



Department of
Infrastructure, Planning and Natural Resources

**PRIMARY SUBMISSION
TO THE COMMISSION OF INQUIRY
FOR THE MOUNT OWEN OPERATIONS
PROJECT**

June 2004

1. INTRODUCTION

On 28 January 2004, the Department received a development application (DA) from the Hunter Valley Coal Corporation (the Applicant), a wholly owned subsidiary of Xtrata Coal, seeking approval for the Mount Owen Operations Project in the Upper Hunter Valley.

Between 30 January 2004 and 12 March 2004, the Department exhibited the DA, environmental impact statement (EIS), and species impact statement (SIS) for the proposal.

During the exhibition period, the Department received 1 petition (with 22 signatures) and 37 submissions on the proposal:

- 6 from Government agencies;
- 5 from special interest groups; and
- 26 from members of the public.

The petition and 30 of these submissions objected to the proposal, and raised a number of concerns about the potential air quality, noise, blasting, surface and ground water, social and economic, and flora and fauna impacts of the proposal. However, most of these submissions were from landowners located to the south east of the proposal, who were particularly concerned about the significant impacts that the proposal could have on their properties and the local community.

Several submissions, including the submission from Singleton Council, asked the Minister to hold a Commission of Inquiry (COI) into the proposal so that neighbouring landowners and the wider community could present their objections to the proposal in an open and transparent forum.

On 28 April 2004, after reviewing these submissions, the Minister for Infrastructure and Planning directed that a COI be held into the environmental aspects of the proposal, in accordance with section 119 of the *Environmental Planning & Assessment Act 1979* (EP&A Act).

However, in recognition of the community's primary concerns, the Minister also directed that this COI should have particular emphasis on the following potential impacts of the proposal:

- air quality, in particular dust impacts;
- noise and blasting;
- surface and ground water; and
- social and economic, including the acquisition of land either directly or potentially affected by the proposal.

This report is the Department's primary submission to the COI. It focuses exclusively on those aspects of the proposal that are specifically referred to in the Minister's direction.

However, if it becomes apparent during the course of the COI, that some of the other potential impacts of the proposal are considered to be of concern to the community, the Department will address these issues in its Submission in Reply.

2. PROPOSED DEVELOPMENT

2.1 Background

The Mount Owen coal mine is located about 25 kilometres north west of Singleton in the Upper Hunter Valley (see Figure 1). It was approved by the Minister for Planning in 1991, and started operations in 1993. It is owned by the Hunter Valley Coal Corporation, a wholly owned subsidiary of Xtrata Coal Australia.

Development Approvals

The mine currently operates under 4 development consents (see Table 1).

	Development Approval	Consent Authority	Description
1	November 1991, which was surrendered in September 1997.	Minister	Establish Mount Owen mine
2	July 1994, which was modified in: • July 1996; • September 1999; • August 2000; • May 2003; and • May 2004.	Minister	Extend Mount Owen mine
3	December 1995	Council	Rail loop and loading facility
4	August 1996	Council	Clean water pipeline and dam (90ML)
5	November 2002	Minister	Homestead dam (1030ML)

Table 1: Previous & Current Development Approvals for the Mount Owen Mine

Major Components

The major components of the mine (see Figure 2) include the:

- open cut mining pit, which is comprised of 3 connected pits: A, B, and C. Mining has been completed in Pit A, is nearing completion in Pit B, and is scheduled to start in Pit C shortly;
- major out-of-pit dump to the north west of the mining pit;
- the infrastructure (or site facilities) complex to the west of the mining pit, which includes the:
 - coal handling and preparation plant (CHPP);
 - ROM and product coal stockpiles;
 - offices, bath house, and workshops;
 - water supply dams; and
- rail loop and loading facility.

Production Rates

The mine is allowed to extract up to 8 million tonnes of ROM coal a year.

Interactions with Adjoining Mines

The Mount Owen mine currently has a number of interactions with the adjoining Ravensworth East and Liddell mines. The Mount Owen mine is allowed to deposit its tailings in the Ravensworth East voids, and Ravensworth East is allowed to process up to 2 million tonnes of its coal at the Mount Owen CHPP. In addition, Mount Owen is also allowed to receive water from the Ravensworth East and Liddell mines.



Figure 1: Mount Owen Mine in its Regional Context

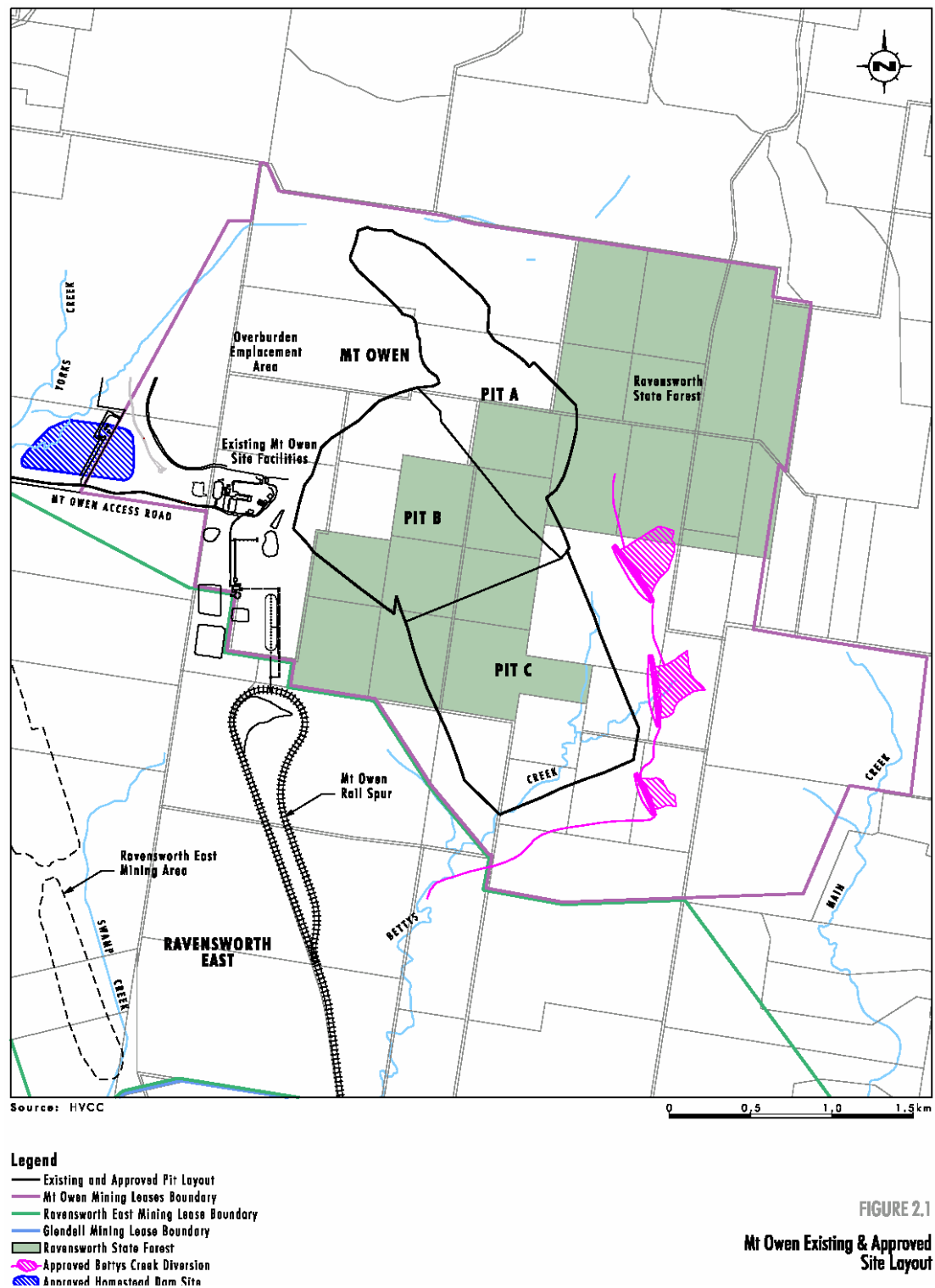


FIGURE 2.1

Mt Owen Existing & Approved Site Layout

Figure 2: The Approved Layout of the Mount Owen Mine

Conservation Areas

Prior to 1993, the Ravensworth State Forest covered an area of about 450 hectares, and was one of the most significant remnants of native vegetation in the Central Hunter Valley Floor.

In 1993, the Minister for Planning approved the proposed extension of the Mount Owen mine. This approval allowed the removal of about 250 hectares of remnant vegetation, and the separation of the Ravensworth State Forest into the northern and southern remnants.

To offset this impact, the Applicant agreed to:

- revegetate 430 hectares of land to the north of the mine (the New Forest);
- revegetate 310 hectares of land to the south and west of the mine (the Wildlife Corridor) to link the two remnants of the Ravensworth State Forest that would be separated by mining; and
- rehabilitate the mining pit and out-of-pit dump to woodland.

In the medium to long term this offset was predicted to increase the size of the remnant vegetation to about 1330 hectares.

In addition to this offset, there is also an Aboriginal Voluntary Conservation Area at the Mount Owen mine. This area covers an area of about 29 hectares around Yorks Creek, and is located to the west of the out-of-pit dump.

Both of these areas are shown in Figure 3.

2.2 Description of the Proposed Development

The Mount Owen Operations Project has 4 major components (see Figure 4).

Firstly, it would increase the size of the mining area by extending Pits B & C, and establishing a new mining pit (the Eastern Rail Pit) adjacent to the rail loop. These extensions would increase the mining reserves from 90 to about 140 million tonnes of coal, and extend the life of the mine by up to 10 years.

