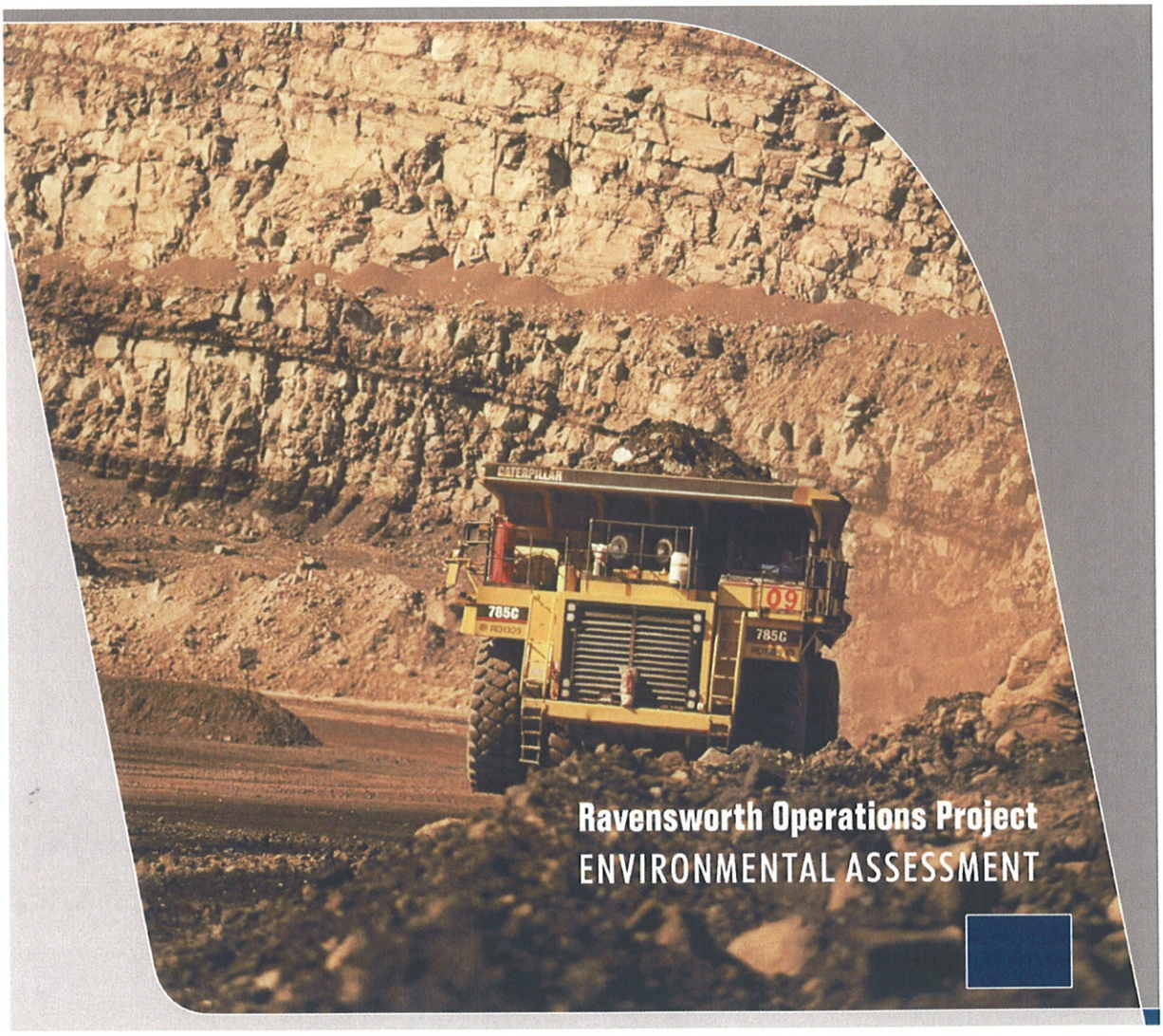
NSW GOVERNMENT | Planning

MAJOR PROJECT ASSESSMENT: Ravensworth Operations Project (09_0176)



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

February 2011

Cover photo: Dump truck operating in the existing pit

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EXECUTIVE SUMMARY

Through its subsidiaries Xstrata Coal Pty Limited (Xstrata) operates the Ravensworth mining complex approximately halfway between Singleton and Muswellbrook in the Upper Hunter Valley (see Figure 1). The complex comprises 4 separate mining areas, including:

- Ravensworth West open cut mine;
- Narama open cut mine;
- Cumnock No. 1 open cut and underground mine (extraction almost complete); and
- Ravensworth Underground Mine (RUM).

The combined operations have approval to extract up to 17.6 million tonnes of run-of-mine (ROM) coal a year (including about 10.6 million tonnes from open cut operations and 7 million tonnes contribution from RUM).

Xstrata is proposing to expand open cut operations and increase the total rate of coal production at the mining complex. The company is also proposing to consolidate all of its existing approvals for open cut coal mining, as well as the surface facilities for the RUM, into a single, modern approval that applies contemporary environmental standards. RUM's underground mining operations would continue to be regulated under its existing approval.

The proposal – known as the Ravensworth Operations Project – involves increasing the production rate to 16 million tonnes of run-of-mine (ROM) coal a year from open cut operations.

Extracted coal would be processed in Xstrata's existing Ravensworth coal handling and preparation plant (CHPP) and then transported to market using existing rail loading and conveyor facilities. These facilities and other mine infrastructure would be upgraded to service the project.

The project has a capital investment value of approximately $900 million, and would provide continued employment for 550 people at the mine.

The proposal constitutes a 'major project' under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) as it is development for the purpose of coal mining, and consequently requires the Minister's approval.

The Department exhibited the Environmental Assessment of the project from 24 February to 29 March 2010, and received 25 submissions on the project: 8 from government authorities, 5 from special interest groups and 12 from the general public. Most of the public submissions either objected to or raised concerns about the project, with the main issues raised including air quality and dust, blasting and vibration, noise, flora and fauna and water resource impacts.

The Department has assessed the project application, EA, submissions on the project, and Xstrata's response to submissions, in accordance with the objects of the EP&A Act and principles of ecologically sustainable development.

This assessment has found that the project would have a number of adverse environmental impacts, including significant dust and/or noise impacts on 4 privately-owned properties (owned by 3 separate landowners), the clearing of 567 hectares of good quality native woodland, and impacting a number of Aboriginal sites/objects.

The Department is satisfied that these impacts can be adequately mitigated, managed, offset and/or compensated, and has recommended a broad range of contemporary conditions to ensure this occurs. These include requirements to acquire properties significantly affected by dust and noise, to implement a comprehensive offset strategy which would ultimately see the long term conservation of 3,720 hectares, and requirements to work with the Aboriginal community to salvage and manage archaeological resources affected by the project, and actively manage offset areas to conserve and promote Aboriginal heritage values.

Importantly, the assessment has also found that the project would not result in any significant cumulative impacts on the surrounding area, including Camberwell Village. Nonetheless, the

Department has recommended conditions requiring Xstrata to comply with contemporary cumulative noise and dust criteria throughout the life of the project, and to implement real time monitoring programs.

The Department acknowledges that the project represents a logical extension of the existing mining complex, and that it would make use of existing infrastructure and facilities. The Department also recognises that the project would provide major economic and social benefits for the Hunter region and to NSW, including:

- a direct capital investment in the mine complex of $900 million;
- maintaining 550 direct jobs at the mine complex; and
- generating over 3,000 new direct and indirect jobs across NSW.

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

1. BACKGROUND

1.1 Project Background

Xstrata Coal Pty Limited (Xstrata) operates the Ravensworth mining complex in the Upper Hunter Valley (see Figure 1). The complex comprises 4 separate mining areas operated by Xstrata's subsidiaries, including:

- Ravensworth West open cut mine (operating under DA 165/97);
- Narama open cut mine (operating under DA 135/90);
- Cumnock No. 1 open cut and underground mine (operating under DA 123/05/01, extraction almost complete); and
- Ravensworth Underground Mine (RUM) (operating under DA 104/96 and DA 161-7-2005).

The combined operations have approval to extract up to 17.6 million tonnes of run-of-mine (ROM) coal a year (including about 10.6 million tonnes from open cut operations and 7 million tonnes contribution from RUM).

Extracted coal from Ravensworth West and Narama is crushed and then sent directly to the nearby Liddell and Bayswater Power Stations via conveyor. Coal from Cumnock and RUM is processed in the Ravensworth Coal Handling and Preparation Plan (CHPP)[1] before being sent to the Port of Newcastle for export by rail via the Ravensworth Coal Terminal (RCT), or by conveyor to the nearby power stations. The RCT is owned by a joint venture and is currently used by RUM, Cumnock and Muswellbrook Coal Company to dispatch coal onto the rail network. The RCT operates under a separate approval granted in 1982.

Figure 1: Regional Context

[1] Cumnock will process coal at the Ravensworth CHPP following decommissioning of the Cumnock CHPP.

1.2 Project Setting

The Ravensworth mining complex is located approximately 15 kilometres southeast of Muswellbrook and 12 kilometres northwest of Singleton, in the Singleton LGA of the Upper Hunter Valley.

The mining complex is situated in an area of intensive coal mining activity, including (see Figure 2):

- Coal & Allied's Hunter Valley Operations mine directly to the west and south;
- Xstrata's Liddell mine directly to the north;
- Xstrata's Mt Owen mining complex (comprising the Mt Owen, Ravensworth East and Glendell mines) to the northeast;
- Yanzhou's Ashton mine directly to the southeast; and
- Integra Coal's mining complex (comprising the Camberwell and Glennies Creek mines) further to the southeast.

Figure 2: Ravensworth Mine Complex and Surrounds

Other industrial-related landuse in the area includes Macquarie Generation's Bayswater and Liddell power stations to the northwest. Macquarie Generation, Ashton Coal, Orica/Dyno, and Coal & Allied use designated areas within the project site for ash disposal (in voids), tailings emplacement, explosives manufacture/storage, and conveyor infrastructure, respectively.

Much of the land in the area is owned by the mining or industrial companies (see Figure 3).

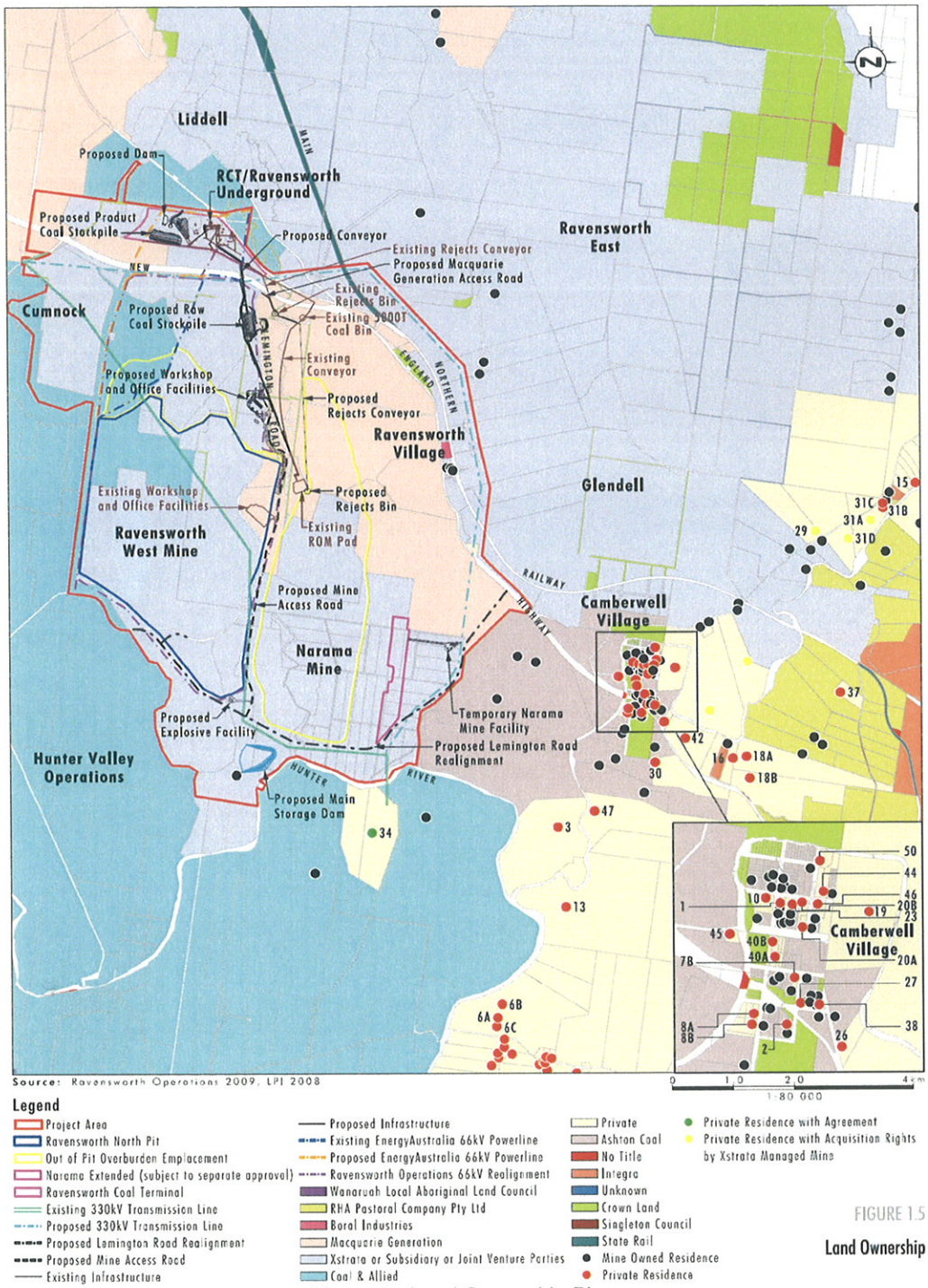


Figure 3: Land Ownership Plan

Most of the sensitive residential and rural landuse in proximity to the mining complex is located to the southeast. The closest village is Camberwell, located about 5 kilometres to the southeast. Mining companies now own most of the properties in the village. The nearest privately-owned rural residence is the Stapleton ('Cheshunt' – Residence 34) property, located about 1.5 kilometres to the south.

1.3 Camberwell Cumulative Impact Study

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 early 2011.

2. PROPOSED PROJECT

2.1 Project Description

Xstrata is proposing to expand open cut operations and increase the total rate of coal production at the Ravensworth mining complex. The company is also proposing to consolidate all of its existing approvals for open cut coal mining, as well as the surface facilities for the RUM and the RCT, into a single, modern approval. RUM's underground mining operations would continue to be regulated under its existing approval.

The proposal – known as the Ravensworth Operations Project – involves increasing the production rate from open cut operations to 16 million tonnes of run-of-mine (ROM) coal a year.

Extracted coal would be processed in Xstrata's existing Ravensworth coal handling and preparation plant (CHPP) and then transported to market using the existing RCT and conveyor facilities. These facilities and other mine infrastructure would be upgraded to service the project.

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

Table 1: Major Components of the Project

Aspect	Description
Project Summary	• **expanding open cut mining operations at the mine, and increasing the total production rate at the mine complex to 16 million tonnes of open cut ROM coal a year;** • **augmenting, upgrading and using the existing surface infrastructure at the mine, including expansion of the Ravensworth CHPP and RCT to process up to 20 million tonnes of ROM coal a year;** • **exporting up to 20 million tonnes of product coal a year from the RCT by rail;** • **realigning a section of Lemington Road;** • **rehabilitating the site; and** • **consolidating all the existing development consents for the open cut mining operations at the mine (and the RCT) into a single, modern planning approval.**
Mining and Reserves	Extraction of an additional coal resource of approximately 330 million tonnes, from a large open cut pit referred to as the 'Ravensworth North Pit', along with completion of mining from existing pits at Narama and Cumnock. Mining using dragline and truck and shovel.
Production	Total production from open cut operations at the Ravensworth mine complex would increase to 16 million tonnes of ROM coal a year, increasing total potential production at the complex (ie. open cut plus RUM) to 21 million tonnes a year.
Project Life	29 years
Coal Washing	Upgrade of the existing Ravensworth CHPP to enable processing of up to 20 million tonnes of ROM coal a year.
Product Coal Transport	Product coal would be transported via existing RCT (export coal) and conveyor facilities (domestic coal). The RCT would be upgraded to enable transport of up to 20 million tonnes of product coal a year, including de-linking of the Ravensworth Rail Loop from the Newdell Rail Loop. The conveyor system would also be upgraded, including a new conveyor and access bridge over the New England Highway.
Overburden Emplacement	Overburden would be placed within mined pits, as well as in two out-of pit overburden emplacements to the north and east of the Ravensworth North Pit. These out-of-pit emplacements would have maximum heights of 200 metres AHD and 160 metres AHD, respectively.
Coarse Rejects and Tailings Management	Coarse rejects and tailings would continue to be disposed of in existing voids and overburden emplacements.
Infrastructure	• Upgrade/expansion of existing Ravensworth Operations mine infrastructure area; • New facilities and workshop building north of Davis Creek; • Realignment of an existing 330kV transmission line and other ancillary services; • Upgrade/expansion of RUM surface infrastructure; • Construction of a mine access road; • Re-alignment of Lemington Road; and • Construction of new water management infrastructure, including diversion of Emu Creek, a new mine water storage dam and other mine water management controls.

