



Planning

MAJOR PROJECT ASSESSMENT
Integra Open Cut Project
(08_0102)



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

November 2010

Cover Photo: View from the open cut extension area to the southwest showing cleared grassland with scattered paddock trees.

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EXECUTIVE SUMMARY

Integra Coal Operations Pty Ltd (Integra), a subsidiary of Vale, operates the Integra mine complex about 10 kilometres northwest of Singleton in the Hunter Valley.

The mine complex is located in an area that is dominated by large-scale mining operations, with the Mt Owen, Ashton, Ravensworth, Hunter Valley Operations and Rixs Creek mine complexes all operating in within close proximity to the Integra mine complex.

The closest settlement is Camberwell Village, which is located about 2.5 kilometres to the west of the mine complex.

The Integra mine complex has both open cut and underground mining operations. Together these operations are currently allowed to extract up to 10.5 million tonnes of run-of-mine (ROM) coal a year, and process it on site before railing it to domestic and export markets for use in steel making and power generation.

Integra proposes to extend its existing open cut mining operations in the Camberwell South Pit to the west, and consolidate all of its previous consents/approvals for open cut mining into a single project approval.

The proposal – known as the Integra Open Cut Project – would allow Integra to continue its open cut mining operations for up to 12 years, and extract up to 38.4 million tonnes of ROM coal at the currently approved extraction rate of up to 6 million tonnes of coal a year.

As the proposed expansion area contains the privately-owned Dulwich property, the project has two different mine plans: the first involves acquiring and mining through the Dulwich property, while the second involves leaving the Dulwich property in private ownership and mining as close as possible to the property.

The project has a capital investment value of \$17.4 million and would provide continued employment for 250 people.

The Department received 23 submissions on the project: 6 from government authorities and 17 from the general public. None of the public authorities objected to the project, however 16 of the 17 submissions from the general public were opposed to the project. The main grounds for objection were the noise, air quality, blasting, threatened species and heritage impacts of the project, as well as the potential cumulative impacts of the project on Camberwell Village.

The Department has carried out a detailed assessment of the merits of the project, in accordance with the requirements of the *Environmental Planning & Assessment Act 1979* (EP&A Act).

This assessment has found that the project would have a number of adverse environmental impacts, including significant dust, noise and visual impacts on the Dulwich property if it is to remain in private ownership and not be mined; significant noise impacts on a further 10 privately-owned properties (owned by 9 separate landowners) in close proximity to the mine complex; the clearing of 19 hectares of an endangered ecological community; and the destruction and/or relocation of a range of heritage items, including the Dulwich property which is listed as an item of local heritage significance in the *Singleton Local Environmental Plan 1996*.

It also found that, despite local concerns, the project would only make a minor contribution to the cumulative impacts of mining on the Camberwell Village.

Notwithstanding these findings, the Department has recommended a range of conditions to ensure that the impacts of the project are suitably mitigated, managed and/or offset. These conditions include requirements for Integra to:

- acquire all significantly-affected properties at the request of the landowners;
- implement additional measures to minimise the noise, dust, blasting, visual, and water impacts of the project;

- implement a comprehensive biodiversity offset strategy, which would add at least 77 hectares of land to the existing offset area to the north of the mine complex, and improve the biodiversity values of the local area in the medium to long term;
- carry out further heritage and archaeological investigations on parts of the site where there is significant archaeological potential, as well as on company-owned land adjoining the site; and
- progressively rehabilitate the site to meet a range of performance measures;
- monitor and regularly report on its environmental performance; and
- commission an independent audit of its operations every three years, to ensuring it is complying with its conditions of approval and implementing best practice on site.

Finally, the Department's assessment has found that the project would represent a logical extension of the existing mine complex, would make efficient use of existing facilities and equipment, and would provide major economic and social benefits to the Hunter region and NSW, including:

- continued employment for up to 250 employees;
- a direct capital investment of \$17.4 million; and
- royalties and payroll taxes for the State Government.

On balance, the Department believes the project's benefits sufficiently outweigh its residual costs, and that it is in the public interest and should be approved subject to strict conditions.

1 BACKGROUND

Integra Coal Operations Pty Ltd (Integra), a subsidiary of Vale, operates the Integra mine complex about 10 kilometres northwest of Singleton in the Hunter Valley (see Figure 1).

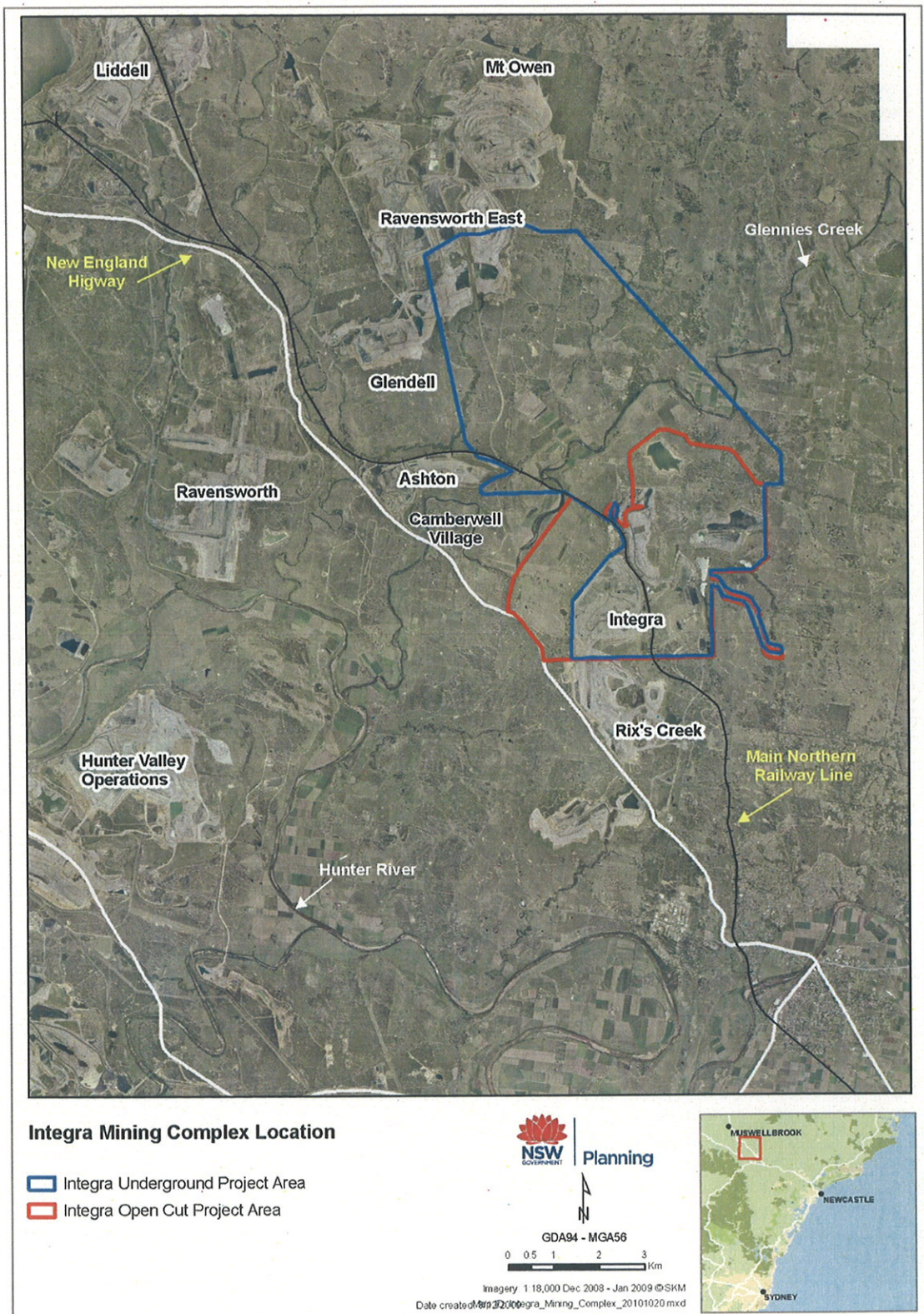


Figure 1: Project Location

The complex comprises 3 separate mining areas and a range of surface facilities (see Figures 1 and 2), including the:

- Camberwell open cut mine (operating under DA 86/2889) where extraction is complete in the north pit and nearing completion in the south pit;
- Glennies Creek open cut mine (operating under MP 06_0073) where extraction is scheduled to be carried out for another 9 years; and
- Glennies Creek underground mine (operating under DA 105/90, MP 06_0213 and MP 06_0057) where extraction is nearly complete in 10 of the 17 longwall panels in the Middle Liddell coal seam.

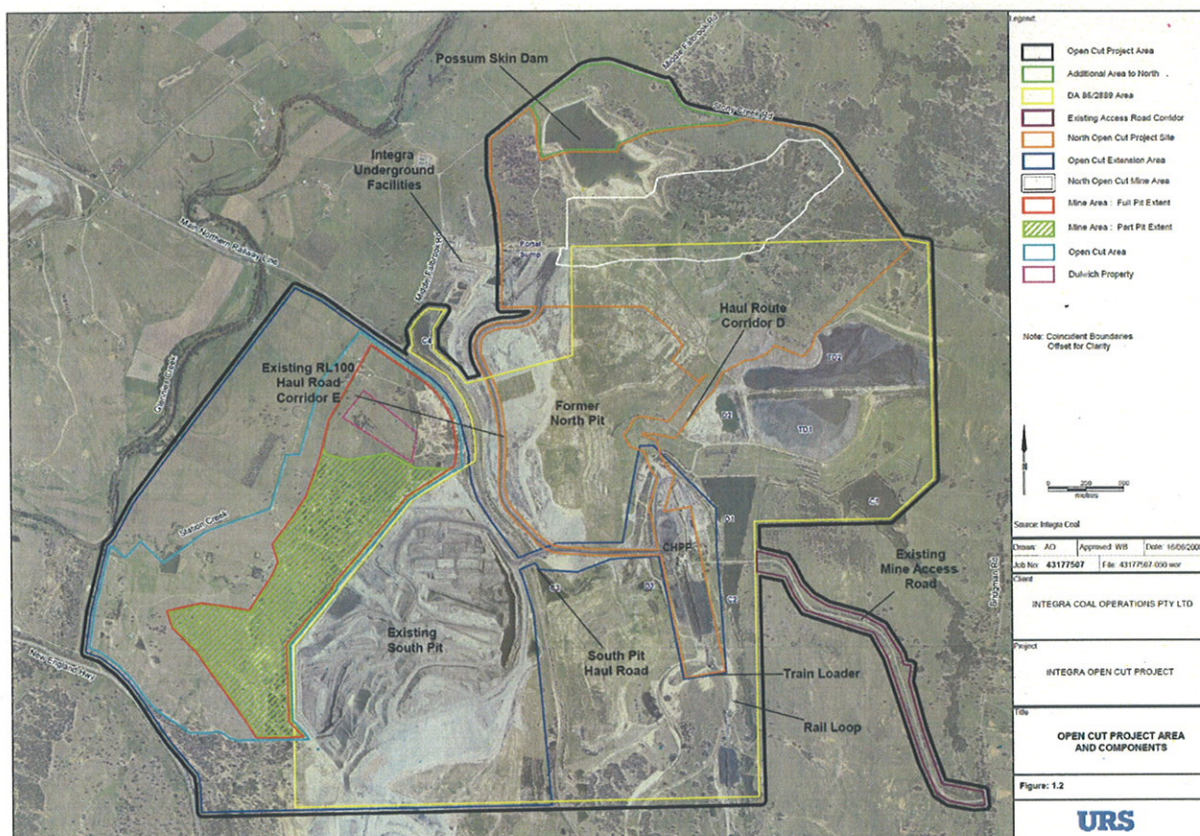


Figure 2: Open Cut Mining Operations within the Integra mine complex.

The complex as a whole has approval to extract 10.5 million tonnes of run-of-mine (ROM) coal a year, including 6 million tonnes from the open cut mining operations and 4.5 million tonnes from the underground mining operations.

This coal is processed at the coal handling and preparation plant, which is located to the south of the mine complex, before being railed to domestic and export markets for use in steel making and power generation.

The mine complex is located in an area that is dominated by large scale and intensive mining activity. This activity has significantly altered the natural landscape. The closest mining operations (see Figure 1) are:

- Xstrata's Mt Owen mine complex to the north (comprising the Mt Owen, Ravensworth East and Glendell mines);
- Yanzhou's Ashton mine complex, Xstrata's Ravensworth mine complex (comprising the Ravensworth West, Narama and Cumnock mines), and Rio Tinto's Hunter Valley Operations mine complex to the west; and
- Bloomfield Collieries' Rix's Creek mine, which is located directly to the south of the Integra mine complex and straddles the New England Highway.

A consequence of all this mining activity is that most of the land in the area is owned by one mining company or another (see Figure 3).

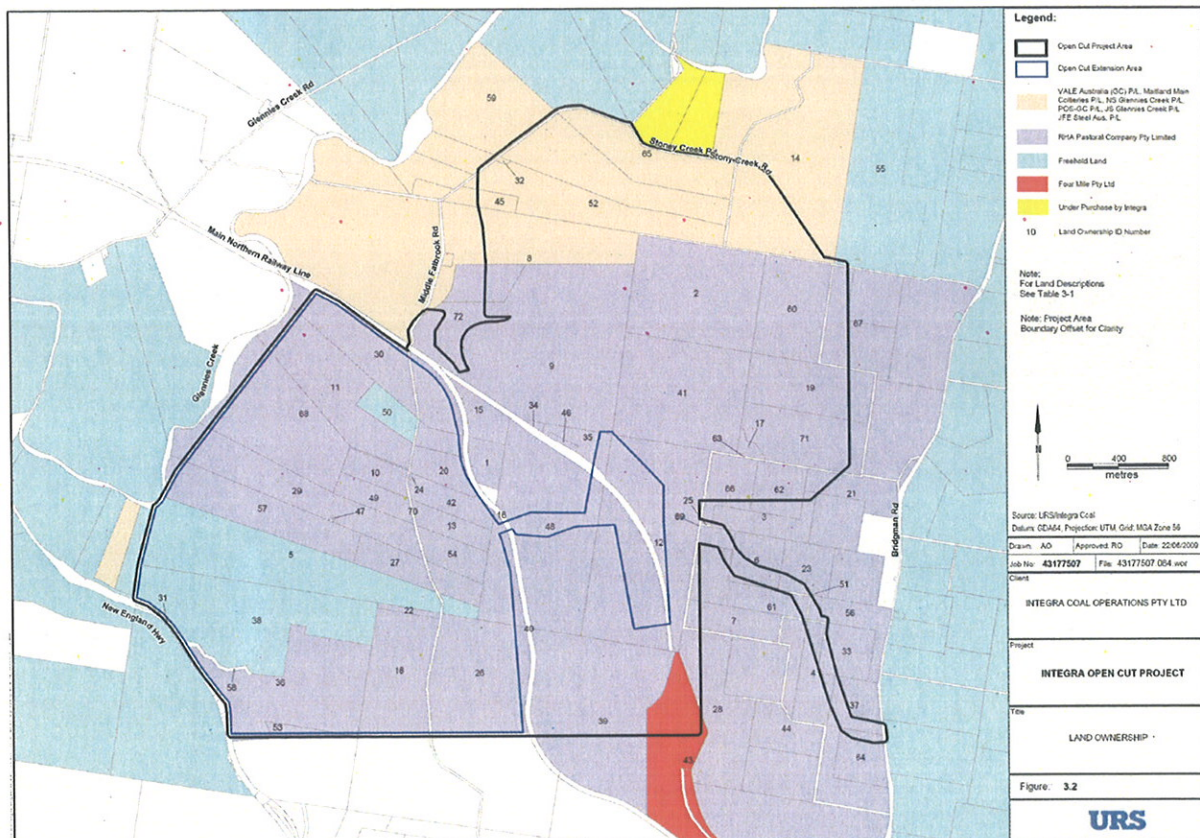


Figure 3: Project Area and Land Ownership (June 2009)

Nevertheless, the land surrounding these mining operations is still used for a range of agricultural activities with the land along the Hunter River and Glennies Creek being used for intensive agriculture (see Figure 1).

