



NSW GOVERNMENT
Department of Planning

MAJOR PROJECT ASSESSMENT: Invincible Coal Project



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

December 2008

Cover Photo: Aerial view of the Invincible Coal Mine showing the proposed new open cut footprint

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EXECUTIVE SUMMARY

Coalpac Pty Limited (Coalpac) owns and operates the Invincible Coal Mine, located in the Western Coalfield of NSW, approximately 20 kilometres northwest of Lithgow.

Since receiving Ministerial approval for the mine in September 2006, Coalpac has utilised open cut and auger mining methods to extract virtually all approved coal reserves on the site.

The Invincible Coal Project would allow Coalpac to increase life of the mine by up to 8 years, and includes:

- increasing production of saleable coal from 500,000 to 900,000 tonnes a year;
- extending the mining existing mining operations by about 54 hectares;
- carrying out further auger mining in the Irondale and Lithgow seams and potentially also in the Lidsdale coal seam;
- handling, processing and washing of run-of-mine (ROM) coal on the site;
- transporting product coal by road to domestic coal users, but principally the Mt Piper Power Station; and
- rehabilitating the mine site and providing biodiversity offsets for disturbance of native vegetation.

The Department exhibited the Environmental Assessment (EA) for the project from 6 May to 9 June 2008 and received 8 submissions on the project: 4 from government authorities and 4 from the general public. Of the public authorities, only DECC does not support the project. It does not believe that Coalpac's proposed offset would maintain or improve biodiversity values in the region (see below). All 4 of the public submissions objected to the project, raising concerns about the potential traffic, noise, dust and water impacts.

The Department has assessed the merits of the project in accordance with the requirements of the *Environmental Planning & Assessment Act 1979*.

Based on this assessment, the Department is satisfied that the impacts of the project can be mitigated, managed and/or offset to ensure an acceptable level of environmental performance.

The Department recognises that the project would clear 54 hectares of native vegetation, which provides habitat for a number of threatened species. However, it is satisfied that the proposed offset strategy, which seeks to restore the area to the west of the Castlereagh Highway to woodland and integrate it with the adjoining Ben Bullen State Forest, will improve the biodiversity values of the region in the medium to long term.

It also recognises that without operational restrictions, the project would have significant noise impacts on up to 15 residences on the southern edge of Cullen Bullen during evening operations under adverse weather conditions. The Department considers these potential impacts to be unacceptable, and has recommended strict conditions to ensure they do not occur.

Finally, the Department is satisfied that the project would provide economic and social benefits for the region by securing additional coal for the Mount Piper and Wallerawang Powers Stations, generating royalties and tax income, and providing jobs for 35 people.

On balance, the Department believes that the potential benefits of the project outweigh its potential costs, and consequently that it is in the public interest and should be approved, subject to conditions.

Coalpac operated the mine sporadically from 1989 until it received Ministerial project approval on 7 September 2006. This approval permitted Coalpac to produce up to 350,000 tonnes of saleable coal a year via open cut methods, with transportation via public roads to local power stations and other domestic customers.

A minor modification was approved on 4 June 2007 permitting the washing of coal on site and a further modification was approved on 6 December 2007 allowing the introduction of auger mining and an increase in saleable coal production to 500,000 tonnes a year.

Coalpac has rapidly exhausted the available resources within the approved area and now seeks to significantly expand open cut and auger mining on the site into areas where it has identified additional economic coal reserves.

Access to this coal would allow Coalpac to maintain existing supply contracts, extend the tenure of employment for approximately 15 full-time staff and create a further 20 full-time jobs.

1.2 Project Description

The major components of the project are summarised in Table 1 and depicted in Figures 2 and 3.

Table 1: Major components of the Invincible Coal Mine Extension Project

<i>Aspect</i>	<i>Description</i>
Project Summary	Proposed extension to the Invincible Coal Mine by utilising open cut and auger mining techniques to increase product coal from 500,000 to 900,000 tonnes a year for up to 8 years. Coal would be processed on-site and then transported by road, principally to local power stations. The site would be rehabilitated following completion of mining and integrated into adjoining lands via a biodiversity offset strategy to offset the clearing of 54 hectares (ha) of native vegetation.
<i>Production</i>	Maximum saleable coal production would increase from 500,000 to 900,000 tonnes a year. The project is based on a coal resource of approximately 7 million tonnes.
<i>Project Life</i>	The proposed production life of the mine is about 6 years, but may extend to 8 years.
<i>Coal Processing</i>	All run-of-mine (ROM) coal would be crushed, screened and (for up to 70% of throughput) processed on site, before stockpiling or transport to market.
<i>Coal Storage</i>	Coal stockpiles would have capacity for 15,000 tonnes of ROM coal, 10,000 tonnes of crushed and screened coal and 85,000 tonnes of processed coal.
<i>Infrastructure</i>	Key infrastructure is already in place at the mine, including coal processing facilities, workers amenities and water management infrastructure.
<i>Product Coal Transport</i>	Product coal would be trucked to power stations and local domestic customers, however all additional coal associated with the increased rate of production (ie extra 400,000 tonnes a year) would go to Mount Piper Power Station.
<i>Employment</i>	An additional 20 full-time employees are expected.
<i>Capital Value</i>	The project has a capital investment value of \$4 million.
<i>Rehabilitation and Offsets</i>	The project includes the backfilling and rehabilitation of all open cut disturbance with native woodland vegetation and the implementation of a biodiversity offset strategy, involving the enhancement and/or preservation of approximately 104 ha of adjacent lands and the additional rehabilitation of 6 ha of derelict mine void to offset the clearing of 54 ha of mostly good quality native vegetation.
<i>Hours of Operation</i>	Mining operations are proposed to occur from 7:00am to 10:00pm, with the exception of coal transport which would cease at 9:30pm, 6 days a week. Maintenance activities would be permitted at any time.