Secondly, it would increase the capacity of the out-of-pit dump space by increasing the height of the existing approved dump from RL 215 AHD to RL 230 AHD, and establishing the West Dump. The Applicant says this is dump space is critical to enable the mine to make a smooth transition from Pit B to Pit C, as there would be limited dump space in the pit during this transition due to the geological and safety constraints associated with mining at depths of up to 270 metres. The Applicant indicates that if it does not secure new out-of-pit dump space, it would need to reduce the mining width in the Pit B to C transition, which would reduce coal recovery rates, shorten the life of the mine, and compromise the ongoing viability of operations.

Thirdly, it would upgrade the existing infrastructure complex at the mine, including the:

- CHPP (from 9 to 15 million tonnes a year);
- product coal stockpile;
- rail loading system;
- haul roads; and
- offices, bathhouse, fuel storage, and workshop.

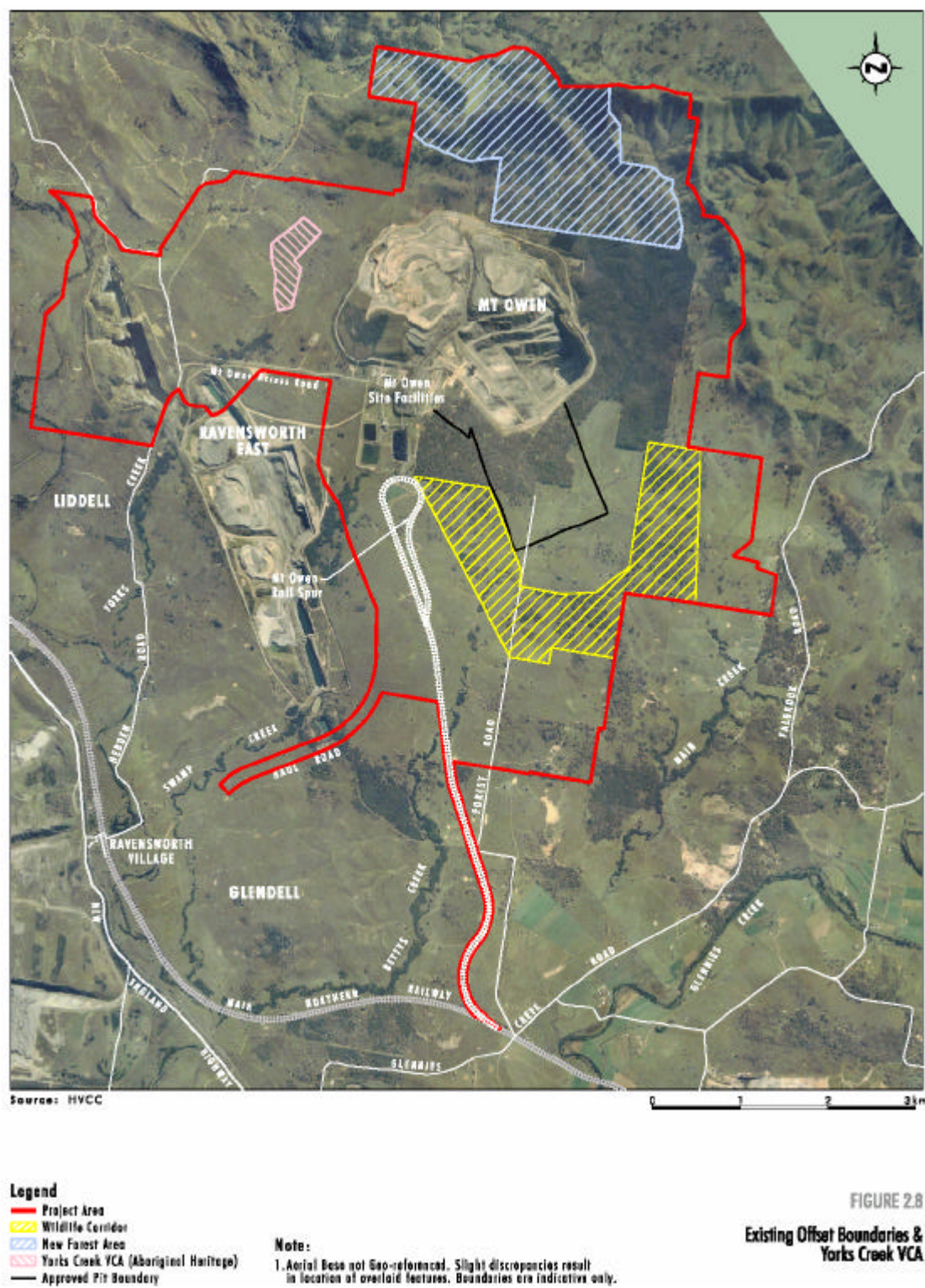


Figure 3: Existing Conservation Areas at the Mount Owen Mine

Finally, it would receive, process, and export about 5 million tonnes of coal from the adjoining Ravensworth East and Glendell mines.

Under this proposal, the mine would be allowed to extract up to 10 million tonnes of ROM coal a year, process up to 15 million tonnes of ROM coal a year, and transport the coal to the Port of Newcastle by rail.

Essentially, operations would mirror current practice:

- coal would be extracted from the mining pits, washed in the CHPP, stockpiled and transported to the Port of Newcastle;
- coarse rejects would initially be deposited in the out-of-pit dumps, and then in the mining pit;
- tailings would be deposited in the Ravensworth East voids, and then in the mining pit;
- water would continue to be imported from the Ravensworth East and Liddell mines or Glennies Creek; and
- the site would be progressively rehabilitated.

Bettys Creek Diversions

To facilitate mining, the proposal requires two diversions to Bettys Creek. The first involves a temporary diversion of the creek around the proposed West Dump and Eastern Rail Pit, which would then be re-established on its original alignment following the rehabilitation of the Eastern Rail Pit. The second involves a permanent diversion of the creek upstream of the mining pit into Main Creek. This diversion would be designed to attenuate flows up to and including a 1 in a 100 year ARI flood event, with 2 detention and 1 retention basins that would be linked by a series of open channels and pipes.

Biodiversity Offset Strategy

In addition, the proposal requires further disturbance to the Ravensworth State Forest, as about 35 hectares of the remaining 40 hectares of the southern remnant would need to be cleared for the proposed West Dump and extension of the product stockpile. It also requires the disturbance of part of the Wildlife Corridor, which was set aside as part of the previous offset. The Applicant is proposing to implement a comprehensive Biodiversity Offset Strategy to compensate for this disturbance, and build on the previous offset strategy. However, the original concept of having two remnants of the State Forest linked by a Wildlife Corridor has been changed, and the proposed offset is now focussed primarily on establishing a major vegetation corridor along the eastern boundary of the mine (see Figure 5). When combined with the current offsets, the proposed offsets should result in the creation of a significant area of woodland in the medium to long term, covering approximately 1774 hectares.

Consolidation of Development Consents

Finally, the Applicant is proposing to consolidate its existing development consents into a single, comprehensive development consent for the whole operation.