The nearest settlement is Camberwell Village, which lies about 2.5 kilometres to the west of the Integra mine complex (see Figure 1). Mining companies now own most of the properties in the village.

In 2009, the Department commissioned an independent review of the cumulative impacts of mining on Camberwell Village (see Appendix H). This review considered both the existing and potential future impacts of mining on the village, as several of the mine complexes in close proximity to the village are seeking approval for expansions of their existing mining operations. The review found that the existing dust and noise levels in the village are higher than they should be, principally due to the Ashton open cut mining operations directly to the north of the village, and recommended that action be taken to reduce these impacts. In this regard, it should be noted that the Ashton open cut mining operations are due to be completed in December 2010.

Key infrastructure in the area includes the:

- regional road network including the New England Highway, Glennies Creek Road, Forest Road, Nobles Lane, Stony Creek Road and Middle Falbrook Road;
- Main Northern Railway and associated Mt Owen Rail Spur, which crosses the underground mining operations; and
- Glennies Creek Power Station, which is located to the north of the proposed extension area and to the east of Glennies Creek.

2 PROPOSED PROJECT

Integra proposes to extend its open cut mining operations in the Camberwell South Pit to the west, and consolidate all of its previous consents/approvals for open cut mining into a single project approval.

The proposal – known as the Integra Open Cut Project – would allow Integra to continue its open cut mining operations for up to 12 years, and extract up to 38.4 million tonnes of ROM coal at the currently approved extraction rate of up to 6 million tonnes of coal a year.

Extracted coal would continue to be processed at the existing coal handling and processing plant on site before being railed to domestic and export markets.

Integra owns most of the land in the proposed expansion area. However, the Dulwich property, which is located in the north-eastern corner of the proposed open cut pit remains in private ownership. Integra and its predecessors have been trying to acquire this property since 1990 but have been unsuccessful. Given the possibility that they may not be able to acquire this property in the future, Integra has developed two different mine plans for the proposed expansion.

The first mine plan involves acquiring the Dulwich property, and mining up to the Main Northern Railway line (see the area outlined in red on Figure 4).

The second mine plan involves mining as close as possible to the Dulwich property as allowed under the *Mining Act 1992*, and the Dulwich property remaining in private ownership while these mining operations are being carried out (see the area cross-hatched in green on Figure 4). This mine plan would result in up to 8 million tonnes of ROM coal being sterilised. It would also reduce the mine life by up to 3 years.

The major components of the project are summarised in Table 1, and depicted in Figures 4 and 5. The project is described in full in Integra's Environmental Assessment (EA), which is attached as Appendix E.

It should be noted that Integra is concurrently seeking approval for a proposal to expand its existing underground mining operations at the Integra mine complex, although this proposal is the subject of a separate application. While the assessment of the merits of this proposal is the subject of another assessment report, the Department has considered the merits of both applications concurrently as well as the potential cumulative impacts of both proposals operating at the same time.

Table 1: Project Summary

Aspect	Summary
Project Summary	• extraction of up to 6 million tonnes of run-of-mine (ROM) coal a year from the northern and western mining areas; • washing this coal at Integra's CHPP and before transporting it by rail to domestic and export markets; • ongoing use and development of existing and proposed ancillary surface infrastructure; • disposal of coarse and fine reject material generated by the project within existing mine voids; and • rehabilitation of all existing mining and infrastructure areas.
Project Area	1,876 hectares (ha), including all existing and proposed open cut mining areas
Mining and Reserves	Approximately 30 Mt of semi soft coking and thermal coals (full pit scenario) Approximately 22 Mt of semi soft coking and thermal coals (part pit scenario) Integra also has a mining reserve of approximately 1 Mt in the currently-approved Camberwell South Pit and approximately 7.4 Mt in the currently-approved North Open Cut Pit. Total product coal generated from the project, together with existing approved open cut extraction, would be 22.5 Mt.
Mining Methods	Truck and shovel/excavator operations (as existing)
Project Life	12 years (the mine life has increased from the nominal 9 year life that was proposed in the EA following a more detailed scheduling exercise by Integra).
Project Staging	Northern mining area: Years 1 to 9 (approved) Western mining area: Years 1 to 12 (proposed)
Existing Surface Infrastructure	Continued use of all existing ancillary surface infrastructure for the life of the project, including the CHPP, coal loader and rail loop.
Proposed Surface Infrastructure	• removal and/or relocation of existing powerlines within the proposed mining area; • re-routing of fibre optic communications cables lying within the proposed mining area; • construction of temporary haul roads for the transportation of overburden and coal within and adjacent to the proposed mining area and existing South Pit; • construction of surface water management structures to the west and south of the proposed mining area; and • installation of transportable site office, crib room, ablutions building and installation of a transportable, above ground equipment refuelling station.

Coal Processing	Camberwell CHPP (approved to process up to 1,200 tph)	
Coal Production	6 Mtpa (1.5 Mtpa from northern mining area and 4.5 Mtpa from western mining area)	
Water Demand and Supply	Modelling indicates overall water balance for the complex would be in equilibrium	
Coarse Reject and Tailings Management	- up to 195 bcm of overburden and interburden would be removed and placed in pit; - up to 18.5 Mt of coarse and fine reject would be disposed of in overburden emplacements and tailings dams in existing/proposed areas of disturbance.	
Hours of Operation	All open mining and associated activities would be carried out 24 hours a day, 7 days a week, except for: - open cut mining operations in the northern mining area (day and evening periods); - vegetation clearing and topsoil stripping (day periods); and - blasting (between 9 am and 5 pm).	
Product Coal Transport	Railed to the Port of Newcastle via the Main Northern Railway Line (as existing)	
Mine Access	Bridgman Road (as existing)	
Complex-wide Rehabilitation and Offsets	Northern Offset Area	121 hectares
	Southern Offset Area	39 hectares
	Western Offset Area	94 hectares
	Supplementary Offset Area	33 hectares
	Bridgman Offset Area	86 hectares
Socio Economic Benefits	The development of this resource would provide social and economic benefits to the region and the State including: - continuing employment for 250 employees at Integra; \$17.4 million in capital investment; \$81 million a year in payments to suppliers of goods and services; \$32.8 million a year in gross wages; and \$12.8 million a year in production royalties and payroll taxes to the State government.	
Capital Value	\$17.4 million	
Approvals/consents to be surrendered	Camberwell Mine (DA 86/2889) Integra North Open Cut Mine (MP 06_0073)	

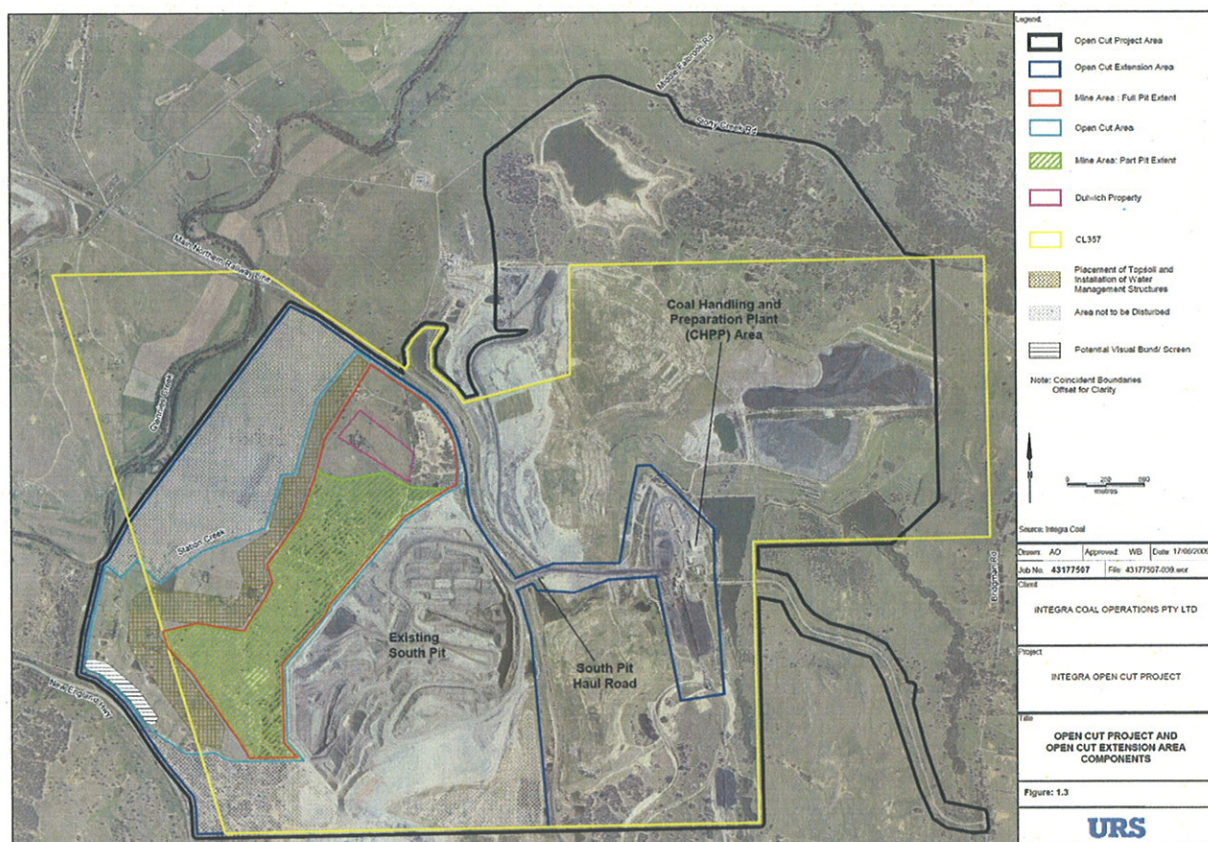


Figure 4: Project Overview – South Pit Extension Area

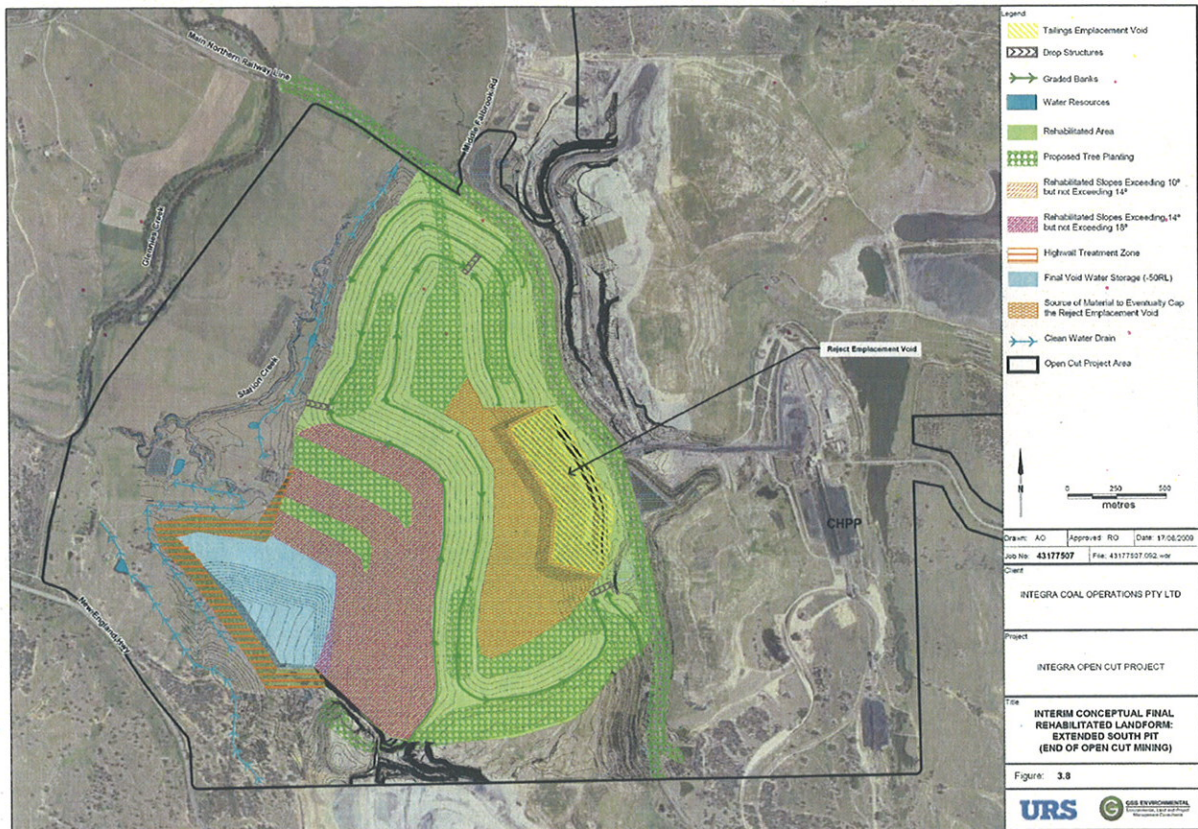


Figure 5: Final Rehabilitation Plan – South Pit Extension Area

3 STATUTORY CONTEXT

3.1 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 constitutes development for the purpose of coal mining, and therefore meets the criteria in Clause 5 of Schedule 1 of *State Environmental Planning Policy (Major Development) 2005*.

Consequently, the Minister is the approval authority for the proposal.

3.2 Permissibility

The land subject to the application is zoned 1(a) (Rural) under the *Singleton Local Environmental Plan 1996*. Mining is permissible with development consent in this zone. Mining is also permissible with development consent under *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007*.

3.3 Other Approvals

Under Section 75U of the EP&A Act, a number of other approvals have been integrated into the Part 3A approval process and are not required to be separately obtained for the project. These include:

- heritage-related approvals under the *Heritage Act 1977* and *National Parks and Wildlife Act 1974*; and
- some water-related approvals under the *Rivers and Foreshores Improvement Act 1948* and *Water Management Act 2000*.

Under Section 75V of the EP&A Act, a number of further approvals are required to be obtained, but must be approved in a manner that is consistent with any Part 3A approval for the project. These include:

- variations to the mining lease under the *Mining Act 1992*;
- approvals under the *Mine Subsidence and Compensation Act 1961*; and
- variations to the environment protection licence under the *Protection of the Environment Operations Act 1997*.