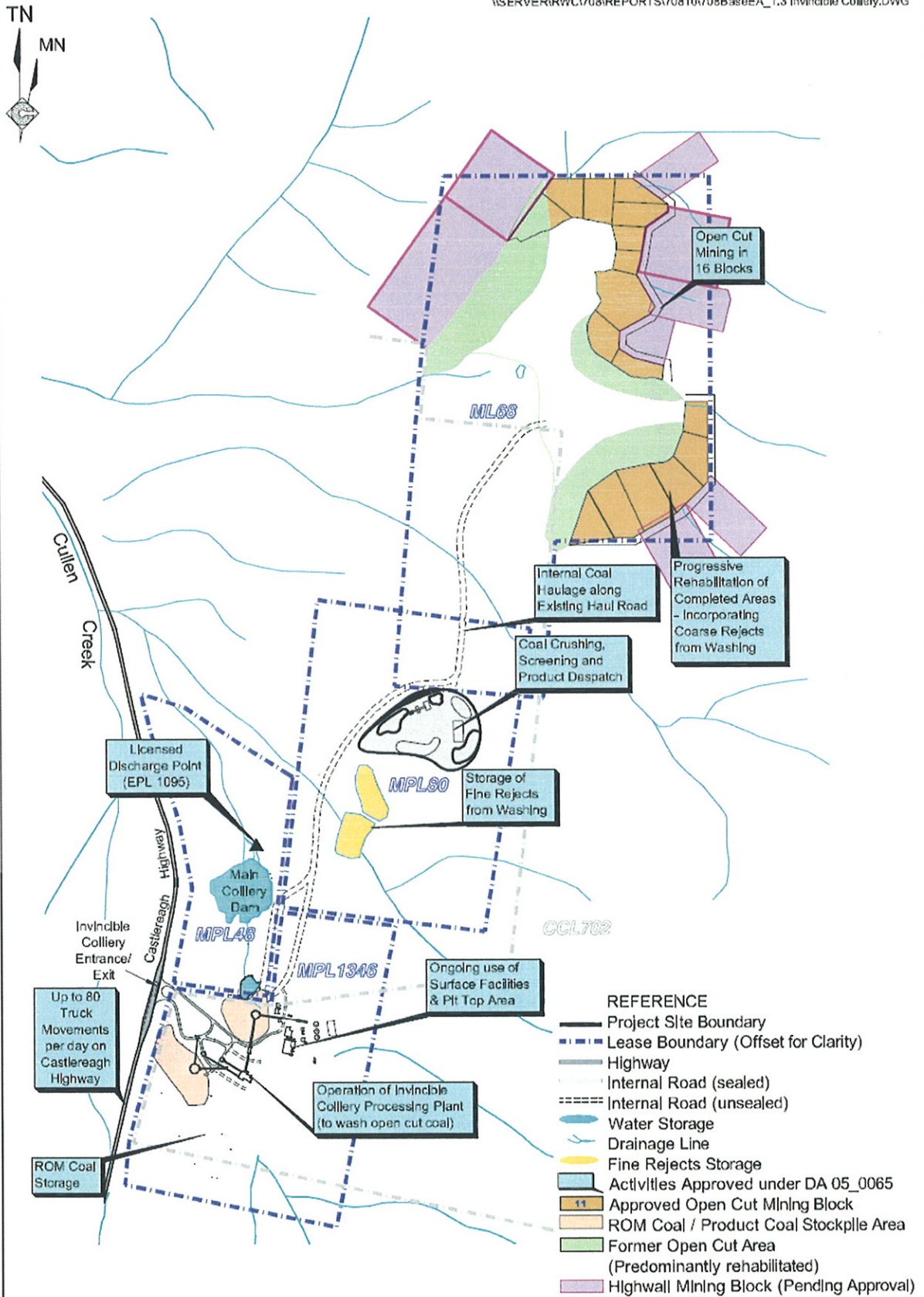


Figure 2: Existing facilities and approved operations at Invincible Coal Mine

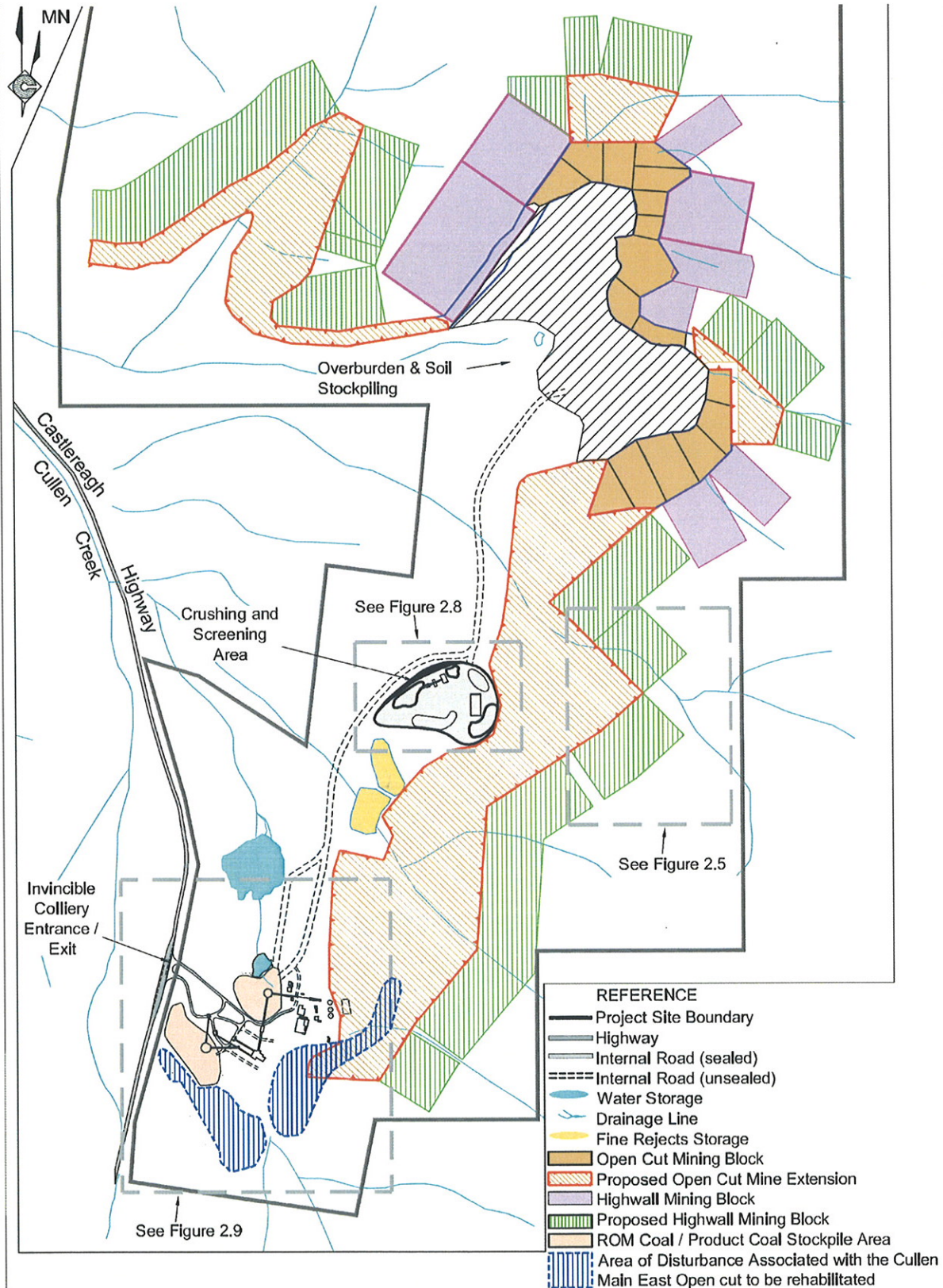


Figure 3: Proposed new operations at Invincible Coal Mine

1.3 Project Setting

The site is located on the western slopes of the Great Dividing Range, within the Turon River catchment, and is bordered by Ben Bullen State Forest on all but its western side, where it is bordered by Castlereagh Highway. The region of the Forest in proximity to the mine is characterised by mostly dense, well-established native vegetation and rugged sandstone landscapes.

The historic township of Cullen Bullen lies roughly 1.5 km north of the site on the other side of a steep ridgeline and has a population of roughly 300.

There are no privately-owned residences in the vicinity of the coal transport route to the Mount Piper power station, which is located 4 km to the south of the mine.

2. STATUTORY CONTEXT

2.1 Major Project

The proposal is classified as a major project under Part 3A of the *Environmental Planning & Assessment Act 1979* (EP&A Act), because it is development for the purpose of coal mining and triggers the criteria in clause 5 of schedule 1 of *State Environmental Planning Policy (Major Projects) 2005*. Consequently, the Minister for Planning is the approval authority for the project.

2.2 Permissibility

The proposal is located on land zoned Rural (General) 1(a) and Rural (Forestry) 1(f) under the *Lithgow City Council Local Environment Plan 1994*.

Coal mining is permissible with consent in both zones and consequently the proposal is permissible with consent.

2.3 Exhibition

After accepting the EA for the project, the Department made the EA publicly available from 6 May 2008 until 9 June 2008, which satisfies the requirements for public consultation in Section 75H(3) of the EP&A Act.