Aspect	Description
	new mine water storage dam and other mine water management controls.
Employment	Construction workforce of 500 personnel and an operational workforce of 550 personnel.
Capital Value	$900,000,000
Hours of Operation	24 hours a day, 7 days a week.
Rehabilitation and Offsets	The project involves the disturbance of 1,680 hectares of land, including 567 hectares of native trees (492 hectares of which constitutes an endangered ecological community). The project disturbance area would be progressively rehabilitated. The project includes an offset strategy that would comprise external (off-site) offsets of some 1,958 hectares of trees. Ultimately (through mine rehabilitation plus external offsets), the project would provide for the conservation and/or establishment of 3,720 hectares of trees.

Figure 4: Proposed Mine Plan

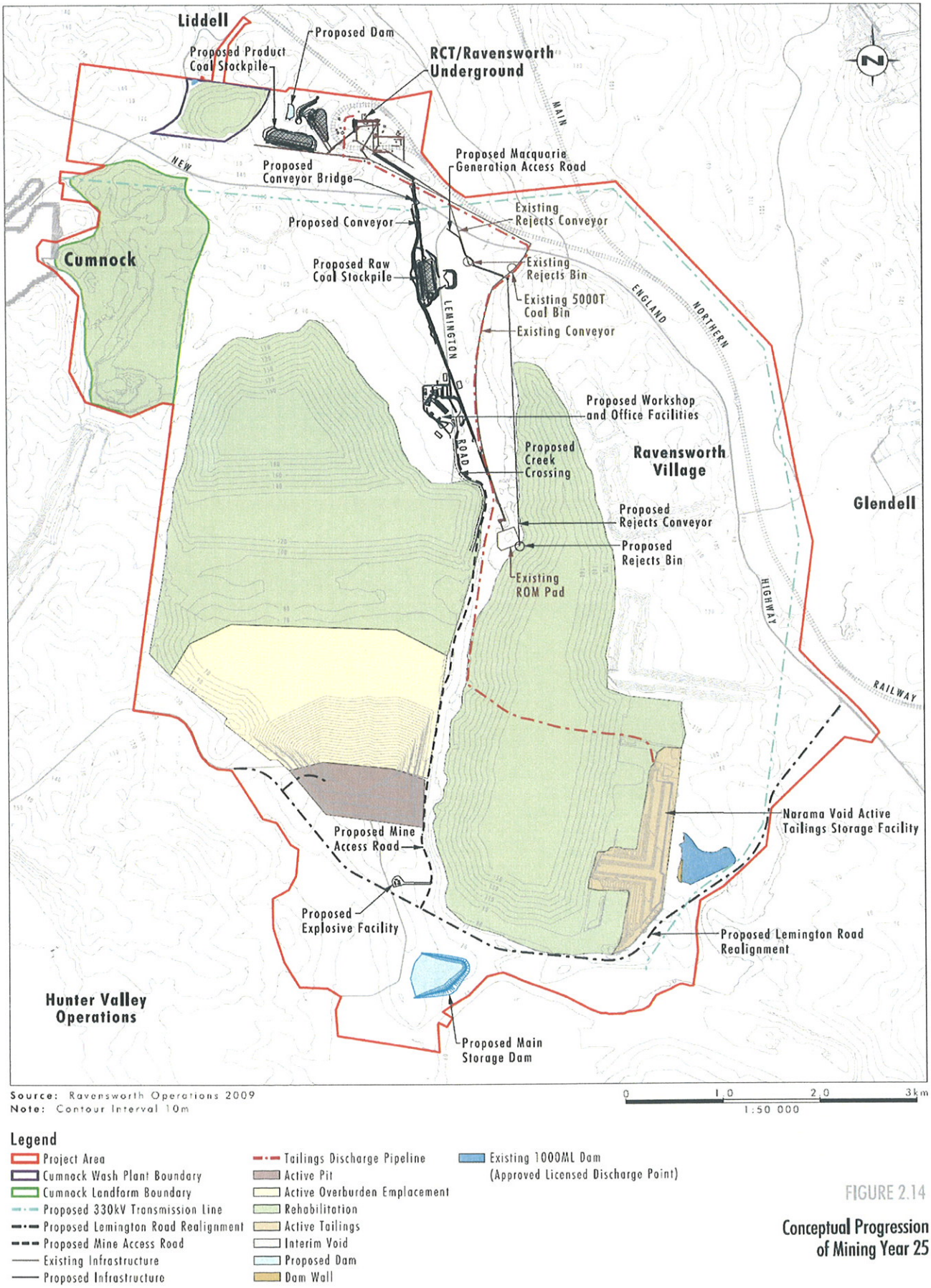


Figure 5: Conceptual Year 25 Mine Layout

3. STATUTORY CONTEXT

3.1 Major Project

The proposal is classified as a major project under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act), because it is development for the purpose of coal mining, and therefore triggers the criteria in Clause 5 of Schedule 1 of *State Environmental Planning Policy (Major Development) 2005*.

Consequently, the Minister for Planning is the approval authority for the project.

3.2 Permissibility

The land subject to the application is zoned Rural 1(a) under the *Singleton Local Environmental Plan 1996*. Coal mining is permissible with consent in this zone.

The proposal is also permissible under the *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007*, which makes open cut mining permissible on land where agriculture may be carried out.

Consequently, the Minister may approve the project application.

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 *Water Management Act 2000*.

Under Section 75V of the 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:

- a mining lease under the *Mining Act 1992*;
- an approval under the *Mine Subsidence Compensation Act 1961*;
- an environment protection licence under the *Protection of the Environment Operations Act 1997*; and
- a consent under the *Roads Act 1993*.

The Department has consulted with the relevant government authorities responsible for these other approvals (see Section 3.4), and considered the relevant issues relating to these approvals in its assessment of the project (see Section 5). None of the relevant authorities object to the project on grounds related to these other approvals.

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) of a project publicly available for at least 30 days.

After accepting the EA for the project, the Department:

- made it publicly available from 24 February until 29 March 2010:
  - on the Department's website,
  - at the Department's Information Centre and Singleton Shire Council, and
  - at the offices of the Nature Conservation Council;
- notified landowners in the vicinity of the site about the exhibition period by letter;
- notified relevant State government authorities and Singleton Council by letter; and
- advertised the exhibition in the Singleton Argus.

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

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.

Xstrata has considered relevant *State Environmental Planning Policies* (SEPPs) in Section 3 of the EA (see Appendix G). The Department has also considered the project against the relevant provisions of several SEPPs and other environmental planning instruments (see Appendix C), and is satisfied that none of these instruments substantially govern the carrying out of this project.

3.6 Objects of the Environmental Planning and Assessment Act 1979

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 proposed modifications 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 (ESD).'

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 the land (Object 5(a)(ii)), particularly as the subject coal resource is located in the centre of existing mining activities and is able to be undertaken using existing mining facilities and infrastructure.

Consideration of environmental protection (Object 5(a)(vi)) is provided in Section 5 of this report. Following its consideration, the Department is satisfied that the project is able to be undertaken in a manner that would maintain and potentially improve biodiversity values of the locality in the medium to long term.

The Department has considered the encouragement of ESD (Object 5(a)(vii)) in its assessment of the project application. This assessment integrates all significant economic and environmental considerations and seeks to avoid any potential serious or irreversible damage to the environment, based on an assessment of risk-weighted consequences.

Xstrata has considered a number of alternatives to the proposed project (including the alternative of not proceeding) and considered the proposal in the light of the ESD principles (see Appendix G).

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 with respect to 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 24 February 2010 and 29 March 2010. During the exhibition period, the Department received 25 submissions on the project, including:

- 8 from public authorities (I&I NSW, DECCW, NOW, Hunter-Central Rivers CMA, RTA, Heritage Branch, Dam Safety Committee and the Land and Property Management Authority);
- 5 from special interest groups (CFMEU, Coal & Allied, Ashton Coal, Muswellbrook Coal and Macquarie Generation); and
- 12 from the general public.

A full copy of the submissions is attached in Appendix F.

In May, August and October 2010 Xstrata provided responses to the issues raised in submissions (see Appendix E), and has provided a revised Statement of Commitments for the project. These have been made publicly available on the Department's website.

Since receiving the responses 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 Industry & Investment*** (Industry & Investment NSW, or I&I NSW) does not object to the project. I&I NSW acknowledged the level of detail provided on rehabilitation and mine closure provided in the EA, but recommended additional detail be provided on some aspects, including specific rehabilitation objectives and closure criteria. Xstrata has since provided additional detail in this regard, and the Department has recommended conditions reflecting I&I NSW's recommendations.

The ***Department of Environment, Climate Change and Water*** (DECCW) initially stated that it could not support the project, as it believed that the offset strategy in the EA was inadequate to compensate the project's impacts on threatened species. In particular, DECCW was concerned that the proposed offset area did not contain adequate like-for-like vegetation, and that the EA didn't identify mechanisms for preserving the offset areas in perpetuity.

Xstrata has since expanded the off-site offset areas to include additional areas. The Department has recommended a number of conditions to address DECCW's concerns, including requirements to independently audit rehabilitation areas, to develop a research program for relevant endangered communities in consultation with DECCW, and to provide for conservation of the offset areas in perpetuity (see Section 5.6).

DECCW also made comments in relation to:

- Aboriginal heritage, particularly in relation to the significant loss of Aboriginal sites/objects as raised by the Aboriginal community, and that the proposed conservation areas where not of particularly high archaeological value; and
- rail noise.

The ***NSW Office of Water*** (NOW) does not object to the project, and recommended conditions requiring Xstrata to update the water management plans for the mining complex to:

- provide specific response actions to potential loss of groundwater from the Hunter River alluvium;
- account for water loss in accordance with applicable water sharing plans; and
- develop remedial and recovery plans for groundwater dependent ecosystems in the alluvial aquifer systems.

The Department has recommended conditions to address these issues.

The ***Hunter-Central Rivers Catchment Management Authority*** (CMA) objects to the project, for similar reasons to those expressed initially by DECCW. That is, the CMA was concerned that the project's biodiversity offset strategy did not meet the 'improve or maintain' standards, particularly as the proposed offset area does not contain adequate like-for-like vegetation to that proposed to be cleared for the project.

The CMA also raised concerns about the impacts on Emu Creek (which would be diverted), and the potential impact on groundwater dependent ecosystems. These issues are addressed in Section 5.5.

The ***Roads and Traffic Authority*** (RTA) does not object to the project, and made a number of recommendations regarding upgrade/closure of local intersections, road widening, standards for the new conveyor bridge over the New England Highway, and traffic management during construction. The Department has recommended conditions in this regard (see Section 5.9).

The ***NSW Heritage Branch*** does not object to the project. It noted that the proposed heritage management measures in the EA were generally acceptable, but recommended conditions in relation to minimising blasting and vibration impacts on some heritage items in the surrounding area. The Department has recommended conditions reflecting the Heritage Branch's recommendations.

The ***Dams Safety Committee*** (DSC) does not object to the project, and noted that the proposed dams would need to be approved by it.

The ***Land and Property Management Authority*** (LPMA) does not object to the project, but noted that there is Crown land within the project area and surrounds, and that this land would need to be managed/acquired/closed as necessary.

4.2 Special Interest Groups

Coal & Allied, ***Ashton Coal***, ***Muswellbrook Coal*** and ***Macquarie Generation*** all initially raised issues regarding the potential interactions with, and impacts, on their respective infrastructure, located both on and in the vicinity of the site. Xstrata has since addressed the issues raised by Coal & Allied, Muswellbrook Coal and Macquarie Generation, and these companies have confirmed their support for the project.

Ashton Coal's key concerns related to:

- the responsibility for subsidence impacts on the realigned Lemington Road (and other infrastructure), part of which is above its approved underground longwall mining operations;
- potential conflicts with its use of Brunkers Lane (ie. the private road which will form part of the realigned Lemington Road) for its construction works;
- potential conflicts with its use of existing Ravensworth mine voids for tailings emplacement;
- potential blast-related impacts on Ashton's underground mine and surface activities; and
- potential conflicts with Ashton's rail movements in the vicinity of the RCT.

Ashton Coal also raised issues regarding potential incremental and cumulative noise, dust and blasting-related impacts on Camberwell Village, and ensuring consistency in the application of environmental criteria for the village. It also recommended that measures be adopted to protect an endangered population of River Red Gum in the project area. These issues are addressed in Section 5 of this report.

The ***Construction Forestry Mining and Energy Union*** supports the project, though it recommended continuous monitoring of noise and dust (including alarm systems for notifying exceedances), and made general comment about the application of fair workplace conditions and standards.

4.3 Community

Of the 12 submissions from the general public (including one on behalf of the Hunter Environment Lobby), 10 objected to the project, 1 raised concerns and 1 supported the project.

The main concerns and grounds for objection were (in decreasing order of mention):

- air quality and dust, particularly in relation to cumulative impacts on Camberwell, and including the potential for contamination of tank water supplies from dust fall-out on roofs;
- blasting and vibration;
- noise, particularly in relation to cumulative impacts on Camberwell;
- flora and fauna; and
- water resources.

Other issues raised included loss of agricultural lands, land value depreciation, visual and light spill, traffic management, rehabilitation standards, greenhouse gas emissions, impacts on Camberwell Common from displaced animals, consistency with strategic plans, hours of operation and existing mine management (including complaints management).

The submission in support of the project cited the socio-economic benefits that the project would bring to the community.

5. ASSESSMENT

5.1 Air Quality

The EA includes a specialist air quality impact assessment undertaken by PAE Holmes Pty Ltd. The assessment includes consideration of total suspended particulates (TSP), fine particulate matter (PM_{10}) and dust deposition, with reference to relevant 24-hour, monthly and annual air quality goals.

The assessment does not include consideration of sulphur dioxide (SO_2) and oxides of nitrogen (NO_x) associated with diesel use, blast fumes and potential spontaneous combustion. However, based on assessments undertaken for similar projects and the distance to sensitive receivers the Department is satisfied that SO_2 and NO_x emissions would be minor and do not warrant further assessment. Notwithstanding, the Department has recommended conditions requiring Xstrata to implement all reasonable and feasible measures to minimise off-site odours and fumes.

With regard to dust, the assessment includes consideration of the incremental increase caused by the project (ie. the mine complex), and the total cumulative emissions generated by the project and existing background dust levels, including those from existing neighbouring mines.

Following the completion of the Camberwell Cumulative Impact Study (see Section 1.3), the cumulative assessment was updated to provide a better understanding 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 Integra mine complexes (see Appendix H).

Further, the air quality assessments are based on the adoption of a number of existing and proposed mitigation measures that Xstrata would implement, including:

- enclosing the top of overland conveyors;
- spray systems for coal stockpiles, dump hoppers and crushing plant;
- minimising the area of disturbance through progressive rehabilitation;
- using water carts and/or dust suppressants on all haul roads, trafficable areas and active mining areas;
- dust control systems on all drill rigs;
- restricting dust generating activities on very windy, dry days;
- restricting blasting activities in adverse winds; and
- an extensive air quality monitoring network, including an alarm system on a strategically placed continuous air quality monitor (to the south-east of the project) to inform mine operators when dust levels are approaching applicable limits, to enable appropriate operational response.

Project-Specific Impacts

A summary of the incremental dust impacts of the project is presented in the following table, and the predicted dust contours (together with the incremental impacts associated with the Ashton and Integra mine complexes) are depicted on Figures 6 to 9.