The Department has consulted with the relevant government authorities responsible for these other approvals, and considered the relevant issues relating to these approvals in its assessment of the project (see Section 5).

None of these authorities object to the project or the recommended conditions of approval.

3.4 Exhibition and Notification

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 1 July 2009 until 3 August 2009 at the:
 - Department's Information Centre;
 - Singleton Shire Council's office;
 - Nature Conservation Council's office; and on the
 - Department's website;
- notified relevant State government authorities and Singleton Shire Council by letter; and
- advertised the exhibition in the Singleton Argus newspaper.

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;
- EA; and
- Integra's response to the issues raised in submissions.

3.5 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 that substantially govern the carrying out of the project.

The Department has considered the project against the relevant provisions of several environmental planning instruments (see Appendix F) as well as Integra's consideration of these issues (see Section 4 in the EA in Appendix E), and is satisfied that none of these instruments substantially govern the carrying out of the project.

3.6 Objects of the EP&A Act

The Minister is required to consider the objects of the EP&A Act when making 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) and (vii). They are:

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 Department is satisfied that the project encourages the proper use of resources (Object 5(a)(i)) and the promotion of orderly and economic use of land (Object 5(a)(ii)), particularly as the subject coal resources are located within an existing mining lease in an area that is dominated by coal mining operations, and can be carried out using existing mining facilities and infrastructure.

The encouragement of environmental protection (Object 5(a)(i)) is considered in detail in Section 5 of this report. Based on this consideration, the Department is satisfied that the impacts of the project can be mitigated and/or managed to ensure an acceptable level of environmental performance, and that with the provision of appropriate offsets the project could maintain and potentially improve the biodiversity values of the locality in the medium to long term.

Finally, the Department has fully considered the encouragement of ecologically sustainable development (ESD) (Object 5(a)(vii)) throughout its assessment of the merits of the project application, and sought to integrate all significant economic and environmental considerations and avoid any serious or irreversible damage to the environment, based on an assessment of risk-weighted consequences. Based on this consideration, the Department is satisfied that the project can be carried out in a manner that is consistent with the principles of ESD.

3.7 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 environmental assessment requirements have been complied with.

4 CONSULTATION

The Department exhibited the EA for the project between 1 July 2009 and 3 August 2009. During the exhibition period, the Department received 23 submissions on the project, including:

- 6 from public authorities; and
- 17 from the general public.

A full copy of these submissions is attached in Appendix D.

In March 2010, Integra provided a formal response to the issues raised in these submissions which is attached in Appendix C.

Since receiving the response to submissions, the Department has carried out further consultation with the public authorities that are likely to be involved in regulating the project, and incorporated their comments into the recommended conditions of approval.

A summary of the issues raised during the consultation process is provided below.

4.1 Public Authorities

The **Department of Environment, Climate Change and Water** (DECCW) commented on several aspects of the project, including:

- *Noise* – DECCW advised that it considered the Integra mine complex to be a single noise source, due to the integrated nature of the open cut and underground operations, and asked for the noise assessment to be updated to reflect this;
- *Blasting* – DECCW asked Integra provide further justification to support its proposed blast frequencies of greater than once per day;
- *Air quality* – DECCW noted that a number of privately-owned residences would experience air quality impacts above the applicable health and amenity air quality criteria;

- *Threatened Species* – DECCW recommended that Integra be required to provide suitable biodiversity offsets to compensate for the clearing of 19 hectares of the Central Hunter Box – Ironbark Woodland endangered ecological community; and
- *Aboriginal cultural heritage* – DECCW noted that the Aboriginal consultation and cultural heritage surveys were comprehensive and in accordance with its guidelines.

These matters are discussed further in Section 5. DECCW has subsequently indicated that it does not object to the project, and is satisfied with the recommended conditions of approval.

The **NSW Office of Water (NOW)** advised that the project would need to comply with requirements of the *Hunter Unregulated River and Alluvial Water Sharing Plan (HURAWSP)*, and that the precautionary setback of 150 metres (m) from the mapped edge of the regulated Glennies Creek connected alluvium complies with its guidelines. NOW was critical of Integra's groundwater assessment, as it did not assess the likelihood of a known geological structure in the area creating a pathway for water to move between the Glennies Creek alluvium and the open cut pit, and recommended that Integra be required to conduct a detailed assessment of the potential influence of this structure on groundwater transmission. NOW also raised concerns about the potential impact of the project on the remaining riparian vegetation along Glennies and Station Creeks, and recommended that Integra be required to improve this vegetation as part of its biodiversity offset package. Finally, NOW recommended that Integra be required to verify its predictions, and implement suitable contingency measures should the impact of the project be greater than predicted.

Following the provision of additional information, including a revised statement of commitments from Integra, NOW indicated its outstanding concerns had been satisfactorily addressed.

The **Industry and Investment NSW (I&I NSW)** supports the proposal.

Singleton Shire Council (SSC) noted that the project would deliver positive socio-economic benefits but raised concerns that the air quality assessment did not address cumulative air quality impacts on the broader population. SSC recommended that Integra be required to contribute to a broader study regarding the extent to which dust emissions impact on public health. During the assessment process, Integra subsequently revised its air quality assessment to include a health risk assessment.

The **Hunter-Central Rivers Catchment Management Authority (CMA)** considered the proposed biodiversity offset to be inadequate and recommended that it be revised to demonstrate that the project would 'improve or maintain' biodiversity values. During the assessment process, Integra revised its proposed biodiversity offset. This is discussed further in Section 5.

The **Roads and Traffic Authority (RTA)** did not object to the project, and advised that the proposal was unlikely to have a significant impact on the classified road network.

4.2 Community and Interest Groups

All 17 of the submissions from the general public were either from residents of Camberwell Village or land owners in the vicinity of the project area. Of these 17 submissions, 16 objected to the project and 1 supported it. The main grounds for objection were (in decreasing order of mention):

- *Noise* – potential increase in noise levels resulting in sleep disturbance and general loss of amenity;
- *Blasting* – potential for damage to property due to vibration impacts from blasting and potential safety issues due to flyrock;
- *Air quality* – potential increase in dust emissions, with resulting impacts on amenity and health impacts on people, livestock and the environment;
- *Socio-economic* – potential impact on the social fabric of Camberwell and surrounding communities, due to the general reduction to the area's amenity and subsequent devaluation of properties in the area;
- *Cumulative impacts* – particularly noise, dust and greenhouse gas;
- *Water resources* – potential impacts on surface water resources, particularly Glennies Creek and Station Creek;
- *Traffic* – potential increase in the amount of traffic using the local road network; and
- *Heritage* – potential impacts to St Clements Church and adjacent gravestones as a result of blasting.

5 ASSESSMENT

In its assessment of the merits of the project, the Department has considered the:

- EA, submissions and response to submissions on the project (see Appendices C to E);
- EA, submissions and response to submissions on the associated underground project (see attached Director-General's report for the underground project tagged B);
- previous development consents and project approvals for the open cut mining operations at the Integra mine complex, including the associated environmental impact statements and environmental assessments referred to in these instruments (see Appendix G);
- Camberwell Cumulative Impact Study (see Appendix H);
- the relevant environmental planning instruments, policies and guidelines; and
- the relevant provisions of the EP&A Act, including the objects of the Act.

5.1 Air Quality

The EA includes a specialist air quality impact assessment undertaken by PAE Holmes Pty Ltd in accordance with the applicable guidelines, including DECCW's *Approved Methods for the Modeling and Assessment of Air Pollutants in NSW* (see Appendix G of the EA, which is attached as Appendix E).

Following the completion of the Camberwell Cumulative Impact Review, this assessment was updated to provide a better assessment of the potential cumulative impacts of the project operating in conjunction with the existing and proposed operations at the surrounding mines, including the operations at the Ashton, Mt Owen, Rixs Creek and Ravensworth mine complexes (see Appendix H).

The assessment assumed the implementation of:

- a range of standard dust mitigation measures, including:
 - minimising the amount of surface disturbance on site, principally through staging the mining operations and progressively rehabilitating the site; and
 - dust suppression of major dust sources, such as haul roads, stockpiles and other disturbed surfaces; and
- a range of specific dust mitigation measures to minimise the impacts of the project on the Dulwich property under the part pit scenario (see the RTS in Appendix C).

It then modelled the potential dust emissions of both mine plans, and compared the results against DECCW's criteria for total suspended particulates (TSP), fine particulate matter (PM₁₀) and dust deposition.

Project-Specific Impacts

The predictions of the incremental impacts of the project are depicted in Figures 5 to 10.

These figures show that:

- the dust emissions from the Integra mine complex would be concentrated around the three principal dust sources on site:
 - the CHPP to the east of the mine complex;
 - the approved open cut mining operations in the Glennies Creek open cut pit, or northern mining area; and
 - the proposed open cut mining operations in the western mining area, or the project (shaded in yellow);
- these dust emissions would gradually disperse and diminish as the distance from the mine complex increases;
- the project on its own would comply with all the applicable dust criteria at all of the surrounding private properties if the Dulwich property is acquired and mined, as the Dulwich property would then be classified as part of the mine; but that
- the project on its own would cause significant exceedances of the applicable dust criteria if Dulwich remains in private ownership; and
- the project would make a minor contribution to the dust levels within the Camberwell Village.

