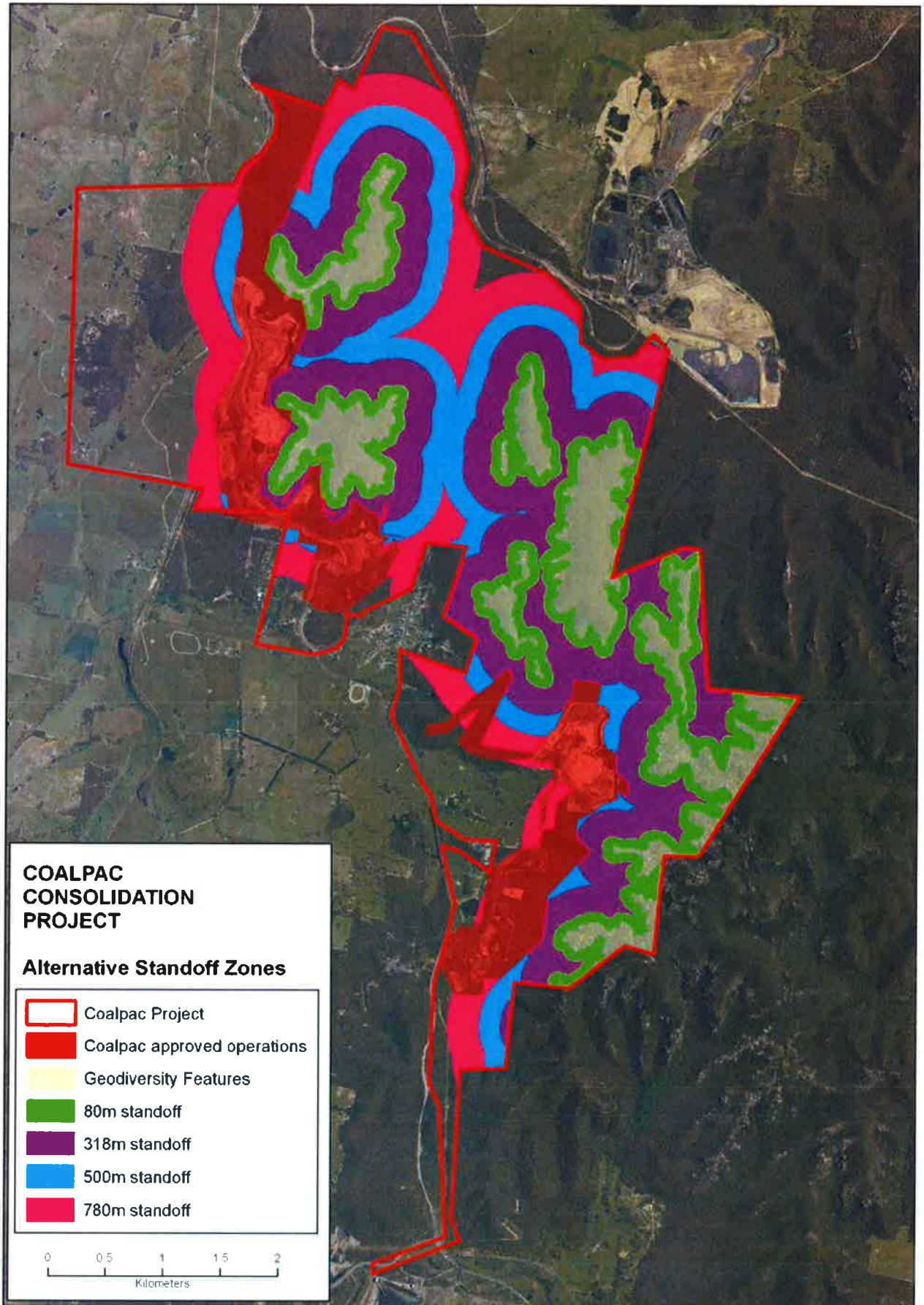


Figure 15: Stand-Off Zones From Pagodas

2. Visual

In regard to the visual impacts of the project, the Department considers that the aesthetic and scenic values of the pagoda landform complex are inherent in their status as natural features of *special significance*. It is similar to the curtilage of a heritage building that contributes to the overall heritage values of the building - so too the aprons and slopes of the pagodas contribute to the overall geoheritage and scenic values of the pagodas themselves. The Department believes that considering the landform as a whole is the only sensible approach to the assessment of the potential impacts of the project on pagodas. The fact that the Department received well over 100 submissions raising concerns about the visual impacts to the pagodas and escarpment landscapes supports this view.