2.4 Objects of the EP&A Act

The Minister is required to consider the objects of the EP&A Act when he makes decisions under the Act. The objects of most relevance to the Minister's decision on whether or not to approve the project are found in Section 5(a)(i),(ii),(vi)&(vii). They are:

"The objects of this Act are:

- (a) to encourage:*
 - (i) the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,*
 - (ii) the promotion and co-ordination of the orderly and economic use and development of land,*
 - (vi) the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and*
 - (vii) ecologically sustainable development"*

The EP&A Act adopts the definition of ecologically sustainable development (ESD) found in the *Protection of the Environment Administration Act 1991*. Section 6(2) of that Act states that ESD "requires the effective integration of economic and environmental considerations in decision-making processes" and lists key principles and programs by which ESD may be achieved.

The Department has fully considered the objects of the EP&A Act, including the encouragement of ESD, in its assessment of the application. The assessment integrates all significant economic and

environmental considerations and seeks to avoid any potential serious or irreversible damage to the environment. The Department is therefore satisfied that the Minister may determine the project accordingly.

2.5 Environmental Planning Instruments

Under section 75I of the EP&A Act, the Director-General's report for a project is required to include a copy of or reference to the provisions of any State Environmental Planning Policy (SEPP) that substantially governs the carrying out of the project or other environmental planning instrument (EPI) that would have effect except for the application of Part 3A.

The Department has considered the proposal against the provisions of the following relevant EPI's and is satisfied that none of these instruments substantially govern the carrying out of this proposal (see Appendix C):

- SEPP 11 – Traffic Generating Development;
- SEPP 33 – Hazardous and Offensive Development;
- SEPP 55 – Remediation of Land; and
- Lithgow City Council Local Environment Plan 1994

2.6 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 environmental assessment requirements issued for the project. The Department is satisfied that the Director-General's environmental assessment requirements have been complied with.

3. ISSUES RAISED IN SUBMISSIONS

During the exhibition period, the Department received 8 submissions on the proposal (see Appendix E), 4 from public authorities and 4 from the general public.

The Department of Environment and Climate Change (DECC) stated that it was unable to support the project as exhibited, for the following key reasons:

- the potential for excessive noise levels during evening operations for a significant number of residences in Cullen Bullen; and
- the proposed offset would not maintain biodiversity values in the medium to long term.

DECC also raised concerns surrounding potential air quality impacts and groundwater discharge.

Other public authorities (Department of Primary Industries (DPI), Department of Water and Energy (DWE), Roads and Traffic Authority (RTA)) did not object to the proposal but canvassed the following issues:

- **DPI** – the requirement for a new mining lease and Mining Operations Plan, including long term rehabilitation plans.
- **DWE** – the viability of the mine's water supply, potential subsidence impacts due to extraction of groundwater from abandoned underground workings and the potential for reduced availability of groundwater resources for regional users.
- **RTA** – the upgrading of the intersection of the mine's entrance with Castlereagh Highway.

Lithgow City Council did not provide a submission on the proposal.

Public Submissions

All public submissions raised objections to the proposal, concerning:

- increased traffic on Castlereagh Highway and the potential for structural damage to the road surface;
- potential for exacerbating dust, noise and blasting impacts at the closest residences; and
- potential to affect local water resources.

Response to Submissions

Coalpac has provided a response to these issues and revised its statement of commitments for the project. The Department has considered the issues raised in submissions, together with Coalpac's responses, in its assessment below.

4. ASSESSMENT

4.1 Noise

As required under its existing approval, Coalpac has conducted quarterly attended noise monitoring and has complied with the relevant noise criteria on all occasions. These criteria were established from background data gathered in December 2005 when the mine was under care and maintenance.

The EA included a noise impact assessment prepared in accordance with DECC's *Industrial Noise Policy*, which adopted the same criteria as currently exist, ie 40dB(A) daytime and 35dB(A) evening. As the proposal would increase the intensity of operations at the mine, achieving these criteria would become more difficult.

While the total noise output of the mine would increase, the distribution of noise sources throughout the site would also change, particularly with the introduction of mining in the 'West Pit'. This would see the nearest mining activities advance from around 1700 m to within 900 m of residences in the south of Cullen Bullen. Although the majority of residences in Cullen Bullen would receive significant natural noise mitigation from the intervening hill which separates them from the West Pit, residences in the south and west of Cullen Bullen are less shielded by this feature and would potentially experience increased noise impacts, most notably when prevailing winds are from the east and south. Noise modelling for the assessment used representative locations for these residences, shown in Figure 4.

The most recent modification to Coalpac's existing project approval included conditions requiring implementation of a range of noise mitigation measures, as part of an addendum ('pollution reduction program' or PRP) to its environment protection licence, to be overseen by DECC. These measures included:

- acoustic shielding of the Bradford (rotary) breaker, the noisiest piece of equipment in the mine's Coal Handling and Preparation Plant (CHPP) and on the site overall;
- extending cladding/shielding of the CHPP building;
- fitting of mid-high frequency broadband reverse beepers to mobile equipment; and
- shutting down certain pieces of CHPP infrastructure during evening periods.

Due to lower than anticipated production levels at the mine following this modification in December 2007, some of these measures have not yet been fully implemented. However, they have all been incorporated into the modelling predictions in the noise impact assessment. Consequently, the Department has recommended a condition to require implementation of this PRP under the project approval. Coalpac has also undertaken in its statement of commitments to complete these measures within 6 months of receiving project approval.

The noise modelling also incorporated the following additional mitigation measures:

- operating the Klockner (primary) breaker and Bradford breaker for only 7.5 minutes each during a 15 minute monitoring period; and
- construction of a 15m high noise mitigation mound for the West Pit.

Despite this additional mitigation, the assessment indicated that during evening operations if prevailing winds from the eastern or southern quadrant occur, there is the potential for significant exceedances (greater than 5dB) of the 35dB criterion at several residences in Cullen Bullen South and West, during certain stages of the project.

By contrast, daytime operations at the same stages of the project are predicted to result in predominantly minor exceedances (1-2dB(A)) above the daytime criterion at the same residences, even if the most noise-enhancing prevailing daytime winds (SSE $\pm$ 45°) are experienced. One residence (currently occupied only on weekends) in Cullen Bullen South is modelled to receive exceedances of up to 4 dB(A).