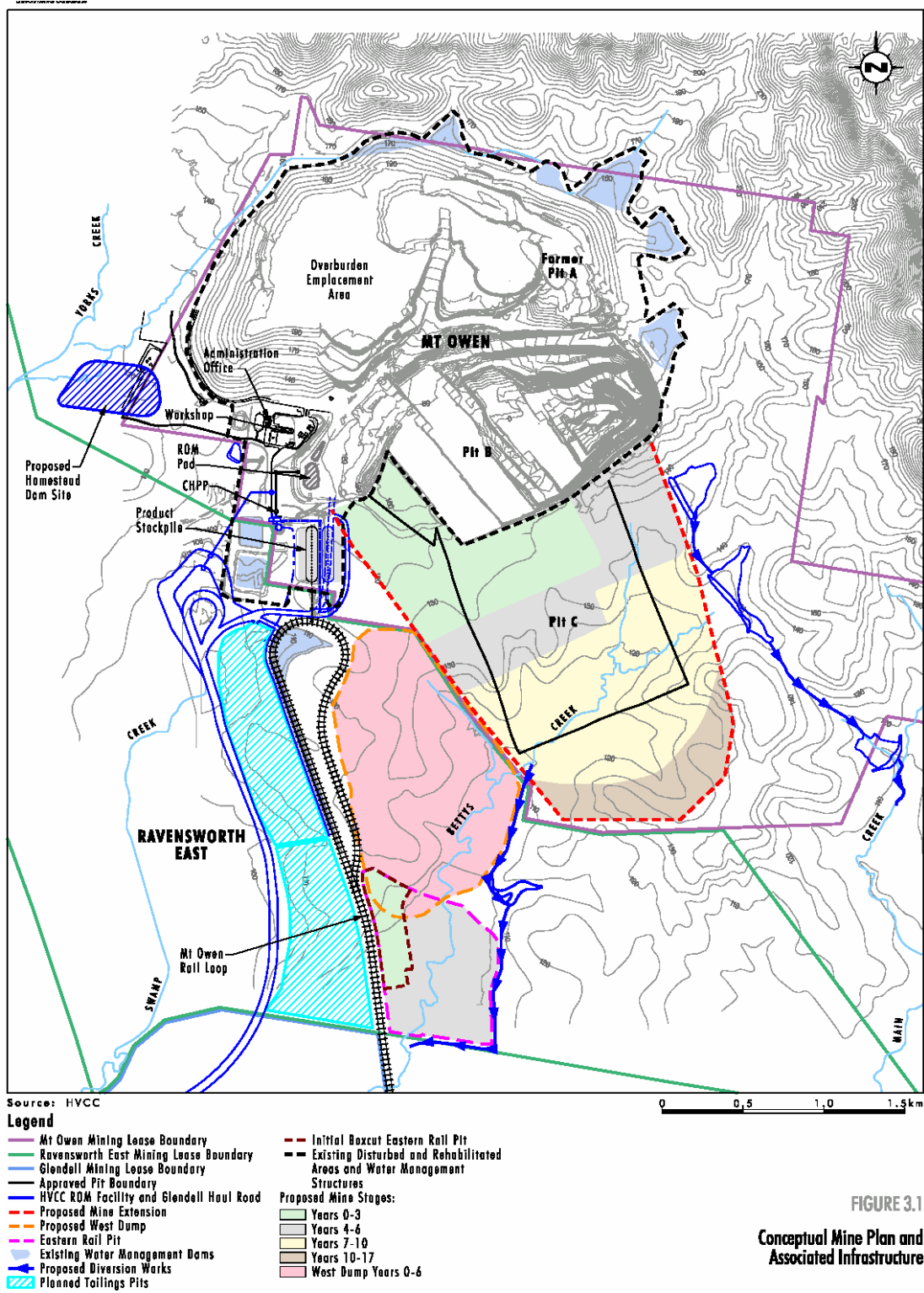


FIGURE 3.1
Conceptual Mine Plan and
Associated Infrastructure

Figure 4: The Proposed Development

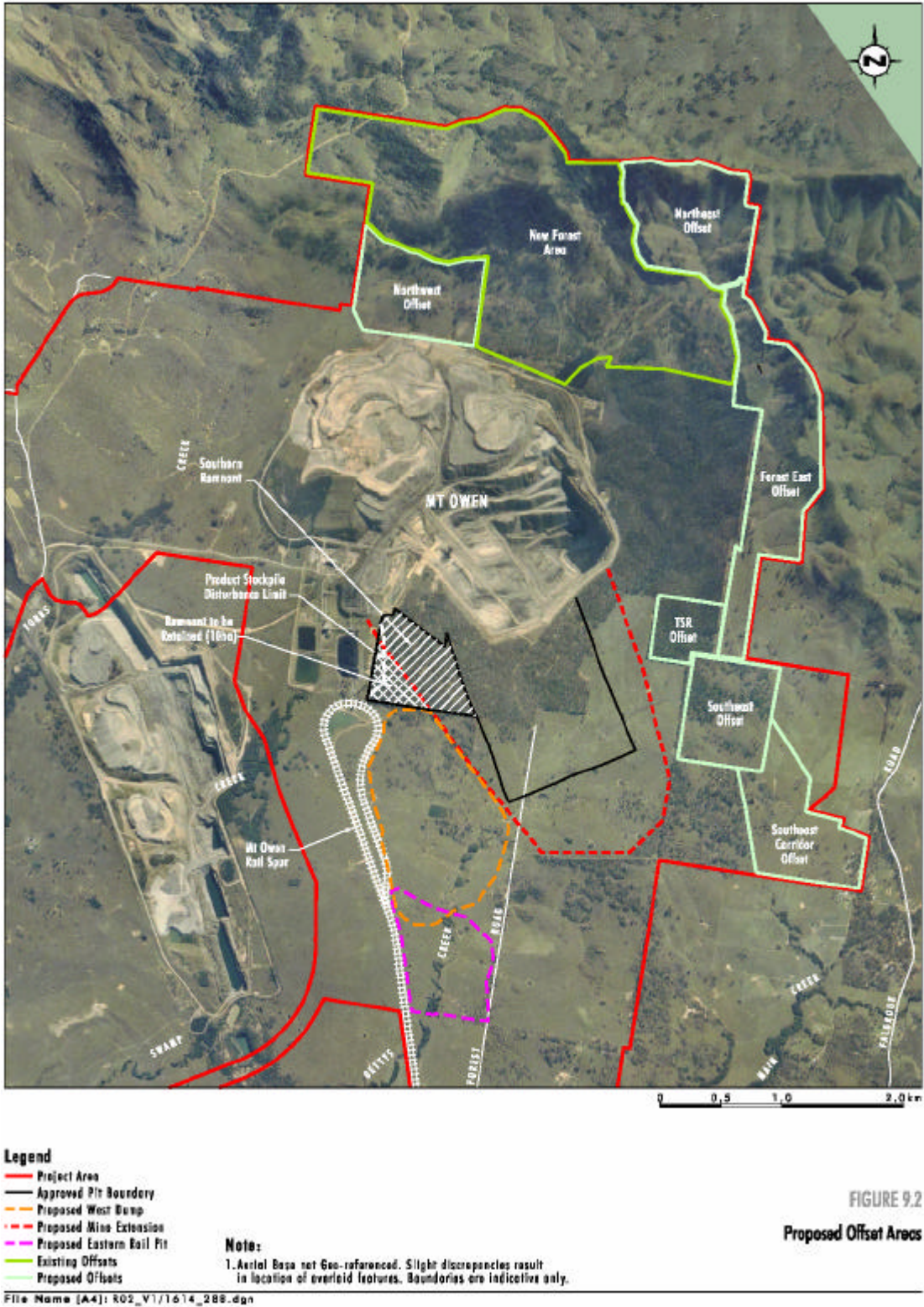


Figure 5: The Proposed Biodiversity Offset Strategy

3. STATUTORY FRAMEWORK

Under the *EP&A Act*, the proposal is classified as State significant, integrated, and designated development.

3.1 Permissibility

Under the *Singleton Local Environmental Plan 1996*, the site is zoned 1(a) Rural. Mining is permissible with consent in this zone. Consequently, the proposal is permissible with consent.

3.1 State Significant Development

The proposal is classified as State significant development, under section 76A(7) of the *EP&A Act*, because it satisfies the criteria in Schedule 1 of *State Environmental Planning Policy 34 – Major Employment Generating Industrial Development*. Consequently, the Minister for Infrastructure and Planning is the consent authority for the DA.

3.2 Integrated Development

The proposal is classified as integrated development, under section 91 of the *EP&A Act*, because it requires additional approvals under the:

- *Water Act 1912*;
- *Rivers & Foreshores Improvement Act 1948*;
- *Protection of the Environment Operations Act 1997*;
- *National Parks & Wildlife Act 1974*;
- *Roads Act 1993*; and
- *Mine Subsidence Compensation Act 1961*.

3.3 Designated Development

The proposal is classified as designated development, under section 77A of the *EP&A Act*, because it meets the criteria for an open cut coal mine in Schedule 3 of the *EP&A Regulation*. Consequently, the DA must be accompanied by an EIS.

3.4 Species Impact Statement

The proposal is likely to significantly effect 5 threatened fauna species listed under the *Threatened Species Conservation Act 1995*. Consequently, the DA must be accompanied by a Species Impact Statement (SIS); and under section 79B(3) of the *EP&A Act*, the Minister for Infrastructure and Planning is required to consult with the Minister for the Environment before he determines the DA.

3.5 Environmental Planning Instruments

The following planning instruments and policies apply to the proposal:

- *State Environmental Planning Policy No. 11 – Traffic Generating Developments*;
- *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development*;
- *State Environmental Planning Policy No.34 – Major Employment Generating Industrial Development*;
- *State Environmental Planning Policy No. 44 – Koala Habitat*;
- *State Environmental Planning Policy No. 55 - Remediation of Land*;

- *Hunter Regional Environmental Plan 1989; and*
- *Singleton Local Environmental Plan 1996.*

The Department has assessed the proposal against the relevant provisions of these instruments, and is satisfied that the:

- provisions of SEPP 33 and SEPP 44 are not relevant to this proposal,
- procedural requirements in SEPP 11 and 34 have been met; and that the
- proposal either complies with, or is consistent with, the aims, objectives, and requirements in the remaining instruments.

4. ISSUES RAISED IN SUBMISSIONS

During the exhibition period, the Department received 1 petition (with 22 signatures) and 37 submissions on the proposal:

- 6 from Government agencies (Roads & Traffic Authority, Department of Environment & Conservation, Department of Mineral Resources, Mine Subsidence Board, and Muswellbrook and Singleton Councils);
- 5 from special interest groups (Hunter-Central Rivers Catchment Management Authority, Hunter Environment Lobby, Hunter Region Botanic Gardens, Minewatch, and the Glennies Creek Colliery); and
- 26 from members of the public.

The petition and 30 of these submissions object to the proposal.

Government Agencies

The *Roads and Traffic Authority* believes the existing intersections on the New England Highway are adequate to accommodate the traffic generated by the proposal.

The *Department of Environment & Conservation* highlights the significant biodiversity values of the site, raises some concerns about the assessment of flora values, evaluates the proposed Biodiversity Offset Strategy, and stresses the importance of ensuring that any rehabilitation proposals are carried out effectively.

The *Department of Mineral Resources* supports the proposal, subject to resolving a number of water management issues in relation to the proposed diversions of Bettys Creek.

The *Mine Subsidence Board* indicates that the Applicant would need to obtain its approval before it constructs or relocates any improvements on site.

Muswellbrook Council indicates that it does not wish to make any comments on the proposal, as it is located in the Singleton local government area.

Singleton Council objects to the proposal at this time due to the impact on the local community.

Other Submissions

The issues raised in the remaining 31 submissions have been summarised in Table 2, and discussed in more detail in the rest of the report.

Issues	Submissions
Air Quality	21
Noise	20
Blasting	13
Social and economic	15
Flora and Fauna/Rehabilitation	14
Water	13
Commission of Inquiry	13
Visual	5
Heritage	2

Table 2: Summary of Issues Raised in Submissions

5. IMPACT ASSESMENT

5.1 Air Quality

Holmes Air Sciences has assessed the potential air quality impacts of the proposal (see Appendix 10 and Section 10 of Volume 1 of the EIS).