The proposed mine plan involves open cut mining along a narrow and elongated valley that would essentially remove the aprons and slopes associated with the pagodas. It is clear that any scenic, recreational, and conservation values associated with the pagodas that surround the open cut mining areas would essentially be destroyed. The Department also notes that the perimeter of the contracted project is almost 40 km in length which dramatically increases the potential for edge effects on both the biodiversity and scenic values of the surrounding areas. The potential visual impacts of the project and the contrast between remnant native woodland and open cut mining at the existing Invincible Colliery is illustrated in Figure 16 below. It is important to note that the setback to the pagodas and escarpments in this photograph is in the order of 200 to 300 m, and that the proposed mine plan involves open cut mining up to 50 m from the pagodas which is approximated by the shading in the photo below.

Coalpac claims that its proposal to undertake progressive rehabilitation with suitable native woodland species would substantially mitigate the visual impacts in the medium to long term. However, as discussed above, the Department does not accept that the rehabilitation of the mine can adequately address the loss of these scenic values within any reasonable timeframe. Consequently, the Department considers that the project would result in a significant and irreversible impact on the scenic, recreational and conservation values of the pagoda landform within the project boundary and beyond. Given this, the Department also is satisfied that the area would not be suitable for inclusion in any reserve system – be it State Conservation Area, National Park or World Heritage Area.

3. Pagodas in the Pit

It is clear from aerial photographs that significant areas of rocky sandstone outcrops occur in a number of locations within the proposed mine plan. The most significant areas of these rocky outcrops are located in areas where multi-seam highwall mining is proposed. However, the Department has been provided with a detailed submission from *Lithgow Environment Group*, *Colong Foundation for Wilderness* and the *Blue Mountains Conservation Society* that provides a series of photographs from the site illustrating the rock formations that exist in the highwall and open cut mining areas of the proposed mine plan (see Figure 17). The following photographs illustrate rock features in the highwall (see Figure 18) and open cut mining areas (see Figure 19), and further details can be found in Appendix J.

It is important to note that the Department has not verified the locations of the photographs within the project boundary, and since this issue was raised, Coalpac has attempted to provide further detailed delineation of rock formations through aerial surveys. This has resulted in some areas being identified that would be protected including at least one of the locations identified by environment groups (i.e. Location 4) which covers a relatively large area of 1,544 m². Another area identified by the environment group (i.e. Location 11) is smaller than Location 4 (about 58 m²) and Coalpac has made no commitments to protect it.

This piecemeal approach to the identification and subsequent protection of rock formations within the mine plan raises doubts about the nature and scale of the impacts on the pagoda formations in general, and suggests that throughout the assessment process Coalpac may have been underestimating the impacts on rock formations that arguably should be classified as pagodas. It also raises questions about the viability of the preferred mine plan as more and more of the minable coal reserves may be sterilised to provide sufficient setback for rock formations in the mine footprint.

Conclusion

While the Department believes that measures can be put in place to maintain the geotechnical stability of the majority of pagoda outcrops, the open cut mining would largely remove the slopes below the pagodas which form an essential part of the pagoda landscape complex, and essentially destroy any scenic or recreational value associated with the pagodas themselves. The Department also considers that rehabilitation of the mine site cannot adequately mitigate this impact. Consequently, the Department believes that the contracted proposal would have an unacceptable and irreversible impact on the scenic, geological and ecological values of the pagodas that occur within the project boundary and surrounds.



Figure 16: Before and After Open Cut Mining Near the Existing Invincible Colliery (indicative only)