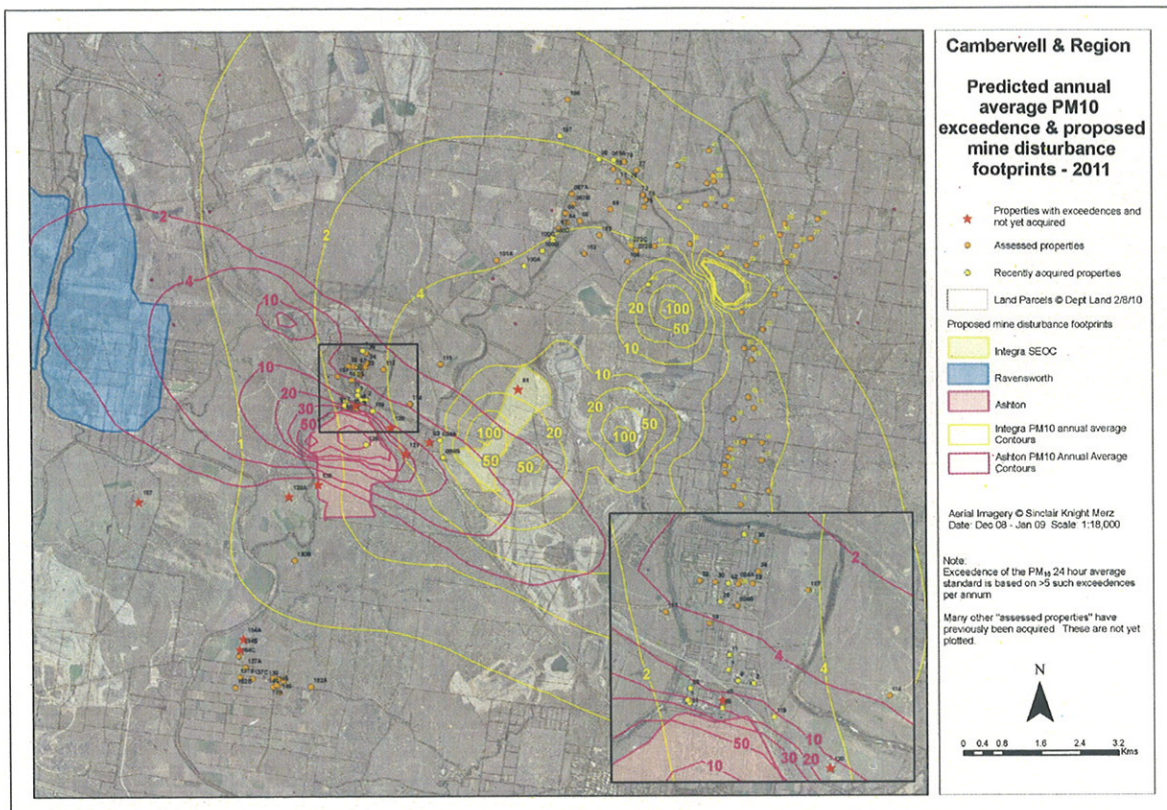


Figure 5: Predicted annual average PM₁₀ exceedances 2011

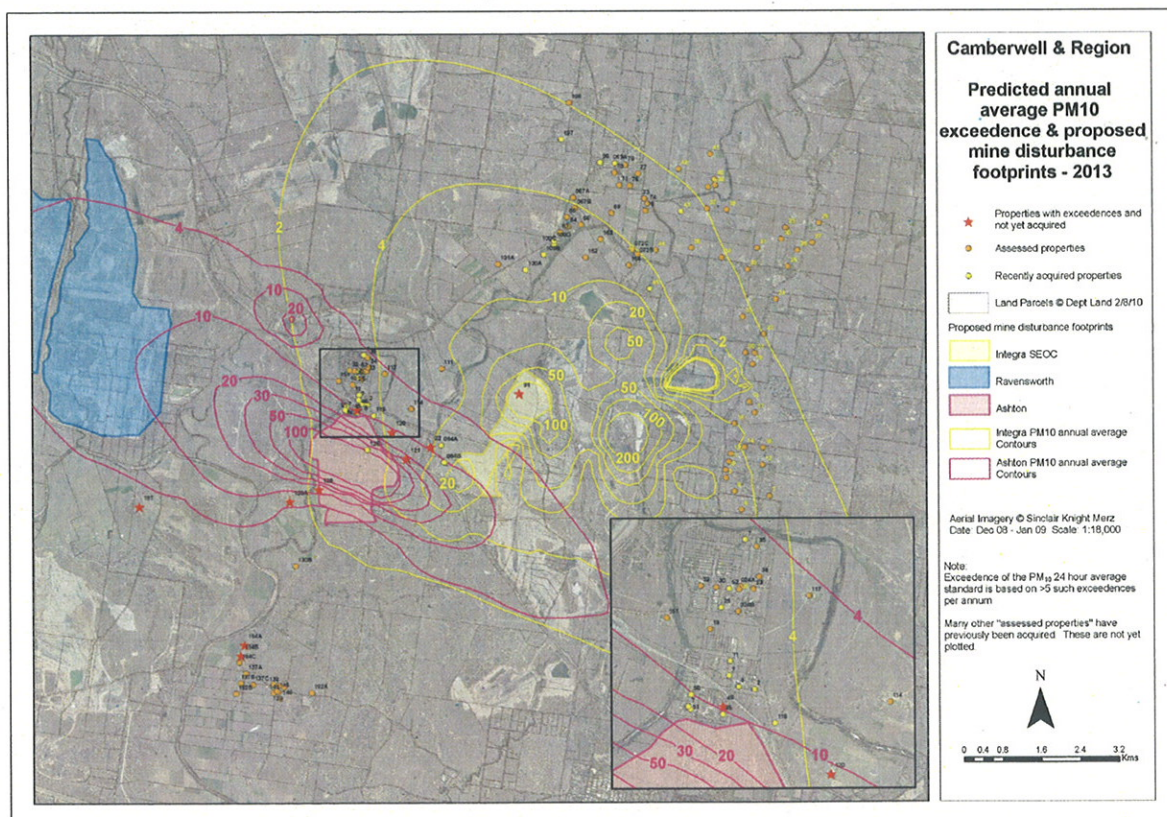


Figure 6: Predicted annual average PM₁₀ exceedances 2013

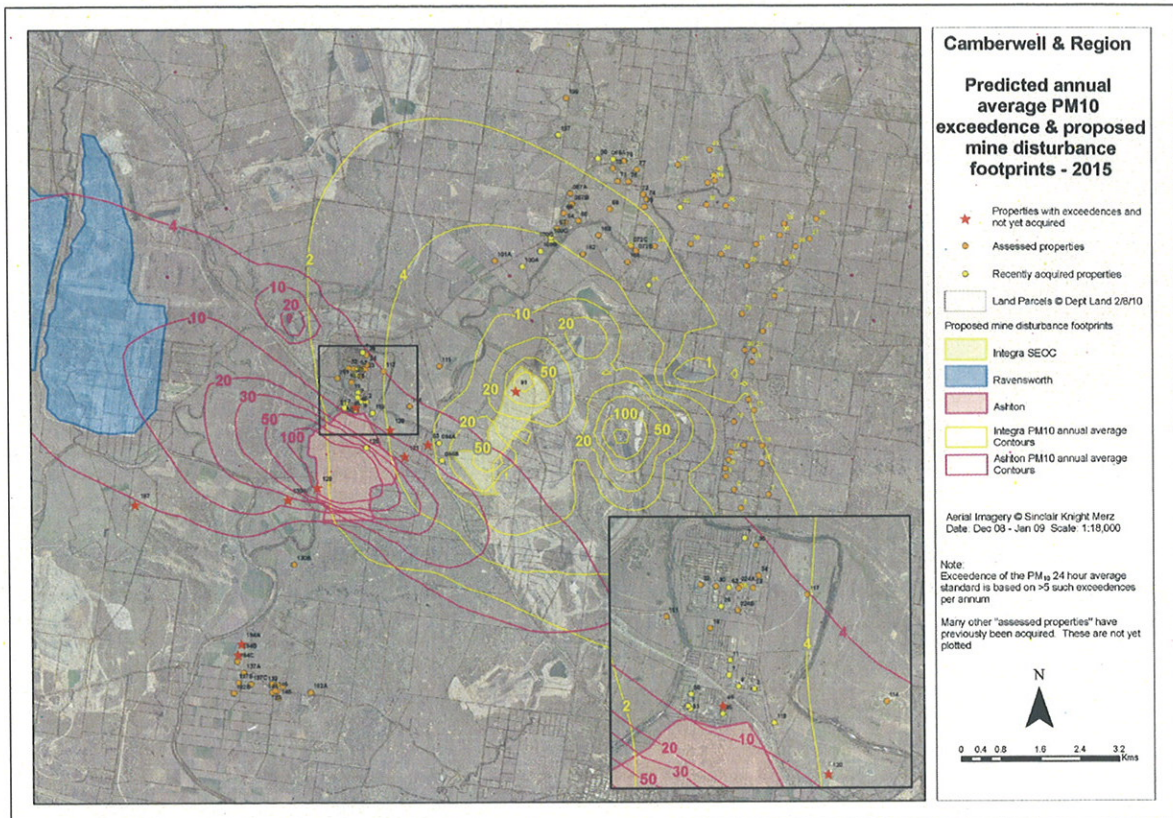


Figure 7: Predicted annual average PM₁₀ exceedances 2015

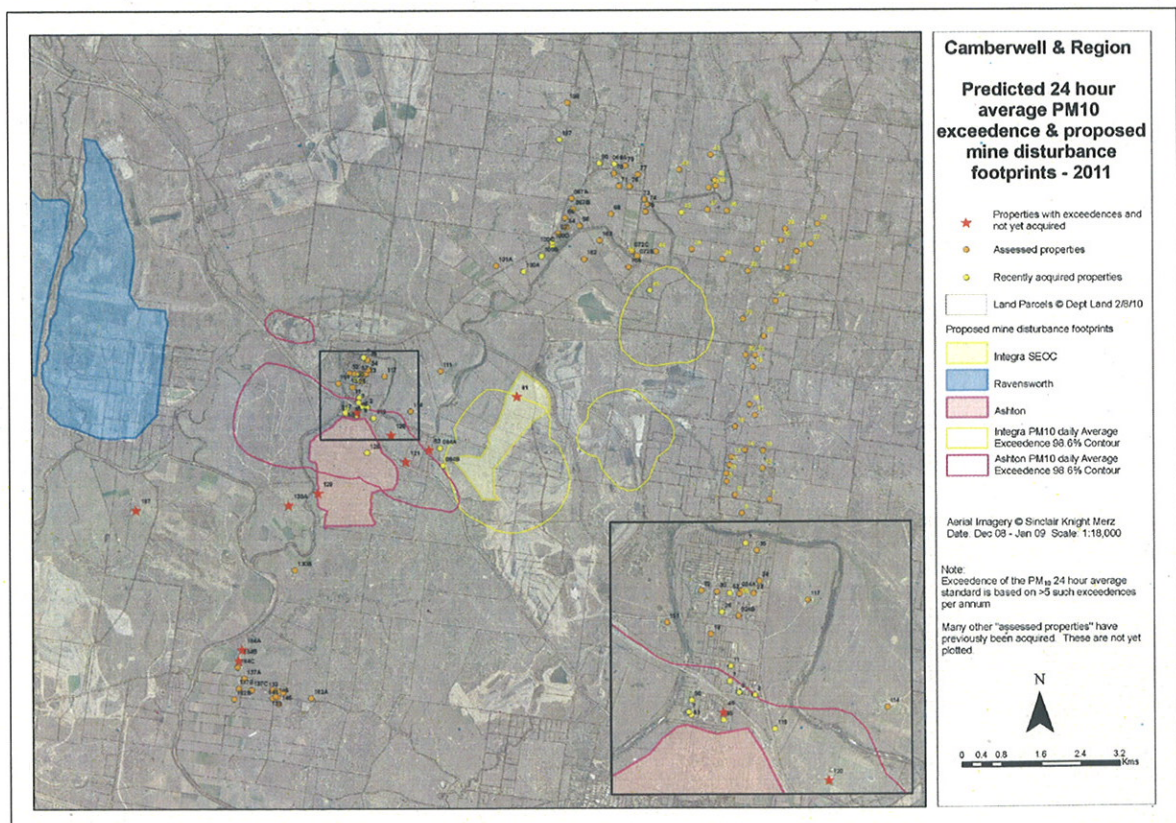


Figure 8: Predicted 24 hour average PM₁₀ exceedances 2011

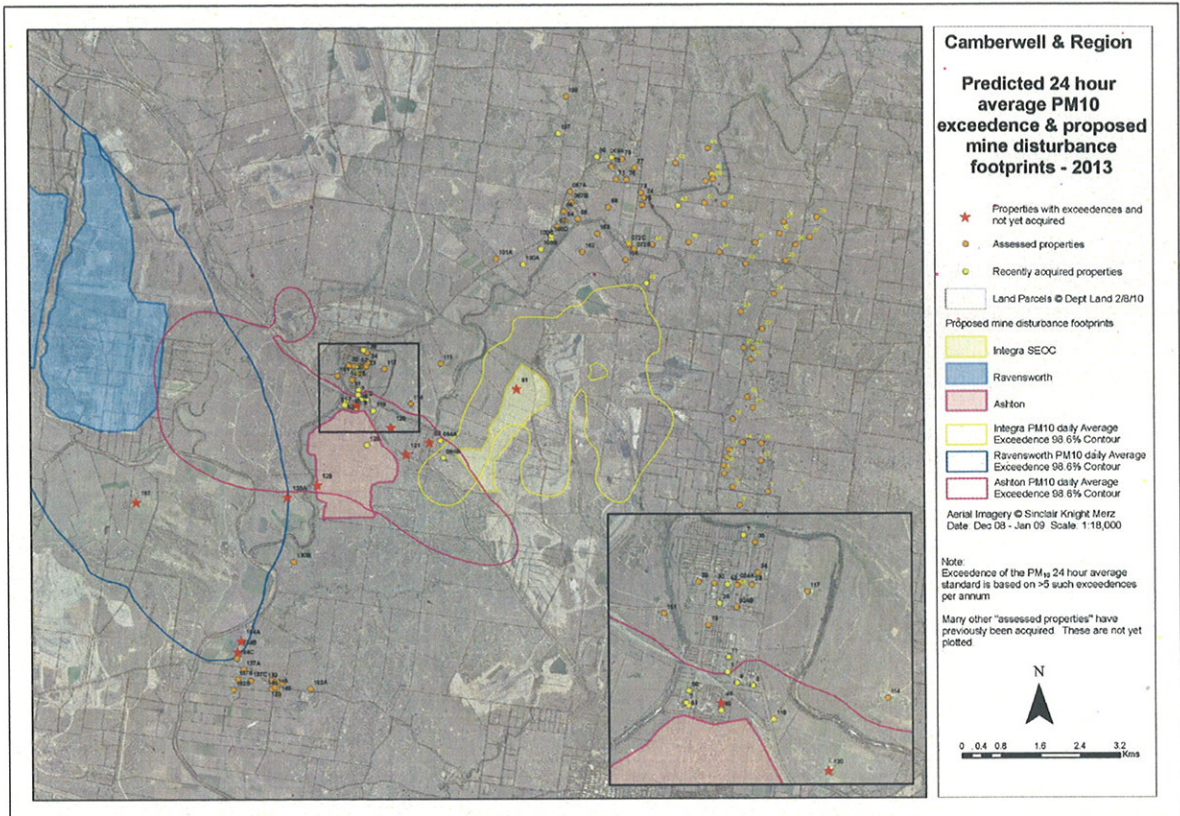


Figure 9: Predicted 24 hour average PM₁₀ exceedances 2013

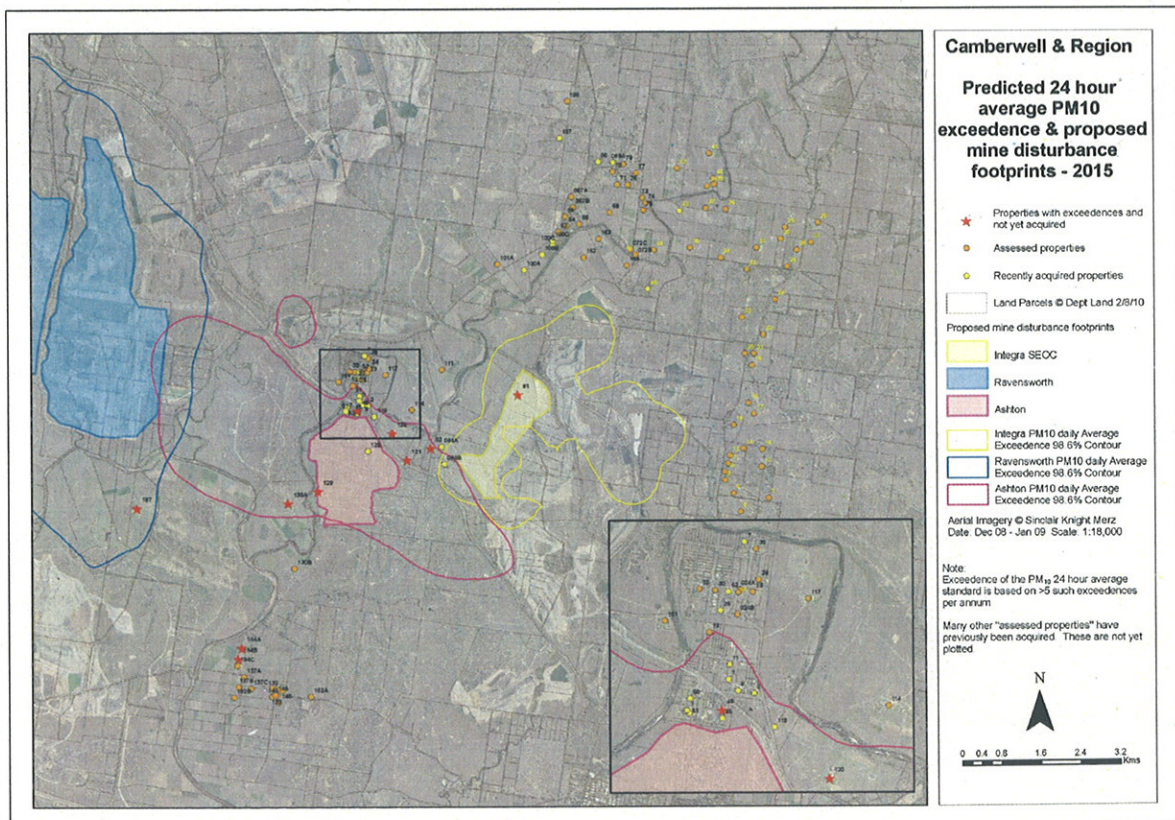


Figure 10: Predicted 24 hour average PM₁₀ exceedances 2015

Dulwich Property

During the exhibition period, the Department, DECCW and the owner of the Dulwich property all expressed concerns about the scale of the predicted impacts on the Dulwich property.

In response, Integra committed to implement a series of additional mitigation measures to further reduce the dust impacts on the property (see the response to Submissions in Appendix C). These measures include:

- realigning the main coal and waste haul road so it is not in alignment with the Dulwich residence and prevailing winds;
- using chemical dust suppressants on haul roads;
- removing soil to the south of the Dulwich homestead as a pre-operational campaign, rather than during Year 1 of mining operations;
- increasing the ROM coal moisture content in-pit;
- using water to control dust from drilling activities; and
- conducting blasting activities between the hours of 9 am and 5 pm (Monday to Saturday) only.

As shown in Table 2, the implementation of these additional measures would dramatically reduce the predicted dust impacts on the Dulwich property, to the extent where the project on its own would meet several of the applicable dust criteria. However, even with the implementation of these measures the Dulwich project is still likely to experience significant dust impacts during the first 3 years of the project.

Table 2: Assessment of dust impacts with and without additional proposed controls

Year	Project Alone								Project & Other Sources							
	PM10				TSP		Dust Deposition		PM10				TSP		Dust Deposition	
	24-hr (max)		Annual		Annual		Annual		24-hour		Annual		Annual		Annual	
	50		-		90		2		150		30		90		4	
	EA	RTS	EA	RTS	EA	RTS	EA	RTS	EA	RTS	EA	RTS	EA	RTS	EA	RTS
1	123	79	35	15	49	17	6.4	1.3	n/a	n/a	55	34	103	70	7.9	2.7
3	195	85	50	22	73	26	6.6	2.1	n/a	n/a	68	40	124	77	7.9	3.4
6	57	57	11	11	14	14	1.2	1.2	n/a	n/a	29	29	65	65	2.5	2.5

Notes:

- Figures in red indicate exceedances of the applicable criteria.
- It is not possible to accurately predict cumulative 24-hour average PM₁₀ concentrations using dispersion modelling when multiple proposed activities and projects are considered together.