Table 2: Summary of Significantly Affected Private Properties (exceedances shown only)

Receiver No.	Receiver	Modelling Year	PM10			TSP	Dust Deposition	
			Annual / µg/m³	24-hour/ µg/m³		Annual/ µg/m³	Annual/ g/m²/month	
Criterion			30	50 for >5 days/yr		90	2 (max increase)	4 (total)
				Max.	No. days			
Residences								
34[1]	Stapleton	All years[2]	-	131	54	-	-	-
6A	Moxey	Year 3	-	59	6	-	-	-
6B	Moxey	Year 3	-	61	7	-	-	-
Additional Private Properties >25% Affected[3] (nb. Approx % of property area above criteria shown)								
3	A Bowman	Year 3	-	~65%	-	-	-	-

Notes:

1 *Already within a dust affectation area under existing mining approvals.*

2 *The Stapleton residence is predicted to exceed the 24 hour PM10 criteria in all modelled years, with Year 15 being the highest impact.*

3 *Additional privately-owned properties where more than 25% of the land exceeds the criteria (but where any residence is not predicted to be affected).*

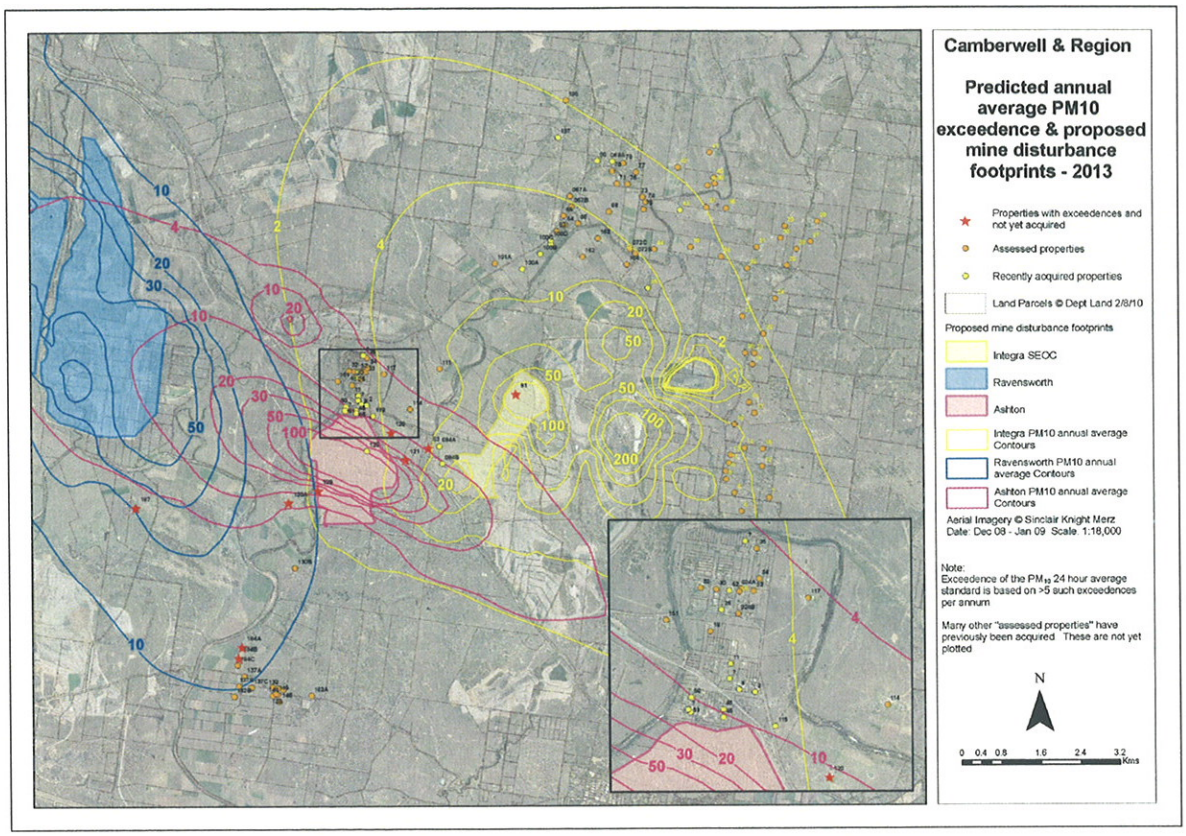


Figure 6: Predicted annual average PM_{10} exceedances, 2013

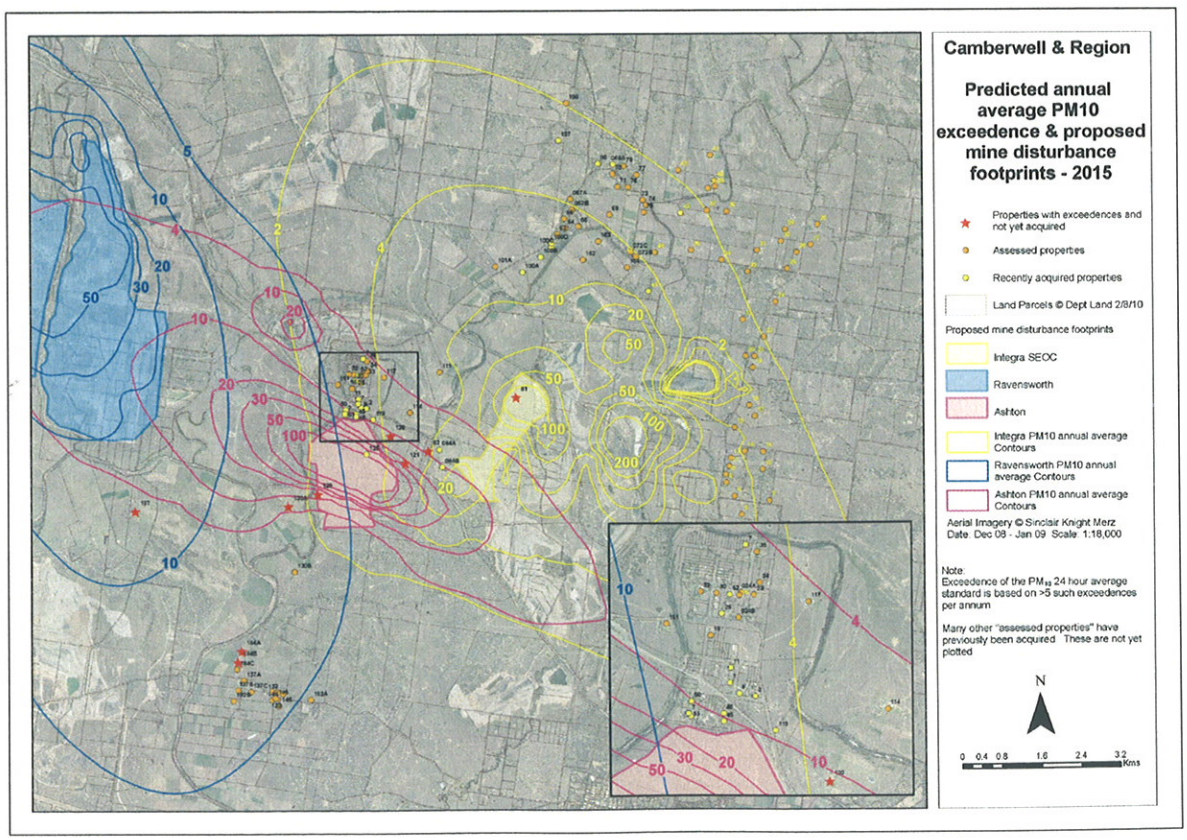


Figure 7: Predicted annual average PM_{10} exceedances, 2015

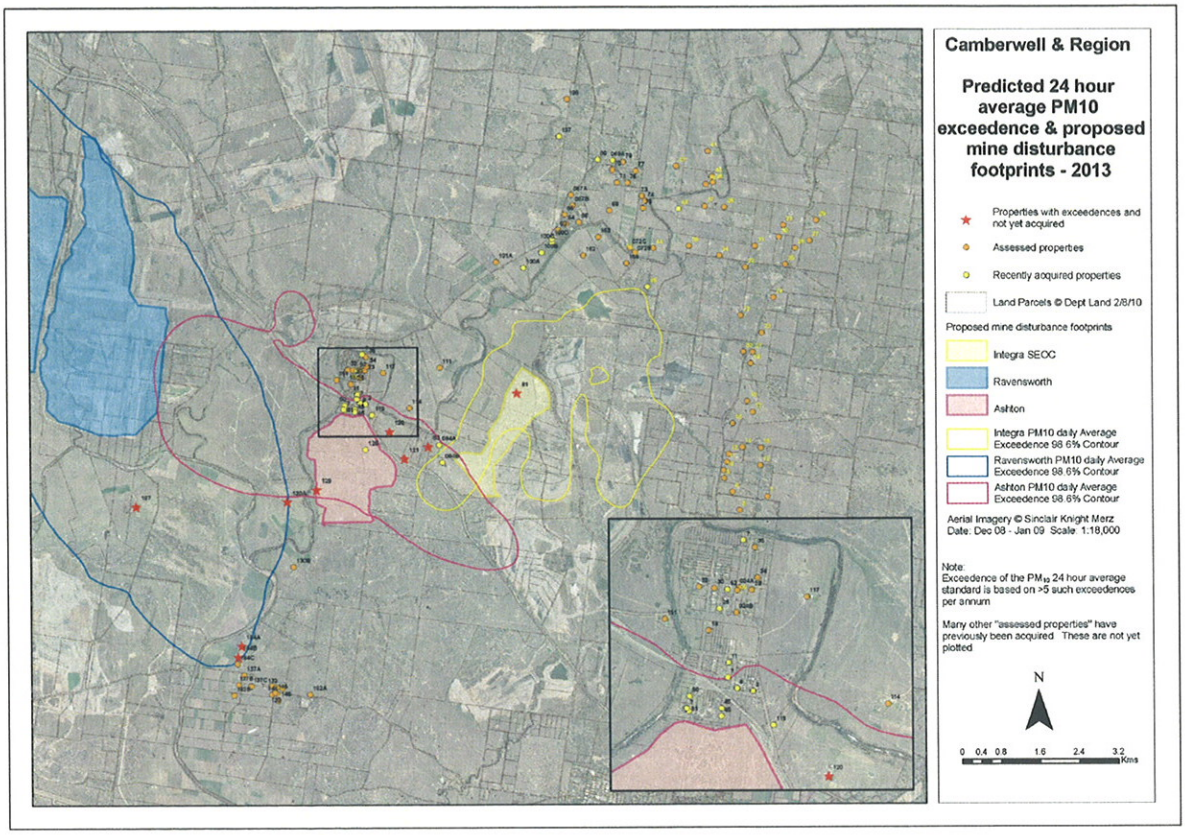


Figure 8: Predicted 24 hour average PM_{10} exceedances, 2013

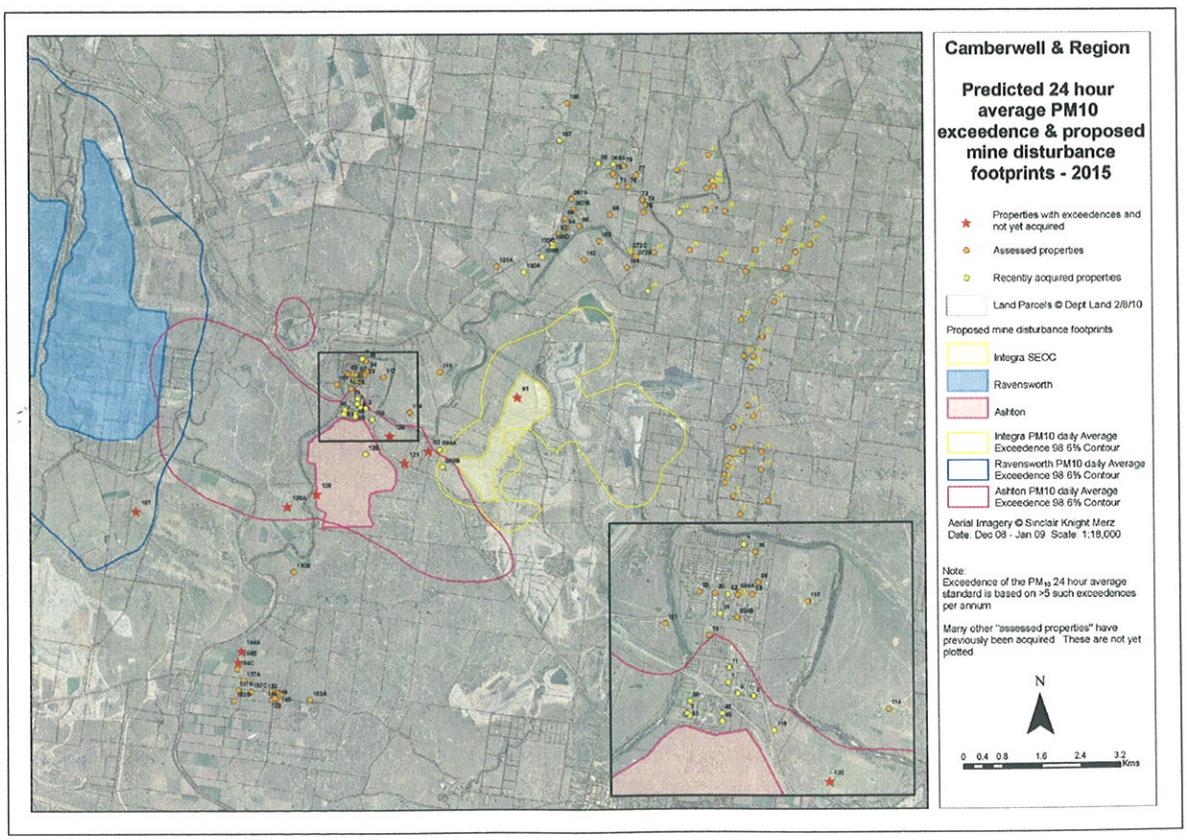


Figure 9: Predicted 24 hour average PM_{10} exceedances, 2015

As indicated in Table 2, the project is predicted to have significant dust impacts on 4 privately-owned properties. The affected properties – owned by Stapleton (Residence 34), Moxey (Residences 6A and 6B) and A. Bowman (Residence 3) – are located in the rural area to the south of the mining complex. The Stapleton residence is within the existing affectation area for the mine complex.

The project is also predicted to have moderate dust impacts on a further 2 private residences – owned by A. Bowman (Residence 13) and Moxey (Residence 6C) – which are predicted to experience 24-hour PM10 levels above the air quality goal on 5 days a year or less. These properties are also located in the rural area to the south.

Cumulative Impacts on Camberwell Village

The Camberwell Cumulative Impact Study (see Appendix H, 'Additional Cumulative Air Quality Assessment') assessed the cumulative air quality impacts of the project, together with all existing and proposed mining projects in the area surrounding Camberwell Village (nb. the cumulative assessment in the EA only considered approved mining projects in the area).

The cumulative assessment indicates that the project would make only a minor contribution to dust levels in Camberwell. In this regard, the assessment indicates that the project would contribute a maximum of 6 $\mu g/m^3$ to annual average PM10 levels in the village, compared to the applicable air quality goal of 30 $\mu g/m^3$. Together, all of the approved and proposed mining proposals in the area are predicted to comply with the 30 $\mu g/m^3$ goal within the village. This predicted compliance is largely the result of the imminent completion of mining operations in the Ashton North East Open Cut mine, which is located directly to the north of Camberwell.

However, the cumulative assessment does indicate that cumulative emissions would exceed the applicable criteria at a relatively small number of privately-owned properties in the rural area surrounding Camberwell Village, if all of the currently proposed projects were to be approved.

Such properties – where the Ravensworth Operations Project is predicted to have more than a minor contribution, and excluding properties predicted to exceed the criteria on a project-specific basis – include:

- Residence 42 (Ernst) – This property, to the southeast of Camberwell, is predicted to exceed the 30 $\mu g/m^3$ annual average PM10 criteria by up to 3 $\mu g/m^3$ between 2011 and 2014. The project would contribute up to 5 $\mu g/m^3$ at this residence, with the main contribution coming from the Ashton South East Open Cut (SEOC) project. Ashton has committed to purchasing this property as part of its SEOC proposal; and
- Residence 47 (W Bowman) – This property, to the south of Camberwell, is predicted to exceed the 30 $\mu g/m^3$ annual average PM10 criteria by up to 4 $\mu g/m^3$ in 2013 and 2014. The project would contribute up to 10 $\mu g/m^3$ at this residence. However, the residence is within the proposed open cut pit for the Ashton SEOC project, and Ashton has committed to purchasing this property as part of that proposal.

The Department is satisfied that the predicted impacts on these properties can be managed under any approval for the Ashton SEOC project. In the event that the Ashton SEOC project is not approved, the Department notes that the predicted exceedances would no longer occur.

Consideration and Conclusion

The Department acknowledges that the project would significantly affect a small number of rural properties in the surrounding area, but also recognises that there is limited scope to reduce or mitigate these impacts further through 'traditional' mitigation measures without significantly down-scaling mining operations or sterilising significant coal resources. The affected properties are located within an area of intensive coal mining, with Coal & Allied to the west, the Ravensworth complex to the north, and the Ashton and Integra operations to the east.

However, the Department notes that the modelling has not taken into consideration (and is not able to using current modelling methods) a key contemporary mitigation measure that can significantly reduce the identified air quality exceedances, namely the adoption of a real-time dust management system. This uses a combination of real-time dust monitoring and weather forecasting to guide the day-to-day planning of mining operations, and prevent air quality impacts during adverse weather conditions.

Such 'active' management systems have been used at the Ashton mine with some success, with results indicating that predicted impacts are able to be significantly reduced or eliminated.

Given the predicted project-specific impacts and the potential for wider cumulative impacts, the Department has recommended conditions requiring Xstrata to develop and implement an active dust management system for the Ravensworth mine complex, as part of a comprehensive Air Quality Management Plan for the complex.

With such a system, the Department believes that Xstrata should be able to avoid many or all of the predicted impacts in the surrounding area, perhaps with the exception of the Stapleton residence given its proximity to the mine.

Nevertheless, and given that the predictive modelling is not currently able to take into consideration (at least with confidence) active management measures, the Department has recommended conditions requiring Xstrata to acquire the 4 properties predicted to be significantly affected, at the request of the landowner.

The Department has also recommended a broad suite of other contemporary conditions to mitigate and manage air quality impacts, including requiring Xstrata to:

- comply with contemporary air quality criteria;
- acquire any property if dust emissions exceed the applicable land acquisition criteria, if requested by the landowner;
- undertake additional dust mitigation measures (such as air filters or air conditioning) at residences predicted to be significantly or moderately affected (see above), or at any other residence if dust emissions exceed the applicable criteria, if requested by the landowner;
- develop a comprehensive Air Quality Management Plan, including a real-time dust monitoring program and an active management system which includes an early warning alert system to identify and manage potential exceedances;
- independently investigate air quality complaints and undertake applicable management measures;
- notify the affected landowners of the potential health-related impacts associated with mine dust;
- respond effectively to enquiries or complaints; and
- publicly report on its environmental performance.