The Department is satisfied that the air quality impact assessment in the EIS has been carried out in accordance with the *Approved Methods & Guidance for the Modelling of Air Pollutants in NSW*, and that the predictions in this assessment are generally robust and accurate. However, there is some uncertainty about the accuracy of the 24-hour average PM₁₀ predictions (see below).

Project Specific Predictions

The relevant air quality criteria for assessing the impacts of this proposal are dust deposition rate, total suspended particulates (TSP), and particulate matter less than 10 microns (PM₁₀). The dust deposition rate is an amenity criterion, while TSP and PM₁₀ are human health criteria.

Using the assumption that the Applicant would continue to implement a range of dust control measures (see Section 9 of Appendix 10 and Section 10.6 of Volume 1 of the EIS), the air quality impact assessment:

- predicts the proposal would cause exceedances of the dust deposition and 24-hour average PM₁₀ criteria at 7 properties, including 3 residences - all to the south east of the mine (see Table 3); and
- demonstrates that these exceedances would generally occur in the later years of the proposal, as the mine moves closer to the mining lease boundary (see Table 3).

Year		Property Numbers	
		Dust Deposition 2g/m ² /month	PM ₁₀ (24 hour average) 50µg/m ³
1	Private Residences	-	-
	Private Properties	-	31, 68
	Mine-owned Residences	-	-
3	Private Residences	-	-
	Private Properties	-	-
	Mine-owned Residences	-	-
6	Private Residences	-	-
	Private Properties	-	31, 68
	Mine-owned Residences	-	-
10	Private Residences	-	70
	Private Properties	66, 67, 68	31, 66, 67, 68, 69, 70, 108
	Mine-owned Residences	-	-
17	Private Residences	67	69, 70
	Private Properties	-	31, 66, 67, 68, 69, 70, 108
	Mine-owned Residences	-	-

Table 3: Predicted Project Specific Air Quality Impacts

The Department would require the Applicant to acquire properties 66, 67, and 68, at the owner's request, due to the predicted exceedances of the dust deposition criteria. However, the exceedances of the 24-hour-average PM₁₀ criteria warrant further consideration.

24-hour Average PM₁₀

The Department understands that to meet relevant legislative requirements under the *Protection of the Environment Operations Act 1997*, the air quality impact assessment must either demonstrate that the relevant impact assessment criteria would be met, or that best management practices are being used to reduce emissions of dust.

The Department therefore understands that, in the case of 24-hr average PM₁₀, the Applicant must demonstrate that it can employ best practice management techniques to ensure that ambient air quality does not exceed 50 ug/m³.

The Applicant, however, has argued that strict application of the 24-hour average 50 ug/m³ criteria is not necessarily justified. This position is based on an appraisal of the National Environment Protection Measure (NEPM) 24-hr average PM₁₀ air quality goal, upon which the criteria is based, which is generally derived from studies of health impacts due to fine particulates from combustion processes in urban areas. Typically, the dust regime surrounding coal mines is very different to what occurs in urban areas, as it is dominated by dirt and coal – not combustion, which compounds potential effects. Consequently, the health risks surrounding a coal mine are likely to be lower than those in urban areas, and limited exceedances of the 24-hour criteria may not create a significant health impact. This is generally consistent with advice from DEC that the 50ug/m³ criteria should be used as a management goal, not a limit condition for the development.

However, on previous mining projects, the Department has developed a land acquisition framework for 24-hour average PM₁₀ impacts, in consultation with certain mining companies, which acknowledges the complexities of regulating 24-hour average PM₁₀, but also seeks to protect the health and equity of the community. Under this framework, the Applicant would be required to acquire any property, at the owner's request, if it can be demonstrated that the 24-hour average PM₁₀ 50 ug/m³ criteria cannot be met at that property. However, this framework allows the criteria to be exceeded on up to five occasions a year because there may be occasions where it may be impossible to meet the criteria that have nothing to do with the Applicant, as bushfires, the contribution of other mines, and adverse weather conditions could all cause the criteria to be exceeded. This is consistent with the NEPM, which allows the 24-hour PM₁₀ 50 ug/m³ standard to be exceeded on up to five occasions a year.

Under this framework, the Applicant would be required to acquire 7 properties (31, 66, 67, 68, 69, 70, 108).

Calibration Factor

However, it is important to note that there is some uncertainty about the accuracy of the 24-hour average PM₁₀ predictions.

For a number of reasons, it is difficult to model 24-hour average PM₁₀ using steady state dispersion models, such as the ISC3-ST model, which is likely to under-predict maximum impacts at receptors close to the emitting source (generally within 1000 metres of the source), but over-predict impacts at receptors further than 1000 metres from the source.

To overcome these shortcomings with the model, one should ideally calibrate and validate the model to ensure that it reflects local conditions accurately.

Unfortunately, the air quality monitoring data sets at Mount Owen were not suitable for calibrating or validating the model, as the monitors were too far from mining operations, and did not record high concentrations of PM₁₀.

Consequently, Holmes Air Sciences has used a factor derived from studies at the Warkworth mine, which compared modelling predictions with monitoring data, to calibrate the model, and divided the maximum predicted 24-hour average PM₁₀ concentrations by a factor of 2.6.

The choice of the calibration factor has potentially significant implications. If a smaller factor was used, then the criteria for 24-hour average PM₁₀ would be exceeded at more properties and residences; and if a larger factor was used, then the criteria would be exceeded at fewer properties and residences.

This raises the question: is the choice of 2.6 as a calibration factor reasonable?

While the Department believes there are likely to be similarities between the conditions at the Warkworth and Mount Owen mines, it accepts that there could also be differences. The only way to really answer the question therefore is to validate the calibration factor using local monitoring data. However, the Department understands that this could take at least a year to complete.

Given that the 24-hour average PM₁₀ impacts of the proposal are generally predicted to increase in the later years of the proposed mine plan, the Department believes it would be reasonable to:

- accept the calibration factor as the best available estimate in the interim;
- validate the calibration factor as soon as possible; and
- review the potential 24-hour average PM₁₀ impacts of the proposal once this has been done; and then,
- set appropriate conditions to regulate the potential 24-hour average PM₁₀ impacts of the proposal.

In addition, to provide a safeguard for community, the Department could set its current acquisition criteria for 24-hour average PM₁₀, and require real-time monitoring of PM₁₀ impacts while this work is happening.

However, before adopting such an approach, the Department would need to consider the implications of doing this in consultation with DEC.

Cumulative Impact Predictions

The air quality impact assessment predicts the proposal would cause exceedances of the dust deposition and annual average PM₁₀ criteria at up to 14 privately-owned properties, including 6 residences, and 17 mine-owned residences (see Table 4).

Year		Property Numbers			
		Dust Deposition	TSP (Annual average)	PM ₁₀ (24 hour average)	PM ₁₀ (Annual average)
		4 g/m ² /month	90 _μ g/m ³	150 _μ g/m ³	30 _μ g/m ³
1	Private Residences	-	-	-	69, 70, 99, 106, 107, 109 a-d, 110
	Private Properties	-	-	-	31, 66, 67, 68, 69, 70, 99, 105, 106, 107, 108, 109, 110, 111, 112
	Mine-owned Residences	C11	C11	C2, C11	C1-C17
3	Private Residences	-	-	-	69, 70, 99, 106, 107, 109 a-d, 110
	Private Properties	-	-	-	31, 66, 67, 68, 69, 70, 99, 106, 107, 108, 109, 110, 111, 112
	Mine-owned Residences	C11	C11	C2, C11	C1-C17
6	Private Residences	-	-	-	69, 70, 99, 106, 107, 109 a-d, 110
	Private Properties	-	-	-	31, 66, 67, 68, 69, 70, 99, 106, 107, 108, 109, 110, 111, 112
	Mine-owned Residences	-	-	-	C1-C5, C9-C17
10	Private Residences	-	-	-	99, 107
	Private Properties	-	-	-	31, 66, 67, 68, 69, 70, 99, 107, 108, 109
	Mine-owned Residences	-	-	-	C9-C13
17	Private Residences	-	-	-	69, 70, 99, 107, 109 c-d
	Private Properties	66, 67, 68	68	-	31, 68, 107, 108, 109, 110, 111
	Mine-owned Residences	-	-	-	C9-C13

Table 4: Predicted Air Quality Cumulative Impacts

These predictions suggest that the cumulative air quality impacts would be greatest in the earlier years of the proposal (years 1, 3 and 6), when there are open cut mining operations at both the Camberwell and Ashton mines, but are likely to decrease after year 10 when mining at Camberwell is predicted to be complete, and there are only underground mining operations at Ashton.

The Department believes the properties affected by the annual average PM₁₀ impacts should be able to request acquisition. The difficulty with this is it that the Mount Owen mine is not the only contributor to these predicted exceedances.

Ideally, the contributors to these exceedances should be liable for their contribution to the exceedance of the annual average criterion. In the past, the Department has encouraged mines to adopt a collaborative approach to managing cumulative air quality and noise impacts, and if necessary, the acquisition of land at the owner's request. However, if the mines are unable to resolve the situation in consultation with the owner, then the matter would be referred to the Department for resolution.

To highlight the area that could be liable for acquisition, at the owner's request, the Department has compiled a map of the affected properties (see Figure 6).

In addition, the Department would require the Applicant to advise any tenants on mine-owned properties affected by dust from the development of any potential risks to their health or amenity.