While it would be preferable for the property to be unoccupied during at least the first three years of the project, the Department accepts that this may not occur.

Consequently, it has considered whether anything else could be done to further reduce the dust impacts of the project on the Dulwich property. In the Department's view, the only other measures that could be implemented are real-time, reactive management measures. These measures involve using a combination of real-time dust monitoring and weather forecasting to guide the day-to-day planning of mining operations and minimise dust impacts, particularly during adverse weather conditions.

While it is difficult to model the effects of such management, they have been found to be extremely effective at reducing the predicted impacts of several mining operations, and particularly the short-term dust impacts of these operations.

With the implementation of these measures, the Department is confident that Integra would be able to reduce the impacts of the project on the Dulwich property to below the predicted levels in Table 2. However, there are limits to the effectiveness of even these measures, and it is important to acknowledge that there would still be exceedances of the applicable criteria at the property. This is simply because the property would be extremely close to the proposed mining operations.

The Department has considered whether setting the proposed mining operations further back from the property would be justified, and has found that this would sterilise substantial amounts of coal and have limited effect on the dust impact of the project. Consequently, the Department does not support this approach.

Given the reasonably short duration of the predicted impacts, and the broader social and economic projects of the project, the Department considers the impacts to be justified in this instance.

Nevertheless, it believes Integra should be required to:

- implement all reasonable and feasible mitigation measures to minimise the dust impacts of the project on the Dulwich property, including real-time, reactive dust management measures;
- prepare an Air Quality Management Plan setting out these mitigation measures in detail; and
- acquire the Dulwich property upon request at any stage of the project.

Cumulative Impacts

The air quality assessment found that the project would:

- make a moderate contribution to the cumulative dust impacts at a number of properties in close proximity to the proposed open cut mining operations (see Figures 5-10), but that this contribution would only result in exceedances of the applicable PM₁₀ annual average criteria at the Richards property (87); and
- make a minor contribution to the cumulative dust levels at the other privately-owned properties surrounding the mine complex, including the properties in Camberwell Village.

In this regard, the Department notes that the Richards property is currently in the acquisition zone of the Glendell mine (which forms part of the large Mt Owen mine complex to the north of the Integra mine complex).

While the Department considers these predicted impacts to be acceptable, it believes Integra should be required to implement real time, reactive dust management measures on site to further reduce the predicted impacts of the project, and to acquire the Richards property upon request.

In summary, after a detailed consideration of the potential dust impacts of the project the Department has concluded that the project would:

- result in significant air quality impacts on the Dulwich property if it is not acquired and mined, and that these impacts would be greatest during the first few years of the project while mining is being carried out in close proximity to the property;
- make a moderate contribution to significant cumulative air quality impacts at the Richards property (87), principally in conjunction with the existing operation of the Glendell mine;
- make a moderate contribution to the dust levels of a few properties in close proximity to the proposed open cut mining operations, and a minor contribution to the dust levels at the remaining properties in the surrounding area (including the properties in the Camberwell Village), which are considered to be acceptable.

Notwithstanding this conclusion, the Department believes that Integra should be required to:

- acquire the properties where significant air quality exceedances are predicted to occur at the request of the landowner;
- comply with contemporary air quality criteria at all the properties outside the acquisition zone;
- acquire any property if dust emissions exceed the applicable land acquisition criteria;
- implement best practice air quality management on site, including all reasonable and feasible measures to minimise the dust emissions generated by the project;
- implement additional dust mitigation measures (such as installing first flush roof systems, air filters or air conditioning) at residences predicted to be significantly or moderately affected by the dust emissions of the project;
- co-ordinate the air quality management on site with the air quality management at nearby mines to minimise the cumulative air quality impacts of the mines;
- develop a comprehensive Air Quality Management Plan, which would describe the measures to be implemented to ensure compliance with the relevant conditions of approval, including the real-time air quality management system;
- notify affected landowners (including the tenants of mine-owned properties in the vicinity of the site) of the potential health impacts associated with mine dust;
- respond effectively to enquiries and complaints;
- commission an independent review of any potential exceedances of the applicable air quality criteria;
- publicly report on its environmental performance; and
- regularly review and audit its performance with a view to continually improving the performance of these operations over time.

5.2 Noise

The EA includes a specialist noise impact assessment undertaken by Heggies in accordance with the applicable guidelines, including the *NSW Industrial Noise Policy (INP)* and *Environmental Criteria for Road Traffic Noise (ECRTN)* (see Appendix F of the EA, which is attached as Appendix E).

At the request of both the Department and DECCW, this assessment was updated by ERM after the exhibition period to include an assessment of the cumulative noise impacts of the Integra mine complex as a whole, as the original assessment concentrated primarily on the potential impacts of the open cut project and underestimated the combined noise impacts of the open cut and underground mining operations at the complex (see the RTS in Appendix C).

The assessment assumed the implementation of a range of standard noise mitigation measures including:

- use of noise mitigated mobile equipment to achieve predicted noise emission noise levels (benchmarked against other mines in the area);
- implementation of real time noise monitoring and a process for reactive management; and
- where practical, carrying out evening and night time operations in shielded areas.

It then modelled the potential noise impacts of the entire Integra mine complex, and compared the predictions with the applicable noise criteria.

As there would be no increases in the number of employees or the production rates at the complex, the assessment concluded that the road and rail traffic noise impacts of the complex would remain much the same, and comply with the applicable noise criteria.

However, the assessment predicts that the combined operations of the Integra mine complex would result in exceedances of the applicable criteria at several properties at some stage over the next 9 years.

These predictions are summarised in Table 3, along with the Department's typical policy with regard to noise exceedances, and depicted in Figure 11.

Table 3: Summary of Operational Noise Impacts

Noise Exceedance	Management generally required at this level of exceedance	No. of affected private properties (all years)
Marginally Affected Residences (1-2dB exceedance)	Noise mitigation, if possible	12
Moderately Affected Residences (3-5dB exceedance)	Noise mitigation, including noise mitigation at residence	15
Significantly Affected Residences (>5dB exceedance)	Acquisition upon request	9 ¹
Significantly Affected Vacant Land (>5dB exceedance)	Acquisition upon request	2 ²
Total Properties Exceeding Noise Criteria		38

¹ 3 of these properties are already within a noise or dust affectation area under existing mining approvals.

² Where more than 25% of a property is affected.

Consistent with the predicted dust impacts of the complex, Figure 11 shows that the predicted noise exceedances of the complex would be concentrated around the three principal noise sources on site: the CHPP, the approved open cut mining operations in the northern mining area, and the proposed open cut mining operations in the western mining area (or the project).

The Department accepts that, apart from the implementation of real time, reactive noise management measures, there is limited scope for Integra to further reduce the predicted noise impacts of either the project or the complex as a whole.

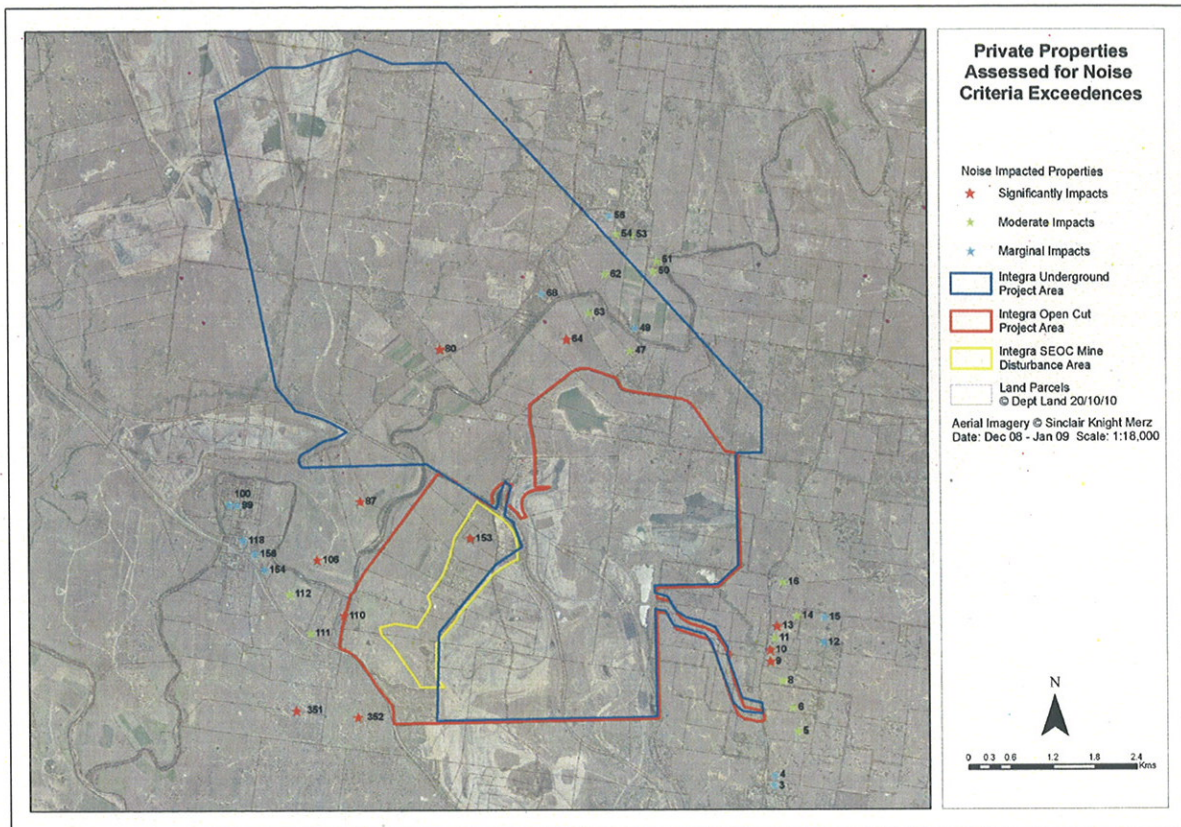


Figure 11: Location of Properties Exceeding Noise Criteria: Red Star (Significantly Affected Residences), Green Star (Moderately Affected Residences) and Blue Star (Marginally Affected Residences)

Nevertheless, it is important to note that 24 of the 38 predicted exceedances are due to the ongoing implementation of existing approved operations at the complex, principally around the CHPP and northern mining area, and not due to the project. In this regard, it should also be noted that none of the properties where significant exceedances are predicted to occur in the areas to the north and east of the mine complex are currently in the acquisition zone of the Integra mine complex.

This is principally due to the fact that the noise impacts of the open cut and underground mining operations have always been assessed separately, rather than as a combined operation. In the Department's view, this oversight should be corrected and these properties should be included in the complex's acquisition zone.

In relation to the open cut project on its own, Figure 11 shows that the project would result in:

- significant noise impacts on 6 properties (including two blocks of vacant land) in close proximity to the mine, and only 5 properties if the Dulwich property (87) is acquired and mined;
- moderate noise impacts on 2 properties (111 and 112); and
- minor noise impacts on further 5 privately-owned properties within the Camberwell Village.

The Department notes that 3 of the 6 properties that are predicted to experience significant noise impacts (153, 87 and 106) are already in the acquisition zones of either the Integra or Mt Owen mine complexes.

When the broader socio-economic benefits of the project are taken into account (see below), the Department considers these impacts to be acceptable.

Notwithstanding this conclusion, the Department believes that Integra should be required to:

- acquire the properties where significant noise exceedances are predicted to occur at the request of the landowner;
- comply with contemporary operational noise limits;
- implement all reasonable and feasible mitigation measures, including real-time, reactive noise management measures, to further reduce the noise impacts of the complex as a whole;

- implement additional noise mitigation measures (such as double-glazing, insulation and/or air conditioning) at the residences that are predicted to be significantly or moderately affected by the noise emissions of the complex as a whole;
- co-ordinate the noise management at the complex with the noise management at nearby mines to minimise the cumulative noise impacts of the mines;
- develop a comprehensive Noise Management Plan for the project;
- monitor and publicly report on its environmental performance;
- respond effectively to enquiries and complaints;
- commission an independent review of any potential exceedances of the applicable noise criteria; and
- regularly review and audit its environmental performance with a view to continually improving the performance of these operations over time.

5.3 Blasting

The EA includes a specialist blast impact assessment undertaken by Heggies Pty Ltd (see Appendix F of the EA, which is attached as Appendix E). This assessment was later supplemented with further specialist advice from Terrock Consulting Engineers (see the RTS in Appendix C).

Safety Risks

The project would involve blasting within 500 metres of the Northern Railway Line and Middle Falbrook Road. Based on previous experience, the Department is satisfied that the safety risks associated with this blasting can be appropriately managed, primarily via temporary closures to both the road and the railway, and has recommended conditions requiring Integra to obtain the necessary approvals for such closures.

Under the part pit scenario, Integra proposes to carry out blasting within 50 metres of the Dulwich property and 200 metres of the residence on the property. Terrock Consulting Engineers has provided specialist advice to suggest that with the implementation of suitable mitigation measures, the flyrock of any blasting could be controlled to within 50 metres of the blast with a probability of exceedance of 1×10^{-6} . While the Department has noted this advice, it remains concerned about the potential safety risks associated with blasting within 500 metres of the Dulwich property, and believes Integra should be required to either manage these risks in consultation with the landowner or prepare a detailed plan setting out the specific mitigation measures that would be implemented to ensure safety before it is allowed to blast any closer to the property.

Consequently, the Department has recommended a condition restricting blasting to within 500 metres of any privately-owned land or land not owned by Integra unless Integra has:

- a written agreement with the landowner to allow blasting to be carried out closer to the land; or
- demonstrated to the satisfaction of the Director-General that the blasting can be carried out without compromising the safety of people or livestock on the land, and updated the Blast Management Plan for the mine complex to include the specific measures that would be implemented to ensure this occurs.

Amenity and Structural Damage

With regard to amenity and structural damage impacts, the relevant blast criteria are presented in Table 4.

Table 4: Blast Criteria

Blast Impact	Amenity Criteria*	Structural Damage Criteria**
Airblast Overpressure	115 dB for 95% of blasts in any year 120 dB for 100% of blasts	133 dB
Ground Vibration	5 mm/sec for 95% of blasts in any year 10 mm/sec for 100% of blasts	10 mm/sec

* ANZEC Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration

** Australian Standard AS2187.2-2006 Explosives – Storage, Transport and Use (houses and low-rise residential buildings).

The blast assessment indicates that the blasting impacts of the project can be suitably controlled to comply with these criteria at all times.

While Integra was originally proposing to carry out up to 5 blasts a day in the western mining area, both the Department and DECCW believe that Integra should be restricted to a maximum of 1 blast a day in accordance with the recommended blast frequency in the ANZEC guidelines.

Based on its assessment, the Department has concluded that the blasting associated with the project can be suitably managed or restricted to minimise any safety risks to acceptable levels, and comply with the applicable criteria for amenity and structural damage.