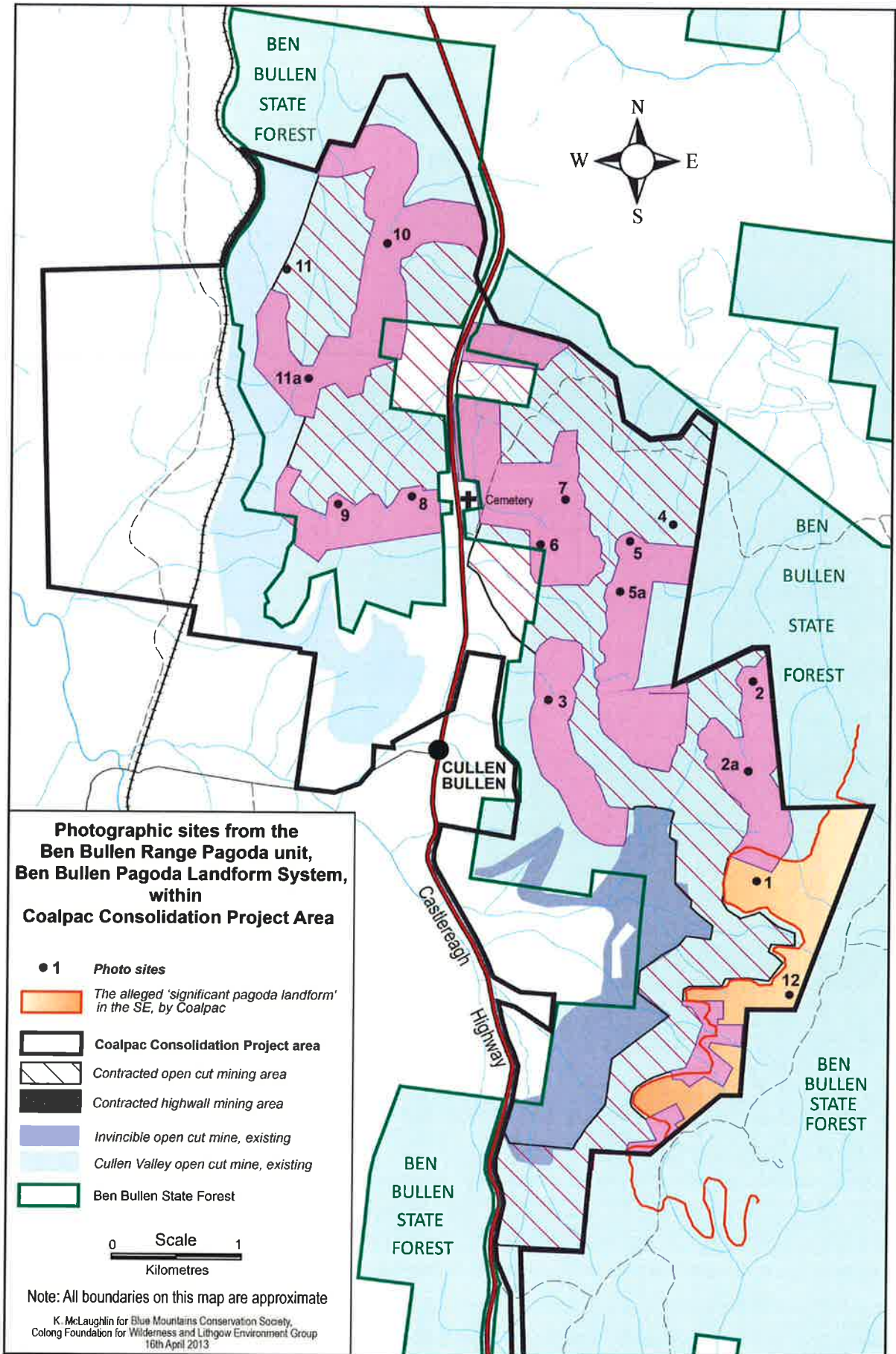


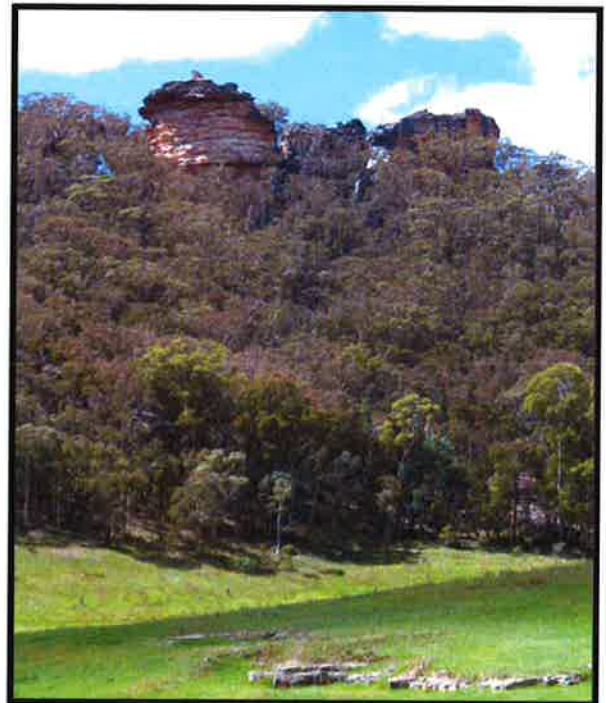
Figure 17: Locations of Pagoda Survey & Photograph Locations (see Appendix J)