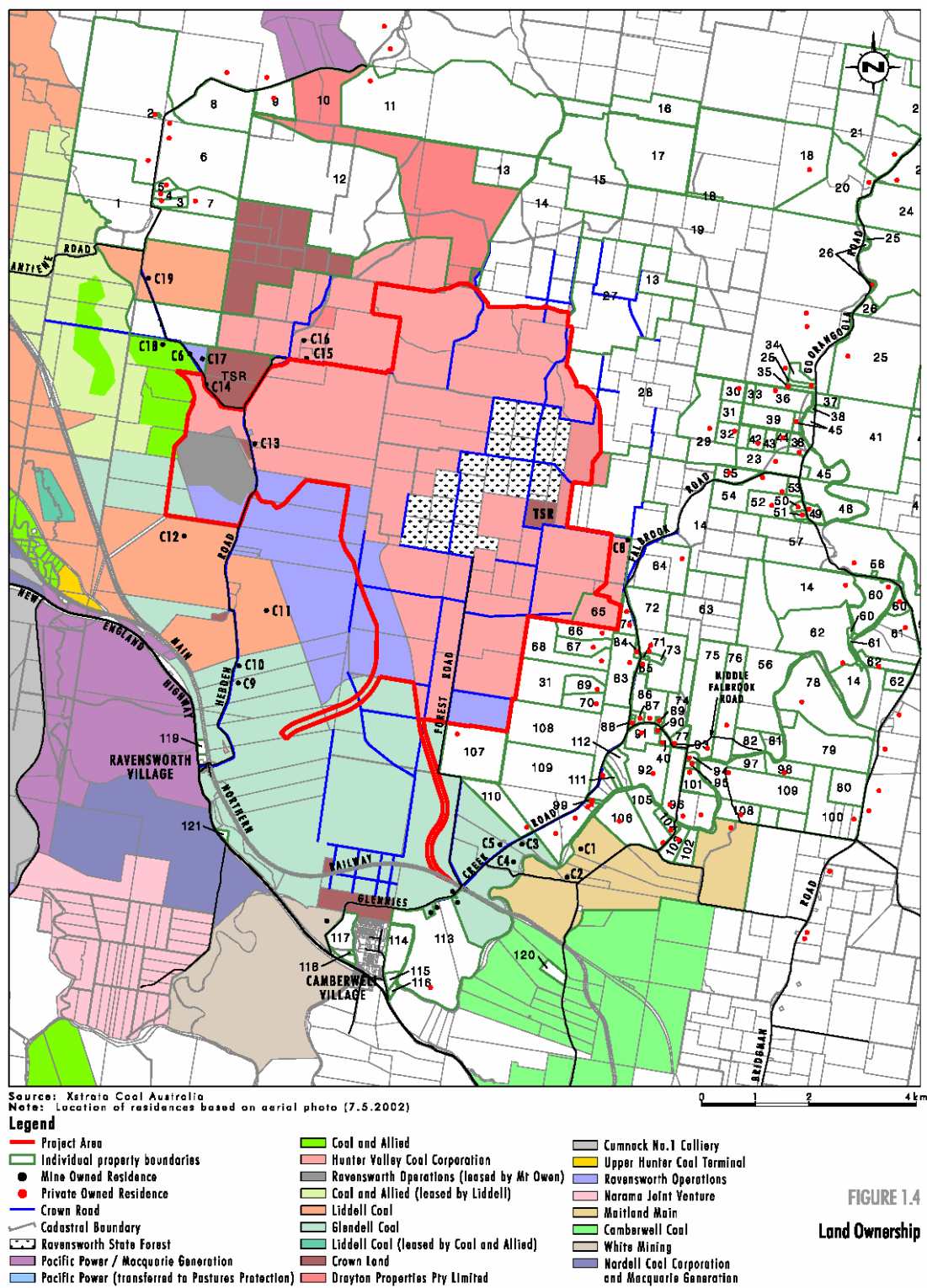


Figure 6: Potential Acquisition Zone - Air Quality

Impacts on Livestock, Agricultural Productivity, and Drinking Water

Several submissions raised concerns about the potential impacts of the proposal on livestock, agricultural productivity, and drinking water quality.

The Applicant has provided additional information to the Department, which demonstrates that dust deposition levels of up to 4 g/m²/month would not have an adverse impact on livestock, agricultural productivity, and drinking water quality.

The Department is satisfied with this information.

While the predicted dust deposition levels are unlikely to cause any health impacts, they are likely to increase the rate of sediment build up in water tanks. However, it is possible to mitigate against these impacts, by using first flush systems. The Applicant has made a commitment to replace or install water filters on tanks if it causes an exceedance of the dust criteria at any property.

Toxicity of Blasting Fumes

Some submissions raised concerns about the potential health impacts of blast fumes.

The Applicant has provided additional information to the Department that:

- demonstrates that the nitrogen dioxide (a potentially toxic gas) in blasting fumes is unlikely to exceed the National Health & Safety Commission's recommended short term exposure limit for nitrogen dioxide (5ppm); and that
- the generation of fumes, and particularly nitrogen oxide fumes, can be kept to a minimum with good blast management.

The Department is satisfied with this information.

Odour from Spontaneous Combustion

Two submissions raised concerns about the potential odour impacts of spontaneous combustion at the mine.

Spontaneous combustion is expected to occur sporadically over the life of the proposal. However, the frequency of this is likely to be low because of the chemical composition of the Whittingham coal measures. This is certainly supported by past practice, as Mount Owen has had very few incidents of spontaneous combustion over the last 11 years.

Consequently, the Department believes the potential odour impacts of the proposal are likely to be minor.

Conclusion

The Department is generally satisfied with the air quality impact assessment in the EIS, as supplemented by additional information. However, there is some uncertainty about the robustness of the 24-hour average PM₁₀ predictions.

The proposal is predicted to cause exceedances of the project specific and cumulative air quality criteria at 13 properties to the south east of the mine.

5.2 Noise

Advitech Pty Ltd has assessed the potential noise impacts of the development (see Appendix 11 and Section 11 of Volume 1 of the EIS).

The Department is satisfied that the noise impact assessment has been carried out in accordance with the *Industrial Noise Policy*, and that the predictions are generally accurate, given that the model has been validated using monitoring data from the Mount Owen mine.

However, while the noise impact assessment acknowledges the proposal is likely to exceed the sleep disturbance criteria at times, it does not determine the location, frequency, or scale of these exceedances. Consequently, the Department believes the Applicant should be required to carry out a more detailed assessment of the potential sleep disturbance impacts of the proposal.

Noise Criteria

The noise impact assessment includes Project Specific Noise Levels, which were based on background noise levels. These levels are generally 35dB(A) $L_{Aeq}(15 \text{ minutes})$.

Predicted Noise Levels

The predictions suggest the proposal would comply with the intrusive noise criteria during neutral calm conditions and during 3m/s SE winds. However, it would exceed these criteria at up to 36 properties (including 25 private residences) during adverse weather conditions (see Table 5).

Year		3m/s NW Winds		3°C Inversions with 2m/s NW winds	
		> 35 dB(A)	> 40 dB(A)	> 35 dB(A)	> 40 dB(A)
3	Private Residences	29, 53, 55, 64, 68, 69, 70, 71a, 72, 73, 83, 84, 85, 86, 87, 88, 89, 107	66, 67	29, 40, 53, 54, 55, 86, 87, 88, 89, 90, 93, 109b, 110	64, 66, 67, 68, 69, 70, 71a, 72, 73, 83, 84, 85
	Private Properties	14, 29, 53, 55, 63, 69, 70, 71a, 71b, 72, 73, 74, 75, 83, 84, 85, 86, 87, 88, 89, 107, 108, 109, 110	31, 64, 66, 67, 68	14, 29, 40, 52, 53, 54, 55, 63, 74, 75, 77, 87, 88, 89, 90, 91, 93	31, 64, 66, 67, 68, 69, 70, 71a, 71b, 72, 73, 83, 84, 85, 86, 107, 108, 109, 110
6	Private Residences	29, 55, 64, 66, 67, 68, 69, 70, 71, 72, 73, 83, 84, 85, 87, 88	-	29, 55, 68, 69, 70, 71, 72, 73, 83, 84, 85, 87, 88, 107, 110	64, 66, 67
	Private Properties	14, 29, 31, 54, 55, 63, 64, 67, 69, 70, 71a, 71b, 72, 73, 83, 84, 85, 86, 87, 88, 107, 108, 109,	66, 68	14, 29, 54, 55, 63, 69, 70, 71b, 72, 73, 74, 75, 83, 84, 85, 86, 87, 88, 108, 109, 110	31, 64, 66, 67, 68, 71a, 72, 107

10	Private Residences	64, 69, 70, 71a, 72, 73, 83, 84, 85, 87, 88, 107	66, 67, 68	69, 71, 86, 87, 88, 89, 110	64, 66, 67, 68, 70, 72, 73, 83, 84, 85, 107
	Private Properties	63, 69, 70, 71a, 71b, 72, 73, 74, 75, 84, 85, 86, 87, 88, 107, 108, 109	31, 64, 66, 67, 68, 83	63, 72, 75, 87, 87, 91, 109, 110	31, 64, 66, 67, 68, 69, 70, 71a, 71b, 72, 73, 83, 84, 85, 86, 107, 108
17	Private Residences	64, 68, 69, 70, 71a, 72, 73, 83, 84, 85, 88	66, 67	69, 71, 86, 87, 88, 89, 107	64, 66, 67, 68, 70, 72, 73, 83, 84, 85
	Private Properties	31, 63, 69, 70, 71b, 72, 73, 83, 84, 85, 86, 87, 88, 108	64, 66, 67, 68, 71a	14, 63, 74, 75, 87, 88, 89, 107, 109, 110	31, 64, 66, 67, 68, 69, 70, 71a, 71b, 72, 73, 83, 84, 85, 86, 108

Table 5: Predicted Noise Levels

The Department believes that it is important to note that these criteria are not mandatory. They are supposed to drive a process of applying all feasible and economically reasonable avoidance and mitigation measures to reduce the risk of people being highly annoyed.