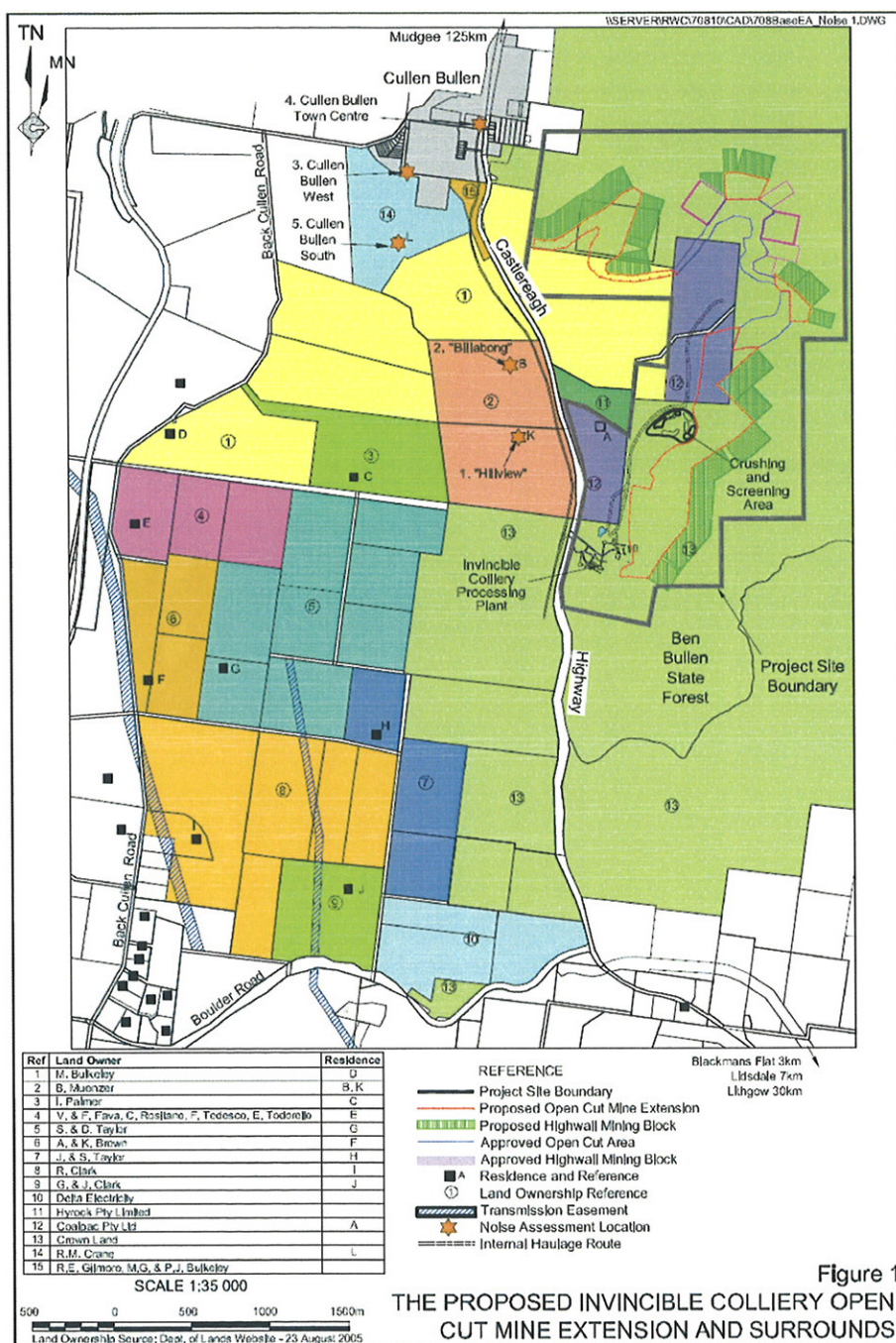


Figure 4: Nearest residential receivers and representative noise assessment locations

The noise predictions at the assessment locations for the evening and daytime periods are summarised in Tables 2 and 3 respectively. Exceedances of the relevant noise criterion are shown in parentheses.

Table 2: Noise Modelling Results for Evening Operations (dBA)

MINING SCENARIO	WIND CONDITIONS	CULLEN BULLEN STH	CULLEN BULLEN WEST	CULLEN BULLEN TOWN	NOISE CRITERIA
Year 1 Mining Operations	Calm	<35	<35	<35	35
	Southerly (<3m/s)	37 (+2)	35	<35	35
	Easterly (<3m/s)	38 (+3)	35	<35	35
Year 3 Mining Operations	Calm	38 (+3)	<35	<35	35
	Southerly (<3m/s)	41 (+6)	40 (+5)	<35	35
	Easterly (<3m/s)	45 (+10)	45 (+10)	<35	35
Year 5/6 Mining Operations	Calm	36 (+1)	<35	<35	35
	Southerly (<3m/s)	41 (+6)	39 (+4)	<35	35
	Easterly (<3m/s)	41 (+6)	38 (+3)	<35	35

Table 3: Noise Modelling Results for Daytime Operations (dBA)

MINING SCENARIO	WIND CONDITIONS	CULLEN BULLEN STH	CULLEN BULLEN WEST	CULLEN BULLEN TOWN	NOISE CRITERIA
Year 1 Mining Operations	Calm	<35	<35	<35	40
	SSE (<3m/s)	39	37	<35	40
Year 3 Mining Operations	Calm	37	<35	<35	40
	SSE (<3m/s)	42 (+2)	41 (+1)	<35	40
Year 5/6 Mining Operations	Calm	36	<35	<35	40
	SSE (<3m/s)	44 (+4)	41 (+1)	<35	40

These results indicate the increased likelihood of noise exceedances for residences located in Cullen Bullen South and Cullen Bullen West. Subjecting these results to a finer analysis, the following impacts are predicted at individual residences for *evening* operations during certain stages of the project:

- minor exceedances (1-2dB) at 13 residences.
- moderate exceedances (3-5dB) at 8 residences.
- significant exceedances (>5dB) at 15 residences.

All 15 significant evening exceedances (ranging from 6-10dB above the criterion) are predicted to occur only when winds are blowing from the eastern or southern quadrant ($\pm 45^\circ$). The noise assessment provided data to indicate that these exceedances would occur during Year 3 for 14 of the 15 residences and during Years 5/6 for the remaining residence. However, the Department notes that the noise assessment did not model operations or noise emissions for Years 2 and 4. Based on the proposed mining plans contained in the EA, the Department believes there is a reasonable probability that further significant exceedances would occur at the same residences during these years.

Where noise modelling predicts significant noise exceedances for residences at any stage of a project, the Department's general practice is to provide acquisition rights to the affected landowners, provided it is satisfied that the proponent has committed to all reasonable and feasible mitigation measures and that no further mitigation of noise levels is possible. Given the large number of residences potentially affected in the context of a relatively small scale coal mining proposal, DECC stated in its submission that it could not support the project as exhibited.

Recognising that the potential for further physical noise mitigation measures is limited, Coalpac proposed as part of its response to DECC's submission that it revise its existing Noise Monitoring Protocol to include measures to restrict or cease certain noisier activities under noise-enhancing weather conditions. Essentially, these measures consist of the following two operational controls, to be implemented on a real-time basis when prevailing winds from the east or south are detected and/or when "significant exceedances" of the evening noise criterion are detected by real-time monitoring equipment:

- the relocation of open-cut mining operations being conducted at or within 10m of the surface to lower in the pit; and
- the suspension or restriction of CHPP operations.

The Department and DECC share reservations concerning these proposed controls. Firstly, Coalpac position is based on a de facto acceptance of exceedances which do not meet the threshold of being "significant" (ie 5dB(A)). The Department considers all exceedances of impact assessment criteria to be a serious matter even over a short period of time and cannot agree to a practice that would effectively accommodate "less significant" exceedances within day-to-day operational management of a mine. Secondly, the proposed real-time method of implementation may not be feasible, since the scale and nature of a coal mining operation creates an inherent degree of inertia to any spontaneously imposed changes. While it may be possible to communicate orders for ceasing work to the relevant ground staff (plant equipment operators etc) almost immediately following the detection of adverse weather conditions, the actual implementation of these controls on the ground may be impractical or

unachievable in a short time frame and unreasonably delay relief for those impacted. Furthermore, as exceedances of up to 10dB are predicted at some residences, any interrogation of the real-time noise monitoring network is likely to retard the process of implementing operating restrictions and consequently prolong impacts at the affected residences.

For these reasons, the Department has included conditions of approval which would restrict the majority of proposed mining operations to the daytime period, in order to eliminate the significant exceedances predicted during the more-sensitive evening period. Specifically, these restrictions would prohibit evening mining works in all but the North Pit (as described in the EA). This principally comprises the two small open cut extensions shown on the cover photograph of this report. Further auger mining in the North Pit would be the only mining permitted during the evening period. However, Coalpac would be permitted to continue to undertake coal processing and transportation activities and all other mining-related activities permitted under its existing approval. For the remaining open cut pits described in the EA (West Pit, Central (Renown) Pit and South Pit) open-cut and auger mining operations would only be permitted during daytime hours.

The Department is confident that these restrictions would prevent the predicted significant noise impacts for these 15 residences. However it has provided Coalpac with the opportunity to have these restrictions lifted, in the event that it can reach written agreements with all residences to accept the predicted noise levels.