5.2 Noise

The EA includes a noise impact assessment undertaken by Umwelt Pty Ltd in accordance with applicable guidelines, including the *NSW Industrial Noise Policy (INP)*, the *Interim Construction Noise Guideline* and the *Environmental Criteria for Road Traffic Noise.*

The assessment was undertaken with reference to sensitive receivers in the vicinity of the Ravensworth mining complex, including rural properties to the south and southeast and residential properties within Camberwell Village (see Figure 10).

Operational Noise

The noise assessment includes modelling of the noise emissions associated with the operations of the entire Ravensworth mine complex, and compares these against applicable project-specific noise criteria. Cumulative noise impacts – that is, the combined noise impact from Ravensworth and all other surrounding mines – are discussed under a separate heading below.

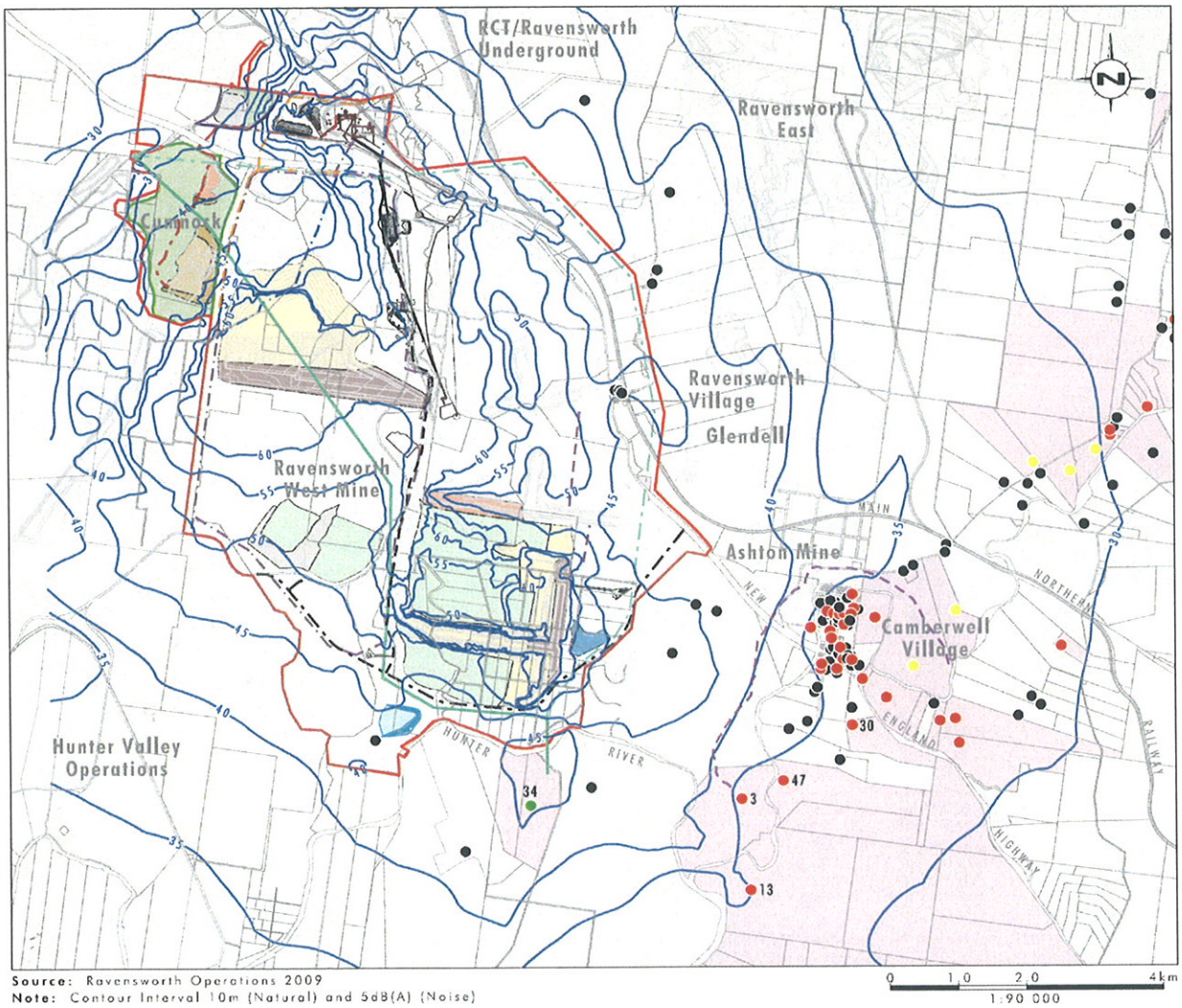
The assessment is based on the adoption of a number of proposed reasonable and feasible mitigation measures that Xstrata would implement, including:

- use of sound attenuated equipment;
- undertaking dumping in higher exposed areas during the daytime period and within protected lower areas during the night time period, where practicable in adverse weather; and
- adoption of a real-time noise monitoring network, including an active management system to inform mine operators when noise levels are approaching applicable limits, to enable appropriate operational response.

The assessment indicates that the combined operations of the mine complex, including the proposed open cut expansion and production increase, would comply with the applicable project-specific noise criteria at all sensitive receiver locations during calm weather conditions. During adverse weather (ie. adverse winds and/or temperature inversions), the project would comply with the criteria at all receivers with the exception of two properties (Stapleton and A. Bowman), as shown in the following table.

Table 3: Predicted Worst Case Noise Impacts (night time) – Ravensworth Mine Complex (Exceedance in bold)

Receiver	Worst Case Combined Noise Level (all years)	Project Specific Criterion, dBA
R1 – Stapleton (Residence 34)	**48 (+12)**	36 $L_{Aeq(15\ min)}$
R2 – A. Bowman (Residence 3)	33	35 $L_{Aeq(15\ min)}$
A. Bowman (Residence 13)	**38 (+3)**	35 $L_{Aeq(15\ min)}$
R3 – Camberwell Village (Central)	37	40 $L_{Aeq(period)}$
R4 – Camberwell Village (North)	34	39 $L_{Aeq(period)}$
R5 – Smiles (Residence 30)	36	38 $L_{Aeq(15\ min)}$



Legend

- Project Area
- Existing 330kV Transmission Line
- Proposed 330kV Transmission Line
- Proposed Lemington Road Realignment
- Proposed Mine Access Road
- Existing Infrastructure
- Proposed Infrastructure
- Existing EnergyAustralia 66kV Powerline
- Proposed EnergyAustralia 66kV Powerline
- Ravensworth Operations 66kV Realignment
- Noise Contour
- Tailings Discharge Pipeline
- Active Pit
- Active Overburden Emplacement
- Rehabilitation
- Interim Rehabilitation
- Active Tailings
- Inactive Tailings (capping)
- Proposed Dam
- Dam Wall
- Interim Void
- Existing 1000ML Dam (Approved Licensed Discharge Point)
- Mine Owned, Power Generation or Crown Land
- Privately Owned Land
- Ridge Line
- Mine Owned Residence
- Private Residence
- Private Residence with Agreement
- Private Residence with Acquisition Rights by Xstrata Managed Mine

FIGURE 5.16

Predicted Year 3 Worst Case Noise Contours (Inversion and drainage flow)

Figure 10: Predicted Noise Levels – Year 3

The Department's typical policy with regard to noise exceedances is shown in the following table.

Table 4: Noise Impacts and Management

Noise Exceedance	***Management generally required at this level of exceedance***
Marginally Affected Residences (1-2dB exceedance)	Noise mitigation, if possible
Moderately Affected Residences (3-5dB exceedance)	Noise mitigation, inc. noise mitigation at residence
Significantly Affected Residences (>5dB exceedance)	Acquisition
Significantly Affected Land (>5dB exceedance)[1]	Acquisition

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

In accordance with this policy, the Department believes that the project would have a significant noise impact on the Stapleton property (Residence 34). As detailed in Section 5.1, the Stapleton residence is also predicted to be significantly affected by dust. It is noted that Xstrata has an agreement with Stapleton to allow exceedances of noise criteria associated with existing approved operations. Xstrata has committed to consulting with the landowner to negotiate an updated agreement, and/or acquiring the property at the request of the landowner.

The Department has recommended conditions requiring Xstrata to acquire the Stapleton property at the landowners request. The Department has also recommended conditions requiring Xstrata to undertake architectural noise treatments (such as double glazing, insulation and/or air conditioning) on the residence whilst it remains in private ownership, at the request of the landowner and unless a negotiated agreement provides otherwise.

The Department believes that the project would have a moderate impact on the A. Bowman residence (Residence 13), and has recommended conditions requiring Xstrata to undertake architectural noise treatments on the residence at the request of the landowner. As detailed in Section 5.1, the Bowman residence is predicted to be significantly affected by dust, and the Department has recommended conditions requiring Xstrata to acquire this property at the landowner's request.

The assessment indicates that the mine complex would comply with the project specific criteria in Camberwell Village (cumulative impacts are discussed separately below). Ashton Coal queried the project-specific noise criterion applied to the village, noting that its current approvals set a night time limit of 36dBA in the village, although it did note that its current application to expand its operations adopted a criterion of 41dBA. The Department and DECCW are satisfied that the adopted noise criteria are reasonable and generally consistent with the criteria recommended in the independent Camberwell cumulative impact study (see further discussion below).

The Department has also recommended a number of other conditions to consolidate and contemporise the noise management requirements for the Ravensworth mine complex. These include requirements to:

- comply with contemporary operational noise limits;
- undertake additional noise mitigation measures (such as double glazing, insulation, and/or air conditioning) at any residence if noise emissions exceed the applicable criteria by more than 2 decibels, if requested by the landowner;
- acquire any property if noise emissions exceed the applicable criteria by more than 5 decibels, if requested by the landowner;
- develop a detailed Noise Monitoring Plan, including real-time noise monitoring and an active management system to identify and manage potential exceedances as they occur;
- independently investigate noise complaints and undertake applicable management measures; and
- communicate mining operations with the community, including publicly reporting all monitoring results, and effectively responding to enquiries and complaints.

With the implementation of these measures, the Department is satisfied that the project's noise impacts can be adequately minimised, managed, or in the case of the significantly affected properties, at least compensated.

Cumulative Noise

The EA includes a cumulative noise assessment which assesses the impact of the project together with surrounding approved industrial sources. The assessment indicates that the cumulative noise

impacts associated with the project would comply with applicable amenity criteria at all residential locations except for the Robertson property which, as discussed above, is also predicted to be significantly affected by the project itself.

It is noted that the cumulative noise assessment in the EA only considered the cumulative noise emissions from existing approved mines in the surrounding area. Given that there are a number of other current mining proposals in the area surrounding Camberwell Village (including expansions at the Integra and Ashton mines), the Department has undertaken a further consideration of the cumulative impacts of the project, together with all existing and proposed mining projects in the area surrounding Camberwell, and considering the findings of the Camberwell Cumulative Impact Study (see Appendix H).

In this regard, under calm conditions Ravensworth Operations is predicted to contribute less than 30 dB(A) to the noise catchment of Camberwell village, rising to between 33 and 35 dB(A) under adverse meteorological conditions. The Department's review indicates that this contribution would result in a negligible (ie. non-perceptible) increase in the overall noise catchment of 0.1dB(A) or less under all conditions.

Accordingly, the Department is satisfied that the project would not result in any significant cumulative impacts on Camberwell village or the surrounding area.

Notwithstanding, the Department has recommended a number of conditions to manage potential cumulative noise impacts, including requirements on Xstrata to:

- comply with cumulative noise limits;
- undertake additional noise mitigation measures (such as double glazing, insulation, and/or air conditioning) at any residence if cumulative noise emissions exceed applicable criteria by more than 2 decibels, if requested by the landowner;
- acquire any property (in conjunction with other relevant mines) if cumulative noise emissions exceed the applicable criteria by more than 5 decibels, if requested by the landowner; and
- implement detailed noise monitoring and management measures (as described in the preceding section).

Sleep Disturbance

The EA includes an assessment of the potential for sleep disturbance, associated with the mining operations within the night-time period.

The assessment indicates that the project would comply with the applicable sleep disturbance criteria at all surrounding receivers, except for the Stapleton residence (Residence 34) where noise would exceed the sleep disturbance criteria (ie. 46 decibels) by up to 3 decibels.

As outlined above the Department has recommended conditions requiring Xstrata to acquire the Stapleton property, upon request. The Department has also recommended conditions requiring Xstrata to undertake additional architectural noise treatments on the property (such as double glazing), at the landowners' request, whilst the property remains privately owned.

The Department has also recommended conditions requiring Xstrata to comply with the relevant sleep disturbance criteria for all other properties.

Construction Noise

The main non mining-related construction activities associated with the project would include realignment of Lemington Road and the transmission lines. Mining-related construction works (such as upgrade of the CHPP) have been considered as part of the operational noise assessment.

The EA includes an assessment of construction noise impacts which indicates that construction noise would comply with relevant criteria at all receivers, apart from the Stapleton residence (Residence 34) where exceedances of up to 9 decibels may be experienced.

The Department is satisfied that the construction noise impacts associated with the project can be managed within the context of the operational noise assessment (see above).

Road Traffic Noise

The EA includes an assessment of off-site road noise, which indicates that the project would increase road traffic noise levels on the New England Highway by less than 0.2 decibels, for receivers at Camberwell Village. The Department is satisfied that this represents a negligible increase that would not be discernable by residents near the highway.

The EA also notes that the nearest residence to the realigned Lemington Road (ie. Stapleton – Residence 34) is more than 1.3 kilometres from the road, and at this distance the realigned roadway would not result in any significant increase in road traffic noise levels at this receiver.

Off-site Rail Noise

The project would increase rail movements on the Main Northern Railway by 6 trains a day, which represents a 30% increase on existing and approved[2] rail traffic.

The EA notes that the nearest residences to the Main Northern Railway Line in the vicinity of the project site are those in Camberwell, which are located approximately 1 kilometre from the railway line at the closest point.

The EA notes that the project would increase rail traffic noise on the Main Northern Railway Line by 1.2 decibels. Given the distance and intervening topography, the noise assessment concludes that the project would not result in any perceptible increase in rail noise levels at Camberwell Village.

To minimise rail noise as far as practicable, the Department has recommended a condition requiring Xstrata to implement all reasonable and feasible measures to minimise rail noise associated with the project.

5.3 Blasting

Blasting for the project has the potential to affect a number of sensitive receivers and structures in the area, including residences, infrastructure and significant Aboriginal and non-Aboriginal heritage items.

The EA includes a specialist blast impact assessment for the project, undertaken by Heggies.

Private Property and Residences

Blasting has the potential to affect residents and private property in three main ways, including:

- annoyance and discomfort, or 'amenity impact';
- structural damage to homes, buildings and property improvements; and
- direct risks to the safety of people and livestock.

(Dust emissions associated with blasting operations is considered separately in Section 5.1. Blast impacts on heritage structures are discussed separately below).

With regard to direct safety risks, the Department notes that all private properties are over 500 metres from the mining area, and therefore have a low risk of being affected by flyrock (ie. rock projectiles).

With regard to amenity and structural impacts, the relevant blast criteria are presented in the following table.

Table 5: 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

* *ANZECC 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 project would comfortably comply with these criteria at all surrounding residences, for the full range of blast sizes (the most limiting maximum instantaneous charge (MIC) size is a large 2,143 kilograms at year 25).

[2] At the time of the EA.

The Department is satisfied that blasting operations can be readily managed to meet the applicable criteria at surrounding private residences and structures, and to minimise annoyance as far as practicable. To ensure this occurs, the Department has recommended conditions requiring Xstrata to:

- manage blasting operations to comply with all relevant criteria at private properties;
- limit blast frequency and hours;
- keep residences notified and up to date regarding blasting operations, and facilitate feedback/complaint management;
- provide for structural property inspections and investigations upon request; and
- develop a comprehensive blast management plan.

Infrastructure

Infrastructure with the potential to be damaged by project-related blasting, along with Xstrata's adopted vibration criteria for each, and the most limiting MIC that would need to be applied at any stage over the life of the project to meet the criteria, is presented in the following table.

Table 6: Infrastructure and adopted Vibration Criteria

Infrastructure	***Vibration Criteria (mm/sec)***	***Limiting MIC (kg)***
Xstrata's 1,000 megalitre dam and proposed main storage dam	25	158
Energy Australia and Transgrid electricity transmission lines (66kV, 132kV and 330kV)	100	347
Coal & Allied's HVO Conveyor	100	68
Railway Line	25	>5,000

Xstrata proposes to manage MIC size and/or implement other blast techniques to ensure compliance with the applicable vibration criteria for all infrastructure at all times. Xstrata also proposes to develop a detailed blast management plan for the project.

Coal & Allied has provided its support for Xstrata's proposed blast management plan, which would include real-time vibration monitoring on the conveyor.

Ashton Coal raised concerns regarding the potential for project blasting to affect safety and production within its underground mining operations. This issue was also raised by Ashton Coal during the assessment of the recent extension to the Narama mine[3], which is the closest component of the Ravensworth mining complex to Ashton's underground mine. During that assessment, Ashton Coal requested that a vibration criterion of 6 mm/s be included to protect its underground operations. The Narama extension approval subsequently includes a condition requiring Xstrata to comply with vibration limit of 6 mm/s at the Ashton underground mine, except with the agreement of the mine owner.