However, it should be recognised that at some point, particularly with large coal mines, it may not be possible to meet the criteria, regardless of what mitigation measures are implemented.

These predictions are based on the assumption that the Applicant would implement a range of mitigation measures, including:

- attenuating and replacing equipment at a cost of \$10.5 million over the next 8 years;
- using equipment with low sound power levels in the Eastern Rail Pit and on the West Dump;
- constructing noise bunds on the proposed West Dump;
- limiting the construction of this bund to daylight hours; and
- investigating ways to reduce sleep disturbance noise, such as the air horns and the track clatter of excavators.

The Department is satisfied that there is probably limited opportunity to reduce levels further, although it may be possible to reduce noise levels marginally at some receptors by, for instance, providing double-glazing, insulating residences, and installing air conditioning.

Typically, the Department considers an exceedance of the project specific noise level of up to 2 dB(A) to be minor, an exceedance of between 3dB(A) to 5 dB(A) to be marginal, and an exceedance of greater than 5 dB(A) to be significant.

Using this as a guide, the Department believes the proposal would cause **significant exceedances** (> than 5dB(A)) of the project specific noise levels at up to 19 properties (including 12 residences).

The Department would require the Applicant to acquire these properties, at the request of the landowner. To highlight the area that would be liable for acquisition, at the owner's request, the Department has compiled a map of the affected properties (see Figure 7).

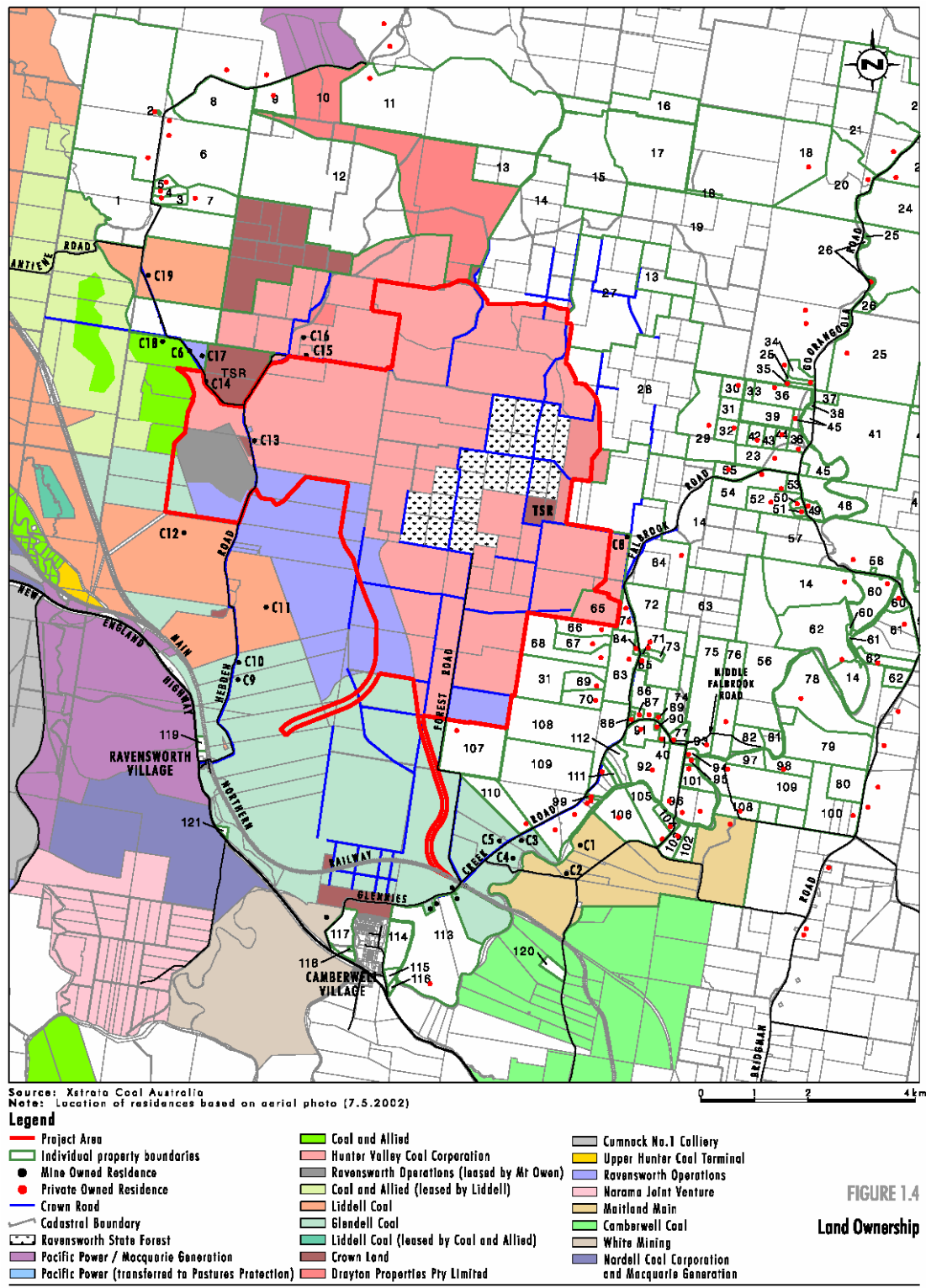


Figure 7: Potential Acquisition Zone - Noise

In accordance with current practice, the Department would set noise limits for the remaining properties in Table 5, which would lie somewhere between 35dB(A) and 40dB(A), and incorporate these levels into any conditions of consent. Exceedances of these levels would trigger a process of implementing strategies to mitigate noise levels; and, if at some stage these noise levels were to exceed 40dB(A), then the Applicant would be required to acquire the property at the owner's request.

Cumulative Noise Impacts

In the noise impact assessment, Advitech does not model the predicted cumulative noise impacts of the proposal. Instead, it demonstrates that if all the mines in the area comply with 35dB(A) noise limits, then the cumulative noise levels would comply with the night-time amenity criterion of $L_{Aeq(9 \text{ hour})}$ 40 dB(A).

The Department concedes that it would be difficult to model the potential cumulative noise impacts of the proposal, incorporating all the other mines in the area. Consequently, it accepts the limited cumulative noise impact assessment in the EIS.

However, the Department expects the noise generated by some mines in the area to exceed 35dB(A), and notes the proposal itself is predicted to exceed this limit at several properties during adverse weather conditions. Consequently, it expects the cumulative noise levels in the area to exceed the night-time amenity criterion at some properties, and possibly even the maximum night-time amenity criterion of $L_{Aeq(9 \text{ hour})}$ 45 dB(A).

To protect the amenity of the community, the Department would set amenity noise acquisition criteria for the proposal; and if these criteria are exceeded, it would encourage the mines that are responsible for the exceedances to adopt a collaborative approach to the acquisition of land, at the owner's request. However, if the mines are unable to resolve the situation in consultation with the owner, the matter would be referred to the Department for resolution.

Conclusion

The Department is generally satisfied with the noise impact assessment in the EIS. However, it believes the Applicant should carry out a more detailed assessment of the potential sleep disturbance impacts of the proposal before the Submission in Reply.

The project is likely to cause exceedances of the intrusive noise criteria at several properties to the south east of the mine, and the night-time amenity criteria (in combination with some of the surrounding mines).

5.3 Blasting

Richard Heggie Associates Pty Ltd has assessed the potential blasting impacts of the proposal (see Appendix 12 and Section 11 of Volume 1 of the EIS).

Blasting Impact Assessment

This assessment uses airblast and ground vibration monitoring results from blasting at Mount Owen between 8 January 2002 and 10 June 2003 to develop blasting guidelines for the proposal (see Table 6).

Years	Range of Offset Distances to Nearest Residence	Allowable MICs Based on Airblast	Allowable MICs Based on Ground Vibration
Mining Pit			
0-3	2600m - 4150m	2,575kg - 10,487kg	98,027kg - 249,834kg
4-6	2130m - 3370	1,415kg - 5,611kg	65,811kg - 164,692kg
7-10	1780m - 3550m	825kg - 6,561kg	45,939kg - 118,281kg
11-17	1500m - 3300m	494kg - 2,373 kg	32,639kg - 92,855kg
Eastern Rail Pit			
3-5	2600m - 3300m	2,575kg - 5,270kg	98,027kg - 157,962kg

Table 6: Blasting Guidelines for the Proposal

With good blast management, the Department is satisfied that the Applicant would be able to comply with the ANZECC criteria for airblast overpressure and ground vibration.

Property Damage

Several submissions suggested blasting at the mine would damage their properties.

The ANZECC criteria for blasting are designed to protect against property damage. Consequently, the Department believes that property damage is unlikely to occur provided the Applicant complies with the ANZECC criteria.

Changes to Blasting Times

At present, the Applicant is allowed to blast between 9am to 5pm (6pm during daylight saving), in accordance with the ANZECC guidelines, although it tends to blast around 12.30pm and 4pm to coincide with shift changes because the pit needs to be cleared for safety reasons.

The Applicant is seeking approval to blast from 7am, when the weather conditions are usually calmer, to reduce the dust emissions from blasting and minimise the disruption to operations.

Based on the results of a recent trial at the Hunter Valley Operations mine, the Department believes that there is some merit in the Applicant's proposal. However, it believes the Applicant should be required to demonstrate the benefits of this proposal in a trial before it is allowed permanently.