Location 2a



Location 2



Location 6



Location 5a

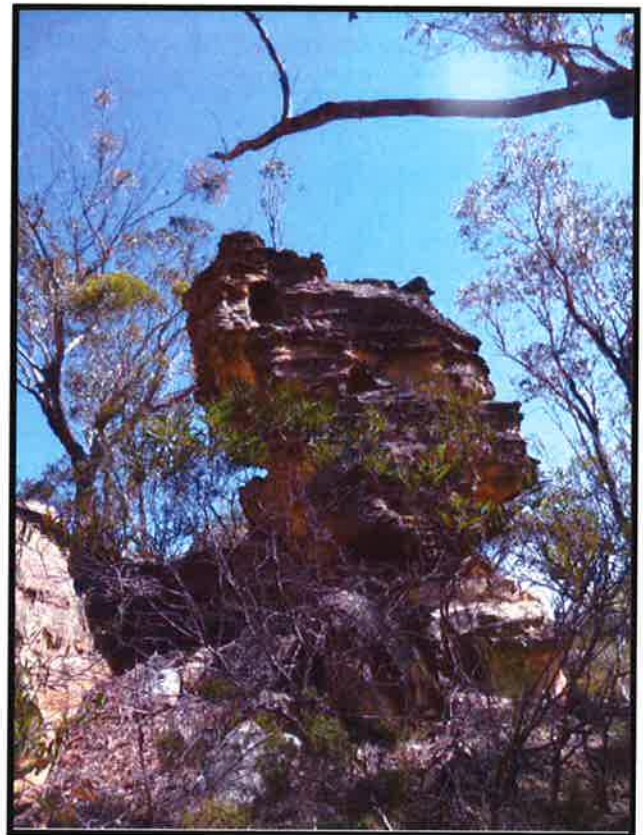


Location 7

Figure 18: Pagodas located in the proposed Highwall Mining Areas



Location 11



Location 4



Location 4

Figure 19: Pagodas located within the proposed Open Cut Mining Areas

6.1 Not in the Public Interest

a) Coal Supply

The operations of the Mount Piper and Wallerawang Power Stations currently require around 6 million tonnes of coal a year (Mount Piper ~ 4 million tonnes and Wallerawang ~ 2 million tonnes each year). Together these power stations generate up to 2400 MW which represents approximately 14% of installed electricity generation capacity in NSW.

Mount Piper Power Station was built in the early 1990's, and is one of the most efficient base load coal fired power stations in NSW. Wallerawang on the other hand was completed in the early 1980's, and is far less efficient. In terms of the economic life of the power stations, the Department understands that Wallerawang may cease to operate as early as 2018, and is unlikely to be operating beyond the early 2020's. However, Mount Piper is likely to be operating for 20 years, with the possibility that it may operate longer in accordance with the agreement that the NSW Government has with Energy Australia which lapses in 2043.

Based on this, the Department believes it is reasonable to assume that the coal supply requirements for Delta West (which is the name given to the Mount Piper and Wallerawang Power Stations) would be approximately 6 million tonnes a year for the medium term (i.e. to around 2023), and then around 4 million tonnes a year in the longer term (i.e. from 2023 until 2043).

The Department has been advised that Coalpac has a contract to supply up to 2.5 million tonnes of coal to the Mount Piper Power Station until 2029, which represents around 60% of Mount Piper's coal supply needs over this period. Given that Coalpac is seeking a 21 year approval, it is possible that it could also provide coal to the power stations beyond 2029 (i.e. until about 2034).

However, apart from Coalpac, the Department believes there a number of mines that can supply the necessary coal to the power stations in the short, medium and longer term. In this regard, the Department has considered the following:

- mines in the immediate vicinity of the power stations that can supply coal in the short to medium term;
- mines that are a little further from the power stations but are able to supply coal by road and/or rail (if the approved rail unloader is constructed at Mount Piper); and
- mines to the north that would require both the Gulgong rail line to be upgraded in addition to the construction of the Mount Piper rail unloader.