The Department notes that in spite of these restrictions, there would still be a residual potential for moderate (3-5dB) exceedances of the evening noise criterion to occur at these residences and, for one of these residences, further notes that moderate exceedances of the daytime noise criteria are predicted in the later years of the project. Consequently, the Department has included conditions that would require Coalpac to install architectural noise treatment (such as double glazing, insulation and/or air-conditioning) at any residence where noise monitoring shows moderate exceedances of either the day or night-time criteria.

This monitoring would form part of a broader requirement to prepare and implement a Noise Monitoring Plan, involving a significant expansion of Coalpac's existing noise monitoring network to include additional monitoring locations in Cullen Bullen South and Cullen Bullen West as well as contemporary noise monitoring equipment with the capacity to accurately determine noise levels at individual residences.

The Department is satisfied that, with these measures in place the project would be unlikely to result in a significant increase in the noise impacts associated with the existing mine.

4.2 Flora and Fauna

The cover photograph of this report shows the extent of the vegetation clearing that was proposed for the project at the time of exhibition. In total, this comprised 55 ha of remnant native vegetation which the EA described as being in moderate to good condition, approximately 45 ha of which is located in Ben Bullen State Forest.

The EA included an ecological assessment by OzArk consultants which involved extensive database reviews, review of previous surveys and on-ground survey work.

The assessment found that vegetation within the subject site could be categorised into four vegetation communities, as follows:

- Tableland Gully Snow Gum – Ribbon Gum Grassy Forest (6 ha);
- Tableland Scribbly Gum – Narrow-Leaved Stringybark Shrubby Open Forest (37 ha);
- Tableland Gully Mountain Gum – Broad-Leaved Peppermint Grassy Forest (5 ha); and
- Cox's Permian Red Stringybark – Brittle Gum Woodland (7 ha).

Also identified in the assessment was the presence of one threatened flora species, Capertee Stringybark (*Eucalyptus cannonii*), occurring over approximately 1 ha of the project site (comprising approximately 50 individuals). This community is shown, together with the four vegetation communities, in Figure 5 below.

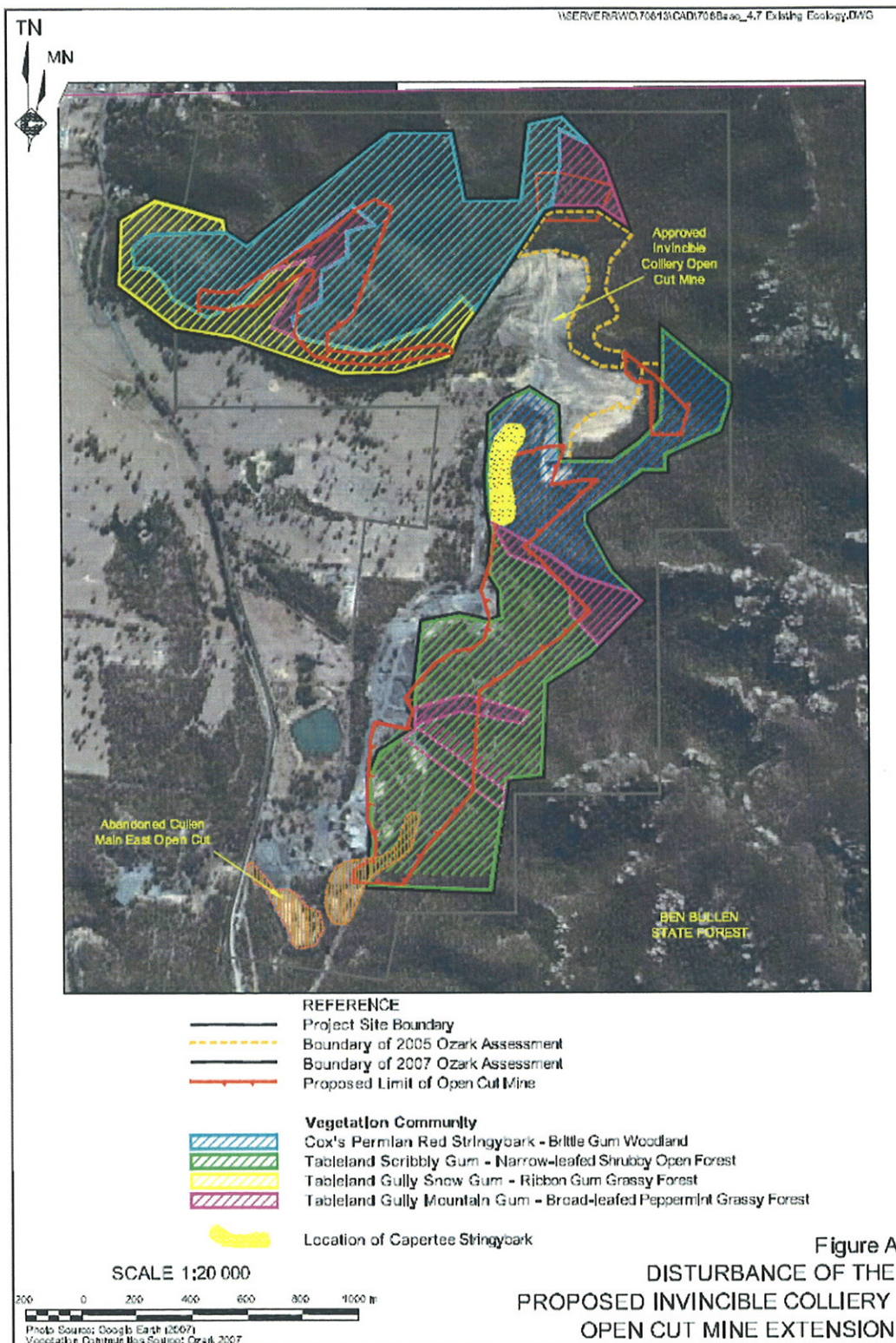


Figure 5: Key vegetation elements on project site

The assessment concluded that despite the active forestry status of Ben Bullen State Forest, the 45 ha of vegetation within the project site was generally diverse, well connected and of good quality. It also observed that the vegetation possessed moderate habitat value for fauna species, with a high incidence of hollow-bearing trees suitable for microbats and other threatened species. The remaining 10 ha consists of partially disturbed land in close proximity to active mining areas. Although of lesser quality, this land was still capable of supporting a wide range of species.

No endangered ecological communities or critical habitats were recorded or identified within the study area, however the assessment determined that the following 5 threatened flora species and 11 threatened fauna species had the potential to occur (or had been recorded) on the site:

Flora Species

- *Eucalyptus cannonii* (Capertee Stringybark)
- *Diuris aequalis*
- *Persoonia marginata*
- *Prostanthera cryptandroides*
- *Derwentia blakelyi*

Fauna Species

- Regent Honeyeater
- Squirrel Glider
- Powerful Owl
- Glossy Black Cockatoo
- Large Pied Bat
- Greater Broad-nosed Bat
- Yellow-bellied Sheath-tailed Bat
- Eastern False Pipistrelle
- Common Bent-Wing Bat
- Brown Treecreeper
- Gang Gang Cockatoo

Further assessment of the potential impacts on these species was conducted, including 7-part tests in accordance with DECC's draft Threatened Species Assessment Guidelines.

The ecological assessment concluded that the project would be unlikely to significantly impact any of these species, predominantly because they were adequately represented and/or had access to appropriate habitat elsewhere within Ben Bullen State Forest and in the wider region. The Department is satisfied with these conclusions.