The Department accepts that blasting operations can feasibly be managed to meet the applicable vibration criteria at surrounding infrastructure and Ashton's underground mining operations, subject to strict blast management conditions. To ensure this occurs, the Department has recommended conditions requiring Xstrata to:

- manage blasting operations to comply with all relevant criteria[4] for surrounding infrastructure, and a vibration limit of 6 mm/s at the Ashton underground mine, except with the agreement of the owner;
- develop a comprehensive blast management plan; and
- repair any public infrastructure that is damaged by the project.

In addition to vibration-related impacts, the EA notes that project blasting activities would occur within 500 metres of the realigned Lemington Road and Coal & Allied's existing HVO CHPP. Xstrata proposes to manage associated risks by temporarily closing Lemington Road during blast events within 500 metres of the road, and managing blast practices to reduce potential flyrock impacts at the HVO CHPP, in consultation with Coal & Allied.

[3] This Narama mine extension application was approved by the Minister's delegate on 27 April 2010.
[4] The Department has recommended a limit of 50 mm/sec for the transmission lines (as opposed to Xstrata's adopted 100 mm/sec), to be consistent with similar approvals, and unless otherwise agreed with the relevant infrastructure provider.

The Department accepts that the temporary closure of Lemington Road (approximately 15 minutes per blast event) is manageable, and has recommended a condition requiring Xstrata to prepare a Road Closure Management Plan for the project. The Department also accepts that flyrock related impacts on the HVO CHPP are manageable subject to a suitable arrangement between the two companies. The Department has recommended a condition requiring such an arrangement prior to blasting within 500 metres of the CHPP.

Heritage Structures

Aboriginal and non-Aboriginal heritage items with the potential to be damaged by project-related blasting are outlined in the following table, along with Xstrata's adopted vibration criteria for each, and the most limiting MIC that would need to be applied at any stage over the life of the project to meet the criteria.

Table 7: Heritage Items and adopted Blast Criteria

Item	Vibration Criteria (mm/sec)	Airblast Overpressure Criteria (dBL)	Limiting MIC (kg)
Aboriginal Axe Grinding Groove Site (REA86)	30	n/a	86
Camberwell Church	5	115	2,245
Ravensworth Public School	10	133	3,091
Chain of Ponds Hotel	10	133	>5,000
Ravensworth Homestead	10	126	>5,000

The assessment indicates that blasting can be readily managed to meet the applicable criteria at the non-Aboriginal heritage items in the vicinity.

However, the assessment indicates that blasting would need to be carefully managed to protect the highly significant Aboriginal axe grinding groove site located directly to the north of the new Ravensworth North pit, particularly during the early years of mining. To ensure this occurs, the Department has recommended conditions requiring Xstrata to comply with the identified vibration criteria at all times, to develop a protocol for evaluating blast-related impacts on Aboriginal (and non-Aboriginal) heritage items, and to develop an Aboriginal Cultural Heritage Management Plan that includes consideration of blast-related impacts.

5.4 Greenhouse Gas Emissions

The EA includes a Greenhouse Gas and Energy Assessment, undertaken by SEE Sustainability. The assessment was undertaken in accordance with applicable GHG guidelines, including the Commonwealth Department of Climate Change's *National Greenhouse Accounts Factors, November 2008.*

The assessment calculates direct and indirect GHG emissions associated with the project, including 'Scope 1' emissions (ie. direct GHG emissions from sources controlled by Xstrata), 'Scope 2' emissions (ie. indirect emissions associated with the import of electricity) and 'Scope 3' emissions (ie. other indirect emissions, such as those associated with the downstream combustion of the coal).

The calculated GHG emissions associated with the project are presented in the following table.

Table 8: Project Direct and Indirect GHG Emissions

Scope	GHG source(s)	Annual average GHG emissions (tonnes carbon dioxide equivalent, TCO_2e)	Total project GHG emissions (TCO_2e)
Scope 1	Mining and extraction related	727,209	21,089,065
Scope 2	Upstream electricity	142,472	4,131,692
Scope 3	Downstream transport of product coal and other	1,134,570	32,978,460
	Downstream coal use	29,201,908	846,855,331
Total (exc. downstream coal use)		**2,003,988**	**58,199,217**
Total (inc. downstream coal use)		**31,205,896**	**905,054,548**

The assessment indicates that 94% of the total GHG emissions generated as a consequence of the project are those associated with the downstream burning of the product coal at power stations – ie. Scope 3 indirect emissions. The main sources from on-site mining activities (ie. Scope 1 and 2) include:

- fugitive methane from the coal seam (59%);
- diesel use (24%); and
- electricity use (16%).

The average annual GHG emissions arising as a consequence of the project (ie. including coal combustion) represents approximately 0.07% of annual global GHG emissions.

The Department acknowledges the impacts posed by global warming/climate change, but does not believe that the threat posed by global warming/climate change should necessarily preclude the approval of this project.

Rather, the consideration of the project application with regard to GHG impacts needs to be balanced with consideration to:

- the project's contribution to global warming/climate change;
- whether refusing the project application would reduce global GHG emissions;
- the need for the project;
- the benefits of the project, including job creation and its contribution to the NSW economy;
- the objects of the EP&A Act, including the encouragement of ESD; and
- available GHG impact mitigation measures.

The project's contribution to global warming/climate change is discussed above. Following this consideration, the Department is satisfied that the project's contribution to global GHG emissions, even when assessed on a full life cycle basis (ie. including downstream GHG emissions), would be very small.

It must be noted that if the project was not allowed to proceed, the resultant gap in the coal supply would be almost certainly filled by another coal resource either in NSW, Australia or overseas. In other words, removing the GHG emissions from the project would not likely result in any decrease in global CO_2 emissions. This point illustrates the reality that the key response to the issue of global warming/climate change needs to be made at a policy or strategic planning level, outside and above the NSW project assessment process.

The need for the project is discussed in Section 5.11. Based on its consideration, the Department is satisfied that there is a clear need for the development of new coal deposits, for at least the foreseeable future, to meet society's basic energy needs.

The benefits of the project are also summarised in Section 5.11. Following its consideration, the Department is satisfied that the project would have considerable socio-economic benefits, and that it represents a logical extension to, and consolidation of, Xstrata's existing mining operations.

The objects of the EP&A Act are outlined in Section 3.6, and these objects have informed the Department's assessment of the project. With regard to the principles of ESD, the Department acknowledges that global warming/climate change presents a clear threat of serious or irreversible environmental damage, as well as a threat to intergenerational equity and a threat to the conservation of biological diversity. However, it must also be acknowledged that the downstream energy and other socio-economic benefits generated by the project would also benefit future generations, particularly through the shoring up of national and international energy needs.

With regard to GHG impact mitigation measures, the EA notes that Xstrata is working on a number of carbon reduction measures at the corporate level, and Xstrata has committed to developing an Energy Management System for the project which would consider energy efficiency opportunities in the mobile mining fleet, stationary equipment and mining operations.

The EA also notes that Xstrata has investigated the potential to reduce fugitive GHG emissions from the coal seam via pre-mining gas drainage, however the study found that such a system was not feasible due to the relatively low gas content.

The Department is satisfied that Xstrata has adequately considered potential GHG reduction strategies, and has recommended conditions requiring Xstrata to prepare and implement a detailed Greenhouse Gas Management Plan for the mine complex, including requirements to implement all reasonable and feasible measures to mitigate greenhouse gases.

The Department does not believe it is reasonable to apply other requirements on Xstrata through the NSW planning system to significantly reduce GHG emissions, including Scope 3 emissions associated with the downstream burning of the product coal. Any such impost – for example a CO_2 levy on product coal – would unfairly penalise Xstrata and its ability to compete in the energy industry. The Department believes that such an ad hoc approach to the issue of global warming/climate change is not in the public interest. The Department is satisfied that much more effective measures have been, and are continuing to be, planned and implemented at the State, national and international levels to combat global warming/climate change.

5.5 Surface Water and Groundwater

The project has the potential to affect surface water and groundwater resources in a number of ways, including:

- altering the water balance for the Ravensworth mine complex;
- directly removing local creeks (Emu Creek), and affecting surface water flows and quality in local and regional catchments, and surface water availability to downstream water users;
- affecting groundwater flows and quality in sub-surface aquifers, and groundwater availability to local groundwater users; and
- affecting flood behaviour.

The EA includes specialist surface water and groundwater impact assessments, undertaken by Umwelt and Mackie Environmental Research, respectively. The assessments include consideration of baseline water flow and quality conditions, water balancing and modelling to assess the impacts of the project on water quality and flows.

Water Balance

The main 'internal' water supplies available for the project include:

- catchment run-off from within the mine water management system area (ie. disturbed areas);
- groundwater inflows to the open cut pits and former Cumnock underground workings; and
- raw water supply for use in the mine infrastructure area.

The main water demands would include water lost through:

- coal handling and processing (washing);
- dust suppression;
- evaporation from dams; and
- potable water use.

Based on these supplies and demands, the water balance modelling in the EA indicates that the project would have a net water deficit throughout most of the life of the project, with a net water surplus occurring toward the end of the project. The maximum predicted deficit based on average rainfall is 4.9 ML/day (or 1,790 ML/yr). During a dry period (ie 10th percentile rainfall) the water deficit would increase to 6 ML/day (or 2,190 ML/yr).

This modelling does not include any supply from sources 'external' to the project area, including other mines in the Greater Ravensworth Water Sharing System (GRWSS, a water sharing network established across Xstrata's operations in the area, including Ravensworth, Narama, Cumnock, RUM, Liddell and the Mt Owen complex) and/or licensed water supplies for the Hunter River. Xstrata notes that additional water supplies would be sourced in the following preferential order:

- savings from implementation of additional water efficiency measures (eg. water recovery from tailings);
- transfer from the GRWSS; and
- use of licensed extraction from the Hunter River (nb. Xstrata has existing water entitlements totalling about 3,634 ML/yr based on current allocations).

The Department and NOW are satisfied that these internal and external water sources should satisfy the water demands of the project (based on historical data), that the project would not have a significant impact on water availability and water sharing in the locality, and that the project water supply is able to be managed in a manner that is consistent with the water market established under the *Water Management Act 2000.*

During periods of water surplus, Xstrata proposes to store the excess mine water in on-site storages, and/or discharge it in accordance with the rules of the Hunter River Salinity Trading Scheme and the conditions of its Environmental Protection Licence.

To ensure the appropriate management of water supplies, the Department has recommended a condition requiring Xstrata to maintain a detailed water balance for the project, including requirements to investigate measures to minimise water use by the project. The Department has also recommended a condition requiring Xstrata to ensure it has sufficient water for all stages of the project, and if necessary, adjust the scale of mining operations to match its available water supply.

Surface Water

Catchments within the project area, and the project's impact upon them, are outlined in the following table.

Table 9: Local Creek Catchment Changes

Catchment	***Flow***	***Catchment area within project area (%)***	***Change in catchment area caused by project (%)***
Hunter River	Permanent	<0.01	0
Farrells Creek	Ephemeral	38	-10
Bayswater Creek	Ephemeral	70	+13
- Emu Creek sub-catchment		*78*	*-4*
- Davis Creek sub-catchment		*100*	*+51*
- Pikes Creek sub-catchment		*23*	*0*
Bowmans Creek	Semi-permanent	5	+2

Farrells Creek, Bayswater Creek (and its tributaries) and Bowmans Creek all drain southward to the Hunter River, located to the south of the project area. There are no private downstream water users between the project site and the Hunter River, and as such the Department is satisfied that the project has limited potential to impact downstream surface water users.

The project would disturb the majority of the Emu Creek sub-catchment, and require the diversion of Emu Creek itself. Xstrata proposes to capture upstream flows from Emu Creek in a dam above the mining area, with captured water to be transferred to Davis Creek (via pump) to supplement flow loss in Davis Creek. The system would be designed to replicate the natural flow regime in Davis Creek to minimise potential impacts on the creek system from the additional water. The system would be designed for a 20 year ARI (24 hour) storm event capacity. Any excess flows would be stored in the Ravensworth North pit and incorporated into the Ravensworth water management system.

Xstrata proposes to reinstate Emu Creek on its original alignment once mining and rehabilitation has advanced beyond the creek.

The Department, NOW and DECCW are satisfied with, or do not object to, the proposed creek diversion. The Department has recommended a condition requiring Xstrata to design and manage the diversion in accordance with a diversion plan, prepared in consultation with DECCW and NOW.

The Department is also satisfied that other surface water impacts associated with the project can be adequately minimised and managed, subject to the implementation of standard best practice water management practices. To ensure this occurs, the Department has recommended conditions requiring Xstrata to prepare a new, comprehensive Water Management Plan for the mine complex, including a detailed:

- surface water management plan, including a program to monitor flows and quality against contemporary surface water and stream health impact assessment criteria; and
- surface water response plan, to manage any identified exceedances of the impact assessment criteria.

Flooding

Flood modelling in the EA indicates that the project would have no adverse affects on flood flows, velocities and levels in downstream catchments, including Bowmans Creek, Davis Creek or Bayswater Creek.

The Department is satisfied that the project is unlikely to result in any significant changes to flood behaviour in the locality, but believes that Xstrata should be required to manage local flooding effects (including construction of a proposed flood levee on Emu Creek) as part of its detailed Water Management Plan. The Department has recommended a condition in this regard.

Groundwater

The groundwater impact assessment indicates that there are 3 key aquifer systems in the area, including aquifers associated with:

- the coal measures;
- the regolith (soils and weathered bedrock) near the ground surface; and
- alluvial sediments associated with the Hunter River, Bowmans Creek and Bayswater Creek.

Groundwater quality within the coal measures is generally brackish to saline, is variable in the regolith from fresh to saline, and is generally fresh within the alluvial aquifers.

There are no privately-owned bores in the vicinity of the project area. The closest is more than 5 kilometres to the southeast, on the other side of the Hunter River.

Groundwater modelling undertaken for the EA indicates that the project would increase the existing depressurisation (or drawdown) of the regional coal seam aquifers, with the area of affectation extending for distances of up to 2 kilometres from the mining area.

Although this drawdown does not extend to within proximity to any private groundwater bores, it does extend below the Hunter River and local creeks. Such depressurisation has already occurred beneath the Hunter River and its alluvials as a result of historical and current mining operations in proximity to the river. The groundwater assessment indicates that the project would cause further depressurisation, but that the additional impact on baseflows arising from the project would be negligible. Similarly, additional baseflow loss in local creeks, including Farrells Creek, Bayswater Creek and Bowmans Creek is also expected to be negligible.

Following the completion of mining, groundwater levels and pressures within the depressurised area would gradually recover, however the Ravensworth voids would act as a permanent groundwater sink.

NOW does not object to the groundwater impacts of the project, but notes that groundwater loss caused by the project must be appropriately accounted for (ie. offset) in accordance with the rules of the relevant water sharing plans – including the Hunter Regulated River Water Sharing Plan (HRRWSP) and Hunter Unregulated River and Alluvial Water Sharing Plan (HURAWSP). NOW recommended conditions requiring Xstrata to update its Water Management Plan for the mine to:

- provide specific response actions to monitor and account for all losses to the groundwater system, including development of triggers for investigation and mitigation; and
- provide remedial and recovery plans for groundwater dependent ecosystems (eg. River Red Gums) in the affected alluvial aquifer systems, including the Hunter River, Bowmans Creek and Davis Creek.

Although the project is predicted to result in a negligible increase in depressurisation of the alluvial aquifer system, Xstrata has committed to the development of remedial and recovery plans for identified stands of River Red Gums on land controlled by Xstrata.

The Department is satisfied with the groundwater impact assessment provided in the EA. Based on this assessment the Department is satisfied that the project is unlikely to significantly increase the existing regional depressurisation of the groundwater resource, and that it is unlikely to affect any groundwater users or result in a significant environmental impact (including significantly increasing the potential impact on groundwater dependent ecosystems).

The Department has recommended conditions consistent with those recommended by NOW, including requirements to:

- provide compensatory water supplies to any landowner whose supplies are adversely affected by the project;
- prepare and implement a detailed Groundwater Management Plan, including agreed impact assessment criteria and including monitoring of all potentially affected groundwater dependent ecosystems; and
- prepare, and if necessary implement, a Surface and Ground Water Contingency Plan for managing identified exceedances of impact assessment criteria and providing compensatory water supplies, and remediating and/or offsetting any impacts on groundwater dependent ecosystems.

Conclusion
The Department is satisfied that Xstrata has adequately assessed the project's potential impacts to surface water and groundwater resources.

Following its assessment, the Department is satisfied that the project can be managed such that it would not have a significant impact on water resources. The Department has recommended conditions that require Xstrata to revise its existing water management plans and monitoring programs for the Ravensworth mine complex, in consultation with NOW and DECCW. In particular, the water management plans would be required to include:

- a Site Water Balance;
- a Creek Diversion Plan;
- an Erosion and Sediment Control Plan;
- a Surface Water Management Plan;
- a Groundwater Management Plan; and
- a Surface and Ground Water Response Plan.

5.6 Flora and Fauna

The project would disturb a total of 1,680[5] hectares of land in addition to the current approved mine footprint, including:

- 567 hectares of native woodland;
- 596 hectares of derived native and exotic grassland; and
- 517 hectares of mine rehabilitation (trees and pasture).