Interactions With Glennies Creek Colliery

In its submission, the Glennies Creek Colliery suggested the blasting impacts of the proposal would disrupt its underground mining operations.

Based on experience at the Bulga and Wambo/United mines, where open cut and underground mining coexist without causing significant disruptions to mining operations, the Department is confident that it would be technically possible to develop a management plan to address these concerns.

Consequently, it believes the two companies should be encouraged to develop such a management plan.

Conclusion

The Department is generally satisfied with the blast impact assessment in the EIS.

However, it believes the Applicant should be required to demonstrate the potential benefits of the proposal to extend blasting hours at the mine in a trial before it is allowed permanently.

It also believes the Applicant should be encouraged to develop a blast management plan with the Glennies Creek Colliery to address the potential interactions between the two mines.

5.4 SURFACE WATER

Umwelt has assessed the potential water impacts of the proposal (see Appendix 5 and Section 8 of Volume 1 of the EIS).

Water Balance

This assessment predicts the mine would remain a net user of water (see Table 7), and would need to continue importing water from the Ravensworth East and Liddell mines or Glennies Creek.

Rainfall Condition	Annual Rainfall	Water Balance (ML/year)					
		Current	Year 1	Year 3	Year 6	Year 10	Year 17
Dry (10%)	416	-703	-730	-1609	-1044	-1255	-1310
Average (50%)	665	-352	-379	-1236	-664	-932	-1005
Wet (90%)	911	20	-7	-840	-260	-591	-683

Table 7: Current & Predicted Water Balance

However, it demonstrates that the mine would have sufficient water supply for its operations, and sufficient capacity to manage any excess water during wet periods, either through on-site storage or discharging water to Swamp Creek under the Hunter River Salinity Trading Scheme.

Downstream Impacts - Main Creek

The proposed diversion of Bettys Creek upstream of the mining pit (412 ha catchment area) to Main Creek would increase the annual runoff in Main Creek by approximately 18%, which equates to an increase of around 90ML in a dry year and 350ML in a wet year.

However, the diversion has been specifically designed to dissipate stream energies through containment banks and temporary storage basins, and ensure that the increased runoff does not increase the peak flows or velocities in Main Creek, or increase the extent or level of downstream flooding. However, the diversion would prolong the **duration** of flows in Main Creek.

One submission suggested the proposed diversion would accentuate the flooding impacts at the bridge over Main Creek on Glennies Creek Road. Although the proposal would increase the duration of flows in Main Creek during flooding events, Umwelt's modelling indicates that the proposed containment banks and temporary storage basins would actually lead to a slight reduction in the 1 in 100 year ARI flood level. It also indicates that the 1 in 100 year flood level would not overtop the bridge. Consequently, the Department is satisfied that the proposal is unlikely to accentuate

the flooding impacts on Glennies Creek Road. However, even if the modelling is incorrect, and flood levels do overtop the road during significant flooding events, the Department is satisfied that landowners living upstream of the bridge would be able to use alternative routes to get to places such as Singleton.

In submissions, several landowners on Main Creek suggested the proposed diversion would increase the periods during which they would be unable to cross the creek. While the proposed diversion is unlikely to increase flood levels, it could increase the duration of these flows for several hours at several properties, including properties 31, 66-70, and 108-110. The Applicant is currently investigating these impacts in more detail in consultation with the landowners, and should be required to report on the results of these investigations in its Submission in Reply.

Some of these landowners also suggested that the proposed diversion would prolong the extent of waterlogging in the area. According to Umwelt, Main Creek changes from being an incised channel to an area of broad overland flow with poorly defined flow paths approximately 12 kilometres upstream of the Glennies Creek Bridge, and the upstream section of this poorly defined channel area is prone to waterlogging during wet periods. The increased runoff from the proposed diversion is likely to prolong this waterlogging during wet periods, but the extent of this impact remains unclear. Umwelt suggests the drainage characteristics of this area are likely to be improved by the subsidence (and associated mitigation works) from Glennies Creeks's underground mining operations, and could be improved with some drainage works. Once again, the Department believes the Applicant should be required to address this matter in more detail in its Submission in Reply.

Finally, several submissions suggested the increased runoff from the proposed diversion would mobilise salts in Main Creek, and reduce the water quality in Glennies Creek. However, the Applicant has demonstrated that this is unlikely as the conductivity levels of the water in Betty Creek upstream are currently lower than conductivity levels in Main Creek. Consequently, the increased runoff is expected to dilute the base flow salt concentrations in Main Creek, and help improve water quality downstream of the mine. In addition, groundwater movement is the primary contributor to saline inflows to Main Creek, and the proposed diversion would not affect this regime.

Downstream Impacts - Bettys Creek

The Bettys Creek catchment would be affected by the proposed extension of the mining pit, West Dump, and Eastern Rail Pit.

These changes would reduce the annual runoff in Bettys Creek by approximately 33%, which equates to a reduction of around 150ML in a dry year and 430ML in a wet year, or a reduction in average runoff from 2.4 to 1.6 ML a day. At present, the only licenced water user downstream of Bettys Creek is the Ashton mine, whose primary water supply comes from Glennies Creek; and in time, the lower reaches of Bettys Creek are expected to be modified extensively by mining operations at the Glendell mine. Consequently, the loss of runoff in Bettys Creek is unlikely to affect any downstream users.

Finally, the loss of runoff is also unlikely to change the amount of salt exported from the catchment each year, as the volume of saline water stored in the small shallow pools of the creek system is insignificant compared with the annual runoff.

Interactions with Glennies Creek Colliery

In its submission, the Glennies Creek Colliery suggested the proposed creek diversions of Betty Creek could increase its liability for repairing the subsidence-induced impacts caused by its underground mining operations.

The Department doubts this, given:

- the proposed diversion of flows from Bettys Creek into Main Creek would be designed to ensure there is no increase in peak flows or velocities in Main Creek, and consequently no adverse impacts on downstream bank stability or the extent or depth of downstream flooding; and that
- the proposed re-instatement of Bettys Creek over the rehabilitated Eastern Rail Pit could be co-ordinated or designed to either address or avoid any subsidence-induced impacts.

Erosion and Sediment Control

The proposal would cause ongoing disturbance within the site, which could cause erosion and discharge sediment into the surrounding watercourses.

However, the Department is satisfied that these impacts can be kept to a minimum with good erosion and sediment control management, using the measures outlined in Section 5.3 of Appendix 4 of the EIS.

Conclusion

The Department is generally satisfied with the surface water impact assessment in the EIS, as supplemented by additional information.

However, it believes the Applicant should be address the potential access and waterlogging impacts of the proposal on the landowners adjoining Main Creek downstream of the mine in more detail in its Submission in Reply.

5.5 GROUNDWATER

Mackie Environmental Research has assessed the potential groundwater impacts of the proposal (see Appendix 4 and Section b of Volume 1 of the EIS).

Impact on Hard Rock Aquifer

The assessment predicts the proposed mining pits would gradually depressurise the hard rock aquifer, and with the Ravensworth East mining pits, increase the zone of depressurisation in the hard rock aquifer by up to 3 kilometres from the mining pit, generally towards the south and east of the mine.

The extension of this zone could affect the water supply of some groundwater bores. However, there is only 1 privately owned bore in the predicted zone of depressurisation, which is located about 2.3 kilometres to the east of the mining pit, and this bore is not currently in use.

Consequently, the Department is satisfied that the proposal is unlikely to have a significant impact on any groundwater users in the area. However, if any users are affected by the proposal, the Department is confident that the Applicant would be able to compensate these users for any loss of supply.

Following mining, the groundwater pressures in the hard rock aquifer would gradually recover. However, this is likely to take over 100 years.

Finally, the proposal would leave a final void. Mackie Environmental Research predicts this void would be an evaporative sink, with a final water level of around 0m AHD, which is likely to be about 110 metres below the final spill level of the final void. The water in the void is expected to be highly saline, with a pH ranging between 7.5 and 8.5.

Impact on Alluvial Aquifer

The extension of the zone of depressurisation is not expected to have any impact on the Bowmans Creek alluvial aquifer, which is located about 4.5 kilometres to the west of the mine, and contains groundwater that is suitable for stock and irrigation.

However, it would induce leakages in the Bettys Creek and Main Creek alluvial aquifers, but at very low rates of about 12 mL/m²/day. This leakage is predicted to have a negligible impact on surface flows or surface water storage in the creek systems, and no impact on groundwater users as the groundwater in these aquifers is highly saline, and of no beneficial use.

Conclusion

The Department is generally satisfied with the groundwater impact assessment in the EIS, as supplemented by additional information.

5.6 SOCIAL AND ECONOMIC

Umwelt has assessed the potential and social and economic impacts of the proposal (see Section 16 of Volume 1 of the EIS).

Benefits

The assessment highlights the significant economic benefits of the proposal. Essentially, it would help to sustain the growth of the mining industry in the Hunter Valley.

The mining industry is extremely important to the economic viability of both the Hunter Valley and NSW, as it is a:

- major export earner;
- major employer;
- major consumer of goods and services, which in turn helps to sustain the regional economy; and
- major contributor to Government revenue through royalties, taxes, and a range of charges.