With regards to Capertee Stringybark, the assessment noted that there were at least 20,000 individuals recorded within 14 existing conservation reserves across the State. However it also noted that the 100 individuals recorded within the study area (half of which were proposed to be cleared, with the remainder of the population immediately adjacent) constituted a 'local population' that would potentially be placed at risk of extinction.

Biodiversity Offset Strategy

At the time of lodging the EA, Coalpac had committed to ensuring no net loss in biodiversity values in the medium to long term as a result of the loss of 55 ha of mostly good quality treed vegetation and the potential impacts on identified threatened species through the implementation of a biodiversity offset strategy. As part of its submission, DECC stated that the strategy provided in the EA would not achieve DECC's no-net-loss objective. Coalpac then revised the strategy a number of times and its final revised strategy broadly consists of the following elements, as described in Table 4:

- revegetation, improvement and restoration of degraded, modified, or otherwise disturbed land – 65 ha;
- long term conservation and enhancement of land of a similar vegetation type and conservation significance as that to be cleared – 39.5 ha; and
- rehabilitation of 'derelict' mine areas – 6 ha.

DECC still does not support the proposed strategy and has advised the Department that its continuing principal concerns with the strategy are:

- failure to maintain or improve biodiversity values (DECC considers this is essentially due to the 'high level of risk' associated with successfully implementing the strategy); and
- lack of certainty surrounding the number of Capertee Stringybark trees that would be cleared/retained.

Coalpac has since committed to retaining and preserving all Capertee Stringybark trees on the site by eliminating mining activities from the 1 ha area where they occur and reducing the overall disturbance

footprint to 54 ha. Coalpac has estimated that this would effectively sterilise approximately 25,000 tonnes of coal worth approximately \$600,000 at current domestic prices.

Table 4: Components of the Biodiversity Offset Strategy

Component	Area (ha)	Key Attributes / Management Objectives
Restoration Area A "Renown Farm" (Lot 1, DP 180294)	18	- consists of 5 ha degraded woodland, 13 ha of derived grassland and 3 ha of water storage as the existing Main Colliery mine dam (not included in total) - livestock would be removed, area fenced and weeds sprayed - enrichment planting of native grass species - retainment of dam as a water reservoir
Restoration Area B (Part of Lot 112, DP 877190)	47	- includes areas of degraded woodland and grassland, linked to existing remnant vegetation on remainder of property - livestock would be removed, area fenced and weeds sprayed - seeding with native grass and tree species and additional tubestock planting
Total Restoration	65	
Preservation Area A (Part of Lot 113 DP 877190)	4.5	- includes approximately 2.8 ha containing the 100 Capertee Stringybark individuals - area would be fenced and monitored, with remedial measures undertaken as required
Preservation Area B (Remaining Part of Lot 112, DP 877190)	35	- consists of mostly undisturbed, high quality native vegetation - direct linkage to Ben Bullen State Forest near the proposed 'West Pit'
Total Preservation	39.5	
Rehabilitation of Cullen Main East Open Cut Voids	6	- abandoned for over 50 years, responsibility for rehabilitation currently resides with the NSW Government, through the DPI's Derelict Mines Program - Coalpac has volunteered to rehabilitate the disturbance, which would otherwise be unlikely to occur in the foreseeable future due to the limited funds available under the DPI program - rehabilitation would involve backfilling, re-profiling and revegetation with native woodland vegetation species
Total Rehabilitation	6	
Overall Total	110.5	

Essentially, the proposed biodiversity offsets would preserve 39.5 ha of existing native vegetation, while restoring another 65 ha to native woodland in the long term. Provided that this 65 ha could be improved over the medium to long term to approach the quality of the 39.5 ha, the total offset ratio would approach 2:1. The Department considers this 2:1 ratio would be achieved if greater value was assigned to rehabilitating the 6 ha of the derelict Cullen Main East mine (as distinct from the rehabilitation of disturbance caused by Coalpac). Indeed, the Department gave similar consideration to the value of derelict mine rehabilitation in its assessment of the recently approved Ivanhoe North Rehabilitation Project on the western side of the Castlereagh Highway. The Department also considers that the value of the proposed offset strategy is increased by its intention to integrate 215 ha comprising the proposed offset areas and the final rehabilitated mined landscape (50 ha of which comes from disturbed areas associated with Coalpac's existing approval) with the adjacent Ben Bullen State Forest.

The Department believes that this would constitute an acceptable outcome for biodiversity values in the medium to long term. However, it agrees with DECC that significant risks and challenges would be associated with successfully restoring this 65 ha of cleared or significantly degraded lands to healthy woodland vegetation. It has therefore included strict conditions which require Coalpac to:

- provide long-term land security for the biodiversity offsets, in order to guarantee that efforts would be sustained for as long as may be necessary to entrench good quality woodland vegetation in all offset areas;
- develop detailed performance and completion criteria for rehabilitation and implementation of the biodiversity offset;
- develop a detailed monitoring program; and
- lodge a substantial biodiversity offset bond, to be refunded only in the event that the performance and completion criteria are met.

The Department believes these conditions would be sufficient to overcome risks otherwise associated with implementation of the strategy. To ensure that clearly defined time frames, procedures and responsibilities are in place to guide the delivery of biodiversity offsets and rehabilitation objectives over the short, medium and long term; the Department has recommended that Coalpac prepare and implement a detailed landscape management plan, including a rehabilitation and offset management plan and mine closure plan.

The Department and DPI are generally satisfied with Coalpac's proposed final landform and rehabilitation plans, including the reinstated locations for drainage lines and the soundness of the rehabilitation methods that have been proposed.

4.3 Water Resources

Water Balance

The site lies within the upper catchment of the Turon River, a tributary of the Macquarie River, which contributes to drinking water at Burrendong Dam approximately 100 km northwest of the mine. Around 500 m east of the site, a local peak in Ben Bullen State Forest marks the start of a gentle east to west decline, which directs the majority of surface water flows towards Cullen Creek just west of the Castlereagh Highway and ultimately to the Turon River.

Water balance calculations in the EA indicate that there would be a need to supplement water captured through surface runoff in order for the mine to be self-sufficient, particularly during dry years. The Department notes that these calculations have incorrectly assumed that the mine would be entitled to capture around 44% of this runoff, whereas the maximum harvestable use right is only 10%. With this in mind, the mine would need to allow for a maximum deficit of some 175ML in a dry year.

Coalpac is proposing to make up any shortfall by extracting groundwater from within disused underground workings on the site, which has steadily accumulated since underground mining ceased in 1998. Coalpac hold a licence to discharge up to 2ML/day of this groundwater at the 'Long Swamp' discharge point, although at the request of DECC this activity ceased in June 2007, to allow the impact on the swamp to be properly assessed.

The EA includes calculations which estimate that approximately 1550 ML of this groundwater is potentially available, while acknowledging that the necessary licences to extract and utilise (rather than discharge) this groundwater would need to be obtained from DWE. The Department understands that the calculations involve some broad assumptions (eg that 50% of the mined areas have now subsided) and could therefore significantly overestimate (or underestimate) the actual volume.

In order to be satisfied that the mine would have a viable water supply for a worst-case scenario of 8 dry years of operation, the Department has included conditions of approval requiring Coalpac to provide a site water balance for the mine including a number of alternative water supply options, as part of an overall Water Management Plan, to the satisfaction of DWE and the Director-General, within 6 months of any approval.

Surface Water

The main activities associated with the project that would potentially affect surface water quality in this catchment involve surface stripping and other site preparation activities during the establishment phase of the new open cut pits. These activities have the potential to mobilise topsoil and sediment, which can then pass into natural drainage lines feeding into Cullen Creek.