The EA includes a flora and fauna assessment undertaken by Umwelt. The assessment draws on the historical studies undertaken for the mining complex, and additional field surveys of the proposed mine extension areas.

Flora
The project area forms part of a large area of regenerating woodland, which comprises mainly regrowth approximately 20-30 years old (with few tree hollows), although a relatively small area of the woodland (about 20 hectares) is more than 40 years old (thought to be less than 120 years old).

A significant portion of the vegetation proposed to be cleared comprises endangered ecological communities (EECs) listed under the NSW *Threatened Species Conservation Act 1995* (TSC Act) and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). A summary of the vegetation communities to be disturbed is presented in the following table.

Table 10: Impacts on Vegetation Communities

Community	***Area to be Cleared (ha)***	***Conservation Significance***
Native Woodland		
Central Hunter Box – Ironbark Woodland	485*	EEC
Central Hunter Ironbark – Spotted Gum – Grey Box Forest	4	EEC
River-flat Eucalyptus Forest	3	EEC
Hunter Floodplain Red Gum Woodland	0.2	Preliminary listed EEC
Central Hunter Bulloak Forest Regeneration	37*	-
Central Hunter Swamp Oak Forest	34	-
Hunter Valley River Oak Forest	4	-
Sub-total EEC	**492.2**	
Sub-total Native Woodland	**567.2**	
Other Vegetation		
Derived Native and Exotic Grassland	596*	-
Mine Rehabilitation (Tree Planted Areas)	75	-
Mine Rehabilitation (Pasture)	442	-
Sub-total	**1,113**	
Total	**1,680.2**	

* Includes contribution from approved Narama Extension project.

[5] This area (and subsequent analysis in this report) has been revised marginally from that identified in the EA, and includes approximately 70 hectares to be disturbed under the Narama Extension project, approved by the Minister's delegate on 27 April 2010. To ensure an integrated and consistent approach to offsetting for the mine complex, the Department allowed the offsetting for the smaller Narama Extension project to be postponed for a limited time, so that it could be integrated with the offsetting for this larger project. Accordingly, the Department has considered the Narama Extension clearing as part of this project.

It is noted that the proposed mine plan has been modified to avoid impacting an area of good quality vegetation north of Davis Creek, despite a viable coal resource occurring in this area. Xstrata notes that it has also limited the size of the out-of-pit overburden emplacement on the southern side of Davis Creek. Xstrata believes that further changes to avoid native vegetation/EECs would not be reasonable.

Notwithstanding, the flora and fauna assessment concludes that, without any mitigation or offsetting measures, the project would have a significant impact on the Central Hunter Box – Ironbark Woodland EEC, given that the removal constitutes the loss of approximately 3.5% of the total known distribution (ie. 14,800 hectares) of this community, and that the remnant on site is large and unfragmented. The EA concludes that the project would not have a significant impact on the other EECs in the disturbance area.

The Department acknowledges that the project would remove a considerable area of good quality EEC and other native vegetation. Consequently, the Department and the DECCW agree that, for the project to be able to meet the general principles of 'improving or maintaining' biodiversity values over the medium to long term, it would require significant vegetation offsets of suitable size and quality. This issue is discussed under a separate sub-heading below.

In addition to the EECs, one threatened flora species (Lobed Blue-grass, *Bothriochloa biloba*) and two endangered populations (Weeping Myall – *Acacia pendula* and River Red Gum – *Eucalyptus camaldulensis*) occur within the project area. These species/populations are outside the disturbance area (though close to it in some instances), and the assessment concludes that the project would not have a significant impact on these species/populations. DECCW and the Department do not object to this conclusion, although the Department has recommended conditions requiring Xstrata to protect the species/populations.

Fauna

A total of 13 threatened fauna species have been identified, or have the potential to occur, within the study area, including:

- 6 birds;
- 6 bats; and
- 1 frog (Green and golden bell frog, *Litoria aurea*).

Tests of ecological significance undertaken for these species indicate that the project – without any impact mitigation or offsetting – would have a significant impact on a number of these species, primarily due to loss of forest habitat which is likely to result in the significant reduction in the local population of all threatened species identified.

To minimise the impacts on fauna, Xstrata proposes to implement a range of standard management strategies including progressive clearing, pre-clearance surveys and habitat augmentation, which would complement the implementation of the biodiversity offset strategy (as discussed below).

Xstrata also notes that the mine plan has been modified (as discussed above) which would avoid impact on important green and golden bell frog habitat. Further, Xstrata would implement a number of additional mitigation measures, including providing supplementary green and golden bell frog habitat (including linkage between Davis Creek and Bayswater Creek), managing weeds and disease, and undertaking population surveys and annual monitoring.

Notwithstanding, the Department acknowledges that the project would affect a large area of good quality habitat for the green and golden bell frog and other threatened species, and consequently believes that, for the project to be able to meet the general principles of 'improving or maintaining' biodiversity values over the medium to long term, it would require significant vegetation offsets of suitable size and quality. This issue is discussed below.

Biodiversity Offset and Rehabilitation Strategy

The EA (and subsequent documentation) includes a rehabilitation strategy and a biodiversity offset strategy which outline the strategies to progressively rehabilitate the site and to compensate for the native vegetation (and EEC) which would be cleared as a result of the project.

The biodiversity offset strategy (as revised) comprises 4 key offset areas outside the disturbance area of the project (as shown on Figures 11 and 12) totaling some 1,958 hectares, including the:

- Ravensworth North Offset Area – a 283 hectare area immediately to the north of the disturbance area (including the Davis Creek riparian area);
- Hillcrest Offset Area – a 1,403 hectare area approximately 5 kilometres to the north of the project area;
- Clifton Offset Area – a 107 hectare area approximately 2 kilometres to the west of the Hillcrest Offset Area; and
- Stewart Offset Area – a 165 hectare area approximately 3 kilometres to the north-west of the Hillcrest Offset Area.

The Clifton and Stewart offset areas have been included since exhibition of the EA, and the Ravensworth North Offset Area has been slightly amended since the EA.

Figure 11: Biodiversity Offset Strategy (as revised)

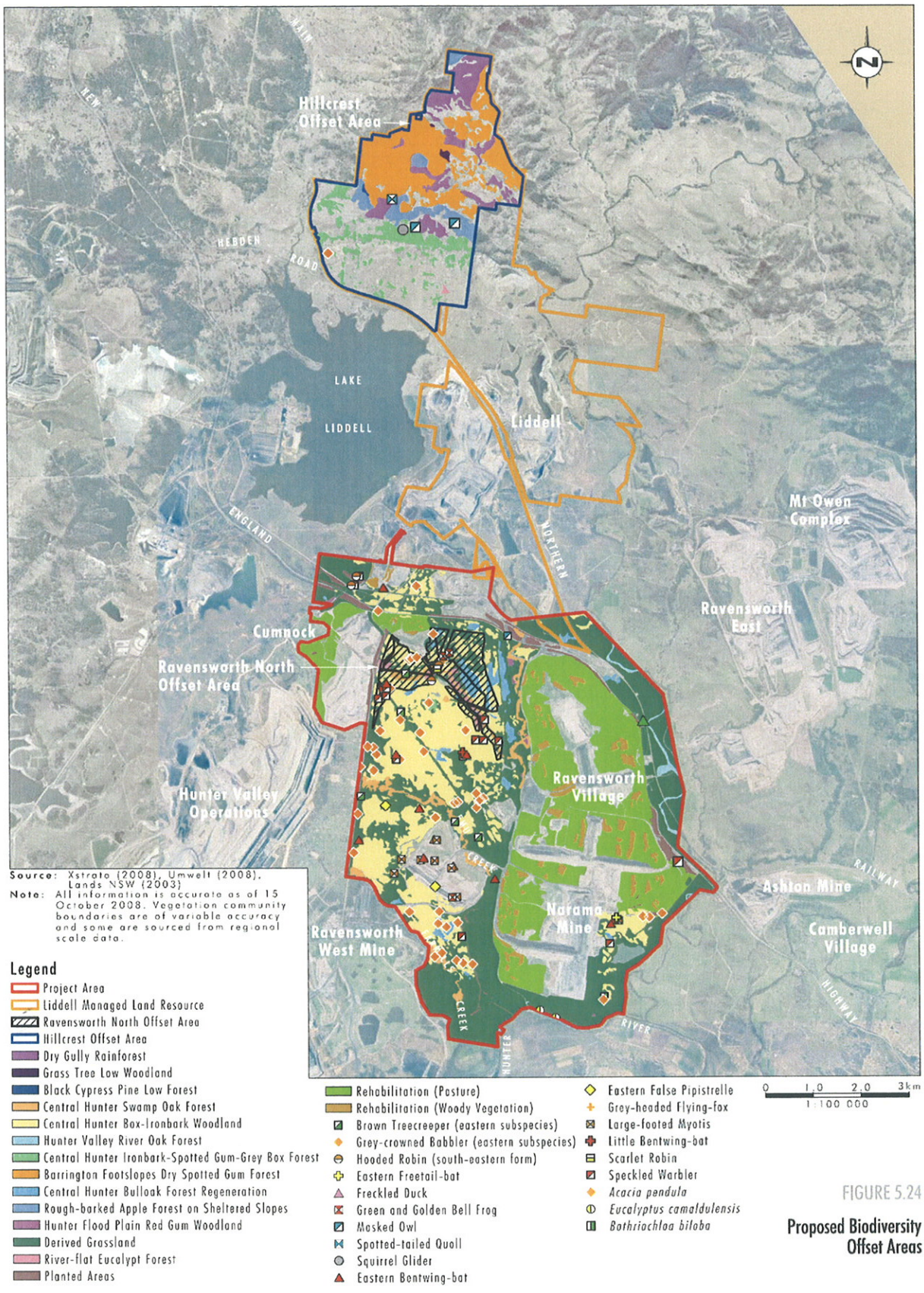


Figure 12: Biodiversity Offset Strategy (Ravensworth and Hillcrest Offset Areas detail)

A (simplistic) summary of the offset strategy is presented in the following table. (More detailed versions of Tables 10 and 11 are provided in Appendix D).

Table 11: Offset Ratios

Offset Ratios				
All Woodland, Excluding Rehab[1]	***All Woodland, Including Rehab***[2]	***EECs***[3] ***– Existing Vegetation Only***	***EECs***[4] ***– Existing Vegetation + Vegetation to be Established***	***EECs***[5] ***– Existing Vegetation + Vegetation to be Established + Rehab.***
3.5:1	6.5:1	1.2:1	2.6:1	6:1

1 Ratio of total offset area (ie. 1,958 ha) to total area of native trees to be cleared (ie. 567 ha)
2 Ratio of total offset area (ie. 1,958 ha) + woodland to be established in rehabilitation (ie. 1,762 ha) to total area of native trees to be cleared (ie. 567 ha)
3 Ratio of total area of existing EEC/VEC in offsets (ie. 613 ha) to total area of EEC/VEC to be cleared (ie. 492 ha)
4 Ratio of total area of existing EEC/VEC in offsets + area proposed to be revegetated to EEC/VEC in offset areas (ie. 1,263 ha) to total area of EEC/VEC to be cleared (ie. 492 ha)
5 Ratio of total area of existing EEC/VEC in offsets + area proposed to be revegetated to EEC/VEC in offset areas (ie. 1,263 ha) + area proposed to be revegetated to EEC/VEC in rehab areas (ie. 1,630 ha) to total area of EEC/VEC to be cleared (ie. 492 ha)

As indicated in the above table, the project would provide a total offset of 3.5 hectares to each 1 hectare removed by the project, excluding mine rehabilitation. If woodland replanting in the rehabilitation strategy is included (ie. 1,762 hectares – see Figure 13), this offset ratio increases to approximately 6.5:1, providing some 3,720 hectares of woodland over the long term to replace the 567 hectares removed by the project.

Whilst not objecting to the size of the offset, DECCW initially stated that it could not support the offset strategy, and hence the project, principally because it believed the offset strategy did not contain sufficient 'like-for-like' vegetation.

This issue is particularly centred around the removal of 485[6] hectares of Central Hunter Box-Ironbark Woodland EEC required for the project (see Table 10). The offset strategy (as revised, excluding rehabilitation) provides for long term conservation of 204 hectares of this community in the Ravensworth North Offset Area, (comprising 124 hectares of existing vegetation and 80 hectares of woodland to be regenerated), but there is none of this vegetation type in the other offset areas. Xstrata argues that the offset strategy provides for some 1,391 hectares of additional vegetation that is structurally and floristically similar to the Box-Ironbark Woodland, including:

- 842 hectares of Central Hunter Ironbark–Spotted Gum–Grey Box Forest EEC (including 298 hectares of existing woodland and 544 hectares of woodland to be regenerated in the offset areas); and
- 549 hectares of Barrington Footslopes Dry Spotted Gum Forest (including 378 hectares of existing woodland and 171 hectares to be regenerated), which is not an EEC.

DECCW does not support Xstrata's view that these 2 vegetation communities are similar to the Box-Ironbark Woodland EEC, and notes that Barrington Footslopes Dry Spotted Gum Forest is not considered to have regional conservation significance and occurs on the Hunter Valley edge rather than on the valley floor where the Box-Ironbark woodland occurs.

Xstrata's ecologist responded that the 3 communities are essentially part of one continuum, each intergrading into each other along a line from north to south. Although not an EEC, Xstrata also argues that the Barrington Footslopes community probably warrants listing as at least a Vulnerable Ecological Community (VEC), as the estimated clearing of this community in the Hunter Valley (ie. 72%) is higher than both the Box-Ironbark Woodland EEC (ie. 68%) and the Ironbark-Spotted Gum-Grey Box Forest EEC (ie. 61%).

Whilst it is acknowledged that the offset strategy does not provide a significant direct offset for Central Hunter Box-Ironbark Woodland, the Department notes that the strategy would provide for the long term conservation of at least some of this vegetation in the Ravensworth North Offset Area (ie. 204 hectares), and the rehabilitation strategy would strive to revegetate a further 1,630 hectares, providing a direct long term offset ratio for this vegetation community of almost 4:1, subject to the success of the rehabilitation. The Department also accepts that the 2 similar communities share many of the

[6] This figure includes that removed by the approved Narama Extension project.

characteristics of the Box-Ironbark Woodland, and that the proposed offset strategy would assist in protecting these communities which have undergone significant clearing in the Hunter Valley.

Further, and irrespective of the like-for-like issue, the Hillcrest Offset Area (together with the nearby Clifton and Stewart Offset Areas) provides a very high quality and strategic offset area for other reasons, particularly in terms of its:

- *Size* – the offset area would provide a large (1,403 hectares, or 1,675 including the recently-added Clifton and Stewart offset areas), un-fragmented parcel of conservation land;
- *Connectivity* – the offset area is located adjacent and/or in proximity to large areas of remnant woodland areas, and is better located in terms of proximity to protected areas such as Barrington Tops National Park. Importantly, the offset area is strategically located with respect to existing and proposed offset areas associated with other mines in the area, including the Mt Owen and Liddell mines;
- *Variety and complexity of habitat* – including valley floor and valley edge habitats, dry areas and wet (gully) areas, remnant woodland areas and areas suitable for regeneration;
- *Presence of threatened species* – and habitat for threatened species, including presence of 3 EECs, a number of significant vegetation communities, and habitat for a broad range of threatened fauna species, some of which are poorly represented in the NSW reserve system;
- *Relative age* – most of the remnant vegetation in the Hillcrest Offset Area is at least 50 years old and up to 150 years old, whereas much of the vegetation in the project disturbance area is around 20-30 years old; and
- *Isolation* – the offset area is relatively removed from the industrial and/or urbanised areas of the valley, or areas of known viable coal resources, with subsequent lower development pressures than a lot of areas on the valley floor.

Given these values, the Department is satisfied that the implementation of the offset strategy would improve, or at least maintain, the biodiversity values of the area of the medium to long term.

The Department acknowledges the offset strategy is supported by Xstrata's rehabilitation strategy which commits to rehabilitating some 1,630 hectares of Box-Ironbark Woodland EEC in the mine rehabilitation area. The Department recognises the inherent risks associated with re-establishment of high-quality, diverse ecosystems on rehabilitated landscapes.

In this regard, Xstrata's ecologist claims that Box-Ironbark Woodland EEC is a community that recovers well in disturbed landscapes, as evidenced in many parts of the Hunter Valley where it has re-established in highly disturbed landscapes after many decades of suppression. Although there has not been much research on this community, the ecologist notes that the similar Central Hunter Ironbark–Spotted Gum–Grey Box Forest EEC at Mount Owen is establishing well in rehabilitated landscapes, based on over 10 years of monitoring data.

To mitigate the risk associated with rehabilitation of the Box-Ironbark Woodland EEC, and to provide a strong incentive to ensuring a high quality rehabilitated landscape is achieved, the Department has recommended a condition requiring Xstrata to undertake a detailed independent ecological audit of the Box-Ironbark Woodland EEC rehabilitation at the end of Year 15 of the project, by which time approximately 1,000 hectares of land would have been rehabilitated. If the audit finds that the rehabilitated woodland does not constitute, or is not adequately trending towards, Box-Ironbark Woodland EEC, then Xstrata would be required to augment the offset strategy to provide additional offsets for the Box-Ironbark Woodland EEC.