To ensure this occurs, the Department believes Integra should be required to:

- comply with the relevant blasting criteria;
- restrict blasting on site to between 9am and 5pm Monday to Saturday, with no blasting on Sundays or public holidays;
- carry out a maximum of 1 blast a day in the western mining area, and 10 blasts a week at the Integra mine complex averaged over a 12 month period;
- establish the baseline condition of any buildings or structures on private land within 2 kilometres of the approved open cut mining pits on site, at the request of any landowner;
- implement best blasting management practice on site to:
 - protect the safety of people and livestock in the surrounding area;
 - protect private and public property in the surrounding area; and
 - minimise the dust and fume emissions of the blasting;
- coordinate blast management on site with the blast management at nearby mines to minimise the cumulative blasting impacts of the mines;
- prepare and implement a detailed Blast Management Plan for the project;
- monitor and publically report on its blasting performance;
- commission an independent review of any claims that the project has damaged property on private land; and
- review and audit its blasting performance regularly with a view to continuously improving this performance over time.

5.4 Water

The EA includes specialist surface and groundwater impact assessments, undertaken by Geoterra and WRM Water & Environment respectively (see Appendices C & D of the EA, which is attached as Appendix E).

These assessments provide baseline information on the surface and groundwater resources in the surrounding area, including information on water flows/levels and quality, and assess the potential impacts of the project on these water resources.

Water Balance

Water balance modelling indicates that the project would result in a marginal increase in the water demand of the Integra mine complex (see Table 5), and that this demand could be met with a high degree of reliability (>90%) from existing water sources on site. In dry years, Integra proposes to either reduce the supply of water to the Ashton mine or extract water from Glennies Creek under its existing licence (230ML).

Table 5: Water Balance Model Results, Project Year 4 and Year 8.

		<i>Mean Annual Volume (ML)</i>		
		<i>Existing</i>	<i>Project Year 4</i>	<i>Project Year 8</i>
Inflows	<i>Seepage to Portal Sump</i>	511	511	511
	<i>Seepage to D1</i>	292	292	292
	<i>Pumping from South Pit</i>	433	521	491
	<i>Pumping from North Open Cut</i>	0	102	99
	<i>Net Inflow from Underground</i>	110	336	206
	<i>Surface runoff – dirty water system (excluding pits)</i>	324	338	335
	<i>Harvest from clean water system</i>	253	110	190
	Total	1923	2210	2124
Outflows	<i>CHPP</i>	1076 (98 %)	1096	1096
	<i>Dust Suppression</i>	439 (85 %)	643	608
	<i>Ashton</i>	343 (85 %)	381	359
	<i>Net evaporation from storages</i>	69	95	67

Spills from Dirty Water Containment Dams	0	0	0
Total	1927	2215	2130

Both the Department and NOW are satisfied that Integra would have sufficient water supply for all stages of the project under the full array of weather conditions.

Surface Water

The project is located in the Glennies Creek catchment, which includes the Station Creek and Stony/Reedy Creek sub-catchments (see Figure 12). While Glennies Creek is an important creek within the region, linking the Lake St Clair dam to the Hunter River, both Station Creek and Stony/Reedy Creek are ephemeral creeks. Salinity in Glennies Creek averages between 335 to 500 $\mu\text{S}/\text{cm}$, with a maximum of only 950 $\mu\text{S}/\text{cm}$ recorded since 2002, and between 100 $\mu\text{S}/\text{cm}$ to 1,900 $\mu\text{S}/\text{cm}$ in Station Creek.

As indicated in Table 6, the project would result in a small reduction of the catchment area (2%) while active mining is occurring. However, it is important to recognise that most of this land would be progressively rehabilitated, and ultimately returned to the catchment upon the completion of mining operations (see Figure 16).

Table 6: Local Creek Catchment Changes

Catchment	Before Mining	Catchment Area (km^2)	
		Area of Catchment Affected by Project (existing) (km^2)	Area of Catchment Affected by Project (existing & proposed) (km^2)
Glennies Creek (excluding Station Creek & Reedy Creek)	474	0.5	1.3
Station Creek catchment	24	6.6	8.3
Stony/Reedy Creek catchment	14	0	0.3
Total	512	7.1	9.9

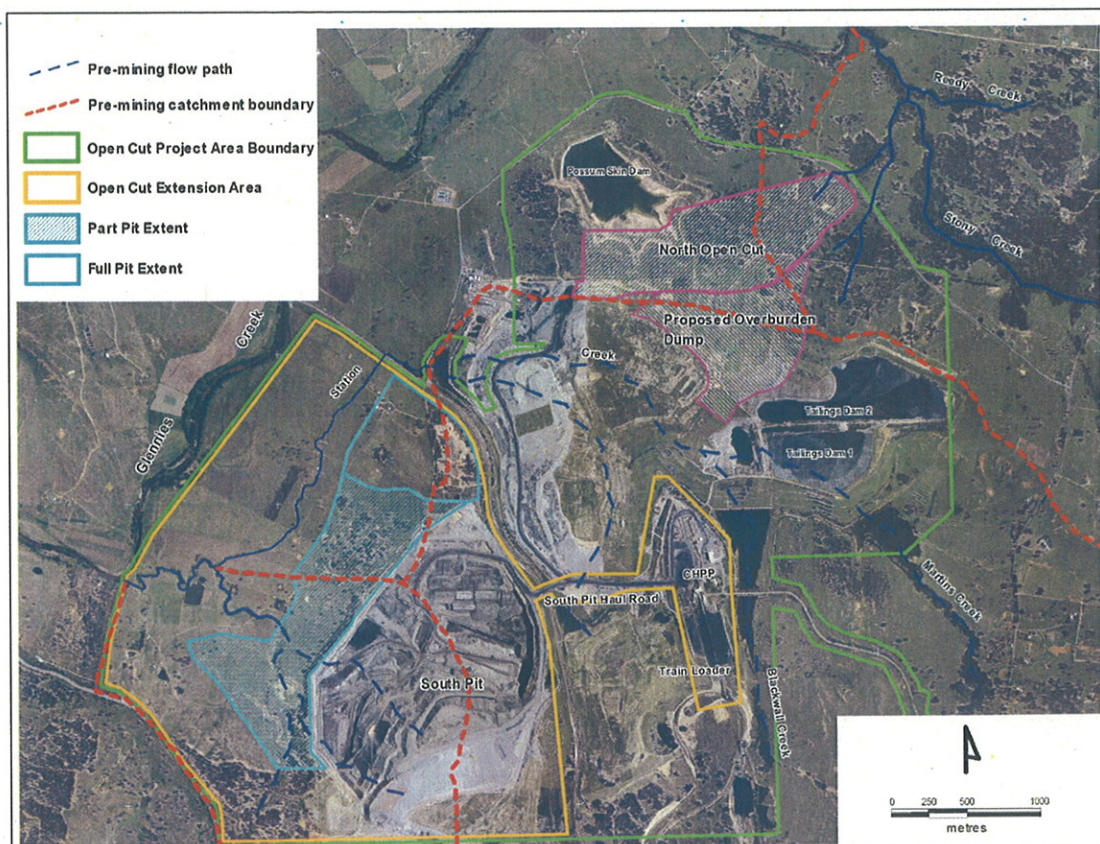


Figure 12: Location of Proposed South Pit Extension Area, Pre-mining Catchment Boundaries and Flow Paths

The assessment predicts this reduction in the size of the catchment area would have no observable impact on stream flows in Station or Glennies Creeks. The Department considers this loss of flow to be negligible, and therefore acceptable.

The assessment also predicts that the project is unlikely to significantly affect the water quality of the surrounding watercourses. This is principally because:

- all "dirty water" would be captured and reused on site during mining operations, and there would be more than enough storage capacity on site to store this water even in wet weather conditions;
- the project is unlikely to significantly alter the surface water flows in these watercourses over time;
- the waste rock at the mine is not potentially acid generating; and
- the proposed final void would be designed as a permanent sink, and consequently the polluted water in the void is not expected to have any impact on surface water quality in the future.

Groundwater

The groundwater impact assessment indicates that there are two key aquifers in the area: the coal measures and the alluvial sediments associated with both Glennies and Station Creeks (see Figure 13).

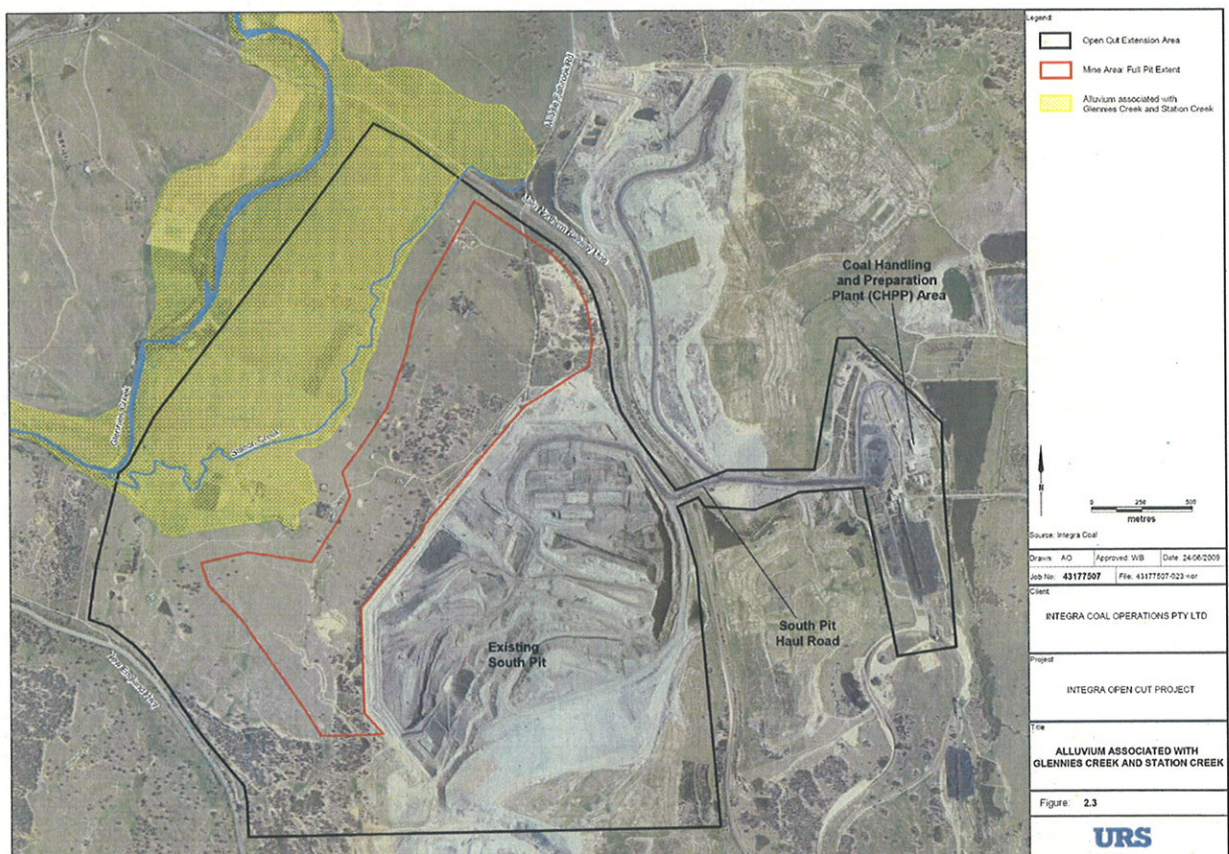


Figure 13: Alluvium associated with Glennies Creek and Station Creek relative to the South Pit Extension

Groundwater monitoring results indicate that the groundwater yields of the coal measures are very low, and that the permeability of the alluvial sediments is low.

The assessment predicted that the project would:

- avoid any direct impact on the alluvial sediments because it would be setback at least 150 metres from the Station Creek alluvium and 350 metres from the Glennies Creek alluvium, and therefore comply with NOW's guidelines;
- depressurise the coal seam measures in the vicinity of the site, in addition to the already extensive depressurisation caused by surrounding mining operations, and that this depressurisation would result in a minor drawdown (<2 metres) of water levels in the alluvial sediments associated with both Glennies and Station Creeks, although this drawdown is not expected to extend as far as the Glennies Creek channel itself;

- increase baseflow losses to Glennies Creek from 3.1 ML to 4.2 ML a year, which is considered to be negligible; and
- affect the yield of 4 registered groundwater bores in the vicinity of the site, although only one of these bores appears to be currently active (Richards 87), and this bore is expected to experience a drawdown of less than 1 metre.

While these impacts are considered to be negligible, and well within the realms of the existing groundwater licensing regime, NOW was critical of the assessment, noting that it had not properly assessed the potential connectivity between the open cut pit and the alluvial sediments via a known geological structure in the area.

To address NOW's concerns, Integra committed to:

- ongoing verification of EA predictions, during and after operations, and the implementation of contingency measures to address any variation from predictions made; and
- mapping the known geological structure prior to any excavation of the western periphery of the proposed pit extension.

NOW was satisfied with these commitments.

While the Department is satisfied that the project can be suitably managed to ensure there are no significant impacts on the region's surface or groundwater resources, it believes Integra should be required to:

- offset the loss of any base flow to the surrounding water courses and/or associated creeks caused by the project;
- provide compensatory water supplies to any landowner whose supplies are adversely affected by the project;
- ensure that no open cut mining operations are carried out within 150 m of Glennies Creek and Station Creek alluvial aquifers without the written approval of the Director-General;
- publicly report on its environmental performance; and
- develop a comprehensive Water Management Plan for the mine complex in consultation with DECCW and NOW, including:
 - a site water balance;
 - an erosion and sediment control plan;
 - a surface water management plan, including a program to monitor and assess surface water flows and quality, impacts on water users and stream health;
 - a groundwater management plan; and
 - a surface and groundwater response plan, to identify, investigate and mitigate any water related impacts.

5.5 Biodiversity

The EA includes a biodiversity impact assessment undertaken by URS in accordance with the *Draft Guidelines for Threatened Species Assessment* (see Appendix E of the EA, which is attached as Appendix E).

This assessment included a literature review of previous studies in the area as well as targeted flora and fauna surveys to determine the conservation value of the site, and an assessment of the potential biodiversity impacts of the project paying particular attention to its ability to affect the endangered ecological communities (EECs) and threatened species habitat on the site.

The literature review and surveys identified:

- 6 vegetation communities on site (see Figure 14), including 19 hectares of the Central Hunter Box – Ironbark Woodland EEC;
- 88 flora species, including a few specimens of the *Goodenia cycloptera* threatened flora species within the broader Central Hunter Box – Ironbark Woodland EEC; and
- 84 fauna species, comprising 6 frogs, 52 birds, 17 mammals (including 10 microbats), 4 reptiles and 5 fish.

The assessment concluded that the site is dominated by cleared grassland that has been used for agriculture for decades, and has limited conservation value.