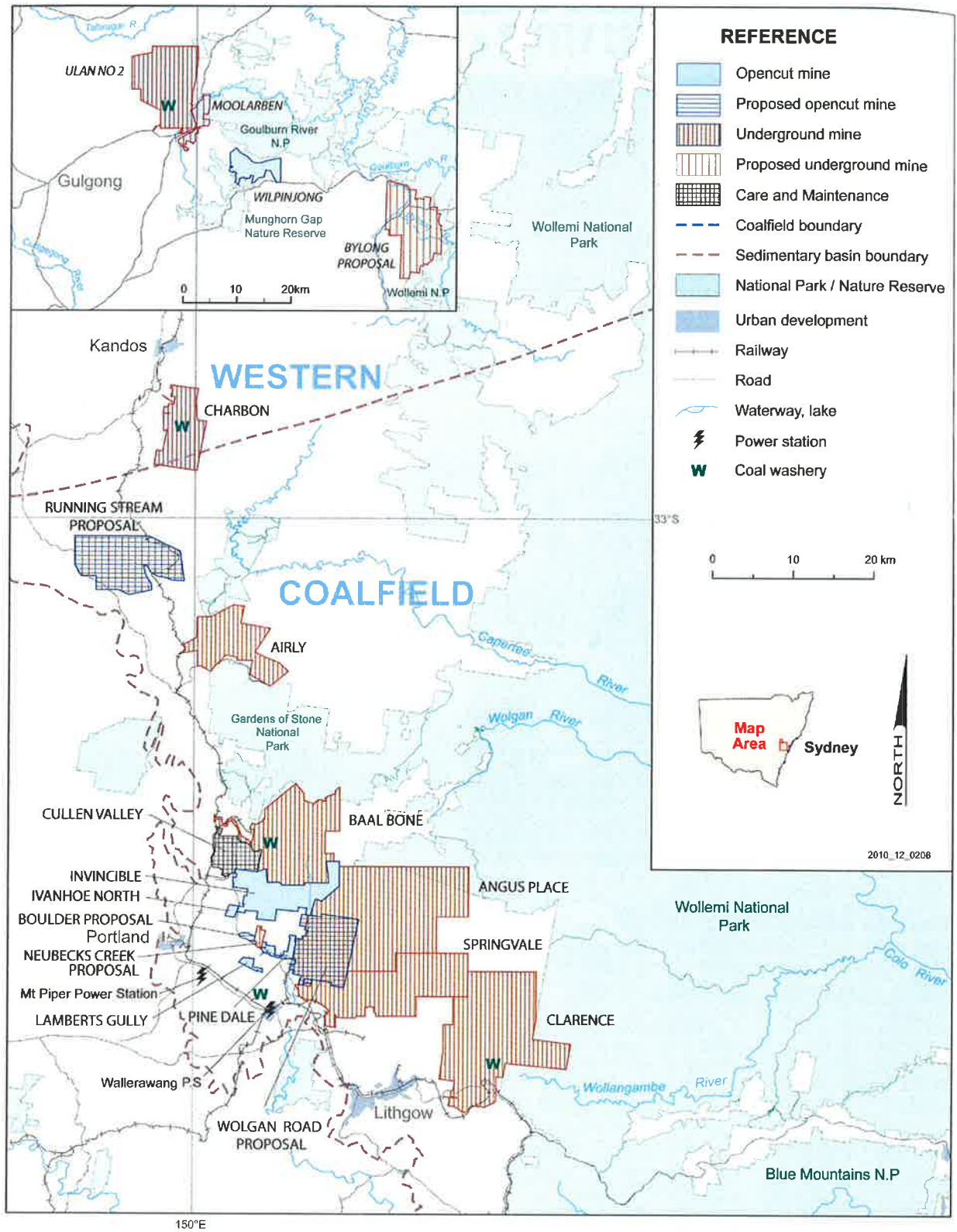
1. *Immediate Vicinity*

The key existing mines (other than Cullen Valley and Invincible) in the vicinity of the power stations that can supply coal in the short to medium term are Angus Place, Springvale and Pine Dale (see Figure 20). Angus Place and Springvale are both owned and operated by Centennial Coal, and Pine Dale is owned and operated by Energy Australia. It is important to note that Energy Australia has purchased the GenTrader rights for Delta West, and has expressed interest in purchasing the power station assets from the NSW Government, albeit that the sale process has yet to be finalised.

In regard to Centennial Coal, the Department understands that it has coal supply contracts with Energy Australia - one for Springvale (about 1.6 million tonnes per year) which lapses in 2013, and one for Angus Place (about 2.5 million tonnes per year) which lapses in 2014. However, Centennial Coal has written to the Department to confirm its ability to continue to supply up to 6.4 million tonnes of coal a year to the power stations from the Angus Place and Springvale Coal Mines (see Appendix K).

The existing approvals for these mines allow for the extraction of up to 7.75 Mtpa of coal, which is sufficient to supply the power stations in the short term. The Department also understands that there is approximately 1 year of coal stockpiled at the power stations to manage any short term supply issues.

One of the key advantages of continuing to develop the mines in the immediate vicinity of the power stations is that little in the way of additional infrastructure is required to facilitate the continued delivery of coal. For example, there are already internal private haul roads and conveyors in place to deliver coal from all three of these mines.