The Department has also recommended conditions requiring Xstrata to develop a Hunter Ironbark Research Program in consultation with DECCW, directed at encouraging research into the mapping and recovery of EECs affected by the project, and to providing at least $200,000 toward preparation and implementation of the program.

With these measures, the Department is satisfied that the project's impacts on the Box-Ironbark Woodland EEC are able to be effectively mitigated and managed, and/or adequately compensated for such that the community would be adequately protected and conserved.

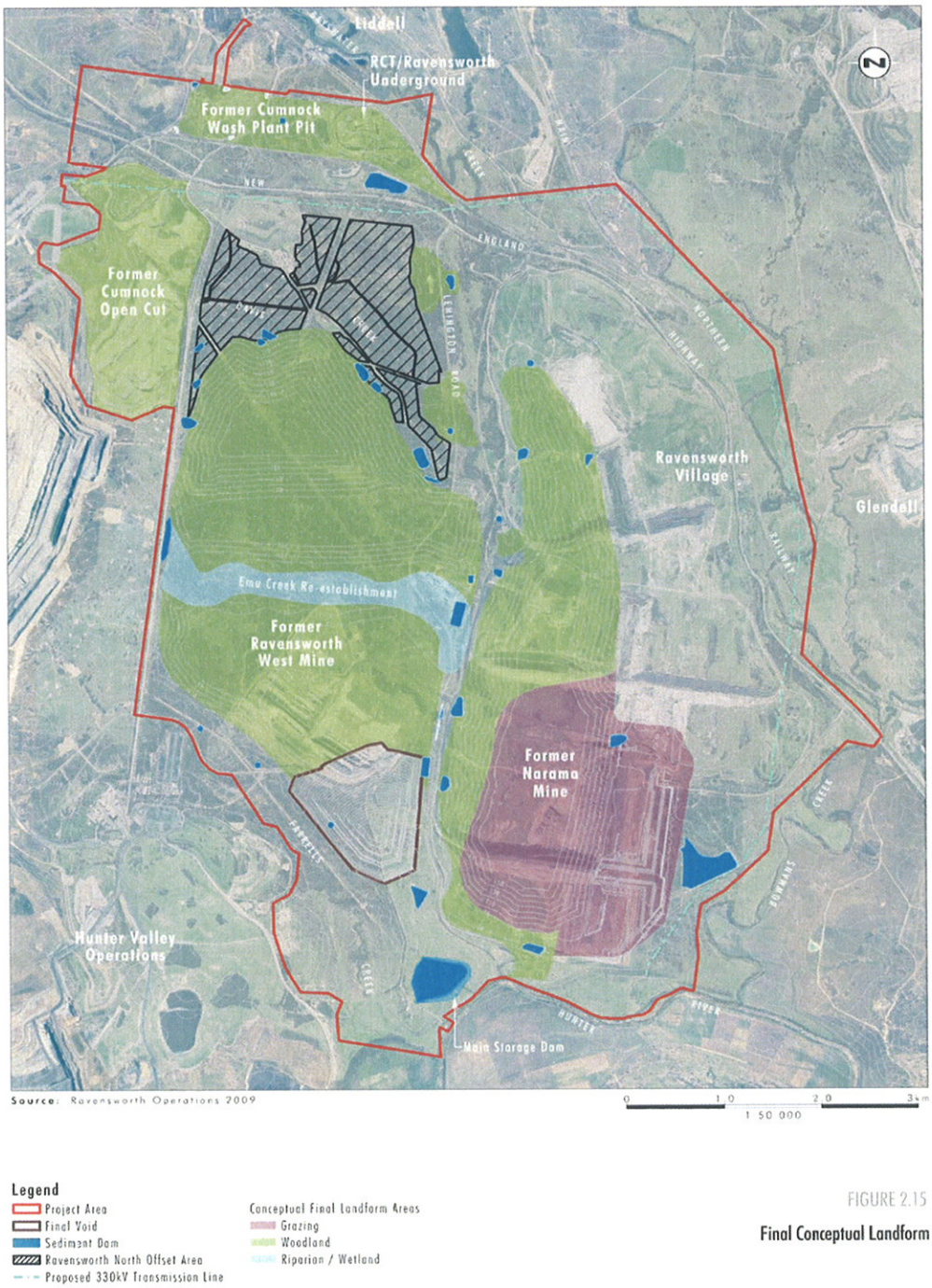


Figure 13: Concept Rehabilitation and Final Landform Plan

Conclusion

The Department acknowledges that the project would require the clearing of a large area of good quality vegetation, including 492 hectares of EEC.

However, the Department is satisfied that these impacts are able to be mitigated and/or offset to an extent such that the project could be considered to improve or at least maintain biodiversity values in the area over the medium to long term. To achieve this goal, the Department has recommended conditions requiring Xstrata to:

- implement the offset strategy;
- commission an independent ecological audit at Year 15, and potentially provide additional offsets based on the outcomes of this audit;
- develop a comprehensive Biodiversity Management Pan and Rehabilitation Management Plan to provide for the detailed implementation of the rehabilitation and offset strategies;
- develop a Hunter Ironbark Research Program, and contribute at least $200,000 toward the program;

- provide for the long term conservation (ie. in perpetuity) of the offset areas; and
- lodge a substantial conservation and biodiversity bond to ensure that the offset areas are established and maintained to the satisfaction of the Director-General.

The Department notes that the implementation the recommended offset strategy and the recommended rehabilitation of the project disturbance area would ultimately provide for the establishment and long term conservation of some 3,720 hectares of trees to compensate for the 567 hectares removed by the project.

5.7 Aboriginal Heritage

The EA includes a specialist Aboriginal cultural heritage assessment, undertaken by Umwelt in consultation with 29 registered local Aboriginal groups. The assessment draws on previous archaeological assessments for the mine complex, and includes additional surveys of areas not previously surveyed.

The surveys identified a total of 173 Aboriginal sites/objects within the disturbance area for the project, although 12 of these are within the footprint of the 330kV transmission line alignment and would be avoided during construction of the transmission pylons, if possible. A further 199 sites/objects were identified within the project area but outside the proposed disturbance area. 42 of these sites are within the proposed Ravensworth North Offset Area, including a site complex (REA 86) containing highly significant grinding grooves.

A summary of the sites and archaeological significance is presented in the following tables.

Table 12: Aboriginal Sites Summary

Site Type	***Within Impact Area***	***Outside Impact Area***	***Total***
Isolated find	78	61	139
Artefact scatter (open camp sites)	93	132	225
Scarred tree	1	3	4
Engraving site	0	1	1
Massacre site	0	1	1
Artefact scatter and scarred tree	1	0	1
Artefact scatter, scarred tree and grinding grooves	0	1	1
Total	**173**	**199**	**372**

* One significant site (REA88) partially impacted and counted as both impacted and not impacted.

Table 13: Archaeological Significance Summary

Archaeological Significance	***Number of Sites***	
	Within Impact Area	***Outside Impact Area***
Low	155	156
Low-moderate	12	9
Moderate	1	12
Moderate-high	4	1
High	1	6
Total	**173**	**184**

* One significant site (REA88) partially impacted and counted as both impacted and not impacted. Also, archaeological significance not available for 15 of the sites outside the impact area.

The site of high archaeological significance that would be directly impacted is identified as REA 88, an artefact scatter containing more than 150 individual artefacts. This site would be partially impacted on its western side for the construction of a haul road. The 4 sites of moderate-high archaeological significance include 3 artefact scatters and 1 artefact scatter/scarred tree. These sites are located within the footprint of the Ravensworth North pit or the proposed main water storage dam.

Through vibration from blasting, the project also has the potential to indirectly impact the highly significant REA 86 site complex, which occurs on a sandstone outcrop to the north of the proposed Ravensworth North pit.

To mitigate the direct Aboriginal heritage impacts associated with the project, Xstrata proposes to:

- salvage 150 of the sites within the disturbance area;
- undertake detailed sub-surface testing and salvage for an additional 11 sites and 2 landforms within the disturbance area, including the more significant sites; and
- relocate the 2 scarred trees within the disturbance area.

Xstrata also proposes to implement a range of broader Aboriginal cultural heritage mitigation measures in consultation with the Aboriginal community through a detailed Aboriginal Cultural Heritage Management Plan for the project. This plan would include provisions for:

- protection of sites outside the disturbance area;
- long term conservation of the Ravensworth North Offset Area;
- protection and management of sites within the existing Farrells Creek 1 Aboriginal Artefact Management Area and the Ravensworth Underground Mine Dam Conservation Area;
- funding display cabinets, IT systems, training for Aboriginal community members in relation to the planned Broke Teaching/Keeping Place or other Keeping Place/s;
- funding for 3D scanning of the Bowmans Creek 16 Engraving Site;
- funding for the preparation of a video of the salvage program;
- providing for supervised access for people to visit the Ravensworth North Offset Area; and
- funding for provision of interpretative signage within the Ravensworth North Offset Area.

With regard to potential blasting impacts on REA 86, Xstrata has committed to protecting the grinding grooves through managing blasting operations to comply with appropriate vibration criteria at the site (see Section 5.3 for further detail).

In accordance with DECCW guidelines for Aboriginal community consultation, Xstrata provided the draft Aboriginal heritage assessment and proposed mitigation measures to the 29 registered Aboriginal groups for comment. Written comments were received from only 3 groups.

At the request of some of the Aboriginal stakeholders, Xstrata subsequently held a meeting (in November 2009) with 23 of the groups. At this meeting 19 of the groups refused to provide written comments on the draft report and resolved to sign a form letter objecting to the project and raising a number of broader issues. This letter states that the groups do not consent to the destruction of any Aboriginal sites in the area and *'are of strong resolve concerning the massive impacts that will occur regarding such a large number of recorded sites and vastness of the sites to be destroyed'*. The letter goes on to raise a number of concerns about the cumulative impact on Aboriginal cultural heritage in the Hunter Valley.

The Department acknowledges that the project would impact a relatively large number of Aboriginal sites, and that the cultural heritage significance of these sites can only be assessed by the Aboriginal community. However, the Department also acknowledges that the assessment indicates that the project would only have a direct impact on one site of high archaeological significance, and that this site (REA 88) would only be partially affected. The project would have a further direct impact on 4 sites of moderate-high archaeological significance, however the assessment indicates that these site types are well represented in the sites outside the disturbance areas and/or within the proposed Ravensworth North Offset Area.

The Department is also satisfied that the project can be managed such that it would not impact the highly significant REA 86 site (including the NARD 17 grinding grooves), subject to strict management of project blasting activities.

The Department believes that the project-specific impacts are not inconsistent with many other large land disturbing projects in the Hunter Valley, including other mining projects or agricultural (cropping) projects. The Department is satisfied that the project's impacts would not significantly impact the archaeological values of the Upper Hunter Valley.

From the concerns raised by the Aboriginal community, the Department understands that the community's main concerns are more related to the cumulative impact on Aboriginal cultural heritage in the Upper Hunter, as well as a perceived lack of a regional approach to management of Aboriginal cultural heritage and lack of opportunities for Aboriginal people in the management of their heritage.

In this regard, the Department notes that the Aboriginal heritage assessment (and consultation with the Aboriginal community) did not include detailed consideration of the Aboriginal heritage values of the large (ie. 1,403 hectares) Hillcrest Offset Area, which has been proposed to be protected for biodiversity purposes (see Section 5.6). Nor did the assessment include consideration of the Clifton and Stewart Offset Areas. Preliminary archaeological assessment and Aboriginal community consultation since the EA indicates that the Hillcrest Offset Area has archaeological values that are

similar to the area to be disturbed by the project. Accordingly, Xstrata has since committed to undertaking detailed archaeological surveys of the Hillcrest Offset Area, and to conserving and managing the area for Aboriginal heritage purposes as well as biodiversity purposes.

The Department is satisfied with the level of Aboriginal heritage assessment (and consultation) in the EA, and on balance, is satisfied that the proposed management measures – including the proposed offsetting measures – would adequately compensate the cultural heritage impacts of the project.

To ensure that Aboriginal heritage is appropriately managed, the Department has recommended conditions requiring Xstrata to:

- establish and conserve the Ravensworth North Offset Area and Hillcrest Offset Area (as well as the recently-added Clifton and Stewart Offset Areas) in perpetuity; and
- prepare and implement a comprehensive Heritage Management Plan for the mine complex, in consultation with all applicable Aboriginal groups and DECCW. The plan would be required to include detailed plans of management for the Ravensworth North Offset Area, Hillcrest Offset Area, and Clifton and Stewart Offset Areas[7], and for ensuring the ongoing involvement of the Aboriginal community in the conservation and management of Aboriginal cultural heritage on the site.

5.8 Non-indigenous Heritage

The EA includes a specialist non-indigenous heritage assessment, undertaken by Umwelt. The assessment includes a literature review and site inspection to identify items of heritage significance.

Six heritage sites/items would be directly affected by the project, and a number of additional sites/items have the potential to be affected indirectly by project blasting. A summary of the impacts is presented in the following table.

Table 14: Heritage Impacts

Heritage Item	***Significance***	***Impact***	***Management Proposed***
Old Lemington Road over Emu Creek	Local	Direct	Archival recording (most items)
Concrete foundations ruins	Nil local		
Former quarry on Davis Creek tributary	Local		
Timber fence associated with Travelling Stock Reserve	Local		
Timber enclosure associated with TSR	Local		
Homestead site ruins	Local		
Dam enclosed by timber fence	Local	Potential indirect (blasting)	Archival recording
Fence enclosure adjacent to dam	Local		
Oaklands homestead	Local		
TSR entrance gate	Local		
Dam associated with TSR	Local		
Former Ravensworth Public School	Local[1]	Potential indirect (blasting)	Blasting designed to ensure compliance with relevant structural damage criteria
Chain of Ponds Hotel and outbuildings	State[1]		
Ravensworth homestead	Regional[1]		
St Clements church	Local[1]		
Camberwell community hall	Local[1]		

1 These items are listed on state and/or local heritage registers

The Department is satisfied that the project would not have a significant direct impact on heritage values of the area, given the low local significance of the items within the disturbance area.

With regard to the blast-related indirect impacts on the listed items, as discussed in Section 5.3 the Department is satisfied that the project blasting can be managed to avoid impacting the heritage items.

To manage the heritage impacts of the project, the Department has recommended a condition requiring Xstrata to prepare and implement a detailed Heritage Management Plan for the project in consultation with the Heritage Branch and local historical organisations, including requirements for:

- measures to protect the heritage values of the significant Ravensworth homestead, Chain of Ponds Hotel and Ravensworth Public School;

[7] As well as the Farrells Creek 1 Aboriginal Artefact Management Area and RUM Dam Conservation Area, as required under previous approvals for the complex.

- photographic and archival recording of all heritage items directly or indirectly impacted by the project;
- protection of other heritage items outside the disturbance area; and
- blast monitoring and management.

5.9 Traffic and Transport

Road Traffic

The main access to the site is from Lemington Road via the New England Highway, with approximately 80% of traffic travelling to and from the Singleton area, and 20% to and from the Muswellbrook area.

Lemington Road was relocated to its existing alignment in the early 1990s to allow the development of the Narama mine. The approval for Narama requires Xstrata to reinstate Lemington Road to its original alignment – now known as Brunkers Lane – on completion of the Narama mine. Xstrata proposes to undertake this realignment as part of the project.

The realignment is shown on Figure 14, and is partly consistent with the original alignment (though modified in areas to avoid proposed overburden emplacements. The realignment requires a new bridge over Bayswater Creek, and also an upgrade to the New England Highway/Lemington Road intersection, and a new intersection for the proposed new mine access road.