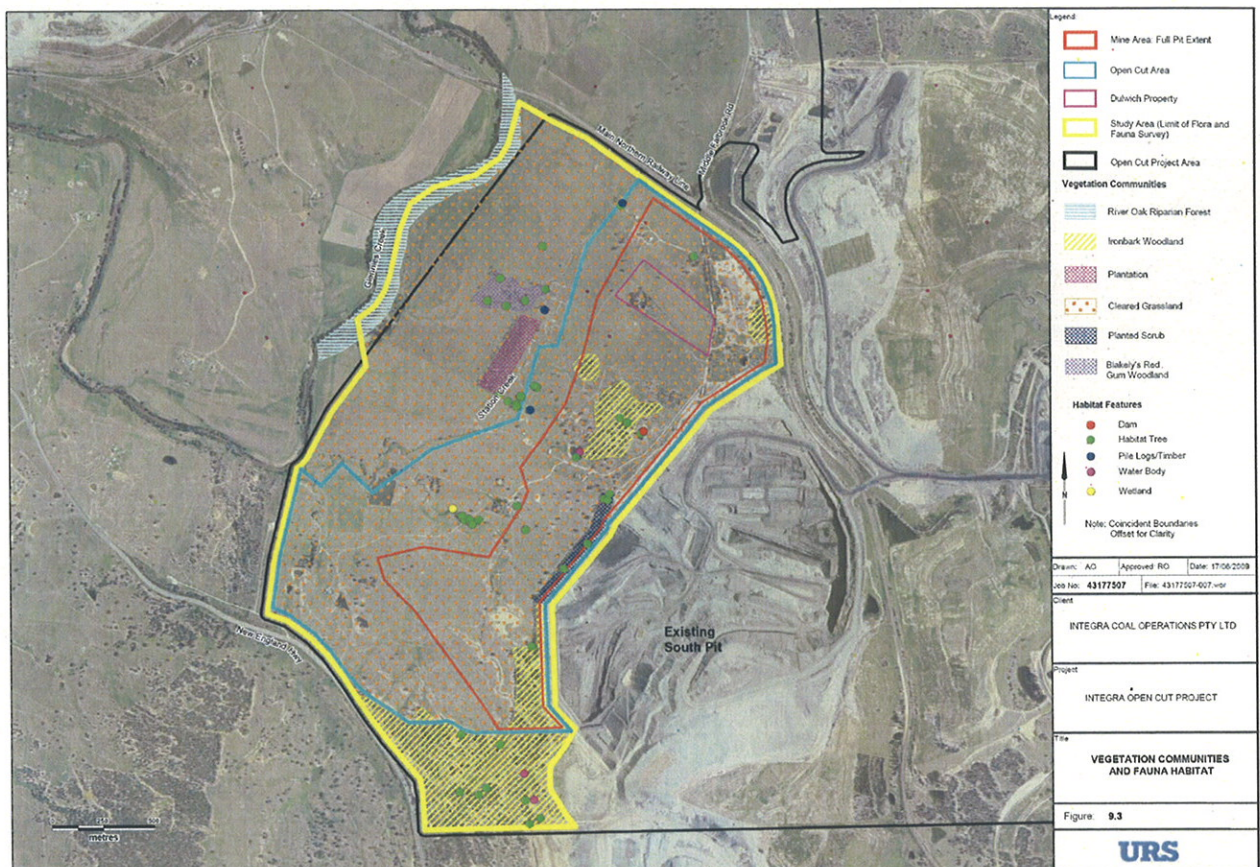


Figure 14: Vegetation Communities and Fauna Habitat

The project would:

- disturb 283 hectares of the site, including 19 hectares of the Central Hunter Box – Ironbark Woodland EEC; 260 ha of cleared grassland and 4 hectares of planted scrub;
- remove the identified specimens of *Goodenia cycloptera* threatened species; and
- destroy the habitat of at least 5 threatened fauna species (Squirrel Glider; Grey-crowned Babbler; and Eastern Bent-wing, Eastern Free-tail and Yellow-bellied Sheathtail Bats).

The Department accepts that the clearing of this vegetation and destruction of habitat is unavoidable, and justified in the context of the broader benefits of the project.

Integra proposes to:

- minimise the impacts of the project by undertaking pre-clearance surveys, encouraging the relocation of any fauna on site, and salvaging and reusing the resources on site for habitat enhancement either in the proposed offset area or on the rehabilitated site;
- upgrade the degraded riparian habitat along Station Creek and Glennies Creek;
- offset the residual impacts of the project by conserving 77 hectares of land adjacent to its existing offset areas to the north of the mine complex (see Figure 15); and
- progressively rehabilitate the site following mining, and plant a range of native species within the rehabilitated site (including the Central Hunter Box – Ironbark Woodland EEC) to provide a vegetated corridor across the site linking the remnant vegetation to the south of the mine complex with the offset areas to the north of the mine complex (see Figure 15).



Figure 15: Proposed South Pit Extension Biodiversity Offset Study Area¹ and Northern and Supplementary Biodiversity Offset Areas



Figure 16: Final Rehabilitation Plan – Integra Open Cut Project Area

¹ This area of 86 ha is known as the Bridgman Offset Area and, apart from the 77 ha proposed to offset the impacts of the open cut project, also contains 9 ha of Central Hunter Swamp Oak Forest proposed to offset the impacts of the Integra Underground Project, as part of a combined offset package for the mine complex.

The proposed offset area comprises 61 hectares of Narrow-leaf Ironbark – Grey Box Forest which equates to the Central Hunter Box – Ironbark Woodland EEC that would be cleared, and 16 hectares of cleared land (see Figure 17). Geoff Cunningham Natural Resource Consultants has surveyed the vegetation within the proposed offset area, and concluded that it is of better quality than the vegetation that would be cleared, and would augment the existing offset area to provide a large stand of good quality vegetation.

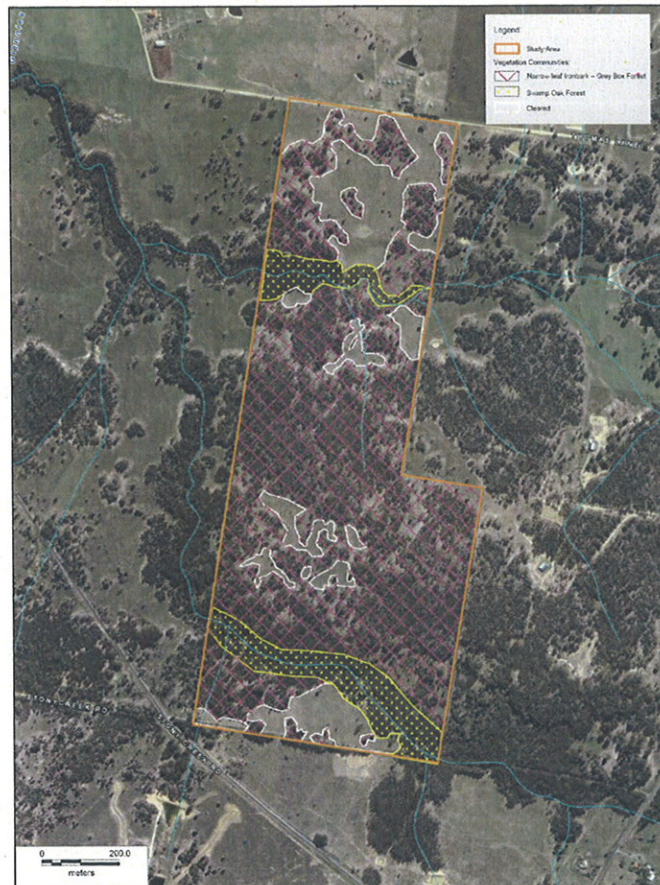


Figure 17: Bridgman Offset Area containing proposed South Pit Extension Biodiversity Offset Area

Both the Department and DECCW support Integra's proposed measures, and are satisfied that they would improve the conservation value of the region in the medium to long term.

Nevertheless, the Department believes Integra should be required to:

- implement the proposed offset strategy;
- make suitable arrangements for the long term protection of the offset areas;
- prepare and implement a detailed Biodiversity Management Plan for the project setting out the detailed measures that would be implemented to enhance the conservation value of both the site and offset areas;
- lodge a conservation bond with the Department to ensure that the offset strategy is properly implemented;
- review and publicly report on its environmental performance; and
- regularly review and audit this environmental performance with a view to continually improving this performance over time.

5.6 Heritage

The EA includes a specialist Aboriginal heritage impact assessment undertaken by Navin Officer Heritage Consultants, in consultation with local Aboriginal groups, and a specialist assessment of the other potential heritage impacts of the project undertaken by NEXUS Archaeology and Heritage (see Appendices H and I in the EA, which is attached as Appendix E).

These assessments included a literature review of previous studies and site specific surveys to determine the heritage values of the site and its surrounds, although it should be noted that no Aboriginal heritage surveys were carried out on the Dulwich property², and then assessed the potential impacts of the project on these heritage values.

Aboriginal Heritage

67 Aboriginal sites were recorded in the broader project area, (see Figure 16), including:

- 49 artefact scatters;
- 15 isolated finds; and
- 3 scarred trees.

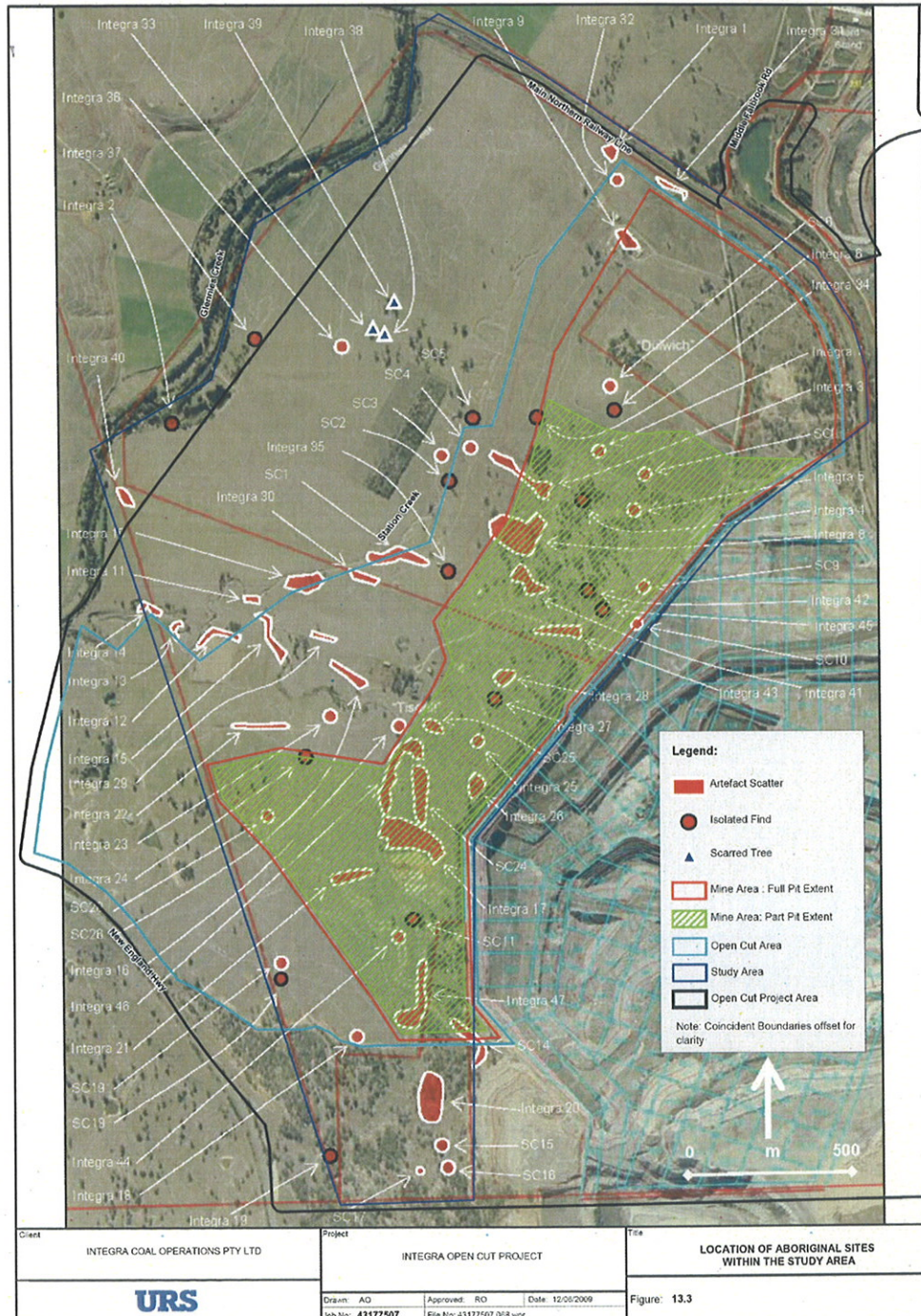


Figure 18: Surveyed Aboriginal Heritage Sites – Western Extension Area

² The Aboriginal heritage study area does not include the Dulwich property or a neighboring paddock with horses, as the study was undertaken during the outbreak of equine influenza. To capture the unsurveyed area, the Department has recommended a condition requiring Integra to conduct an Aboriginal heritage survey of Dulwich, prior to undertaking any mining activities within 200 m of the Dulwich property boundary or 500 m of the Dulwich homestead.

The assessment ranked the majority of these sites to be of low or moderate cultural significance.

The project would destroy 34 sites within the open cut pit mining area, up to 19 additional sites within the surrounding disturbance area, and an undetermined number of sites on the Dulwich property.

Both the Department and DECCW accept that these impacts are unavoidable, and justified when the broader benefits of the project are considered.

Integra proposes to:

- conserve the sites that would not be directly affected by the project, including the 3 scarred trees;
- record, salvage and manage the Aboriginal sites that are to be destroyed in the open cut area, and undertake targeted sub-surface investigations of some of these site with the local Aboriginal groups;
- provide a "keeping place" for the storage of all the cultural material to be collected on site; and
- involve the Aboriginal community in the conservation and management of Aboriginal cultural heritage on site.

Both the Department and DECCW are satisfied with the proposed measures, and believe Integra should be required to:

- carry out further surveys on the Dulwich property if it is going to be mined; and
- prepare a detailed Heritage Management Plan for the project that describes the specific measures that would be implemented to conserve and manage the Aboriginal heritage values within the broader project area.

Other Heritage

The heritage assessment identified 10 heritage items either on or in the vicinity of the project area (see Table 7), but failed to find most of these heritage items.

Eight of the identified items relate to the development of the land using convict labour, once it was granted to James Glennie in the 1820s, and include at least one known grave site. The other two items relate to the current Dulwich property, and include the Dulwich Homestead which was constructed in the 1870s.

Table 7 - Heritage Items Either On (Or In The Vicinity Of) The Project Area

Site Name	Predicted Impact
1 James Glennie Land Grant and Homestead	
a) First Phase – homestead and convict quarters	Nil
b) Second Phase – homestead and convict quarters	Likely
c) Possible tracks. Roads and Glennies Creek crossing	Nil
d) Farm outbuildings	Possible - location unconfirmed
e) Grave Site – possibly James Halliday Glennie	Likely
f) Grave Site – possibly Charles Bates	Possible - location unconfirmed
g) Dulwich Inn	Nil
h) Greyhound Inn	Nil
2 Dulwich Homestead	
a) House structure including outbuildings, formal gardens	Likely
b) Original stables and coach house	Likely - location unconfirmed

The Dulwich Homestead is listed as an item of local heritage significance in the Singleton LEP, while both the homestead and the known grave site are considered to be significant heritage items by the National Trust of Australia (see Figures 19 and 20).