The Department also notes that both Centennial and Energy Australia have lodged applications with the Department for extensions to the Springvale and Pine Dale Coal Mines (respectively), and Centennial is planning to extend Angus Place and develop a new open cut mine known as Neubecks Creek approximately 2 km north of Mount Piper. In summary, these proposals involve:

- *Angus Place* – expansion of existing underground workings to continue to extract up to 4 Mtpa of coal for another 25 years with a total recoverable reserve of around 85 Mt;
- *Springvale* – expansion of existing underground workings and increase in extraction rate of coal up to 4.5 Mtpa for another 13 years with a recoverable reserve of 50 Mt;
- *Pine Dale* – expansion of existing open cut and increase in extraction rate of coal up to 2 Mtpa of coal for the next 10 to 15 years with a total recoverable reserve of around 14.5Mt; and
- *Neubecks Creek* – establish an open cut/highwall mining operation to extract up to 1.2 Mtpa over the next 10 to 15 years with a total recoverable reserve of 11 Mt.

In total, this means there is at least **160 Mt** of recoverable coal in the immediate vicinity of the power stations which represents more than **25 years** of supply to the power stations if they operate at their current maximum installed capacity.

It is acknowledged that some of this coal would require additional planning approvals, a proportion of this coal would be exported (via the Lidsale Coal Loader) and used to supply other domestic customers (e.g. Shoalhaven Starches), and there may be geological constraints on the development of some of the underground resources in particular.

There is also the possibility that Mount Piper may increase its capacity to 2000 MW in accordance with its 2009 planning approval. However, this is not likely to occur in the near term, and would most likely only occur once Wallerawang Power Station has ceased to operate. Consequently, the total installed capacity, even if Stage 2 of Mount Piper proceeds, would be unlikely to exceed the existing installed capacity of 2400 MW at Delta West.

Hence, the total coal supply requirement is unlikely to exceed 6 Mtpa in the foreseeable future. The current reduction in overall electricity demand from coal fired generation assets in NSW also supports this conclusion.

2. Other Mines Near Lithgow

While the Department is generally satisfied that there is sufficient coal available in the immediate vicinity to supply the Delta West for at least the next 25 years, it is acknowledged that there may need to be additional coal supply available in the medium to long term. It is also acknowledged that from a risk management and financial perspective, additional alternative coal supply options would be important to provide certainty and security for the ongoing operations of the power stations.

In this regard, the Department notes that there are a number of existing mines (owned and operated by Centennial) in the general Lithgow area that could supply coal by road and/or by rail:

- *Clarence* – existing underground mine with approval to extract up to 3 Mtpa of coal until 2026;
- *Airly* – existing underground mine with approval to extract 1 Mtpa until 2014, but Centennial is proposing to expand the mine to produce up to 3 Mtpa for around 17 years; and
- *Charbon* – existing open cut and underground mine with approval to extract 1.2 Mtpa for approximately another 4 years.

In addition, the Department notes there are at least two other proposals to develop coal mines in the region, including the Running Stream Coal Project (Xstrata) and the Inglenook Coal Project (Centennial - located adjacent to the Running Stream Coal Project) that could supply coal to the power stations in the medium to long term (see Figure 21).

It is noted that coal from all of these mines may require additional approval to transport coal by road to the power stations and/or the construction of the rail unloader at the Mount Piper Power Station at a cost of approximately \$150 million. However, the development of this infrastructure may be justified to manage any risks that may occur as a result of any constraints on coal availability at the mines in the immediate vicinity of the power stations.

3. *More Distant Mines*

If the life of Mount Piper was extended significantly beyond 2033, a longer term supply of coal may need to be secured. The most likely source would be from the large open cut and underground mines near Mudgee (i.e. Ulan, Moolarben, and Wilpinjong Coal Mines – and Cobbora if this mine is approved and developed).

However, this would also require significant investment to upgrade the rail line to Gulgong. The total cost of these upgrades would be in the order of \$250 million. It is assumed that a variety of funding options may be available in the longer term to assist with this upgrade, including contributions from government in addition to the investment from the electricity generators and/or relevant mining companies. However, the Department acknowledges that the return on the investment may mean these upgrades are not economically viable.

The Department acknowledges that developing alternative coal resources in the Lithgow region or beyond would result in a range of environmental impacts. However, the Department notes that many of the proposed alternatives are underground mines that are unlikely to result in significant impacts on sensitive natural features (such as the pagoda landform complex), and in clearing of significant areas of high quality remnant native vegetation that have been identified as being suitable for reservation under the *National Parks and Wildlife Act 1974* (such as that found in the Coalpac project area).