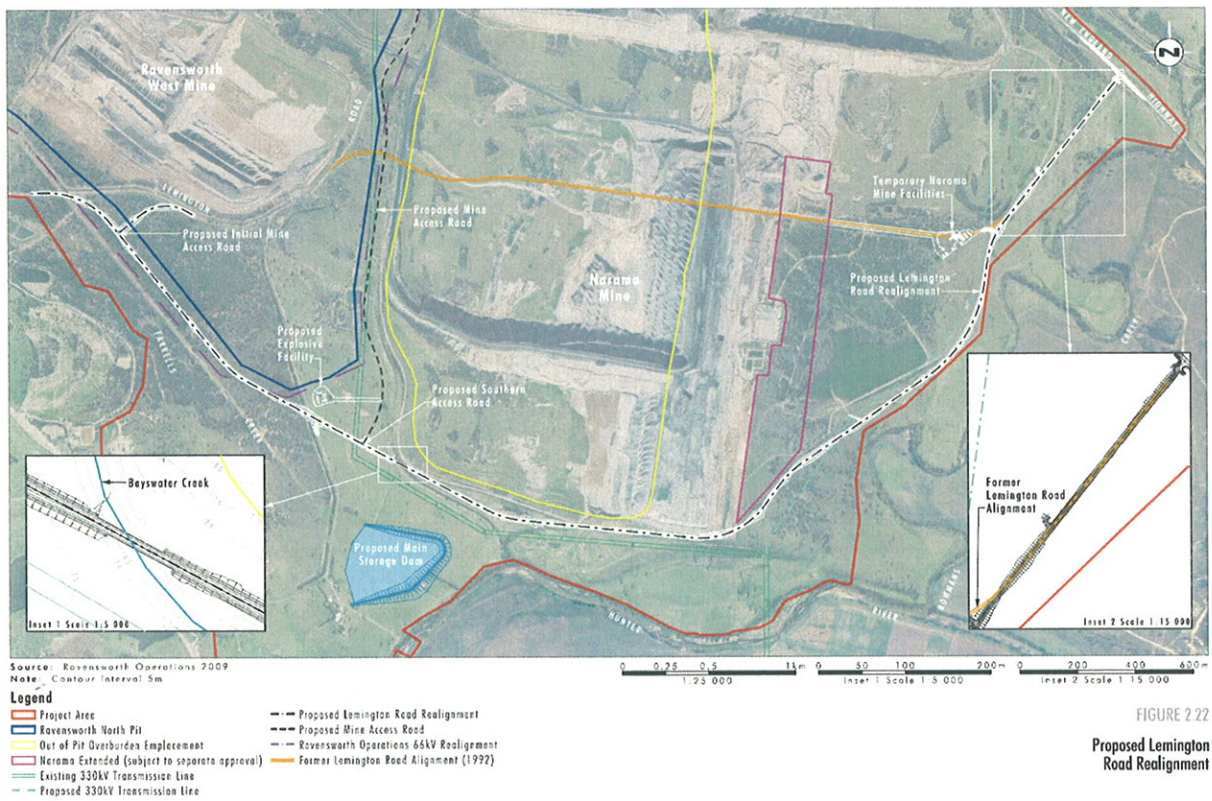


Figure 14: Lemington Road Realignment

Following realignment, all mine access would be via the new realigned roadway, and the existing Lemington Road alignment would be closed to public access. However, access to the RUM, Ravensworth CHPP and Ravensworth Coal Terminal would continue to be accessed from Pikes Gully Road and Liddell Station Road. Xstrata proposes to upgrade the intersection between the RCT access road and Liddell Station Road as part of the project.

With these improvements Xstrata's traffic assessment, undertaken by Parsons Brinkerhoff, indicates that the:

- Lemington Road realignment, and its proposed upgraded intersection with the New England Highway, would comfortably accommodate peak operational traffic levels;
- proposed Lemington Road/mine access road intersection would perform satisfactorily; and
- access to the Ravensworth CHPP and Ravensworth Coal Terminal would continue to perform satisfactorily.

The RTA does not object to the project, but believes that Xstrata should be required to:

- upgrade the New England Highway / Brunkers Lane intersection to a seagull-type intersection;
- ensure that project elements near parts of the eastern boundary are appropriately setback from the New England Highway, as portions of the road will be subject to widening;
- close the existing New England Highway/Lemington Road intersection once Lemington Road is relocated;
- construct the proposed new conveyor bridge over the New England Highway to its satisfaction; and
- prepare a Construction Traffic Management Plan for the project, to the satisfaction of the RTA and Council.

The Department is satisfied that the local and regional road network is capable of accommodating the traffic associated with the project, subject to the identified upgrades. The Department has recommended conditions consistent with the RTA's recommendations.

The Department notes that Ashton Coal raised concerns about the responsibility for rectification of subsidence impacts on the realigned Lemington Road (and the relocated 330kV transmission line), part of which is above its approved underground longwall mining operations. As shown on Figures 14 and 15, approximately 1 kilometre of the eastern part of the realigned roadway is above Ashton's approved longwalls.

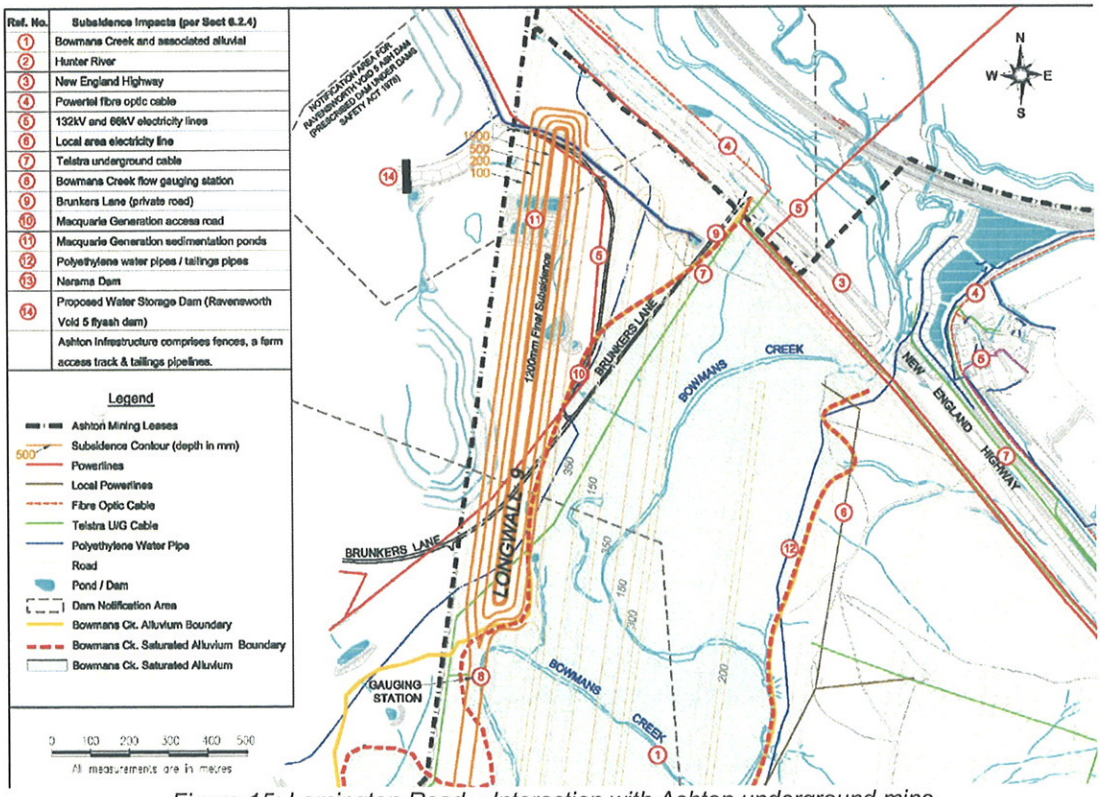


Figure 15: Lemington Road – Interaction with Ashton underground mine

Since the EA (and the Response to Submissions), Xstrata and Ashton have come to an agreed position on the responsibility and management of subsidence-related impacts on the realigned road. The agreement essentially involves:

- Xstrata would build the realignment in a manner that could reasonably withstand the subsidence impacts arising from Ashton's approved underground mining operations;
- Xstrata would pay Ashton's reasonable costs associated with the monitoring and management of ongoing subsidence-related impacts on the realigned road; and
- Xstrata and Ashton would jointly review the need, if any, for further realignment of Lemington Road arising as a result of long term subsidence impacts.

The Department has recommended conditions reflecting this agreement, and notes that similar conditions relating to the realignment 'review' have been placed on the approval to the Ashton underground mine, following a recent modification to that approval.

Rail Traffic

The Main Northern Railway is located within the eastern extent of the project area, and the existing Ravensworth CHPP and Ravensworth Coal Terminal (RCT) has a dedicated rail loading facility.

The project involves increasing load-out of coal from the RCHPP/RCT to up to 20 million tonnes of coal a year, which would increase average train movements from about 1 per day to 6 or 7 per day.

The increased movements from RCHPP/RCT would increase average movements on the local Ravensworth and Newdell Rail Loops from 20 to 26 a day (ie. a 30% increase). To help support this increase and avoid significant delays, the project includes rail upgrades to improve efficiency of the local access to and from the Main Northern Railway, including de-linking of the Ravensworth Rail Loop from the Newdell Rail Loop. The proposed upgrades would occur prior to increasing coal load out from the CHPP/RCT above 8 million tonnes a year.

Subject to these improvements, the Department is satisfied that the existing and planned rail infrastructure would accommodate the rail traffic generated by the project in the local area.

With regard to the wider rail network, the EA acknowledges that the existing capacity of the Main Northern Railway line system into the Port of Newcastle is approximately 97 million tonnes a year, and that industry forecasts predict an increase in demand of 52% by 2013 (including contribution from the Ravensworth mine complex). The EA notes that the ARTC is currently working on a number of strategies to enhance the capacity, safety and reliability of the rail network in the short to medium term.

The Department recognises that there are existing capacity constraints on the regional rail network, but is satisfied that current and planned rail infrastructure improvements would mitigate these constraints. Securing access to adequate rail capacity is a commercial risk for Xstrata, along with other miners and commercial operators in the Upper Hunter.

5.10 Visual Amenity

The EA includes a specialist visual impact assessment undertaken by Umwelt. The assessment considers the visual impacts of the project with respect to key visual receiver locations, including:

- residential receivers – including Camberwell Village residents approximately 5 kilometres to the southeast, and rural receivers approximately 1.5 kilometres to the south (at the closest point);
- commuters on:
  - New England Highway and the Main Northern Railway – approximately 1.5 kilometres to the north and east; and
  - the realigned Lemington Road – directly to the south; and
- the Hunter Valley Operations viewing point – approximately 1 kilometre to the southwest.

The main visually prominent features associated with the project would include the overburden emplacements, along with some mining activities and infrastructure. The overburden emplacements would have heights of up to 200 metres AHD for the main central emplacement and up to 160 metres AHD for the eastern out-of-pit emplacement.

With regard to residential receivers, the EA concludes that due to distance and intervening topography and vegetation, the project would have only a moderate visual impact during construction of the emplacements (the top 10 metres of the eastern emplacement would be visible from elevated areas in Camberwell Village), reducing to minor once the emplacements are rehabilitated.

The emplacements would be visible from a 5.7 kilometre section of the New England Highway. Given the intervening distance and relatively short viewing time, the EA concludes that the project would have a minor impact on commuters on the highway (and commuters on the adjacent railway line).

The emplacements would also be visible, at relatively close distance, from a 5 kilometre section of the realigned Lemington Road. Xstrata proposes to establish a vegetation screen along this section of the road to mitigate the visual impact of the project over time. With this measure, and the relatively short viewing time, the EA concludes that the visual impact from this receiver location would be minor.

The EA notes that the emplacements would block some views from the HVO Viewing Point to the east, but considers that the impact would be minor given that most tourists visiting the viewing point are doing so to view the mining operations themselves.

The Department is satisfied that the project can be managed such that it would not have a significant visual impact on surrounding receivers. To ensure this occurs, the Department has recommended conditions requiring Xstrata to:

- prepare a comprehensive Landscape Management Plan for the mine complex that, amongst other matters, describes the measures that would be implemented within the project area to reduce the visual impacts of the project, and measures to rehabilitate visible areas of emplacements as soon as is reasonable and feasible;
- promptly establish tree screens along the sections of New England Highway and the realigned Lemington Road that would have views to the emplacements; and
- implement all reasonable and feasible measures to reduce night lighting impacts, and ensure that all external lighting associated with the project complies with relevant Australian Standards for controlling impacts of outdoor lighting.

5.11 Socio-economic Impacts

The project would generate a large number of jobs and inject considerable capital investment into Singleton and the broader Hunter region, which would have a range of benefits but may also put pressure on public services and facilities.

The EA includes a socio-economic assessment and an economic assessment, undertaken by Umwelt and Gillespie Economics respectively, which attempt to identify, assess and analyse the project's socio-economic costs and benefits.

Cost Benefit Analysis

The economic assessment includes a cost benefit analysis which seeks to calculate a net benefit/cost associated with the project based on its full range of environmental, social and economic impacts and benefits. These are illustrated in the table below.

Table 13: Costs and Benefits of the Project

	Potential Costs	***Potential Benefits***
Production	• Opportunity cost of land required for the project • Mining and infrastructure capital costs • Land acquisition costs • Mine operating and rehabilitation / decommissioning costs	• Avoided rehabilitation / decommissioning costs • Sale value of export and domestic product coal • Residual land value and capital at project end
Potential Externalities	• Air quality • Greenhouse gases • Noise and vibration • Ecology • Groundwater and surface water • Traffic and transportation • Aboriginal and non-Aboriginal heritage • Visual impacts	• Economic and social benefits of employment provided by the Project

The assessment calculates that the project would have a net benefit to society of some $5.1 billion.

The Department understands that this figure does not include consideration of the costs and benefits associated with downstream burning of the coal produced. Notwithstanding, based on this assessment (and other similar cost benefit analyses undertaken for coal mines in the Hunter), the Department is satisfied that the project would result in a considerable net benefit to society.

Regional Economic Impacts

The assessments indicate that the project would have considerable socio-economic benefits to the region and the State, including:

At the mine:

- 550 direct jobs during operation;
- 500 direct jobs during construction;
- $900 million in initial capital investment;

For the Regional Economy:
- $1.0 billion in annual direct and indirect business turnover;
- $627 million in annual direct and indirect value-added (gross regional product);
- $113 million in annual household income;
- 1,132 direct and indirect jobs;

For the NSW Economy:
- $1.6 billion in annual direct and indirect business turnover;
- $888 million in annual direct and indirect value-added (gross regional product);
- $270 million in annual household income; and
- 3,084 direct and indirect jobs.

The EA includes an assessment of the impact of the project on public services and facilities in the Singleton local government area, which indicates that:
- health services are already strained, and the project would strain these services further;
- education facilities (including pre-school, primary, secondary and tertiary schools) are likely to have sufficient capacity to accommodate the project; and
- residential housing availability and affordability is a current issue (as it is for large areas of NSW and Australia), however there are a number of initiatives underway to increase supply, including a number of subdivisions in the local area.

Whilst the Department recognises the existing pressures on local services and facilities, the Department is satisfied that the project would not significantly increase these pressures, given that it essentially represents a continuation of existing mining activities. The Department also believes that the project's considerable economic benefits to the broader regional economy would benefit and stimulate the orderly growth of these services by the public and private sectors.

The Department is satisfied that the socio-economic benefits of the project are likely to far exceed its costs, and is satisfied that the region is able to accommodate the project. The Department has recommended a condition that would require Xstrata to enter into an agreement with Singleton Council to provide for a reasonable level of contributions toward local services and facilities.

Project Need

The Department recognises that society is heavily reliant on coal to meet its basic energy needs (both at a domestic and international level). Coal provides around 90% of NSW's electricity needs, 75% of Australia's electricity needs and 40% of the world's electricity needs.

Access to energy remains a critical development need, particularly for the one-third of the world's population without electricity. As living standards and development in Third World countries increase, it is expected that the demand for coal will rise to satisfy increasing global energy requirements. The Ravensworth Operations Project would contribute to supplying this rising annual coal demand. Therefore the ultimate need for the project is driven by both domestic and international markets to meet current and future energy needs.

Consequently, the Department is satisfied that there is a demonstrable need for the project in terms of meeting society's need for adequate, reliable and affordable energy.

At the local level, the Department recognises that the proposed area of coal extraction is largely surrounded by existing mining operations. The project is able to be undertaken using existing mining facilities and infrastructure. In this regard, the Department acknowledges that the project represents a logical extension to existing coal mining activities at the Ravensworth mining complex.

From the State's perspective, the project would deliver a number of key benefits, including the generation of 500 construction and 550 operational jobs at the Ravensworth mine complex, flow-on regional economic benefits, and significant tax income and royalty income (approximately $1.4 billion over the project life).

Notwithstanding the above, the Department recognises that a balance must be met in the promotion and co-ordination of the orderly and economic use of land; the proper management and development of the State's resources; and the protection of the environment and ecologically sustainable development. The Department has considered these matters in detail in its assessment of the project.

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.

Xstrata has reviewed and accepts the recommended conditions. The Department believes the conditions reflect current best practice for the regulation of coal mines in NSW.

7. CONCLUSION

The Department has assessed the project application, EA, submissions on the project and Xstrata's response to submissions, in accordance with the relevant statutory requirements.

This assessment has found that, whilst the project would result in some adverse environmental impacts – including significant dust and/or noise impacts on 4 privately-owned properties (owned by 3 separate landowners), clearing of 567 hectares of good quality native woodland, and impacting a number of Aboriginal sites/objects – the Department is satisfied that these impacts can be adequately mitigated, managed, offset and/or compensated for. The Department has recommended a broad range of contemporary conditions to ensure this occurs.

The assessment has also found that the project would not result in any significant cumulative impacts on the surrounding area, including Camberwell Village. Nonetheless, the Department has recommended conditions requiring Xstrata to comply with contemporary cumulative noise and dust criteria throughout the life of the project.

The Department acknowledges that the project represents a logical extension of the existing mining complex, and that it would make use of existing infrastructure and facilities. The Department also recognises that the project would provide major economic and social benefits for the Hunter region and to NSW, including:

- a direct capital investment in the mine complex of $900 million;
- maintaining 550 direct jobs at the mine complex;
- generating over 3,000 new direct and indirect jobs across NSW;
- facilitating development of a 330 million tonne coal resource, generating some $1.4 billion in coal royalties for NSW; and
- realising a net benefit to society of some $5.1 billion.

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

8. 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 (see Appendix B).

David Kitto
Director, Mining & Industry Projects
3/2/11

Chris Wilson
Executive Director, MPA
4/2/11

Richard Pearson
Deputy Director-General, DASP
6/2/11

Sam Haddad
Director-General
7/2/2011