Figure 19: *Dulwich Homestead (circa 1870)*



Figure 20: *Grave of James Halliday Glennie*

The assessment predicted that 6 of the 10 heritage items would be affected by the project, including the Dulwich Homestead and known grave site. However, it concluded that there would be little benefit in relocating the Dulwich Homestead to another site because its historical context would be lost forever, and that the impacts of the project as a whole should be considered as of local (and potentially regional) significance.

To minimise the impacts of the project, the assessment recommended that:

- further archaeological investigations be carried out in the areas marked as Zone 1 and 2 on Figure 21;
- further archaeological investigations and archival recording be carried out on the Dulwich property if it is to be mined;
- a detailed conservation management plan be prepared for the Dulwich property (subject to the agreement of the landowner) if it is not to be mined; and
- the known grave site be excavated and relocated in accordance with a detailed management plan that has been prepared by a suitably qualified forensic anthropologist in consultation with any descendants of the Glennie family.

While the Department accepts that the predicted heritage impacts of the project are unavoidable, and justified when the broader social and economic benefits of the project are taken into consideration, it believes that some of the archaeological deposits both on the site, and on Integra's land adjoining the site could be of State heritage significance, as they may contain items that:

- are important in the course, or pattern, of NSW's cultural or natural history;
- have potential to yield information that will contribute to an understanding of NSW's cultural or natural history; and
- possess uncommon, rare or endangered aspects of NSW's cultural history.

Consequently, it believes Integra should be required to carry out detailed archaeological investigations of the northern portion of the site before it is allowed to be mined, as well as of the areas to the north of the site with potential archaeological significance (see the area outlined in purple on Figure 21 below).

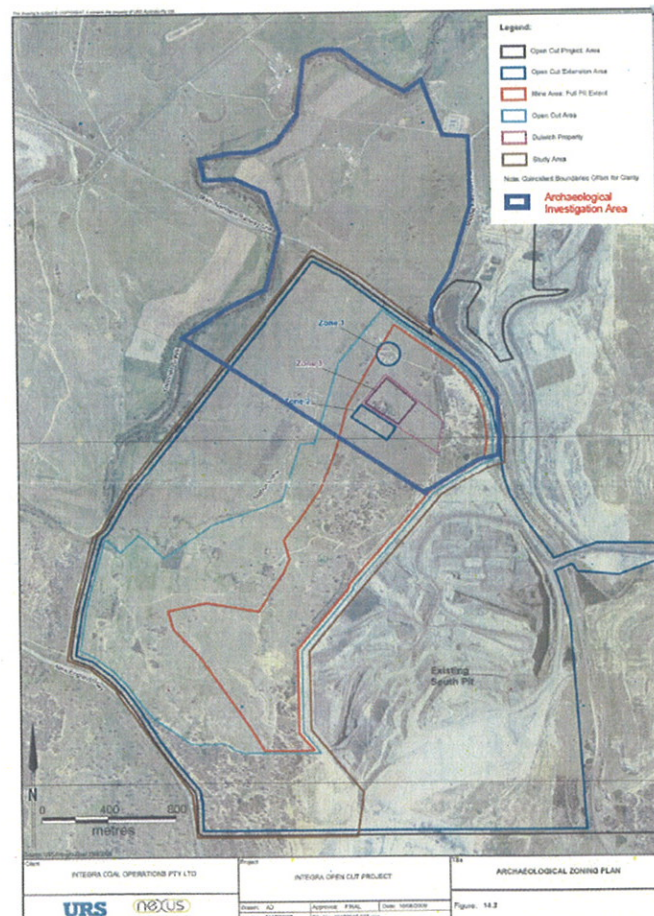


Figure 21: Areas of Potential Archaeological Significance

In the Department's view, these investigations are likely to yield important information that will enrich the community's understanding of the early development of the Hunter Valley.

Consequently, the Department has recommended conditions requiring Integra to:

- carry out further archaeological testing and investigations of the potential archaeological resources within the area outline in purple on Figure 21;
- excavate and relocate the known grave site in consultation with any descendants of the Glennie family;
- prepare a detailed archival recording of the Dulwich Property if it is to be mined;
- prepare a detailed conservation management plan for the Dulwich property if it is not to be mined (subject to the agreement of the landowner); and
- prepare and implement a detailed Heritage Management Plan for the project, setting out the measures that would be implemented to conserve, minimise and manage the potential impacts of the project on both Aboriginal and non-Aboriginal heritage values of the area.

5.7 Visual Impacts

The EA includes a specialist visual impact assessment undertaken by Green Bean Design Landscape Architects (see Appendix K in the EA, which is attached as Appendix E).

This assessment considered the potential impacts of the project on views from the surrounding rural-residential properties as well as public corridors, such as the New England Highway and Main Northern Railway.

Due to the extensive open cut mining operations in the region, both at the Integra mine complex and the adjoining mines, the assessment concluded that the visual absorption capability³ of the surrounding landscape was moderate to high, and the project was unlikely to have significant visual impacts on most of the properties in the vicinity of the site.

The only exceptions to this would be:

- the Dulwich property under the part pit scenario, where significant visual impacts would be unavoidable due to the short distance between the mine and the property; and
- properties 106, 110, 111 and 112, where there would be medium to high visual impacts at various stages of the proposed mining operations, again due to the relatively short distance between the mine and these properties which are all located to the south-west of the mine complex (see Figure 11).

To minimise these impacts, Integra proposes to:

- construct a number of visual bunds around the mining operations and plant landscape screens; and
- implement a range of standard measures to minimise lighting impacts from the project.

The Department is satisfied with these proposed mitigation measures, but believes Integra should be required to implement additional visual mitigation measures (such as vegetation screening) at the residences of all the properties where moderate to significant visual impacts are predicted at the request of any of the owners of these properties.

Consequently, the Department has recommended conditions that would require Integra to:

- minimise the visual amenity and lighting impacts of the project; and
- implement additional visual mitigation measures residence on the Dulwich property as well as the properties where moderate to significant visual impacts are predicted at the request of any of the owners of these properties.

5.8 Other Key Issues

The assessment raised several other issues that are addressed in Table 7 below.

³ The relative ability of the landscape to accept human modifications and alterations without the loss of landscape character or deterioration of visual amenity.

Table 6: Assessment of Other Issues

Issue	Consideration	Conclusion
Greenhouse Gas	- The proposal would generate direct and indirect greenhouse gas emissions (GHGEs) that would contribute to global warming and climate change. - The EA includes a detailed greenhouse gas emissions assessment, undertaken by Holmes Air Sciences in accordance with the Commonwealth's <i>National Greenhouse Accounts (NGA) Factors</i> (2008). - The assessment calculates direct and indirect GHGEs associated with the project, including Scope 1 emissions (direct GHGEs from sources controlled by Integra), Scope 2 emissions (indirect emissions associated with the import of electricity to the project) and Scope 3 emissions (other indirect emissions, such as those associated with the downstream combustion of product coal). - The project (assuming full pit extraction) would generate 2,836 Mt CO₂-e of direct GHGEs and a total of 54,639 Mt CO₂-e over the project's life. The most significant source (61%) of Integra's <i>direct</i> GHGEs is from fugitive methane gas released from coal seams during the mining process. However, the emissions associated with the burning of the product coal (ie <i>indirect</i> emissions) would generate the greatest amount of GHGEs at 51,778 Mt CO₂-e over the life of the project. Emissions from mining and burning coal from the project are estimated to contribute 0.2% to global CO₂-e annual emissions from fuel burning.	- The Department is satisfied that the predicted increase in global surface temperature of 0.00005°C produced by the project would not result in a measurable environmental effect and represents a negligible contribution to national and global GHGEs. - Nevertheless, the Department has recommended that Integra be required to: - implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site. - prepare and implement a detailed Air Quality & Greenhouse Gas Management Plan for the Integra mine complex in consultation with DECCW.
Transport	- The project has the potential to impact on the local road and rail network. - Access to the project would be via the existing site access road located off Bridgeman Road (see Figures 3 and 4). The existing Integra Open Cut activities generate an average of 512 vehicle movements (to and from the site) per day. The assessment indicates that as the project would represent a continuation of existing activities, traffic volumes are not expected to increase. - All coal extracted from the project would be transported from the CHPP by rail. The project would not alter the approved product coal transport system or volumes. Accordingly, there would be no additional train movements as a result of the project. - Blasting within the northern half of the proposed pit extension would require the closure of Middle Falbrook Road for up to 10 minutes per blast. Integra has committed to minimising the duration of road closures during blasting and notifying nearby residents of blast times on the morning prior to blasts.	- The Department is satisfied that traffic impacts of the project would be consistent with the impact of the existing operations at the mine complex. - Nevertheless, the Department has recommended that Integra be required to: - dispatch no more than 7 trains a day from the site; - dispatch no more than 3 trains a day from the site, when averaged over each calendar year; - keep accurate records of the: - amount of coal transported from the site (on a monthly basis); and - date and time of each train movement from the site; and - make these records publicly available on its website at the end of each calendar year.
Waste	- The project would generate additional waste products, including coal tailings and rejects. - The EA has estimated that 15.9Mt of coarse rejects and 2.6Mt of fine rejects (tailings) would be generated up to 2018, and that 7.3Mt of coarse rejects and 1.5Mt of tailings would be generated from 2018 to 2031. - As a result of the proposal, Integra's existing coal reject and tailings disposal areas have insufficient capacity to accommodate all the waste that would be generated during the proposed life of the Integra mine complex. - Integra has proposed a number of strategies for reject and waste management, including a short-term option for tailing emplacement.	- The Department is satisfied that there would be minimal environmental impact from Integra's proposed strategies for reject and waste management. - Nevertheless, to ensure the appropriate management of waste generated by the Integra mine complex the Department has recommended that Integra be required to: - minimise the waste generated by the project; and - prepare and implement a detailed Waste Management Plan for the project in consultation with I&I NSW.

Rehabilitation	- The project would alter the current landform and result in some disturbance to the existing vegetation. - Integra has committed to undertake progressive rehabilitation with the primary focus of rehabilitation being the achievement of stable final landforms that are compatible with the surrounding environment.	- The Department is satisfied that Integra's rehabilitation and final land use strategies outlined in the EA, are achievable and are compatible with surrounding land uses. - Nevertheless, the Department, in consultation with I&I NSW, has developed detailed rehabilitation performance and completion criteria for the progressive revegetation and rehabilitation of the Integra mine complex. The Department has recommended a condition requiring Integra to achieve these performance measures. - The Department has also recommended conditions requiring Integra to prepare and implement a comprehensive Rehabilitation Management Plan for the Integra mine complex to the satisfaction of I&I NSW, and in consultation with DECCW, NOW, Council and the Community Consultative Committee.
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5.9 Socio-Economic

The EA considers the socio-economic impacts of the project (see Appendix E).

This assessment indicates that the project would provide significant social and economic benefits to both the Hunter region and NSW, including:

- the extraction of up to 38.4 million tonnes of ROM coal for use in steel making and power generation;
- \$17.4 million in capital investment;
- continued direct employment for up to 250 people at the Integra mine complex;
- \$81 million a year in payments to suppliers of goods and services;
- \$32.8 million a year in gross wages; and
- \$12.8 million a year in production royalties and payroll taxes to the State government.

The Department agrees with the conclusions of this assessment, and notes that these benefits can be obtained mostly through the use of existing infrastructure and plant. The Department also recognises that society is currently heavily reliant on coal to meet its basic energy needs, and is predicted to remain so during the life of this project.

Notwithstanding these benefits, the Department acknowledges that the project is likely to result in significant dust, noise, and visual impacts on the Dulwich property if it is not mined, and significant noise impacts on another 10 properties, including 2 blocks of vacant land. It also acknowledges that the project is likely to make a moderate contribution to significant exceedances of the applicable air quality criteria at the Richards property, which is currently in the adjoining Mt Owne mine complex's acquisition zone, and a relatively minor contribution towards the cumulative impacts mining in the surrounding area, including the Camberwell Village.

While the Department considers these impacts to be justified when the broader socio-economic benefits of the project are taken into consideration, it has recommended a range of conditions to ensure these impacts are kept to a minimum, and provide the significantly-affected landowners with voluntary acquisition rights. These rights will enable affected landowners to leave the area at any stage of the project, and secure suitable compensation for their properties.

6 RECOMMENDED CONDITIONS

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

These 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; and
- provide for the ongoing environmental management of the project.

The Department has given careful consideration to the form that the conditions should take, given that this project application (MP 08_0102) has been considered in parallel with that for the Integra Underground Coal Project (MP 08_0101).

Given the integrated nature of the mine complex, the Department considers that it is appropriate for a single approval instrument to be issued in satisfaction of both project applications. This will lead to a straightforward and streamlined document, with minimal overlap and potential for confusion.

Integra has considered and accepted both the proposed format of the approval instrument and the conditions as recommended.

7 CONCLUSION

The Department has carried out a detailed assessment of the merits of the project, in accordance with the requirements of the *Environmental Planning & Assessment Act 1979* (EP&A Act).

This assessment has found that the project would have a number of adverse environmental impacts, including significant dust, noise and visual impacts on the Dulwich property if it is to remain in private ownership and not be mined; significant noise impacts on a further 10 privately-owned properties (owned by 9 separate landowners) in close proximity to the mine complex; the clearing of 19 hectares of an endangered ecological community; and the destruction and/or relocation of a range of heritage items, including the Dulwich property which is listed as an item of local heritage significance in the *Singleton Local Environmental Plan 1996*.

It also found that, despite local concerns, the project would only make a minor contribution to the cumulative impacts of mining on the Camberwell Village.

Notwithstanding these findings, the Department has recommended a range of conditions to ensure that the impacts of the project are suitably mitigated, managed and/or offset. These conditions include requirements for Integra to:

- acquire all significantly-affected properties at the request of the landowners;
- implement additional measures to minimise the noise, dust, blasting, visual, and water impacts of the project;
- implement a comprehensive biodiversity offset strategy, which would add at least 77 hectares of land to the existing offset area to the north of the mine complex, and improve the biodiversity values of the local area in the medium to long term;
- carry out further heritage and archaeological investigations on parts of the site where there is significant archaeological potential, as well as on company-owned land adjoining the site; and
- progressively rehabilitate the site to meet a range of performance measures;
- monitor and regularly report on its environmental performance; and
- commission an independent audit of its operations every three years, to ensuring it is complying with its conditions of approval and implementing best practice on site.

Finally, the Department's assessment has found that the project would represent a logical extension of the existing mine complex, would make efficient use of existing facilities and equipment, and would provide major economic and social benefits to the Hunter region and NSW, including:

- continued employment for up to 250 employees;
- a direct capital investment of \$17.4 million; and
- royalties and payroll taxes for the State Government.

On balance, the Department believes the project's benefits sufficiently outweigh its residual costs, and that it is in the public interest and should be approved subject to strict conditions.

8 RECOMMENDATION

It is RECOMMENDED that the Minister:

- **consider** the findings and recommendations of this report;
- **approve** the project application, subject to conditions; and
- **sign** the attached instrument of project approval (Appendix B).

Kitto 3/11/10

David Kitto
Director

[Signature] 5/11/10

Richard Pearson
Deputy Director-General

[Signature] 5.11.10

Chris Wilson
Executive Director

Haddad

Sam Haddad
Director-General