In summary, while the Department acknowledges that the Coalpac Consolidation Project would provide an important supply of coal to Mount Piper Power Station, it is satisfied that the coal on the site is not *essential* for NSW's electricity supply, and that suitable alternatives are available to meet the demand for coal at the Mount Piper and Wallerawang Power Stations in the short to medium term. In the longer term, the Department believes there is opportunity for other coal resources to be developed that would have far fewer environmental impacts on sensitive natural features and biodiversity than the Coalpac Consolidation Project.

b) Electricity Prices

Energy Australia has the GenTrader rights for the Mount Piper and Wallerawang Power Stations, and has advised the Department that obtaining coal from Centennial's mines (i.e. Angus Place and Springvale) would cost approximately 30% more than coal from the Coalpac Consolidation Project. According to independent research commissioned by Energy Australia, this would increase wholesale electricity prices by around 20% and retail electricity prices in NSW by between 4 and 12% (see Appendix L). Similar concerns about the potential increase in electricity prices in NSW if the Coalpac Consolidation Project does not proceed have also been raised by the NSW Treasury (see Appendix M). NSW Treasury has also advised that the proposed sale of the Delta West (Mount Piper and Wallerawang Power Stations) may not proceed if the Coalpac project is not approved.

The Department does not dispute these findings, but notes that the quantum and duration of the increase in retail electricity prices would depend on a number of factors including the demand for electricity in the National Electricity Market, investment in additional electricity generation assets, the exchange rate for the Australian dollar, international demand for coal and the associated export price of coal - which would be the primary driver for determining the price able to be negotiated with alternative coal suppliers such as Centennial.

c) Economic Considerations

The Coalpac Consolidation Project would result in a range of economic benefits that must be considered in weighing the merits of the project. Gillespie Economics has conducted an economic assessment of the project in accordance with relevant guidelines. The assessment indicates that the contracted project would have a net benefit to Australia in the order of \$1,330 million, including around \$200 million in revenue to the NSW Government in royalties.

The PAC raised a number of concerns about the adequacy and accuracy of the economic analysis presented in the EA. In particular, the PAC relied on comments made by the Institute of Sustainable Futures to support a submission from the Total Environment Centre. The Institute for Sustainable Futures criticised the economic analysis in the EA on the basis that benefits and costs are not accounted for consistently. The PAC also questioned some of the assumptions in the economic analysis and concluded that, even though the economic analysis may be acceptable in theoretical terms, it grossly overstates the real financial benefits of the project.

The Department generally accepts the economic analysis conducted by Gillespie Economics, and notes that the methodology used has been confirmed as appropriate by the NSW Treasury and by Dr Jeff Bennett (Professor of Environmental Management at the Australian National University) who conducted a peer review of the analysis. It is also noted that the assessment has been conducted in accordance with the Department's draft *Guidelines for Economic Effects and Evaluation in EIA* (2002) and the draft *Guideline for the Use of Cost Benefit Analysis in Mining and Coal Seam Gas Proposals* (2012) – both of which incorporate consideration of environmental impacts.

The economic assessment for the contracted project estimated externality costs associated with the clearing of native vegetation. In the absence of the project, it was assumed that this area of forest would be available for a combination of forestry, recreation, conservation and carbon sequestration. Using a range of economic valuation techniques, the value of the vegetation was estimated to have a value of approximately \$0.9 million.

The Department does not accept that the vegetation of the site is valued at only \$900,000, and believes this illustrates the difficulties in monetising natural resources and biodiversity values. In particular, the Department believes that quarantining the vegetation on the site in the economic assessment *grossly under-estimates* its inherent biodiversity values, and its connection to the broader pagoda landform complex. As discussed above, the vegetation should be considered as an integral component of the pagoda landform complex. And while the Department accepts that there are established techniques for estimating the economic value of environmental assets and impacts, it believes that all benefit cost analyses have certain limitations when evaluating environmental externalities associated with major development projects. This is particularly the case where there are natural features of *special significance* that may be adversely affected by the project, as is the case in this instance.

The Department notes that the PAC expressed similar concerns in its review of the project:

"Although the economic analysis may have been conducted within the applicable guidelines and bounds of economic theory, the facts of this particular project are sufficiently unusual to test the limits of this approach." (p140)

Finally, given the discussion about coal availability above, the Department believes that this issue is not simply a matter of choosing between the value of the coal and the value of vegetation on the site. Rather, from a broad public interest perspective, this issue is more accurately articulated as a choice between what is the most appropriate coal to extract. It is clear that there are a range of alternative coal reserves that could be extracted to supply Delta West that would result in far less environmental consequences, including areas adjacent to the existing Coalpac operations at Cullen Valley and Invincible.