Coalpac would seek to avoid this scenario through a range of standard controls, including:

- constructing temporary diversion and containment structures downstream of these disturbance areas to capture and subsequently recycle any surface flows into the mine water circuit;
- constructing permanent clean water diversion structures upslope of these areas, to be commissioned progressively when establishment works for each pit are completed; and
- stockpiling topsoil and subsoil within existing disturbed areas and away from natural or created drainage lines and vegetating the stockpiles as soon as possible.

The existing mine water circuit includes structures to capture runoff from the vicinity of the coal crushing, screening and CHPP areas, which typically contain elevated levels of suspended solids from coal fines and other sediment. This runoff is then used for dust suppression and other processing

activities around the mine, with discharge only occurring during wet weather events. The Department is satisfied that Coalpac's operational record to date has demonstrated these structures are robust, although it recognises that they may need to be augmented in order to accommodate the increased scale of operations.

In order to ensure that surface water resources are managed appropriately over the life of the mine, the Department has included conditions of approval which require Coalpac to develop an Erosion and Sediment Control Plan and Surface Water Monitoring Program, as part of a broader Water Management Plan.

In conjunction with the implementation of the described temporary and permanent diversion structures and sediment controls and any necessary upgrading to existing dirty water management structures, the Department is confident that the project would have a minimal effect on the quality of surface waters in the local catchment.

Groundwater

Open cut and auger mining activities would intercept groundwater contained within the hard rock and coal seam aquifers, a scenario which DWE was concerned could potentially lead to induced dewatering of the surrounding areas. The EA reasoned that because the regional 'dip' of the coal seams is to the northeast, this interception would be limited to the direct disturbance area and would not lead to any ongoing seepage of groundwater into the created pits (or voids).

The Department acknowledges that the empirical experience of the existing open cut void supports this conclusion and does not expect any significant dewatering of aquifers beyond the localised mining area, or that users of groundwater resources in the region would experience any noticeable change in its availability.

Nonetheless, in order to ensure any unexpected impacts to groundwater resources are identified and appropriate contingency measures are in place, the Department has included conditions of approval requiring Coalpac to include a Groundwater Monitoring Program as part of the Site Water Management Plan, containing trigger levels and detailed response measures.

4.4 Traffic

Coalpac's existing approval permits road transportation of coal to Mount Piper and Wallerawang power stations and some additional domestic customers. Current truck movements would not change except in respect of transport of coal to Mount Piper. Coalpac is proposing to increase the number of coal truck movements for Mount Piper from 80 to 180 per day (ie 50 additional loads per day). This means that all additional truck movements would take place on a 4 km stretch of the Castlereagh Highway between the mine and Boulder Road (the access to Mount Piper power station) over which there are no residences which could potentially be impacted by traffic noise or vibration. The traffic impact assessment in the EA determined that when this increase was considered alongside the projections for coal traffic due to all active mining operations in the area, a combined total of approximately 470 coal truck movements on this section of road would be expected each day.

Two of the public submissions objected to the project on traffic grounds, suggesting that the increase in traffic would be considerable and noticeably contribute to the deterioration of the road surface. The Department acknowledges that, if the project was approved, the amount of coal traffic on Castlereagh Highway would be at its highest level since 1990.

However the Department notes that the traffic impact assessment describes the road surface along Castlereagh Highway as being in generally good condition, save for the region near the intersection with Boulder Road, and indicates that traffic volumes were substantially higher during a prominent spike in coal production around 1990 – in the order of 580 coal truck movements per day. The Department therefore considers the increase in traffic to be acceptable and does not expect it to significantly affect the amenity of other road users or the integrity of the road surface.

The Department is also confident that the intersection of the mine access road with Castlereagh Highway would be capable of safely accommodating the increased coal traffic both entering and exiting the mine, given the extensive visibility for drivers in both directions and the impending upgrade to the existing right hand turning bay into the mine. It is the responsibility of the proponent for the

neighbouring Ivanhoe North Rehabilitation Project (05_0103, approved April 2007) to upgrade this intersection to RTA's satisfaction prior to commencement of mining under that approval.

4.5 Air Quality

Concerns over increased dust levels were raised in two of the public submissions, in the context of the expanded mine's contribution to overall cumulative dust generation from open-cut mining activities in the region. The air quality assessment in the EA adopted background concentrations from the DECC Bathurst monitoring station as a basis for modelling the likely dust deposition and PM₁₀ levels generated by the project. Whilst this station is located some 40km west of the mine, the Department accepts that it is likely to provide an overestimate of background levels, being higher than the average concentrations obtained by averaging the monitoring results from the mine to date.

Coalpac's existing approval requires monitoring of dust deposition, total suspended particulates (TSP) and PM₁₀ concentrations at representative locations to establish compliance with relevant DECC criteria. Save for one 24-hour PM₁₀ result, these criteria have been met. The results of the modelling indicate that the mine would continue to easily comply with the annual criteria for dust deposition and PM₁₀, but potentially exceed the 24-hour PM₁₀ criterion under particular weather conditions during certain stages of the project. With regards to these potential exceedances, the assessment determined that they would occur over less than 1% of any given year and affect up to 15 residences in Cullen Bullen, together with the 'Hillview' and 'Billabong' properties on the western side of the Castlereagh Highway.

The Department has some reservations over the methods employed to arrive at these 24-hour PM₁₀ results, to the extent that it believes the potential for PM₁₀ exceedances may be underestimated. Nonetheless, the Department is confident it is unlikely that there would be more than 5 exceedances per year, a number which is considered acceptable in the Commonwealth's *National Environment Protection Measure for Ambient Air Quality*, due to the inherent variability in PM₁₀ background levels.

DECC expressed concern in its submission that the assessment failed to include modelling predictions for TSP. The Department accepts Coalpac's response that the annual PM₁₀ criterion is generally accepted as being more stringent than the TSP criterion and therefore is confident that the mine would be able to comply with the TSP criterion. However the Department considers Coalpac must be able to demonstrate this compliance on an ongoing basis and has included conditions of approval requiring a revised Air Quality Monitoring Plan for the project, including an augmentation of the existing monitoring network and long-term monitoring of dust deposition, TSP and PM₁₀ levels.

4.6 Other Issues

Other environmental impacts of the project have been assessed by the Department and are considered to be relatively minor and readily managed. A summary of these impacts and Coalpac's proposed management measures are set out in Table 5.

Table 5: Summary of other Environmental Issues

Issue	Consideration
Subsidence	Potential subsidence impacts associated with the project would be restricted to impacts resulting from large-scale collapse of the supporting pillars between auger holes. Coalpac's existing approval permits auger mining in the Irondale seam, for which it was assessed that a maximum of 5mm surface subsidence could be experienced under a worst-case pillar collapse scenario. Coalpac is now proposing auger mining in the Irondale, Lithgow and Lidsdale seams. The EA did not provide an assessment of potential subsidence impacts due to mining in these additional seams (and therefore no assessment of the potential cumulative subsidence effects should pillar collapse occur in multiple seams). The Department is confident that even under a worst-case scenario the cumulative surface subsidence would be unlikely to exceed 20mm, a level which is indistinguishable from natural soil movements. The Department also acknowledges that Coalpac must provide an assessment to satisfy contemporary DPI guidelines for conducting auger mining. These guidelines impose stringent requirements for demonstrating operational safety and mine stability based on proposed mining plans.