Over the next 17 years, the proposal is predicted to:

- earn at least \$2.5 billion in export revenue;
- provide continued employment for approximately 260 people, who would spend between \$15 to \$20 million dollars a year in the regional economy;
- provide indirect employment for between 500 and 800 people, due to the flow on effects of its operations;
- improve the viability of the Ravensworth East mine, which has 50 employees, by allowing coal from Ravensworth East to be processed at the Mount Owen CHPP,

and then exported, rather than being used for domestic power generation at the Liddell or Bayswater power stations;

- increase the likelihood of production at Glendell mine, which is expected to employ 120 workers, by allowing coal from Glendell to be processed at Mount Owen and exported, and reducing the upfront capital costs of the mining operations;
- contribute at least \$50 million to the economy in capital spending on infrastructure;
- contribute at least \$170 million a year to the regional economy due to spending on goods and services; and
- provide revenue to the Government through royalties, taxes, and a range of charges.

The Department considers these potential benefits to be significant, and believes that it is important to keep these benefits in mind when assessing the potential costs (or adverse impacts) of the proposal.

Social Impacts

Based on the preceding assessment, the Department believes the proposal could have a significant impact on several properties to the south east of the mine.

This assessment indicates the proposal would cause exceedances of the Department's air quality and noise acquisition criteria at up to 23 properties, including 18 residences, as well as a range of blasting, surface water, groundwater - and even visual – impacts.

To highlight the area that could be liable for acquisition at the owner's request as a result of project specific or cumulative dust and/or noise impacts, the Department has compiled a map of the affected properties (see Figure 8).

While the Department wants to stress that this map is only a preliminary estimate, it clearly illustrates that the project specific and cumulative off-site impacts of the proposal are likely to be concentrated on a small area to the south east of the mine.

Several submissions suggested these impacts would have a significant impact on the social infrastructure and services of the area, not to mention the sense of community in the area. In particular, these submissions raised concerns about the potential impacts of the proposal on the:

- Glennies Creek Hall;
- Glennies Creek Rural Bushfire Brigade;
- Mount Pleasant Primary School and school bus Services.

The Department acknowledges these concerns, and has asked the Applicant to conduct a more detailed assessment of the potential social impacts of the proposal. The Department expects to receive this information shortly, and will provide a more detailed assessment of the potential social impacts of the proposal in its Submission in Reply.

Finally, several submissions criticised the land acquisition provisions in current mining consents (see Appendix 1), and suggested that both the land acquisition process and the terms of acquisition in these consents are unfair, and should be changed. The Department considers these provisions to be fair and reasonable. .

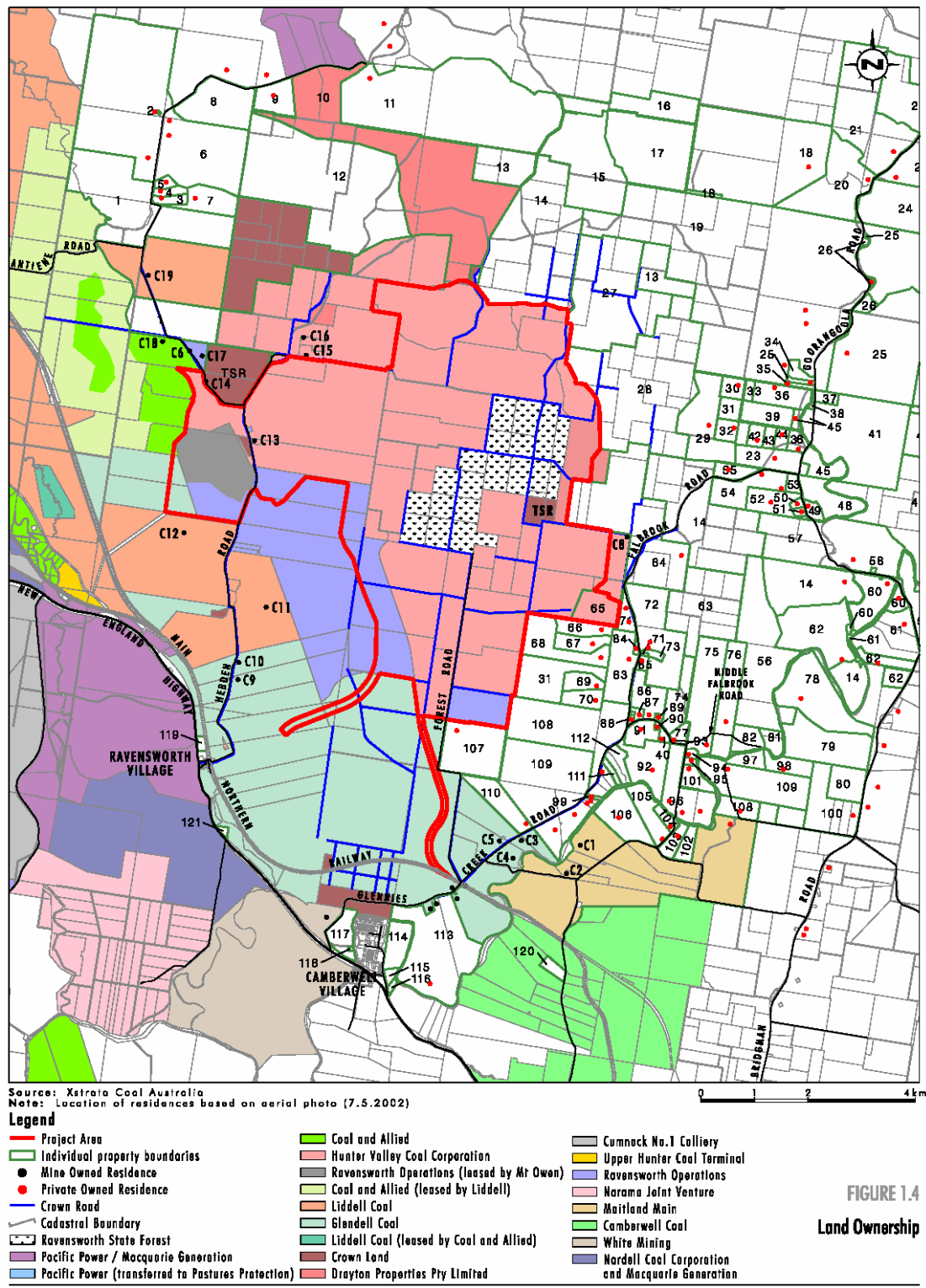


Figure 8: Potential Acquisition Zone - Dust & Noise

6. CONCLUSION

The Department has completed its preliminary assessment of the Mount Owen Operations Project.

This assessment recognises the significant economic benefits of the proposal, in terms of its ability to earn export revenue, provide jobs, and stimulate the NSW economy. However, it also recognises that the proposal could generate a range of environmental impacts, and in particular, would exceed the Government's air quality and noise criteria at several properties to the south east of the mine.

The Department has identified a number of issues that would need to be investigated further before it could finalise its assessment of the proposal.

The key issues that require further investigation relate to:

- **air quality**, particularly in relation to the potential 24-hour average PM10 impacts of the proposal;
- **noise**, particularly in relation to sleep disturbance and night-time amenity impacts;
- **surface water**, particularly in relation to the potential access and waterlogging impacts on owner's adjacent to Main Creek; and
- **social**, particularly in relation to the potential impacts on the community to the south east of the mine.

The Department recognises, and fully appreciates, that there is a significant level of community concern in relation to the potential impacts of the proposal, and the proposal could have an impact on the social fabric of the community to the south east of the mine.

The Department should be able to finalise its assessment of the economic, social and environmental impacts of the proposal in its Submission in Reply.

APPENDIX 1 ACQUISITION PROVISIONS IN RECENT CONDITIONS OF CONSENT

Land Acquisition

1. Within 6 months of receiving a written request from the landowner, the Applicant shall pay the landowner:
 - (a) the current market value of the landowner's interest in the land at the date of this written request, as if the land was unaffected by the development the subject of the DA, having regard to the:
 - existing and permissible use of the land, in accordance with the applicable planning instruments at the date of the written request; and
 - presence of improvements on the land and/or any approved building or structure which has been physically commenced at the date of the landowner's written request, and is due to be completed subsequent to that date;
 - (b) the reasonable costs associated with:
 - relocating within the Singleton local government area, or to any other local government area determined by the Director-General;
 - obtaining legal advice and expert advice for determining the acquisition price of the land, and the terms upon which it is required; and
 - (c) reasonable compensation for any disturbance caused by the land acquisition process.

However, if within 6 months of receiving this written request, the Applicant and landowner cannot agree on the acquisition price of the land, and/or the terms upon which the land is to be acquired, then either party may refer the matter to the Director-General for resolution.

Upon receiving such a request, the Director-General shall request the President of the Australian Institute of Valuers and Land Economists to appoint a qualified independent valuer or Fellow of the Institute, to consider submissions from both parties, and determine a fair and reasonable acquisition price for the land, and/or terms upon which the land is to be acquired.

If either party disputes the independent valuer's determination, then the independent valuer must refer the matter back to the Director-General.

Upon receiving such a referral, the Director-General shall appoint a panel to determine a fair and reasonable acquisition price for the land, and/or the terms upon which the land is to be acquired, comprising the:

- (a) appointed independent valuer,
- (b) Director-General or nominee, and
- (c) President of the Law Society of NSW or nominee.

Within 14 days of receiving the panel's determination, the Applicant shall make a written offer to purchase the land at a price not less than the panel's determination.

If the landowner refuses to accept this offer within 6 months of the date of the Applicant's offer, the Applicant's obligations to acquire the land shall cease, unless otherwise agreed by the Director-General.

2. The Applicant shall bear the costs of any valuation or survey assessment requested by the independent valuer, panel, or the Director-General and the costs of determination referred to in Condition 9.

If the Applicant and landowner agree that only part of the land should be acquired, then the Applicant shall pay all reasonable costs associated with obtaining Council approval for any plan of subdivision, and registration of the plan at the Office of the Registrar-General.