Consequently, while the Department accepts that the project would undoubtedly result in a range of substantial economic benefits, overall the Department is satisfied that these benefits do not overcome the significant and irreversible impacts on the biodiversity, scenic, and geological values of such a large part of the internationally significant pagoda landform complex that occurs in the region, and hence the project is ultimately not in the public interest.

7. RECOMMENDATION

The Department has prepared an instrument of refusal for the Coalpac Consolidation Project. The instrument includes the Department's recommended grounds for refusal, namely:

- the project would result in unacceptable and irreversible impacts on biodiversity;
- the project would result in unacceptable and irreversible impacts on natural features of *special significance*;
- the site is not suitable for the project; and
- the project is not in the public interest.

8. CONCLUSION

The Department is generally satisfied that Coalpac has done everything that is reasonable and feasible to minimise, manage and offset the potential impacts of the Coalpac Consolidation Project.

The Department also acknowledges the significant changes to the original project made by Coalpac in response to the recommendations made by the PAC in its review, and that the project would generate a range of economic benefits in the local area and more broadly for NSW, including:

- providing a secure and economic supply of coal to Mount Piper Power Station at least until 2029;
- generating \$200 million in royalties over the life of the mine for the NSW Government; and
- creating 120 direct jobs, and up to 400 indirect jobs in the region.

If the Coalpac project does not proceed, the Department has been advised by the NSW Treasury and Energy Australia there may be significant implications for the electricity industry in NSW. In particular, independent modelling commissioned by Energy Australia indicates that retail electricity prices in NSW would increase by between 4 and 12%, and NSW Treasury has advised the Department that the proposed sale of the Mount Piper and Wallerawang Power Stations may not proceed if the Coalpac project is not approved.

However, in considering the public interest under the EP&A Act, the benefits of the Coalpac Consolidation Project must also be weighed against the environmental costs, including:

- loss of a landscape with high conservation significance, including the destruction of part of the unique biodiversity, scenic, and geological values associated with the platy pagoda landform complex on the western edge of the Great Dividing Range;
- loss of 762 ha of high quality remnant native vegetation in the Ben Bullen State Forest, including 18 ha of EEC and around 15,000 individual *Eucalyptus cannonii* listed under the TSC Act; and
- loss of habitat for a large number of fauna species, including a number of threatened species listed under the TSC Act and EPBC Act.

The Department notes that the proposed mine plan involves open cut mining along a series of relatively narrow and elongated pits that is not typical of conventional mine plans in NSW. The perimeter of the open cut mining area is almost 48 km in length which dramatically increases the potential for edge effects on both the biodiversity and scenic values of surrounding areas. In essence, this means that the environmental consequences of extracting the 96 million tonnes of coal from the site are proportionally much more significant than extracting the same volume of coal from a mine with a more conventional open cut design or from an underground mine.

Given these considerations, the Department believes that the vast majority of the site for the Coalpac Consolidation Project is fundamentally unsuitable for an open cut coal mining operation, and the highest and best use of the site should be for conservation purposes. The Department agrees with the PAC that the mitigation and rehabilitation measures proposed by Coalpac do not overcome the inherent incompatibility of open cut mining with preserving the significant conservation values of the site.

The Department notes that there is also strong opposition to the project. A total of 880 public submissions were received during the exhibition of the EA for the project – 85% of which objected to the project. A significant majority of submissions from the nearby residents in Cullen Bullen Village objected to the project. There is also strong opposition to the project from key environmental interest groups in the area, including the *Advisory Committee for the Greater Blue Mountains World Heritage Area*.

Notwithstanding the above, the Department acknowledges that the merits of the project are finely balanced, and it may be possible to obtain approval for a more modest extension to the west of the Castlereagh Highway as this would largely avoid the pagoda landform complex in the Ben Bullen State Forest. Such a proposal could potentially provide a cheaper source of coal to the power stations in the short to medium term.

However, on balance, the Department generally agrees with the recommendation of the PAC, that when the project is taken as a whole, the environmental impacts of the project outweigh the benefits of the project. Consequently, the Department considers that the Coalpac Consolidation Project is not in the public interest, and should not be approved in its current form.

9. RECOMMENDATION

It is RECOMMENDED that the Planning Assessment Commission:


- considers the findings and recommendations of this report;
- refuses the project in its current form; and
- signs the attached instrument of project refusal (see Appendix A).

 12.6.13

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Mining Projects

 12/6/13

David Kitto
Director
Mining & Industry Projects

 19.6.13

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