<i>Aboriginal Heritage</i>	An archaeological assessment of the site and wider study area was undertaken by OzArk consultants and included an on-ground survey with representatives from the Bathurst Aboriginal Land Council and Warrabinga Native Title Claimants Aboriginal Corporation. The survey identified a 0.5 ha open camp site near the Invincible weather station, just southeast of the proposed open-cut disturbance footprint for the West Pit. No other Aboriginal sites or artefacts were identified during the survey and, due to the undulating topography, the potential to encounter Aboriginal artefacts during operations was assessed to be low. Coalpac has committed to managing this site in accordance with the recommendations from the Aboriginal representatives who attended the survey. These recommendations suggest Coalpac should aim to preserve the site as far as possible, unless disturbance was to prove unavoidable, in which case an archaeological dig would be required before mining-related works could proceed. Conditions of approval have been included formalising this position. To provide for the continuing management of Aboriginal heritage over the life of the project, the Department has recommended a condition requiring Coalpac to prepare an Aboriginal Cultural Heritage Management Plan for the mine, in consultation with local Aboriginal communities.
<i>Visual Amenity</i>	The visual impacts associated with the existing mine are predominantly a consideration for passing motorists on Castlereagh Highway, as natural topographic features restrict visibility from almost all residential locations. The proposed open-cut extensions would not significantly change this situation, with the exception of the 'West Pit', which would potentially be visible from some residences in the south of Cullen Bullen. As described in section 4.1, Coalpac has committed to building and vegetating a 15 m high acoustic bund for activities in this area, which would effectively double as a visual mitigation mound and shield the intrusive effects of lighting from evening operations. The Department is satisfied that the visual impacts associated with the mine would not change significantly as a result of the expanded operational footprint and, in particular, is confident that the closest residences would notice only a marginal difference in their view of the operations.
<i>Greenhouse gases</i>	The project would generate greenhouse gas (GHG) emissions, mainly from: • diesel usage in mining equipment and haulage trucks; • on-site electricity use; • fugitive methane emissions as coal seams are exposed; and • burning of the product coal at Mount Piper power station (Scope 3 emissions). The EA calculated that the annual GHG output expected from the mine, assuming maximum production of 900,000 tonnes, would be approximately 2.3 million tonnes CO₂-equivalent or 0.38% of total Australian GHG emissions predicted each year for the period 2008-2012. Over 97% of these GHG emissions would be from Scope 3 emissions, for which the Department believes it would be unreasonable for Coalpac to bear effective responsibility. The Department does however consider it appropriate that Coalpac minimise or offset its direct GHG emissions and has recommended conditions of approval requiring the implementation of a comprehensive Energy Savings Action Plan, including energy efficiency targets and a range of measures to minimise GHG emissions over the life of the project.

5. RECOMMENDED CONDITIONS

The Department has prepared recommended conditions of approval for the project (see Appendix B) and summarised these conditions in Appendix A.

The recommended conditions are required to:

- prevent, minimise and/or offset adverse impacts of the project;

- set standards and performance measures for acceptable environmental performance;
- ensure regular monitoring and reporting in accordance with current best practice;
- provide for the ongoing environmental management of the project; and
- ensure rehabilitation and final land use objectives for the mine are satisfactorily achieved.

Coalpac has reviewed these conditions and accepted them. The Department believes these conditions reflect current best practice for the regulation of open cut coal mines in NSW.

6. CONCLUSION

The Department has assessed the merits of the project in accordance with the requirements of the EP&A Act.

Based on this assessment, the Department is satisfied that the impacts of the project can be mitigated, managed and/or offset to ensure an acceptable level of environmental performance.

The Department recognises that the project would clear 54 hectares of native vegetation, which provides habitat for a number of threatened species. However, it is satisfied that the proposed offset strategy, which seeks to restore the area to the west of the Cumberland Highway to woodland and integrate it with the adjoining Ben Bullen State Forest, will improve the biodiversity values of the region in the medium to long term.

It also recognises that without operational restrictions, the project would have significant noise impacts on up to 15 residences on the southern edge of Cullen Bullen during evening operations under adverse weather conditions. The Department considers these potential impacts to be unacceptable, and has recommended strict conditions to ensure they do not occur.

Finally, the Department is satisfied that the project would provide economic and social benefits for the region by securing additional coal for the Mount Piper and Wallerawang Powers Stations, generating royalties and tax income, and providing jobs for 35 people.

On balance, the Department believes that the potential benefits of the project outweigh its potential costs, and consequently that it is in the public interest and should be approved, subject to conditions.

7. RECOMMENDATION

It is RECOMMENDED that the Minister:

- consider the findings and recommendations of this report;
- approve the project application, subject to conditions, under section 75J of the *Environmental Planning and Assessment Act 1979*; and
- sign the attached project approval (Tagged B).

Kitto 28/11/08

David Kitto
Director
Major Development Assessment

Chris Wilson 1.12.08
Chris Wilson
Executive Director
Major Project Assessment

Shaddad
Sam Haddad
Director General

1/12/2008

APPENDIX A. SUMMARY OF CONDITIONS OF APPROVAL

Aspect	Condition	Requirement(s)
Schedule 2: Administrative Conditions		
Surrender of existing project approval	5	Surrender of existing Ministerial approval for the mine
Limits of Approval	6	Approval for mining restricted to 8 years
	7	Restriction on production to 1.2 million tonnes of ROM coal a year
	8	Restriction on production to 900,000 tonnes of saleable coal a year
	9	Hours of operation
	10	Restrictions on mining activities during the evening period
Contributions	15	Requirement for community enhancement contribution
Schedule 3: Specific Environmental Conditions		
Land Acquisition	1	Acquisition rights for significantly affected privately owned land
Noise	2, 3	Noise impact assessment and acquisition criteria
	4, 5	Additional noise mitigation measures
	6	Noise Monitoring Program
	7	Requirement for continual improvement of noise performance
Air Quality	8,9	Air quality impact assessment criteria and acquisition criteria
	10	Air Quality Monitoring Program
	11	Meteorological monitoring
Soil and Water	12	Limits on discharge of mine waters
	13	Water Management Plan
Traffic and Transport	14	Requirement to record volumes of coal transported from the site
	15	Permitted hours of coal transportation
	16-18	Limits on destinations for coal product
Blasting and Vibration	19, 20	Blast impact assessment criteria
	21, 22	Permitted blasting hours and frequency
	23, 24	Restrictions on blasting practices,
	25	Road Closure Management Plan
	26	Requirement for public notification of blasting events
	27-29	Rights for structural investigations for properties potentially affected by blasting
	30	Blast Monitoring Program
Landscape	31, 32	Implementation of a Biodiversity Offset Strategy, and requirement to provide for the long term security of the offset areas
	33	Requirement to progressively rehabilitate the site
	34-36	Landscape Management Plan
	37	Requirement for Conservation and Biodiversity Bond
Subsidence	38	Requirement for subsidence assessment of auger mining
Aboriginal Heritage	39	Management of Aboriginal Heritage site Invincible OS1
	40	Aboriginal Heritage Management Plan
Visual Impact	41	Requirement to minimise mine's visual and lighting impacts
Greenhouse Gas	42	Energy Savings Action Plan
Waste Minimisation	43	Requirement to monitor and minimise waste
Schedule 4: Additional Procedures		
Notification of Landowners	1	Requirement to notify landowners of acquisition rights and exceedances of relevant criteria during monitoring.
Independent Review	2-5	Procedures for independent review if landowners believe the mine to be exceeding relevant impact assessment criteria
Land Acquisition	6-8	Procedures for land acquisition
Schedule 5: Environmental Management, Monitoring, Auditing and Reporting		
Environmental Management Strategy	1	Preparation and implementation of a consolidated Environmental Management Strategy
Reporting	2, 3	Requirement to report incidents
	4	Annual Environmental Management Report
Auditing	5-7	Requirement to undertake regular independent environmental audits
CCC	8	Requirement for Community Consultative Committee
Access to Information	9, 10	Requirement to publicly report environmental management plans/programs/strategies, and monitoring results

APPENDIX B. RECOMMENDED CONDITIONS OF APPROVAL
